

**Metadata Frameworks Driven by Indigenous Communities in Canada's North: An
Exploration**

by

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Abstract

Digital libraries are online environments for organizing, sharing, and providing access to resources in digital form. Ideally, their content, functionality, organization, and metadata should reflect the needs, interests, and contexts of the communities they are meant to serve. Indigenous communities in Canada and around the world are increasingly turning to digital libraries as a means of leveraging the potential of technologies to create systems that are reflective of local knowledge systems and protocols and responsive to local needs and interests, enabling those communities to control and use their digital resources for their own benefit. Culturally responsive systems are grounded in aspects of the local culture, including language and ways of knowing and being in the world.

The purpose of my research was to gain insight into how communities conceptualize culturally responsive metadata frameworks for digital libraries, and how those frameworks can be surfaced. Through a participatory case study of the Inuvialuit Digital Library (<https://inuvialuitdigitallibrary.ca>), a community driven research partnership, I sought to address two guiding research questions: a) how do Indigenous communities in the northernmost region of Canada characterize culturally responsive metadata frameworks for digital libraries of cultural resources?, and b) what methodologies and approaches are appropriate and effective in developing such conceptual frameworks? Information was gathered through interviews, informal and purposeful conversations, presentations, demonstrations, and user observations involving community collaborators and partners as well as community members at large. This approach was supplemented by the Digital Library itself, data gathered during the Digital Library North project, and my own field notes and reflections. Processes of thematic analysis of the information through my own review and reflection as well as through formal coding were carried out in

parallel and in an iterative fashion, as observations were regularly taken back to community collaborators for review and discussion.

The culturally responsive metadata framework surfaced through the research is very broad and holistic in character. It exhibits the general characteristics of sustainability, user-friendliness, and responsiveness. These are seen not only in the technical infrastructure, but in the framework itself and the people who work with it. The framework allows for organizing content according to themes and topics important to the community, such as place and people, and for ease of navigation and exploration. Resource descriptions include properties important to the community, and are displayed in a logical and intuitive manner. The metadata elements are those deemed most relevant to the community by the community, and are labelled clearly. The elements allow for both traditional (given based on Inuvialuit practices) and colonial (given based on Western practices) forms of names as well as spelling and dialect variations. They incorporate information about relationships between resources, and allow for community members to share and reference them. Our understanding of the framework can be enhanced by viewing it through a theoretical lens that incorporates anti-colonial theory, fluid ontologies, language (or sociolinguistic) codes, and digital storytelling.

Certain methodologies and approaches were appropriate and effective in working together with the Inuvialuit community to surface the framework. As a researcher and collaborator, personal reflection on the what and why of the project as well as how I was working with the community was vital. Building relationships and trust was a critical ongoing process, which involved taking the lead from the community, using appropriate methods for

gathering and analyzing information, engaging with the community outside of the research project proper, working respectfully with community collaborators, giving back to the community, and owning my educational, academic, and professional contexts, and my missteps, and learning from them.

In researching and working together with community collaborators, we have created a Digital Library that is reflective of the community, and a framework that can be the basis of its continued growth and development. In striving to be a good relation and approach this work with respect and in the spirit of reciprocity, in this research I have demonstrated how Indigenous and non-Indigenous individuals can work together to bring about positive changes. My research contributes to scholarship on digital libraries for a community and geographic region that is underrepresented, and contributes to a growing body of community based, action oriented research in library and information science. The framework has the potential to be used as a model in other Indigenous communities looking to develop their own digital libraries, and may offer insights to those people from or working with other traditionally underserved communities seeking to undertake similar initiatives.

Preface

This thesis is an original work by Sharon Farnel. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “METADATA DRIVEN BY INDIGENOUS COMMUNITIES IN CANADA’S NORTH: AN EXPLORATION”, No. Pr00079955, March 12, 2018.

Dedication

This dissertation is dedicated to the staff at the Inuvialuit Cultural Centre and the Inuvialuit Regional Corporation and the many individuals within the Inuvialuit Settlement Region who participated, shared their knowledge and expertise, provided guidance, and welcomed me into their communities. I hope that the work we have done together has created a living and breathing Digital Library that contributes to the strengthening (e.g., preservation, safeguarding, and protection) of Inuvialuit culture and language.

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As I reflect back on these past few years, I am filled with appreciation for the many wonderful people I am fortunate to have in my life. What has seemed impossible at times has been made possible by all of you, and I could not be more profoundly grateful.

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Those who control language and its values control history and its interpretations.

Heather Moorcroft, "The Construction of Silence"

Chapter 1: Introduction

According to Nakata (2002), "the Web is an emergent global space that has enormous potential and implications" (p. 287) for user communities. The online environment supports community engagement and 'publishing' in ways that break down traditional barriers to information access and sharing. "As the digital world gains further traction, ... evidence continues to emerge with regard to ... emerging and changing technologies in the management of knowledge and the need to bring information closer to the community through new technologies" (Nakata, 2007b, p. 99). Alemu and Stevens (2015) argue that the digital world is reflective of a new paradigm, characterised by the participatory and collaborative culture which is built around its architecture, enabling users to become proactive content creators and consumers" (p. 32).

Occurring alongside the growth and development of the digital environment is an increased interest in traditional knowledges and Indigenous communities. Nakata (2007b) notes that there "is an emerging demand by the world community for Indigenous knowledge and, accompanying this, a range of responses to preserve, safeguard and protect this area as a vital resource of Indigenous communities across the globe" (p. 100). These efforts often come from the cultural heritage sector - from libraries that are seeking to provide "better identification of and access to cultural materials within institutional collections, many of which represent or contain Indigenous knowledge" (Nakata, 2007b, p. 100), from museums that are taking advantage of the "significant possibilities for sharing curatorial and ethnographic authority with originating communities" (Hennessy, 2009, p. 5) that digital technologies provide, and from

archives that see the “possibilities for expanding modes of search, retrieval and archiving information” (Christen, 2008, p. 21) enlivened by digital technologies.

Increasingly, however, these efforts are coming from Indigenous communities themselves. As Alexander, Adamson, Daborn, Houston, and Tootoo (2009) note, “from the outset of the digital era, Indigenous peoples in Canada and around the world have recognized the potential of information and communication technologies to alter power relations” (p. 226). These communities see the potential to “leverage the technological functionality of search, database retrieval, and interface design” (Christen, 2008, p. 21) to create systems that capture local knowledge reflective of local knowledge systems and protocols, and who see digital technologies as enabling them to “control, configure and utilise their digital resources for themselves in their own local contexts ... to enhance rather than inhibit Indigenous knowledge traditions” (Christie, 2005b, p. 52). “The underlying theme is always that it is preferable to take a pro-active and culturally sensitive approach to technology introduction. In the end, it is up to local indigenous groups to take ownership of the technologies and use them to make their languages and cultures flourish in cyberspace” (Lieberman, 2009, p. 2).

In this chapter I introduce my study. In Section 1.1 I provide the background for my study, which includes discussion of the value of culturally relevant metadata frameworks, and the shortcomings of existing metadata frameworks. In Section 1.2 I describe the specific setting for my study, outlining the foundational project and describing the Inuvialuit community, and identify the purpose. In Section 1.3 I identify the specific research questions explored, and in Section 1.4 I provide context for my study through a brief discussion of digital libraries, metadata, and digital libraries and user communities. Section 1.5 includes definitions for key concepts. In Section 1.6 I describe my position as a researcher, and in Section 1.7-1.8 I outline

the guiding research paradigms for my study, Indigenous and participatory, and discuss how my research falls under the umbrella of information ethics. In Section 1.9 I provide an overview of the structure of the dissertation.

1.1 Background to My Study

1.1.1 Why Culturally Responsive Metadata?

Both digital libraries and the metadata that they contain should be designed to meet the needs and interests of the community by and for whom the library is designed. Numerous scholars and practitioners in the information disciplines (Adler, 2016; Adler & Tennis, 2013; Alemu & Stevens, 2015; Alemu, Stevens, Ross, & Chandler, 2015; Boast, Bravo, & Srinivasan, 2007; Bowker & Starr, 1999; Clarke, 2002; Olson, 1998, 2002; Sahadath, 2013; Srinivasan, 2017; Srinivasan, Boast, Furner, & Becvar, 2009; Srinivasan & Huang, 2005; Stevens, Flinn, & Shepherd, 2010) argue for the importance of community specific or appropriate metadata based on the socially constructed, contextual nature of knowing and understanding the world. As Srinivasan (2017) reminds us, “all knowledge attempts are socially situated, grounded by peoples and places” (p. 217). It is through metadata that “the meanings of documents are constructed and enunciated for library users” (Olson, 2000, p. 53), and so the practices that inform these descriptions must be reflective of, and appropriate for, the diverse communities being served.

With increasing interest in traditional knowledge and Indigenous communities (Nakata, 2007b), and growing recognition of the rights of Indigenous peoples to preserve, safeguard, and protect their knowledge and all its expressions (United Nations, 2007), we have seen in recent decades the “emerging importance and visibility of Indigenous knowledge organization” (Parent, 2015, p. 703) and the development and promotion of alternative ways of describing that

knowledge. While these descriptive practices are about both discovery and access, they are fundamentally also about so much more. As Cooke (2016), Berry (2017), and Sweeney (2020) note, they are also about equity, diversity, inclusion, and social justice. Olson (1999), Turner (2015), Parent (2015), Smith (2015b), Duarte and Belarde-Lewis (2015), Cocq (2013, 2015), Howarth and Knight (2015), Lee (2011), Liew (2005) and others discuss Indigenous ways of knowing and organization of knowledge and how they differ from those based on western traditions, and argue that metadata standards and practices for describing resources for, by, and about Indigenous communities should be reflective of these cultural characteristics.

1.1.2 Culturally Responsive Metadata and Cultural Heritage Organizations

Many cultural heritage organizations such as libraries, archives, and museums, and those who work within them, have recognized the development and application of more culturally responsive metadata as an important component of broader efforts to engage more thoughtfully, respectfully, and meaningfully with Indigenous communities. Projects and initiatives targeted toward more appropriate description include greater use of local language and terminology (Bow, Christie, & Devlin, 2015; Buente, Baybayan, Hajibayova, McCorkhill, & Panchyshyn, 2020; Christie, Devlin, & Bow, 2014; Holland & Smith, 1999, 2000; Lissonnet, 2004; Lougheed, Moran, & Callison, 2015; Pitt Rivers Museum, n.d.; Rigby, 2015; Suárez, 2020), application of alternative subject headings or classification notations (Bone, 2016; Cherry & Mukunda, 2015; Chester, 2006; Doyle, Lawson, & Dupont, 2015; Farnel, Koufogiannakis, Laroque, Bigelow, Carr-Wiggin, Feisst, & Lar-Son, 2018; Littletree & Metoyer, 2015), involving local communities in metadata creation (Cedar Face & Hollens, 2004; Clarke, 2002; Holland & Smith, 1999, 2000; Lissonnet, 2004; Lougheed, Moran, & Callison, 2015; Malpas & Proffitt, 2017; O'Sullivan, 2013; Smith, 2002), and developing protocols for working respectfully and collaboratively with

Indigenous communities (Canadian Federation of Library Associations, n.d., 2017; Library and Archives Canada, 2003; McKemmish, Faulkhead, & Russell, 2011; Society of American Archivists Native American Archives Roundtable, 2006).

Substantial impetus for this shift within cultural heritage institutions is the acknowledgement that metadata practices both past and present have resulted in descriptions that inaccurately or inappropriately represent resources by, for, and about Indigenous peoples and contexts. Indeed, research in information science has demonstrated that Indigenous communities have been particularly negatively affected by the colonial biases inherent in the ways in which established metadata practices have treated resources created by, for, and about them (Duarte & Belarde-Lewis, 2015). As far back as 1971, Yeh declared that “the treatment of the American Indian in the Library of Congress Classification: Class E-F is inadequate and out of date” (p. 122). And while librarian activists such as Berman (1995, 2000), library and information science educators such as Olson (1999), and others continued to press for changes in library descriptive practices, near the end of the first decade of the twenty-first century, community members (and in this instance also library professionals) Webster and Doyle (2008) still found themselves pleading “don’t class me in antiquities!”

To be fair, there has certainly been some progress in addressing these issues. The work of scholar-advocates such as Berman (1995, 2000) has resulted in some positive changes to the controlled vocabularies used by many North American libraries when describing resources. And Maori scholar Linda Tuhiwai Smith (2015b) has recently observed that “I have seen some innovative and exciting attempts to re-present Indigenous cultures in Indigenous contexts” (p. 474). Yet the changes that have occurred have been fairly localized and piecemeal, and the pace has been much slower than might have been expected or hoped. And even when there is

agreement on the need for reform of descriptive practices for resources by, for, and about Indigenous individuals and communities, there is no agreement on the best means of going about that reform.

1.1.3 Same Problem, Different Solutions

A substantial group of scholars and practitioners argue that revisions and enhancements to existing practices can be sufficiently effective in addressing the recognized problems. At the level of national organizations, one often sees a preference for working within existing practices. The State Library of Queensland (n. d.) and Library and Archives Canada (2003, 2007), for example, explain that improved description of materials by, for, and about Indigenous populations can be achieved through revisions to existing practices as well as the development of aides and tools to help contextualize and explain those practices. In a recent report, the Canadian Federation of Library Associations Truth and Reconciliation Committee (2017) also recommends first acknowledging structural biases and inadequacies in current descriptive practice, and then integrating Indigenous knowledges into those practices as a means of addressing them.

Several scholars and practitioners provide concrete examples of reformed practice in action in order to demonstrate the feasibility and effectiveness of this approach to addressing identified problems. Rigby (2015) discusses the inclusion of traditional names of people and places in the original scripts within descriptive records for library resources, and describes the procedures and workflows developed around it. Bone (2016) and Villanueva (2016) describe projects to include customized terminology for local subjects and topics within records, and how these terms were incorporated into existing systems and workflows.

Other scholars argue for taking existing descriptive standards and enhancing them with elements that can capture information relevant to, and reflective of, local Indigenous communities. Lissonnet (2004) and Nevile and Lissonnet (2003, 2006) describe their work with an Aboriginal community in Australia to develop a digital library, and describe the process of taking an existing descriptive standard, Dublin Core, and simply adding in several additional elements to reflect information important to the community that could not be captured in the core standard. Hunter, Koopman, and Sledge (2003) and Hunter (2005), who also work extensively with Aboriginal communities in Australia, advocate for the use of existing standards and practices but supplementing them with additional elements in order to capture what is important in a given context. All of these scholars argue that building on existing standards and practices is an effective and efficient means of addressing known inadequacies.

Several scholars argue that an effective means of addressing inadequacies of current descriptive practices is to involve community members in correcting or supplementing existing metadata. McKemmish, Faulkhead, and Russell (2011), Hunter (2005), Holland and Smith (2000), and Srinivasan, Boast, Furner, and Becvar (2009) all describe projects in which members of Indigenous communities provide descriptions or annotations of resources that exist alongside descriptions created by library staff, thereby incorporating a more authentic voice. Cocq (2013) argues that this “symbiosis of the vernacular and the institutional” (p. 5) is an effective means of improving the appropriateness of metadata.

An additional group of researchers argues that existing practices are capable of appropriately and respectfully treating Indigenous resources if there is a willingness to review those practices critically and make necessary changes. Olson (2000), Berman (2000), Hannah (2020), and Yeh (1971) are examples of those who see potential in what we have, and argue that

what has held back progress is not the practices per se, but rather an unwillingness in those who create and implement those practices to recognize their inadequacies and biases and address them through concrete and timely changes.

There is, however, another substantial group of practitioners and scholars who argue that true change is not possible within the structures of existing practices. Attempting reform from within, they posit, simply perpetuates systemic inadequacies and biases. What is needed instead is a completely fresh start that would build coherent and appropriate practices from *the ground up*.

Several scholars emphasize the importance of developing and applying practices that are based on an Indigenous worldview, which differs greatly from the Western worldview which underpins many of the most commonly followed library descriptive practices. Moulaison and Bossaller (2016) argue that appropriate access to Indigenous knowledge is a “moral imperative” (p. 1) for libraries and that developing standards and practices that reflect the worldviews of Indigenous communities is the only way to ensure that resources are represented accurately and appropriately. Duarte and Belarde-Lewis (2015) propose the use of the Indigenous technique of imagining, of “creating figurative and literal spaces for the work of building, analyzing, and experimenting with Indigenous knowledge organization” (p. 687), to develop alternative descriptive practices and information structures. Stevens (2008) reviews three projects in Canada, the United States, and Australia that have incorporated Indigenous ways of knowing into their practices to the benefit of their communities. Turnbull (2009) reminds us that “indigenous knowledge is local, place based, diverse and hence incommensurable and incapable of being validated by common standards”.

Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, and Keegan (2015) and Lilley (2015) address the specifics of the Maori way of understanding and interacting with the world and how it has informed the development of descriptive standards and practices that are inherently more representative of the communities which they are meant to serve. Doyle (2013) proposes library collections, spaces, and services, including descriptive practices, that incorporate the worldview of the local Indigenous community, in their case those of the Canadian West coast. Lee (2011), in surveying Indigenous community members and professionals in Western Canada, heard repeatedly that systems of organization and classification based on the medicine wheel, as opposed to the hierarchical systems based on a Western worldview, would be welcome by Indigenous communities as more reflective of their ways of engaging with the world around them.

Several scholars reflect on the tools and systems we use in our descriptive practices and argue the need for those to be critically examined as well if we are to develop practices interculturally that are truly reflective of Indigenous ways of knowing. Christie (2004, 2005b) reminds us that our systems are not innocent, that they “carry with them particular culturally and historically contingent assumptions about the nature of the world, and the nature of knowledge ” (2004, p. 1), and argues a need for flattening our ontologies to remove any hard-wired assumptions about knowledge and how it is structured. Srinivasan and Huang (2005) make a similar observation, and argue for “fluid ontologies” (p. 194), or processes for letting knowledge structures emerge from community interaction with systems and resources. Van der Velden (2010) argues that the technoscientific knowledge of the traditional database differs from that of Indigenous knowledge and proposes the idea of contact zone as an interactive and adaptive process for creating databases that are meaningful to Indigenous communities.

Another group of scholars focuses on the need for the development and use of Indigenous focused knowledge management tools such as subject heading lists, thesauri, and classification systems. McClellan (2010), Doyle (2013), and Littletree and Metoyer (2015) discuss several thesauri developed for and by Indigenous communities in North America and Australia. Doyle, Lawson, and Dupont (2015), Tomren (2003), and Chester (2006) discuss the development of community-specific classification systems. Doyle, Lawson, and Dupont (2015), Lilley (2015), and Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, and Keegan (2015) discuss several subject heading lists that have been developed by and for Indigenous communities. Each of these scholars argues that truly accurate and appropriate representation of Indigenous communities and their resources is only possible with descriptive tools built by those communities based on their own ways of knowing and understanding their world (Matsuda, 2015; Matsuda, Hajibayova, Buente, Quiroga, & Long, 2017).

1.1.4 The Challenge of Change

Slowness or refusal to address inadequacies of existing descriptive practices with respect to resources by, about, and for Indigenous peoples is due in part to the perceived challenges in enacting change, whether through reform of existing practice or development of entirely new practice. As Adler (2016) notes, knowledge organization systems such as classifications and subject heading lists are informed by social and political agendas; they are inherently biased. And “the fact that some of these structures remain unchanged also reveals important information about the embeddedness of those discourses” (p. 631). The two most commonly identified challenges are consensus building, and developing specialized standards and systems that will have to work alongside others.

Lougheed, Moran, and Callison (2015) speak to the importance of practices in achieving reconciliation, but also address the challenges of working through community input and settling on a practice that will be broadly acceptable across communities. Lee (2011) notes that their survey respondents differed greatly in the descriptive language they found appropriate and respectful, and concluded that consensus building would be a major challenge in developing new practices for handling Indigenous resources. Berman (1995) relates their own similar experience working with Native American groups, observing that there is variance between the level of acceptability of different terms between Indigenous communities. In 2007, Library and Archives Canada initiated a process of reviewing its practices in this area, including consultations with community members and practitioners, but eventually ended it with no firm changes made, based partially on the fact that there was a lack of consensus on certain aspects of change, including appropriate terminology in metadata.

Several scholars voice concern over the challenges that come with developing and applying alternative standards and systems that will have to interoperate with others already in existence. Library and Archives Canada (2007), in describing the reasons for ending its review of descriptive practices, notes that concerns were raised about the difficulty of trying to work with two sets of standards, and the burden this might place on staff and systems in libraries. Godbold (2009) and Christie (2004), in working with Aboriginal communities in Australia to develop systems and tools reflective of the needs of the local communities, describe the tensions between working with communities on local solutions, and ensuring that those solutions do not inhibit broader sharing of descriptions and resources. Boast, Bravo, and Srinivasan (2007) recognize that this challenge of balancing the needs of local communities with those of the broader

community is real, and must be addressed in any discussion of possible avenues of action. And it begs the question, which communities and whose interests are and have been first served?

Clearly, change has been far too little and far too slow to happen. But why is this important? The title of an article by Lougheed, Moran, and Callison (2015), “Reconciliation through description: using metadata to realize the vision of the National Research Centre for Truth and Reconciliation”, spells it out for us. It is about recognizing that our current descriptive practices reinforce existing structures of power and privilege (Morales, Knowles, & Bourg, 2014) and that if we wish to ensure our collections and services respect and reflect Indigenous peoples and worldviews, we must engage in decolonizing our metadata practices with both meaning and respect.

1.1.5 Culturally Responsive Metadata and Indigenous Communities

The growing interest in culturally responsive metadata is not in the least restricted to cultural heritage institutions. Indeed, the need for revised metadata policies and practices is acknowledged within Indigenous communities around the world, and is part of a larger trend of Indigenous communities leveraging the capabilities of digital technology to drive sharing of traditional knowledge and cultural resources on their own terms (Cocq & DuBois, 2020; Farnel & Shiri, 2018; McCann, Pulsifer, & Behe, 2016; Powell & Aitken, 2011). “In many communities, the traditional media for transmitting aboriginal knowledge, [oral storytelling and experiential instruction], have become largely unavailable to many aboriginal people, especially the young. The young people no longer have daily access to experiential learning on the land; they have decreased levels of fluency in aboriginal languages that would keep them in communication with elders; and they spend much of their time in educational institutions that socialize them into dependence on the written word” (Stevens, 2008, p. 26). As Christie (2004)

notes, “many Aboriginal parents and grandparents ... endorse the use of computer databases to store texts, photos, videos, maps, lists etc. to help with their work of teaching” (p. 4). Christen (2015) confirms that “many tribes are using their own digital archives and regionally accessible Web portals as practical ways to facilitate sharing knowledge, engaging local knowledge holders, expanding collections, and promoting the use and creation of new knowledge and cultural materials” (p. 4).

At the same time, there is a “radical awareness ... of the symbolic power involved in the activity of representation” (Hall, 1999, p. 7). And so within the literature are numerous examples of Indigenous individuals and communities calling for change in metadata practices and policies, and of community initiated or driven collaborations and partnerships between Indigenous communities and others to address these changes. The exact nature of the participation ranges from basic enhancement and/or correction of descriptions created by individuals or organizations according to established disciplinary standards, to partnership in determining relevant metadata elements and their content, to full ownership and guidance of the process from design to application.

A number of scholars and practitioners (Aase, 2017; Christen, 2017, July 13; Doyle, Lawson, & Dupont, 2015; Duarte & Belarde-Lewis, 2015; Genovese, 2016; Hurley, Kostelecky, & Aguilar, 2017; Lee, 2011; Noprison, Sensuse, Sucahyo, & Lukman, 2016; Smith, 2015b; Srinivasan, 2006a, 2006b, 2012b, 2017; Stevens, 2008; Webster & Doyle, 2008) reiterate the need for more culturally responsive metadata practices and standards, and argue that these can and must be developed by or in partnership with Indigenous communities. As Srinivasan (2012b) reminds us, “different communities communicate, interpret, and socially construct ontologies based on their diverse social, cultural, and political goals” (p. 204), which presents possibilities

for diverse representations which *must*, however, be generated by communities to benefit their own priorities and values.

Srinivasan, Boast, Furner, and Becvar (2009), Hennessy, Wallace, Jakobsen, and Arnold (2012), Christal, Roy, and Cherian (2005), Dousset, Hendery, Bown, Koch, and McConvell (2010), Loughheed, Moran, and Callison (2015), Somerville and EchoHawk (2011), and Smith (2008) among others discuss involving Indigenous communities in correcting or enhancing existing metadata for cultural resources. Community contributions in the way of corrections or enhancements can be seen as examples of what Cocq (2013) labels as “the symbiosis of the vernacular and the institutional” (p. 5) wherein the “vernacular voice emerges in the narrative form and in the references to community-based knowledge” (p. 6). Furner, Smith and Winget (2006) note that cultural annotation systems that “allowed patrons not only to supply their own descriptions of an institution’s resources, but also to add comments and to build communities around personal collections, could be envisaged as a vital service that would help patrons interact with and interpret those resources, largely outside the authority and control of curators and other specialists” (p. 71). They do caution, however, that further research is needed to determine the actual usefulness of such systems.

Others also caution that while enabling community engagement via corrections or enhancements in the form of tags or comments is a positive step in the right direction, there is still much work to do. Srinivasan, Boast, Becvar and Furner (2009) note that while “Web 2.0 applications may support meaningful interactions with digital museum systems”, ...”the intellectual control over the informational core of the museum, its catalog of objects, has largely remained in the hands of the museum and its staff of elite experts” (p. 667). Srinivasan, Boast, Furner and Becvar (2009) further argue that “most existing examples of social computing in

museums ... are notable because of their distance from the core information systems in museums” (p. 269). “Indigenous peoples hold contextual, experiential, and historical knowledge around objects that are often absent from catalog entries” (Srinivasan, Boast, Furner, & Becvar, 2009, p. 270), though they should not be. “While the folksonomies seem to generate great activity and usage, implying that they have engaged their user publics, ..., what is still missing is the application of these new approaches to the norms and practices of traditional institutions that hold and maintain knowledge, and the interactions that engage communities as coproducers and classifiers rather than simply as technology consumers” (Boast, Bravo, & Srinivasan, 2007, p. 399).

Others (Christen, 2008, 2015; Christie, 2004, 2005a; Christie, Devlin, & Bow, 2014; Godbold, 2009; Greyling & Zulu, 2010; Haberstock, 2019; Hennessy, 2009; Holland & Smith, 1999, 2000; Isaac, 2005; Kapuire & Blake, 2011; Lissonnet, 2004; Nevile & Lissonnet, 2006; Powell, 2007; Powell & Aitken, 2011; Srinivasan & Huang, 2005; Srinivasan, Pepe, & Rodriguez, 2009; Stevens, 2008; Verran, Christie, Anbins-King, Van Weeren, and Yunupingu, 2007; Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, and Keegan, 2015) speak to projects or studies that engage Indigenous communities through partnering around metadata design and application, or by having those communities drive the process from start to finish. As Michael Christie and colleagues observe in their work with Aboriginal Australian communities, “we have found very little evidence that Aboriginal users/owners are actively involved in conceptualising the possible purposes or uses of this [cultural resource] material, in collaborating in the selection of resources, or the database design, or in the actual database use” (2005a, p. 62). They question the usefulness of such archives and vow in their own work to ensure the community voice holds prominence. Verran and Christie (2007) work with Aboriginal

communities on the core principle of always “conceiving software that allows the user always to be the designer” (p. 224). Hunter, Koopman, and Sledge (2003) concur, explaining that “it is essential that indigenous communities be able to describe and contextualize their culturally and historically significant collections in their own words and from their own perspectives”. This approach “probes the possibilities for communities to serve as the content creators, interface designers, and, most importantly, information architects and ontology creators of their own systems” (Srinivasan, 2007, p. 725).

These community led initiatives are important reminders of the need to ensure that this important work is carried out in true partnership and collaboration. “Nothing about us, without us” is a commonly encountered slogan that expresses the principle that any practice, policy, or research project should be developed in true collaboration with those who will be most impacted (Lived Experience Advisory Council, 2016). This slogan is heard often from Indigenous peoples the world over, who have not generally been “well-partnered with” (Fitzpatrick, 2013) in the past. Clearly, then, Indigenous communities and allies are calling for re-indigenized metadata frameworks. In order to heed this call we must engage in ethical and intercultural collaborative research to better understand the nature and application of culturally responsive metadata. As Smith (2015b) reminds us, “Indigenous knowledge frameworks and concepts can be employed to revitalize Indigenous knowledge, restore relationships between people and the objects they created, and provide new ways to understand Indigenous knowledge in contemporary contexts” (p. 474). For as Wendt (1996) observes, “cultural dependency is even more soul-destroying than economic dependency” (p. 642).

1.2 Setting for My Study

1.2.1 The Foundation: The Digital Library North Project

The Digital Library North (DLN) project was a four year (2014-2018) collaboration between researchers at the University of Alberta, staff at the Inuvialuit Cultural Centre (ICC), and communities within the Inuvialuit Settlement Region (ISR) to develop a digital library infrastructure to support access to cultural resources. It was driven by the community for the community, and sought to address a recognized need for enhanced community access to culture and language materials. Building on the Omeka digital library platform, with its default Dublin Core metadata scheme, the project explored and developed along several streams, including digital libraries, information needs, cultural heritage, multilingual user interfaces, user evaluation, community driven research, sustainability, and metadata. The research team and community collaborators used a variety of qualitative methods such as interviews and surveys, as well as ethnographic methods including focus groups, informal conversations, and site visits (Digital Library North, 2017).

As a research assistant on the DLN team, my focus was on the metadata theme, working with ICC staff and community members to explore what constitutes culturally responsive metadata in their context, and how this can be expressed in a metadata and knowledge organization framework and subsequently applied to cultural resources in the digital library. My work with the community as part of the DLN project began to surface some key characteristics of culturally responsive metadata as defined by the community.

1.2.2 The Community Case: The Inuvialuit and Their Digital Library

The Inuvialuit (“the real people”) are the Indigenous people of the Western Arctic region of what is now Canada. Archaeologists believe the ancestors of the Inuvialuit are the Thule people, who migrated from the Bering Sea region and settled in the area around the mouth of the Mackenzie River around 800 years ago (Inuvialuit Regional Corporation, 2011; Lyons 2010). The culture, language, and lifestyle of the Inuvialuit are similar to that of Inuit in other arctic regions including Greenland, northern Alaska in the United States, and the Siberia region in Russia (Inuvialuit Regional Corporation, 2011, 2017; Lyons, 2010).

The language of the Inuvialuit is collectively known as Inuvialuktun, and includes three languages: Kangiryuarmitun, Sallirmiutun, and Uummarmiutun. Kangiryuarmitun means “people of the large bay” and is spoken in the community of Ulukhaktok. Sallirmiutun, meaning “people closest to the shore”, is spoken in the communities of Sachs Harbour, Paulatuk, and Tuktoyaktuk. Uummarmiutun, meaning “people of the evergreens and willows”, is spoken in both Inuvik and Aklavik. Inuvialuktun is currently considered an endangered language, but efforts at reawakening it are growing (Inuvialuit Regional Corporation, 2017).

The Inuvialuit are full and active participants in modern society while retaining strong ties to the land. In 1984, they signed the Inuvialuit Final Agreement (IFA) with the Government of Canada, which recognized Inuvialuit ownership of their homeland, now known as the Inuvialuit Settlement Region (ISR), a region covering 91,000 square kilometres and incorporating the traditional lands and waterways of the Inuvialuit. There are six communities within the ISR: Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok. The population of the region is approximately 6,500, with more than half (3,400) based in Inuvik, the regional centre. There is also a growing population of Inuvialuit who live outside of the ISR, in

southern Canada and elsewhere, seeking to maintain connections to their land, language, and community (Indian and Northern Affairs Canada, 2005; Inuvialuit Regional Corporation 2011, 2017; Smith, 2018).

While the region has “an immensely rich culture and history, its geographic remoteness poses challenges for enabling easy access to cultural heritage resources” (Farnel, Shiri, Rathi, Cockney, Campbell, & Stobbs, 2016, p. 3) for community members. The Inuvialuit Cultural Resource Centre, now the Inuvialuit Cultural Centre Pitquhiit-Pitqusiit, a division of the Inuvialuit Regional Corporation (IRC), was founded in 1998 with a mandate to promote and preserve the language and culture of the Inuvialuit of northern Canada (Inuvialuit Cultural Resource Centre, 2017). Located in Inuvik, it serves as the cultural hub for the six communities of the ISR. The ICC administers funds to communities for language and cultural programming, plans and holds its own cultural and language events, creates and publishes language learning resources, and provides translation services to government and research organizations, among other activities. To better serve the needs of the communities and fulfill its mandate, the ICC made the decision to develop an online digital library of cultural resources (<https://inuvialuitdigitallibrary.ca/>). The ICC wanted the community to be engaged with and use the digital library, to make it their own, and recognized that a responsive metadata and knowledge organization framework could contribute to this.

Using a participatory case study approach, I explored Inuvialuit understanding of a responsive metadata framework for their digital library of cultural resources. The purpose of my study was to gain insight into how Indigenous communities in the northernmost region of Canada characterize culturally responsive metadata frameworks for digital libraries of cultural

resources, and what methodologies and approaches are effective and appropriate for surfacing them.

1.3 Research Questions

The following specific research questions guided my study:

- a) how do Indigenous communities in the northernmost region of Canada conceptualize culturally responsive metadata frameworks for digital libraries of cultural resources?
- b) what methodologies and approaches are appropriate and effective in developing such conceptual frameworks?

1.4 Context for My Study

1.4.1 Digital Libraries

In a foundational overview article, Borgman (1999) provides several definitions of digital libraries as developed by various disciplines during the early years of growth and spread of digital library development and research. One definition characterizes a digital library as “1) a service; 2) an architecture; 3) a set of information resources, databases of text, numbers, graphics, sound, video, etc. and 4) a set of tools and capabilities to locate, retrieve and utilize the information resources available” (p. 233). A later and expanded definition of digital libraries is “a set of electronic resources and associated technical capabilities for creating, searching and using information. In this sense they are an extension and enhancement of information storage and retrieval systems that manipulate digital data in any medium (text, images, sounds; static or dynamic images) and exist in distributed networks” (p. 234).

Tedd and Large (2005) build on Borgman in emphasizing the key characteristics of digital libraries as containing “information in a digital state” (p. 17), existing in “distributed networks” (p. 17), and including collections of any size that have been “selected and organized” (p. 18). Arms (2000) provides a similar definition of digital libraries as “managed collection[s] of information, with associated services, where the information is stored in digital formats and accessible over a network” (p. 2). The National Information Standards Organization (2007) defines digital libraries as “digital objects that are selected and organized to facilitate their discovery, access, and use” (p. 4).

Digital libraries, then, can generally be understood to be online environments for organizing, sharing and providing access to resources in digital form.

1.4.2 Metadata

Metadata is language; it is the words, phrases, and sentences that are used to describe resources of any kind.

Gilliland (2008) defines metadata as “the sum total of what one can say about any information object” (p. 2). The National Information Standards Organization (2004) provides a more detailed definition of metadata as “structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource” (p. 1).

Metadata is a central component of digital libraries. Borgman (1999) notes that “the content of digital libraries includes data, metadata that describes various aspects of the data (e.g., representation, creator, owner, reproduction rights) and metadata that consist of links or relationships to other data or metadata, whether internal or external to the digital library” (p. 234). Tedd and Large (2005) note that “the content of a digital library comprises both data and

metadata describing that data (such as their authors, titles, year of publication, and a summation of their subject coverage)” (p. 18).

Because of its role in driving search and discovery and its impact on how resources can be understood, metadata is vital to the success of digital libraries, equal in importance to content and services. Srinivasan, Becvar, Boast, and Enote (2010) argue that it is at the level of the metadata “that the enduring identity of an object exists” (p. 747), and so two of the most important decisions made with regard to describing objects are “the choice of a metadata scheme and the choice of vocabularies” (Srinivasan, Boast, Furner, & Becvar, 2009, p. 268). As the National Information Standards Organization (2007) observes, “objects, metadata, and the user interface together create the user experience” (p. 4) of digital libraries.

1.4.3 Digital Libraries and User Communities

Digital libraries are understood to be developed by, with and for user communities. Their content, metadata, and functionality are all to be driven by the needs, interests and contexts of the particular user communities for whom they are developed. Indeed, as Pang (2012) notes, “one cannot fathom a digital library without considering the social interactions driving its development, sustainability and use” (p. 86).

According to Borgman (1999), “digital libraries are constructed, collected and organized by (and for) a community of users, and their functional capabilities support the information needs and uses of that community. They are a component of communities in which individuals and groups interact with each other, using data, information and knowledge resources and systems” (p. 234). Tedd and Large (2005) concur, noting that “a very important characteristic of a digital library is that its collection has been selected and organized for an identifiable user community” (p. 18) and that the needs of the community are met through both its content and

associated functionality. For many Indigenous communities, digital libraries have the potential to “remind us of who we are and provide us with new pathways forward” (Srinivasan, 2017, p. 192), and to “be the same yet different in a way that supports not just who we were but who we aspire to be” (Srinivasan, 2017, p. 193).

As a key component of digital libraries, metadata too must be appropriate for a digital library’s user communities; it must reflect their needs, interests and contexts. The National Information Standards Organization (2007) notes that “good metadata conforms to community standards in a way that is appropriate to the materials in the collection, users of the collection, and current and potential future uses of the collection” (p. 61).

Alemu and Stevens (2015) observe a growing trend toward community-focused metadata approaches, and argue that it is part of a broader paradigm shift - which they characterize as a shift from Web 1.0 to Web 2.0 - in which users are considered to be not just consumers, but creators of information and in which technology not only enables but creates the expectation of greater participation, collaboration and coordination. “This paradigm is characterised by the participatory and collaborative culture, which is built in around its architecture, enabling users to become proactive content creators and consumers” (p. 32). They further argue that this paradigm shift reinforces the belief that there is more than one way of making meaning in the world, that “there is no one way of ordering as each scheme is deeply intertwined with the social, political and cultural realities of the categorizer” (p. 35).

This paradigm, Alemu and Stevens (2015) argue, enables and perhaps even compels us to recognize that “the construction of metadata is highly influenced by socio-cultural constructs such as language, education, context of use and personal interests” (p. 41) and to take advantage of the opportunities made available through digital technology to enhance the experience for

digital library users. As Stevens, Flinn, and Shepherd (2010) note, it is about enabling communities to document their own stories in their own terms (p. 60). In the context of Indigenous communities, metadata then “must reflect and support context specific Indigenous ways of being and knowing and people’s control over their own knowledge” (Godbold, 2009, p. 120).

1.5 Definitions

My research study was guided by operational definitions of several key concepts, as outlined below.

Cultural resources - tangible resources such as artefacts, photographs, maps, documents, as well as intangible resources such as traditional knowledge, oral histories, and languages. Indigenous cultural resources in particular can be defined as “a living heritage that includes objects, stories, songs, dances and images that are created today or in the future, based on that knowledge. Indigenous culture is diverse and alive; it is not static” (Janke, 2006, p. 9).

Indigenous communities - “practic[e] unique traditions, and retain social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live. They are descendants of those who inhabited a country or a geographical region at the time when people of different cultures or ethnic origins arrived” (United Nations Permanent Forum on Indigenous Issues, n.d.). It is vitally important to note that while there are certain characteristics that are shared across definitions of Indigenous communities, there is vast diversity and richness in and between these communities around the world as they shape, and are shaped by, their environmental, social and cultural contexts. There is no one “Indigenous people”; there is diversity within diversity.

Culturally responsive - systems, processes, methodologies that are grounded in aspects of the local culture, including language and ways of knowing and being in the world. “To be culturally responsive is to be sensitive, aware, and capable of employing cultural learning patterns, perspectives, family structure, multiple worldviews” (Pewewardy, 1999).

Metadata framework - scheme for creating and implementing metadata for resources. Typically these consist of the particular set or sets of metadata elements chosen, and information on how to populate those elements, including choice of vocabularies or ontologies (Lissonnet, 2004; Mandal, 2018; Park, Lamontagne, Perez, Melikhova, & Bartlett, 2009; Stein & Dunham, 2018). Examples include the Oregon Digital (n. d.) Metadata Guide and the Digital Public Library of America (2017) Metadata Application Profile.

At a conceptual level, then, a *culturally responsive metadata framework* can be defined as a scheme for creating and implementing metadata for resources that is responsive to, and grounded in, a given local cultural context, including language and ways of knowing and understanding the world. The specific aspects of a framework will be dependent on the nature and character of the given cultural context from which it is derived.

1.6 Researcher Position

As a professional librarian my research and practice have focused on the organization, description, and classification of resources for user discovery and access. As a member of the First Nations Information Connection (FNIC), Canadian Polar Data Network (CPDN), and Digital Library North (DLN) teams I have witnessed first hand the challenges faced by Indigenous communities in using existing and established metadata practices and frameworks to organize and describe resources for preserving and promoting their culture and heritage both within the community and beyond. I believe these aspects of my background positioned me well

to investigate the proposed questions. However, as I am not of Indigenous ancestry, I am an outsider to the Indigenous experience. And although I see myself as an “allied other” (Denzin, Lincoln, & Smith, 2008), I am very sensitive to questions around the place of non-Indigenous individuals in doing research with, alongside, and for Indigenous communities.

This awareness prompted me to pose many critical questions to myself. Can I ever truly understand the worldview of my colleagues? If not, should I be engaging in research into Indigenous issues? Can I incorporate Indigenous methodologies into my practice and research without appropriating them? What underlying biases and assumptions are parts of my worldview as a person born into and brought up in western paradigms? Am I being thoughtful and reflective enough to see where these biases may be and to strive to counter them? To what extent do I engage with colleagues with respect, for example, in how I act and speak and, more importantly, in how I listen? Despite these concerns, I nevertheless hope and believe there is room for non-Indigenous researchers in this area. As Margaret Kovach reflects,

non-Indigenous critical theorists are strong allies for Indigenous methodologies.... They can assist in making space for Indigenous methods (protocols, ethics, data collection processes), but also for the epistemic shift from a Western paradigm that Indigenous methodologies bring.... Even if critical theorists cannot fully embrace Indigenous methodologies, they would argue that doing so can be a legitimate option (Kovach, 2009, p. 86).

I believe that core to overcoming these challenges is understanding who I am and where I come from, and being honest and open about it both with myself and with others; being mindful and thoughtful with what I think and do and reflecting meaningfully on the ways in which I engage with others; being open to all ways of knowing and understanding, and recognizing that I

am always learning; and being respectful of all others and the world around me. In addition, I must work to reduce as much as possible the potential impact of my past experiences, my biases, and any expectations I might have of what I might find, and let the data, in a sense, tell a story. As I was conducting my research study, I did so by journaling, regularly checking in with community collaborators and my supervisors, and striving to reflect on all aspects of my research process. I reflected on the fact that I have been 'brought up' in western research traditions, acknowledge the assumptions and tendencies this comes with, and the contradictions it might surface in the context of collaborative research with an Indigenous community. As part of this ongoing learning, I took advantage of every possible opportunity to engage in equity, diversity, and inclusion programs, such as a multi-day Aboriginal Cultural Training program delivered by local elders, Diversity Day for all staff of the University of Alberta Library, and workshops such as "Weaving Indigenous Wellbeing, Research, and Ethics" and "Indigenous Knowledge and Northern Community Participation" offered by community members and researchers expert in collaborative work with Indigenous communities. While awareness and critical reflection "do not absolve us of our position" (Schroeder, 2014, Critical Research section, para. 4), they are important first steps. They aid us in asking "if we can see our own limitations as researchers and participants. Can we see where our conceptual luggage and our biases affected the process and outcome? ... Have we been transparent in our biases and in the power relations and decisions that were made regarding the research process?" (Potts & Brown, 2005, p. 277). And they guide us in engaging in "courageous conversations", in asking our community co-collaborators "How can we work together to solve problems?" rather than "How can I help?" (Smith, 2015).

1.7 Guiding Research Paradigms

Wilson (2008) and Chilisa (2012) share a view of paradigm as comprised of a set of philosophical assumptions about the nature of reality (ontology), ways of knowing (epistemology), ethics and value systems (axiology), and processes and approaches to answering research questions (methodology). As Kovach (2010) notes, “the term paradigm when used within a research context includes a philosophical belief system or worldview and how that belief system or worldview influences a particular set of methods. A paradigm is both theory and practice” (p. 141).

I worked alongside an Indigenous community to explore a problem of importance and interest to that community, and strove to do so in ways that were responsive to their cultural, social, and historical context. And for that reason I chose to situate my research study within two congruent research paradigms: Indigenous and participatory.

1.7.1 Indigenous Paradigm

An Indigenous research paradigm is grounded in Indigenous knowledge and Indigenous ways of knowing. Its characteristics include relationality, or the recognition of and respect for relationships between people, people and the land, and people and the cosmos (Chilisa, 2012; Hart, 2010; Wilson, 2008); knowledge as fluid, communal, and interconnected (Kovach, 2005; Lavallée, 2009; Little Bear, 2000); individuals as located or situated and thereby never neutral or objective (Absolon & Willett, 2005; Kovach, 2010); and respectful engagement as expressed through ethics, values, and principles (Hart, 2010; Kovach, 2005, 2010). Relationality encouraged me to take the time to build a sincere relationship with the Indigenous community and ensure that we were in a truly reciprocal collaboration within our project. An understanding and appreciation of Indigenous knowledge opened me to appreciating experience as a legitimate

way of knowing, and Indigenous methods such as storytelling as legitimate ways of sharing knowledge. Situatedness ensured I was mindful of the importance of situating myself in the research, of declaring openly who I am, where I come from, what my goals and intentions were, and what my investment in the research process was. Respectful engagement ensured that I followed community protocols and acted ethically in everything I did, and that I let the community's interests and needs guide the research in all aspects.

1.7.2 Participatory Paradigm

Participatory research emphasizes culture-based creation of knowledge and entails equal and cooperative exchange of local cultural knowledge and academic knowledge to drive inquiry (Baydala, Placsko, Hampton, Bourassa, & McKay-McNabb, 2006; Lincoln, Lynham, & Guba, 2011). It aims to improve a given social reality through insights gained from research involving practitioners, academics, and community members (Bergold & Thomas, 2012). It favours integration of theory and practice, takes place in a real-life setting, and is responsive to a problem or need in the research context (Cahill, Rios-Moore, & Threatts, 2008; Dick, 2014). From this paradigm I took the importance of a focus on the nature and strength of community knowledge and a respectful and reciprocal process of engaging in collaborative inquiry (Denzin, Lincoln, & Smith, 2008; Hermes, 1998). And its emphasis on involving communities as partners and letting community interests and needs drive the research was a reminder that enabling the community to build knowledge and expertise to address issues in ways that are most appropriate to it (Bergold & Thomas, 2012; Castellano, 2012) is a core outcome of the research process.

1.7.3 Paradigmatic Fusion

It may be asked whether or not it is possible to be guided or informed both by a western and an Indigenous paradigm. Castellano (2012) argues that such intercultural research is possible, and can be understood through the concept of “ethical space” in which “parties acknowledge different ways of knowing and learning ... [and] nurture collaborative relationships and negotiate mutual responsibilities” (p. 5). Indeed, there are many examples of Indigenous paradigms and western paradigms, such as feminism (McHugh & Kowalski, 2010), critical theory (Denzin, Lincoln, & Smith, 2008; Hermes, 1998), and participatory (Castellano, 2012; Evans, Hole, Berg, Hutchinson, & Sookraj, 2009; Smith, 1999, 2012) coming together to inform research. According to Evans, Hole, Berg, Hutchinson, and Sookraj (2009), the fusion of Indigenous and participatory paradigms can lead to greater social transformation and democratization of research (p. 899). What is most important is to ensure that such intercultural knowledge exchanges or fusions take place in an equitable, mutual, and respectful manner.

1.8 Under the Umbrella of Information Ethics

Information ethics focuses on the “relationship between the creation, organization, dissemination, and use of information, and the ethical standards and moral codes governing human conduct in society” (Online Dictionary for Library and Information Science). My study can be seen as situated squarely within the broad discipline of information ethics. It lies within the context of professional codes of values and ethics that encourage, indeed require, critical reflection on the organization and description of, and access to, information resources. It can be seen as part of a growing body of research into understanding information ethics within different, in particular non-Western, cultural traditions (Samek, 2007, p. 31). Through my research explorations, I asked myself and others within the profession to reflect on the fact that there is

power in naming, and that this is a serious responsibility that must not be taken lightly. I asked us to “fulfill [our] responsibility to take social action in directions that promise the fullest and richest life” (Olson, 2000, p. 65) for each and every one of our users. I asked us to follow the lead of Christen (2017, September 28) and Brody (2002), who argue that ethical behaviour in the organization and description of information resources is about “doing the *right* thing all the time and not do[ing] the *same* thing all the time” (Brody, 2002, p. 198). And in relation to Indigenous information resources, I asked us to acknowledge that “librarianship has been complicit, if not responsible, for perpetuating colonial approaches to knowledge by replacing traditional knowledge with Western knowledge, ... by failing to maintain the authority of the indigenous people who produce the knowledge, or by stealing or appropriating the knowledge” (Moulaison Sandy & Bossaller, 2017, p. 132), and to recognize that “institutionalized words, ‘white words’ cannot initiate the kind of healing achieved through tribal ritual, they cannot ... put you back in step with things, back in the natural cycle, primarily because they do not recognize how the deeper harmony has been destroyed” (Iseke-Barnes & Danard, 2007, p. 13). And while I asked many things, I also engaged in a project through which to explore, alongside Indigenous community partners, what contextualized, appropriate metadata might be imagined to look like, so I might begin to decolonize my mind and my practice with the spirit and intent of reconciliation (Regan, 2016) and in adherence to principles of information ethics.

1.9 Overview of the Dissertation

This Chapter has provided background on my research, introduced the research questions addressed, and outlined the overarching research paradigms. Chapter 2 provides a review of the literature related to culturally responsive metadata frameworks for Indigenous communities’ digital libraries. In Chapter 3 I review the literature for the theoretical approaches taken to the

topic of culturally responsive metadata frameworks, describe the four theoretical approaches that contribute to the theoretical framework for my study, and outline how they come together and are a good fit with my research topic and approach. In Chapter 4 I outline the methodological framework used in my research study. In Chapter 5 I outline in detail the culturally responsive metadata framework, and in Chapter 6 I discuss the specific methodologies and approaches found to be effective and appropriate for working with the Inuvialuit community to surface that framework. In Chapter 7 I summarize my study, propose questions for further research and exploration, and reflect on how the research has impacted me as a researcher, practitioner, and a person.

Chapter 2: Literature Review

In this chapter I provide a survey of the literature related to culturally responsive metadata frameworks for digital libraries of Indigenous cultural heritage resources. Three major sections are presented. Section 2.1 presents specific aspects of culturally responsive metadata that are most often the focus of research, including local languages and dialects; specific metadata elements or categories, interoperability versus localization, and community input; specific knowledge organization tools such as thesauri, classification systems, and subject headings, as well as specific metadata standards; and rights and access. Section 2.2 addresses culturally responsive metadata in the context of Indigenous communities in the northernmost region of Canada. Section 2.3 situates culturally responsive metadata within the context of the discipline of information ethics, including discussion of professional values and ethics, fair representation, and focusing on users. A review of the literature addressing theoretical approaches to culturally responsive metadata frameworks is found in Chapter 3.

2.1 Aspects of Culturally Responsive Metadata

The scholarly and professional literature covers a range of aspects of activities, issues, and entities associated with the development and application of culturally responsive metadata.

2.1.1 Local Languages and Dialects

An interesting discussion found in the literature deals with issues around language, dialects and scripts and their use in digital collections. Again and again, it is emphasized that language is a key aspect of Indigenous, indeed any, culture. As Nichols, Witten, Keegan, Bainbridge, and Dewsnip (2005) note, “language is the vehicle of thought and communication, and an important manifestation of cultural identity” (p. 140). “When the language dies, so do

other aspects of the culture; ways of knowing, history, stories and other aspects of ephemeral culture that wither if not actually nurtured” (Oppenheimer, 2008, para. 1). Nichols, Witten, Keegan, Bainbridge, and Dewsnip (2005) note, however, that “digital libraries represent a solution to this problem, and are practical tools for preserving and revitalizing minority languages” (p. 141). Not surprisingly, then, several projects or studies focus specifically on language resources and/or language revitalization (Bow, Christie, & Devlin, 2015; Dousset, Hendery, Bower, Koch, & McConvell, 2010; Lilley, 2015; Love & Hall, 2011) or write extensively on the challenges and opportunities of the use of Indigenous languages in digital environments (e.g., Budzise-Weaver, Chen, & Mitchell, 2012; Cocq, 2015; Cosijn, Pirkola, Bothma, & Järvelin, 2002).

Several sources discuss language with regard to metadata rather implicitly. Scott (2004), in their audit of Australian Indigenous knowledge databases, included a count of the number of languages acknowledged and supported in a given system. Nichols, Witten, Keegan, Bainbridge, and Dewsnip (2005) focus on language aspects of the digital library interface as opposed to metadata specifically. Lougheed, Moran, and Callison (2015) wonder which language(s) the metadata for the National Research Centre for Truth and Reconciliation should be in, though do not come to any firm conclusions. In discussing arguments for, or projects to develop, localized vocabularies for use in describing Indigenous cultural resources, Kam (2007), Lilley (2015) and Littletree and Metoyer (2015) note that language embodies values and worldviews, and so it is important for Indigenous communities in particular to have the ability to express themselves using their own terminology. “Language - in the form of songs, stories, and oration - informs the shared knowledge of Indigenous communities. Words, chosen carefully and mindfully, convey the mental, spiritual, social, and physical aspects of the world around us. Names given to people, places, and ideas allow us to identify ourselves and to see the relationships we have with each

other and our surroundings (Littletree & Metoyer, 2015, p. 640-641)". Christal, Roy, and Cherian (2005), Hunter, Koopman, and Sledge (2003), and Godbold (2009) speak to the meaning inherent in language and argue for ensuring this is captured in design elements.

Other sources discuss language and metadata more explicitly. As Kutay and Green (2013) note, in order to make systems more useful and user-friendly we need to adapt them to the language(s) of the user, whether that be English or one or more Indigenous languages. This, they argue, is key to community engagement with the digital environment. For example, Hennessy, Wallace, Jakobsen, and Arnold (2012), Powell (2007), Cedar Face and Hollens (2004), Bow, Christie, and Devlin (2015), and Nevile and Lissonnet (2006) discuss the use of, and search functionality built around, local terms for people, places, objects, etc. Greyling and Zulu (2010), Scales, Burke, Dallwitz, Lowish, and Mann (2013), Godbold (2009), Kapuire and Blake (2011), and Karuk Tribe, Hillman, Hillman, Harling, Talley, and McLaughlin (2017) discuss the use of both English and local languages, with the local language(s) in many cases being given preference. Holland and Smith (2000) note that the Digital Collective model will enable metadata to capture the terminology of the community, and that descriptions from those who contribute to the Collective can be in the language of the donor's choice.

The importance of using local languages, but also some of the challenges in doing so, is discussed in several sources. As Dousset, Hendery, Bower, Koch, and McConvell (2010) note, "which languages to include and what language names to use as labels ... are potentially controversial." (p. 44). Christie (2005b) notes additional challenges around the use of local languages, including those posed by spelling variations, use of non-Roman scripts and/or special characters. Cosijn, Pirkola, Bothma, and Järvelin (2002) describe similar challenges in working with Zulu, describing an additional challenge which is that "it is often the case that a user is able

to read a foreign language, but is not fluent enough to construct an appropriate query in that language” (p. 95). Wu, He, and Luo (2012) find similar challenges faced by users of multilingual digital libraries, whose different levels of comfort in language(s) impact how they interact with digital libraries and what they expect in terms of system behaviours. Despite these challenges, “multilingual digital libraries, which allow users to access digital collections using different languages, provide a portal for strengthening individual cultures, promoting diversity, and enhancing global information infrastructure by highlighting underrepresented languages in worldly communities” (Budzise-Weaver, Chen, & Mitchell, 2012, p. 221)”, and so the information in those libraries “needs to be presented to users in a language that he or she understands” (Budzise-Weaver, Chen, & Mitchell, 2012, p. 221).

2.1.2 Specific Metadata Elements or Categories

In many sources, the discussion includes references to specific metadata categories or elements, from a recognized standard or a local one, or some combination thereof. Christen (2008), in discussing the development of the Mukurtu project, notes that each item in the digital collection has a unique ID number as well as dates, names and places in its description. In addition, each is “tagged with a set of restrictions relating to family relations, gender, and country affiliations” (p. 22) for properly managing access. Bow, Christie, and Devlin (2015), describing the Living Archive of Aboriginal Languages, note the metadata includes language(s) of the resource, places (depicted and reflecting resource creation), people(s) (both those depicted and those involved in resource creation), titles, genre(s) or type(s), and links to related resources in the collection. Cawthorn and Cohen (2013) describe the metadata that drives search and browse for the Strehlow collection, including object name, language group(s), totem, skin name, cultural site, ceremony, conception site ceremonial object, plant name, animal name. Barwick,

Marett, Walsh, Reid, and Ford (2005) describe the metadata used for the Murrinh-patha song archive, including composer, song text transcription, explanation, translation, musical style, associated dance, associated place, etc. Jane Hunter, in their work on software tools for Indigenous knowledge collections (Hunter, 2005; Hunter, Koopman, & Sledge, 2003; Hunter, Khan, & Gerber, 2008) notes the use of basic Dublin Core elements with some inclusions from CIDOC (Center for Intercultural Documentation) CRM (Conceptual Reference Model) and local elements for capturing specific rights and access details.

Michael Christie and colleagues working with Aboriginal communities in Australia have observed that “there is a problematic disjunction between the structured information to be found on a computer, and the integrated, holistic, lived and performed knowledges of Aboriginal people” (Christie, 2004, p. 7). To address this problem, they propose what might seem to Western sensibilities a somewhat radical approach to metadata design and application - a process of flattening the ontology as much as possible to remove any a priori assumptions about knowledge and its structure. As Christie (2004) reminds us, “Indigenous knowledge production is social, negotiated work which depends upon collective memory practices” (p. 64), which does not fit as well with traditional database structures. They further note that “the sequestration of metadata into predetermined fields enforces a particular a priori ontology inhibiting and in fact precluding the creative work of making new worlds, new possibilities, through the creative, connecting work of language. ... The structuration of metadata into fields, the purpose of which is to aid searching, has the effect of inhibiting this process which can be understood to be the very foundation of Aboriginal knowledge production” (p. 65). The solution, they argue, is to “do away with the attempt to hard wire relationality into the database - to rid it as far as possible of its ontological presumptions, collapse the metadata categories and create the conditions whereby

Indigenous owners-users can learn to invoke and encode for themselves the multiple connections which constitute Aboriginal knowledge in the context of database use” (Christie, 2005b, p. 61). The software platform Christie and colleagues developed based on this principle is known as TAMI (Text, Audio, Movies, Images). TAMI makes but a single ontological assumption in that it “encodes an irreducible ontological distinction between texts, audio, movie and image files” (Christie, 2005b, p. 60). As Christie (2004) recognizes, “the best databases for indigenous peoples to use for their own purposes of knowledge transmission may be frustratingly difficult or counter-intuitive for western scientists to use”, but that “indigenous ownership and facility of use should not be compromised by the perceived needs of non-indigenous partners for easy intuitive access” (p. 7).

Srinivasan and Huang (2005) outline a similar but perhaps less seemingly radical method for enabling structures and systems to work for Indigenous communities and their cultural resources. They explain that while progress has been made towards understanding what sorts of database systems and descriptive standards work best for enabling the preservation and sharing of Indigenous knowledge, there is still uncertainty. They suggest that “instead of focusing on the development and definition of clear but fixed standards for structuring information” (Srinivasan & Huang, 2005, p. 194), the focus should shift to “liquefying such structures and designing ‘fluid ontologies’, i.e., processes for letting knowledge structures emerge from the interaction with the very communities that are using the digital museum” (Srinivasan & Huang, 2005, p. 194). Fluid ontologies are “not predefined but emergent (and adaptive) structures for knowledge representation” (Srinivasan & Huang, 2005, p. 195) that will make the systems and users’ interactions with them more authentic and powerful. The notion of fluid ontologies (which also inspired the work of Christie and their colleagues) is seen as having great potential power,

“partly due to the fact that it does not emphasize the building of intelligent, a priori standardized knowledge structures but instead focuses on creating processes and providing tools to gradually support the sense-making processes of humans when they are confronted with cultural and artistic heritage” (Srinivasan & Huang, 2005, p. 204).

2.1.3 Interoperability Versus Localization

The struggle to balance local needs with broader goals of interoperability is ever present when designing and applying metadata in cultural heritage contexts. This is certainly evidenced in the literature, where a strong focus on Indigenous community needs and interests can perhaps be seen as heightening the tension. Godbold (2009) describes how the principles of user-centred design, employed in their work with Aboriginal communities, “led the design team into direct conflict with the mandate to use interoperable metadata using established national standards” (p. 119). The result of these tensions was “databases with divergent metadata” (Godbold, 2009, p. 122) which ultimately was seen by the communities as perfectly acceptable as it allows each to reflect its own context; the benefits that come from this are seen to outweigh the drawbacks. Christie (2004) remarks that in developing information architecture, there is pressure in a number of opposing directions. “One is pressure towards standardising metadata so that different databases can be read against each other and be searched using standardised mechanisms: ‘interoperability’. ... At the same time, there is pressure towards making metadata structures and search methods reflect the special local nature of the content of a particular database, and the uses to which its data are intended to be put” (p. 4).

In describing their work on the Quinkan Matchbox project, Nevile and Lissonnet (2003) note that “in many Indigenous knowledge projects, the focus is on organising resources for local use but little attention is paid to conformance to global standards. ... We felt we could adopt

Dublin Core (DC) architecture (and perhaps other standards) as a base then customise it to suit local Quinkan needs without compromising future inter-operability”. For them, the ability to enable both import and export of metadata drove the decision to use a common standard as a base and make extensions in as compatible a way as possible. Hunter (2005) confirms the importance of using internationally recognized standards in order to maximize potential for interoperability, noting that “many projects have not approached the problem of [the application of information technology to Indigenous collections] using international metadata standards” (p. 115). Christie (2005b) notes that in their team’s work with Aboriginal groups in Australia, they ran into these very same tensions between localization/customization and interoperability. “For a while, we accepted unthinkingly the necessity of metadata fields (title, author, language, etc.). To some extent, we were talked into using them through arguments about interoperability and future-proofing” (p. 56) but soon came to recognize that such a structure was ineffectual for the communities and collections involved and moved away from standards like DC and towards more ontologically flat structures. Srinivasan (2007) argues that “by privileging information interoperability, standards research encounters the danger of neglecting cultural and community context” (p. 726) and instead proposes a hybrid model “wherein communities articulate their own information systems yet on a metalevel multiple systems are integrated through global standards” (p. 726).

Several sources discuss the tensions between localization/customization at a more theoretical level. Cawthorn and Cohen (2013) observe that “too frequently, information systems built on the premise of universal access remain largely out of the hands of the intended users” ... due to a “lack of adequate metadata to render the data meaningful” (p. 193). In the case of Indigenous cultural heritage, addressing this issue is of particular importance because “the

contextualization of knowledge is crucial in that the knowledge created by that community should contribute to community capacity building and community capital” (Cawthorn & Cohen, 2013, p. 193). Boast, Bravo, and Srinivasan (2007) claim that “the general response to the challenge of linking disparate information - of interoperability - has been to standardize systems of classification and description, ... which has sacrificed some of the findings and value that particular institutions and communities may have developed that are specific to their own collections and knowledge systems” (p. 396). Instead, we should recognize the “value of local systems created to meet local needs” (Manoff, 2000, p. 868) since for many Indigenous communities, “creating new virtual communities with people in far-off places is less enticing than employing their authorship to establish new rapports among their own people - for them the focus of community-building is usually at home” (Boast, Bravo, & Srinivasan, 2007, p. 397).

2.1.4 Community Input

The importance of community input of one kind or another with respect to metadata design and application is emphasized often within the literature. As discussed earlier in this paper, this is part of the trend within cultural heritage institutions toward revising descriptive practices to accommodate multiple viewpoints, to move away from thinking about knowledge organization tools and processes as universally applicable and relevant, and within Indigenous communities toward making fullest use of the opportunities provided by digital technologies to gain control over the preservation of their cultural resources.

One aspect of the discussion involves the content and format of community contributed metadata. Most emphasized is that the true value of Indigenous community input is in the contextual information that goes beyond the ‘what’ and ‘when’; connecting to people and places, uses, stories and experiences is where the true richness and interconnectedness of local

knowledge comes through. This, as Cameron (2003) notes, reflects the understanding that descriptions are not ‘factual’ statements about people, objects and events but rather interpretive statements that are intrinsically subjective. “Restoring the ‘why’ and the ‘how’ to objects, rather than just identifying the ‘what’, is the task of documenting culture” (Holland & Smith, 2000, p. 189). As Hennessy, Wallace, Jakobsen, and Arnold (2012) note, “museum collections represent significant repositories of intangible forms of knowledge that are encoded in tangible objects. Their role in eliciting narrative expressions and use as political touchstones has been well documented”. In the Reciprocal Research Network (RRN) Project, therefore, they and their team ensure that the metadata captured includes “community interpretations [that] provide an opportunity for Inuvialuit today to add their own knowledge of items in the collection, as well as personal reflections on their traditional culture” (Hennessy, Wallace, Jakobsen, & Arnold, 2012). Comments and recollections and stories go a long way to encouraging dialogue and making the collections ‘come alive’ rather than being stale snapshots of knowledge frozen in place. In describing their project working with Aboriginal communities to archive and describe digitized audio recordings, Toner (2003) notes that the metadata which refers to these recordings are people’s memories - memories about the singers, about the ethnomusicologists or anthropologists who produced them, about the recording sessions, or about the musical past more generally” (p. 2). “We must expand the categories of metadata to include culturally-significant styles and types of knowledge” (Toner, 2003, p. 14). As Littletree and Metoyer (2015) explain, a resource is more than just a resource; it has a spiritual, social, and mental dimension” (p. 647) which should be captured in stories and comments from the community from whom the resource originates. This is important not only for true understanding of the resource, but for reducing the “risk of users with little understanding of the material using it in ways which fail to respect its

importance” (Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, and Keegan, 2015, p. 532). As Verran (2009) describes, “The Aboriginal participants in our projects tell us over and over again that things are not real without their stories” (p. 180). “A surrogate that supports the voice of a *meaning*-maker over that of a professional *meaning-maker* (e.g., the knowledge organization specialist) may reflect more closely an Indigenous approach to cataloging and classification” (Howarth & Knight, 2015, p. 593)

In line with viewing metadata as stories and experiences, several sources include discussions of the importance of allowing for metadata in non-textual format. Hunter, Koopman, and Sledge (2003), Kapuire and Blake (2011), Smith (2002), and Powell (2007), among others emphasize the importance of capturing metadata as audio or video in addition to, or instead of, text format. This is reflective of the living character of Indigenous cultural resources and is respectful of the oral tradition. Powell (2007) describes how their project with Ojibwe communities includes “digital video recordings of members of contemporary Ojibwe communities whose traditional and contemporary knowledge will help to awaken the archival material through the art of storytelling” (p. 176). Hunter, Koopman, and Sledge (2003) clearly outline the value and importance of enabling spoken annotations: “Spoken annotation tools reinforce and support the oral tradition which is so strong in many indigenous cultures; Spoken annotations are an easier and more natural interface for user input ...; Spoken annotations represent new language resources which can be used to help preserve threatened languages; Photos and videos can act as a trigger for the Indigenous elders to record their stories as spoken annotations to the visual resources” (p. 3). Christal, Roy, and Cherian (2005) describe the power of Yup’ik students creating a video annotation for a pair of feathered dance hoops held in the National Museum of the American Indian: “the students were videotaped giving spontaneous

performances of their village dances using the dance fans. The performances included the accompanying songs in the Yup'ik language in beautiful harmony. The students were wearing blue jeans and tee shirts, emphasizing that they were representing their living culture in a contemporary context” (p. 85).

2.1.5 Specific Knowledge Organization Tools

2.1.5.1 Thesauri, Classification Systems, Subject Headings.

Several sources discuss in detail thesauri as knowledge organization tools. Shiri and Chase-Kruszewski (2009) examine thesauri (and other knowledge organization systems such as taxonomies) used in North American digital libraries, while Doyle (2013) discusses the backgrounds of several Indigenous focused thesauri. Littletree and Metoyer (2015) discuss the impetus for and the development of the Mashantucket Pequot Thesaurus of American Indian Terminology. McClellan (2010) briefly notes thesauri (local and international) used in several Australian Aboriginal cultural heritage collections. Numerous sources note the use of the various thesauri developed by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) for describing Aboriginal materials.

Several sources (Lee, 2011; Lin, 2000; McClellan, 2010; Shiri & Chase-Kruszewski, 2009) note that the project or study involves the application of a specific classification system, with the Library of Congress and Dewey Decimal Classifications receiving numerous mentions. Sources focusing on the North American context mention the application of Indigenous specific classification systems such as Brian Deer (Doyle, 2006; Doyle, Lawson, & Dupont, 2015; Tomren, 2003) or Native American Educational Services (Tomren, 2003). Chester (2006) examines several western based and Indigenous classification systems and proposes several

hybrid systems that could take advantage of the most appropriate aspects from various systems to best represent Indigenous needs and cultures. Mai (2010, 2013) discusses classifications broadly with respect to notions of bias and trust. They note that “all classifications are biased and that bias is not a feature of a classification that can be eliminated and erased to create a neutral and unbiased classification” (p. 628). They argue instead that consulting with appropriate communities of experts and ensuring that the decisions, principles and philosophy that have informed the classification are openly shared go a long way to building trust.

The literature contains similar discussions with respect to subject headings. Several sources (Cedar Face & Hollens, 2004; Lee, 2011; Lilley, 2015; Littletree & Metoyer, 2015; McClellan, 2010; Strottman, 2007) note that a project or study involves the application of a specific subject heading system, with Library of Congress receiving several mentions. Doyle, Lawson, and Dupont (2015) discuss the First Nations Subject Headings in use at the University of British Columbia, while several sources (e.g., Lilley, 2015; Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, & Keegan, 2015), perhaps not surprisingly, include discussions of the use of Maori Subject Headings.

The most substantial discussions of subject headings and classification touch on the inherent biases that can be (and have been) found in many of the established systems commonly used in cultural heritage institutions around the globe, particularly with regard to their treatment of Indigenous resources. Olson (1999), Tomren (2003) and Kam (2007), among others (Agrawal, 2002; Bow, Christie, & Devlin, 2015; Duarte & Belarde-Lewis, 2015; Howarth & Olson, 2016; Kublik, Clevette, Ward, & Olson, 2003; Moorcroft, 1992; Moulaison & Bossaller, 2016; Olson, 2000; Villanueva, 2016), note the lack of fit in a particular context or more broadly the deficiencies and/or biases inherent in them as knowledge organization systems abstractly.

Classifications and subject headings are social constructs, reflecting the cultures that create them. As Tomren (2003) notes, “a biased system may in fact be the most appropriate way to organize certain collections; it becomes problematic when the worldview represented by the classification system is incompatible with the worldview represented by items in the collection or the collection as a whole”. Littletree and Metoyer (2015) note that many of the commonly used systems are based on the concept of literary warrant, which in the case of the world’s Indigenous peoples, “often works against those who are marginalized” (p. 642).

Addressing these issues of bias and lack of appropriateness of fit has indeed often been what has led to the development of extensions to existing systems or new systems altogether (Beghtol, 2002, 2005; Bone, 2016; Bone & Lougheed, 2018; Cherry & Mukunda, 2015; Chester, 2006; Doyle, 2006, 2013; Doyle, Lawson, & Dupont, 2015; Liew, 2005; Lilley, 2015; Littletree & Metoyer, 2015; Martens, 2006; Olson, 2000; Tomren, 2003; Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, & Keegan, 2015), such as the Maori Subject Headings. This reflects what Beghtol (2002) terms ‘cultural hospitality’ in classification systems, which posits that “making provisions for specific aspects of different cultures in knowledge organization systems will increase the appropriateness and usefulness of those knowledge systems in different settings for the purposes of world-wide information flow” (p. 47). Stevens (2008) concurs, noting that “standard thesauri and classification systems have been developed with a Western bias and lack the complexity of words and concepts of particular indigenous languages and cultures. Thus, when managing indigenous knowledge, one may need to seek out alternative thesauri and classification systems or develop new ones to suit the local knowledge system one is managing” (pp. 29-30).

2.1.5.2 Specific Metadata Standards.

In terms of identified metadata standards, several are discussed in the literature, although Dublin Core (DC) is by far the one occurring most often. Numerous sources (Barwick, Marett, Walsh, Reid, & Ford, 2005; Chen, 2014; Christie, 2005b; Holland & Smith, 2000; Hunter, Koopman, & Sledge, 2003; Hunter, 2005; Hunter, Khan, & Gerber, 2008; Lissonnet, 2004; Montenegro, 2019; Srinivasan & Huang, 2005; Tjiekka, 2006) specifically mention the use or consideration of DC, often extended or adapted to local needs. A more traditional metadata standard, MARC, is mentioned in several sources (Chen, 2014; McClellan, 2010; Rigby, 2015). Several sources (Chen, 2014; Lissonnet, 2004; Nevile & Lissonnet, 2003) discuss the use of CDWA (Categories for the Description of Works of Art), while others (e.g., Chen, 2014; Hunter, Koopman, & Sledge, 2003; Srinivasan & Huang, 2005) discuss CIDOC CRM. Other standards mentioned include MODS (Metadata Object Description Schema), OLAC (Open Language Archives Community), OAI (Open Archives Initiative), and RDF (Resource Description Framework). Reasons for making use of an existing, established standard are several. Chen (2014) notes that a requirement to contribute to a shared union catalogue drove the decision to stick with established standards. The need for metadata to be interoperable is noted as an important factor in choosing to use DC as a base standard in several sources (e.g., Hunter, Koopman, & Sledge, 2003; Hunter, 2005; Hunter, Khan, & Gerber, 2008; Lissonnet, 2004). Nevile and Lissonnet (2003), in discussing the development of the Quinkan Matchbox Project, note that the DC Metadata Element Set (DCMES) “provides a framework within which both rich and slim metadata records can co-exist” (p. 200), enabling “local description and classification ... while supporting the import, integration, and export of metadata records produced by a

variety of intellectual communities for a variety of purposes with tolerably low levels of loss” (p. 199).

2.1.6 Rights and Access

Issues of rights and access are certainly a focus of a good number of sources in the literature, some in the abstract/theoretical (Hunter, 2005; Lawrence, 2013; Nakata, 2002), others in the more concrete, with discussion of how rights and access are applied in a given study or project (Christen, 2007; Halperin, 2019; Hennessy, 2009; Local Contexts, n.d.; Montenegro, 2019). The importance of tying rights and access to community protocols and needs is emphasized again and again as key to the success and sustainability of projects and to the rebuilding of relationships with Indigenous communities. As stated in Article 31 of the United Nations Declaration on the Rights of Indigenous Peoples (United Nations, 2007), “Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, ... and to maintain, control, protect and develop their intellectual property over [them]” (pp. 22-23).

The discussions often touch on the fact that Indigenous communities have notions of rights and access that differ significantly from the predominant western paradigm that drives digital environments. According to Nakata (2002), “Indigenous peoples hold collective rights and interests in their knowledge. This, along with its oral nature, the diversity of Indigenous knowledge systems, and the fact that management of this knowledge involves rules regarding secrecy and sacredness means that the issues surrounding ownership and therefore protection are quite different from those inscribed in Western institutions” (p. 283). “In brief, there are clear points of difference between Western principles that underpin copyright and the principles that underpin Indigenous intellectual and cultural property rights and the regimes for management of

these” (Nakata, Nakata, Byrne, McKeough, Gardiner, & Gibson, 2008, p. 8). These often come about because “Indigenous people claim in perpetuity intellectual ownership of cultural heritage, both in intangible and tangible forms, and in collective rather than individual rights, as part of an ongoing oral knowledge tradition” (Nakata, Nakata, Byrne, McKeough, Gardiner, & Gibson, 2008, p. 10).

As Godbold (2009) notes, at the core of Indigenous digital collections is not always the notion of universal, uncontrolled search or interoperability, which differs from a Western view which often advocates for users to be able to access as much as possible as freely and easily as possible. Rather, many Indigenous communities engage in “strategic traditionalism” (Ginsburg, quoted in Lawrence, 2013, p. 11), reinforcing the notion that simply because an archive is digital and available online does not mean that access to it is, or should be, completely open. “To paraphrase Mary Mortimer, the Internet is about maximum access for a maximum number of people; Indigenous knowledge is about restricted access for authorised people” (Nevile & Lissonnet, 2003). Hennessy (2009), Hennessy, Wallace, Jakobsen, and Arnold (2012), Smith (2002) and others note that it is the technology itself which creates the risk even at the same time it is creating possibilities. “Although digital materials can be used to build relationships and facilitate self-representation, they can also be uploaded to the Internet for instantaneous distribution, circulation and unrestricted access, making otherwise privately managed tangible and intangible culture public. ... The nature of the digital medium makes it difficult to control the circulation of ethnographic representation in virtual contexts” (Hennessy, 2009, p. 6).

To counter these concerns, many scholars and practitioners (Christen, 2007; Hennessy, 2009; Hollowell & Nicholas, 2009; Hunter, 2005; Nakata, Nakata, Byrne, McKeough, Gardiner, & Gibson, 2008) advocate for the use of community protocols to define and control appropriate

access to cultural resources in Indigenous digital collections. Nakata, Nakata, Byrne, McKeough, Gardiner, and Gibson (2008) note that protocols encourage ethical practices and allow the communities to ensure proper access to and use of their resources. Many governmental and disciplinary organizations (Library and Archives Canada, 2003; Society of American Archivists Native American Archives Roundtable, 2006; State Library of Queensland, n. d.) have created and employed protocols for working with Indigenous communities and resources, which include specifics for ensuring community control over proper handling, access and use of resources. Protocols can define access based on membership in a particular clan or family, association with a particular place, age, gender, nature of a resource and its association with ceremony, people or places depicted, nature of information contained, and more.

Several projects or studies (Christen, 2007; Hunter, 2005) note the importance of capturing access and rights information in metadata. The most extensive discussion of rights and access can be found in Christen's description (2015) of their work with Jane Anderson and others on the Local Contexts project. In working with Aboriginal communities in Australia, Christen notes that the "problem of ownership became a new thread for understanding the limits of access and the relationship of internal cultural protocols to external legal systems that define access and circulation" (p. 6)". The Local Contexts project grew out of the realization that there was a need for a means to describe and enable articulation of protocol based access and rights scenarios. The TK (traditional knowledge) licenses available through the Local Contexts Project are a legal mechanism while the labels serve education and social purposes.

While the professional and scholarly literature incorporates discussions of the various aspects of the concept of culturally responsive metadata, there seems to be a lack of discussion of metadata viewed holistically, understood as sets of linguistic expressions which, taken together,

construct and convey meaning. There is clearly a need for broader investigation into the facets of culturally responsive metadata and how they come together to enable meaning making within Indigenous communities.

2.2 Culturally Responsive Metadata and Indigenous Communities in Northern Canada

Despite the fact that there are millions of Indigenous peoples spread across more than 70 countries worldwide (United Nations Forum on Indigenous Issues, n. d.), the bulk of the literature on the topic of culturally responsive metadata focuses on work with Aboriginal communities in Australia (Armstrong, 2019; Barwick, Marett, Walsh, Reid, & Ford, 2005; Bow, Christie, & Devlin, 2015; Cawthorn & Cohen, 2013; Christen, 2017, July 13; Christie, 2004, 2005b; Gibson, 2007; Glowczewski, 2013; Godbold, 2009; Huebner, 2013; Leavy, 2014; Lissonnet, 2004; Masterson, Stableford, & Tait, 2019; Nakata, Nakata, Byrne, McKeough, Gardiner, & Gibson, 2008; Nakata, Nakata, Gardiner, McKeough, Byrne, & Gibson, 2008; Nevile & Lissonnet, 2003, 2006; Thorner, 2010; Toner, 2003; Verran & Christie, 2007; Verran, Christie, Anbins-King, Van Weeren, & Yunupingu, 2007) and New Zealand (Crookston, Oliver, Tikao, Diamond, Liew, & Douglas, 2016; Duncker, 2002; Hollowell & Nicholas, 2009; Lilley, 2015; Love & Hall, 2011; Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa, & Keegan, 2015).

Some discussion reflective of experiences in other geographic locations with Indigenous populations can also be found, including Africa (Cosijn, Pirkola, Bothma, & Järvelin, 2002; Greyling & Zulu, 2010; Limb, 2005; Peters & Pickover, 2001; Van der Velden, 2010), Brazil (Magalhaes-Castro, Alonso, Ferneda, Cunha, Cruz, & Brandao, 2006), China (Lin, 2000), India (Van der Velden, 2010), Taiwan (Chen, 2014), Indonesia (Tjicka, 2006), Scandinavia (Cocq,

2013, 2015), the Philippines (Villanueva, 2016), the Caribbean (Francis, 2008), and the UK (Reciprocal Research Network, 2014).

Discussions of this issue with respect to Native communities in the United States (Cedar-Face & Hollens, 2015; Chester, 2006; Christen, 2017, July 13; Hasegan, 2018; Holland & Smith, 1999; Hollowell & Nicholas, 2009; Isaac, 2005; Littletree & Metoyer, 2015; Martens, 2006; Powell, 2007; Powell & Aitken, 2011; Sapon-White, 2017; Smith, 2002; Smith, 2008; Somerville & EchoHawk, 2011; Srinivasan, 2002, 2007, 2017; Srinivasan, Pepe, & Rodriguez, 2009;) or First Nations in Canada (Bone, 2016; Bone & Lougheed, 2018; Cherry and Mukunda, 2015; Chester, 2006; Doyle, Lawson, & Dupont, 2015; Heavy Head & Greenshields, 2019; Hennessy, 2009; Hollowell & Nicholas, 2009; Lee, 2011; Lougheed, Moran, & Callison, 2015; Smith, 2008) are fewer than might be expected given the large Indigenous populations in both nations. And even fewer (Alexander, Adamson, Daborn, Houston, & Tootoo, 2009; Farnel & Shiri, 2018; Farnel, Shiri, Campbell, Cockney, Rathi, & Stobbs, 2017; Farnel, Shiri, Rathi, Cockney, Campbell, & Stobbs, 2016; Hennessy, Lyons, Loring, Arnold, Joe, Elias, & Pokiak, 2013; Hennessy, Wallace, Jakobsen, & Arnold, 2012; Rigby, 2015; Smith, 2008; Srinivasan, Boast, Becvar, & Fumar, 2009; Turner, 2018) discussions address this issue with respect to Indigenous communities in Canada's northernmost region.

Srinivasan, Boast, Becvar, and Furner (2009) describe a study that revolved around an experimental online museum catalogue that enabled social tagging and blogging, and engaged as one of their test groups a small number of Canadian Inuit high school students. Smith (2008) discusses Project Naming, an initiative of Library and Archives Canada to engage Canadian Inuit communities in identifying individuals in photographs held in their collection. Rigby (2015) describes efforts of libraries in Nunavut to enhance traditional bibliographic description of Inuit

materials in their shared online catalogue, while Hennessy, Wallace, Jakobsen, and Arnold (2012) discuss work with communities in the Inuvialuit Settlement Region (ISR) to enhance access to the MacFarlane Collection held in the Smithsonian in Washington, DC. Farnel, Shiri, Campbell, Cockney, Rathi, and Stobbs (2017), and Farnel, Shiri, Rathi, Cockney, Campbell, and Stobbs (2016) also discuss working with communities in the ISR and partnering with the Inuvialuit Cultural Resource Centre to develop a digital library of cultural resources. Alexander, Adamson, Daborn, Houston, & Tootoo (2009) discuss the development of the Nanisiniq Inuit Qaujimajatuqangit (IQ) Adventure Website in collaboration with communities in Nunavut, and the ways in which it enables those communities to advance Inuit values, culture, knowledge, and philosophy.

Also of interest within the literature is that the concept of ‘north’ is found in descriptions of communities found in the polar regions of Canada, the US and Scandinavia, as well as of communities found in northern Australia. While it is certainly the case that the experience of ‘northernness’ will be very different in these areas, it was clear that the concept of ‘northern’ implies certain characteristics of remoteness, and harshness of landscape and climate, all of which shape the worldview of communities located there, and pose specific challenges for digital studies or projects. Glowczewski (2013) notes the challenges faced by northern Australian communities, including access to computers, reliable internet access, comfort with language and technology, and sheer distances to urban areas where the museums, libraries and archives with the cultural resources are located. Smith (2008) discusses the importance of ‘visual repatriation’ particularly for northern Canadian communities who are remote, or at a distance, from their cultural resources held elsewhere, while Hennessy, Wallace, Jakobsen, and Arnold (2012, From the MacFarlane Collection to *Inuvialuit Living History* section, para. 3) note that “The

MacFarlane Collection, arguably the most significant assemblage of Inuvialuit ethnographic artifacts, ... had remained largely inaccessible to Inuvialuit peoples, separated by great distance and by unfamiliarity with the Smithsonian's online catalogue".

It is vitally important to recognize that while there are certain characteristics that are shared across Indigenous communities, there is vast diversity and richness in and between these communities around the world as they shape, and are shaped by, their environmental, social and cultural contexts. As Smith (2015) reminds us, "Indigenous peoples around the world share commonalities but experience them in vastly different ways". And so while there may be some transferability from other contexts, there is an obvious need to work with Indigenous communities in Canada's northernmost region to better understand how culturally responsive metadata is characterized in their particular context.

2.3 Culturally Responsive Metadata and Information Ethics

2.3.1 Professional Values and Ethics

The work of libraries and librarians is founded on ideals that are embodied in professional statements of values and ethics which encompass all areas of librarianship, including the organization of information resources and the design and use of metadata for describing those resources. These codes and statements are concerned with the principles of information ethics, or "the active application of ethical principles to the design, creation, collection, distribution and use of information" (Brody, 2002, p. 97), which "emerged as a concept in the library and information literature in the late 1980s" (Samek, 2007, p. 30).

The Canadian Federation of Library Associations (2008), affirming the intent and spirit of the IFLA code (see below), notes that a "diverse and pluralistic society" is core to the

Canadian identity, and that libraries, through collections, services, and spaces, have a responsibility to “contribute to a culture that recognizes diversity and fosters inclusion.” Further, “libraries are a key institution in Canada for rendering expressive content accessible” and “to this end, in accordance with their mandates and professional values and standards, libraries provide, defend and promote equitable access to the widest possible variety of expressive content” (Canadian Federation of Library Associations, 2015). The accompanying Code of Ethics (2018) notes that members have the individual and collective responsibility to “make every effort to promote and maintain the highest possible range and standards of library service to all segments of Canadian society”, and to “facilitate access to any or all sources of information which may be of assistance to library users”.

The American Library Association (2019) includes within its statement of core values of librarianship the recognition and valuing of the diversity of our communities, and the provision of the “full spectrum of resources and services to the communities we serve”, as well as noting that “all information resources that are provided directly or indirectly by the library, ... should be readily, equally, and equitably accessible to all library users”. The associated Code of Ethics (2008) recognizes that as librarians we “significantly influence or control the selection, organization, preservation, and dissemination of information” and therefore have an obligation to “provide the highest level of service to all library users through appropriate and usefully organized resources; equitable service policies; equitable access; and accurate, unbiased, and courteous responses to all requests”.

The International Federation of Library Associations and Institutions (IFLA) (2017) holds as core values “the belief that people, communities and organizations need universal and equitable access to information”, and that “the delivery of high quality library and information

services “without regard to “citizenship, disability, ethnic origin, gender, geographic location, language, political philosophy, race or religion” helps guarantee that access. The accompanying Code of Ethics (2016) requires that librarians and libraries “respect language minorities of a country and their right to access information in their own language”, and be committed to “the most balanced collection and the most balanced access to information achievable”.

2.3.2 Fair Representation

Metadata is a service that enables discovery of, and access to, information resources. The variety and amount of information resources we can access is increasing exponentially, and so we are more and more reliant on information discovery and retrieval tools, including metadata. In fact, as Schaffner (2009) notes, metadata is often the first, most frequent, and in some cases the only interaction point between a library or archive and its users. And when we interact with metadata surrogates, “we are relying on the social, political, and ethical choices made by those who structure these tools and enable our access to them and, in turn, to the information to which they refer” (Brody, 2002, p. 97).

Information resources are not value neutral, nor are the metadata records that represent those resources. Indeed, these records are about much more than simply discovery and access. As Cooke (2016), University of Waterloo Special Collections & Archives (2020), and others note, they are also about diversity, inclusion, and social justice. Rosenfeld and Morville (2002) highlight the fact that “there are few things quietly as powerful as labels. We are completely surrounded by them, and for the most part their influence is invisible. They are seen only by the people they hurt” (p. 318). Olson (2000) further argues that it is through resource descriptions that “the meanings of documents are constructed and enunciated for library users” (p. 53), and so the practices that inform these descriptions must be guided by ethical principles, including the

principle of fair representation. As Cappuro and Hjørland (2003) remind us, this “challenges information science to be more receptive to the social and cultural impacts of interpretative processes and also the qualitative differences between different contexts and media” (p. 397).

Human beings unavoidably assign value judgements when making assertions about a resource and in defining (via metadata standards and vocabularies) the assertions that can be made about a resource. Metadata creators must possess awareness of their own historical, cultural, racial, gendered, and religious worldviews, and work at identifying where those views exclude other human experiences. Understanding inherent bias in metadata standards is considered a core competency for all metadata work. Development of inclusive metadata standards or best practices is a competency that should be developed over the course of a career (Cataloging Competencies Task Force of the ALCTS CaMMS [Association for Library Collections & Technical Services Cataloging and Metadata Management Section] Competencies and Education for a Career in Cataloging Interest Group, 2017, p. 1).

Buchanan (2004) identifies information professionals as having “the potential to adversely affect our increasingly large and diverse clientele by failing to act responsively, fairly, timely, and appropriately” (p. 620). Bair (2005) argues that this applies to those who design and apply metadata, and implies ethical responsibilities: “catalogers are professionals who are experts in their field, have a calling to serve society and the potential, by their actions, for great harm or good” (p. 14). Catalogers, they argue, “should work with honesty and integrity to represent the truth about each resource in regard to its subject area, or “aboutness”, the identity of those responsible for the content, and accurate description” (p. 17), and proposes a cataloging code of ethics which consists of ten principles, including “putting the information needs of our

clients and the human right to freedom of information before our own needs and conveniences”, “avoid[ing] cultural bias and preserv[ing] cultural specificity in name headings”, contributing “to the creation, development, reform, and fair, unbiased application of cataloging rules, standards, classifications, and information storage and retrieval systems”, and not “blindly contribut[ing] ... [metadata] for resources for which we have no language or subject knowledge, but instead seek[ing] assistance” (pp. 23-24). Shoemaker (2015) concurs, noting that “the power to code, describe, and classify information resources is a tremendous responsibility; ... a cataloger can censor a book with a few keystrokes, or lack thereof” (p. 355). And for that reason it is “necessary to include why and for whom we catalog to ground cataloging policies and decisions”, and to work collaboratively as a profession to “figure out what the core of ethics is for cataloging in a constantly changing world of standards and technology” (p. 357).

2.3.3 Focusing on Users

Shoemaker (2017), Ferris (2008), Hoffman (2009), and Moulaison Sandy and Bossaller (2017), among others, remind us of the key place of helping users and meeting user needs within an ethics of information. As Hoffman (2009) notes, serving users by organizing information resources, describing them, and making them accessible, is a core purpose of librarianship. They note that this is the first principle of the American Library Association code of ethics (2008) and also the first principle of Bair’s (2005) proposed code of ethics for catalogers. “This reflects Library and Information Science’s (LIS) user-centered paradigm, in which users are supposed to be the focus of research and practice. [And] if users are at the core of these ethics statements, then cataloging should be centered on users and meeting their needs” (Hoffman, 2009, p. 632).

Moulaison Sandy and Bossaller (2017) concur, and present their argument for user focused practices and services in terms of a “cognitively just” approach to information science.

This approach focuses on understanding what the users or user communities need from libraries and librarians, and rejects the universal in favour of the local, making room for multiple conceptions of knowledge and worldviews, and of ways in which such knowledge is gained and shared. Addressing the organization and description of Indigenous information resources, they argue that a cognitively just approach “must look to [the origins] of indigenous knowledge. The only solution is to include the view points of indigenous people at every step, and to let that organizational structure unfold organically, grounding the collection and its surrogates in a socially just and rights-based representation of indigenous knowledge” (Moulaison Sandy & Bossaller, 2017, pp. 130-131). Indigenous services must “belong to the community, they must express their spirit, they must satisfy their needs and their [sic] must involve indigenous peoples in the modern affairs without a loss of identity” (Civallero, 2004, p. 3).

Chapter 3: Theoretical Framework

In the first part of this chapter, I provide a review of the literature to identify and contextualize the theoretical and conceptual approaches that have been used in the definition and application of culturally responsive metadata frameworks for Indigenous communities' digital resources. Section 3.1 provides some general observations about the nature and role of theory in library and information science research. Section 3.2 discusses specific applications of existing theory including contact zones, participatory archiving, assemblage, user-centred design, Indigenous frameworks, decolonization theory, classification theory, and critical theory. Section 3.3. describes the development of new theory such as Nakata's cultural interface, Doyle's knowledge organization, Holland and Smith's digital collective, and Srinivasan's fluid ontologies. In Section 3.4 I summarize the four approaches that make up the theoretical framework for my study, specifically anti-colonial theory, fluid ontologies, language (or sociolinguistic codes), and digital storytelling. In Section 3.5 I construct the theoretical framework and explain why it is appropriate for my research.

3.1 General Observations

An initial observation is that many of the sources can be considered atheoretical, or not explicitly concerned with or based on theory, as evidenced by a lack of reference to specific theories or theorists (Anwar & Ba, 2010; Barwick, Marett, Walsh, Reid & Ford, 2005; Bone, 2016; Bow, Christie & Devlin, 2005; Cedar Face & Hollens, 2004; Huebner 2013; Hunter, Koopman & Sledge, 2003; Kapuire & Blake, 2011; McClellan, 2010; Nevile & Lissonnet, 2003; Rigby, 2015; Tjicka, 2006). This is not to say that there is no underlying standpoint or theoretical basis, but rather that it is not overtly noted in the work. This is a common phenomenon within library and information science research (Boyce & Kraft, 1985; Feehan, Gregg, Havener, &

Kester, 1987; Grover & Glazier, 1986; Hjørland, 1998, 2000; Jaeger, 2010; Kim & Jeong, 2006; Kumasi, Charbonneau, & Walster, 2013; McGrath, 2002; McKechnie & Pettigrew, 2002; Ocholla & Le Roux, 2011; Pettigrew & McKechnie, 2001; Pierce, 1992).

A second and related observation is that the application of existing theory is much more common than the development of new theory. In addition, theories that are used predominantly come from fields outside of library and information science, including sociology, literature, and anthropology. This is another well known phenomenon within library and information science (Grover & Glazier, 1986; Hjørland, 1998, 2000; Jaeger, 2010; Järvelin & Vakkari, 1990; Kim & Jeong, 2006; Kumasi, Charbonneau, & Walster, 2013; McKechnie & Pettigrew, 2002; Ocholla & Le Roux, 2011; Pettigrew & McKechnie, 2001; Pierce, 1992).

A third and final general observation, which is symbolic of the historical nature of the research paradigm, is that there are few references to specific Indigenous theories or theorists, despite the fact that there are numerous discussions of Indigenous ways of knowing and Indigenous knowledge organization. For example, while Chester (2006), Christie (2005a, 2005b), Crookston, Oliver, Tikao, Diamond, Liew and Douglas (2016), Doyle (2006, 2013), Duarte and Belarde-Lewis (2015), Lee (2011), Lilley (2015), Littletree and Metoyer (2015), Nakata (2007b), Olson (1999), Stevens (2008), Tomren (2003), Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa and Keegan (2015) discuss Indigenous ways of knowing and organization of knowledge and how they differ from those based on western traditions, only Crookston, Oliver, Tikao, Diamond, Liew and Douglas (2016), Doyle (2013), Duarte and Belarde-Lewis (2015), Lilley (2015), Littletree and Metoyer (2015), and Olson (1999) discuss specific ways of knowing such as Mātauranga Māori or the Native American four domain

philosophy, or specific Indigenous theorists working in this area such as Linda Tuhiwai Smith (1999, 2012).

3.2 Applying Existing Theory

Within the literature, applications of theoretical and conceptual frameworks from a variety of disciplines can be found. The following discussion provides a high-level overview of the frameworks encountered and how they are used.

3.2.1 Contact Zones

Pratt (1998) defines “contact zones” as “social spaces where cultures meet, clash, and grapple with each other, often in contexts of highly asymmetrical relations of power, such as colonialism, slavery, or their aftermaths as they are lived out in many parts of the world today” (p. 34). In discussions on the use of the theory of contact zones in cultural heritage organizations and disciplines, anthropologist James Clifford is often mentioned alongside Pratt as the first to propose that museums be understood as contact zones between Indigenous peoples and non-Indigenous museum workers (Clifford, 1997).

Within several sources, the theory of contact zones is cited as the basis for the research being described. In discussing their work with Indigenous communities in Quinkan Country in Australia, Lissonnet (2004) uses the concept of contact zones in the context of museums and their understanding and handling of the Indigenous collections they hold. Interestingly, Chen (2014) also references the concept of the contact zone in the context of collections. The collaborative nature of the contact zone, as well as its inclusion of the community voice, is implicit in the reference to the digital library as contact zone.

A slightly different and more extensive application of the theory of contact zones is found in van der Velden's (2010) discussion of designing software for Indigenous digital collections. They reference both Pratt (1998) and Clifford (1997) in their proposal to use contact zones as a way of understanding how holistic and communal Indigenous knowledges can meet with the "technoscientific knowledge" of database technology on the basis of "cognitive justice" (van der Velden, 2010, p. 11).

Srinivasan, Becvar, Boast and Enote (2010) and Srinivasan, Boast, Furner and Becvar (2009) take yet another slightly different approach to using the concept of contact zones in their work on museums and museum object descriptions. They describe contact zones as "spaces of postcolonial encounters between heterogeneous publics" (Srinivasan, Becvar, Boast and Enote, 2010, p. 737) which "foster incommensurability and dialogue" (Srinivasan, Boast, Furner and Becvar, 2009, p. 270), and base their discussions on the assumption that museums can, and should, serve as such spaces. They argue that contact zones enable us to acknowledge multiple, often conflicting, ontologies, which in turn allows us to accept that there can be multiple understandings and interpretations of an object.

3.2.2 Participatory Archiving

In "Reconciliation through description: Using metadata to realize the vision of the National Research Centre for Truth and Reconciliation", Lougheed, Moran and Callison (2015) make extensive reference to the concept or theory of participatory archiving as underpinning their approach to addressing the challenges of describing the archive of Canada's Truth and Reconciliation Commission. They propose to incorporate "traditional/non-traditional, archival/user-generated, and institutional/Indigenous" (p. 596) elements into their descriptive practices in order to make the archive truly participatory. Doing so, they argue, will allow users

to shape the archive, making it more of a living, breathing entity than a traditional archive. They cite the Reciprocal Research Network (2014), Plateau Peoples' Web Portal (2017), and Mukurtu (n.d.) as models to follow in building their archive.

Henke and Berez-Kroeker (2016) note that more recently, those who work in archives and archiving, whether cultural or linguistic, as in their case, have turned toward more participatory models in which individuals and communities who are not archives specialists play a greater role in the development and description of archival collections. In order to describe this theory and trace its rise, they turn to two specific variations on the theory of participatory archiving, that of Shilton and Srinivasan (2007), and that of Huvila (2008).

In their 2007 paper, Shelton and Srinivasan argue that in order for archives to be relevant for communities, particularly traditionally marginalized communities, archival practices of appraisal, arrangement, and description have to be made more community-focused and participatory. They outline their framework for participatory archiving, which “encourages community involvement during the appraisal, arrangement, and description phases of creating an archival record” (p. 98).

According to Henke and Berez-Kroeker (2016), Huvila (2008) builds on this theory of participatory archiving in order to develop a theory of a participatory archive. According to Huvila, “archivists, archival records, and users represent a plethora of viewpoints, which all contribute to the formation of common and individual understanding of archives and archival materials. In the post-modern sense, the notion of participation is built into any human interaction with information, which makes it and its implications also essential in the archival and records management contexts” (p. 18). While Huvila acknowledges that their theory shares an approach with that developed by Shilton and Srinivasan (2007), they assert that there is a

major difference between the two in that the former model assumes an existing collection and a consensual community, while their model sees both the archive itself and the community involved in its creation and curation as not predefined but rather organic and ever changing.

3.2.3 *Assemblage*

Kennedy, Zapasnik, McCann and Bruce (2013) describe assemblage as “not an arrangement or state of affairs, but an ongoing *process* of arranging, organising, or congealing *how* heterogeneous bodies, things or concepts come in connection with one another” (p. 45). Assemblage theory comes from the work of modern philosophers Gilles Deleuze and Félix Guattari, in particular their monograph *A Thousand Plateaus* (1987), and as a term is a translation of the original French agencement (Smith & Protevi, 2015; Kennedy, Zapasnik, McCann & Bruce, 2013; Little, 2012; Verran, 2009).

The concept or theory of assemblage is found several times within the sources. In several instances (Boast, Bravo & Srinivasan, 2007; Christie, 2005a; Dousset, Hendery, Bower, Koch & McConvell, 2010; Doyle, 2013; Hunter, Koopman, Sledge, 2003; Lissonnet, 2004; School of Australian Indigenous Knowledge Systems – Charles Darwin University, 2005; Verran, Christie, Anbins-King, Van Weeren & Yunupingu, 2007) the concept is used simply to describe a collection of heterogeneous entities brought together into a compilation, with no reference to the source of the meaning of the term nor the philosophy behind it. In their paper “Diverse knowledges and contact zones within the digital museum”, Srinivasan, Becvar, Boast and Enot (2010) provide stronger hints at the theoretical foundations of assemblage when they discuss digital museums as “knowledge spaces dedicated to the process of assemblage and negotiation of knowledges” (p. 746).

In their aptly titled “On assemblage”, Verran (2009) uses the theory of assemblage to examine the similarities and difference between two disparate cultural projects, one of which is the development of technical infrastructures for Indigenous knowledge management. In looking back on the Indigenous infrastructure project (Indigenous Knowledge and Resource Management in Northern Australia, or IKRMNA), in which they were a primary investigator, Verran observes that it produced an “odd and seemingly unconnected set of products”, the emergent “multiplicity and heterogeneity” of which “attest many alternatively configured material-semiotic clots, that embed alternative moments of generalizing” (Verran, 2009, p. 178) and enrich Aboriginal knowledge traditions.

Interestingly, van der Velden (2010) draws our attention to similarities between the concepts of assemblage and contact zone, going so far as to claim that contact zones, described by Clifford (as cited in van der Velden, 2010, p.11) as “space[s] where knowledge systems not meet as sociocultural wholes, but as systems already constituted relationally, entering new relations through historical processes of displacement”, can be equated to assemblages. They argue that both frameworks incorporate an understanding of environments as dynamic and ever-changing as processes of communication, collaboration and creation continually emerge and re-emerge (p. 13).

3.2.4 Participatory or User-centred Design

According to International Organization for Standardization (ISO) 9241-210 (2010), “human-centred design is an approach to interactive systems development that aims to make systems usable and useful by focusing on the user, their needs and requirements, and by applying human factors/ergonomics, and usability knowledge and techniques” (p. vi). Whether specifically referred to as user-centred design or participatory design, or reflected in the choice

of theory or model, the notion of digital system design driven by and focused on the user can be found in several of the sources reviewed and analyzed.

In “Design for the Contact Zone”, van der Velden (2010) discusses Indigenous knowledge databases as places where different ways of knowing and understanding the world, namely Indigenous knowledge and the technoscientific structure of databases, meet. They argue that participatory design approaches are appropriate for developing systems for these contact zones because they are “knower friendly” (p. 13). They further build on the concept of participatory design by proposing meta-design as a framework for creating sociotechnical infrastructures that enable collaborative design to take place.

Godbold (2009) discusses their work with Aboriginal communities in Australia to develop a clans’ database. They define the understanding their team has of participatory or user-centred design and describes how their work is based on the principles of those models, including keeping user needs at the centre, and involving them in all aspects of the process of design, development, and implementation. Love and Hall (2012) describe and review a project designed to develop a database that could act as a national network of Māori community archives. They argue that digital technology can be an enabler of Indigenous cultural revitalization if designed from a sociotechnical perspective, that is, if they are designed by and with the communities, driven by their needs and interests, and incorporate their ontologies and value systems.

Srinivasan, in their work developing and applying the theory of fluid ontologies (Srinivasan, 2002; Srinivasan & Huang, 2005; Srinivasan, 2007; Srinivasan, Boast, Furner & Becvar, 2009; Srinivasan, Becvar, Boast & Enote, 2010), is strongly and clearly inspired by the principles of participatory design. They note that fields such as community informatics have

pushed researchers and practitioners to consider user involvement more extensively, from content development to system design, and that fluid ontologies extend such approaches by incorporating methods and principles of ethnomethodology.

Howarth and Olson (2016) describe the nature of established knowledge organization practices for subject access to resources, such as large, ‘universal’ classification systems or subject vocabularies, and how their appropriateness and utility are increasingly being called into question in our modern context where boundaries are understood to be more fluid, top-down processes are highly scrutinized, and localized approaches are gaining in favour. In order to unpack this context and understand what aspects of established practices should be maintained and which should be let go, they adopt a design thinking approach. Design thinking is a model or approach which can be described as a “series of steps focused on human-centred solutions to meaningful problems” (p. 3). The process involves understanding the users of your design, articulating their needs and interests, and letting that drive the design, testing, and redesign processes.

In their work with Aboriginal communities in Australia to develop technical platforms for preserving and promoting Indigenous knowledge (Verran & Christie, 2007; Verran, Christie, Anbins-King, Van Weeren & Yunupingu, 2007), Verran and Christie and colleagues describe their approach as informed by Suchman’s theory of located accountability. Suchman (2002), inspired by feminist theory and its relationship to science and technology, notes that designers often understand their work in one of three ways: as “design from nowhere”, as “detached intimacy”, or as “located accountability” (p. 94). The last of these, they argue, is the most responsible as it “recognizes the fact that our vision of the world is a vision from somewhere, that it is inextricably based in an embodied and therefore partial perspective, which makes us

personally responsible for it” (p. 96). Verran and Christie see their work as an example of this conceptualization of design in use.

In their conceptual paper on Indigenous knowledge and system design, Oppenheimer (2008) examines how one can design systems that respect the ways that various Indigenous communities interact with their cultural heritage. They cite as their starting point the theory of value sensitive design as outlined by Friedman, Kahn and Borning (2006). They define value sensitive design as “a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process” (p. 349). In this examination, Oppenheimer adds another crucial value, “respect for cultural ways”, that is “the explicit consideration of how a proposed technological solution adheres to the cultural practices and ways of knowing endemic to the Indigenous population using that technology” (Oppenheimer, 2008, Implicated Human Values section, para. 2). These approaches share similarities with the ideal of “global information justice”, coined by Smith (2001) and further elaborated by Carbo and Smith (2008) and others, which “assumes that cultural differences shape the ways that various people relate to information and its role in society” (Smith, 2001, p. 534), and that technology should be seen and used in service of humanity rather than determining it.

3.2.5 Indigenous Frameworks

While most of the sources reviewed and analyzed make reference to the differences between Indigenous knowledge and knowledge organization practices and those of dominant western cultures, very few discuss or incorporate any specific Indigenous theoretical or conceptual framework. The exceptions to this trend are Crookston, Oliver, Tikao, Diamond, Liew and Douglas (2016), Lilley (2015), Littletree and Metoyer (2015), and Olson (1999).

Olson (1999) attempts to demonstrate the social construction of classification by identifying core characteristics of western classification – exclusivity, teleology, and hierarchy - as embodied in the works of Aristotle, Durkheim, and Foucault, and describing how these characteristics are not always compatible with the worldview of other cultures. They look specifically at knowledge organization in the North American First Nations, Polynesian (Hawaiian), and Eastern (Chinese and Indian) traditions to demonstrate the culturally bound characteristics of classification.

Littletree and Metoyer (2015) describe the work to develop, apply, and assess the Mashantucket Pequot Thesaurus of American Indian Terminology and the Indigenous conceptual and theoretical frameworks that served as the foundation for that work. The authors remind us that the importance of relationships between all creatures, ideas, and the cosmos is at the heart of Indigenous ways of being and knowing, and that Indigenous knowledge is often based on observations of patterns in nature, and shared and transmitted through stories and story systems (Littletree & Metoyer, 2015, p. 646-647). The resulting thesaurus structure consists of four domains, the Spiritual, the Physical, the Social, and the Mental, which “reflect key aspects of the Native American philosophies, including the orientation provided by the four directions – north, south, east, and west” (p. 644).

Crookston, Oliver, Tikao, Diamond, Liew and Douglas (2016) describe their project to explore the ways in which digitized Māori language collections are being used, and what impacts they are having on the people and communities who use them (p. 4). In all aspects of the study, from design to data collection, to data analysis and reporting, the research team was informed and guided by Kaupapa Māori, or Māori-centric, theory.

Kerr (2012) explains that Kaupapa Māori is used to describe “all manner of Māori undertakings and Māori -focused endeavours”, and is based on the concept of kaupapa, “ground rules, customs, the right way of doing things” (p. 7). Kerr notes that Kaupapa Māori cannot be owned by any group nor narrowly defined as a checklist or recipe. Instead, scholars articulate key concepts or principles that are common across articulations of it.

Lilley (2015) discusses the genesis of the Māori subject headings, and argues that their development and application are directly related to the natural order reflected in a Māori worldview. As they note, the Māori subject headings are representative of a body of knowledge steeped in an epistemological framework, and have enabled library professionals to provide enhanced and more appropriate access to Māori materials.

3.2.6 Decolonization and Decolonization Theory

Perhaps not surprisingly the theory or concept of decolonization appears in a number of the sources reviewed and analyzed. The foundations of decolonization theory can be found in the work of Martinican philosopher Frantz Fanon, who argued that “all of us are entitled to moral consideration and no one is indispensable” (Nicholls, n. d., Decolonization Theory section, para. 1), and “decolonization ... sets out to change the order of the world” (Fanon, 1963, p. 36).

In their project to examine the folksonomy of Twitter hashtags created and used by Sami Twitter users to preserve and promote their language and culture, Cocq (2015) uses decolonization theory as a lens through which to examine the underlying character of these activities. They note that Twitter users writing in English while simultaneously using Sami hashtags “is an act of activism, [of decolonization], not only in the wording (“challenge”) but also in addressing an international readership and raising the issue of colonialism” (p. 279).

Lougheed, Moran and Callison (2015) describe how barriers still exist in libraries for Indigenous users, and commit the National Research Centre for Truth and Reconciliation to the principles of re-empowerment and decolonization. Inspired by the call to action of James Youngblood Henderson, who writes that “one task of decolonization is to replace the sameness of universality with the concepts of diversity, complementarities, flexibility, and equity or fundamental fairness” (Henderson, as cited in Lougheed, Moran & Callison, 2015, p. 606), the Centre commits itself to several decolonizing best practices.

Duarte and Belarde-Lewis (2015) present to non-Indigenous knowledge workers the technique of imagining, of acknowledging why Indigenous peoples might prefer to develop their own approaches to organizing and describing resources by, for, and about them. This, the authors argue, is decolonization work at its heart. Powell (2007) references the decolonization theory of Smith (1999, 2012) in describing their work with an Ojibwe community to develop a digital archive. They quote Smith’s discussion of traditional archives in which multiple voices were present, but some were dominant while others submerged.

Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa and Keegan (2015) describe the ways in which decolonization theory as defined by Smith (1999, 2012) was foundational to their work of digitization of the manuscripts, works, and treasures of Dr. Pei Te Hurinui Jones. In developing their model of digitization, they were directly informed by several key principles of Smith’s decolonization theory, and describe how different stages of the journey of digitization reflect those principles.

Genovese (2016) reflects on the colonial and imperial foundations of archival practice, and in using Smith’s (1999, 2012) theory proposes ways of decolonizing that practice. If we turn to decolonization theory, they propose, we can begin to shift our ways of thinking and doing and

make them more just. Directly and sincerely involving Indigenous communities in decisions, and engaging in “decolonization-centered reappraisal and deaccessioning could begin to heal the colonial wound of archival methodology” (p. 39).

3.2.7 Classification and Classification Theory

Classification can be understood as “the process of dividing objects or concepts into logically hierarchical classes, subclasses, and sub-subclasses based on the characteristics they have in common and those that distinguish them” (Online Dictionary of Library and Information Science). A number of sources make reference to one or more classification theories.

Star (1998) offers a conceptual discussion in which they compare Ranganathan’s theory of faceted classification with the method of grounded theory (as articulated by Glaser and Strauss), and argue that because both struggle with “a core problem – i.e., the representation of vernacular words and processes, empirically discovered, which will, although ethnographically faithful, be powerful beyond the single instance or case study” (p. 218), there are opportunities for cross-fertilization. Lissonnet (2004) addresses the bias in universal classifications as demonstrated by theorists such as Olson (1998) and Star (1998) and indicates that their work with the Quinkan in Australia to develop a digital repository is informed by this acknowledged bias. They argue that the application of grounded theory in their context, as inspired by Star’s (1998) comparison of grounded theory with Ranganathan’s theory of faceted classification, could be used to develop localized classification structures.

Mai (2010) also addresses the issue of bias in classification systems. Drawing heavily on the theorizations of Bowker and Star (1999), they argue that while they may seem objective and innocent on the surface, on closer examination, all classifications reveal assumptions about the world. Inspired by this observation, Mai argues that the unavoidable bias in classification

systems should be recognized, and that we should instead evaluate them in terms of their trustworthiness based on the credentials, past record, and reputation of those who develop them.

Tomren (2003) and Chester (2006) take up the issue of bias in classification specifically with respect to treatment of Indigenous North American peoples and contexts. They reference well known criticisms of these systems from theorists such as Olson (1998, 1999) and examine alternative systems based on Indigenous theoretical foundations. They encourage scholars and practitioners to theorize and develop classification systems that break free from the western, colonial foundations of existing systems.

Several of the sources (Littletree & Metoyer, 2015; Howarth & Olson, 2016; Bullard, 2017) discuss the concept of warrant as found in classification theory. Beghtol (1986) defines warrant as “the authority a classificationist invokes first to justify and subsequently to verify decisions” (p. 110) about terms, their relationships, and their order.

Bullard (2017) argues that “warrant is simultaneously an everyday, mundane aspect of classification design and one that spawns deep discussions of the purpose of systems and the designers’ claims to ‘truth’ or objectivity, connecting daily practice to longstanding theoretical concerns in classification research” (p. 76). They remind us that theorists such as Olson (1998), Bowker and Starr (1999), Mai (2010) and others have injected into classification theory the acknowledgement of bias, and therefore understanding the warrant for classification systems becomes all the more important. Howarth and Olson (2016) take up a similar stance, arguing that while there is value in the notion of warrant, in our contemporary context, “the boundaries between and among the individual, the local, the national, and the international have not only been blurred, they may, in fact, be indistinguishable” (p. 4), and so a sort of “social warrant” is being exerted and may be seen as more relevant.

Littletree and Metoyer (2015) discuss the challenges of basing the development of classification systems for Indigenous materials on literary warrant “because much of what has been published on American Indian topics has been written by non-Native people and from a non-Native perspective” (p. 648). They take their warrant instead from users or potential users, and gather that information through interviews, correspondence with Native and non-Native scholars, and meetings with community members (p. 648).

In describing their development of an annotation system for a digital collection of Indigenous music, Hunter, Khan and Gerber (2008) address the known challenges with universal classification systems as demonstrated by theorists such as Star (1998) and Olson (1998, 1999), and discuss their incorporation of tags and tagging functionality as inspired by modern theory of folksonomies, ethnoclassification, and distributed classification. Srinivasan (2007) echoes this need for an ethnographic approach to the theory and application of classification, noting that “an approach to information system design that is grounded within the ethnographic process does not negate the powerful achievements in global standards, information retrieval, and top-level ontologies, but also asks for the information scientist to consider community-articulated metadata” (p. 726).

3.2.8 Critical Theory

According to Howell (2017), critical theory “involves ideas relating to empowerment of the people; it should challenge injustice in social relations and social existence. Feminist theory, queer theory, decolonization theory, post-colonial and Indigenous studies are just some of the approaches which align with critical theory principles.

Many sources describe their approach as founded on or inspired by decolonization theory, which at its heart is aligned with critical theory. Cocq (2015), Lougheed, Moran and

Callison (2015), Duarte and Belarde-Lewis (2015), Powell (2007), Genovese (2016), and Whaanga, Bainbridge, Anderson, Scrivener, Cader, Roa and Keegan (2015) are those that provide in-depth discussion of the role of decolonization theory in their work. Others, however, also make minor references to the theory. Indeed, one might argue that work in this area requires of its researchers and practitioners a commitment to decolonization and its critical aspects.

In their work with Aboriginal communities to design knowledge management systems, van der Velden (2010) takes as their foundational approach the critical notion of situated knowledges as outlined by Haraway (1988), in which there is recognition of different knowledges and ways of knowing, and acknowledgement that we can and should find ways for them to co-exist. They add to this insights from feminist and post-colonial theory which ask “whose knowledge and what kind of knowledge should inform practices” (p. 4) in examining relationships of knowledge and power.

Adler (2016) reviews the substantial body of literature, both scholarly and professional, that highlight the inherent biases in, and systemic violence enabled by, established descriptive standards, and argues that despite some progress, “the fact that some of these structures remain unchanged also reveals important information about the embeddedness of those discourses” (p. 631). They seek to bring knowledge organization into discussion with critical theory and conversations about reparations to develop “reparative taxonomies” that consciously respond to injustice (p. 631). They base their approach on the feminist and postcolonial critiques of established knowledge organization systems articulated by Olson (1998, 2000, 2002, 2007), the historical and theoretical methods used by Bowker and Star (1999), critical race theory as used by Furner (2007) to examine the Dewey Decimal classification, Drabinski’s (2013) use of queer

theory to address cataloguing standards and practice, and Roberto's (2011, 2015) examination of institutional bias in classification systems and library practice.

In their paper "The politics of search: Archival accountability in Aboriginal Australia", Christen (2007) posits that most debates on search lack a concern with the relationships between social structures and systems of accountability that privilege particular knowledges over others and reproduce material and social inequalities (p. 19). Christen makes their argument in opposition to, rather than based on, critical information studies (CIS) as articulated by Vaidyanathan (2006), arguing that it is based on a false belief that the "cultural reservoir from which these pull" is open to all, when in fact it "has always relied on exclusions" (p. 5).

3.3 Developing New Theory

Within the literature are several instances in which researchers develop and describe their original theoretical contributions. These individuals represent the disciplines of library and information science and education.

3.3.1 Nakata and the Cultural Interface

Nakata (1997) defines the cultural interface as the contested space between Indigenous and non-Indigenous knowledge systems. According to Nakata, in this space things are neither black nor white, Indigenous or western; it is a place of tacit and unspoken knowledge through which people make sense of the world (Nakata, 2007a, p. 9). The cultural interface is a place of constant tension and negotiation, but also a place where one can "work the interaction in ways that serve Indigenous interests, in ways that can uphold distinctiveness and special status as First Peoples" (Nakata, 2002, p. 286).

Nakata (2002; 2007b), alone and with others (Nakata & Langton, 2005; Nakata, Nakata, Byrne, McKeough, Gardiner & Gibson, 2008; Nakata, Nakata, Gardiner, McKeough, Byrne & Gibson, 2008), applies this approach to understanding the potential and challenges for Indigenous communities in the digital environment which comprises our modern world. They argue that this new environment has both potential and risks for Indigenous communities, but if Indigenous peoples are effectively and actively involved then the shifted balance of power and influence promised by the theory of the cultural interface can be achieved.

The influence of Nakata's theory of the cultural interface can be seen in many of the sources reviewed and analyzed, although it often goes unstated. Perhaps the most extensive application of the theory is that by Doyle (2013) who uses it as a component of their own theoretical framework, Indigenous knowledge organization @ Cultural Interface.

3.3.2 Doyle and Indigenous Knowledge Organization @ Cultural Interface

Doyle develops their framework from within the context of an academic library set in a post-secondary educational institution in Canada. They define Indigenous knowledge broadly, incorporating the materials collected, how they are described and arranged physically, and how services are built around them. The descriptive focus is on controlled vocabularies, in particular classification systems, and the collections' focus is on the physical rather than the digital.

To build their framework, Doyle combines Nakata's theory of the cultural interface with the axiology of Indigenous Métissage, developed by Canadian scholar Dwayne Donald (2012), which "is based on an ecological understanding, and views human relations as relations with all beings or entities that inhabit the world" (Doyle, 2013, p. 68). They then integrate this with the methodology of domain analysis, which "is an approach developed to inform a conceptualization of a field of study or knowledge domain in order to design or improve its information systems"

(Doyle, 2013, p. 82). These come together in a set of seven principles of design for Indigenous knowledge organization: a) Indigenous authority (primacy afforded to Indigenous accounts of Indigenous experience), b) Indigenous diversity (representing as full a range of Indigenous identities as possible), c) wholism and interrelatedness (belief that all things are interconnected), d) continuity (support of Indigenous language and culture revitalization and maintenance), e) Aboriginal user warrant (Aboriginal people as primary audience for design), f) designer responsibility (credibility and trustworthiness and enabled through transparency and reciprocity), and g) institutional responsibility: ethical access (recognizing and enacting appropriate protocols) (Doyle, 2013, p. 307-318).

Duarte and Belarde-Lewis (2015), Adler (2016), and Littletree and Metoyer (2015) make reference to Doyle's framework as an example of efforts to approach Indigenous knowledge organization differently, but do not attempt to build on or expand the theory.

3.3.3 Holland and Smith and the Digital Collective

The Digital Collective, as Holland and Smith describe it, is a model for “storing and accessing shared information and knowledge, as well as for creating new knowledge and recreating global memory, and a place where people share personal and professional information and where they seek connections and build a community” (Smith, 2002, The CHPI Becomes a Model section, para. 2). Their inspiration came from Vygotsky's (1978) model for connecting museum exhibitions and visitors through shared experiences and personal responses, as well as the participation model developed by Matusov and Rogoff (1995) in which the museum visitor-learner is a collaborator.

The Digital Collective model is based on a set of five core principles: a) it must be inclusive of all formats and digital instantiations, including born-digital items, b) institutions of

memory must work together to carry out their responsibilities to communities, c) research about learning will reshape how people use information and create knowledge, d) the Web enables users of information to become producers of information, and stakeholders to become collaborators, e) employing principles a) through e) will result in a new model which is neither digital library nor virtual museum, nor electronic archive, but a true collective knowledge sharing and creation space (Smith, 2002). The Digital Collective model inspired the work of Nevile and Lissonnet on the Quinkan Matchbox Project (Lissonnet, 2004; Nevile & Lissonnet, 2006).

3.3.4 Srinivasan and Fluid Ontologies

Since their master's work at MIT in 2002, Srinivasan has worked in the area of community informatics, which deals with user and community focused and driven technology and design. As was noted earlier, their work is referenced often as representative of user-centred design principles and applications. An additional and important contribution they have made in their own work, and with others, is their development of the theory of fluid ontologies and its use as a foundation for community-led digital projects, particularly with Indigenous communities. Fluid ontologies are a component of my theoretical framework and will be discussed in detail in Sections 3.4.2 and 3.5.2.

3.4 Components of the Theoretical Framework

The purpose of my research was to gain insight into what characterizes culturally responsive metadata frameworks for digital libraries of cultural resources and what methodologies and approaches can be used for developing them. In order to explore my research questions I proposed a theoretical framework that draws in aspects from four separate

approaches: a) anti-colonial theory, b) Srinivasan's fluid ontologies, c) Bernstein's language (or sociolinguistic) codes, and d) digital storytelling.

3.4.1 Anti-colonial Theory

Fanon (1963) and others remind us that decolonization is a historical process rather than an event; it is an ongoing discourse between hegemonic systems and subversion of those systems, between "European imperial discourses and their anti-colonial dis/mantling" (Tiffin, 1995, p. 95). But as Dei (2000) cautions, "the understanding of colonization must be grounded to the colonized" (p. 116). In the absence of an understanding of social reality informed by local knowledge and practices, decolonization efforts will not succeed. What is needed, rather, is "an epistemology of the colonized, anchored in the Indigenous sense of collective and common colonial consciousness" (p. 117). Dei labels this approach an anti-colonial discursive framework.

An anti-colonial framework begins by questioning institutionalized power and privilege and the ways in which they enable domination in social relations. "As a theoretical perspective, anti-colonialism interrogates the power configurations embedded in ideas, cultures and histories of knowledge production and use" (Dei, 2000, p. 117). It recognizes and highlights the role that institutional and societal structures play in both producing and reproducing inequalities based on race, gender, class, etc. And through such a framework we

learn that there is no such thing as self-professed impartiality, non-partisanship, and indifference; that discursive practices are never neutral or apolitical and that historical accounts and narratives are shaped and socially conditioned by particular interests, histories, desires, and politics (Dei & Asgharzadeh, 2001, p. 318).

To this, an anti-colonial framework adds recognition of the power of the local/communal

to survive colonialism and resist colonial power. It argues that “power and discourse are not possessed solely by the ‘colonizer’, that discursive agency and the power of resistance reside in and among colonized and marginalized groups” (Dei, Hall, & Rosenberg, 2000, p. 7). Indeed, for many Indigenous communities, teaching and learning their cultures, histories, and languages are profound acts of resistance to colonial imposition. Anti-colonial theory works from an understanding of indigenusness as an “awareness of the intellectual agency of local subjects as well as from their capacity to articulate their condition in terms of their own geography, history, culture, language, and spirituality” (Dei & Asgharzadeh, 2001, p. 302) and is manifested in the use of that Indigeneity to resist “colonialist agendas of assimilation and annihilation” (p. 303).

According to Dei, Hall, and Rosenberg (2000), anti-colonial theory is grounded in alternative, oppositional paradigms which are in turn “based on Indigenous concepts and analytical systems and cultural frames of reference” (p. 7). Indigenous knowledges resist the colonial imperative to imposition. They recognize the multiple and collective origins of knowledge, and affirm that there are many interpretations of social reality (Dei, Hall, & Rosenberg, 2000, p. 7-8). It recognizes the “importance of locally produced knowledges emanating from cultural histories and daily human experiences and social interactions” (Dei, 2000, p. 117). It builds on and encourages the work currently happening in many communities to reintegrate and reinvigorate language learning in the schools and homes, to preserve and promote cultural expression in all forms, and to repatriate and retell community stories and histories. “It is a celebration of oral, visual, textual, political and material resistances of colonized groups” (Dei, 2000, p. 117). For it is only by “according a discursive integrity to subjects’ accounts (validating their voice/words/language) of their histories and cultures that colonial imperialist projects can be destabilized” (Dei, 2000, p. 117-118).

In their collaborative research with northern Canadian communities on capacity and knowledge building for healthy eating and active living, Fournier (2017) describes incorporating anti-colonial theory into their existing framework of critical social theory. They describe their struggles as a non-Indigenous researcher working with Indigenous communities, and challenges in finding ways of decolonizing their research and themselves. “Applying an anti-colonial discursive framework can act as a counter-resistance to the ever present and unconscious Eurocentric ways of a non-Indigenous researcher” (p. 45). By starting from Indigenous knowledge, an anti-colonial framework highlights the colonizing potential of research, and forces the researcher to recognize that we all speak from a location, and must continuously examine that position as we work with Indigenous colleagues and partners.

In their examination of the representation of African leadership and management in the literature, Nkomo (2011) extends existing postcolonial scholarship in organization studies by incorporating anti-colonial thought. They note that “African anti-colonialism in the form of an intellectual, political, philosophical and cultural response to European colonial rule is a complex formulation that spanned geography, time and different ideological positions” (p. 368), and has often been underappreciated by postcolonial theorists. Anti-colonialism, they argue, encourages and enables activists to unite in a common struggle to challenge colonialism not only on a political or intellectual level, but also on an emotional level (pp. 368-369). What sets anti-colonialism apart, and gives it its strength, they posit, is that it not only seeks to resist colonialism, but “to change it and build something better” (p. 380).

Kaupapa Māori theory is based on a Māori world view and focused on Māori needs and interests (Kerr, 2012). In a conceptual paper, Mahuika (2008) attempts to answer the question “Is Kaupapa Māori theory anti-colonial”? They describe how many Māori scholars, unhappy with

the concept of postcolonial because it gives a false sense that colonialism has ended, choose instead to use the term anti-colonial, as defined by Merata Mita: “I have dismantled the frame of reference further, and in my construct - post-colonialism, which denotes passivity has become anti-colonialism, which is a truer description of what influences the arts and politics in the Māori world” (quoted in Mahuika, 2008, p. 37). Anti-colonialism, then, describes an active and proactive resistance to old and new forms of colonization (Mahuika, 2008, p. 10). “In its assertion of Māori cultural aspirations, values and beliefs, Kaupapa Māori continues to work both against and beyond the struggles and strife created as a consequence of colonization, past and present. In this way Kaupapa Māori is very much anti-colonial” (Mahuika, 2008, p. 11).

3.4.2 Fluid Ontologies

Within their thesis, Srinivasan (2002) focuses on a case study (Village Voice) in which they capture the content and power of narrative by working with a community to develop a localized ontology to underlie the information system being used. Here they refer to this concept as community-designed ontologies. As they note in an early paper, despite the fact that many communities, including Indigenous communities, are realizing how technology can be leveraged to preserve, maintain, and promote their cultural and linguistic heritage, it is “not yet clear what knowledge architectures are most appropriate for creating a digital museum in order to facilitate an effective collection, organization, conservation, and experience” (Srinivasan & Huang, 2005, p. 193) of that heritage. They therefore further refined and developed their early work into the theory of fluid ontologies (Srinivasan & Huang, 2005).

Fluid ontologies can be conceptualized as “flexible knowledge structures that evolve and adapt to communities’ interest based on contextual information articulated by human contributors, curators, and viewers, as well as artificial bots that are able to track interaction

histories and infer relationships among knowledge pieces and preferences of viewers” (Srinivasan & Huang, 2005, p. 193). One can see the influence of the principles of user-centred design in this as it allows for increased congruence between community interests and the design and functionality of the system.

According to Srinivasan and Huang (2005), one of the core attributes of fluid ontologies is that they are “emergent and adaptive” (p.195) structures for knowledge organization. They are informed by four key principles: a) involvement of content creators (which provides additional context for the content), b) metaview sharing (views the users create of the available knowledge should be presented visually and shareable with others), c) adaptiveness (continuously redesigned as users’ understanding of the world evolves), d) bots and personalization (using technology to track interactions to aid in adapting the ontology) (p. 195). A commitment to such ontologies recognizes that the most powerful experiences with digital collections occur when the knowledge structure and architecture are harnessed to the interests and needs of the community. The ability to embed different ways of knowing and understanding the world is the key to unlocking “the doors to diverse, rich, and incommensurable knowledge communities” (Boast, Bravo & Srinivasan, 2007, p. 399).

While Srinivasan applies this theory in their own work with Indigenous communities (Srinivasan, 2007; Srinivasan, Boast, Furner & Becvar, 2009; Srinivasan, Becvar, Boast & Enote, 2010), it has also been influential in the work of others who work with these communities. In discussing their work with Aboriginal communities to digitize and describe the Strehlow Archive, Cawthorn and Cohen (2013) recognize the “unique opportunity to scrutinise the intersection of digital cultural heritage and Western archival practice” (p. 191) by considering this intersection through the prism of fluid ontologies. Perhaps the strongest and most evident

influence of the theory of fluid ontologies can be found in the work of Christie and Verran and colleagues (Christie, 2005a, 2005b; Verran, Christie, Anbins-King, Van Weeren & Yunupingu, 2007) in collaborating with the Yolngu in Australia to develop a database for storing local knowledge. In describing the progression of their work, they speak to moving from a structured to a semi-structured to a flat ontology based on the notion of fluid ontologies. The system, called TAMI (Text, Audio, Movies, Images) is an “ontologically flat” or “epistemologically innocent” (Christie, 2005b, pp. 59-60) database as it makes no prior assumptions about the content, and thereby creates the conditions “whereby Indigenous owner-users can learn to invoke and encode for themselves the multiple connections which constitute Aboriginal knowledge” (Christie, 2005b, p. 61).

Although Srinivasan’s use of the concept of ontology varies slightly within their work, from “the community’s identification of a structure of collective priorities that emerges from the reflective process of viewing community-created content” (Srinivasan, 2006b, p. 361) to the “means of expressing and articulating knowledge” (Srinivasan, 2017, p. 33) to how particular ways of knowing impact “interfaces, databases, and algorithms” (Srinivasan, 2017, p. 136), in the end the focus is always on putting the needs and interests of the community first.

3.4.3 Language (or Sociolinguistic) Codes

Bernstein’s theory of language (sometimes referred to as sociolinguistic) codes and their relationship to social contexts, in particular social class, was continuously refined and reframed throughout their career. According to Danzig (1995) and Halliday (1995), it was during Bernstein’s early career teaching in London in the 1950s that they first came to believe that the differences in educational success between middle and working class children could be understood in terms of “the way the children learn to mean; the sources therefore had to be found

in language” (Halliday, 1995, p. 128). In order to examine this proposition, Bernstein and colleagues worked to observe and analyze the language use of children both within the formal educational setting and outside of it.

In their early writings, Bernstein characterizes language codes as ‘formal’ and ‘public’, and emphasises the lexicogrammatical differences between the two (Atkinson, 1985; Danzig, 1995; Halliday, 1995; Bernstein, 1971; Bolander and Watts, 2009). Even as they were publishing on ‘formal’ and ‘public’ language codes, however, Bernstein was already beginning to move away from focusing on “what people say to the rules that govern how it is that they come to speak in specific ways” (Danzig, 1995, p. 148). According to Halliday (1995), their shift was to a more general theory of cultural transmission through language towards a theory “in which the social structure transforms language possibility into a specific code which elicits, generalizes and reinforces those relationships necessary for its continuance” (Bernstein, 2003, p. 58). This refined theory introduces the concepts of ‘restricted’ and ‘elaborated’ language (or sociolinguistic) codes.

In moving from ‘public’ and ‘formal’ to ‘restricted’ and ‘elaborated’, Bernstein (1964; 1966; 1971) recognized the importance of shifting the level of abstraction, focusing less on lists of lexicogrammatical forms and more on the socially constructed nature of the codes. “The concept of sociolinguistic code points to the social structuring of meanings *and* [italics in original] to their diverse but *related* [italics in original] contextual linguistic realizations” (Bernstein, 1971, p. 170-171).

Bernstein (1964; 1966) argues that the two codes can be distinguished on a general linguistic level by the degree of “probability of predicting for any one speaker which syntactic elements are to be used to organize meaning across a representative range of speech” (Bernstein,

1966, p. 255). Restricted codes are those where there is a higher degree of predictability in the selection of syntactic elements. Bernstein (1966) provides a few specific linguistic characteristics of such codes, including “meanings that are likely to be concrete, descriptive, or narrative rather than analytical or abstract”, fast and fluent speech, and “meanings that are likely to be dislocated, condensed and local” (Bernstein, 1966, p. 256). In reiterating the socially constructed nature of the codes, they note that restricted codes are

played out against a backdrop of assumptions common to the speakers, against a set of closely shared interests and identifications, against a system of shared expectations; in short, it presupposes a local cultural identity which reduces the need for the speakers to elaborate their intent verbally and make it explicit. In one sentence, the extent to which the intent of the other person may be taken for granted, the more likely that the structure of the speech will be simplified and the vocabulary drawn from a narrow range (Bernstein, 1964, pp. 60-61).

Elaborated codes are those in which there is a lower degree of predictability in the selection of syntactic elements. Bernstein (1964) notes that speech controlled by an elaborated code will be “punctuated by relatively frequent pauses and longer hesitations” (Bernstein, 1964, p. 65) and involve “meanings that have to be expanded and raised to the level of verbal explicitness” (Bernstein, 1966, p. 256). “An elaborated code, or at least an orientation towards this code, will develop to the extent that the discrete intent of the other person may *not* [italics in original] be taken for granted” (Bernstein, 1964, p. 63).

Although greatly interested in the ways in which these codes related to social class structures and thereby to rates of success in the formal educational system, Bernstein emphasizes that restricted codes are not necessarily linked to social class; that they are “used at some time by

all members of a society” (Bernstein, 1966, p. 256). The codes are “generated by particular forms of social relationships ... and do not necessarily develop as a result of a speaker’s innate intelligence” (Bernstein, 1964, p. 58). “[Language] does not, of itself, prevent the expression of specific ideas or confine the individual to a given level of conceptualization, but certain ideas and generalizations are facilitated rather than others“ (Bernstein, 2003, p. 32).

What does concern Bernstein, however, is the impact that the use of, and socialization into, the different codes has on children entering a formal educational system which, they argue, is structured around elaborated codes. As they state,

Now because the sub-culture through its forms of social integration generates a restricted code, it does not mean that the resultant speech and meaning system is linguistically or culturally deprived, that the children have nothing to offer the school, that their imaginings are not significant. ... But if the contents of learning, the examples, the reading books, are not contexts which are triggers for the children’s imagination, are not triggers on the children’s curiosity and explorations in his family and community, then the child is not at home in the educational world. (Bernstein, 2003, pp. 153-154).

For Bernstein, then, it is important to recognize that all language is complex and rich with meaning, and that children have a right to see themselves in the language used in the classroom.

Bernstein’s theory of language (or sociolinguistic) codes as it developed over their career moved from focusing on specific linguistic features to a more abstract discussion of the socially constructed nature of language. As Danzig (1995) claims, “the significance and application of code theory is in its description and explanations of how language shapes understanding of the world and the human potential for change” (p. 145).

3.4.4 Digital Storytelling

According to Couros, Montgomery, Tupper, Hildebrandt, Naytowhow, and Lewis (2013), we are storied creatures. “Story or narrative imagining is our primary mode of making meaning and understanding lived experience, both our own and others” (p. 550). Erstad and Wertsch (2008) concur, adding a social dimension to the narrative impulse. “Narratives are seen as cultural tools that we all relate to and use in our meaning-making activities” (p. 22). Digital storytelling as both technique and movement builds on these notions and looks to the how and why of using technology to tell one’s story (Watkins & Russo, 2009; Willox, Harper, & Edge, 2012).

Digital storytelling is not a theory per se, but rather a technique or method that draws on narrative theory, which itself argues that stories are a tool for empowerment as they allow individuals and communities to construct, reconstruct, and share their own story based on their own worldview (Perone, 2014, p. 114). McWilliam (2008) provides a useful distinction between what they label *specific digital storytelling* and *generic digital storytelling* which alludes to the origins and subsequent development and expansion of the concept. *Specific digital storytelling* refers to the “co-creative filmmaking practice developed by Dana Atchley, Joe Lambert and Nina Mullen in California in the early 1990s, now homed in the Center for Digital Storytelling” (p. 146). This digital storytelling follows a standard format and process and has been reproduced in many iterations around the world since its inception. *Generic digital storytelling*, on the other hand, reflects the myriad ways in which our understanding of what digital storytelling is, how it is done, what it is for, and where it is located has evolved. This version of digital storytelling is understood broadly as “any media form that digitally facilitates interactive storytelling” (p. 145),

or “the whole range of personal stories now being told in potentially public form using digital media resources” (Couldry, 2008, p. 42).

Digital storytelling in this sense is seen as part of a broader shift away from one-way, top-down models of communication toward two-way, bottom-up models, similar to community and/or participatory media (McWilliam, 2008, p. 145-147). It is a “method for local action as well as a means for preservation of local culture” (Bratteteig, 2008, p. 279). Digital storytelling gives voice and agency back to communities, and provides the potential for them to challenge established institutions which, for too long, have had the power to represent them without their input.

Couros, Montgomery, Tupper, Hildebrandt, Naytowhow, and Lewis (2013) examine the effectiveness of the use of digital storytelling in mandatory treaty education in Saskatchewan. They define digital storytelling for their purposes as “the use of digital tools and media to develop, create, enhance, and share stories” (p. 546). They remind us that their study is situated in a context in which “Aboriginal story, agency, voice, knowledge, and experience are often subjugated ... in the service of normalized mythologies of Canada as a multicultural and benevolent nation” (p. 544) and in which reconciliation requires hearing Aboriginal stories and histories. Digital storytelling was selected as a method precisely because it enables storytellers to “explore and retell counter-hegemonic stories, that is, create alternative stories to those of dominant discourses” (p. 546).

Tan, Lee, and Hung (2013) describe a project to assess the effectiveness of digital storytelling in teaching different forms of knowledge. The authors draw on Bernstein’s (1977, 2000) categorization of knowledge as “hierarchical”, in which “abstract knowledge derived from within one particular context of its generation may be found to explain phenomena in contexts

distant in time and space” (Tan, Lee, & Hung, p. 625), and “horizontal”, where multiple knowledge claims can be made, and multiple stories can be told. Their interest in digital storytelling as a method is driven by its potential to enable the storyteller to contextualize conceptual information, to devolve epistemic authority in the classroom, and to motivate learning and self-discovery (p. 628). They conclude that digital storytelling is particularly powerful and effective within knowledge domains that are highly horizontal in nature, i.e., which draw upon the concept of “perspectivism, in that the story that is told is but a recounting from one privileged point of view; other perspectives exist, other stories exist, ... and the power of such an analysis lies in the revelation of a polysemous nature to what was formerly considered a unidimensional narrative” (p. 625).

In a conceptual paper, Couldry (2008) asks us to critically examine both our understanding of digital storytelling as a broad social phenomenon and the “social transformations actually and potentially linked to it” (p. 43). They highlight the democratic roots of digital storytelling, noting the originators’ view of digital storytelling as a tool for giving marginalized individuals and groups a voice. But they are somewhat skeptical that its potential can ever be realized when digital storytelling, like any other movement or technique, is situated within contexts of imbalances in power, resources, and recognition (pp. 55-57). They wonder whether digital storytelling “will remain a largely isolated phenomenon, ... not recognised more widely in the regular distribution of social and cultural authority and respect” (p. 56). While Lundby (2008) recognizes this potential challenge, they are also optimistic. “This media practice may well remain small-scale. Nevertheless, for those who employ Digital Storytelling in their own lives, this practice may actually give them a voice, or be significant in other ways” (p. 4).

3.5 Constructing the Theoretical Framework

The final theoretical framework was informed not only by my understanding of the approaches taken in previous research, but most importantly by my ever evolving understanding of the cultural and community context of the Inuvialuit Settlement Region. Constructing the framework was not a process of excluding certain approaches such as those discussed in previous sections. Rather, it was a process of including those theories or approaches that were more appropriate and relevant in this particular context. The ultimate theoretical framework, as shown in Figure 1, incorporates aspects of four bodies of theory, namely Anti-colonial theory, which lies at the foundation, as well as Digital storytelling, Language (or sociolinguistic) codes, and Fluid ontologies. How each of these contributes to the framework will be discussed in greater detail in the paragraphs below.

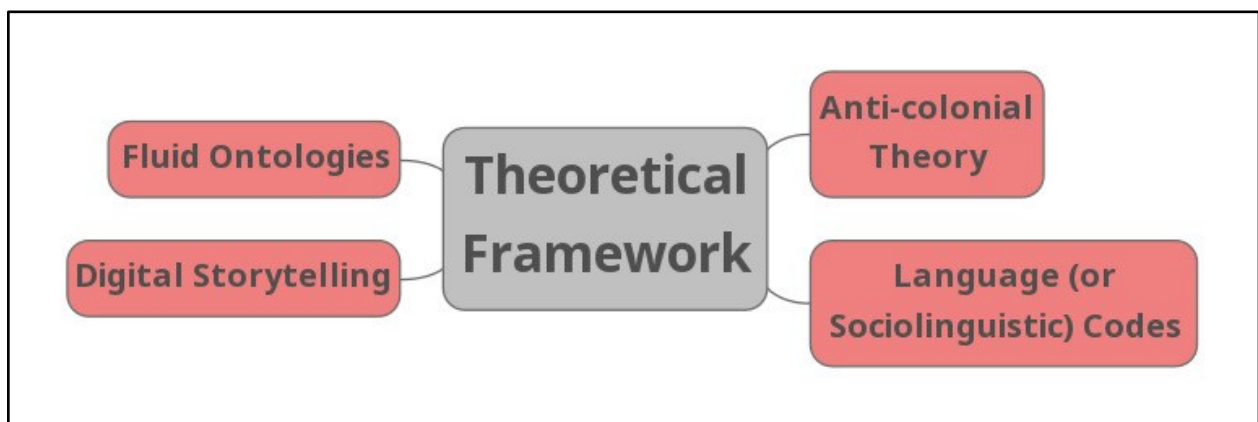


Figure 1. Specific components of the theoretical framework.

3.5.1 *Anti-colonial Theory*

Anti-colonial theory is present within my theoretical framework in two different but related ways. First, my research had an anti-colonial aim as every aspect reflected the needs and interests of an Indigenous community as articulated by that community. It was founded on a

critical examination of the underlying assumptions, motivations, and values that inform existing metadata frameworks and how they are constructed, and attempted not only to unsettle them, but to make room for more appropriate frameworks grounded in Indigenous community. Porsanger (2004) notes that research with Indigenous communities requires “scholars to think critically about their research processes and outcomes, bearing in mind that Indigenous peoples’ interests, experiences and knowledge must be at the centre of research methodologies and the construction of knowledge concerning Indigenous peoples” (p. 109). An anti-colonial approach, therefore, was not only appropriate for my research project, but indeed necessary in order to collaborate with Indigenous communities in an ethically correct and culturally responsive manner.

Second, anti-colonialism is a process of creating space and support for Indigenous communities to reclaim what has been taken from them, including their culture, language, community, and history. Dei (2008) reminds us that an anti-colonial approach is a critical one; it is “about resistance, subject(ive) agency and collective politics. It centres the agency, voice and political and intellectual interests of Indigenous and Aboriginal subjects in accounting for and resisting oppression and domination” (p. 10). Through this lens, metadata frameworks that are developed with Indigenous communities based on their needs and interests, and which they judge to be culturally responsive and appropriate, can be understood as examples of anti-colonialism in practice.

3.5.2 Fluid Ontologies

Srinivasan characterizes fluid ontologies as dynamic and emergent representations of knowledge that are based on community articulated categories and interrelations, which are then enacted within technical infrastructures. Metadata is connected to algorithms, interfaces, and databases, and as such is one key component of such technical infrastructures. Seddon and

Srinivasan (2014) argue that “we often worry about technical issues in metadata, ... but much less about the correspondence between the information that accumulates in the knowledge bank and the meaning that surrounded it in the minds of those it describes” (p. 1125). I believe this challenge can be addressed if we place additional focus on metadata frameworks within technical infrastructures. And I propose we can do so by understanding metadata frameworks that are defined and deemed culturally responsive by Indigenous communities as specific expressions of fluid ontologies.

Further, Srinivasan (2012b) reminds us that the “fluid ontology approach resists imposing ontologies in lieu of using ethnographic and participatory approaches to collaborate with communities in the design of information systems” (p. 215). Understanding metadata frameworks as a specific component of fluid ontologies requires us to approach their development and definition in the same way, through collaborative activities with and within communities where their voices have final say over design and application.

3.5.3 Language (or Sociolinguistic) Codes

Bernstein defines language (or sociolinguistic) codes as sets of linguistic expressions which, taken together, “give access to a vast potential of meanings, of delicacy, subtlety and diversity of cultural forms, to a unique aesthetic the basis of which in condensed symbols may influence the form of imagining” (Bernstein, 1971, p. 186). Together, these elements enable, and are a result of, shared meaning making within a community. I propose that metadata created within a culturally responsive metadata framework can be understood as examples of language (or sociolinguistic) codes.

Bernstein’s theory of language (or sociolinguistic) codes enables us to recognize that metadata, as language, should be understood as socially constructed. Bernstein’s theoretical

framework is structured around the notion of language as socially constructed, as both a product and shaper of the context in which it is learned, developed and applied. Metadata, as language, can be argued to operate within this same framework. That is, metadata can be seen as socially constructed, as reflective of the interests, needs and contexts of those who develop and apply it. Approaching metadata in this way speaks to the need for culturally responsive metadata at all. That is, only if we accept that metadata is socially constructed can we agree that there are differences in the ways in which cultures interact with, understand and make meaning of the world around them, and thereby acknowledge that metadata should reflect those differences.

The theory of language codes also encourages us to look at metadata holistically rather than as discrete descriptive elements. Early in their work, Bernstein realized the value and benefit of looking at language codes not as individual semantic features or elements, but rather as whole systems taken together. This methodology can be used to understand metadata, and in particular culturally responsive and relevant metadata, not in terms of specific elements or fields, but rather as a set of linguistic expressions which taken together provide insight into the social construction of the meaning it conveys.

3.5.4 Digital Storytelling

For Indigenous communities, the representation and sharing of knowledge is all about stories (Srinivasan, 2017, p. 191). And digital technologies - their design and application - can be leveraged in the interest of those storytelling processes. Digital storytelling is the use of technology to construct, reconstruct, and share one's own story in one's own words and according to one's own view. Metadata, as language that is used within technical infrastructure to describe resources, can itself be viewed as narrative or story. And therefore I propose that metadata that is created according to a metadata framework that has been defined and deemed

culturally responsive by a community can be understood as instantiations of digital storytelling, enabling communities to tell the stories they wish to tell about their digital cultural resources in the way they wish to tell them.

In addition, digital storytelling has an emancipatory aspect, enabling the unsettling of traditional power structures around the representation of knowledge, of challenging whose story is told and how. And the fact that community defined culturally responsive metadata enables those communities to disrupt the “dominant and problematic narratives” (Couros, Montgomery, Tupper, Hildebrandt, Naytowhow, & Lewis, p. 555) that have too often been applied to their cultural resources without their input, provides additional support for viewing such metadata as instantiations of digital storytelling.

3.5.5 Fit for Purpose

Taken together, these specific components formed the theoretical approach to my research project. This framework positioned me to work in partnership with Indigenous communities in the true spirit of reconciliation and decolonization of research and practice. And it also ensured that the conceptualizations of culturally responsive metadata frameworks that were uncovered and the methodologies and approaches used to do so were truly grounded in the needs, interests, and articulations of Indigenous communities.

Chapter 4: Methodological Framework

The development of a robust methodological framework required considerations from multiple perspectives, including the choice of methods and approaches to working with collaborators, that take into account the particular nuances of engaging in research with Indigenous communities, especially as a non-Indigenous researcher. In this chapter, I outline the methodological approach for my study. In Section 4.1 I provide background on qualitative and quantitative approaches and how they each relate to my research. In Section 4.2 I describe participatory case study as a methodology, its strengths and limitations, and its fit with my research, and in Section 4.3 I survey the choice of methods available and appropriate for participatory research with Indigenous communities. Sections 4.4-4.6 provide information about my community collaborators, ethics and protocols followed, and locations and timeframes for the study. Section 4.7 describes my approach to information gathering, including people and processes, and Section 4.8 includes my approach to information. Section 4.9 describes enhancements to the Digital Library related to content, organization and description, functionality, look and feel, and management. In Sections 4.10 and 4.11 I discuss self-reflection and giving back to the community as critical to working with Indigenous communities. Section 4.12 addresses the topic of trustworthiness, and Section 4.13 outlines additional constraints on my study.

4.1 Qualitative Approaches Versus Quantitative Approaches

Pierce (2011) notes that qualitative and quantitative research are often portrayed as polar opposites or mutually exclusive approaches, often reduced to ‘on the one hand’ and ‘on the other hand’ comparisons (p. 41). “Qualitative and quantitative research are more than just differences between research strategies and data collection procedures. These approaches [can] represent

fundamentally different epistemological frameworks for conceptualising the nature of knowing, social reality, and procedures for comprehending those phenomena” (Filstead, 1979, p. 45). Yet Crotty (2015) strongly argues that “whatever research we engage in, it is possible for either qualitative methods or quantitative methods, or both, to serve our purposes” (p. 15). What we should look to instead, they argue, is the epistemological/theoretical perspective, or paradigm, in which the research is situated, and how that will impact the ways in which the knowledge gained through the use of different methods will be understood. I follow Crotty’s lead and characterize my research study by positioning it relative to an overarching perspective or paradigm.

4.1.1 Constructionism Over Positivism

In their seminal book *Naturalistic Inquiry*, Lincoln and Guba (1985) outline a research perspective or paradigm, based on five axioms, which can be seen as being in opposition to those of a “positivist paradigm” (p. 19). It represents a ‘qualitative turn’, providing the philosophy and techniques to enable us to study how humans make sense of their world, to get at the richness and complexity of the human experience. It makes room for the view that “knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being *constructed* in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context” (Crotty, 2015, p. 42).

The first axiom addresses the understanding of the nature of reality. Understandings of reality fall on a spectrum from belief in a single, knowable reality (objective reality) to a reality that is nothing more than multiple possibilities, none of which comes into existence unless an individual interacts with it (created reality). Lincoln and Guba base their naturalistic paradigm on the notion of constructed reality (pp. 37, 70-91).

The second addresses the relationship between a knower and what can be known. Within disciplines dealing with human subjects, research has demonstrated time and again that not only are the observed shaped by the very act of being observed, the observer themselves are also shaped by that process. Rather than deny this reality, it should be recognized as a natural and beneficial aspect of doing research with human subjects, and researchers should instead take steps to achieve fairness and balance in research (pp. 37-38, 92-109).

The third addresses the notion of generalization. Rather than attempt to make generalizations that claim to apply across time and space, recognition of the contextual nature of reality leads the researcher to instead develop “working hypotheses” (p. 122) which describe and aim to elucidate a particular context only. Moving from context to context, the researcher attempts to understand whether or not a hypothesis is applicable, why or why not, and thereby increases their overall understanding of the phenomenon. This is a process whereby generalization is neither expected nor forced. Instead, the degree of transferability of the hypothesis from one context to another is the key to understanding (pp. 38, 110-128).

The fourth addresses the notion of causality. Simple cause and effect assumes linearity and does not take into account the complex and dynamic interactions among entities. Lincoln and Guba instead argue for the idea of “mutual simultaneous shaping” (p. 151), which states that in any given situation or context, multiple factors or elements are involved, all interacting and influencing each other. In such realities, linear cause and effect becomes irrelevant; understanding is contextual and prediction is impossible (pp. 38, 129-139).

The fifth and final axiom deals with the notion of value-less research. The long-standing belief in inquiry as value-free is grounded in the positivist belief that there is a single, knowable reality and that observation can be objective or neutral. Unfortunately, the history of scientific

inquiry is awash with instances where inquiry has been driven and shaped by the values of the researchers, and the refusal to engage the notion of values and bias in inquiry has had negative impacts. The authors argue that a more productive approach is to recognize that values do have an impact on inquiry, from the topic chosen to the methodologies employed, and to instead work to ensure compatibility and coherence between topic of study, underlying paradigm, and methods of inquiry (pp. 38, 160-186).

Lincoln and Guba (1985) argue that this paradigm is characterized by seven broad axioms: a) the existence of multiple, complex realities, b) there are multiple orderings of entities in nature, none of which is inherently dominant, c) the nature of the world should be imagined as a three-dimensional rather than two-dimensional image, d) the future of entities and their systems are not predictable, e) entities and systems interact with each other on a constant basis and so simple, linear cause and effect can not always be determined, f) new and complex forms and systems appear in nature unexpectedly, g) objectivity is an illusion (pp. 51-56).

4.1.2 From Theory to Practice

How does this paradigm relate to the qualitative, quantitative question? What impact does it have on the methodological framework of a research project? Lincoln and Guba (1985) argue that embracing the naturalistic paradigm has implications for the way in which inquiry is conducted. While the very nature of naturalistic inquiry precludes overly intricate design of a study prior to it being undertaken (p. 226), there are nevertheless a number of characteristics which such inquiries share in common.

Reflective of the importance of context to the understanding of any phenomenon, naturalistic inquiry must take place in a natural, i.e., non-contrived setting. In recognition of the unique strengths of humans including responsiveness, adaptability, and holistic understanding,

naturalistic inquiry relies heavily on the human as instrument. Naturalistic inquiry is also characterized by an acceptance of the value of tacit as well as explicit knowledge for providing insight. Naturalistic inquiry emphasizes the use of qualitative methods but does not exclude the possibility of quantitative methods when they are appropriate. Sampling methods in naturalistic inquiry tend to have purposes other than trying to find a representative sample, such as studying extreme or rare cases. Data analysis within naturalistic inquiry is inductive rather than deductive; working hypotheses and theories come from the analysis of the data rather than being defined in advance. Outcomes of naturalistic inquiry are negotiated. That is, the findings should be reviewed by participants for verification. Outcomes are often reported in the case study format, which emphasizes the contextual nature of any naturalistic inquiry, and ideally includes enough detail for others to determine potential applicability in their context. And finally, trustworthiness is understood as the ability to demonstrate credibility, transferability, dependability, and confirmability, which can be established through extended engagement and observation, detailed case study reporting, and external auditing of findings (pp. 39-43, 187-220).

My study was firmly grounded in this naturalistic, constructionist paradigm. I worked with a community to better understand the social meanings that community members apply to the world around them, and how those can be articulated in descriptions of cultural resources. We worked together to discover more about a phenomenon that is little known and understood within this community context. My approaches were grounded in a belief in the relativity of truth based on one's perspective and, further, a belief in the important role social relationships and networks play in the construction of those perspectives (Crotty, 2015). My processes and goals were not aimed at objectivity, validity, generalizability. Rather, they were aimed at enhancing our understanding of how this particular Indigenous community desires to express its knowledge

and experience through culturally responsive metadata frameworks. The structure of this dissertation and the language it uses is designed to emphasize that this work is grounded in people and place rather than scientific objectivity. The specific ways in which this overarching paradigm was reflected in my methodological approach and choice of specific methods will be described in the following pages.

4.2 Methodology: Participatory Case Study

Methodology can be defined as the set of processes and approaches to answering research questions. It asks the question “how do I go about learning about reality?” (Wilson, 2008, p. 34) and must be congruent with one’s view of the nature of reality and how one comes to know about that reality. As Latulippe (2015) reminds us, “researchers fulfill their roles and responsibilities through their methodology” (p. 5). My research questions are grounded in an assumption of the social construction of knowledge, and are situated within two specific and congruent paradigms, Indigenous and participatory. Inherent in this is context, and so it would be impossible to gain true insight into this phenomenon outside of a specific cultural context. For these reasons, I chose participatory case study as a highly appropriate and potentially effective methodology for my study.

4.2.1 Characteristics and Philosophical Assumptions

Case study is “an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular ... [phenomenon] ... in a ‘real life’ context” (Simons, 2012, p. 11) with the goal of contributing to broader knowledge of the topic or issue at hand. This definition includes three of the core characteristics of case study that distinguish it from other

methodologies: the focus on a single or at most a small number of cases, the examination of the case in its natural environment, and the collection of very detailed data.

Stake (1995) reminds us that what defines case study is the choice to study the ‘case’. “Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (p. xi). To gain the desired depth or intensiveness of understanding, one must focus on one or a few cases; attempting to examine a large number would be impractical. In order to come to a rich understanding of a case, the researcher must gather as much data as possible of different types and from different sources, and analyse that data using a variety of methods (Baxter & Jack, 2008; Flyvbjerg, 2006). And the understanding of the case ‘in context’ dictates that the inquiry be carried out in the field, amidst naturally occurring situations, rather than in the laboratory (O’Reilly, 2012; Dick, 2014).

Case study, like any methodology, is informed by a particular philosophical perspective or stance. Baxter and Jack (2008) reflect on the philosophical underpinnings of the approaches to case study outlined by two key thinkers in the field, Robert Stake and Robert Yin. Both researchers, they claim, base their approaches on a constructionist paradigm, which is built on the belief in the social construction of reality (p. 545). Flyvbjerg (2006) too implies a belief in constructionism when they explain that “concrete, context-dependent knowledge” (p. 223) is what case study has to offer and that the case study ‘report’ itself will be “different things to different people” (p. 238). Yet G. Thomas (2011) notes that case study practitioners come from various epistemological starting points, including interpretivism and various flavours of positivism. Piekkari, Welch, and Paavilainen (2012) found similar ‘pluralism’ in their analysis of case studies in the field of international business. This variety of underlying worldviews should

not be seen as a “threat to the legitimacy of the case study” (Piekkari, Welch, & Paavilainen, 2012, p. 3), but rather an inherent characteristic and an arguable strength.

Participatory case study is a particular mode of case study that draws on the foundations of case study but incorporates participatory elements by involving participants, local groups, and the community in all aspects of the research project (Reilly, 2012). In keeping with a participatory paradigm, participants are “the experts into the underlying causes of the issues within their social world” (Reilly, 2012, p. 2). It is designed to empower stakeholders, to enable their voices to come from the margins to the centre, and to establish their roles as co-collaborators (Gilchrist, 2010).

Writers on participatory case study (Bana, 2010; Reilly, 2012; Shukla & Beaudin, 2014) describe the numerous principles that underlie participatory case study research: a) it is understood as a change-oriented, social improvement methodology in which “meaningful participation insures [sic] that all partners are invested in the project results” (Reilly, 2012, p. 3); b) practitioner or local knowledge and expert knowledge are considered of equal value; c) formal boundaries between roles, e.g., researcher-subject, are reduced or eliminated, and a variety of more egalitarian roles are taken up interchangeably; d) the goals of the research process are to produce authentic, actionable knowledge that will directly benefit the participating community in a way that is useful to them. “Giving back involves knowing what ‘useful’ means, and so having a relationship with the community, so that the community can identify what is relevant, is key” (Kovach, 2009, pp. 80-81); e) methods used are sensitive to the community’s culture, history, social and emotional lives, and languages; f) participants are identified and recruited in participatory, respectful, and ethical ways; g) “concurrent and reciprocal levels of inquiry, observation, dialogue, and reflection” (Reilly, 2012, p. 3) are combined with the traditional

processes of case study; h) project findings include input and voices of all collaborators; i) findings and reports are written in clear language and presented to the community in a variety of appropriate forms and formats (Bana, 2010; Reilly, 2012; Shukla & Beaudin, 2014).

The fact that values play an important role in participatory research can be seen in those values that are embedded within participatory case study. These include a) knowledge production, use, and sharing are democratic processes; b) knowledge is to be used fairly and in an ethical manner, and in such a way that benefit those who contributed to its generation; c) “participants are encouraged to realize their potential by recognizing, using, and building on their own strengths and existing resources to accomplish their goals” (Reilly, 2012, p. 3); d) there is a commitment from all to social change and social justice; e) research processes are characterized by dialogue, equality, mutual respect, collaboration, and inclusivity; f) critical reflection and subjectivity are not only recognized but valued (Bana, 2010; Reilly, 2012; Shukla & Beaudin, 2014).

4.2.2 Congruence with Indigenous Research

According to Castellano (2012), Indigenous research is systematic inquiry that engages Indigenous persons as investigators or partners to extend knowledge that is significant for Indigenous peoples and communities” (p. 426). It is a “heterogeneous set of methodologies and methods in the service of indigenous peoples aimed at comprehending, explicating and analyzing the contemporary world from their standpoint within it” (Jordan, 2014, p. 437). While there is no definitive model of Indigenous research, practitioners and theorists such as Smith, (1999, 2012), Castellano (2012), Jordan (2014), Kovach (2009), Chilisa (2012), Denzin, Lincoln, and Smith (2008), Battiste (2008), Menzies (2001), Lee (2019), and others agree that there are certain core principles that lie at its heart.

First and foremost, Indigenous research can be seen as arising from and incorporating an Indigenous worldview, one that “emphasizes respect, relationship, reciprocity and the central place of the spiritual world in everyday life” (Jordan, 2014, p. 438). An essential component of this is a recognition of the validity, value and importance of Indigenous knowledge, and privileging it throughout the research process. While there is no singular, homogenous ‘Indigenous knowledge’, it is commonly articulated as knowledge that is dynamic and adaptive, specific to place and rooted in history, and holistic (involving body, mind, spirit); that emerges through dialogue and conversation and is acquired over time; is based in relationships between people, people and the land and other creatures, and people and the cosmos; is rooted in oral traditions, and maintained and transmitted by elders and keepers of knowledge (Battiste, 2008; Castellano, 2012; Christen & Anderson, 2019; Denzin, Lincoln, & Smith, 2008; Kovach, 2009).

Indigenous research must also begin with the concerns and interests of Indigenous peoples (Christen & Anderson, 2019; Denzin, Lincoln, & Smith, 2008; Jordan, 2014; Smith, 1999, 2012). It must address the questions “what research do we want done?”, “whom is it for”, and “what difference will it make?”. “These questions are addressed to indigenous and nonindigenous researchers alike. They must be answered in the affirmative; that is, indigenous persons must conduct, own, and benefit from any research that is done on, for, or with them” (Denzin, Lincoln, & Smith, 2008, p. 9-10).

Indigenous research recognizes and accepts that all research is political and moral, and has a decolonizing aim. It focuses on putting power back into the hands of Indigenous communities, forces researchers to confront the impacts of historical and contemporary colonial practices, respects multiple ways of knowing and honours differences, and is politically proactive (Denzin & Lincoln, 2008; Kovach, 2009). According to Kovach (2009), a decolonizing approach

is “particularly effective in analysing power differences between groups; ... provides hope for transformation; ... [ensures a] role for both structural change and personal agency in resistance; ... [encourages] finding victories in small struggles” (p. 80). The decolonizing aim “demands that indigenous groups own the research process. It speaks the truth to people about the reality of their lives. It equips them with the tools to resist oppression, and it moves them to struggle, to search for justice” (Denzin, Lincoln, & Smith, 2008, p. 12). “By purposefully keeping colonial structures and practices in our view ... we can begin the work of tearing them down and building anew” (Christen & Anderson, 2019, p. 98).

A fundamental principle of Indigenous research is accountability towards those with, for, and about whom we are conducting the research (Menzies, 2001). It respects the interconnectedness between all involved in the research process, and the responsibilities this entails. It means doing research in a good way, about not being extractive, about respecting and honouring local knowledge and protocol. This encourages “research practices that are reflexively consequential, ethical, critical, respectful, and humble. These practices require that scholars live with the consequences of their research actions” (Denzin, Lincoln, & Smith, 2008, p. 6).

Indigenous research should also be participatory (Castellano, 2012; Denzin, Lincoln, & Smith, 2008; Jordan, 2014; Kovach, 2009). Indigenous communities should have equal input into the research undertaken, by whom, and to what ends. They are to be co-researchers as well as participants. They should have first access to research findings, and control over the dissemination of knowledge. A participatory mode of learning and knowing privileges sharing, the personal and subjective (Bradbury Huang, 2010; Fine & Torre, 2004), as well as the collective and localized knowledge of the community. At its heart, Indigenous research is about respecting Indigenous peoples’ right to control their own knowledge. As Battiste (2008) reminds

us, “any research conducted among Indigenous peoples should be framed within basic principles of collaborative participatory research, a research process that seeks as a final outcome the empowerment of these communities through their own knowledge” (p. 508).

“An environment that allows for equitable valuing of ideas and relationships, in understanding the world, and the living entities in it, is necessary for relational approaches like Indigenous [research] to thrive” (Kovach, 2009, p. 38). “Valuing diverse perspectives, maintaining flexibility in techniques, and negotiating ongoing collaborative relationships between researchers and participants” (Castellano, 2012, p. 426) is characteristic of participatory methodologies. Indeed, for these reasons many scholars engaged in work with Indigenous communities have embraced such methodologies. Therefore, participatory case study research can be seen to be in alignment with the principles of Indigenous research (Smith 1999, 2012).

4.2.3 Fit with My Research Topic

The purpose of my study was to provide insight into how culturally responsive knowledge organization and metadata is conceptualized and into what processes may be effective in surfacing that framework within a specific cultural context. Participatory case study, which involves co-research with a community, in this case an Indigenous community, to enable in-depth examination of a particular case in order to provide broader insight into a given phenomenon, was a good fit for several reasons, including the philosophical stance on which it is grounded, its inclusivity with respect to research methods, and its inherent usefulness for examining particular types of research questions.

Writers on case study, including participatory, explain that methods used in case study can and, some would argue, should be multiple and varied (Bana, 2010; Baxter & Jack, 2008; Cronin, 2014; Dick, 2014; Flyvbjerg, 2006; Gummesson, 2011; Reilly, 2012; Rogers, Aytur,

Gardner, & Carlson, 2012; Schrank, 2011; Shukla & Beaudin, 2014; Stake, 2005; R. Thomas, 2011; Vorley & Williams, 2015). Baxter and Jack (2008) note that “data sources may include ... documentation, archival records, interviews, physical artifacts, direct observations and participant observations” (p. 554) as well as potentially quantitative survey data and questionnaire responses (Bana, 2010; Rogers, Aytur, Gardner, & Carlson, 2012; Shukla & Beaudin, 2014). Methods of data analysis can then include document analysis, constant comparison, pattern matching, and so on (Baxter & Jack, 2008; Gummesson, 2011; Shukla & Beaudin, 2014). This flexibility with regard to data sources and analysis techniques fit very well with my research study. Obvious sources for gaining insight on how a particular community understands culturally responsive metadata frameworks were observations of community members interacting with metadata descriptions, interviews with creators of those descriptions, examination of relevant documentation such as descriptive policies and procedures, and examination of important cultural resources. In addition, surveys of community members focusing on what characteristics of those resources are most important to be included in a description would also prove useful. Participatory case study provided the flexibility to incorporate these varied data sources and the methods appropriate for analyzing them.

Case study can be very effective for addressing particular types of research questions. Gummesson (2011), for example, notes that case study can be particularly effective when approaching phenomena that are not well understood or are ambiguous or “fuzzy”, as well as processes that are dynamic (p. 2). Yin (2003) notes that case study should be used when one is trying to answer “how” and “why” questions, participant behaviour cannot be manipulated, context is relevant to the phenomenon, and the boundary between phenomenon and case study is not clear. Participatory case study is particularly well suited for investigating questions, issues, or

problems with a focus on real and immediate improvement within and benefit to the community. My study focused on a phenomenon that is neither well understood nor well articulated, and the key research question was of the “how” kind. Additionally, it was aimed at understanding culturally responsive metadata frameworks as a means of enabling the community to tell their own stories in their own voices, overturning existing standards which perpetuate the harmful effects of colonial and racial biases. Arguably, therefore, participatory case study methodology was highly appropriate for this research.

4.2.4 Strengths and Limitations

Participatory case study is an extremely valuable methodology when we wish to “[include] participant perspectives, ... [respond] to audience needs, [be] attentive to the process and dynamics of implementation and interpretation of events in their socio-political contexts” (Simons, 2012, p. 2). However, the methodology also has its limitations which must be recognized and accounted for, both in general and with respect to my own study.

Simons (2012) notes challenges posed by the subjectivity of the researcher and the ability to form generalizations or inferences from a single case (p. 14). O’Reilly (2012) further explains that case study shares with other methodologies, such as ethnography, the problems of small sample size and limited ability to draw broader conclusions (p. 4). In addition, Reilly (2012) notes that it can be challenging to communicate with many participant-partners on an ongoing basis, and hard to maintain momentum in a project if there is a change in community leadership or turnover in staff at collaborating organizations. In addition, the time investment needed for each phase of the research process can be substantial. Indeed, these are certainly situations that I faced in my own use of participatory case study.

Fortunately, there are ways in which these challenges can be addressed. Baxter and Jack (2008) note that stating the research question(s) clearly, ensuring that case study is an appropriate fit, using appropriate sampling strategies, and collecting and managing the data systematically (p. 556) go a long way toward study quality and trustworthiness. Data analysis procedures such as triangulation, double coding, and member checking (Baxter & Jack, 2008; Cronin, 2014; Stake, 2005; Shukla & Beaudin, 2014) add to the credibility and trustworthiness of the study, and aid in ensuring that everything is “transparent and made explicit” (Cronin, 2014, p. 26). Reilly (2012) adds that ongoing and effective communication can be done through “newsletters, conference calls, frequent in-person meetings, and site visits” (p. 5), and that anticipating and building in ample time for relationship building and nurturing can contribute to the success of the project. And finally, recognizing that gaining a long-term commitment to the project is desirable but not always feasible, and planning for this eventuality, can aid in addressing that particular challenge.

In my own use of participatory case study I strove to be as open and transparent as possible through the entire process. Journaling and taking field notes helped address personal subjectivity or bias, and detailed documentation of data collection and analysis helped to address validity of findings. Including multiple and varied data sources, employing a variety of data analysis methods, and staying in constant communication with the cultural community to ensure that I was accurately representing the examined reality helped address concerns over credibility and trustworthiness. A willingness to invest the time needed to truly engage with community collaborators by spending time in the community and immersing myself in its culture, and being flexible about the pace and phasing of the research project contributed to the ability of the community to guide the process in the desired direction.

4.3 Choosing Appropriate Methods

Chilisa (2012) notes that methods are the tools for data collection and analysis and are an important component of the overall research process. Wilson (2008) describes them in a similar way, noting that they are the “particular tools and techniques you use to actually gather data” (p. 39). The choice of methods is influenced by the questions being asked, available resources, and the “social, political, environmental, racial, cultural, linguistic, and religious environments” (Shukla & Beaudin, 2014, p. 12) of the context in which the study is being carried out.

When collaborating with Indigenous communities, it is critically important to be aware and make use of culturally responsive methods. As Wilson (2008) notes, “as long as the methods fit the ontology, epistemology and axiology of the Indigenous paradigm, they can be borrowed from other suitable research paradigms” (p. 39). Steinhauer (2002) agrees, arguing that “most Western research methods are appropriate for use by Indigenous researchers, as long as they honor, respect, manifest, and articulate an Indigenous world view” (p. 79). Henry, Dunbar, Arnott, Scrimgeour, Matthews, Murakami-Gold, and Chamberlain (2002) observe that in the area of Indigenous health research in particular, “the adoption of research approaches that involve a combination of qualitative and quantitative methods is proposed as a positive way forward” (p. 7). “Applying ethical principles for research involving Indigenous peoples does not dictate any particular method. provided the methods are decided through a consultative process and carried out respectfully” (Ball & Janyst, 2008, p. 43).

Steinhauer (2002) lists interviews, talking circles, sharing through music, art, drama, dreamwork, and revelations through connections to nature as methods available to those doing research in an Indigenous context. Wilson (2008) also notes talking circles and mentions action research. Lavallée (2009) adds sharing circles and symbol-based reflection, while Absolon and

Willett (2005), Chilisa (2012), Kovach (2009, 2010), Qwul'sih'yah'maht (2005), Denzin, Lincoln, and Smith (2008), Bushnell (2009), Young and Brownotter (2018), among others, include stories, conversations, and research/sharing circles as common and appropriate. Walts (2011), Lee (2011), Hollowell and Nicholas (2009), Shukla and Beaudin (2014), and Bana (2010) advocate the use of interviews and questionnaires. Denzin, Lincoln, and Smith (2008) note also critical and counter narratives such as testimonio, performance autoethnography, while Battiste (2008), Jordan (2014), and Chilisa (2012) discuss storytelling, dialogue, performance, dreams, and rituals. Hollowell and Nicholas (2009) and Botan and Krepps (1999) discuss focus groups, oral histories, participant observation, and site visits. Lee (2011) and R. Thomas (2011) note that more quantitative methods such as surveys can be appropriately used in certain contexts.

These are but a few research methods or 'strategies of inquiry' that can be, and have been, used in research in Indigenous contexts. As researchers, then, we have choices. However, as Wilson reminds us, "some methods and strategies have inherent in them more relationship building and relational accountability than others and therefore may be more attractive in an Indigenous paradigm" (2008, p. 39). In determining which method(s) to use we must not only factor in what is most appropriate for the question(s) we are trying to answer, but more importantly we must ensure that the methods chosen "emphasize respect for the individual and a commitment to social change" (St. Denis, 1992, p. 51). Ultimately, we must "make every effort to ensure that the methods complement rather than supplant local forms of expression, communication, discussion and decision-making" (Henry, Dunbar, Arnott, Scrimgeour, Matthews, Murakami-Gold, & Chamberlain, 2002, p. 8). We must ensure that "the method, the

actual technique of data collection, is respectful of and includes Indigenous protocols, values, and beliefs that are important to the specific community” (Lavallée, 2009, p. 28).

As will be described in further detail in Section 4.7.2 (Information Gathering Processes), the methods of information gathering I used varied, changing fluidly as the study developed, through iterative processes of information gathering, analysis, and reflection. They included interviews, extended purposeful conversations, informal conversations, meetings with project collaborators and partners, presentations and demonstrations, participant observation, document gathering, and taking of field notes.

4.4 Participant Researchers and Community Collaborators

ICC staff members were critical collaborators in this study as we built on the work of the DLN project. As members of the community they share the language, culture, and history of their users, and can therefore speak authoritatively about questions of cultural appropriateness. In addition, they have intimate knowledge of the resources and strong interest in ensuring that they are appropriately organized and described. They are the individuals most involved in the processing of the resources and so have an insight that general users do not. And as those tasked by community members to steward the communities’ cultural resources, they also have community members’ respect and trust. Through those relationships they facilitated the strengthening of connections and partnerships with the communities, and the ongoing involvement of community members in the project. In addition to being research partners, ICC staff were also key participants with valuable knowledge to contribute to the research. And so their input and reflections not only helped shape the processes and progress of the study, but were also an important source of information to be analyzed.

As one of the main outcomes of this project was to use the knowledge gained from it to enhance the design and functionality of the metadata component of the ISR digital library, the community of users of that digital library, who are also often creators of the content of the library, were essential participant collaborators. This community includes elders, language and culture instructors, and both adult and minor community members at large. Each group, and individuals within them, are real or potential users of these resources and have insights into how they understand them, how they do or might engage with them, and what they believe are appropriate ways of describing them within their cultural context. And they have a vested interest in the metadata framework as something that appropriately reflects their understanding and experience of the world around them, and that facilitates their access to, and sharing of, that cultural knowledge.

4.5 Ethics, Protocols, and Consent

In my study I collaborated with and researched alongside individuals and groups within Indigenous communities, and therefore several aspects of ethics and protocol had to be addressed. As Kovach (2009) reminds us, “ethical protocols in research respond to the political dimension of research within Indigenous contexts and protect against previous extractive approaches to research” (p. 127). I of course obtained ethics approval from the appropriate University of Alberta Research Ethics Board, making amendments as needed and renewing yearly. In addition, I ensured that all required permissions and approvals were obtained from the community at both the local and provincial levels (Aurora Research Institute, 2011; Inuit Tapiriit Kanatami, 2007; Inuvialuit Regional Corporation, n.d.). This approval was evidenced by the granting (and renewal) of a Scientific Research Licence through the Aurora Research Institute. The application was circulated to, and reviewed by, representatives of the Territorial and

Inuvialuit governing bodies in each of the six communities, and any concerns or questions brought forward prior to the license being issued. Lastly, I was sure to make myself aware of and follow any University and funder suggested best practices for working with Indigenous communities (Association of Canadian Universities for Northern Studies, 2003; Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 2018).

Cultural protocols, which work in tandem with ethical protocols, are about respect. “From that perspective, it applies to all aspects of the research process, and the researcher needs to be aware of protocol for the particular context and/or tribal epistemology being used” (Kovach, 2009, p. 127). Most importantly, therefore, I strove to work with the ISR communities, with ICC staff as key guides, to ensure that all aspects of the study were acceptable and appropriate. This meant making collective decisions, respecting collaborator wishes around sharing of data and knowledge, being willing to negotiate spaces for differences in approaches or perspectives that could arise (Castellano, 2012; Reilly, 2012), and recognizing that some differences can and should co-exist (Castellano, 2012). It also meant ensuring proper remuneration for work involved, full credit for input and contributions, and opportunities to review and provide feedback on research outputs before they are shared (Hollowell & Nicholas, 2009). I recognized and strove to follow local protocols for appropriate and respectful community engagement, including providing tokens of appreciation for participation, being respectful of collaborator and participant wishes around methods of information gathering, such as preferring conversations over formal interviews, and for appropriate recognition and acknowledgement, for example being open to participants wishing to be named rather than

remain anonymous (Castleden, Sloan Morgan, & Neimanis, 2010; Den Ouden, 2017; Feige & Choubak, 2019; Felt & Natcher, 2011).

The past (and unfortunately the present) is rife with examples of research processes and products that have been carried out or disseminated without the prior and informed consent of Indigenous individuals and communities. Ball and Janyst (2008) emphasize that “researchers who wish to address issues pertaining to Indigenous peoples need to become familiar with the socio-political history of relationships between Indigenous and non-Indigenous people” (p. 49) and what this means in terms of the critical importance of ongoing consent. As White (2018) has noted, consent has always been the first principle of relationships between Indigenous and non-Indigenous peoples in all aspects of reciprocal and peaceful co-existence. I strove to be mindful that consent is “not just a waver, [but] an ongoing state” (Reder, Fee, Chambers, & Shield, 2018) that it is fluid and may change (St. Onge, 2019), and should and must be negotiated on an ongoing basis (Lee, 2019). I worked to keep myself open to the idea that I might not be the right person, nor this the right project, for the community at the time (Reder, Fee, Chambers, & Shield, 2018), and to be prepared to end the study if so desired by the community.

4.6 Locations and Timeframes

As my study built upon, and in many ways continued the DLN project, with which I have been involved since 2014, the line between the end of one and the beginning of the other was somewhat blurred, as collaborative planning for my study began as the DLN project was winding down. The ‘official’ start date of my research project can be taken as June 1, 2018 based on the dates recorded in the University of Alberta and Aurora Research Institute ethics and license documents, respectively. As this was a participatory and action based project, the work, indeed,

is still ongoing. Nonetheless, what is reported on herein reflects the state of affairs as of the formal launch of the Inuvialuit Digital Library on June 5, 2019.

Laurent (2017) reminds us of the critical importance of place, space, and time to community engaged research in Indigenous contexts. “Going onto Country to complete data entry allow[s] you to become absorbed into your surroundings, see the areas being talked about, learn the language to use, understand the space you are working in, and therefore know how to talk appropriately” (p. 47) about the work. Therefore, the most intense and key activities in my study took place during three periods spent living and working in community, specifically Inuvik: August 13-25, 2018, February 13-23, 2019, and May 29-June 8, 2019. During these visits I was based out of the ICC, where a great deal of the activities outlined in the pages below took place. The ICC is a hub of activity in Inuvik, for Inuvialuit but also for non-Inuvialuit residents and others (researchers, tourists, etc.) who are visiting for a time or simply passing through on their way elsewhere. There were other sites of activity in Inuvik, however, including the Inuvialuit Regional Corporation (IRC) offices, the Aurora Research Institute, and the Canadian Broadcasting Corporation (CBC) offices. The Inuvialuit Day event took place in Jim Koe Park in the centre of town, and simply being in and engaging with community involved various activities and locations. The effectiveness of my time in community was enhanced by the fact that I was not going in ‘cold’. That is, because of my DLN work I had existing relationships that could be further developed, a base familiarity with people, places, and culture within the community, and a growing understanding of the ways in which research and associated activities play out in this particular context.

As my home location, as well as that of additional project collaborators and partners, Edmonton, Alberta was another important site of study activities. These activities were largely

centred in and around the University of Alberta, including the Arts Resource Centre (ARC), School of Library and Information Studies (SLIS), the University of Alberta Library, and the offices of Information Services and Technology (IST). Activities here occurred during periods in between community trips, as well as during those trips through regular communication with collaborators and partners.

4.7 Information Gathering

4.7.1 People

My study involved project collaborators as well as partners, and study participants in general. The core community collaborators were the staff of the ICC in Inuvik, including the Manager, Regional Language Consultant, Regional Language Coordinator (a position occupied by two different individuals during the main work period of my study), and Contract Language Specialist. Additional important community collaborators were the IRC Information Technology Manager and the IRC Records Manager. Study partners included System Administrators in IST, Team Lead, Research Computing Analyst, and Systems Analyst at ARC, a contract developer I engaged to work on enhancements to the Digital Library, and the DLN Primary Investigator.

In my study I strove to hear as many voices as possible, and to privilege Inuvialuit voices (Reilly, 2012). However, I recognized and acknowledged that as an outsider to the community, I was not the one to identify the experts and spokespersons, and so I worked closely with my community collaborators to “identify which different people or groups of people might have different kinds of knowledge or experiences to contribute” (Hitomi & Loring, 2018, p. 840).

Study participants included various staff at IRC, such as the Manager of Research, Program Academic Advisor, Early Childhood Intervention Coordinator, Director of Operations

(Culture & Communications), Communications Advisor, and Communications Coordinator. Additional participants included various staff from local research and cultural organizations, individuals such as researchers, tourists, community members (both Inuvialuit and non-Inuvialuit) who visited the ICC, attended presentations and/or events, and those who may have contacted us about the Digital Library. In the discussions that follow throughout the dissertation, participants have been given pseudonyms where appropriate (e.g., A33).

4.7.2 Processes

Young and Brownotter (2018) and Kapuire, Winschiers-Theophilus, and Blake (2015) note that methods used in research with Indigenous communities vary, and can include interviews, focus groups, observations, workshops, group discussions, personal observations, site visits, and more. Most important is that the researcher remains flexible, and adapts as the context changes (Allard & Ferris, 2015; Simpkins, 2010). “The culture embedded within a particular place (community/region) is vital and active and should be recognized and allowed to drive the methodologies employed” (Koster, Baccar, & Lemelin, 2012).

Interviews can provide a certain kind of grounded knowledge of everyday experience and events that can be useful information for a research study (Warren, 2010). I had anticipated that formal interviews and focus groups might comprise a somewhat substantial component of my study, and had developed question sets and guides in anticipation of this. However, in the end I did not hold any focus groups, and completed only one formal interview. It was semi-structured in nature following the broad set of themes and questions of interest that I had prepared for my study. Formal consent was secured, the interview was recorded, and was later transcribed for analysis.

As Thorpe and Galassi (2014) remind us, unsettling our research practice and working appropriately and respectfully with Indigenous collaborators “requires us to let go of long held traditions and assumptions, and to establish new ways of practice that allow Indigenous people and communities to guide and control the process” (p. 91-92). Indeed, this is something that I came to understand during my time with the DLN project, and which I strive to embody in my ongoing work with community. And so a great deal of information gathering for my study happened through more conversational, less formal means, which is reflective of appropriate engagement in this community context (Kapuire, Winschiers-Theophilus, & Blake, 2015; Lee, 2019; Simpkins, 2010; Srigley & Sutherland, 2018).

Meetings with study collaborators and partners, as well as with participants from IRC and elsewhere, were a regular occurrence (Allard & Ferris, 2015; Laurent, 2017; Lauzon, 2019). At times these were called or arranged by me, at times by others. They occurred most frequently during the three community trips (August 13-25, 2018; February 13-22, 2019; May 29-June 7, 2019), but also at other times. Whenever possible these were in-person meetings; when not, telephone was the preferred method. During these meetings I took notes for action and analysis, and enhanced these with reflective notes after the fact.

Extended purposeful conversations were an extremely common information gathering method (de Leeuw, Cameron, & Greenwood, 2012; Kapuire, Winschiers-Theophilus, & Blake, 2015; Krebs, 2012; Young & Brownotter, 2018). These conversations were specifically arranged to discuss the topics of my study, and often included a hands-on demonstration and/or user testing of the Digital Library. These most often were initiated by me, although in some instances were requested by others, either for themselves or for another participant. Referrals and networks of relationships (i.e. snowball sampling) were the key means of identifying individuals for such

conversations. During these sessions I made notes of observations, and enhanced these with reflective notes after the fact.

Informal conversations were an additional important method of information gathering (Lee, 2019; Simpkins, 2010; Srigley & Sutherland, 2018). These often came about serendipitously in various locations and covered many topics, some of which related to my study. These conversations regularly occurred over coffee or tea and not only helped to build relationships and connections, but were important learning moments for me both academically and personally. These informal conversations were not recorded or formalized in any way; rather, I made reflective notes after the fact.

Presentations and demonstrations of the Digital Library and of my research study were an important opportunity for information gathering (Ball & Janyst, 2008; Castleden, Sloan Morgan, & Neimanis, 2010; Reilly, 2012). These could be more formal affairs such as when the Contract Language Specialist and I presented to the community as part of the Aurora Research Institute summer speaker series in 2018, or when I presented to IRC staff during my February, 2019 trip. They could also be more informal, such as when I demonstrated and promoted the Digital Library at Inuvialuit Day, or showed the Digital Library to visitors to the ICC. These activities also included setting up and promoting the site at community events, collaboratively developing communications such as Facebook and website posts and promotional postcards, and doing interviews (on my own and with collaborators) with local media outlets including newspaper and radio. I always made reflective notes on these events and activities after the fact.

The Digital Library itself, in its various iterations, was a key source of information (Rogers, Aytur, Gardner, & Carlson, 2012; Shukla & Beaudin, 2014). I made inventories of the organization, content, and functionality of the Digital Library, including screenshots with

explanatory notes, on a regular basis throughout the study. This captured not only the changes and enhancements made during the DLN project, but also the ongoing changes being made as my study progressed. These enhancements (discussed in detail in 4.9 below) were a critical source of information and informed my understanding of the emerging framework.

Materials associated with the DLN project were key sources of information (Bana, 2010; Baxter and Jack, 2008). I gathered together survey data, interview transcripts, field notes and summaries, user testing session transcripts, team meeting notes and other project documentation, presentations and publications during and after the project, and media coverage during and after.

A final set of information sources was the daily field notes and community trip summaries that I wrote during my study (Burgess, 1984; Hughes, 2002; Roulston, 2010). These included pure listings of events and activities (“February 15: Set up meeting with P37 and comms team for Feb. 22 (9:30-10:30) to show dig lib. P37 sent new logos for IRC, ICRC, Inuvialuit Digital Library; will work with N86 to get these incorporated. Did some more work on cleanup of the Aulavik oral histories”), reflections on the activities and events from a methodological perspective (“G78 notes the need to seek input from men, women, of a variety of ages; suggested I get in touch with S88 and P37 as good sources”), and preliminary analyses of what was being observed (“M35 thinks it would be great to have a teachers portal on the site, and G78 thinks drum dancing would be a great section. Perhaps indicates top level organization and browse by topic and by language resources?”).

4.8 Information Analysis

The process of information analysis was reflective of a participatory, action-based research project with an Indigenous community in that analysis of information began immediately and continued throughout my study. The analysis process was very much

qualitative in nature; themes and categories were allowed to emerge from the data (Botan & Kreps, 1999; Corbin & Strauss, 1990; Glaser & Strauss, 1967; Shukla & Beaudin, 2014; Strauss & Corbin, 1990) rather than being imposed. A critical aspect of this process was sharing and verifying the themes with community collaborators and project partners regularly throughout the process (Reilly, 2012; Shukla & Beaudin, 2014). This “not only allow[ed] the research partners to render these processes explicit, but also create[d] opportunities for more authentic interpretations” (Reilly, 2012, p. 4). And the process was iterative, constantly being redone as I “gained access to further areas of the research location, develop[ed] and focus[ed] my study, and develop[ed] my role as participant researcher” (Burgess, 1984). This not only informed the ongoing and parallel information gathering process, but enriched the reexamination and re-analysis of the emerging information set (Roulston, 2010). As Toombs, Drawson, Chambers, Bobinski, and Dixon (2019) remind us, “reanalysis of collected data to incorporate additional beliefs and changing environmental contexts can promote relevance, respect, responsibility, and reciprocity within existing research partnerships” (p. 8).

Thematic analysis proceeded along two parallel and very interconnected paths. Throughout the study I was reviewing and reflecting on what I was hearing, seeing, and learning through the various information gathering processes, summarizing what I believed were the emergent themes and categories, and then bringing these back to community collaborators for review (including confirmation or correction) and discussion, and using the results to inform further information gathering as well as further review and reflection on that information (Ball & Janyst, 2008; Bowen, McSeveny, Lockley, Wolstenholme, Cobb, & Dearden, 2013; Burgess, 1984; de Leeuw, Cameron, & Greenwood, 2012; Emerson, Fretz, & Shaw, 2011; Hughes, 2002; Roulston, 2010).

The second path of thematic analysis involved formal coding of the information gathered (Botan & Kreps, 1999; Corbin & Strauss, 1990; Reilly, 2012; Shukla & Beaudin, 2014). The information gathered was imported into a free data analysis program (TAMSAalyzer), coded and recoded based on emergent themes and categories. What I was learning from the coding process was in turn compared against what I was learning from the review and reflection on the data to find commonalities and bring to light potential discrepancies or gaps (Glaser & Strauss, 1967; Roulston, 2010), and incorporated into what I would take back to community collaborators for review and discussion.

An example of this iterative, collaborative process of information gathering and analysis related to the revised way in which language and dialect were represented, and the related sections of the Digital Library organized for user interaction. Through discussions with the ICC Regional Language Consultant an alternative means of arranging this intellectual content was described. I was able to review and analyze those discussions, develop an understanding of what this would mean in terms of the organization and description of resources in the Library, mock it up in the test instance of the Digital Library, and bring it back to the Consultant for review and affirmation that what I had understood was what was intended.

As Toombs, Drawson, Chambers, Robinski, and Dixon (2019) remind us, “it is not within researchers’ duties to “find”, “expand”, or “give” representation to participants’ knowledge, but rather attempt to find commonalities in the knowledge that participants had shared” (p. 9). The process of constant review and discussion with community collaborators was key to ensuring that how I was interpreting the information gathered was reflective of what the community was telling me. Such collaborative processes are important steps towards “improving relevance and meaning” of research to communities (Toombs, Drawson, Chambers, Robinski, & Dixon, 2019),

and represent “rigorous - yet also reflective and appropriate” (Lyons, Supernant, & Welch, 2019, p. 6) frameworks for vetting knowledge generated through participatory research.

4.9 Enhancing the Digital Library

The first research question my study hoped to answer was how the Inuvialuit community in northern Canada characterizes culturally responsive metadata frameworks for a digital library of cultural resources. As my study was an action-based one founded on principles of Indigenous and participatory research, the outcome was not meant to be something solely in the abstract, a blueprint for a digital library as yet only imagined (Ball & Janyst, 2008; Gaudry, 2011; Turner, 2018). Rather, an important aspect of my study was more concrete, which was working to enact the needs and interests of the community in the Digital Library as we surfaced those needs and interests through our collaborative work. And so an important aspect of my methodology was, and continues to be, to work on enhancements to the Inuvialuit Digital Library.

Greater detail on what has been (and what has not yet been) enacted in the Digital Library and how this is reflective of what my community collaborators and I have learned throughout the study will be discussed in detail in later chapters. What I will outline briefly here are the methods used to contribute to the ongoing development of the Digital Library.

4.9.1 Content

The nature and amount of content within the Digital Library is a critical component of its usability within the community, and work in this area has been ongoing. I worked together with community collaborators to identify and prioritize content for the Digital Library, and either added it myself or worked with staff at ARC at the University of Alberta to do so in cases where the number and/or size of objects meant that it had to be ingested directly on the server. For

example, feedback such as “The legends. I really like to see them up there. Especially like, in the book format, with the artwork” (Participant J33) led to the addition to the Digital Library of several new booklets that the Cultural Centre had developed. And suggestions such as “that might be something we need to develop is like, an inventory. Of all the resources, yeah. That way they can, you know, quickly go through and click onto [an item] and get it right away” (Participant J33) initiated the development of an inventory for the Centre’s resources.

4.9.2 Organization and Description

A critical component of the Digital Library is the way in which the content is organized and described. I worked with community collaborators to continue to revise the organization to reflect the interests and needs of the community. Input gathered such as “A46 likes the idea of “people” resources who have photo, audio, images, etc.” (Fieldnotes, February 2019) contributed to ongoing investigation of people as a key organizational theme in the Digital Library. In addition, I worked to revise the descriptive information for resources in the Library as appropriate and directed by the emerging requirements, recognizing my limitations as a non-Inuvialuit individual. I also worked with the Contract Language Specialist to add the enhanced descriptions being created to the records for the audio recordings currently in the Library. For example, the team determined that “for community names [we] should have each in all three dialects as well as English (in the form of Inuvialuktun name (English name)”, but “when [the] official name is now the Inuvialuktun name, don’t use the western name unless a speaker says it” (Fieldnotes, August 2018). Existing descriptions in the Digital Library were updated to reflect this.

4.9.3 Functionality

In addition to content and descriptions, I also added, enhanced, or tested additional functionality for the Digital Library. This involved activities such as exploring, configuring and testing new plugins, reconfiguring existing plugins, and demonstrating and testing with community collaborators. An example is that feedback such as “it would be cool to be able to trace a story on a map” (Fieldnotes, August 2018) led to the investigation of several Omeka plugins for mapping and timelines. This was often done on my own but at times also involved working with ARC staff at the University of Alberta who have the skills and permissions to work on the Library at the server level.

4.9.4 Look and Feel

An important aspect of the Digital Library is its overall look and feel, which can range from colors and logos to overall page design. Based on the interests and needs emerging from the study, I worked to make changes to the look and feel accordingly. Given time constraints as well as my lack of expertise in programming, I opted to hire a contract developer who is expert in Omeka (the platform for the Inuvialuit Digital Library) and web design to make additional changes to the Digital Library. For example, feedback such as “in list of results, remove “item” as type on the left; it just repeats and isn’t useful; takes up space ” (Fieldnotes, August 2018) was incorporated into several changes made to the display of search results. Suggestions such as “I think maybe, too, uh, having a little bit of pictures in the, like in the opening, uh? Maybe, maybe having more visuals. It would be nice to have that as an option because you never know what, like, how different people like to learn, uh? They don’t, you don’t know what, what they want to look at in the beginning” (Participant P56) were heard again and again, and led to the revisions to

the Digital Library home page. Plans are under way for some additional changes to be made in the coming months.

4.9.5 Management

A final method of engaging with the Digital Library throughout the study was through management and communications activities. These included working with IST and ARC at the University of Alberta on system upgrades and security patches, ensuring web analytics were set up for the Library, and creating and managing user accounts. I also provided training on the Library for community collaborators and the Contract Language Specialist, and worked collaboratively to address questions about the Digital Library that came to ICC staff directly or through the Contact Us page on the site. Discussions around ongoing review of content and descriptions, including “a small committee that could review things on a regular basis” (Fieldnotes, May-June 2019), began and will be critical to management and sustainability of the Digital Library over time.

4.10 Self-reflection

Reflexivity is a core part of qualitative research in general, and is even more critical to appropriate and respectful engagement in the context of research alongside Indigenous communities (Absolon & Willett, 2005; Ball & Janyst, 2008; Laurent, 2017). “The ability to self-reflect with an open heart and open mind” (de Leeuw, Cameron, & Greenwood, 2012, p. 190), and a certain level of self-awareness and honesty (Lee, 2019) are essential values when engaging with Indigenous communities. And this is particularly important for non-Indigenous individuals such as myself (Gaudry, 2011; Simpkins, 2010), who must always be mindful of situating ourselves appropriately within the research, and of “actively resist[ing] the colonizing patriarchal

impulse to appropriate, codify, and assert ownership over spaces, actions, and knowledge/ways of knowing that are not theirs” (Allard & Ferris, 2015, p. 372). Absolon and Willett (2005) remind us that “Aboriginal research methodologies are as much about the process as they are about the product” (p. 107). This process is about “attending to the research processes and activities in the moment” (Fournier, 2017, p. 20), reviewing and reflecting on decisions and correcting as necessary.

Knowing when to speak up and when to be quiet and listen, as well as the willingness and ability to acknowledge when I’ve got it wrong, apologize, and keep trying to get it right (Gaudry, 2011; Schmidt, 2019), are essential skills that I am continuing to develop and practice. And these cannot happen without honest and humble self-reflection. In my work with the community I attempted to enact these principles through listening and learning. I strove to be respectful and listen carefully, and tried to do things in a good way (Krebs, 2012; Lauzon, Cullingham, & McCue, 2019). This process was helped by the various types of notes that I made on a regular basis (Burgess, 1984; Huberman & Miles, 1998; Toombs, Drawson, Chambers, Robinski, & Dixon, 2019), whether after specific events such as a conversation or demonstration, or at the end of a day or a community trip. These reflections “promote[ed] insight, document personal growth, and describe lessons for future research” (Toombs, Drawson, Chambers, Robinski, & Dixon, 2019, p. 10) and help[ed] me to “attempt to ‘know,’ but recognize that knowing and knowledge is tentative and tenuous” (herising, 2005, p. 136).

4.11 Giving Back

Appropriate and respectful research collaborations with Indigenous communities involves reciprocal processes of exchange and sharing that benefit all those involved in the collaboration. Essential to this are creating and nurturing relationships (Ball & Janyst, 2008; Christen &

Anderson, 2019; Felt & Natcher, 2011; Gaudry, 2011), as well as giving back to the community through one's knowledge and expertise (Inuit Tapiriit Kanatami, 2019; Latulippe, 2015; Young & Brownotter, 2018). I attempted to do both of these things throughout my study.

Kovach (2009) reminds us that “giving back does not only mean dissemination of findings; it means creating a relationship throughout the entirety of the research” (p. 149). Building and growing relationships happens through community engagement, which touches on all aspects of this kind of research, and indeed is foundational to it. Relationship building can involve many things, one of which is spending time in community, which I did during my three trips to Inuvik in 2018-2019. It means working to get to know the people and the culture through engagement in activities and events outside of one's research (Berry, 2017; Inuit Tapiriit Kanatami, 2007; Laurent, 2017). I did this through activities somewhat more related to my study such as formal presentations at the ARI summer research series, or informally at the ICC table at Inuvialuit Day. As well, simply ‘living’ in the community, being out and about, attending events and meeting and chatting with people, was an essential part of what I did on each trip. Relationship building is also about understanding community protocols and ways of doing things and being a good guest (Felt & Natcher, 2011; Lee, 2019; Reder, Fee, Chambers, & Shield, 2018), which involves things like bringing gifts for community collaborators when visiting. It is about ongoing communications which I strove to do through regular emails and occasional calls in between visits to the community, and by basing myself out of the ICC when in Inuvik.

Building relationships requires an investment of time and resources (Allard & Ferris, 2015; Ball & Janyst, 2008; Christen & Anderson, 2019; Simpkins, 2010), which I strove to do through community visits and ongoing work while not in community. Certainly, building upon an existing project and its associated relationships was helpful in terms of how my study

progressed. I worked within my means to provide resources to accomplish shared goals, such as engaging a contract developer to enhance the Digital Library rather than have this come from an already stretched ICC budget. Building and maintaining relationships also means being mindful and respectful of the burden that research places on community collaborators and being realistic about what that means in terms of processes and timelines (Inuit Tapiriit Kanatami, 2007; Koster, Baccar, & Lemelin, 2012; Starks & Taylor-Leech, 2016). As best I could, I worked activities and visits around schedules not only of ICC collaborators but also around other community events and activities such as Inuvialuit Day. I attempted to be as respectful as possible of people's time, to recognize that collaborators and others have many projects and initiatives underway, and to acknowledge that work, family, and community take precedence over my research work and needs.

Also important in building strong relationships is the need to remain open and flexible as opportunities, needs, and concerns may change throughout a project (Ball & Janyst, 2008; Laurent, 2017; Silverman, 2015). An example of working collaboratively to manage change within my own study involved staff changes at the ICC. Near the end of the DLN project there was a change in management at the ICC; the final team trip to Inuvik was the first opportunity for the team and the new manager to truly begin building a personal relationship. And so even as my study began taking over from the DLN project, it was still very new territory for the ICC Manager. We spoke openly about this, and the need for patience and communication as we forged new relationships together. The Manager was and continues to be extremely supportive of my study, and passionate about the Digital Library. My first trip in August 2018 focused a great deal on continuing to grow this relationship, and on developing a relationship with the individual who had taken over the Regional Language Coordinator position.

Between my first and second trip there was an additional staff change as a new person took over the role of Regional Language Coordinator. During my second trip I was able to focus time on getting to know that person, and sharing what my study is about. These relationships were able to grow and expand during my third trip, as ICC has been taking on a more team based approach and getting everyone on staff more involved in all of the projects of which they are a part. This was an excellent opportunity to grow the relationships in new ways. I continued to work towards agility with regard to study processes, timelines, and objectives, to be patient, and to communicate and work openly and respectfully with collaborators as we navigated changes together.

Another critical aspect of giving back as part of reciprocal research relationships is sharing freely of one's knowledge and expertise, "sharing what I know ... even though I don't know more than anybody else" (Inuit Tapiriit Kanatami, 2019, p. 46). This is about being open to other projects and priorities, and willing to provide what you can to assist with those projects and priorities (McMullen, 2008; Tharani, 2019; Young & Brownotter, 2018). When in community I based myself out of the ICC and provided assistance as I could with other tasks and projects. This included providing some technical support with computers and systems, greeting and speaking with visitors about the ICC and what it has to offer, preparing an inventory of graphic material (photographs, slides, negatives) for potential scanning and addition to the library, scanning and retyping oral history transcripts, and organizing and inventorying the language resources at ICC.

I also had the opportunity to work with community collaborators in ICC and IRC around various grant applications. I felt humbled by these requests for input and was happy to provide any and all the support I could. As I did so I was reminded of how Lee (2019) speaks about this

aspect of giving back: “Another way in which reciprocity can be manifested in the research process is for the researcher to be prepared that participants may request some access to resources that the researcher may have. ... The wise researcher will accept this invitation and carry out this request and feel honoured to do so. It is a recognition that the community members have deemed you worthy of continuing the relationship” (pp. 16-17). As Allard & Ferris (2015) observe, “trusting relationships with communities emerge from practices that have very little to do with” (p.377) the specific project at hand. Rather, they come from focusing not simply on the goals and finish of a project, but everything that happens in between (Absolon & Willett, 2005; Christen, 2018; Lyons, Supernant, & Welch, 2019), like giving back to the community through relationality and reciprocity.

4.12 Trustworthiness

As Cronin (2014) reminds us, “qualitative research is descriptive rather than explanatory, and exploratory rather than testing. It is subjective in nature and so everything must be transparent and made explicit” (p. 26). Lincoln and Guba (1985) have argued that trustworthiness is as important to qualitative research as to quantitative. Rather than the standard notions of rigor and validity, however, they propose credibility, transferability, dependability, and confirmability (pp. 39-43, 187-220) as criteria for assessing trustworthiness.

Lincoln and Guba (1985), Baxter and Jack (2008), and others suggest that techniques such as triangulation (e.g., of data sources, analysis techniques, methodologies), maintenance of field journals, member checking, prolonged exposure to the phenomenon in question, and well-managed data collection and analysis are means of increasing trustworthiness.

In my research study, I worked with participant researchers and community collaborators with whom I have an established relationship, and spent substantial amounts of time in the

community conducting my inquiry. I gathered data from multiple sources and compared it both within and across those sources. From the beginning of the study I took detailed field notes and wrote memos in order to decrease the chances for loss of context and nuance emerging from the data, and ensure I remained mindful of, and addressed, potential biases in my approach. The data gathered was provided back to community members for review at multiple stages as was possible, and desired revisions accommodated. I thoroughly documented details of data gathering and processing to retain an audit trail of processes and procedures.

Finally, but perhaps most importantly, in the context of working with an Indigenous community, I strove for “relational validity” (Tuck & McKenzie, 2015), which is recognition and valuing of our relationships with all the world around us, and being mindful and respectful of those relationships in all aspects of our inquiry. Ensuring trustworthiness is an ongoing process of engagement and consultation. It is about monitoring and evaluating one’s actions and decisions to determine whether or not you are truly working at maintaining lasting relationships with the community (Boiteau, 2017, pp. 20, 61). Wilson (2008) reminds us that the authenticity and credibility that underpin trustworthiness are about building and maintaining healthy and strong relationships “that we can be held accountable to. ... We are all accountable to and analyze our shared relational reality together” (p. 121). I followed these measures to the best of my ability, which I hope increases the trustworthiness of my study, and enhances its credibility within the communities and beyond.

4.13 Constraints

Every study has its limitations and challenges, and mine is no exception. A limitation discussed in previous chapters but important again to emphasize is that because I am not Inuvialuit, what I understand and convey is filtered through a particular lens. And while working

closely with community collaborators to ensure the closest representation as possible, it can never be as true as it would be if I were a member of the community (Jennings, 2017; Simpkins, 2010).

Two additional limitations arose from the nature of information sources and the geographic realities of the region. While I attempted to be as rich in my information gathering as possible and to represent the many individuals and groups that make up the Inuvialuit community, I was of course not able to hear from everyone who may have an interest in the study topic. And I also acknowledge that some of the voices heard are non-Inuvialuit voices. However, these are the voices of individuals who are respected by and closely aligned with the Inuvialuit community. And finally, the logistics of travel to and between the communities outside of Inuvik is such that I was unable to make trips into the communities themselves. This is somewhat mitigated through connections, made with the assistance of ICC staff, with individuals from those communities who now live in Inuvik, as well as opportunities to engage with Inuvialuit from those communities who came through the ICC while I was based there.

A challenge in my study is the fact that I am based in Edmonton, work full-time, and also teach at the School of Library and Information Studies (SLIS) in the winter terms. The reality of this is that I was not able to be in the community as often or for as long as may have been possible under different circumstances. I believe, however, that I made the most of the times when I was in the community and also had the good fortune to have been in community during the DLN project. In addition, my community collaborators and I made the very best of the technological options to stay in close and regular communication through email and telephone calls when I was not in Inuvik.

A second challenge was the reality of the need to find a way of engaging authentically with the community and laying the foundations of ongoing collaborations while meeting time pressures and deadlines that are imposed by the academic infrastructure (Emerson, 2011; Young & Brownotter, 2018). Co-supervisors who are experienced community researchers and understand all that this type of research entails, as well as community collaborators who understand the nature of academic research structures and are invested in working together to find ways of making the partnership work for everyone, have been critical to my efforts to find this balance. And I am grateful to all of them for this!

The somewhat blurred lines between my study and the DLN project, while a great benefit (as was noted earlier), were also a challenge at times. Differentiating between the two was at times tricky both for my community collaborators and for me, as was managing expectations for an individual research study versus a grant-funded, team project. Through regular and open communication I believe that we were able to work through any confusion and come to an understanding of how the two were related, yet different.

A final challenge in my study arose not from my being an insider within the community but rather being a metadata practitioner. My level of familiarity with metadata design and applications in other contexts, while perhaps necessary to the research (Morriss, 2016), can also make it hard for me to not assume things to be obvious and self-evident, to avoid being blinded by the overly familiar (Ybema & Kamsteeg, 2009). As Hughes (2002) observed in their own work, a deep level of knowledge can “render it difficult to disentangle ‘what everyone knows’” (p. 41) from what may be new and original. To try and combat this I asked myself of every assumption “what if what I think is going on really isn’t?” (Ybema & Kamsteeg), and tested

these assumptions not only with my community collaborators, but also with colleagues and friends who come from different areas within the profession.

Chapter 5: The Culturally Responsive Metadata Framework

Indigenous communities have the right “not just to access their own content in archival and library systems, and not just to control access to it (as radical as that idea may be in some circles) -- but to set the terms for the infrastructure itself, actively configuring classification systems, search-and-discovery interfaces, and visualization tools in ... digital libraries to express independent theories of the world -- the world as it is for them, and the world as it should be” (Nowviskie, quoted in Malpas & Proffitt, 2017, p. 14).

One goal of my research was to gain insight into how Indigenous communities in the northernmost region of Canada conceptualize culturally responsive metadata frameworks for digital libraries of cultural resources through a participatory case study of the Inuvialuit Digital Library. In this chapter I outline that culturally responsive metadata framework. I begin in Section 5.1 by introducing and contextualizing the framework. In Section 5.2 I provide examples of how the framework can be understood through the theoretical lens outlined in Chapter 3. In Section 5.3-5.5 I describe the major facets (and subfacets) of the metadata framework - General Principles, Knowledge Organization/Information Architecture, and Metadata Elements - in detail, and in Section 5.6 I provide an overall observation on the framework.

5.1 Introducing the Framework

As noted in Chapter 1, metadata frameworks most typically have a rather narrow scope, focusing on the specific set of metadata elements to be used in describing a set of resources, and providing guidance on populating those elements, such as the use of certain vocabularies. As can be seen in Figure 2 (below), the culturally responsive metadata framework surfaced through collaboration with the Inuvialuit community is much broader in scope and more holistic in character. It encourages us to think differently about metadata frameworks as it includes

components not normally found in metadata frameworks for digital libraries. The framework consists of three separate but equally important facets: General Principles, Knowledge Organization/Information Architecture, and Metadata Elements. The General Principles are sustainable, responsive, and user-friendly. Knowledge Organization/Information Architecture incorporates organizational themes and topics, exploration and navigation, and item presentation. Metadata Elements include names of people, places, and resources, language and dialect, dates, subjects, audience, relationships, as well as additional elements and general practices. Each of these facets and their subfacets are discussed in detail in the remainder of the chapter, after a brief discussion of the metadata framework through the theoretical framework developed for my study.



Figure 2. The culturally responsive metadata framework

5.2 Viewing the Framework Through a Theoretical Lens

In Chapter 3 (Theoretical Framework), I proposed an exploration of my main research question through a theoretical framework that incorporates aspects of four separate approaches, namely anti-colonial theory, fluid ontologies, language (or sociolinguistic) codes, and digital storytelling. Prior to describing the culturally responsive framework in detail, I would like to highlight an example of how each of these four aspects can be seen within it.

5.2.1 *Anti-colonial Theory*

Anti-colonialism centres Indigenous voices and knowledges and focuses on the power of the local and communal to survive and resist colonial power (Dei, Hall, & Rosenberg, 2000). Nkomo (2011) describes anti-colonialism as not only seeking to resist colonialism, but “to change it and build something better” (p. 380). As Christen (2018) reminds us, anti-colonial work means that “instead of asking Indigenous peoples to bend to your technology, [you must be] willing to bend the technology to their needs, goals, and priorities (p. 411). The culturally responsive metadata framework underlying the Digital Library that has emerged from the community as responsive to and reflective of the Inuvialuit can be seen as an example of an “anticolonial and Indigenous-centered approach that seeks to subvert the western epistemologies and their impact upon Indigenous TK structures and cultures” (Montenegro, 2019, p. 733).

Community collaborators and participants emphasized first and foremost that the framework needed to be responsive to the actual interests and needs of the community, and flexible enough to change when those interests and needs change, as they inevitably will, as no community is static or frozen in time and space. Defining the ways in which knowledge is organized in the Digital Library and the ways in which resources are described demonstrates how

the community is adapting to new technologies, and being creative and innovative in how to use that technology to promote and enliven their language and culture (Muzyka, 2018).

An example of the community taking control and subverting traditional practices is around resource description, specifically the determination to allow for multiple expressions of a place name or person name (rather than settling on one ‘authoritative’ form), and the privileging of traditional names (that is, those names given to individuals according to Inuvialuit practices, or names of places as they have always been known to the community) over their colonial forms (that is, forms given by settlers or missionaries according to Western practices). For example, including all regional variations for Tuktuuyaqtuuq / Tuktuuŕaqtuuq (Tuktoyaktuk) and placing them ahead of the English form may seem like a small action, but it is a very meaningful one. And an even more powerful action is the decision to use Ulukhaqtuuq / Uluksaqtuuq (Ulukhaktok), which includes Inuvialuktun and English variants of only the traditional name, leaving out entirely the former colonial name (Holman). By driving the development of the framework, and its expression in the Digital Library, the community has been able to “subvert the ideology of form ... and employ western technology in sustaining and entrenching the Inuit way of life” (Kulchyski, 1989, p. 61).

5.2.2 Fluid Ontologies

Srinivasan and Huang (2005) define fluid ontologies as “flexible knowledge structures that evolve and adapt to communities’ interest. They are continuously redesigned as users’ understanding of the world evolves” (p. 193). Gibson (2007) notes that they are organic, expanding and changing over time. This approach “operate[s] through linguistic and cultural perseverance rather than the imperialist agenda of preservation of cultural tradition as hermetically sealed, contained, unchanging” (Cushman, 2013, p. 117). And while this approach

may seem intuitive, western based knowledge organization and descriptive frameworks have all too often treated Indigenous collections as “fragmented and static materials preserving ‘frozen’ knowledge” (Montenegro, 2019, p. 734).

The framework surfaced through working with the Inuvialuit community can be seen as a fluid ontology in two ways. The first is that a clearly identified requirement of the framework, as expressed by community collaborators and participants, is that it be responsive. This responsiveness, which includes the framework itself as well as the people involved in working with it, and the technical platform, incorporates the ability to be flexible, to accommodate the shifting needs and interests of the community. The fact that the framework was able to incorporate custom elements (Language and Dialect) as well as revised labels for elements (People instead of Creator and Contributor, Places instead of Spatial Coverage), that the interface could be made more visual in nature through the use of an existing plugin (Simple Pages), and that the team agreed to revise the practices around subjects and keywords, amply demonstrate that it is flexible and fluid.

The second way in which the framework has demonstrated its fluid and responsive nature is through the changes it has undergone over the course of the project. These included the changes to the colour scheme and logos, shifts in the layout of the item description pages, and the incorporation of different and alternative approaches to place based browsing and interaction with language lessons. As Srinivasan, Pepe, and Rodriguez (2009) note, an effective community-driven, fluid ontology presents the community’s knowledge from their worldview and does so with respect and integrity, engages community members in designing the system, and presents an appropriate means of finding and browsing resources in the collection. While the Digital Library

framework can be seen to embody these characteristics, ensuring that it continues to do so is an “ongoing and ever-emergent process” (Thorner, 2010, p. 125).

5.2.3 Linguistic (or Sociolinguistic) Codes

Bernstein (1971) defined linguistic (or sociolinguistic) codes as sets of expressions which both enable, and are a result of, shared meaning making within communities. They encourage us not to think of these expressions as isolated and discrete, but rather to see them as whole systems taken together. As discussed in Chapter 2 (Literature Review), a great deal of the discussion around community driven knowledge organization and descriptive frameworks focuses on specific elements in isolation. In constructing my theoretical framework, I proposed that Bernstein’s approach would be more helpful in understanding and exploring culturally responsive knowledge organization and resource description frameworks, and I believe we see this in the culturally responsive framework underlying the Inuvialuit Digital Library.

The ways in which the community has approached the various elements required for appropriate resource description reflects their emphasis on “multiplicity and relatedness”, on “parallel and relational metadata that recreates metadata as a storied narrative rather than defined and secluded fields of information” (Christen & Anderson, 2019, p. 102). Examples of this include gathering together Creator and Contributor and renaming them People, ensuring Language and Dialect display next to each other and in a prominent place, and allowing for multiple dialect and spelling variations of a name or a term, capturing the variety of ways in which a person or a concept can be known.

The holistic nature of community appropriate and reflective knowledge organization and resource description is also evidenced by the fact that the framework emerged as one which is multifaceted. As described in the previous sections, the framework consists not only of the

metadata elements themselves, including the way they are populated, labelled, and displayed, but also of general characteristics - sustainability, responsiveness, and user-friendliness - which underlie all aspects of the Digital Library, as well as the overall knowledge organization enacted through key organizational themes or topics, methods of navigation and exploration, and item description and display. Each of these components can, and should, be addressed together in order for the framework as a whole to work in service of the community.

5.2.4 Digital Storytelling

Many Indigenous communities and those who work with them, Indigenous and non-Indigenous alike, have articulated how culturally informed and specific metadata (de Souza, 2016; Karuk Tribe, Hillman, Hillman, Harling, Talley, & McLaughlin, 2017) and community driven ontologies (McCracken, 2015; Srinivasan, 2004; Willox, Harper, & Edge, 2012) enable Indigenous communities to tell the stories they want to tell, in the way they want to tell them, pushing back against those stories being told by others, re-centering the community and putting control back where it belongs. Digital storytelling is the use of technology to construct and tell one's own story in one's own words and according to one's own views. In my theoretical framework discussion, I argued that metadata created according to a culturally responsive and appropriate knowledge organization and resource description framework can be seen as instantiations of digital storytelling, and I believe we see this played out in the framework underlying the Digital Library.

The culturally responsive framework emphasizes the importance of functionality for community members to contribute information or stories about resources in the library, adding their own voices to the narrative surrounding them. Although an automated process for this is not yet functional, such information is already finding its way into the Digital Library through

interactions with community members. For example, the description for <https://inuvialuitdigitallibrary.ca/items/show/3380> originally read “A photo of Garrett Nutik and Ella Phillips). After finding this item, a relative emailed the Cultural Centre with additional information. The description now reads “Photo of Garrett Nutik (father of Kathleen Hansen and Garret Nutik), Emma’s (mother of Kathleen Hansen, Garrett Nutik, Jeannie Lennie, and Ivy Ekaksak) first husband. He is holding Ella Phillips, Clara Phillips’ mother. Credit: Martha Harry. More family history can be found in the interview with Jeannie Lennie at <https://inuvialuitdigitallibrary.ca/items/show/326>”. One community participant emphasized that “it is vital that all Inuvialuit can and do tell their own stories” (Participant T57). And as Deanna Marie Jacobson, at the time Regional Language Coordinator for the Inuvialuit Cultural Centre remarked about the Digital Library, “these stories come right from our people. It’s not what someone else thinks about us. This is the real deal” (quoted in McKay, 2018, p. 4).

5.3 General Principles

Digital libraries and the knowledge organization and resource description frameworks that underlie their development and use are often guided by general sets of principles, ideally developed and articulated by those who will use them. This was no different in the case of the Inuvialuit Digital Library. Often, however, these principles are seen to sit outside the framework itself. From the very beginnings of the collaborative work to define the metadata framework and implement it in the Digital Library, it was made very clear by the community it needed to adhere to certain general principles. That is, it needed to be sustainable, responsive, and user-friendly, each of which is described in further detail below.

5.3.1 Sustainable

IFLA/UNESCO (2010) notes that digital libraries should be “developed and made accessible in a coherent and sustainable manner”. This means that when engaging with a community to develop a digital library, a critical issue that must be addressed throughout the process is the sustainability of both the digital library platform and the metadata framework past the life of the project timeline, the spending of the grant monies, and the dissolution of the research team. In the context of the Inuvialuit Digital Library, the concept of sustainability in the context of the metadata framework was related specifically to the management and use of the technical platform, and the ongoing description of content enabled through the creation of metadata guidelines and training materials, use of specific metadata related plugins, development and maintenance of locally relevant term lists, and acceptance of community contributions. As participants noted, “my concern would be over the longevity, over how to make it sustainable” (Participant T75), to “see this move forward and ... be maintained and added to in a meaningful way over the years” (Participant D37).

5.3.1.1 Technical Platform.

Initial data gathering and fieldwork on the DLN project surfaced key information with respect to the choice of technical platform for the Digital Library. The platform chosen had to be: cost-effective (ideally open source); flexible with respect to customization and addition of functionality; relatively easy to install, configure, maintain, and upgrade; capable of handling layered access permissions; amenable to multilingual interfaces and content. “We need to develop and pilot this system to make sure it meets the needs of the Centre and the staff” (Fieldnotes, May-July 2015). With these needs in mind, and thinking of long-term sustainability, Omeka was chosen as the platform.

Omeka (n.d.), developed by the Roy Rosenzweig Center for History and New Media (RRCHNM) and initially launched in 2008, has established itself as one of the leading open source platforms for creating and publishing digital collections.

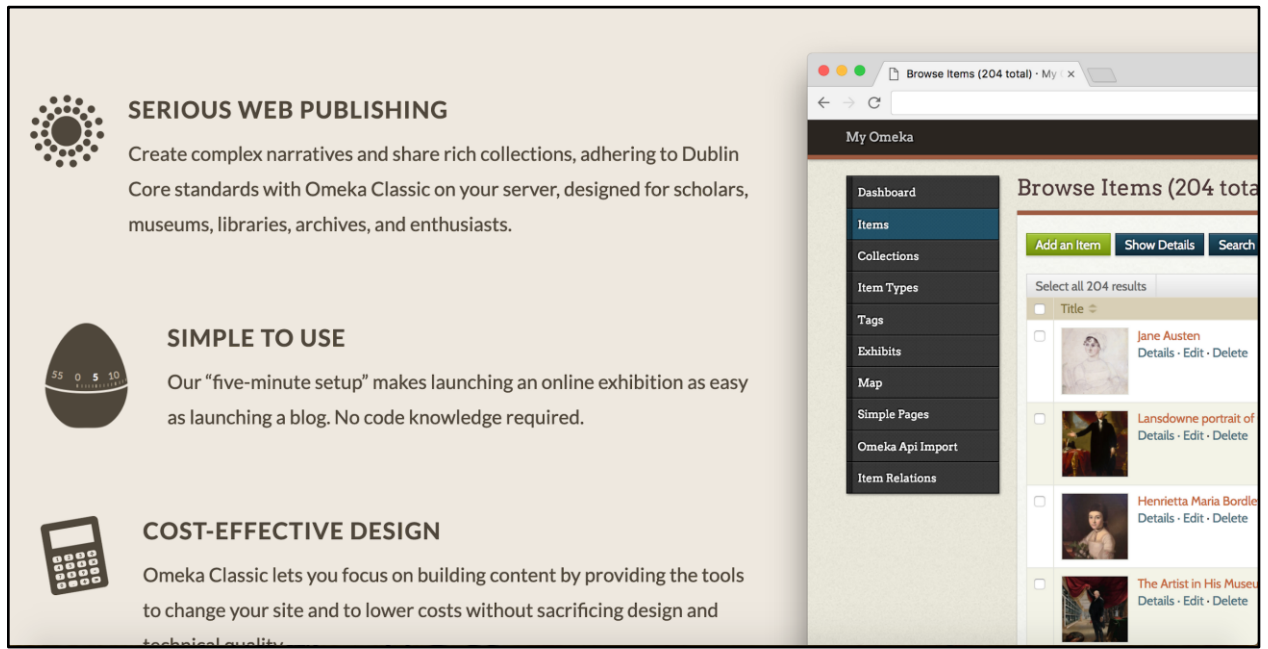


Figure 3. Omeka (Classic) project home page (<https://omeka.org/classic/>)

Among digital library platforms, Omeka is considered to be on the easy to use end in terms of installation and upgrading (Bartley, Blackaby, Casad, Chandler, Flum, Oliver, & Wallace, 2014). It has a large and active online community of users and developers, and the code is fully open source, encouraging and enabling experimentation and development. It comes with quite robust out-of-the-box metadata support and has the ability to create custom metadata elements and schemas. It is modular in that additional functionality is enabled through plugins, and branding and look and feel customization through themes. Omeka is built on common, open web technologies including PHP, Apache, and MySQL (Omeka, n.d.).

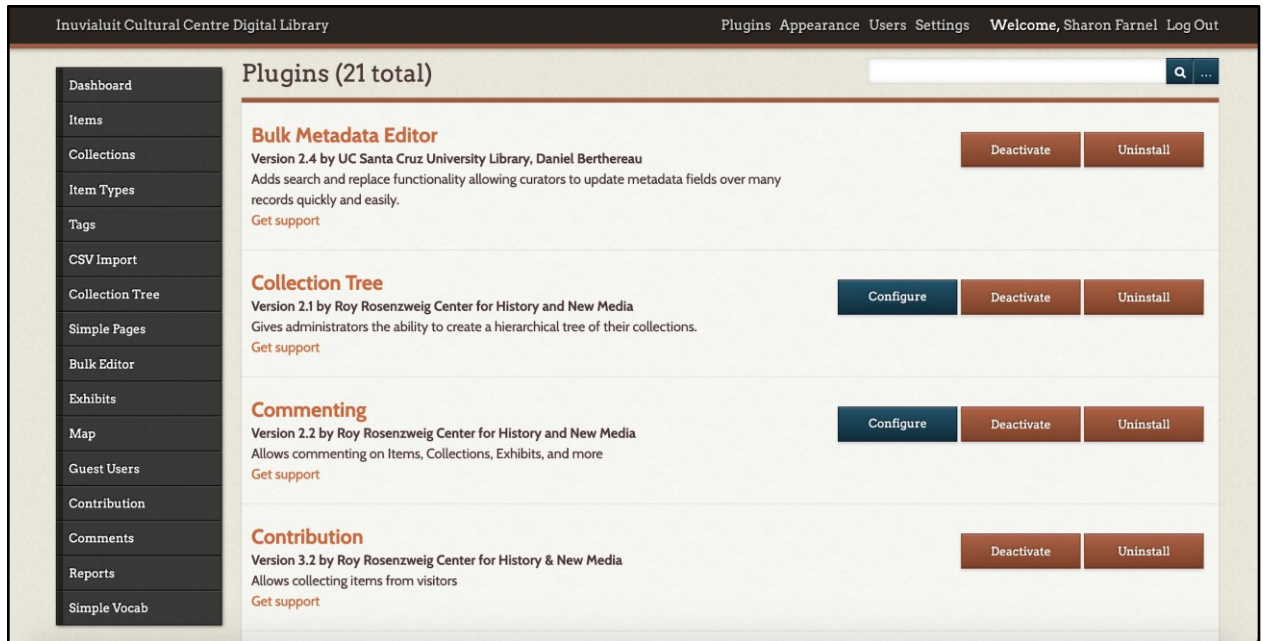


Figure 4. Inuvialuit Digital Library plugin administration screen

While each and every platform has pros and cons, given the context for the Inuvialuit Digital Library, the project team and collaborators together made the choice to select Omeka. In addition to the strengths outlined in the preceding paragraphs, several other factors pointed to Omeka as a good choice. These additional factors were expertise in Omeka hosting and development that existed at the University of Alberta (Arts Resource Centre, Information Services & Technology, and the Library), as well as known contract developers within the Edmonton region. Efforts have been made to use existing plugins whenever possible, and when making changes to the theming to do so according to best practices and to document those changes thoroughly. An additional exciting discovery made in February, 2019 is that *Katiqsugat: Inuit Early Learning Resources* (Inuit Tapiriit Kanatami, n.d.), developed and maintained by Inuit Tapiriit Kanatami, also uses Omeka, providing the potential for collaboration and resource sharing across Inuit organizations.

5.3.1.2 Description of Content.

The other key aspect of sustainability relates to the ongoing description of content. It was noted by collaborators and participants alike that the process of description had to be “user-friendly and something that they (i.e. ICC staff) can pick up and carry on” (Fieldnotes, May-June 2019). Several steps were taken in order to achieve this goal, including the creation of metadata guidelines and training documents, use of metadata related plugins, development and use of preferred lists of local terms, and allowing for community contributions.

5.3.1.2.1 Metadata Guidelines and Training Materials.

The development of metadata guidelines and training materials to “clearly define what should be captured and how to ensure consistency” (Fieldnotes, August 2018) is an important contribution to sustainability. Work on the Inuvialuit Digital Library was guided by a living Metadata Guidelines document that provided basic instructions for creating resource descriptions. The guidelines focused on the content of the specific metadata elements, and were designed to be concise and straightforward to use. They were regularly revised as the project progressed.

Digital Library North - Metadata Guidelines

Draft Revised March, 2018

These guidelines are meant to help those who are creating descriptions, or metadata, for resources in the Inuvialuit Digital Library (<https://inuvialuitdigitallibrary.ca/>).

Questions we have for community partners are being gathered in the document found [here](#).

This is a growing, living document that will change as we work together with the community to build the digital library.

Legend

Element Name: the name of the metadata element

Element Label: the name of the element as it is displayed to an end user

Definition: a brief definition of the element

Required: must the element be used

Repeatable: can the element be repeated

Vocabularies: specific lists of terms that can or should be used

Example: an example of the element

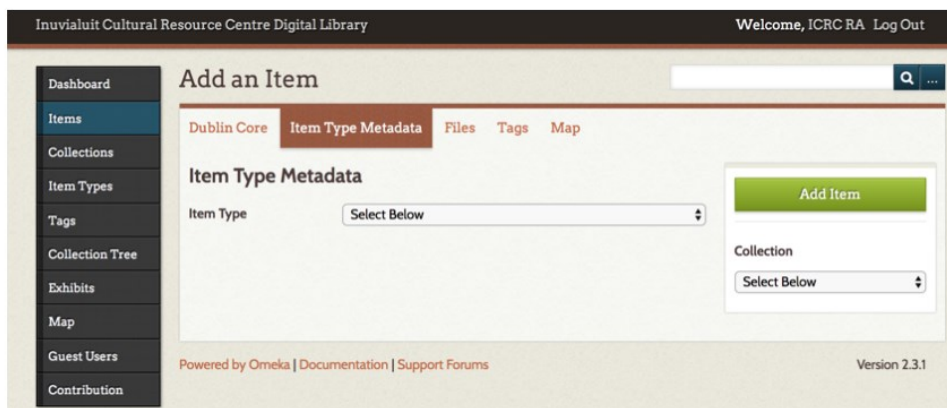
Notes: any further information that may be helpful

Element Name	Title
Element Label	Title
Definition	A brief, descriptive name for a resource.
Required	Yes
Repeatable	Yes
Vocabularies	
Example	Holiday party
Notes	Some resources, for example a booklet, may have a title on them that you can use. For others, for example a photograph, you may need to create a title. Try to be brief but descriptive so that a user can learn something about the resource just by seeing the title.

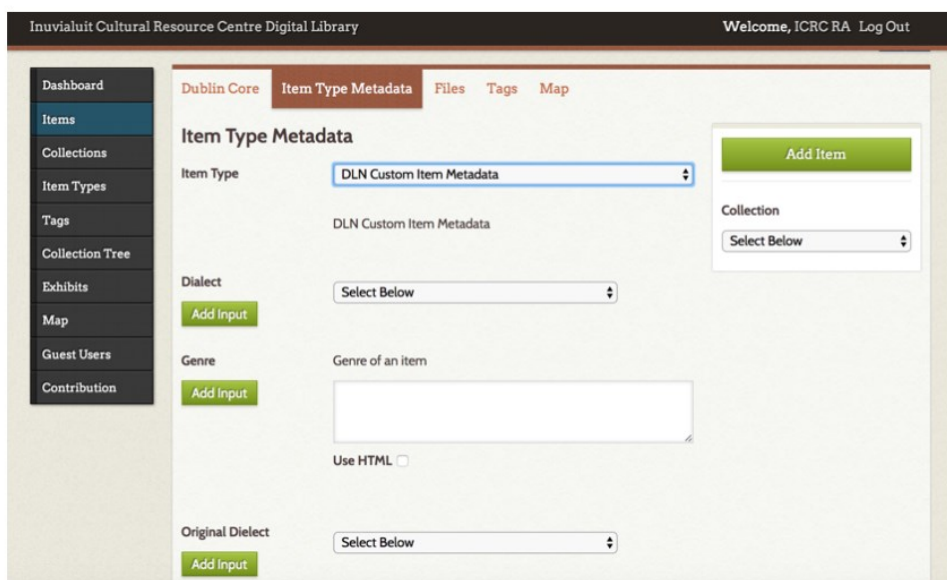
Figure 5. First page of the Inuvialuit Digital Library Metadata Guidelines (v.2, 2018)

Accompanying the Metadata Guidelines were training documents on how to use the Omeka web interface to enter descriptions and add items. These documents focused on the steps from log in to item upload, and were also designed to be concise and straightforward to use. They were revised regularly as the project progressed.

6. Next you want to add a few custom metadata fields. To do this, in the top menu click on Item Type Metadata.



7. In the Item Type dropdown menu select DLN Custom Item Metadata. When you do so, a small number of elements will appear for you to add.



8. From the dropdown menus, select the dialect(s) of the item as well as the original dialect(s) if the item is a translation.

Figure 6. Page from Adding Items to the Digital Library guide (v.1, 2017)

The Metadata Guidelines and Adding Items guides were used in training sessions at the ICC and also available for ICC staff and others to use for individual study and when working with the Digital Library.

5.3.1.2.2 Metadata Related Plugins.

Sustainability of resource description has also been enhanced through the installation and use of two Omeka plugins, Bulk Metadata Editor (UCSC Library Digital Initiatives, 2014) and CSV Import (Roy Rosenzweig Center for History and New Media, n.d.). The Bulk Metadata Editor enables batch metadata editing within and across collections in sophisticated ways. For example, one could find and replace a certain text string only within a given element used in a particular collection, or ‘explode’ elements that have multiple values into several separate elements. Figure 7 shows the initial step in identifying a particular collection, metadata element and value on which a bulk edit will be performed.

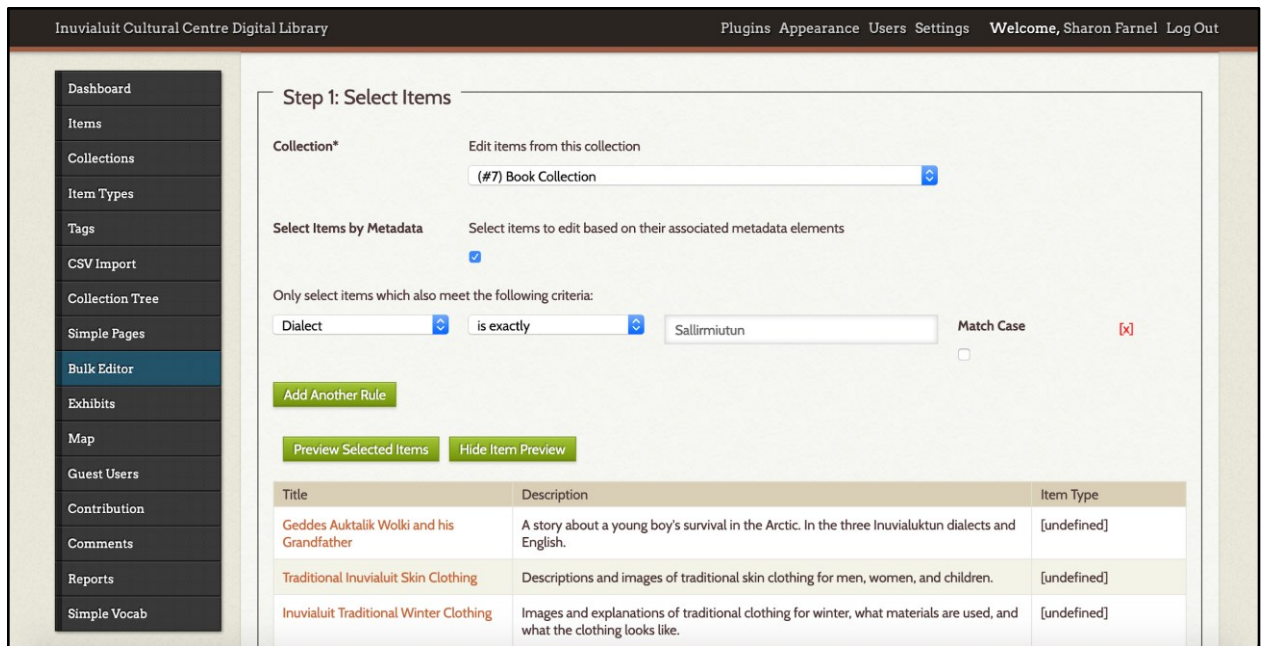


Figure 7. Bulk Metadata Editor

5.3.1.2.3 Locally Relevant Term Lists.

Sustainability of resource description has also been enabled through the development of simple custom vocabularies for use in several metadata elements. Type, Language, Dialect, Original Dialect, Places, and Subject all have a controlled list of terms that were created through

community and collaborator input, and revised and updated as needed throughout. Figure 8 shows the list of terms for Dialect and Original Dialect.

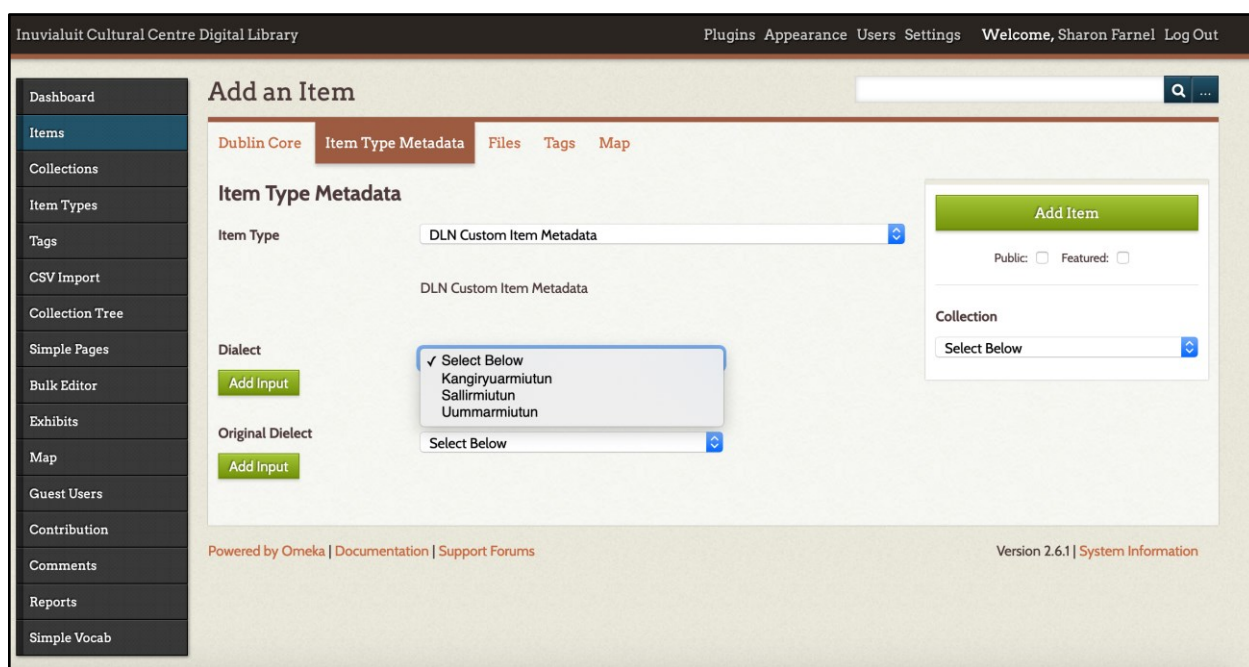


Figure 8. Term list for Dialect and Original Dialect

As can be seen in Figure 8, these term lists are available as dropdown menus within the Digital Library metadata entry form, which contributes to ease of use and consistency across descriptions, both of which are key components of sustainability. The Omeka Simple Vocab plugin makes creation and maintenance of such custom vocabularies both simple and straightforward, as can be seen in Figure 9, which also contributes to sustainability.

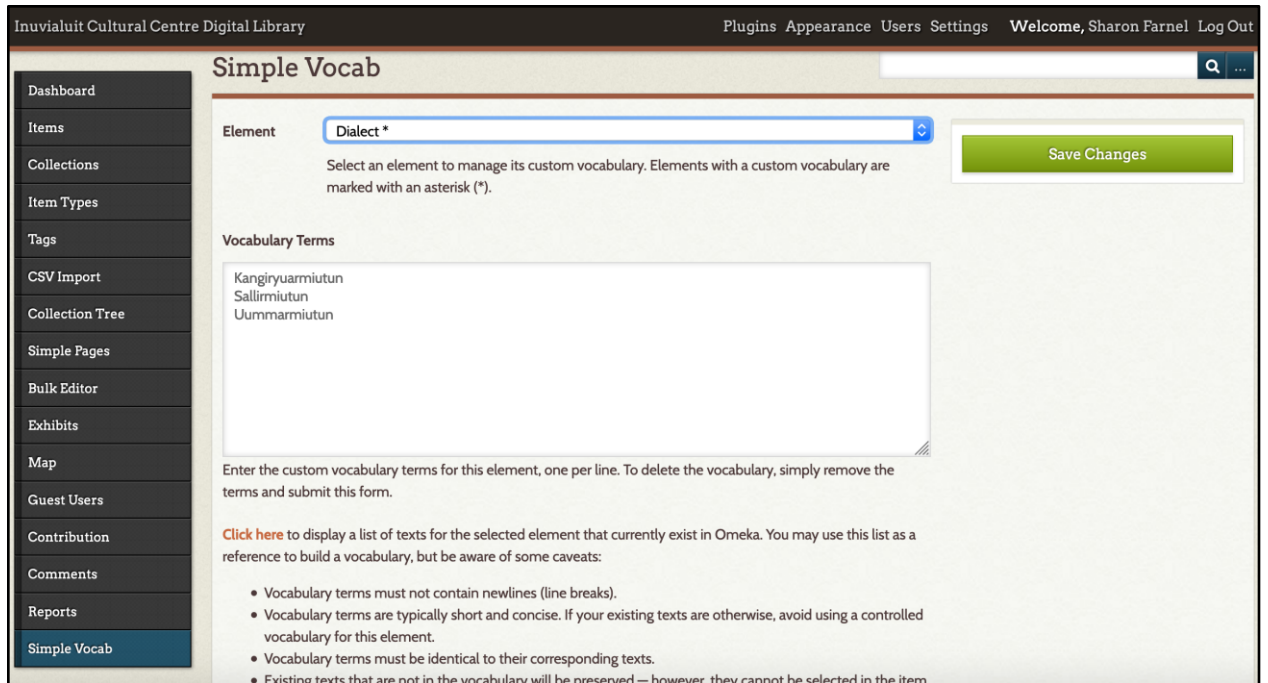


Figure 9. Interface for creating and maintaining custom vocabularies

The term list for Places is currently maintained in a Google sheet for easy collaboration with the Contract Language Specialist who is describing audio recordings in the Digital Library. This approach makes description sustainable as it is easily revised, is in a format familiar to the individual working most closely with it, and can easily be uploaded into the Digital Library as a custom vocabulary when desired. The ability to customize through the use of local terminology and language are concrete examples of the culturally responsive metadata framework, and of how the use of digital library platforms for sharing Indigenous knowledge should be conceived. Figure 10 shows a portion of this custom list for Places.

D	E	
Akᓄarvik (Aklavik)		
Akpayautchiaq (Running River)		
Iglukpak / Igluqpait (Fort McPherson)		
Ikaahuk / Ikaariaq (Sachs Harbour)		
Imaryuk (Husky Lakes)		
Inuuvik / Iñuuvik (Inuvik)		
Iqaluktuuttiaq (Cambridge Bay)		
Kaanata / Kanata (Canada)		
Kangikhuakyuk (Jesse Bay)		
Kangikhualuk (De Salis Bay)		
Kiglavaq		
Killinik?		
Kiññaq (King Point)		
Kitigaaryuit		
Kitikmeot		
Kuugyuak (Minto Inlet)		
Kuukpak (Mackenzie River)		
Kuuluguᓕuak		
Nalruriaq		
Niaqulik (Niakolik Point)		

Figure 10. Portion of custom list for Places

The use of controlled vocabularies for the Subject element was designed from the start of the project to be sustainable through the use of established vocabularies such as the Thesaurus for Graphic Materials (Library of Congress, n.d.) or the Indigenous and Northern Affairs Canada (2017) Subject Thesaurus. Use of existing vocabularies contributes to sustainability by promoting consistency and minimizing the need for customized local term list development and maintenance.

Sustainability, however, was also enabled through the development of local term lists that reflect the language used by the community. This list, which is an organic and living one, contains local terminology in both English and Inuvialuktun, and is easier to apply for many who do and may work with the Digital Library as it does not require the same level of training or experience working with controlled vocabularies, nor the same familiarity with how they are structured. For example, whaling is an important activity within the community, and when speaking about these activities and their importance, community members use beluga whale when using English. However, in most existing vocabularies what you find is white whale. This is a small but important example of ways in which local usage can and should be privileged. Digital libraries often privilege standardization and sustainability, which can lead to erasure of locally-specific knowledge that is captured in languages and dialects. Making this framework culturally responsive means enabling the use of local language and dialect as much as possible. Figure 11 includes a portion of the local subject term list, which is currently maintained in a Google sheet for ease of use and future addition to the Digital Library.

Agnes Nigiyok
Alaska Radio Station
Atigi
Banks Island Report
Beaufort Sea Committee Meeting
Beluga whales
Bible Story
Big Flu
Canadian Broadcasting Corporation
Caribou Herd
CHAK News
Christmas Greetings
COPE Report
Current Affairs
Drum dancing
Elder
Elders Greetings
Fishing
Friendship Center
Fritz Wolki
Good Woman Contest
Greetings
Greetings
Hospital Food
Interview
Inuit Circumpolar Conference Meeting
Inuit Cultural Institute
Inuit Tapirisat Board of Directors Meeting
Inuit Tapirisat Canada Conference
ITC
ITK Leaders Meeting

Figure 11. Portion of custom list for Subject

5.3.1.2.4 Community Contributions.

A final aspect of sustainability with respect to resource description is reflected in the desire to have users in the community contribute to descriptions through comments, corrections, enhancements, etc. Enabling community contributions, among other things, can ease the burden on staff at the ICC through efficient gathering of rich information from those who may have additional or alternative knowledge. This functionality is made possible in Omeka via the Commenting plugin, which creates an easy way for users to contribute descriptive information by adding a Comments box to every item in the Digital Library, as shown in Figure 12.

Comments

Your name

Website

Email (required)

Comment

Allowed tags: <p>, <a>, , , , ,

B *I* U [List Icons] [Link Icon] [Code Icon]

SUBMIT

Figure 12. Comment feature for items in the Digital Library

This feature has not yet been activated in the Digital Library. While there is strong interest in doing so for reasons of sustainability as well as community engagement - “the feedback on options for community members to provide information about items and/or make corrections to descriptions was very positive” (Demonstration Notes Summary, 2017), there is also some desire to moderate contributions for accuracy and tone, and concern that this aspect of the process may make the functionality unsustainable if taken up too heavily by users - “who would be able to administer that on a daily or weekly basis?” (Information Audit, 2015). The benefits and challenges inherent in solicitation of user contributions as part of descriptive content for digital libraries are well known, and can impact sustainability both positively and negatively.

5.3.2 Responsive

“Based on review and analysis of the 2015 field work interview transcripts, field observations and bi-weekly summaries, as well as survey responses to November 2015, and the information audit from spring 2015, ... a guiding metadata principle is that it needs to be iterative and based on real user stories” (2015 fieldwork metadata review). As this quotation demonstrates, a critical characteristic of the framework that was identified very early on was flexibility and responsiveness as the project progressed and the needs and interests of community collaborators and members became clearer. Flexibility cuts across all aspects of knowledge organization and resource description, with the use of local terminology and language being one example. The ability for a framework to be flexible and responsive depends not only on the structure of the framework itself, but also the approach of the individuals working with and developing it, and the technical platform in which it is manifested. There are numerous instances in which this flexibility and responsiveness has been demonstrated throughout the development of the Inuvialuit Digital Library; three of these will be discussed below.

5.3.2.1 Framework.

“There is no ‘one-size-fits-all’ standard for digital library collections. ... Although current standards can be used as a basis in the proposed digital library, a study of the suitability and applicability of those standards needs to be conducted to develop a comprehensive, culturally sensitive-and-aware metadata scheme” (Digital Library North, 2017). The approach of the project team and community collaborators from the beginning has been to see what, if any, existing metadata standards might exist that could be usefully repurposed, such as the Dublin Core schema that comes with the Omeka platform as a default, but not to be tied to them. Rather, the goal has always been to “imagine[e] innovative and ethical ways in which Indigenous communities might be able to operate within a standards framework without having to comply with all the ... deleterious problems of decontextualization, and fragmented and fixed framing of holistic, relational and dynamic knowledge” (Montenegro, 2019, p. 735). An excellent example of this is the early creation of custom elements for Dialect and Original Dialect. Figures 13 and 14 show the Omeka interface for creating custom elements, and an example of Dialect and Original Dialect as applied to an item in the Digital Library.

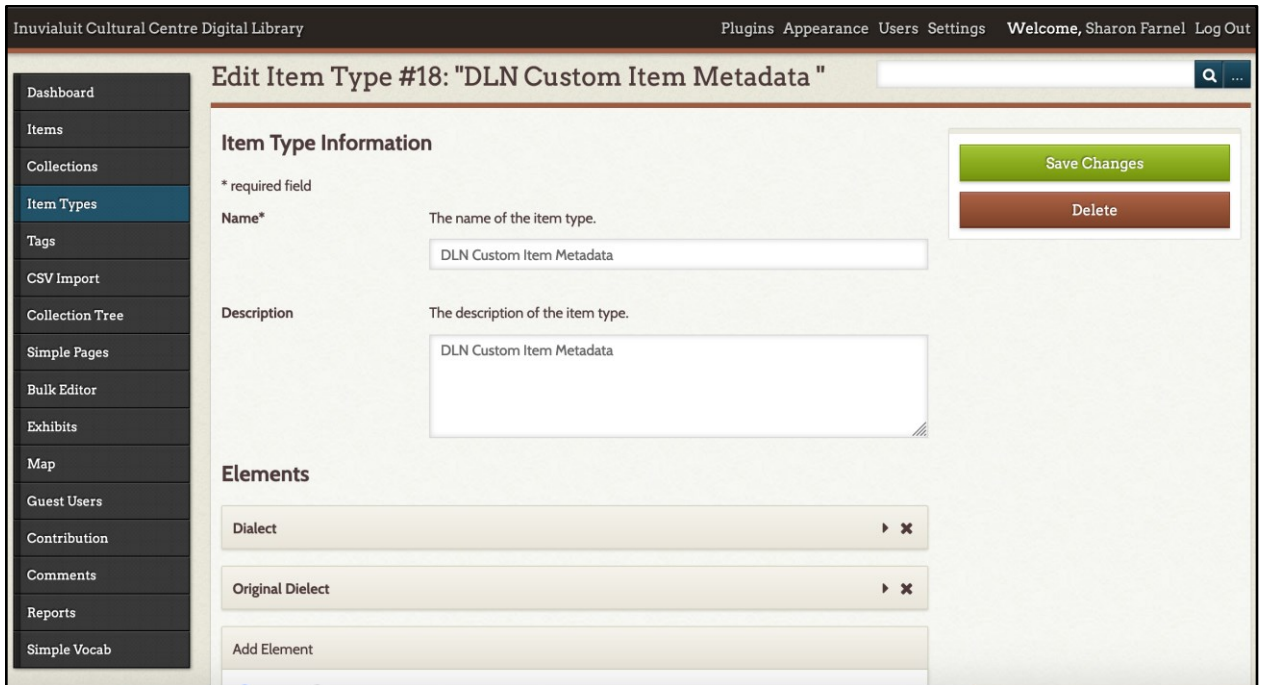


Figure 13. Omeka interface for creating custom elements



Figure 14. Dialect and Original Dialect custom elements for an item

The framework was able to accommodate these custom elements without issue, meeting the interests and needs of the community and adapting to the context at hand.

A second example of the framework accommodating community needs and interests was the change of element labels from Creators and Contributors to People, and Spatial Coverage to Places. Figures 15 and 16 show the same item record before and after the change of labels.

Title	Language
Sigitun Basic Language Lessons, Lesson 45	Inuvialuktun
Location	English
Creator	Contributor
Inuvialuit Cultural Resource Centre (ICRC)	Gruben, Helen (speaker, Sigitun)
	Amos, Beverly (translator, Sigitun)
	Glowach, Sue (speaker, English)
Date	Spatial Coverage
2002	Canada, Northwest Territories, Inuvik
Description	Source
Basic language lesson on location.	Sigitun Basic Language Lessons (Booklet)
Subject	Is Part OF
Instructional materials	Sigitun Basic Language Lessons
Inuit languages	

Figure 15. Item record with previous labels Creator, Contributor, Spatial Coverage

<p>Title</p> <p>Sallirmiutun Basic Language Lessons, Lesson 45 Location</p> <p>People</p> <p>Inuvialuit Cultural Centre (ICC)</p> <p>Gruben, Helen (speaker, Siglitun)</p> <p>Amos, Beverly (translator, Siglitun)</p> <p>Glowach, Sue (speaker, English)</p> <p>Date</p> <p>2002</p> <p>Description</p> <p>Basic language lesson on location.</p> <p>Subject</p> <p>Instructional materials</p> <p>Inuit languages</p>	<p>Language</p> <p>Inuvialuktun</p> <p>English</p> <p>Dialect</p> <p>Sallirmiutun</p> <p>Places</p> <p>Nunaptingni (Northwest Territories)</p> <p>Inuvik / Iñuuvik (Inuvik)</p> <p>Paulatuq (Paulatuk)</p> <p>Tuktuuyaqtuuq / Tuktuufaqtuuq (Tuktoyaktuk)</p> <p>Ikaahuk / Ikaaraiq (Sachs Harbour)</p> <p>Kaanata / Kanata (Canada)</p> <p>Type</p> <p>Audio</p>
--	---

Figure 16. Item record with custom labels People and Places

In this example, the framework was easily able to accommodate these changes. However, implementation in the Digital Library was more challenging, requiring additional human resources in the form of a contract developer to bend the platform to the will of the community. This emphasizes the impact individuals and the technical platform can have on the flexibility and responsiveness of the framework as a whole.

5.3.2.2 People.

Subject or topic of a resource was identified very early on as a critical piece of information to have about resources in the Digital Library. Genealogy, legends, hunting,

shamanism, and others were identified as common topics that students and community members looked for when coming to the ICC (Information Audit, 2015). Discussions around the need for a subject or topic element, of course, included consideration of the words and phrases that should be used to populate it. As discussed previously (section 5.3.1.2 Description of content), there has always been a desire to make use of existing established vocabularies, but to complement those with localized term lists. The initial project team was composed of a large number of individuals who had or were working towards graduate degrees in Library and Information Science, including the ICC Manager at the time, and all but one of the project research assistants. This naturally led to an interest in, and greater use of, established vocabularies commonly used in libraries and other cultural heritage institutions. This resulted in a preponderance of more complex, pre-constructed subject terms such as those in Figure 17.

Airplanes--Canadian--Northwest Territories--Inuvik
Alcoholism—Prevention
Animal radio tracking--Canada--Northwest Territories--Inuvialuit Settlement Region (ISR)--Hornaday River
Carving (Decorative arts)--Northwest Territories--Inuvialuit Settlement Region (ISR)
College orations--Aurora College
Drum--Performance--Canada--Northwest Territories--Inuvialuit Settlement Region (ISR)--Ulukhaktok
Drums (Musical instruments)
Fishing--Subsistence activities
Folk-rock music--Canada--Northwest Territories--Tuktoyaktuk
Fur trade—Law and legislation--Canada--Northwest Territories--Inuvialuit Settlement Region (ISR)--Inuvik
Music--Performance--Canada--Northwest Territories--Inuvialuit Settlement Region (ISR)--Paulatuk
Older people—Recreation--Canada--Northwest Territories-- Inuvialuit Settlement Region (ISR)--Inuvik
Stone carving--Canada--Inuvialuit Settlement Region (ISR)
Theater and children--Northwest Territories--Inuvialuit Settlement Region (ISR)--Aklavik
Whaling--Canada--Northwest Territories--Inuvialuit Settlement Region (ISR)--Kendall Island

Figure 17. Sample of complex, pre-constructed subject headings

However, as the project progressed, the composition of the team changed, and it became clear that the approach needed to shift to focus on terminologies and tools that could be

developed and applied without specific library science training. As one participant noted, “I mean, you’ve got your vocabulary, that’s, that makes it easier, right? ... potentially, I mean, the trouble too is, is you’re dealing with usefulness for the layperson versus very specific in your industry” (Participant D37). Collectively as a team, everyone involved agreed that the approach should shift, and the framework was easily able to adjust to a less complex structure for creating and using subject headings, which is also more approachable for community members. The headings seen in Figure 17 are now more likely to be applied as seen in Figure 18, with geographic information captured separately in Places.

Animal radio tracking
Canadian airplanes
Carving
College orations
Aurora College
Drum performance
Drums
Fishing
Subsistence activities
Folk-rock music
Fur trade
Law and legislation
Music performance
Older people
Recreation
Stone carving
Theater
Children
Whaling

Figure 18. Pre-constructed subject headings expressed as constituent terms

The framework was able to accommodate this shift without issue, as was every member of the team, focused as they are on prioritizing the needs of users over deferential adherence to standards (Berman, 1998; Berman & Gross, 2017).

5.3.2.3 Technical Platform.

In addition to contributing to sustainability, the chosen technical platform has also contributed to the flexibility and responsiveness of the knowledge organization and resource description framework. For example, the initial Browse Collections page was very text heavy as can be seen in Figure 19.

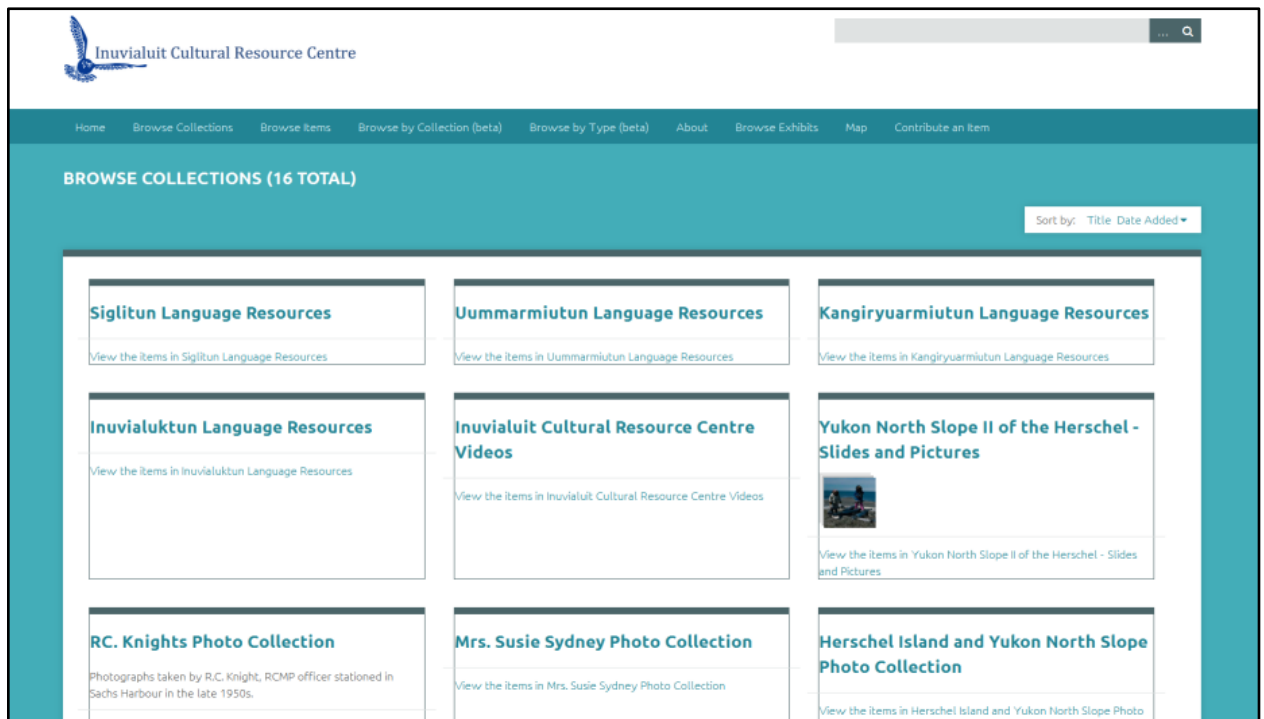


Figure 19. Initial Browse Collections page

However, through the Simple Pages plugin, the page was easily made more dynamic and visual, as seen in Figure 20, reflecting input heard from collaborators and community members - “the more visual the better” (Participant G37).

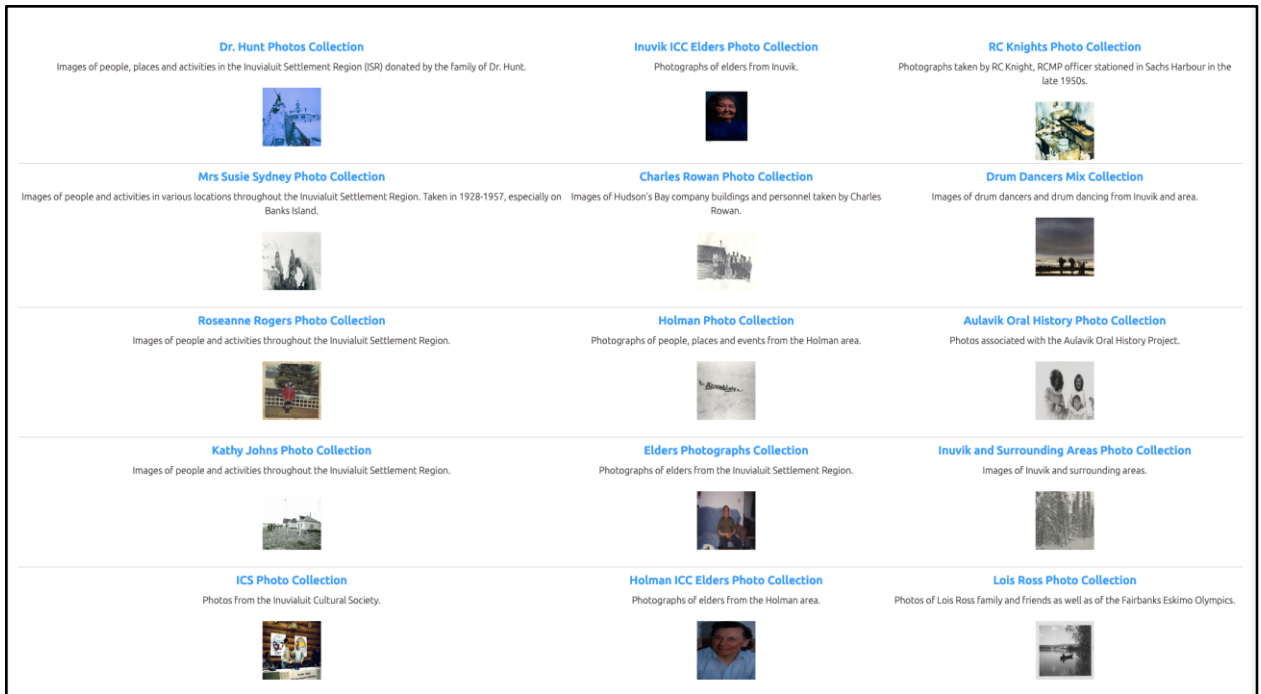


Figure 20. Revised Browse Collections page

In other instances, the technical platform has made flexibility and responsiveness somewhat more challenging. For example, changing the top-level browse menu names and order, as seen in Figure 21, is relatively straightforward through the Omeka interface as seen in Figure 22.



Figure 21. Top-level navigation of the Digital Library

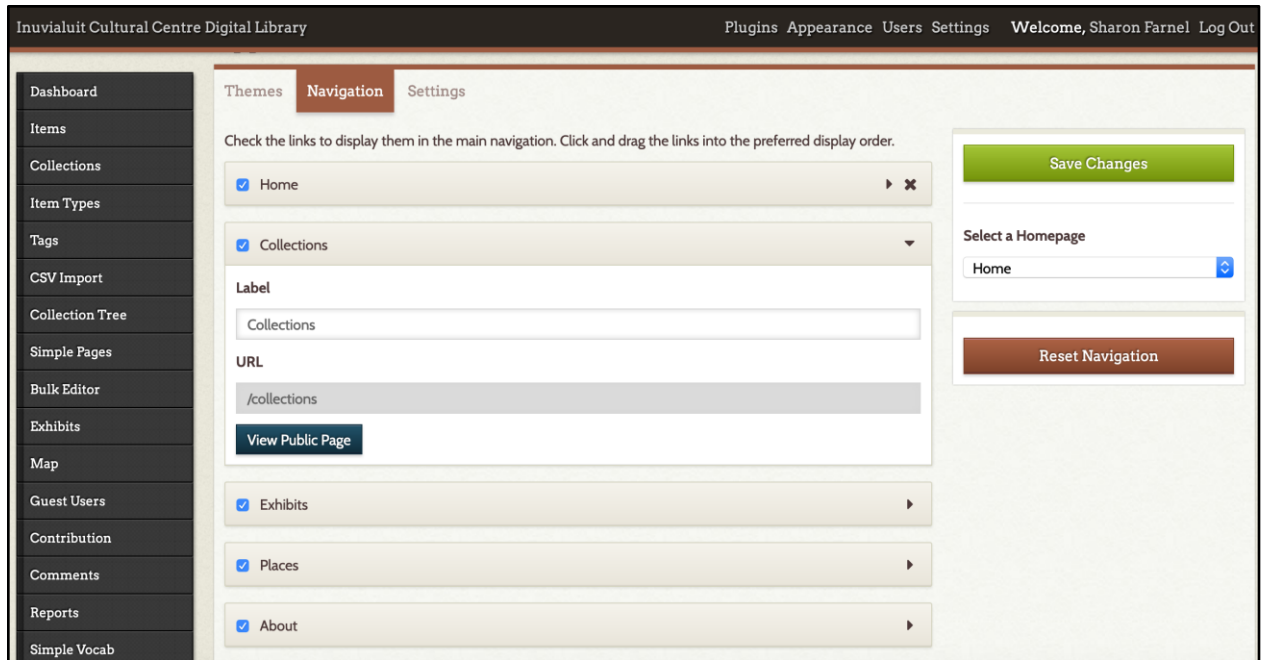


Figure 22. Interface for renaming and reordering top-level navigation

Despite the ease with which this is done, other changes that seemed as though they should be straightforward were not, and required work from a contract developer in the code base itself. These included changes such as reordering item display pages so that Dialect (a custom element) appear appears directly below Language (a standard element) as was shown in Figure 14, increasing the information about individual items in a search result list to include Date and People (Figure 23), and changing the default thumbnail icons to be colourful and culturally responsive (Figure 24).

<p>Sam Oliktoak Papigluk Storytelling then Another Unidentified Storyteller Date: Date unknown People: Papigluk, Sam Oliktoak</p>
<p>Joe Teddy Viewing Photographs and Storytelling Date: February 20, 1996 People: Teddy, Joe</p>
<p>Life Stories and Journals of Mary Kailek Date: [197-?] People: Kailek, Mary</p>

Figure 23. Search result list

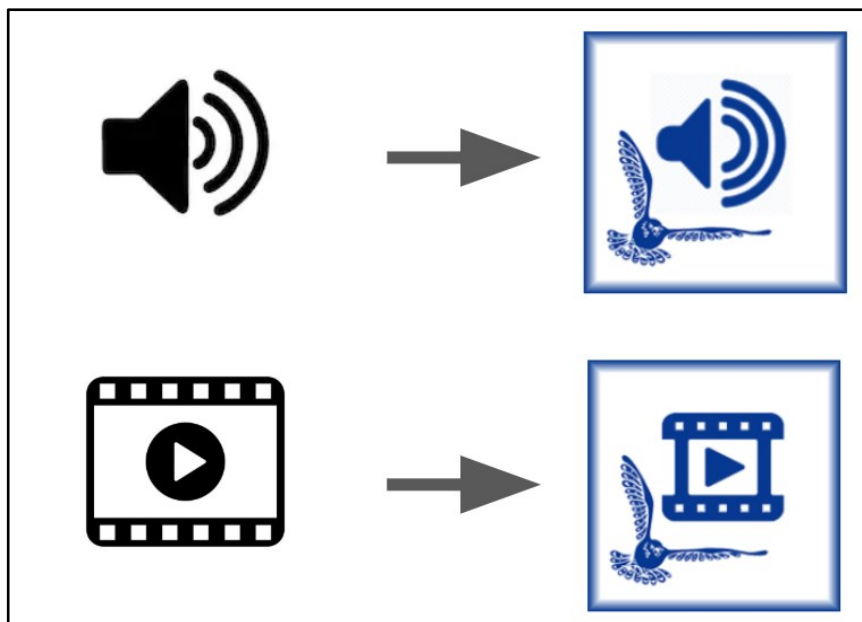


Figure 24. Culturally responsive default thumbnails

As these examples make clear, maintaining the flexibility and responsiveness of the knowledge organization and resource description framework underlying the Inuvialuit Digital Library will require that same flexibility and responsiveness from the people and the technology.

5.3.3 User-friendly

A clear and consistent message heard from community collaborators and members at large was that the metadata framework needed to be user-friendly, i.e., simple and straightforward to use. “If it gets too complicated people are going to give up” (Participant A46) so you need “something simple and easy to read” (Participant E45). As the DLN team noted, a “simple and clear interface will be important for user experience” (Final Summary Summer 2015). In the context of the culturally responsive metadata framework underlying the Inuvialuit Digital Library, user-friendliness was conceptualized in terms of simplicity, shareability, and navigability.

5.3.3.1 Simplicity.

Simplicity, at its most basic, is removing unnecessary or extraneous elements to ensure an intuitive and engaging experience. A very prominent example of how this characteristic of the metadata framework is evidenced in the Digital Library is simple search. While search was indicated as a necessary means of finding and accessing the content in the Digital Library, the emphasis was on simple (Google-like) search. “Keep search simple and broad”, “uhm, because most people, ... you know were just going to type in ‘Uncle George’, right?” (Participant G37). Omeka comes with both simple and advanced search capabilities out of the box and so some work needed to be done to ensure the search was as user-friendly as possible.

To that end, simple search was configured to search only items and files and not other content such as collections, exhibits, static pages. The sense was that this would get users directly to actual resources in the Digital Library, which is what the community is most interested in. It was also configured to default to keyword searching rather than Boolean or exact match. This fuzziness was designed to meet the need to keep search simple and straightforward, and as natural as possible. As can be seen in Figure 25, the user can, however, change what is searched, and how, if they so choose.

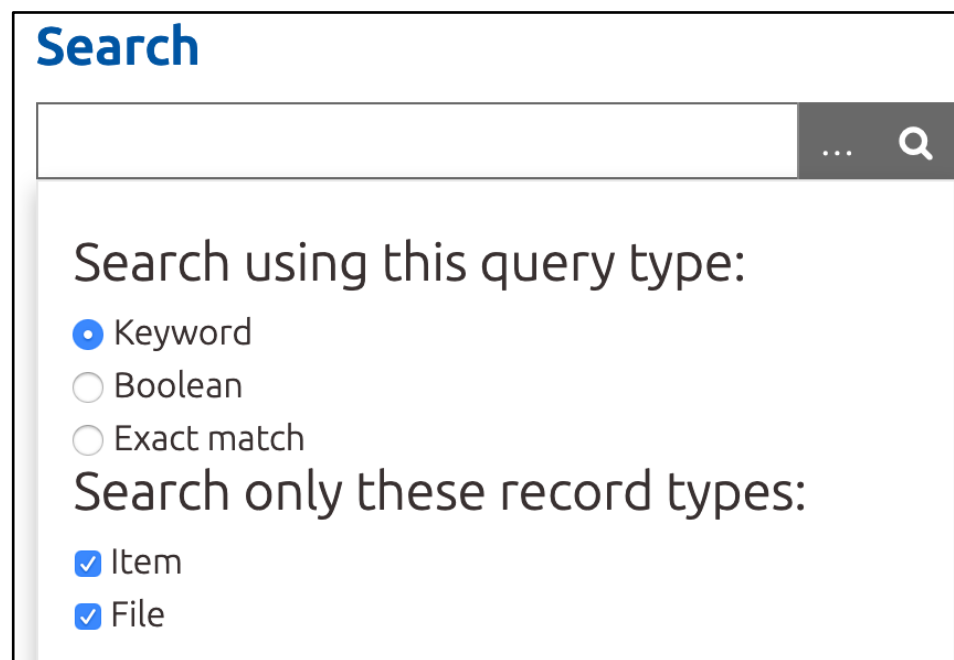


Figure 25. Simple search options

It was discovered early on that the search was configured so that words or phrases had to be at least four characters long in order to be searchable. This was very quickly determined to be problematic when users searched “ulu” or “dogs” (where the search algorithm would automatically truncate to simply ‘dog’). This issue was easily addressed through a search algorithm reconfiguration by project partners at the Arts Resource Centre at the University of Alberta, ensuring a more user-friendly experience.

The Advanced Search option was turned on in the Digital Library from the start.

The image shows a portion of an Advanced Search interface. It is divided into four sections by horizontal blue bars. Each section has a title and a dropdown menu. The first section is titled 'Search By Collection' and has a dropdown menu with the text 'Select Below'. The second section is titled 'Search By Type' and has a dropdown menu with the text 'Select Below'. The third section is titled 'Search By User' and has a dropdown menu with the text 'Select Below'. The fourth section is titled 'Search By Tags' and has an empty text input field.

Figure 26. Portion of Advanced Search options

Although the search options available are numerous, including by word or phrase, metadata element, collection, and so on, in addition to what is shown in Figure 26, getting to the Advanced Search screen requires first noticing and then clicking on the three dots next to the search icon, and then further clicking on Advanced Search (Figure 27).

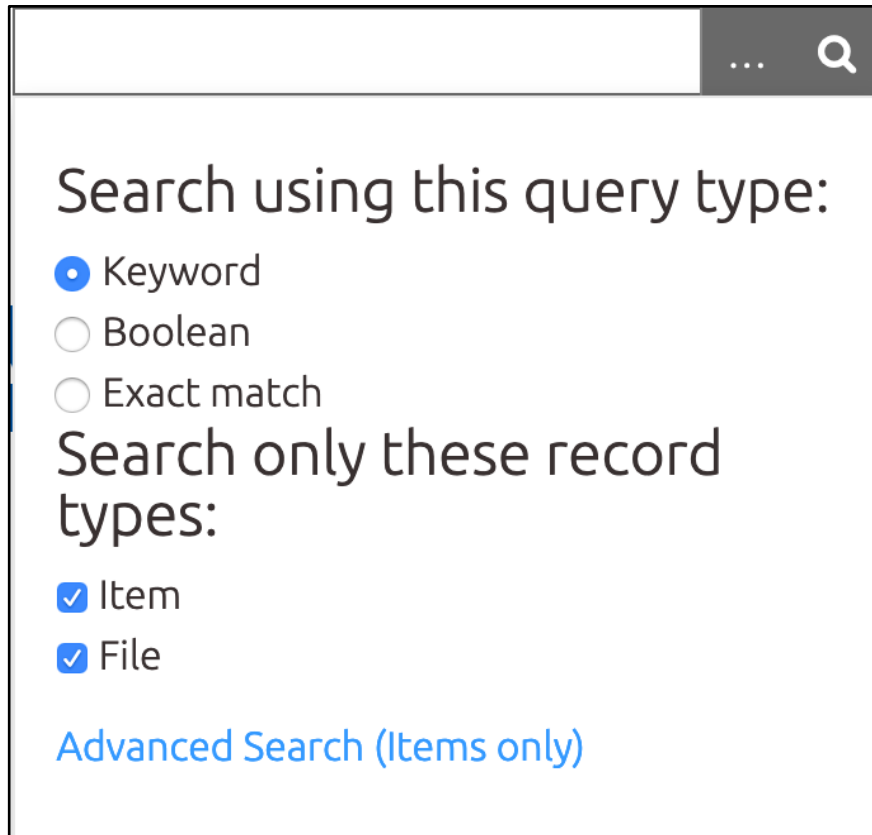


Figure 27. Getting to the Advanced Search

What was heard from community members was that this was not at all intuitive and that it was not something they were likely to use in any case. While the Advanced Search option is still enabled in the Digital Library, user testing and input reveals that it is rarely, if ever, used, and so it is on the list for possible removal.

5.3.3.2 Shareability.

Through feedback and input from community members as well as experience being in the communities, it was very clear that social media, in particular Facebook, is heavily used by community members for finding information and connecting with others. “Yeah, I do a lot of Facebook. When I want to get a hold of somebody” (Participant W55). “Especially up here. Uh, Facebook and the social media platforms and that are extremely, you know, that’s where a lot of

people get their news and their information and that” (Participant M33). Not surprisingly, then, the culturally responsive metadata framework was expected to both accommodate and promote sharing and connectivity between community members.

An example of the characteristic of shareability that can be seen in the Digital Library is the social bookmarking/sharing functionality that was added very early on via the Social Bookmarking plugin (Omeka Team, n.d.). This plugin allows you to enable this functionality on different item types, and to select which social bookmarking services (of many) you wish to enable. Based on input from community members and collaborators, Facebook and email were identified as the core services, with Pinterest and Twitter also selected for inclusion. As can be seen in Figure 28, the selected services appear as icons on each item or collection page, while the additional services are still available by clicking on the plus sign.

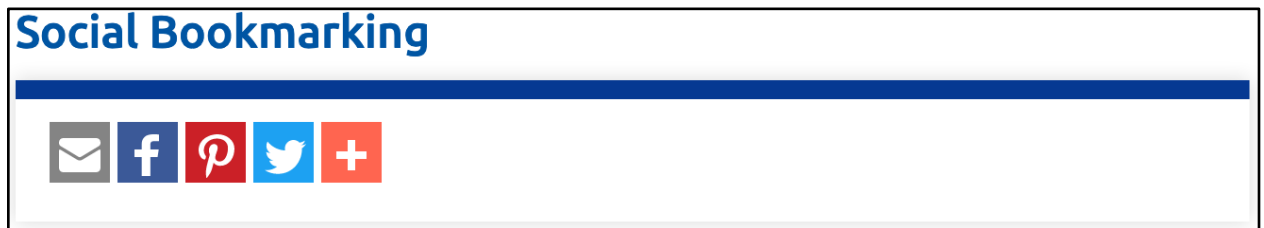


Figure 28. Social bookmarking panel

5.3.3.3 Navigability.

Interviewer: “So then we want to make sure, big star there, ... ease of getting into the resources, right?” Participant: “Yeah, ... but even if you just say click here if you want to hear the language and it will go right to the next link. ... Yeah, and just easy to click. Cause sometimes it’s hard to, you have to click on so many links to get where you want” (Participant P56). Navigability, or ease of traversing through content (Wojdyski & Kalyanaraman, 2015), was mentioned over and over again by community members and collaborators. It was clear, then,

that the culturally responsive metadata framework had to prioritize wayfinding and sensemaking. This characteristic is evidenced in several aspects of the framework as seen in the Digital Library, including the emphasis on browse which will be discussed in further detail in later sections. In this section I will highlight minimal clicking as an example of navigability, and describe several aspects of the Digital Library that have been designed to minimize the amount of clicking for users.

One way in which this characteristic has been enacted is through the use of links to related items within an item record. For example, a multipart story may have links to the other parts embedded within the metadata, as can be seen in the example pictured in Figure 29.

<p>Title</p> <p>The Hunter Who Drifted on Ice (Part 6)</p> <p>People</p> <p>Smith, Charlie</p> <p>Extine, Brice</p> <p>Canadian Broadcasting Corporation</p> <p>Committee for Original Peoples Entitlement (COPE)</p> <p>Date</p> <p>October 14, 1965</p> <p>Description</p> <p>Charlie Smith is telling a legend of a hunter who drifted on ice, part 6, first in Inūpiatun then in English. To be continued.</p>	<p>Type</p> <p>Audio</p> <p>Identifier</p> <p>N-1992-253-1011</p> <p>Relation</p> <p>The Hunter Who Drifted on Ice (Part 1)</p> <p>The Hunter Who Drifted on Ice (Part 3)</p> <p>The Hunter Who Drifted on Ice (Part 4)</p> <p>The Hunter Who Drifted on Ice (Part 7)</p> <p>Is Part Of</p> <p>The Hunter Who Drifted on Ice</p>
--	--

Figure 29. Multipart item with links to additional parts

There has been discussion about reducing the number of clicks for such items even further by having all parts contained within a single item. There is some concern, however, over

page load times given the challenges with internet speeds that are often encountered in the North, and so this has not yet been implemented.

An additional means of reducing the number of clicks needed to access related items is through the Previous Item and Next Item links that are part of the default Omeka navigation. This allows a user, for example, who is interested in working through language lessons one at a time and in sequential order, to easily navigate from one to the next through the links as seen in Figure 30.

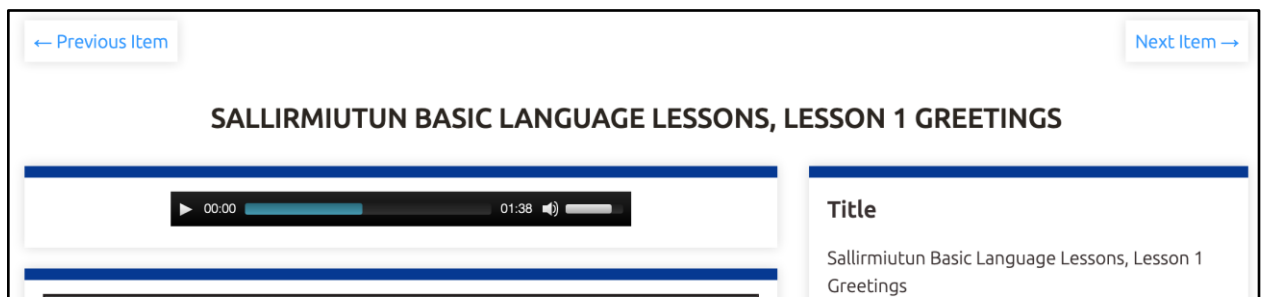


Figure 30. Previous and Next Item links for navigation

A second aspect of reducing overall number of clicks addresses browsing through to collections of particular types (e.g., audio, image). This is particularly evident from the revisions to the Inuvialuit Digital Library home page, pictured in Figure 31.

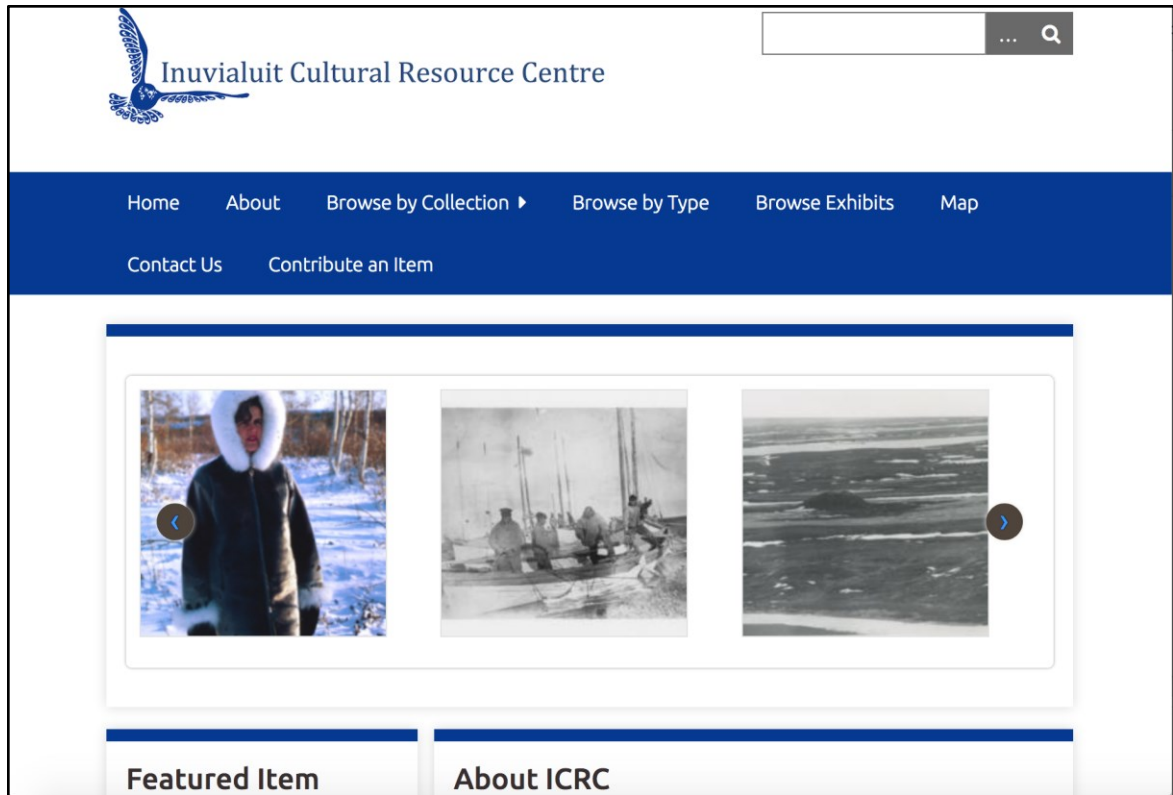


Figure 31. Earlier version of the Inuvialuit Digital Library home page

Were a user interested, for example, in audio collections within the Digital Library, they would have to first click Browse by Type which would take them to the Collections by Type page shown in Figure 32.

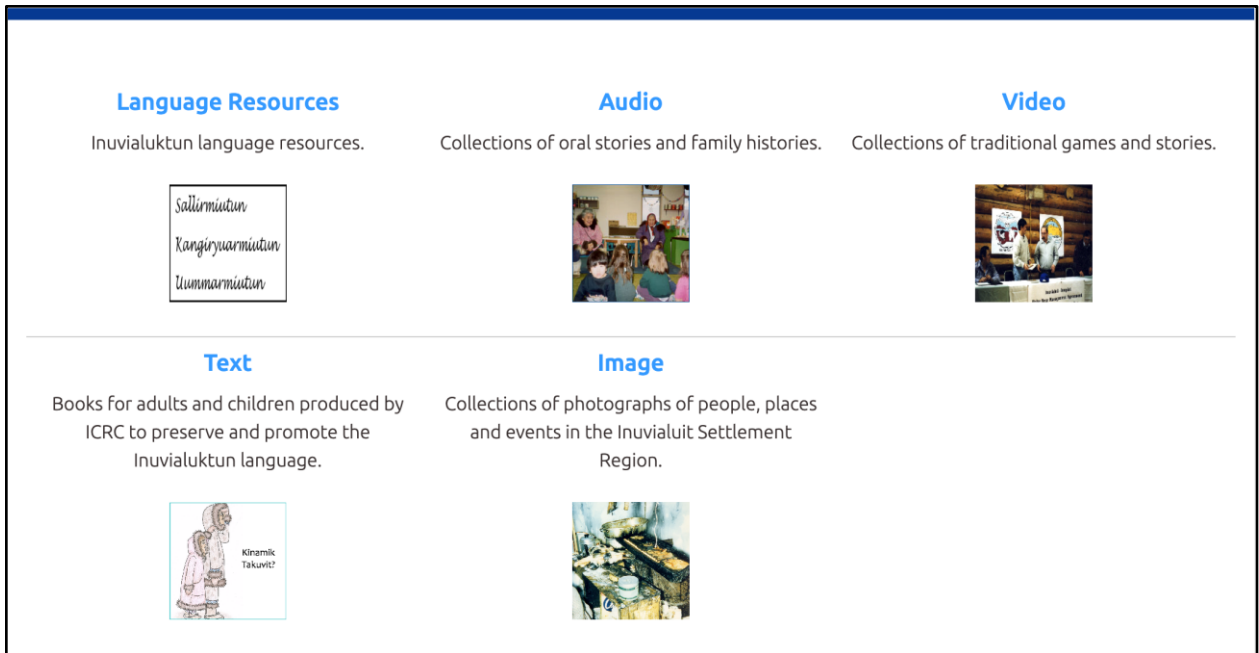


Figure 32. Browse by Type page

From here the user would need to click on Audio which would take them to the Audio Collections page pictured in Figure 33.

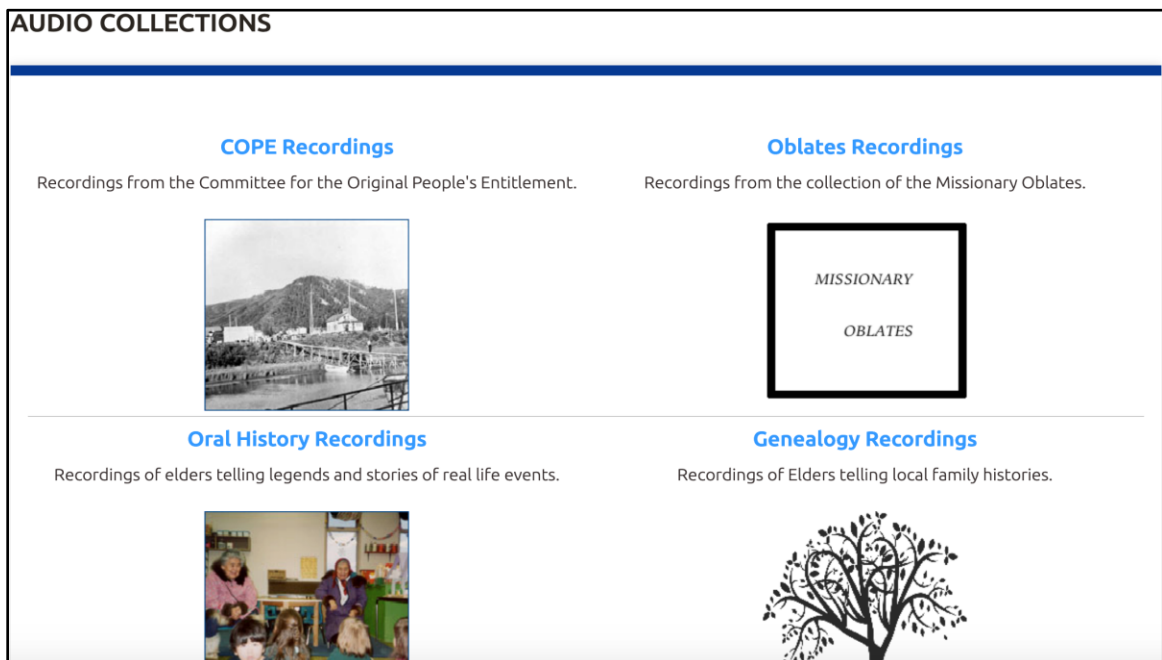


Figure 33. Audio Collections page

Only at this page could the user finally see which specific Audio collections are in the Digital Library and begin navigating to items within them. In all this required three clicks. While this may not seem like an overly burdensome number, it is enough to frustrate many.

The current home page, pictured in Figure 34, was revised with several goals in mind, one of which was to reduce the number of clicks needed to get to individual items in the Digital Library.

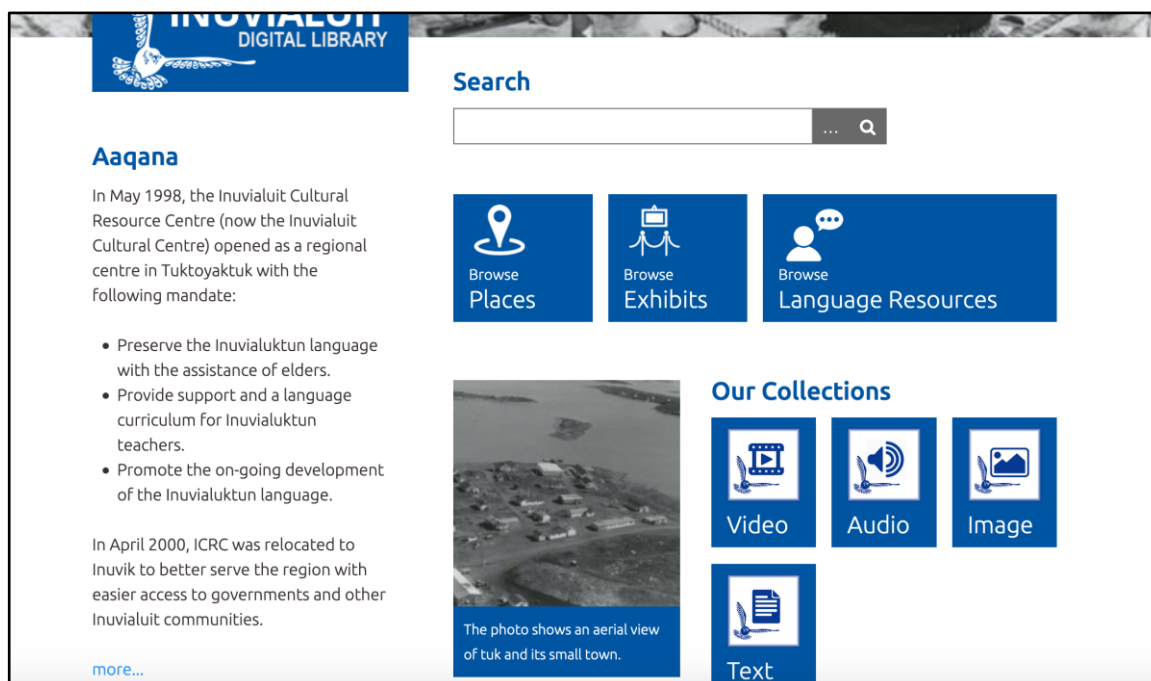


Figure 34. Portion of current Inuvialuit Digital Library home page

From the home page a user interested in Audio collections can now click once and go directly to the page listing the specific Audio collections in the Digital Library (Figure 33). One click rather than four is an improvement and better meets the community desire for as few clicks as possible.

From all other pages within the Digital Library, a user still needs to click first through the Collections by Type page (Figure 32) to get to their collections of interest. However, we are currently exploring alternatives to this such as having the Collections link on the top navigation panel be a dropdown list, similar to what is shown in Figure 35.

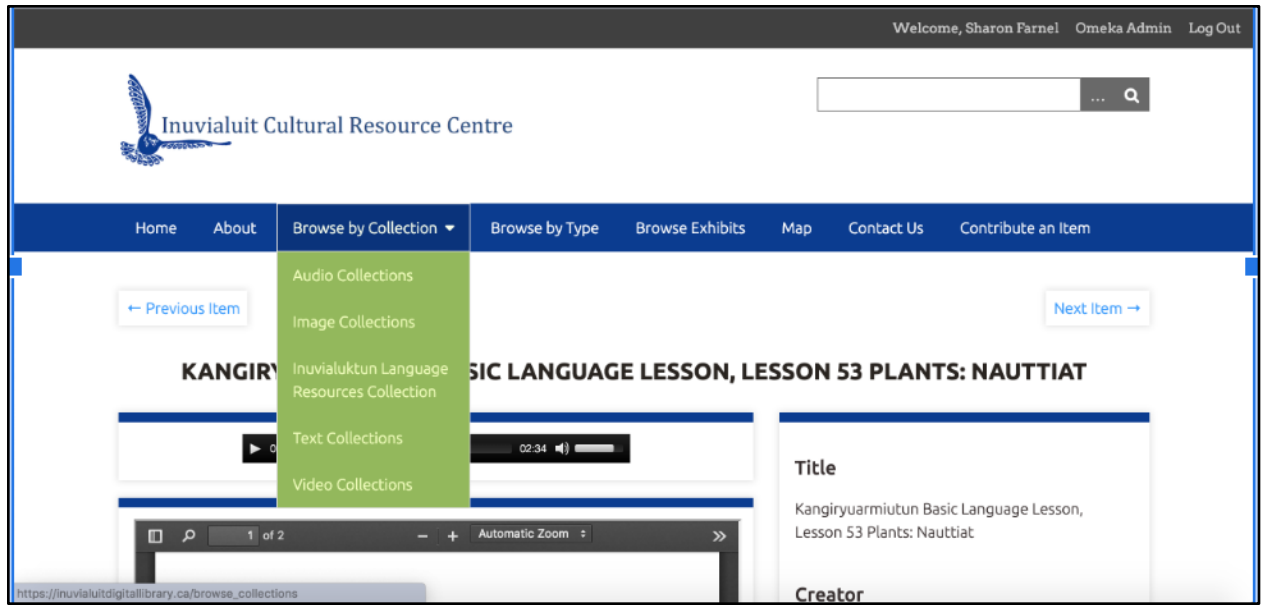


Figure 35. Collection browse as dropdown list

5.4 Knowledge Organization/Information Architecture

Community collaborators very clearly articulated that a culturally responsive metadata framework for a digital library must incorporate “community-based knowledge structures into its design” (Allard & Ferris, 2015, p. 366). That is, the way in which knowledge is organized and presented must “resonate with and performatively enact culturally-specific ways of being and knowing about objects” (Glass, 2015, p. 37). This involves considering questions such as what values or categories are given priority, how information is structured, and how it is organized (de Souza, 2016; Dillon & Turnbull, 2005). In the case of the Inuvialuit community, culturally responsive knowledge organization/information architecture is enacted through the key topics or themes around which the Library is organized, how the Library is explored or navigated, and how individual items and their descriptions are organized and presented. Each of these is described in detail in the following pages.

5.4.1 Key Organizational Topics and Themes

5.4.1.1 Place.

The Inuvialuit, like all Indigenous peoples, have strong connections to land and place. And so not surprisingly, from the earliest days of the project, place was identified as a core theme around which the Library should be organized. “Finding a way to spatially represent the information in the library would not only tie the information back to place but could also create an engag[ing] browsing interface” (Final Summary, Summer 2015). The ability to navigate and explore by place has been enabled through the inclusion of spatial information in the description of each item in the Digital Library.

A key component of navigation and exploration by place is the Geolocation plugin (Roy Rosenzweig Center for History and New Media, n.d.), which was one of the first plugins added to the Digital Library. The Geolocation plugin leverages the Google Maps API, allowing you to add a location on a map for each item. Figure 36 shows the page used for adding the location information, while Figure 37 shows how this displays in the public interface.

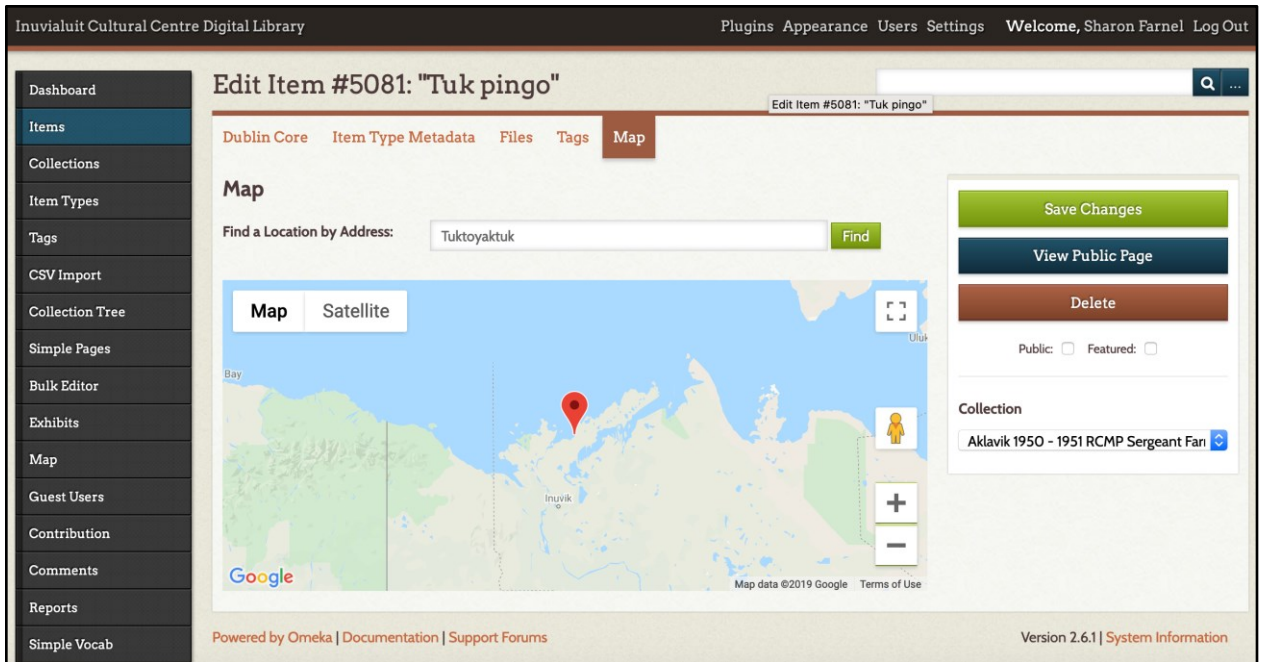


Figure 36. Adding location to an item description

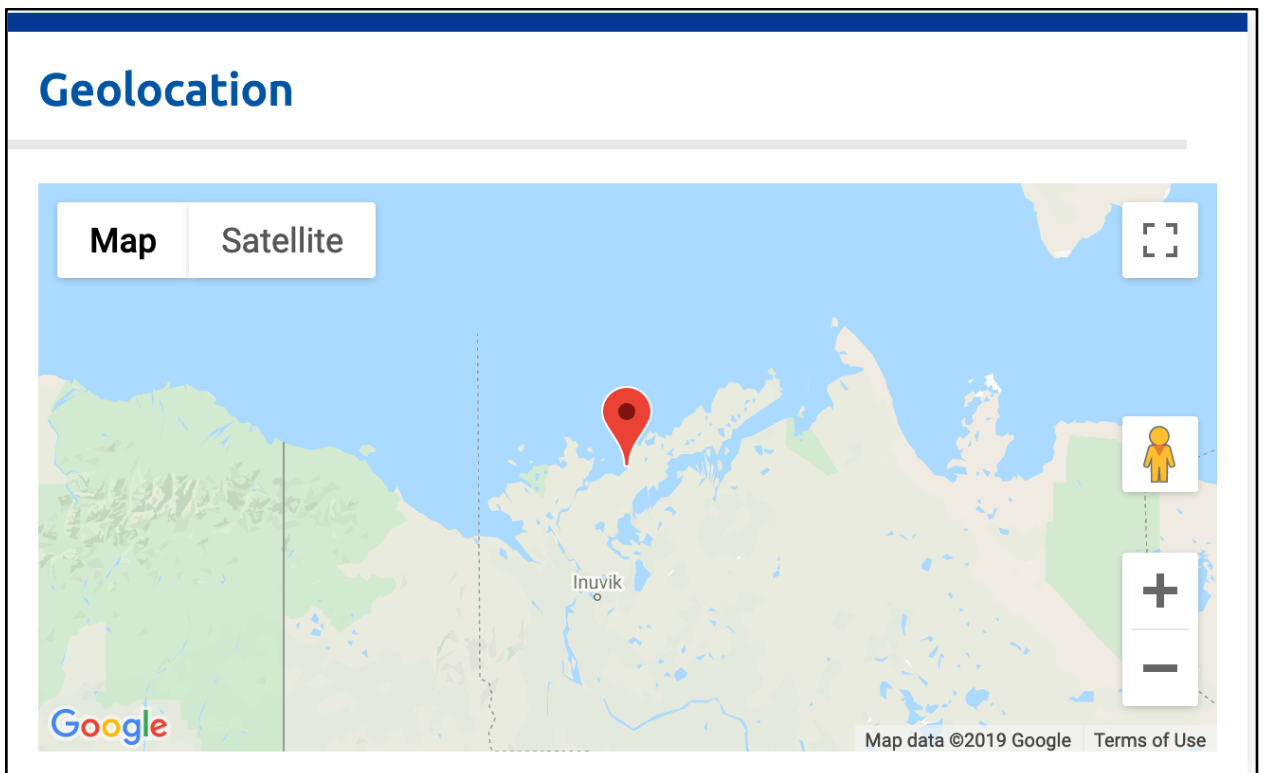


Figure 37. Location information as it appears in the public interface

While this feature of the Geolocation plugin allowed for a map view for each item, the capabilities it had with respect to navigating the entire Digital Library were of even greater interest. The plugin uses the location information for individual items to present a map browse view for an entire collection that gives the users a much broader sense of the areas covered in the collection. Figure 38 shows the current version of this map interface, configured to show a small number of locations at a time.

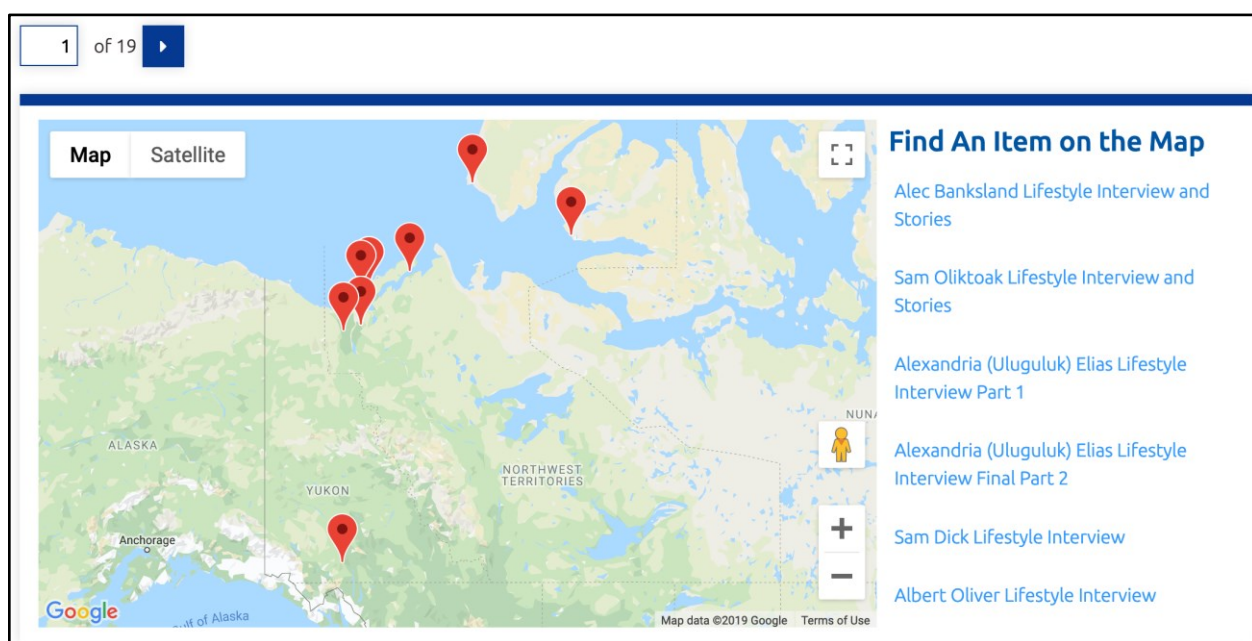


Figure 38. Map browse using the Geolocations plugin

This map browse shows a pin on the map for each item listed on the right. Clicking on the title of an item on the right will take a user directly to that item page. Clicking on a pin opens up a small window with a preview of the item (as seen in Figure 39) which the user can then click on to be taken to the full item page. A user can see all items with location information, several to a page, by using the page navigation button at the top left.

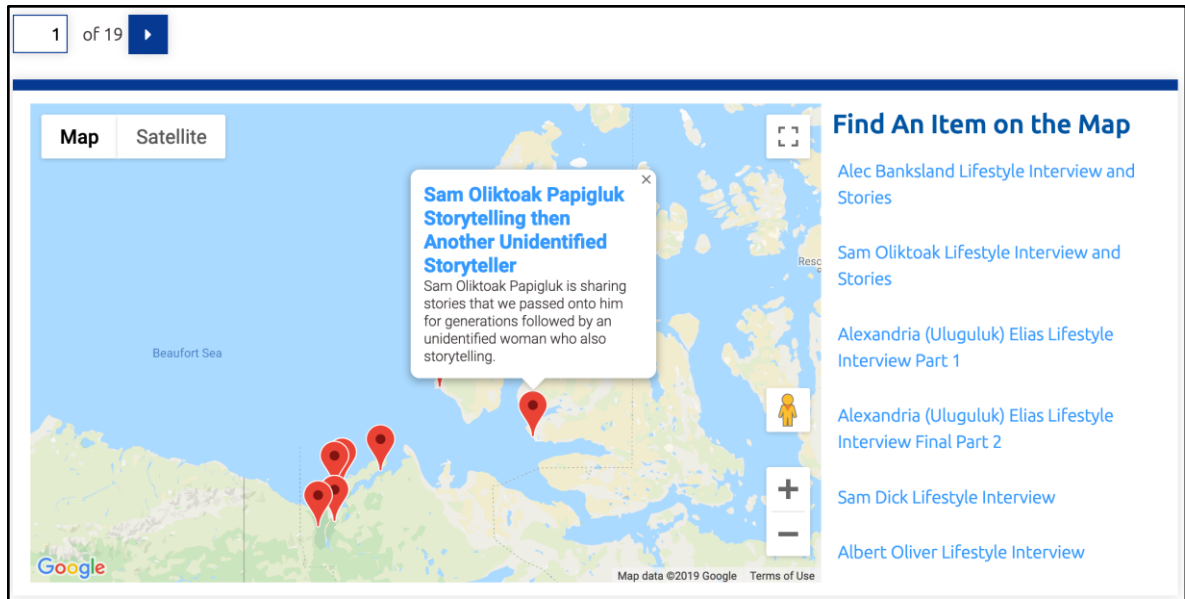


Figure 39. Preview pane for an item on the map

While this functionality was, and still is, a part of the Digital Library, it is not quite what was desired by community members. What was desired was the ability to click on a place name on a map and retrieve all of the items in the Digital Library that were associated with that place. “Yeah. Yeah, I think that’s really good. And I think that’s a really, I mean, people are gonna use it, like this, but if you have that sort of map where you have a spot. Or even, you know, even the communities, ... I think having the map and clicking the place and then having [items] ... that would be really cool” (Participant M33). Unfortunately, this is not possible through the Geolocation plugin, and investigations into other Omeka plugins turned up nothing of promise. Given the resources available on the project, and keeping sustainability in mind, the decision was made not to develop a custom plugin. Rather, a different and simpler approach was chosen.

An image map is an image that has clickable areas on it (W3C Schools, n.d). They are designed to allow for linking portions of an image to additional information, other web resources, etc. Image maps are relatively straightforward to create and maintain, and there are

many tools and tutorials available online to assist in the process. This is the technology that underlies the place based browse currently available in the Digital Library.

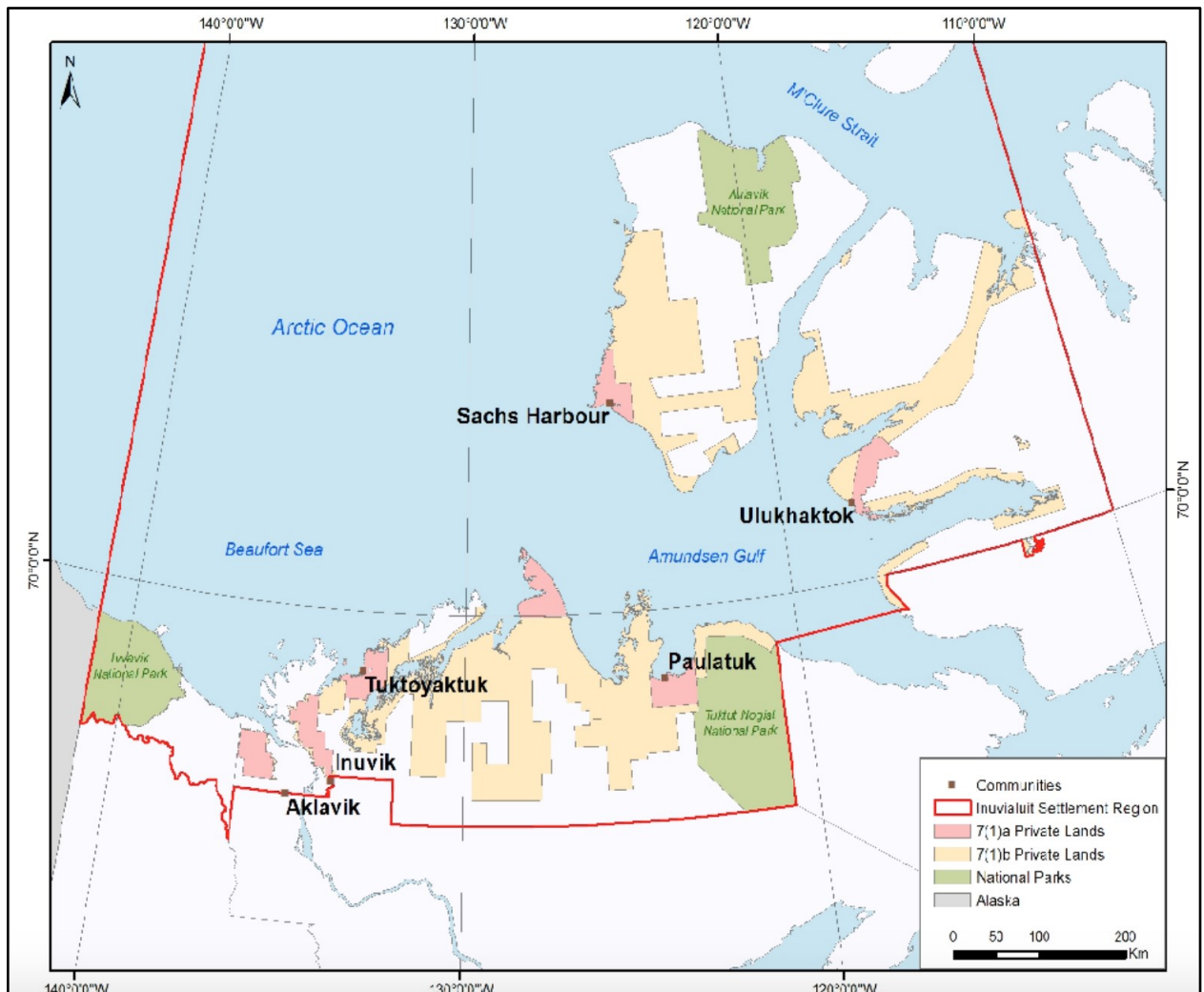



Figure 40. Browse by place through an image map

The basic map as seen in Figure 40 was designed for the Cultural Centre and includes only the six communities of the ISR. When a user clicks on any of the community names, they are returned the set of all items associated with that place. For example, clicking on Ulukhaktok will return the list of items tagged with that place. On the map, the word Ulukhaktok is simply a link to a search for Ulukhaktok (and variants) in the Spatial Coverage element (see Figure 41).


BROWSE ITEMS (434 TOTAL)

BROWSE ALL Search Items Browse Map

Spatial Coverage contains "Ulukhaqtuuq / Uluksaqtuuq (Ulukhaktok)" 1 of 22 

Sort by: Title Creator Date Added ▾

English translation and transcription of interview(s) with Sam Oliktoak and Flossie Papidluk



English translation and transcription of interview(s) with Mark Emerak




Figure 41. Ulukhaktok on the map links to results of a search on that place name

There is work underway at IRC on a traditional place names project. The future plan is to replace this simple map with a much more detailed one which will allow for browsing by more specific place names. As one participant noted, “I think that like the map, this is a wonderful way to explore this data” (Participant D37).

Reflective of the importance of navigation and exploration by place, it has been given much greater prominence on the Digital Library home page. In an earlier iteration of the Library (Figure 42), this path into the collection was named Map and was available only on the top navigation panel. In the current iteration, it has been renamed Places and given a prominent place on the home page (Figure 43). It is still also available from the top navigation panel on all pages.

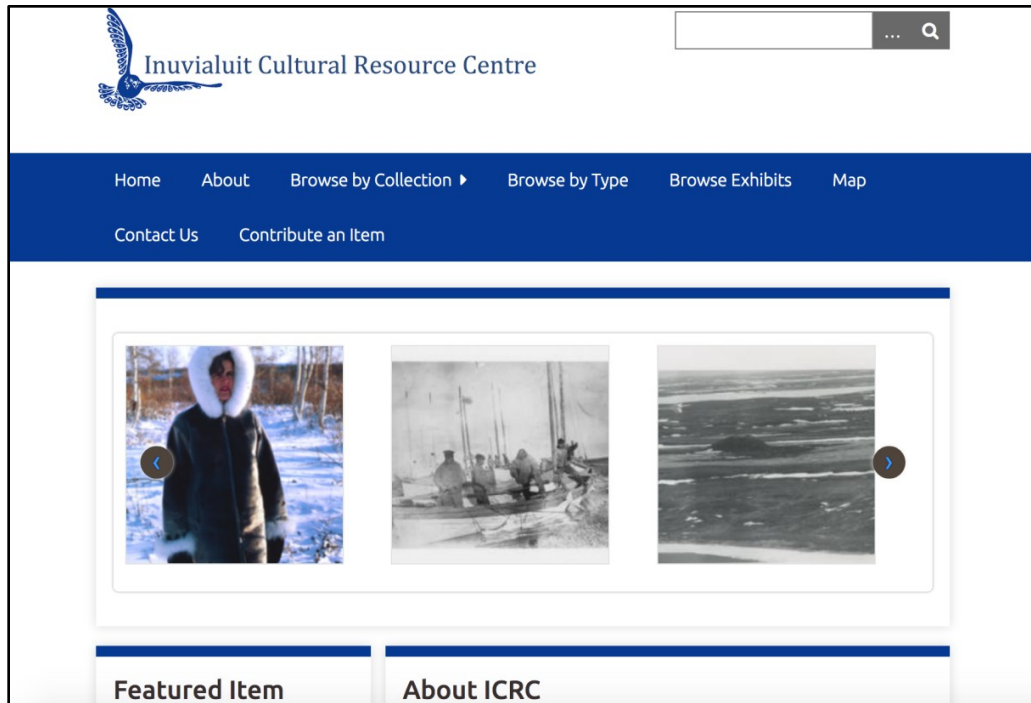


Figure 42. Earlier home page with Map browse available on the top navigation panel

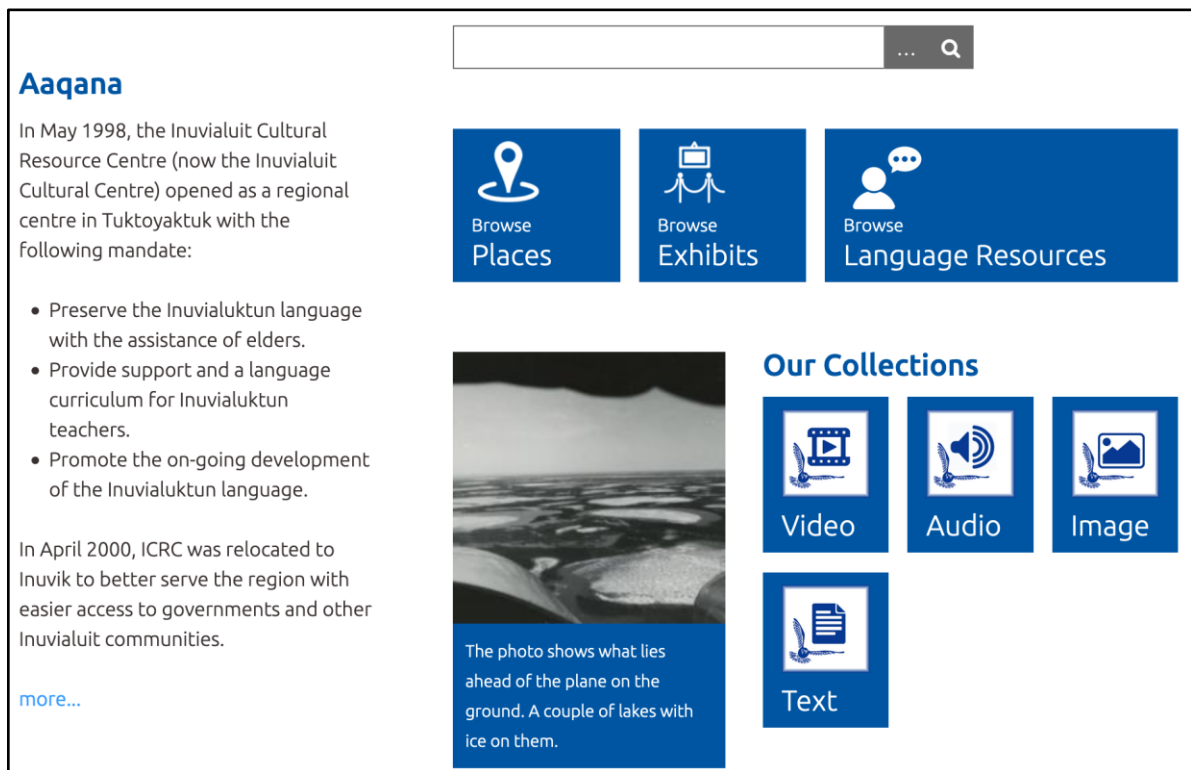


Figure 43. Current home page with prominent Browse Places

The Inuvialuit, like other Indigenous peoples, have places that are considered sacred and/or are vital to the livelihood of families and communities, and which cannot and should not be shared with others (Armstrong, 2019; Karuk Tribe, Hillman, Hillman, Harling, Talley, & McLaughlin, 2017; Roberson, 2019). As with all other aspects of the Digital Library, the community will decide what level of detail about places will be shared within the Digital Library. The understanding has been that the navigation by place will be more detailed than it is at the time of writing (i.e., going beyond the six community names), but still at a more general level, covering areas and features important to the community such as Husky Lakes or Banks Island, but not at the level of identifying locations such as specific family camps or trapping lines.

5.4.1.2 Language and Dialect.

The mandate of the Inuvialuit Cultural Centre Pitquhiit-Pitqusiit includes the preservation and revitalization of Inuvialuktun through programming and the creation of resources. Language resources are therefore a large and important component of the Digital Library, and every opportunity to promote and encourage language learning and sharing, and to deepen the understanding of the languages of the region, through engagement with the Digital Library are being taken. For these reasons, language and dialect have always been a high priority entry point into the Library.

Gathering together and presenting language resources (as well as resources not specifically designed for language learning but which obviously have a linguistic component, such as oral history recordings) is made possible through the capture of language and dialect information for each item in the Digital Library. In an earlier iteration of the Digital Library, getting at resources through language or dialect was a multistep process. From the home page

(Figure 42) a user had to click either on Browse by Collection or Browse by Type, after which one or more clicks would lead you to a very basic page (Figure 44) with the dialects listed. From here a user would click once more to arrive at a list of all items tagged with a given dialect.

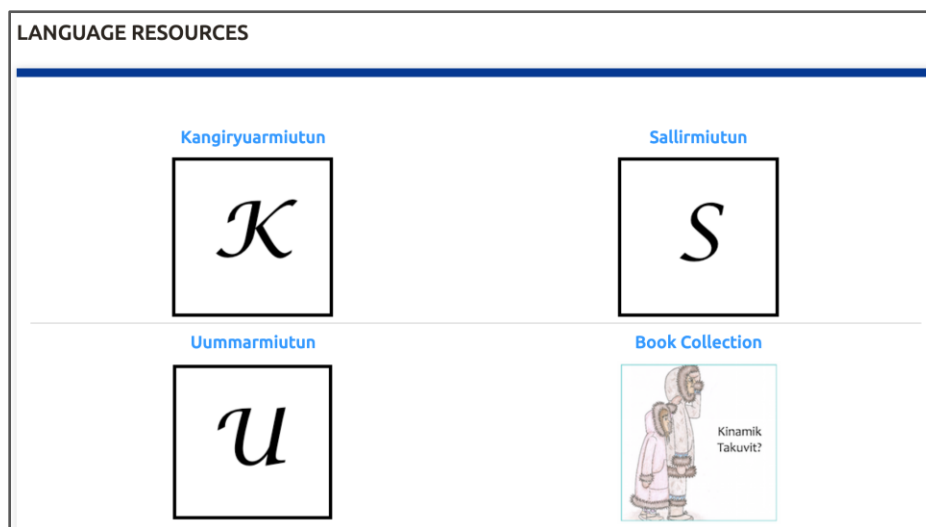


Figure 44. Early version of Language Resources page

Further work with project collaborators led to a vision for a richer and more informative experience, including the opportunity to provide background on the languages of the area and where their roots lie. “I don’t know how having a map or outlining, you know, which communities traditionally have spoken which languages because ... I think outlining how the language kind of uh kind of breaks down” (Participant T75). As seen in Figures 45 and 46, the Languages page now begins with some explanation of the three languages spoken in the region, how they got their name, and their origins. In addition, there is a detailed map of the ISR noting the areas in which each is spoken. Clicking on the name of any dialect takes the user to a list of the resources so tagged.

LANGUAGES

Three languages are spoken in the Inuvialuit Settlement Region:

Sallirmiutun

A dialect of Inuvialuktun spoken by the coastal Inuvialuit people of Tuktoyaktuk, Paulatuk, and Sachs Harbour. This also includes Inuvik, where many coastal Inuvialuit now reside. Sallirmiutun means "people located closest to the shore."

Uummarmiutun

Spoken in the tree-lined inland communities of Aklavik and Inuvik, Uummarmiutun means "people of the evergreens and willows." The origin of this language comes from the Alaskan Inupiaq language.

Kangiryuarmiutun

Spoken in the community of Ulukhaktok on Victoria Island, Kangiryuarmiutun means "people of the large bay." This language is a dialect of Inuinnaqtun, which is the language of the Central Arctic-Kitikmeot communities (such as Cambridge Bay, Kugluktuk, and Ulukhaktok).

Figure 45. Top of the current Languages page

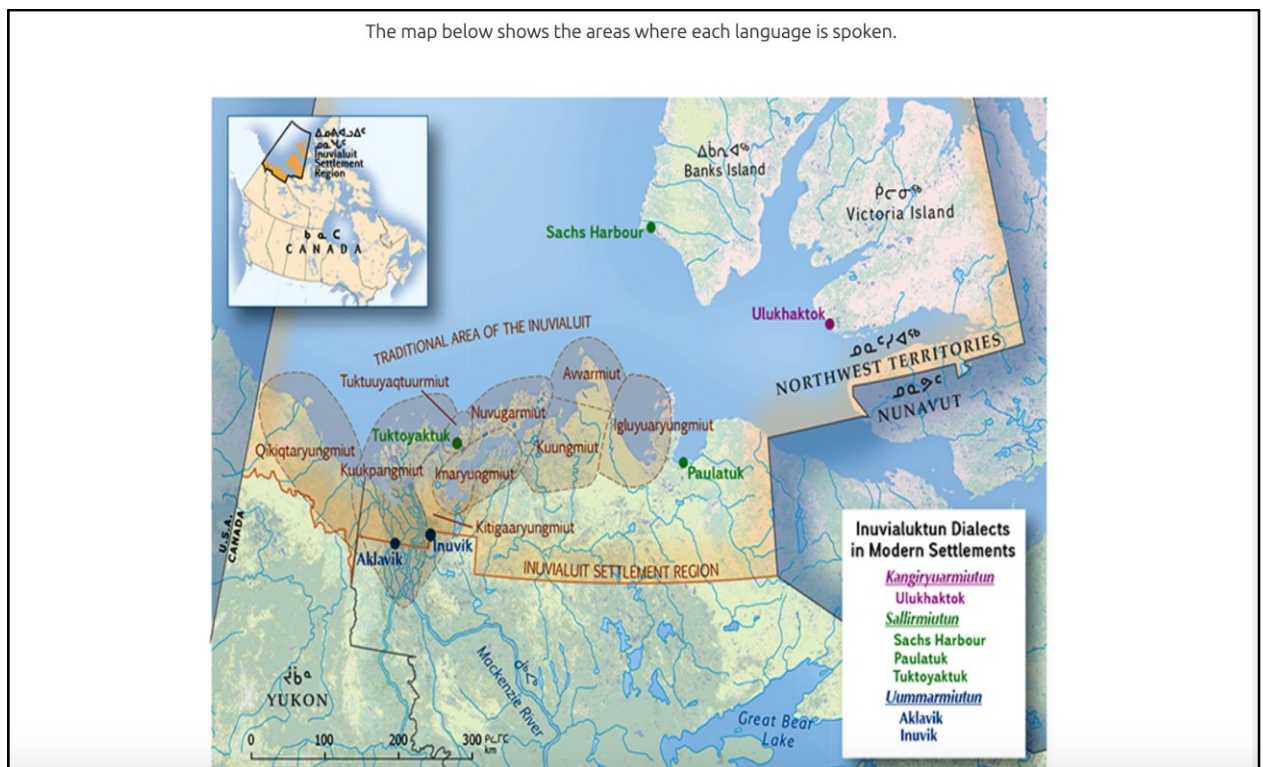


Figure 46. Bottom of the current Languages page

As well, on the current home page (see Figure 43), Browse Language Resources is in a prominent place and is only one click away. In addition, a Languages link, which takes the user directly to this page, is available on the top navigation panel from all other pages (see Figure 47).

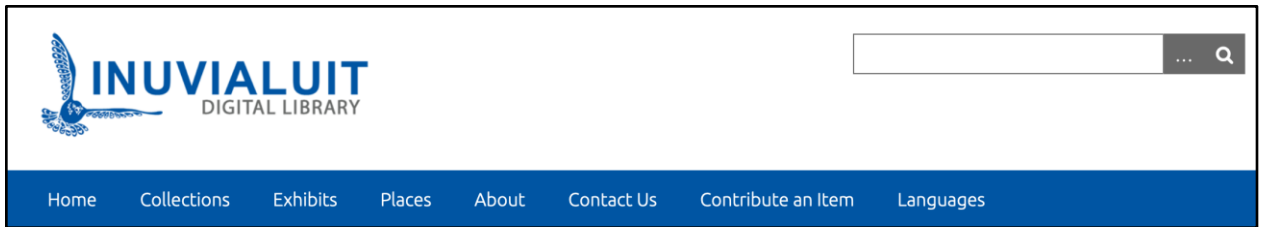


Figure 47. Top navigation panel available on all pages (except the home page)

5.4.1.3 Exhibits.

Collaborators and participants very often expressed the idea of having some way to start to explore what was in the Digital Library, such as a featured collection. This can be very helpful to users who are perhaps unsure of the nature of the content, or who may not have a specific item or type of item in mind. The ability to curate and highlight collections within the Digital Library is enabled through the Exhibit Builder plugin (Roy Rosenzweig Center for History and New Media, n.d.).

The Exhibit Builder Plugin allows you to create and describe exhibits of content within the Digital Library. Omeka allows you to input basic description for your exhibit, specify whether or not it should be publicly visible and/or ‘featured’, and to begin to build by adding pages. Once basic information has been input, additional pages for the exhibit can be added. The pages are built using ‘blocks’, which are simply sections of the page that are configured to look and function a certain way.

The public display of exhibits allows users to engage with the collection in an exploratory way. Figure 48 shows the summary page for the Dr. Hunt Photo Collection, including a description of the collection, a brief biography of Dr. Hunt, and a listing of the organizational structure, in this case by place, to the right.

DR HUNT PHOTO COLLECTION

Images of people, places and activities in the Inuvialuit Settlement Region (ISR) donated by the family of Dr. Hunt.

Dr. Hunt Family photos has taken plenty of photos in varies area that include the following:

- Aklavik Region
- Colville Lake
- Déłjine (Fort Franklin)
- Fort Good Hope
- Inuvik
- Old Crow
- Paulatuk
- Sachs Harbour
- Tuktoyuktak
- Ulukhaktok (Holman)
- On the land
- Mackenzie River
- Porcupine River

Dr. Norris (Joe) E. Hunt was born in 1920. From 1940 to 1942, he served in the Royal Canadian Air Force as a pilot. After the war he attended Queen's University and graduated in Medicine in 1951. Dr. Hunt practised family medicine in Oakville and Huntsville, Ontario and in Inuvik and

- [Aklavik](#)

- [Colville Lake](#)

- [Déłjine \(Fort Franklin\)](#)

- [Fort Good Hope](#)

- [Fort McPherson](#)

- [Inuvik](#)

- [Ulukhaktok \(Holman\)](#)

- [Old Crow](#)

- [Paulatuk](#)

- [Sachs Harbour](#)

- [Tuktoyuktak](#)

- [On the Land](#)

- [Mackenzie River](#)

- [Porcupine River](#)

- [Miscellaneous](#)

Figure 48. Exhibit (Dr. Hunt Photo Collection) summary page

Figure 49 shows the gallery that a user sees after clicking on Porcupine River from the summary page. You can see that from within a gallery page, the user still has the ability to navigate throughout the rest of the exhibit or to go back to the summary page using the links at the top of the gallery page.

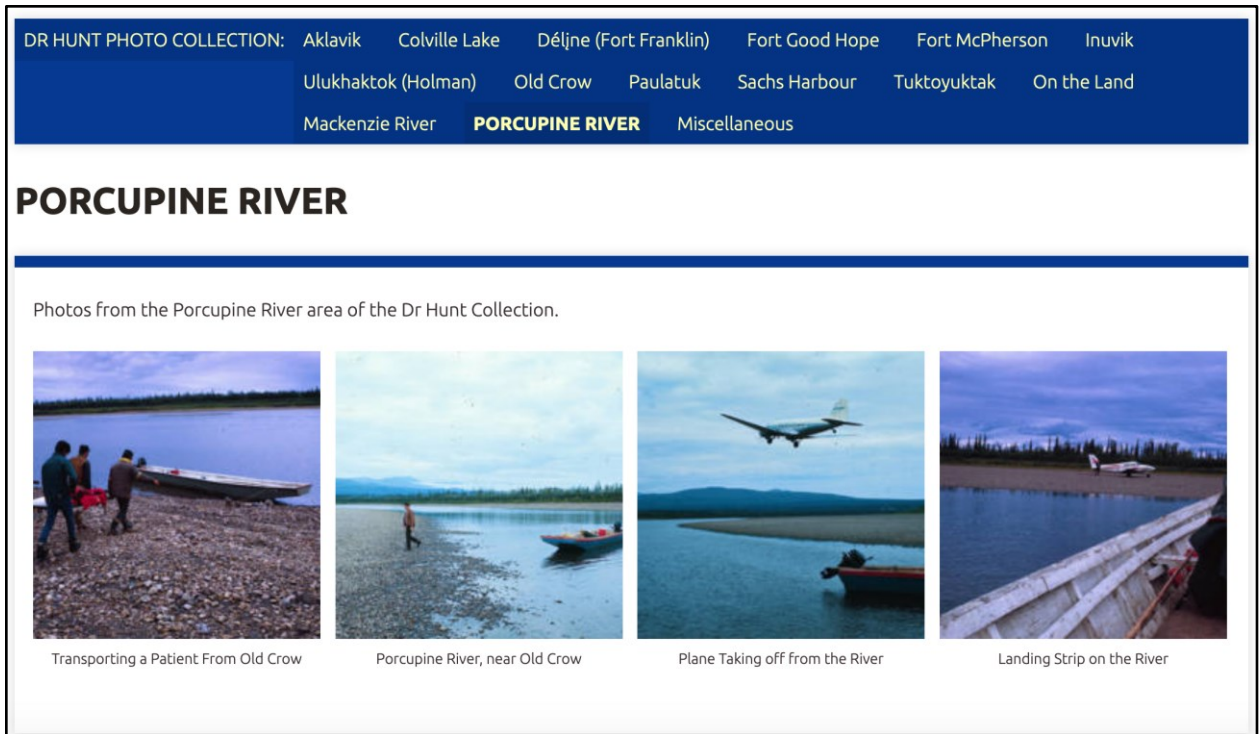


Figure 49. Gallery page within an exhibit (Dr. Hunt Photo Collection)

An earlier iteration of the Digital Library home page (Figure 42) included a Featured Exhibit and also had a Browse Exhibits link on the top navigation panel. The current home page (Figure 43) features Browse Exhibits very prominently. In addition, Exhibits is a link on the top navigation panel available on all secondary pages (Figure 47).

5.4.1.4 Resource Type.

Each of the items in the Digital Library is given one (or more) type label, currently limited to options for Audio, Video, Text, Image. These types were identified from the very start based on the types of resources that the Cultural Centre wanted to include in the Library. “It’s from what people request. Like over the years. They always come in and they like to hear recordings, they like to look at photos, and of course the learning resources. That’s what they always ask for” (Information Audit, 2015). Based on very early discussions with our Cultural

Centre collaborators, the need for an initial entry point into the Library via resource type was identified. The usefulness of this approach has since been borne out through conversations, demonstrations, and user testing with members of the community.

On the current iteration of the home page (Figure 43) resource type is a prominent navigational theme under Our Collections. If a user clicks on one of these typed collections, for example Audio, they are taken to a secondary page listing the various collections available for further exploration (Figure 50). In addition, the Collections link on the top navigation panel available on all secondary pages (Figure 47) takes a user through to the Collections page (Figure 51) which allows for immediate exploration by resource type.

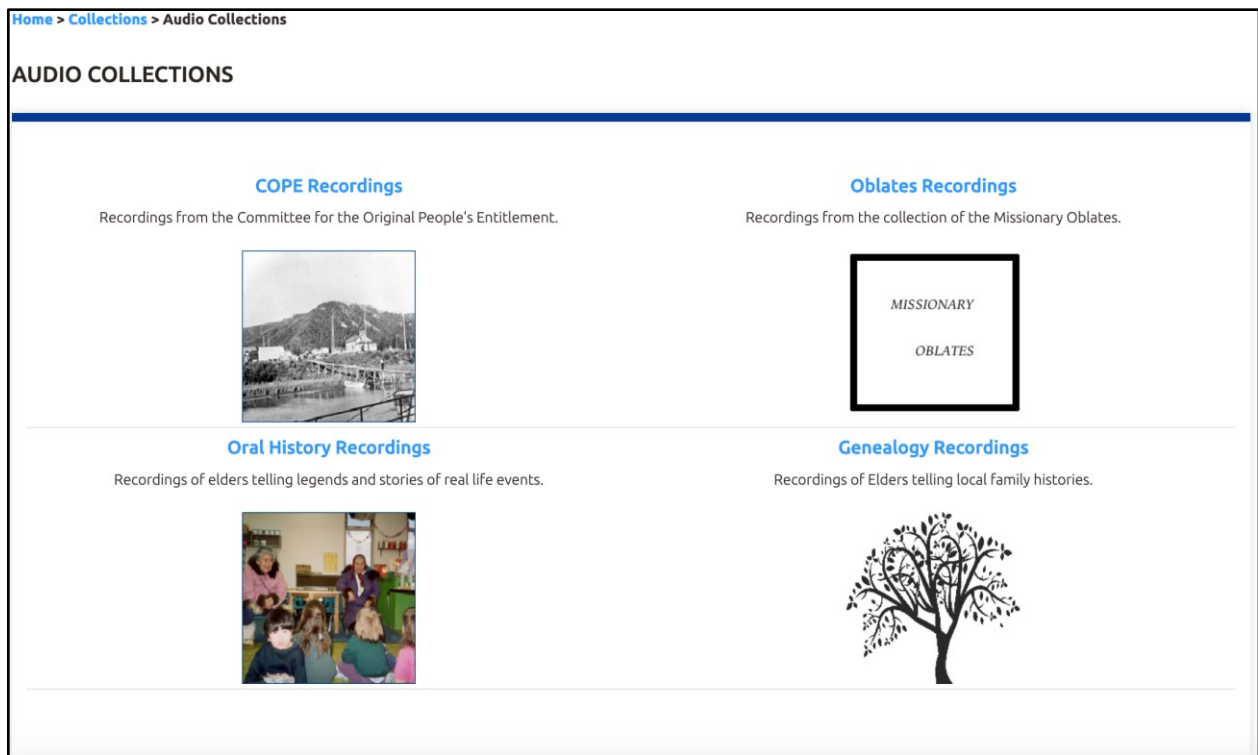


Figure 50. Audio Collections page

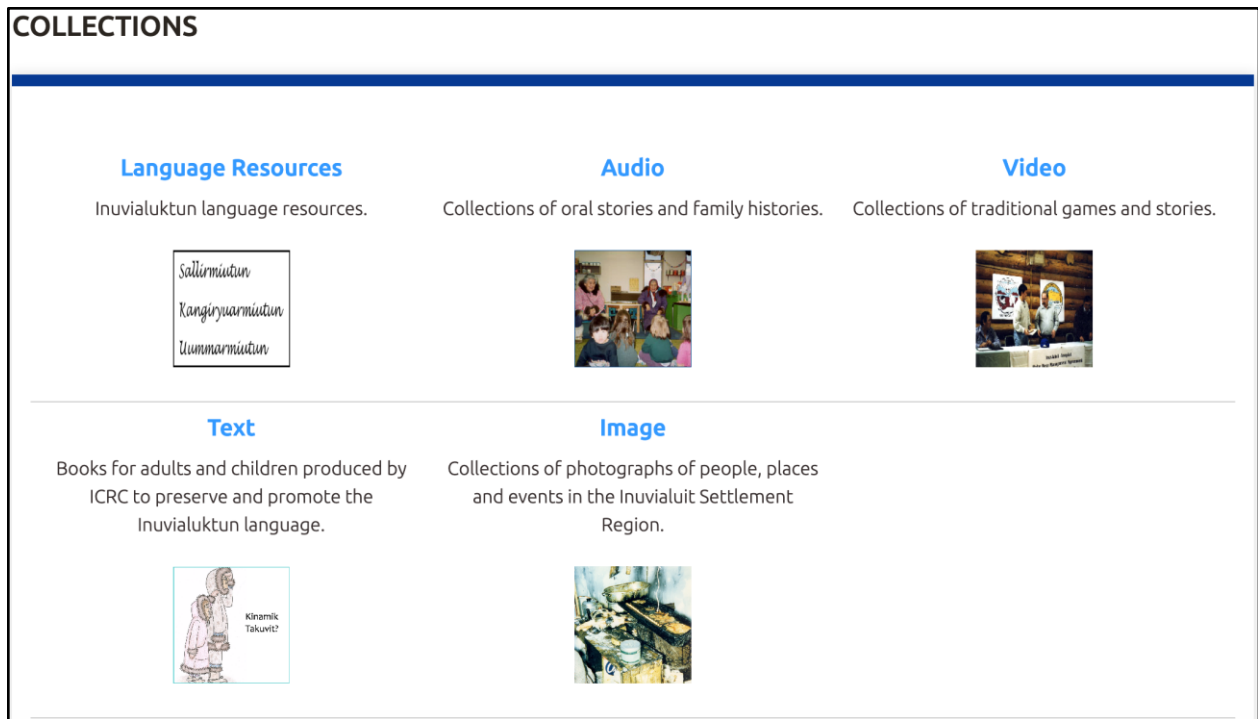


Figure 51. Collections page

5.4.1.5 Themes, People, Seasons.

In conversations with our Cultural Centre collaborators, the notion of an entry point into the Digital Library through a set of curated themes has come up numerous times. Some categories that have been discussed as possible candidates include drum dancing, “on the land”, and Inuvialuit games. What has been envisioned is a themes page or set of pages (perhaps structured like or as an exhibit) that brought together some introductory text and items from the Digital Library into browsable collections based around these key areas of interest. This has not yet been incorporated into the Digital Library as it will require substantial work on the part of the Cultural Centre and community members to gather and curate the themes. However, a prototype of the home page with a Browse Themes option has been created (Figure 52), as has a draft secondary level page (Figure 53).



Figure 52. Portion of proposed home page including Browse Themes

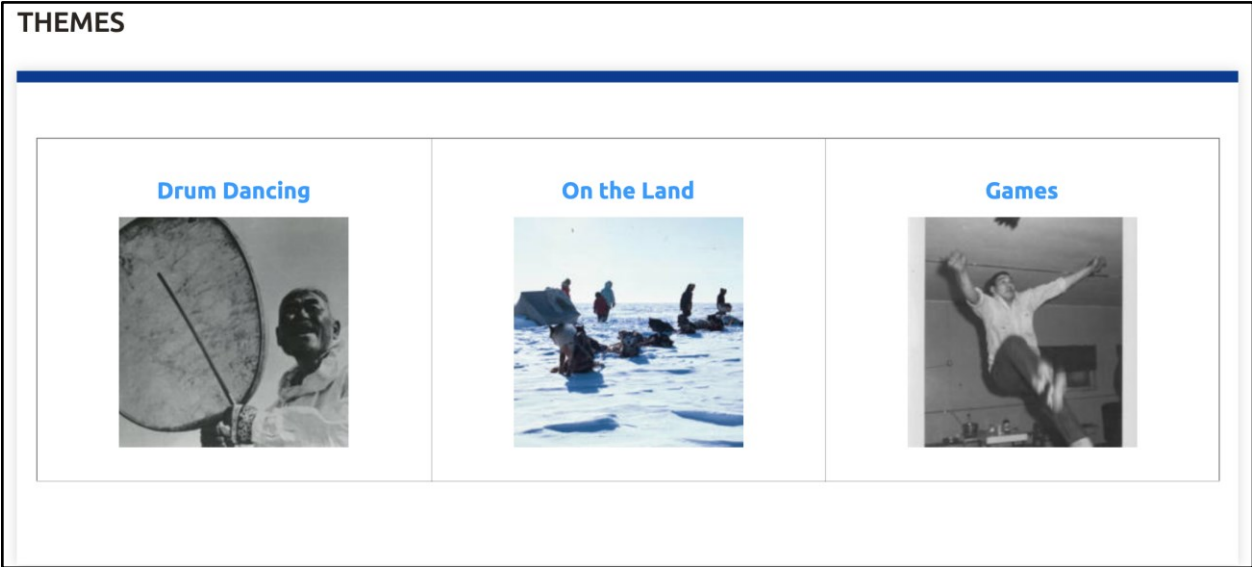


Figure 53. Draft Themes page

As strong as the Inuvialuit connection to land and place is the connection to people, to family, to community. Community members come to the Cultural Centre to find resources that are about or by relatives and friends, to look at photographs, to listen to stories and oral history, to make connections across generations. “They’re interested in their own people, but when it comes close to their family, they are even more interested” (Participant A46). Not surprisingly, similar materials are very popular within the Digital Library. Participants and collaborators have

mentioned time and again how helpful and interesting it would be to have all the items associated with an individual or family gathered together - photos, recordings, and even some biographical information such as birth and death dates, where they are from, etc. - and to make this a main entry point into the Digital Library. This is highly desired functionality that has not yet been incorporated into the Library as it will take substantial work on the part of Cultural Centre staff and community members. However, a Browse People option is included in a prototype home page (Figure 52) and we have worked with collaborators to start thinking through how to structure such resources in the Digital Library. A possible option is to have individuals themselves as 'resources' in the Library, allowing for custom description and attachment of all digital items associated with that person. Another possibility would be to have individuals as 'exhibits', enabling textual description and compilation of resources together in several pages. Either option is feasible, and there may yet be others. Conversations are ongoing.

“The lessons are based on whatever’s happening at a certain time of year. So most of the time, like beginning of the year, it’s like berry picking or leaves falling. Like the types of grasses and the names of trees and stuff. And then when it’s closer to hunting, like how ice forms and types of snow. So we just teach around the season.” (Participant P56). The ability for families and children to navigate the library “following the seasons and using the appropriate language would be fantastic” (Fieldwork February 2019). “A lot of activities are seasonal ... could there be a way to incorporate that aspect?” (Fieldnotes 2016). “Historically we go by seasons” (Participant A46). These words are representative of similar sentiments that have come up again and again in conversations with collaborators and participants. Inuvialuit life, even today, is centred around the seasons; the learning and teaching of language and culture, both formally and informally, are often structured around the activities and places associated with given seasons.

And so the ability to enter into the Digital Library through the seasons has been identified as something that would be of great interest and use to the community. This functionality, however, has not yet been added to the Library. This will require a great deal of work by collaborators and community members to determine how best to add this descriptive information to resources in the Library. In addition, there are technical aspects to be thought through as well, such as how to tie this to place and mapping functionality, since seasonal activities are very much tied to specific areas. Conversations on how to make this aspect of Inuvialuit culture and language come alive through the Digital Library are ongoing.


5.4.2 Exploration and Navigation


Input received from collaborators and community members indicated a need for easy navigation between related items, as well as between multiple parts of the same item, within the Digital Library. Each of these contributes in its own way to a user-friendly and intuitive system.

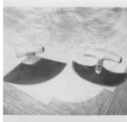
Omeka comes with Previous Item/Next Item navigation built into the system, and made available on any item page. However, the way this functions is not at all intuitive and can be counterproductive when trying to enable linkages between items. For example, a search on the homepage for ulu results in a list of 12 items (Figure 54).

SEARCH (12 TOTAL)

Query: ulu Query type: Keyword Record types: item, file

 **Ulu exhibit**
Date: 1971-11-01

 **Using Ulu**
Date: 1986

 **Stone and Wood Handle**
Date: -


 **U. of A. Museum**
Date: 1971-11-01

Figure 54. Search result list for ulu

If I click on the first item, “Ulu exhibit”, I am taken to the full item page which then gives me options to navigate to Previous Item or Next Item, at the top left and right, respectively (Figure 55). If I click on Next Item I might expect to go to the next item in the result list (“Using Ulu”). However, when I click on Next Item I am instead taken to a different item altogether, in this case “U. of A. Museum”, the fourth item in the result list (Figure 56).

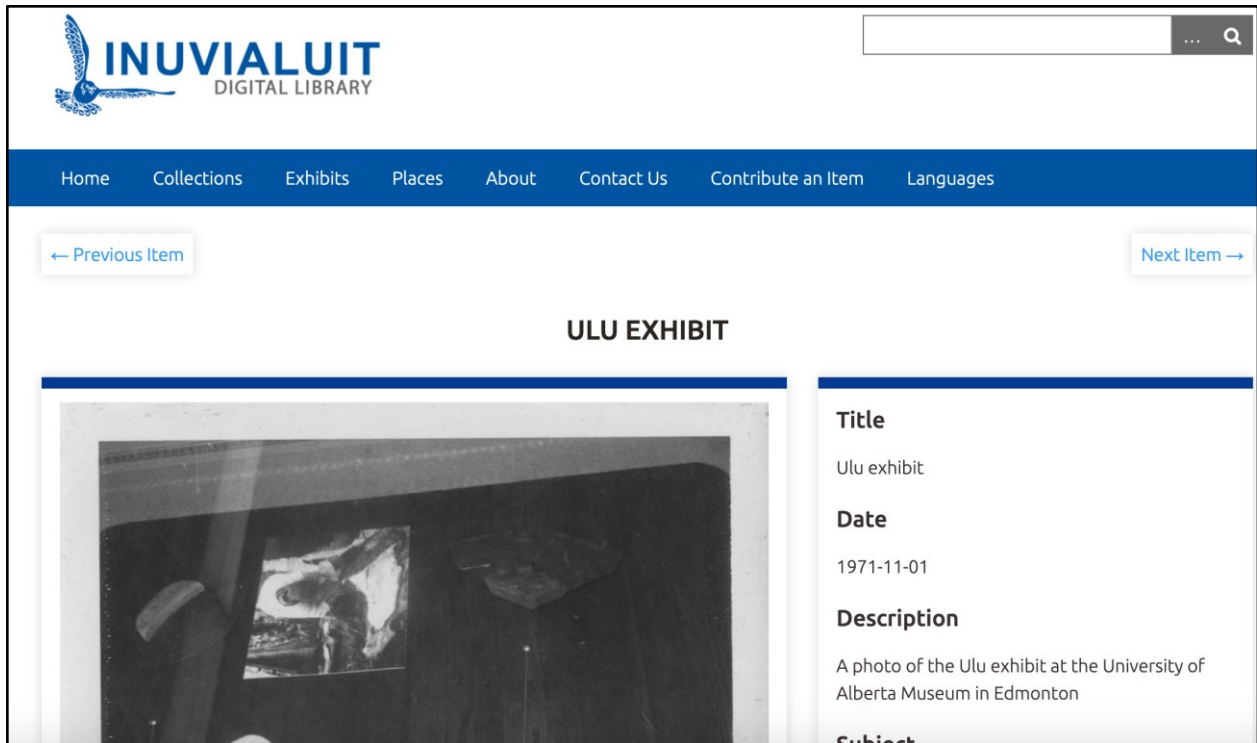


Figure 55. Item page for first result

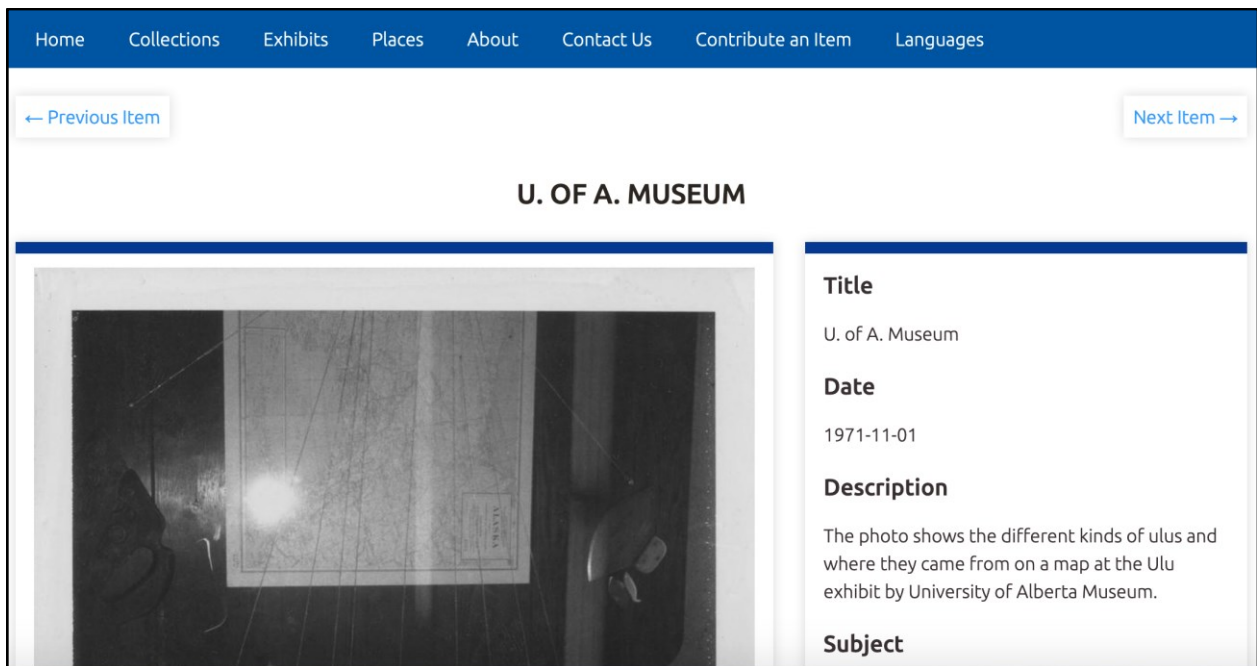


Figure 56. Next Item takes the user to a seemingly random item

What has happened is only made clear by looking at the URL for each item and knowing how Omeka assigns identifiers. Our first search result has the URL <https://inuvialuitdigitallibrary.ca/items/show/4227> meaning that it was the 4,227th item added to the Digital Library. The item that appeared when Next Item was clicked has the URL <https://inuvialuitdigitallibrary.ca/items/show/4228> meaning that it was the 4,228th item added to the Digital Library. Therefore, the system looks to item database identifier to determine Previous and Next rather than using the contextual information of where the user is at any given moment. This is not at all intuitive and unfortunately is hard coded into the system. In order to combat this to some degree, items that are related and best viewed in sequence have had links to the other related parts added to the descriptions to allow for alternative navigation (Figure 57).

THE HUNTER WHO DRIFTED ON ICE (PART 3)

Relation

The Hunter Who Drifted on Ice (Part 1)

The Hunter Who Drifted on Ice (Part 4)

The Hunter Who Drifted on Ice (Part 6)

The Hunter Who Drifted on Ice (Part 7)

Figure 57. Navigational aids added to item description

A similar approach has been taken to the presentation of language lessons for enabling navigation between a larger item or collection of items and the component parts. Within an individual language lesson item, for example, Sallirmiutun basic language lesson 1, greetings,

the Is Part Of metadata value (Sallirmiutun Basic Language Lessons) allows a user to click and immediately go back to the list of all language lessons, from which they can choose the next one or another of their choice (Figure 58).

SALLIRMIUTUN BASIC LANGUAGE LESSONS, LESSON 1 GREETINGS

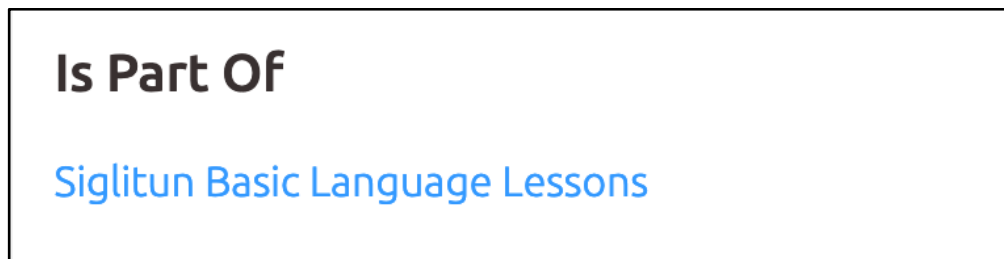


Figure 58. Navigating back out to all language lessons from within a lesson

A more sophisticated approach to the presentation of the language lessons to enable easier navigation through and between them is in the prototyping stage at this time. For context, the language lessons are currently presented one at a time, with the audio and text together on a single screen (Figure 59), with the user needing to use the navigation structure seen in Figure 58 to make their way through them.

SALLIRMIUTUN BASIC LANGUAGE LESSONS, LESSON 1 GREETINGS

00:00 01:38

1 of 2 Automatic Zoom

Greetings		Lesson 1
How are you?	Qanuq itpit?	
I am fine.	Nakuuyunga.	
How about you?	Ilvitmi?	
Me too, I'm fine.	Uvangalu, nakuuyunga.	
How is he/she?	Qanuq itpa?	
He/she is fine.	Nakuuyuq.	

Title
Sallirmiutun Basic Language Lessons, Lesson 1 Greetings

People
[Inuvialuit Cultural Centre \(ICC\)](#)
[Gruben, Helen \(speaker, Siglitun\)](#)
[Amos, Beverly \(translator, Siglitun\)](#)
[Glowach, Sue \(speaker, English\)](#)

Date
2002

Description
Basic language lesson on greetings.

Subject
[Instructional materials](#)

Figure 59. Language lesson as currently presented

Inspired by the interactive language lessons developed by the Yukon Native Language Centre, such as that for Tagish found at http://ynlc.ca/languages/tagish/lesson_tagish_1.html, we have been working to create a similar structure for the Inuvialuktun language lessons.

“Interesting how they set this up, when you click on a language link it automatically recites. The layout and ease of access I find more appealing as the user does not have to flip from recording to recording to listen to the audio. Everything relevant is presented on a single screen page” (Participant C68). This would make use of image maps (as described in 5.4.1.1) and embedded scripting for playing the audio, so that the lessons could be listed on a single page, with the user able to click on a word or phrase and hear it spoken, and to easily scroll to earlier or later lessons with ease (Figure 60).

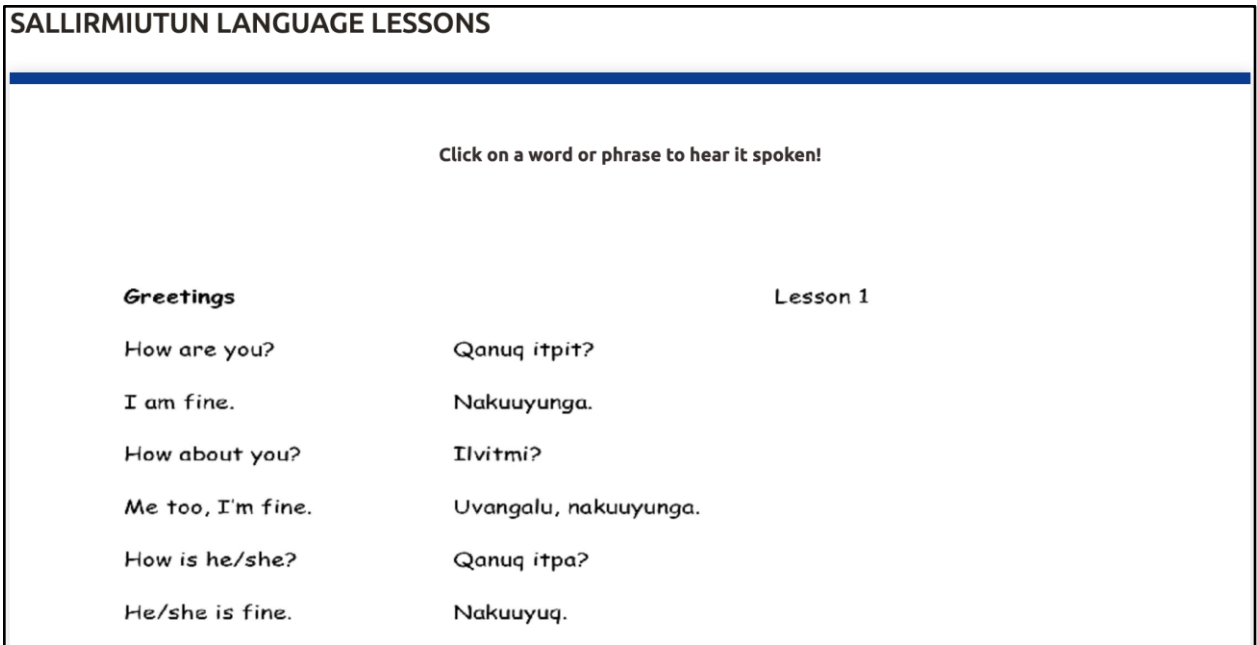
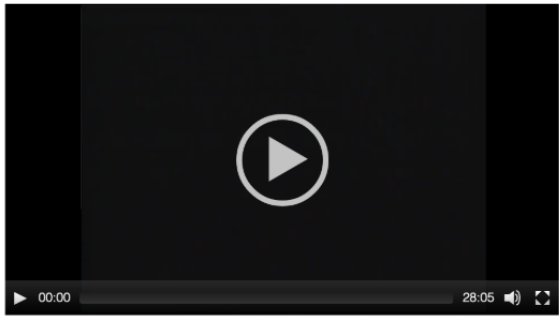


Figure 60. Prototype language lesson with clickable phrases, all lessons on a single page

An additional aid to easy navigation between items in the Digital Library that share certain characteristics, such as subject or type, is made possible through the Search by Metadata plugin (Roy Rosenzweig Center for History and New Media, n.d.). This plugin allows you to make any metadata element, including custom elements, into search links. Turning this functionality on for any given element means that a user viewing an item can click on a metadata value and receive a list of all other items that have that value in common. Figure 61 shows the item screen for the “Cultural Games” video with Harry, Leonard (Host/Narrator) in blue to the right, and Figure 62 shows the list of items that also have Leonard Harry as host/narrator as retrieved upon clicking their name from the item page.

99 10 T CULTURAL GAMES FISHING1-H



Collection

[ICS TV Archive](#)

Citation

Inuvialuit Communications Society (ICS), "99 10 T Cultural Games Fishing1-H," *Inuvialuit*

Title

99 10 T Cultural Games Fishing1-H

People

[Inuvialuit Communications Society \(ICS\)](#)

[Ruben, Stan \(Camera/Sound\)](#)

[Harry, Leonard \(Host/Narrator\)](#)

[Ruben, Stan \(Narrator\)](#)

[Ruben, Stan \(Producer\)](#)

[Canadian Heritage \(Funding\)](#)

[Canada Government of the Northwest Territories \(Funding\)](#)

[Gordon-Ruben, Debbie \(Assistant Executive Director\)](#)

Date

1999

Figure 61. Item screen with clickable metadata value

Contributor is exactly "Harry, Leonard (Host/Narrator)" of 2
Sort by: [Title](#) [Creator](#) [Date Added](#) ▾

99 12 T SAMS School Concert-H

Children from Sir Alexander Mackenzie School perform songs, dances, skits, and plays in their school Christmas concert.

99 10 T Cultural Games Fishing1-H

A video depicting cultural games; fishing techniques.

99 03 T Ulukhaktok Entertainment music and Drum Dancing-H

The entertainment portion of the 1998 Ulukhaktok's annual Kingalik Jamboree featuring drum dancing and musical performances.

Figure 62. All other items with Leonard Harry as host/narrator

A further navigation aid for the Digital Library that has been suggested by collaborators and community members is a faceted search interface. This is not the same as an advanced search (which exists in the Library) where the user limits their search before running it. Rather, this would mean limiting or narrowing after the initial set of results were retrieved. For example, a search for whaling could return a page that had the list of items, but with some limiting or faceting options on the page, such as limit and show me only items of type video, or only items associated with Sachs Harbour. Some investigation has been done into this functionality but a suitable plugin has not yet been identified.

A final aspect of navigation and exploration that has been identified is the ability to browse more intuitively through items. This deals specifically with browsing through collections and search results pages. Community members and collaborators have indicated some confusion when navigating search results. On any given search results page (Figure 63) they have noted that it is not clear why items are ordered in the way they are, and there are no options to sort them differently, such as by Date or Title or Format.

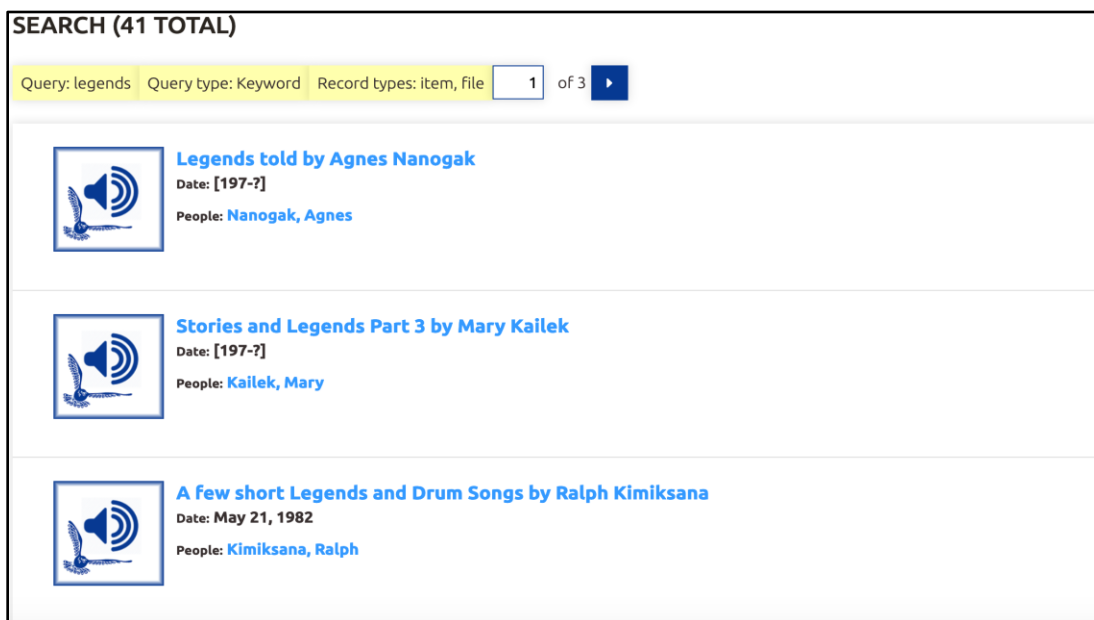


Figure 63. Search results page

Browsing items in a given collection presents a related but slightly different challenge (Figure 64). As with search results, the items are not displayed in any intuitive way, although one can select to sort them instead by Title, Creator, or Date Added. It has been suggested that the most intuitive would be to order them by Title. Unfortunately, the default sort order in Omeka can be changed only through the base code, which has sustainability implications.

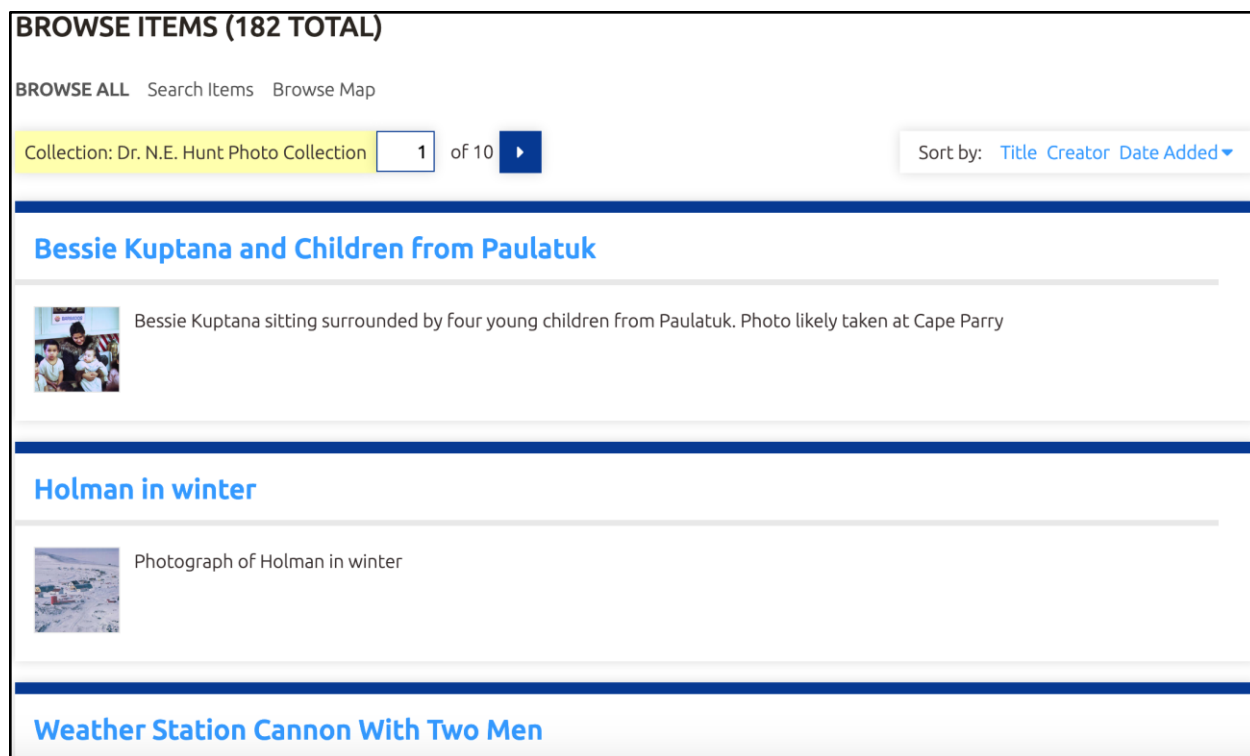


Figure 64. Browse items within a collection

An aspect of the culturally responsive framework that touches on both navigation/exploration and presentation/description (see 5.4.3) is a multilingual interface. “Yeah, if I was to go to the Library, I would like to see the three dialects” (Participant W55). In early discussions with collaborators this was seen as something that would not only make the Digital Library more reflective of the community it serves, but also enable language learning and development for Inuvialuit no matter their level of fluency in their language. In fact, development of a multilingual interface was identified as one of the goals of the Digital Library

North project. “Given the multilingual nature of the ISR, the digital library should provide multilingual interfaces as necessary, based on the environmental scan... This study will investigate the specifications for a multilingual user interface suitable for the proposed digital library” (Digital Library North, 2017). Collaborators and community members agreed that the ideal scenario would be one in which a user would be able to navigate, search, browse, and view item descriptions (including element labels) in the three dialects as well as English, and to be able to easily toggle back and forth between them. Cultural Centre staff noted that when they used to print calendars in the three dialects, they would colour code each dialect for easy recognition, and suggested that this might somehow be incorporated in the Digital Library. Language specialists at the Cultural Centre have participated in several projects related to multilingual websites and have experience in this area. A good example is The Inuvialuit Place Name Virtual Exhibit (Figure 65), which offers the entire site in English, French, and Inuvialuktun.



Figure 65. Example of a multilingual website (<https://www.nwtexhibits.ca/inuvialuit/index.html>)

Omeka as a platform was chosen in part because it does have multilingual capabilities. Through 2016 and 2017, work on testing the multilingual interface was undertaken, focusing on the Switch Language plugin (Research Laboratory of Social Anthropology, n.d.). In the summer of 2017, language experts Beverly Amos and Agnes White began work on translations for common terms used in the Digital Library interface (Figure 66) for purposes of testing and development.

Terms and phrases: English	Terms and phrases: Siglitun	Terms and phrases: Uummarmiutun	Terms and phrases: Kangiryuarmitun
? Browse Collections	Nautchiurlugit		
Title	A+ga		
Previous Page	Sivullia		
Current Page	Makpiraag una		
Next Page	Tuglia		
Featured Item	Nuallugit sivuniksa		
Featured Collection	Nuatangit		
Search for Keywords	Uanatchim pagitchivia		
Go to Home Page			Sivullirmun Utipsaanin
Home	Aiyuami		
Browse by Collection	Nautchiurlugit	Nuatat	
Browse by Type	Nautchiurlugit allagiiktuat		
Browse Exhibits	Nautchiuraksat	Takurlugit	
Map	Nunauyag		
About	Anni		
Inuvialuit language resources	Inuv. Ugausijit	Ilisarviat	
Audio collections		Naalaktuni Nuatat	
Video collections		Takunnaat Nuatat	
Text collections	Aglaktat Nuatat		
Image collections	Aglusigiyit	Nuatait	

Nuatchiyit = Nuatat - Collections

Figure 66. Draft translations for interface terms (Beverly Amos and Agnes White)

This work turned out to be more challenging than first thought, with particular challenges around format needed for the language files. In addition, translation of resource descriptions would be another large and long term undertaking. With changes in project collaborators there was a shift in focus; the multilingual site was seen as a future goal to work toward, with the near term focus on content and description and aspects of the framework that are more manageable to address. In 2019 it was discovered that Inuit Tapiriit Kanatami (ITK) had developed an Omeka-based digital platform for early childhood learning resources, *Katiqsugat: Inuit Early Learning Resources* that is available in both English and Inuktitut (Figure 67), and the plan is to reach out to them to see what can be learned from their experience.



Figure 67. Multilingual digital platform built using Omeka (<http://katiqsugat.itk.ca/>)

5.4.3 Presentation of Items and Descriptions

Through input and feedback from collaborators and community members, several aspects of the display of items and their descriptions within the Digital Library have been identified as part of the culturally responsive framework. An important aspect of this has to do with the location of description in relation to the digital object (image, video, etc.). In the earliest iteration of the Digital Library, the digital object and description appeared one on top of the other, meaning a great deal of white space and much scrolling. A very early change was to move the description to the right of the digital object (Figure 68) so that the object and description can be viewed together. “Like, this is a pretty good example of, uhm, something that has quite a bit of information... Yes, but it would probably -- some of it, having it on the side ‘cause, uhm, and if you’re just skimming you might not be scrolling down right to the bottom” (Participant V47).

HOLMAN IN WINTER



Title
Holman in winter

People
[Hunt, David E., 1925-](#)

Date
1968-1969

Description
Photograph of Holman in winter

Subject
[Digital images](#)
[Winter](#)
[City & town life](#)

Places
[Nunaptingni \(Northwest Territories\)](#)

Collection

[Dr. N.E. Hunt Photo Collection](#)

Figure 68. Digital object and its description side by side

Related to this was to privilege the descriptions by locating the Collection, Citation, Social Bookmarking, and Geolocation information below the digital object (Figure 69).

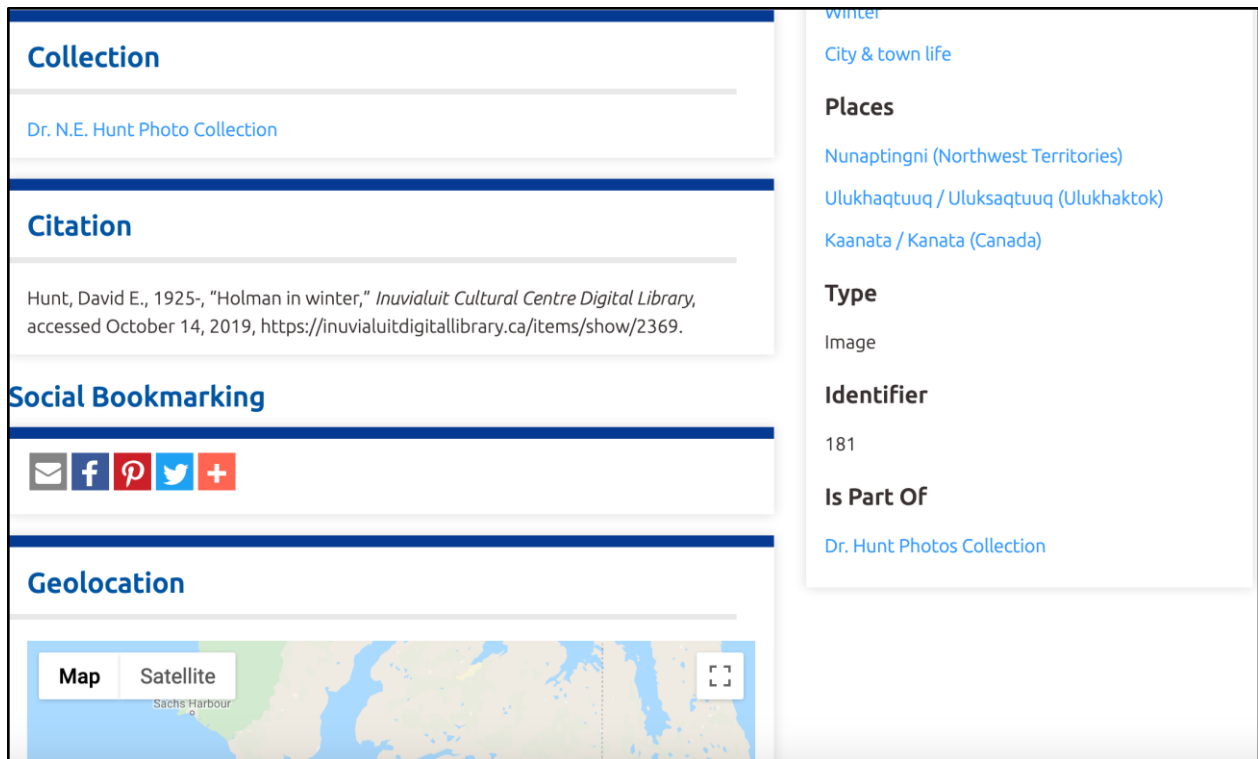


Figure 69. Less critical information appears below the digital object

The order of elements within item descriptions was also adjusted to better meet the needs of community users. Feedback consistently indicated that the core information (Title, Date, People, Description, Subject, Language, Dialect, Places) should appear at the top of the descriptions, with less critical information (Identifier, Type, etc.) being placed further down. This allows the critical information to be viewed alongside the object and with as little scrolling as possible. Making these changes is very straightforward in Omeka through simple drag and drop of element names in the Settings interface.

Related to this is the arrangement of specific elements within the descriptions. One important instance is the display of Language and Dialect (or Original Dialect) within item descriptions. Because Dialect and Original Dialect are custom elements, the system by default placed them at the bottom of the descriptions, far removed from the associated language (Figure 70).

Title Qiviuq, Aanrualik Tingmiaryuungnik Malrungnik
Language Inuvialuktun
Spatial Coverage Nunaptingni (Northwest Territories) Inuuvik / Iñuuvik (Inuvik)
Type Text
<hr/> Dialect Sallirmiutun

Figure 70. Early iteration of item description, with Language and Dialect separated

This was identified immediately by collaborators and community members as less than ideal, as the language and dialect information should be displayed very prominently, and together.

Working with the contract developer, this was changed so that they display together and in a prominent place (Figure 71).

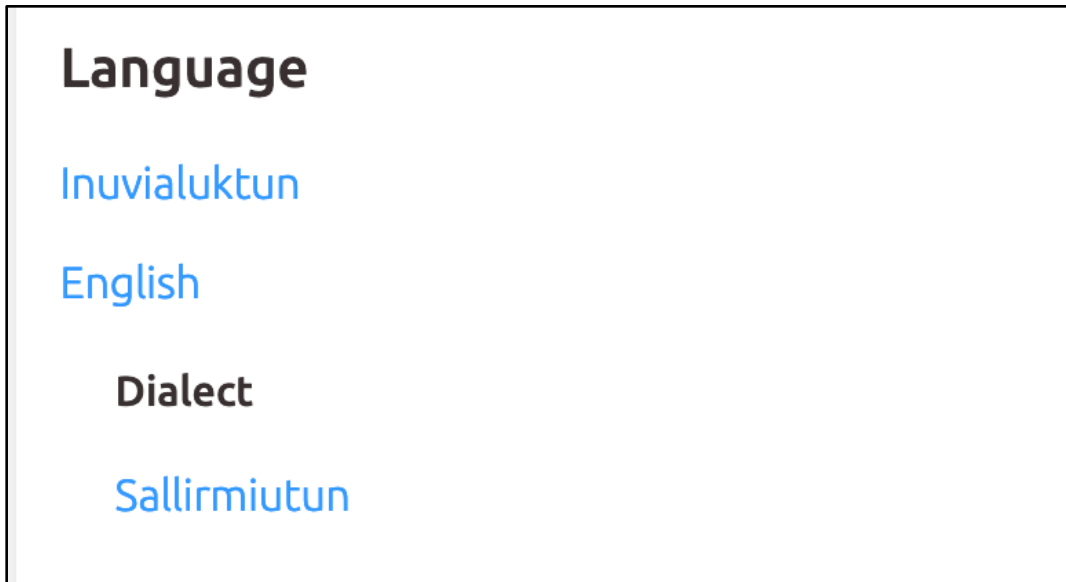


Figure 71. Revised display with Language and Dialect together

Something similar was done with the *Creator* and *Contributor* elements, both of which were renamed *People* and displayed together on the item screen.

Some of the material in the digital library, in particular in the oral history and genealogy audio collections, deal with sensitive content. This has been described by community collaborators as content that touches on certain subjects (e.g., residential schools, family violence) that users should be warned about so that they can choose to listen, or not. There was a strong desire to have this made very clear to users immediately upon navigating to an item in the Digital Library and so the decision was to add a brief disclaimer in red font just under the item's Title (Figure 72).

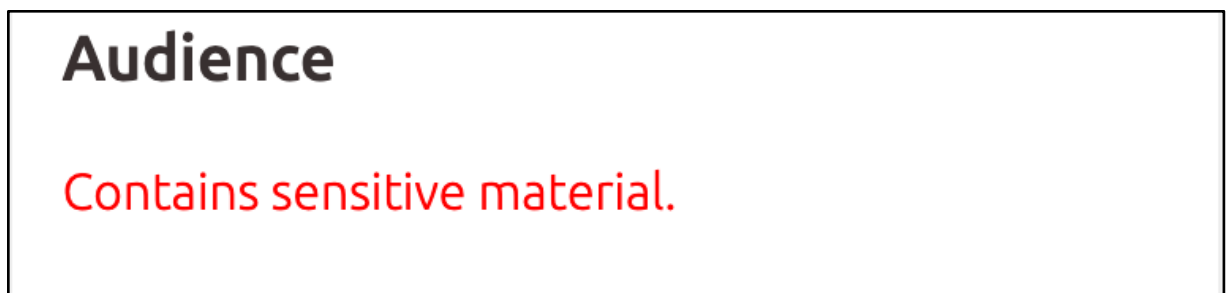


Figure 72. Disclaimer for sensitive content

An element of item presentation that was identified as important from the beginning was the ability to have items with multiple associated digital objects, and to have these display, along with the item description, in a useful and intuitive way. As noted previously, item display was revised very early on so that the digital object and its description would appear next to each other rather than one on top of the other. This is beneficial when there is only one object to an item, but is particularly helpful when an item has more than one associated object, such as a language lesson which has both an audio clip and a text file (Figure 73).

UUMMARMUTIUN BASIC LANGUAGE LESSON, LESSON 1 GREETING : PARAUTIT

00:00 02:05

1 of 2 Automatic Zoom

Paarutit / Greetings Lesson 1

How are you?	Qanuqitpit?
I am fine.	Nakuufunga.
How about you?	Ilvitmi?
Me too, I'm fine.	Uvangalu, nakuufunga.
How is he/she?	Qanuqitpa?
He/she is fine.	Nakuufuq.

Title
Uummarmuitun Basic Language Lesson, Lesson 1
Greeting : Parautit

People
[Inuvialuit Cultural Centre \(ICC\)](#)
[Elias, Lillian \(speaker, Uummarmuitun\)](#)
[Albert, Rosie \(translator, Uummarmuitun\)](#)
[Glowach, Susan \(speaker, English\)](#)

Date
2002

Description
Uummarmuitun basic language lesson on greetings.

Subject

Figure 73. Item with two digital objects (audio and text)

There has been ongoing discussion, however, that this display may need to be revised yet again to accommodate items with three or more associated digital objects. What collaborators and community members have in mind here is specifically how people may be modelled if there are one or more images, audio recordings, text transcripts, etc. associated with them. An early draft of an alternative (Figure 74) has been discussed briefly, but to date no decision has been made.


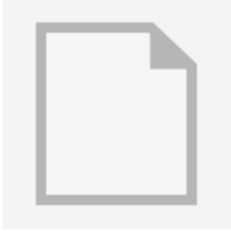
KANGIRYUARMIUTUN BASIC LANGUAGE LESSON, LESSON 53 PLANTS: NAUTTIAT	
 	
<p>Collection</p> <p>Kangiryarmiutun Language Resources</p>	<p>Title</p> <p>Kangiryarmiutun Basic Language Lesson, Lesson 53 Plants: Nauttiat</p> <p>People</p> <p>Inuvialuit Cultural Resource Centre (ICRC)</p> <p>Malgokak, Susie (speaker, Kangiryarmiutun)</p> <p>Inuktalik, Annie (translator, Kangiryarmiutun)</p> <p>Glowach, Susan (speaker, English)</p> <p>Arey, Renie (special thanks)</p> <p>Language</p> <p>Inuvialuktun</p> <p>English</p>
<p>Citation</p> <p>Inuvialuit Cultural Resource Centre (ICRC), "Kangiryarmiutun Basic Language Lesson, Lesson 53 Plants: Nauttiat," <i>Inuvialuit Cultural Resource Centre Digital Library</i>, accessed</p>	

Figure 74. Proposed display of item with multiple digital objects

General branding aspects of the Digital Library were identified very early on as important for the culturally responsive framework as a means of the community taking and demonstrating ownership of the process and the product. The initial colour scheme included generic spring colours (Figure 75).

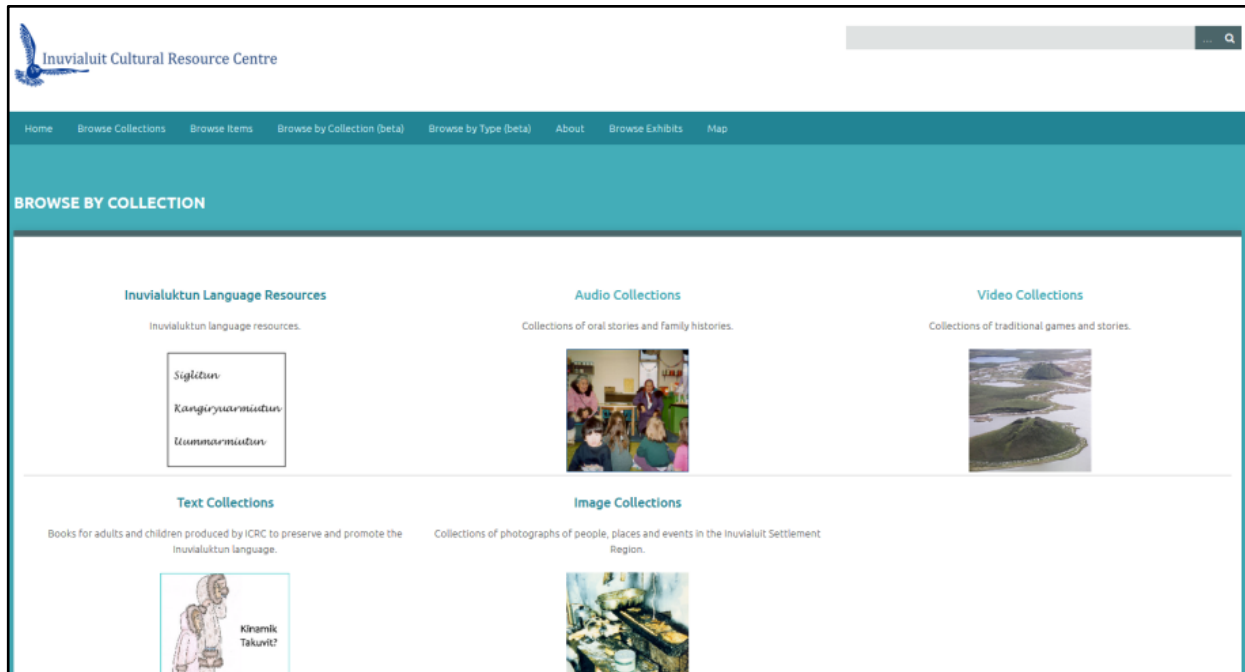


Figure 75. Early colour scheme featuring ‘spring’ colours

The desire was instead to use the colour scheme used by the IRC for websites, logos, etc., and so the colour specifications were obtained and the result is the darker blue seen throughout the current site.

Logos were another critical part of the presentation. The Inuvialuit Cultural Resource Centre logo (Figure 76) was added to a prominent place on the Digital Library. When the Resource Centre changed its name to the Inuvialuit Cultural Centre, the revised logo (Figure 77) was added to the site. And as the official launch of the Digital Library approached, IRC technical and design staff completed the Digital Library logo (Figure 78) which is now on the home page.



Figure 76. Early iteration of Cultural Centre logo



Figure 77. New Cultural Centre logo



Figure 78. Digital Library logo

A final aspect of the culturally responsive framework identified immediately as important was the display of search results. The Omeka default display included the resource ‘type’, but this was not type as in format (audio, video, etc.) but rather type as determined by Omeka, i.e, was it an item or a collection. Feedback immediately indicated this was both confusing and unhelpful or irrelevant. In addition, there was very little information provided for an item to help a user determine whether or not to click through to the full item page. And there was also a great deal of unnecessary white space. Working with the contract developer we were able to remove the ‘type’ information, make the thumbnails slightly larger (and use the revised versions rather than the default, as discussed in 5.3.2.3), and add additional descriptive information, all of which contributed to a reduction in unused white space. Figures 79 and 80 show the initial version of search results and the revised version, respectively.




Record Type	Title
Item	 An'ngikpaak (Siglitun)
Item	 Nalluutik (Kangiryuarmitun)
Item	 Kamikpaak (Uummarmiutun)
Item	 Puviishualuk (Anna)

Figure 79. Early version of search results page

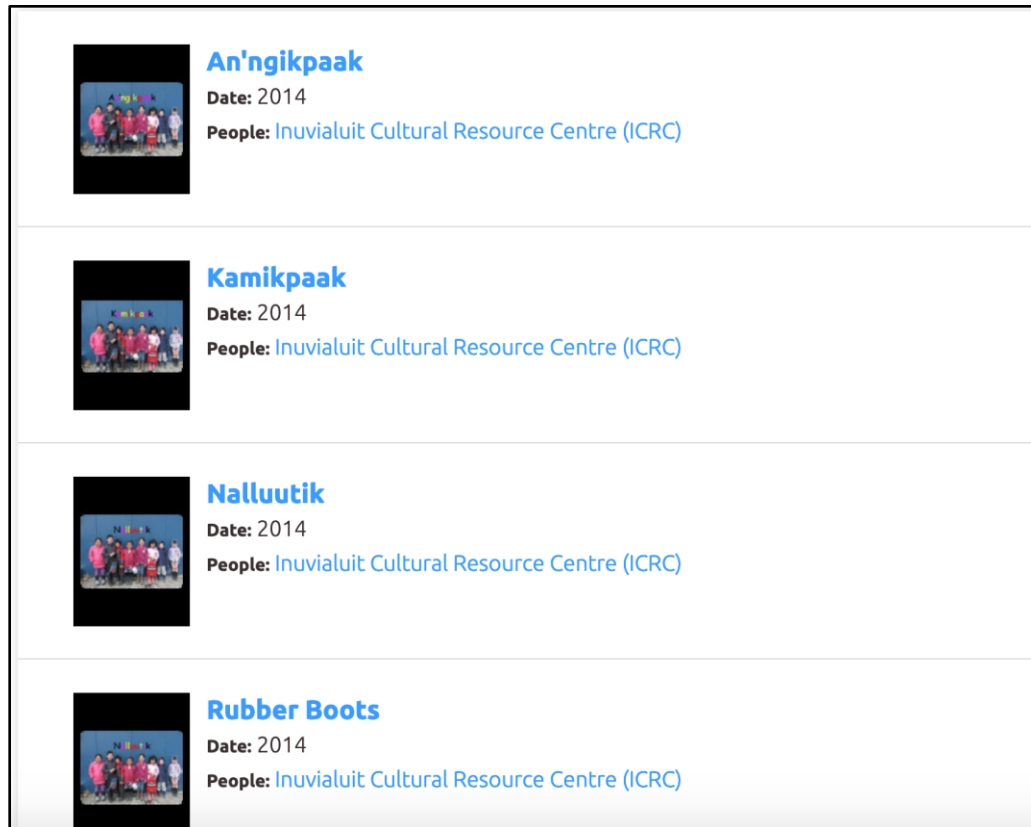


Figure 80. Revised search results page

5.5 Metadata Elements

Metadata frameworks incorporate the properties, or elements, that are used, as well as how those elements are populated. This speaks to questions such as what the entry fields are (Gibson, 2007), what (if any) standards are used, can multiple stories be connected with a given item, are variant spellings of names of people and places allowed (de Souza, 2016), and what, if any, is the role for controlled vocabularies (Glass, 2015). The framework surfaced in exploration with the Inuvialuit community and in place for the Inuvialuit Digital Library is no different. Importantly, however, in the case of a culturally responsive framework, these elements must “resonate with culturally-specific ways of knowing about objects, ... and reflect the right cultural categories of the varied ontologies and epistemologies of multiple audiences and stakeholders”

(Glass, 2015, p. 37). And in the case of the Inuvialuit community, the elements and properties are those identified as important by the community, and they are populated with content that reflects the specific community context. These include names of people, places, and resources; language and dialect; dates, subjects, and descriptions; rights, citation, and audience; relationships; additional elements and general practices, each of which is described in the following sections.

5.5.1 Names of People, Places, and Resources

An immediately identified need was for each resource to have a name. A very commonly used label for such a property is *Title*, which is what was chosen. Feedback to date has been that this label is understandable and usable. “You know what? This is good. It’s got all the, um, titles bold. And I think that’s what people are gonna look for in the beginning” (Participant P56). Having a quick way of seeing what an item is was consistently emphasized by participants. “I like the very clear title” (Participant V47). Example titles from the Digital Library include “Sled dogs at a seal hunt camp”, “Legends and stories by Agnes Nanogak”, and Aturuukkatka aimamni (Uummarmiutun)”.

The content of the *Title* element is meant to be concise and clear in order to help the user of the Digital Library decide whether or not they want to explore the resource further. We heard from community that “big, fancy words should be avoided” (Participant G78), that ideally information should not be repeated across *Title* and other elements, and that *Title* should be able to capture titles in English or Inuvialuktun. Some of the initial descriptions for resources in the Digital Library originated elsewhere, and work is under way to improve those descriptions. While this work is being done by Cultural Centre staff, there is a strong desire for community input and assistance with this work. Striving to make titles more specific is an excellent example

of this type of initiative. As one community member stated, “[we] do not like having ‘Inuit man’ as the title, the person has a name” (Participant C63).

The Inuvialuit way of being is reflected in strong connections to people (family) and to place (land), and Inuvialuit are constantly striving to know and learn more about who they are and where they come from. And so it is not surprising that the names of people and the names of places were emphasized as critical pieces of information for resource description. “And, like I mentioned earlier, to have, you know, all of the person’s like, a search engine for like, say I’m looking for my grandmother, you know, I plug in her name and everything of her would pop up, you know” (Participant J33). Collaborators and participants have emphasized that knowing who is speaking in a recording, or is depicted in a photograph or video, or who told or translated a story, is perhaps the most important property of a resource. Indeed, processes of identification are ongoing not only for resources within the Digital Library, but for Inuvialuit resources held not only by the Cultural Centre, but also by archives and museums far and wide.

Creator and *Contributor* are commonly used labels for elements that capture information about people who relate to the content of a resource in some way. These elements are also part of the default metadata standard (Dublin Core) that comes with Omeka, and so these were the labels initially used. An example of an early description with these two elements can be seen in Figure 81.

Title	Language
Siglitun Basic Language Lessons, Lesson 45 Location	Inuvialuktun English
Creator	Contributor
Inuvialuit Cultural Resource Centre (ICRC)	Gruben, Helen (speaker, Siglitun) Amos, Beverly (translator, Siglitun) Glowach, Sue (speaker, English)
Date	Spatial Coverage
2002	Canada, Northwest Territories, Inuvik
Description	Source
Basic language lesson on location.	Siglitun Basic Language Lessons (Booklet)
Subject	Is Part Of
Instructional materials Inuit languages	Siglitun Basic Language Lessons

Figure 81. Item description showing Creator and Contributor elements

While these elements enabled the capture of the information people were seeking out, the labels were found not to be intuitive and perhaps even problematic, and so suggestions for alternate labels were sought out. The term heard most often was simple and straightforward - *People* - and so this change was made. This involved changing the display labels for both elements and grouping them together in a single *People* section on an item record (Figure 82).

<p>Title</p> <p>Sallirmiutun Basic Language Lessons, Lesson 45 Location</p> <p>People</p> <p>Inuvialuit Cultural Centre (ICC)</p> <p>Gruben, Helen (speaker, Siglitun)</p> <p>Amos, Beverly (translator, Siglitun)</p> <p>Glowach, Sue (speaker, English)</p> <p>Date</p> <p>2002</p> <p>Description</p> <p>Basic language lesson on location.</p> <p>Subject</p> <p>Instructional materials</p> <p>Inuit languages</p>
--

Figure 82. Revised display showing People rather than Creator and Contributor

When a resource is about a person, the name of that person is also captured, but within the *Subject* element.

Treatment of personal names is another area about which there has been much discussion. Colonization, along with westernization and Christianization, are processes of systematic and sustained efforts to erase Indigenous culture, language, and heritage, including names for people and places. The Inuvialuit, like other Indigenous peoples, are reclaiming these names, and so including them within the Digital Library was understood as critical from the project's inception. "Because a lot of, we still carry on our traditional names. So kids can see, and say 'oh that's my Inuvialuktun name'. They will have more pride" (Participant C63). However, we have also heard that it is important to keep the westernized/Christianized versions as many still use them, and so allowing for multiple forms of an individual's name, as well as alternate spellings, was essential. Language specialists at the Cultural Centre emphasized the importance of using the form and spelling that the individual uses (or used), consulting with family and others as needed. The names as they are encountered are being added to a growing document being used by the project team. Examples from within the Digital Library include Donald Ířituagayuk Sakiituaľuq Kuvľualuk Kagľik and Ishmael Suuyuk Alunik.

Related to the names of people is the role that person may have played with respect to the resource being described. This could be someone who translated a legend from one dialect to another, produced a television program, or took a photograph. Initial discussion centred on capturing this in a custom *Role* element. However, ensuring that a name and a role were always accurately matched and presented to the user in a clear and meaningful way was identified as a challenge for both descriptions and the platform. And so a decision was made not to capture this important information in a separate element, but rather by including it along with the name in the People element (Figure 83). The terms used for this element are not taken from a controlled

vocabulary, but rather have been used as found on the resource (e.g., translator, speaker, etc.). Efforts are made to be consistent in use across descriptions.

People
Inuvialuit Regional Corporation
Video North Productions (Producer)
Inuvialuit Communications Society (Producer)
Inuvialuit Regional Corporation (Executive Producer)
Carpenter, Les L. (Narrator)
Albert, Ruth M. (Narrator)
McLeod, Esther (Narrator)
Kisoun, Yvonne (English voice over)
Fry, Frank (English voice over)
Refshauge, Chris (supervising producer)
Gordon, Debbie (Producer)
Arey, Renie (producer)
Coates, Ken (Writer)
Refshauge, Chris (Writer)
Landy, Robert (Camera)
Vaughan, Lantry (Camera)

Figure 83. Item record showing roles along with names

The place or places associated with a resource, which could be the place from which something originated (e.g., a language booklet created by the Resource Centre in Inuvik), a place or places that a resource is about (e.g., an oral history recording discussing winter hunting locations throughout the region), or the area that a language or dialect is associated with (e.g., a

story in Uummarmiutun which is spoken in Aklavik and Inuvik), were also identified as absolutely critical from the earliest days of the Digital Library. “I think, having that, you know, the places too would be, you know, helpful if someone was to do some research. Or, you know, find out about a place, what it looked like, maybe back then and now” (Participant J33). The Dublin Core label for the element for capturing this information is *Spatial Coverage*, which is what was initially used in the Digital Library (Figure 84).

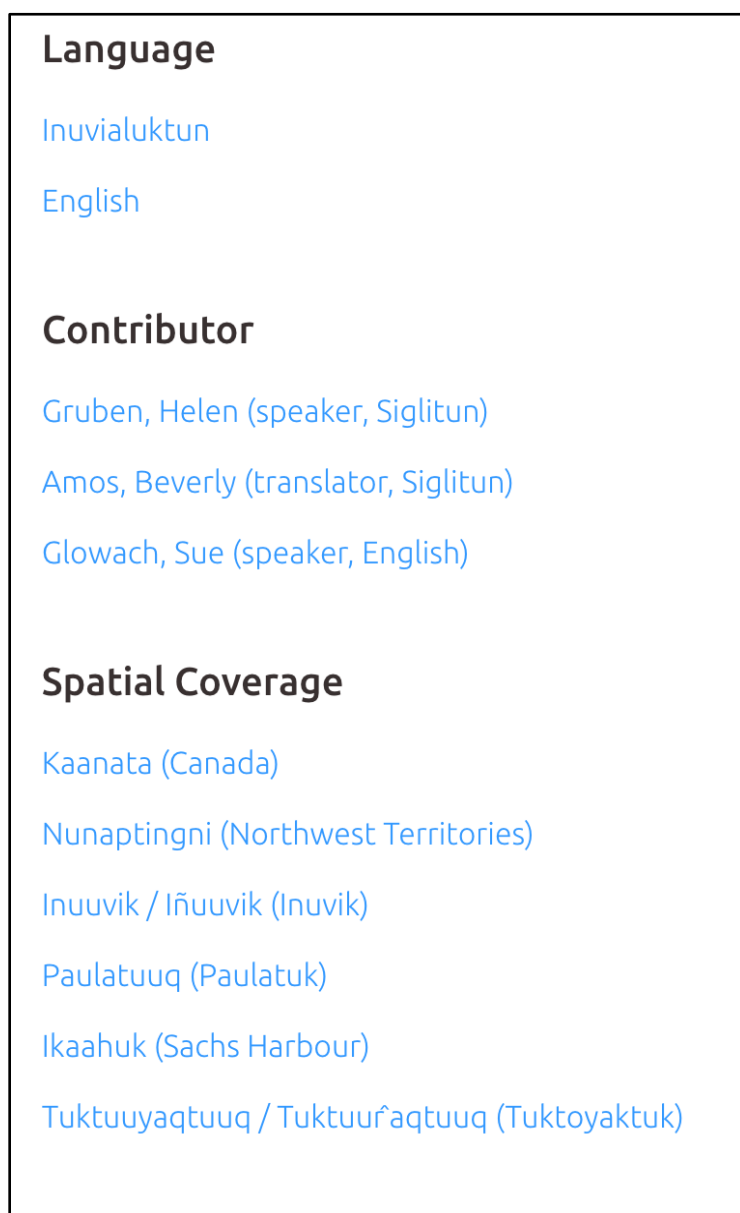


Figure 84. Item description showing Spatial Coverage

However, from the start it was obvious that this label was not at all clear to community members and collaborators; “what is spatial something?” (Participant A46) is a refrain that was heard over and over again. Several alternative labels were suggested, including land, nuna (Inuvialuktun for land), location, place. In the end a decision was made to use *Places* as the label (Figure 85). This has been found to be intuitive and reflective of community interests.



Figure 85. Item description showing Places rather than Spatial Coverage

The content values for the *Places* element generally come from controlled lists of terms. Locations within the ISR and elsewhere within traditional Inuit territories are taken from the custom, dynamic list that was created earlier in the project and which continues to grow as new names need to be recorded. This list includes the names in English as well as all dialects of Inuvialuktun. Staff at the Cultural Centre decided that places that had officially reverted to their traditional name (e.g., Ulukhaktok, formerly Holman) would not include the westernized/colonized version. The inclusion of English names was discussed from the very

beginning. Many collaborators and community members feel that it is important to include them because many individuals still know them by that name, and so not including them might disadvantage some users of the Digital Library. In addition, it was noted that colonization and the associated processes of westernization and Christianization are a part of the history of the Inuvialuit and their land, and this must be recognized and not washed away. The guidance was to keep them, but to deemphasize them, and that is what is done in resource descriptions.

The forms of names of places other than those of the ISR or other traditional Inuit locations are taken from standard sources such as the Canadian Geographic Names Database (Natural Resources Canada, n.d.). Language specialists at the Cultural Centre determined that they would like to use the Inuvialuktun names for Canada and Northwest Territories as well as the English forms and so what you find in the Digital Library is Kaanata / Kanata (Canada) and Nunaptingni (Northwest Territories).

Another unique aspect of the application of *Places* to resource descriptions in the Digital Library relates to the efforts to ensure Inuvialuit culture and language continue to thrive and grow into the future. General practice when describing resources is to include only those locations that are associated with an event in the lifecycle of the resource (e.g., creation or conversion), or those that represent the subject matter of the resource. However, community collaborators wanted to go outside this practice when describing language learning resources. So, for example, a Sallirmiutun language booklet published by the Cultural Centre in Inuvik would have Inuvik included in *Places*, but would also include Ikaahuk / Ikaariaq (Sachs Harbour), Tuktuuyaqtuuq / Tuktuuâqtuuq (Tuktoyaktuk), and Paulatuuq (Paulatuk) in order to help educate users that Sallirmiutun is the language spoken by those communities.

5.5.2 *Language and Dialect*

An immediately identified need was for an element to capture both the language and the dialect of a resource in the Digital Library. Cultural Centre staff explained to us that many of the stories and legends are known to originate from one area or another, and are considered to be native to the dialect of that region. When these are then developed into booklets or recordings, they are translated into each of the other dialects. For this reason, the ability to capture the original dialect in the metadata was considered very important. The element selected to capture language information was *Language*, one commonly used for this and that is very clear to users. The standard that came with Omeka did not have an element for capturing dialect information, and so in discussion with community collaborators, a decision was made to create two custom elements: *Dialect* and *Original Dialect*. To make description easier and to reduce the chance of errors, the content values for *Language*, *Dialect*, and *Original Dialect* are all taken from custom controlled vocabularies that reflect the local context. Figure 86 shows an example of these three elements used in a resource description.



Figure 86. Item description showing Language, Dialect, and Original Dialect

5.5.3 Dates, Subjects, and Descriptions

An important property of resources identified very early on was the time period or date associated with it. This could be when something was created (e.g., when a language resource was published), or when something took place (e.g., when an oral history interview was conducted, or when a photograph was taken). A commonly used element for this type of information is *Date*, and this was chosen for the Digital Library. Collaborators and community members have found this to be clear and intuitive. No restrictions on the format of the content of the *Date* element have been put in place as feedback indicated that it would be most useful if it enabled flexibility in terms of how the date information itself is captured. Some examples of *Date* in the Digital Library include “early 1900s?”, “November 1976”, and “1950-1951”.

Through feedback and input from the start of the Digital Library, it has been clear that subject or topic matter of resources (“aboutness” as it is often referred to), described both

through keywords or phrases as well as longer descriptions, is essential information to be captured. Two elements chosen for this are *Subject* and *Description* (Figure 87).

Description

A Long Time Ago host Ishmael Alunik airs Aklavik Elder Hope Gordon storytelling about where and how they lived in Alaska, Part 2. To be continued.

Subject

Big Flu

Death

Births

Hiking

Hunting

Fishing

Tooth Extraction

Snaring

Various Families

Traditional Medicine

Christmas

1920 Census

Travel

Figure 87. Item description showing Subject and Description

There was some discussion at various points of alternatives to the *Subject* label, including topics, keywords, and tags. However, collaborators and community members did not have a strong

belief that these would be of any greater benefit to users of the Digital Library, and so the decision was made to keep it as is for now.

The content values for *Subject* come from several sources. From the earliest days of the project it was acknowledged that most existing vocabularies would not include all of the topics that would be reflected in the Digital Library, and that the terms for those concepts they did include might be inappropriate or even offensive. And so the idea was to make use of both existing, established vocabularies as well as creating and using a localized term list. The balance over time has shifted to a much greater reliance on local terminology, and on deconstructing complex subject heading strings from other vocabularies into their component parts. This is designed to make the Digital Library more usable to all community members. This local list is maintained in a shared space and can be added to and revised as needed. It currently contains just under 2,000 terms, many of which are names of local people as well as culturally specific terms such as beluga whale, Alaskan high kick, and qulliq (a traditional Inuit lamp). The main goal for descriptive work is to use the words and phrases that the community would use.

A final element for describing what a resource is about has to do with the desire from community collaborators and members to enable engagement with the Digital Library based on season. There have been discussions about the creation and use of a custom *Season* element, and how this could be used in conjunction with place information to provide this highly desirable functionality. This has not yet been done, however, as work around knowledge organization based on seasons is still in its infancy.

Related to what a resource is about is what it *is*, that is, what kind of resource is it? From the beginning there was a very clear need for, and interest in, being able to indicate the general type or format of a resource. Specifically, the main categories of Text, Audio, Video, Image

needed to be accounted for. The element chosen for this was *Type*, which is commonly used for capturing this sort of information. An alternative label, *Media*, has been mentioned from time to time, although collaborators have not indicated a strong desire to change what seems to be clear and intuitive to users of the Digital Library. As with several other elements, such as Language, the content value for the *Type* element is controlled by a custom term list.

There had been some discussion early on about a means of capturing the genre of a resource, for example, that a story was a legend rather than a real life tale. Based on this, a custom Genre element was created and made available when describing resources. However, those doing descriptive work have found it simpler to simply include this type of information as a *Subject* and so this custom element has yet to be used. It has been retained, however, should need for it arise in the future.

5.5.4 Rights, Citation, and Audience

Omeka comes with functionality built into it to generate a citation for each item in a collection in order to promote appropriate sharing and use of materials. This citation is hard coded in the platform and uses the content of existing metadata elements (Figure 88).

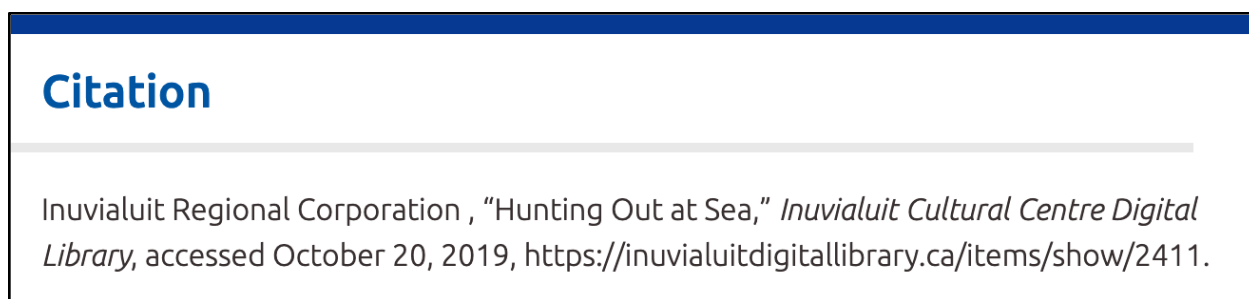


Figure 88. Automatically generated citation for an item in the Digital Library

The desire for such an element in the metadata was made clear by community collaborators from the start. Ensuring that items can easily be properly cited must be “an integral part of the system” (Participant M33).

As was discussed in a previous section, some of the resources in the Digital Library, in particular the oral history and genealogy recordings, contain discussion of topics that could be considered sensitive. There was a desire to be able to flag this for someone who comes to the Library so that they can decide whether or not to listen or to allow young ones to listen. The Dublin Core standard that comes with Omeka includes an *Audience* element and this was the one chosen to capture this information when needed. The phrase chosen for this - Contains sensitive material - was designed to be brief and generic, meant to simply alert the user that some difficult content lay ahead. It is also displayed in red font to make it immediately visible.

Principle A3 of the CARE (Collective Benefit, Authority to Control, Responsibility, and Ethics) Principles of Indigenous Data Governance states that “Indigenous peoples have the right to develop cultural governance protocols for Indigenous data and be active leaders in the stewardship of, and access to, Indigenous data especially when in the context of Indigenous knowledge” (Global Indigenous Data Alliance, 2019). And so the question of how complex and dynamic cultural permissions are handled in the Digital Library is a critical one. It was recognized by all involved very early on that access and rights are an important issue that needs to be considered with respect to the materials in the Digital Library. And it was also acknowledged from the beginning that the Inuvialuit community collaborators and community members at large would be the ones to make decisions about access and rights and how those would be conveyed within the Library.

Consistently throughout the project we have heard from collaborators and community members that there is a strong general belief that as much as possible, cultural resources in the Digital Library should be openly available. This is to ensure that the community has access to its own rich culture and language (“putting the information online is great that way all Inuvialuit can access it” (Anonymous Survey Respondent)), and to enable non-Inuvialuit to learn about Inuvialuit culture, language, and history as told by Inuvialuit (“I believe that resources should be available to the general public to foster an understanding of who we are as people” (Anonymous Survey Respondent)). However, it has also been recognized that there may be cases (such as family histories for example) where some materials should not be openly available, but rather only to Inuvialuit or to specific families, or perhaps not available online at all. In the run up to the launch of the Digital Library, the decision was made by the Cultural Centre and IRC staff to make all the materials in the Digital Library openly available, and to address concerns on an individual item or collection basis as needed.

Omeka allows for implementation of access by including two statuses for items, collections, pages, etc. - public and private. Anything new to the system is automatically private; it takes a conscious step to make something public. Private items can be made accessible through the use of user accounts. There are a few options available for more nuanced access controls, but they are not as extensive as they are in other systems such as Mukurtu (Center for Digital Scholarship and Curation, n.d.). Discussions have occurred at various points around creating accounts for all Inuvialuit beneficiaries, for example, but this work has yet to be fully explored and implemented.

Dublin Core has several elements available for expressing rights and access information: including *Rights*, *Access Rights*, and *Rights Holder*. There is also of course an option for one or

more custom elements to be created. Discussions have included options around custom statements, the use of existing vocabularies such as Creative Commons (n.d.), or the definition and application of community-specific traditional knowledge statements made available through the Local Contexts project (n.d.). As discussions with community collaborators in terms of how access and rights will be expressed in the Digital Library are ongoing, these have not yet been used in any systematic way.

5.5.5 Relationships

There are instances in the Digital Library where ease of use and navigation of an item or a collection is aided by capturing information about relationships between items. There are two elements currently available for doing so: *Relation* and *Is Part Of*, both of which come from the Dublin Core standard that is default to Omeka. These have most often been used when describing the individual items that make up multi-part resources, such as language lessons or oral history recordings. An example of these elements in use can be seen in Figure 89.

THE HUNTER WHO DRIFTED ON ICE (PART 4)

Relation

- The Hunter Who Drifted on Ice (Part 1)
- The Hunter Who Drifted on Ice (Part 3)
- The Hunter Who Drifted on Ice (Part 6)
- The Hunter Who Drifted on Ice (Part 7)

Is Part Of

[The Hunter Who Drifted on Ice](#)

Figure 89. Item description showing Relation and Is Part Of elements

5.5.6 Remaining Elements

The remaining elements from the framework are present mainly due to the incorporation of external information about resources. These include *Identifier*, which is used for capturing pre-existing unique identifiers for resources, for example “N-1992-253-1010”; *Source*, which captures information about an original item or repository from which the digital resource has been created, for example “Tamapta (All of Our People)”; *Alternative Title* which is most often used to capture an English language version of a title of a language resource (e.g., “Inuvialuit Traditional Winter Clothing”); *Date Copyrighted*, which has been used only with the Inuvialuit Communications Society (ICS) materials; and *Date Modified*, which has been used in a few instances where multiple versions of a language resource exist in the Digital Library.

5.5.7 General Practices

The requirements for resource description in the Digital Library have intentionally been kept very flexible in order to make the system as usable as possible, and the work of describing resources as straightforward and sustainable as possible. All elements are repeatable as necessary, and only *Title*, *Subject*, and *Type* are required in all cases; others are required only when available or applicable.

As has been discussed in previous sections, there is a desire to incorporate descriptive information from users of the Digital Library. This could be in the form of corrections to existing descriptions, addition of additional details, naming of individuals, and so on. To date, this has happened when someone has contacted the Resource Centre or the project team, at an event or by email, and provided information which is then added to the appropriate descriptions. However, the goal is to have this information come through more streamlined channels such as a comment form on an item in the Digital Library, and to capture that content in a specific element

within the description to indicate that it came from users. There is no obvious element in the Dublin Core standard that comes with Omeka to capture this information, and so a custom element is likely to be needed. However, this work is still at the discussion stage.

A final observation about the metadata elements and their content as reflected in the Inuvialuit Digital Library framework addresses the issue of language, in particular the balance between English and Inuvialuktun not only in the interface, but in the metadata elements and their contents. This challenge was identified in the earliest stages of the project. That is, how does a collaborative team create an engaging and usable digital library that both respects and responds to the linguistic diversity of the community and promotes language learning and growth within that same community? Inuvialuktun is classified as an endangered language as it is spoken by less than fifty percent of the population, and many of these are elders and are concentrated in the outlying communities of the ISR (IRC website). Indeed, this was why the Cultural Centre was formed, and why language resources continue to be the items in highest demand. The reality is that the potential users of the Digital Library have differing levels of skill in, and comfort with, their language. And so community collaborators and members were adamant that, at least to start, English would have an important role to play in all aspects of the Digital Library. As discussed earlier, there are plans for a multilingual interface that would allow use of the Digital Library by all users, no matter their familiarity with Inuvialuktun. And this is also why subject terms and descriptions, at least for now, are predominantly in English. As one of the Language Specialists working on resource description has said, their goal is to make the descriptions and subject terms as extensive as they can so that when someone listens to the recording, even if they are just learning the language, they can know what is being discussed, and can start to make sense of what they are hearing in an almost immersion like scenario. As

Carew, Green, Kral, Nordlinger, and Singer (2015) note “such [systems] may contain predominantly English [descriptions] yet have a focus on local themes, thus providing a matrix for the incorporation of Indigenous language words and phrases ” (p. 315).

5.6 Observations on the Framework

5.6.1 Revisiting the Concept of a Culturally Responsive Metadata Framework

In Chapter 1, I defined a culturally responsive metadata framework at the conceptual level as a scheme for creating and implementing metadata for resources that is responsive to and grounded in a given local cultural context. Based on the framework surfaced through my research, I would argue that the definition stands and is valid at that abstract, conceptual level. What the research findings make very clear, however, is that such frameworks are operationalized and made meaningful at the local cultural level. That is, there is no single ‘culturally responsive metadata framework’, but rather a multitude of frameworks that each reflect the specific local context in which they are developed and applied. And this is where their true value and power lies.

5.6.2 Relationship to Metadata Frameworks in General

Metadata frameworks, as noted in Chapter 1, most typically consist of the choice of metadata elements to be used in describing a set of resources, and guidance on how to populate those elements, including the choice of vocabularies. This can be seen in the two examples noted in that chapter, specifically the Oregon Digital Metadata Guide (n. d.) and the Digital Public Library of America Metadata Application Profile (2017). As can be seen in Figures 90 and 91, each of these includes information on the term or label for a field, the underlying metadata element or property used to capture the information, any vocabulary to be used, and any relevant application notes.

Term	Property	Range	Vocabularies	Usage Note
Author	http://id.loc.gov/vocabulary/relators/aut	dc:Agent	LNAF, ULAN, OD:Creator	Use for author of resource.
Cartographer	http://id.loc.gov/vocabulary/relators/ctg	dc:Agent	LNAF, ULAN, OD:Creator	Use for cartographer of resource.
Collector	http://id.loc.gov/vocabulary/relators/col	dc:Agent	LNAF, ULAN, OD:People	Use for collector of resource.
Composer	http://id.loc.gov/vocabulary/relators/cmp	dc:Agent	LNAF, ULAN, OD:Creator	Use for composer of resource.
Creator	http://purl.org/dc/elements/1.1/creator	dc:Agent	LNAF, ULAN, OD:Creator	Use for the entity primarily responsible for the creation of the resource.
Creator Display	http://opaquenamespace.org/ns/cco/creatorDisplay	rdf:Literal	N/A	Use for a label identifying the person or corporate body responsible for the creation of the resource by combining the preferred name and image records.
Contributor	http://purl.org/dc/elements/1.1/contributor	dc:Agent	LNAF, ULAN, OD:Creator	Use for an entity responsible for making the resource.
Donor	http://id.loc.gov/vocabulary/relators/dnr	dc:Agent	LNAF, ULAN, OD:Creator	Use for donor of resource.
Editor	http://id.loc.gov/vocabulary/relators/edt	dc:Agent	LNAF, ULAN, OD:Creator	Use for editor of resource.
Illustrator	http://id.loc.gov/vocabulary/relators/ill	dc:Agent	LNAF, ULAN, OD:Creator	Use for illustrator of resource.
Interviewee	http://id.loc.gov/vocabulary/relators/ive	dc:Agent	LNAF, ULAN, OD:Creator	Use for interviewee in resource.
Interviewer	http://id.loc.gov/vocabulary/relators/ivr	dc:Agent	LNAF, ULAN, OD:Creator	Use for interviewer in resource.
Lyricist	http://id.loc.gov/vocabulary/relators/lyr	dc:Agent	LNAF, ULAN, OD:Creator	Use for lyricist of resource.
Patron	http://id.loc.gov/vocabulary/relators/pat	dc:Agent	LNAF, ULAN, OD:Creator	A person or organization responsible for the creation of the resource.
Photographer	http://id.loc.gov/vocabulary/relators/pht	dc:Agent	LNAF, ULAN, OD:Creator	Use for photographer of resource.
Print Maker	http://id.loc.gov/vocabulary/relators/prm	dc:Agent	LNAF, ULAN, OD:Creator	Use for printmaker of resource.
Scribe	http://id.loc.gov/vocabulary/relators/scr	dc:Agent	LNAF, ULAN, OD:Creator	Use for scribe of resource.

Figure 90. Portion of Oregon Digital Metadata Guide

Subtype	edm:hasType, .sourceResource.subtype	edm:is RelatedTo	skos: Concept	This property relates a resource with the concepts it belongs to in a suitable type system that captures categories of objects in a given field.	Reference	AAT (See list of preferred terms in Appendix D)	0 – n
Temporal Coverage	dcterms:temporal, .sourceResource.temporal	dc: coverage	edm:Time Span	Temporal characteristics of the described resource. Captures aboutness.	Reference		0 – n
Title*	dcterms:title .sourceResource.title			Primary name given to the described resource.	Literal		1 – n
Type*	dcterms:type, .sourceResource.type		rdf:Class	Nature or genre of described resource. Strongly recommended.	Reference	dcterms: DCMI Type	0 – n

Figure 91. Portion of Digital Public Library of America Metadata Application Profile

The metadata framework surfaced through my collaborative work with the Inuvialuit community also includes the selection of metadata elements and guidance on how to populate them. However, it includes elements not found in either of these frameworks, such as dialect and original dialect. And while these two general frameworks suggest the use of certain vocabularies,

they are broadly used ones such as the Getty Art and Architecture Thesaurus (AAT) or the Union List of Author Names (ULAN), whereas the culturally responsive framework surfaced through my research incorporates locally relevant lists, including names of people and places, and local knowledge and culture topics.

Perhaps the most substantial difference between the culturally responsive framework described here and the two example frameworks from Oregon Digital and the Digital Public Library of America is the scope. The framework surfaced with Inuvialuit collaborators is so much more than simply the metadata elements and their contents; it encompasses how the cultural resources are organized, how one navigates through the content in locally meaningful ways, and how community and sharing, which is so much a part of Inuvialuit life, can be captured and supported through the framework and its application in the Digital Library. This way of looking at a metadata framework as broad and holistic is unique, and demonstrates the power and value of working with local communities to understand their context.

5.6.3 Relationship to Metadata Frameworks for Other Indigenous Communities

In reviewing the metadata framework surfaced through exploration with the Inuvialuit community, one can observe some similarities between it and others that have been developed by and for Indigenous communities around the world. For example, it shares with the Quinkan Metadata Application Profile (Lissonnet, 2004) and the Mukurtu Content Management System (Shepard, 2014) elements such as Title, Date, Language. With the Ara Irititja Project (Gibson, 2007) and the Center for Native American and Indigenous Research (Hasegan, 2018) it shares the importance of capturing names of people and places, and allowing for multiple language and spelling variants. With the Living Archive of Aboriginal Languages (Mamtora & Bow, 2017) it shares place and language as overarching organizational themes, and a preference for a largely

graphical interface. And with Matsuda's (2015) proposals for a Hawaiian knowledge organization system, it shares a preference for browsing, and a need to incorporate English heavily at first but with plans to move away to using only the local dialects. And with many digital library platforms and projects not specifically focused on Indigenous peoples and content, it shares aspects such as elements for subjects, search capabilities, and social media integration.

A deep examination of the reasons for these similarities, and differences, is beyond the scope of my research. Nonetheless, it is interesting to imagine some possible explanations. Perhaps it can be attributed in part to the pervasive reach of the Internet and web technologies generally, and certainly not excluding the Inuvialuit and other Inuit (Brown & Nicholas, 2012), including the prolific use of social media such as Facebook (Hocine, 2019; de Souza, 2016). Certainly, survey results from the Digital Library North (DLN) project indicated quite widespread use of the Internet and social media: 78% indicated they used the Internet daily. Or perhaps it is linked to Inuvialuit use of online technology to access and use cultural resources (73% of respondents to that same DLN survey stated they used search engines, organization specific websites, and/or social media to access cultural materials). Heavy Head, in speaking about their work with the Blackfoot Digital Library, observed something similar. The initial organization was based on a "'Blackfoot view', but she did not realize that the end user [wasn't] going to understand things". The revised version incorporates title, subject, and format approaches that "may be more familiar to some users" (Heavy Head & Greenshields, 2019, p. 8).

As Brown and Nicholas (2012) note, the Inuvialuit have collaborated on several projects to develop online cultural sites, including Taimani: Inuvialuit History Timeline (<http://www.inuvialuithistory.com/#!/home/>), the Inuvialuit Living History Project (<http://www.inuvialuitlivinghistory.ca/>), and the Inuvialuit Place Name Virtual Exhibit

(<https://www.nwtexhibits.ca/inuvialuit/index.html>), and so perhaps these experiences with other digital platforms influence the way in which the community approaches a framework for the Digital Library. Or perhaps the similarities come from the influence of widely adopted standards such as Dublin Core. And it is possible that the deeper structures of the framework, such as the emphasis on people and place and language, and the strong relationships between them, is indicative of commonalities between Indigenous worldviews and knowledges.

And yet there are also differences between the Digital Library Framework and the others. A desire to gather named individuals together into a single category labelled People, to ensure that Language and Dialect appear together in resource descriptions, and the desire for overarching organization around the seasons are not found in the other projects or initiatives. In the end, regardless of similarities or differences, what is most important is that this framework was defined by the Inuvialuit community to represent their needs and interests. As Glass (2015) reminds us, “I take for granted that diverse cultural communities may have unique ontologies even if these are sometimes in close articulation” (p. 22) with others. What is most important is that the framework is driven by the cultural nuances, practices, and elements of the Inuvialuit, and that we work within an “ethics of practice that put[s] technological standardization in dialogue with individual and community specificities” (Earhart, 2018, p. 375).

Chapter 6: Surfacing the Framework

The culturally responsive metadata framework described in Chapter 5 surfaced through collaborative exploration with Inuvialuit community partners. As Tharani (2019) reminds us, “community-based research does not happen in isolation but rather in the context of a community and its epistemology, knowledges, and traditions” (p. 3). A second goal of my research was to understand what methodologies and approaches are appropriate and effective for working with an Indigenous community to develop such a framework, using the Inuvialuit Digital Library project as a case study. In this chapter I describe those methodologies and approaches. In Section 6.1 I discuss aspects of being reflective as a researcher working with an Indigenous community. In Section 6.2 I describe critical aspects of building and sustaining relationships, including taking the lead from the community in project initiation, going about the research, and in shifting priorities; using appropriate methods; engaging with the community outside of the research; working effectively with collaborators; and giving back to the community. In Section 6.3 I provide some particular challenges faced during my study.

6.1 Being Reflective

Toombs, Dawson, Chambers, Robinski, and Dixon (2019) note that non-Indigenous individuals working with Indigenous communities must approach the research from a “position of humility, genuine curiosity, and a desire to learn” (pp. 12-13). This asks us to be reflective not only about what we are doing, why, and how, but about how we are conducting ourselves in relation to the research team and the community as a whole. Reflection on the processes and on one’s role within it has been expected of all those who are involved in building the Digital Library, and traces of this can be seen in some of the formal project documentation as well as team member notes and observations.

Both individual and team trips to community incorporated daily reflection discussions, which included a recap of the events and activities of the day, observations on how they went and what could be improved or changed in the future, and personal and team reflections on what was learned both as researchers and individuals. Many of these discussions led to insights and further questions for later exploration.

The field notes contain summaries of many of these discussions, although it can be challenging to capture all of their nuances. At times the reflections relate to how one is integrating into the community, for example “A33 has begun volunteering with the Inuvik community garden, and S76 has found the local quilting guild” (Summary, May 15, 2015). Other times they reflect general observations on desired functionality for the Digital Library itself, for example “G78 likes the idea of a drum dancing section, and maybe a teacher’s portal as well. Seems to be interest in browse by theme” (Notes and Observations, August, 2018). And at times they capture information about the processes of research, for example “there may be opportunities to connect with the Inuvialuit Living History project and the Gwich’in Tribal Council digital library project to share resources and learn from their processes” (Notes and Observations, August, 2018). Reflecting and learning and capturing those reflections has been essential for the ongoing work of the project, and has contributed to team engagement and commitment.

6.2 Building and Sustaining Relationships

The scholarly and professional literature in library and information science and related disciplines includes many general descriptions of appropriate and respectful ways of working with Indigenous communities, all of which emphasize the critical importance of “build[ing] and maintain[ing] good relationships throughout the research process” (Lee, 2019, p. 14) for the

“continued momentum of digital projects and community initiatives” (Hennessy, Lyons, Loring, Arnold, Joe, Elias, & Pokiak, 2013, p. 59). They explain that these relationships are built and strengthened through a collaborative and cooperative research process (Felt & Natcher, 2011). However, it can be hard to understand and appreciate what building relationships through collaborative research might look like “on the ground” for a particular project or within a given community context. While there is no formula for effective community-based collaboration in developing a knowledge organization and resource description framework for a digital library of Indigenous cultural resources (Silverman, 2015), the hope is that describing what was effective and appropriate in the context of the Inuvialuit Digital Library project will not only enhance understanding of this community and their Library, but also provide some guidance for others who may be interested in working with communities to develop similar platforms.

6.2.1 Taking the Lead from the Community

Koster, Baccar, and Lemelin (2012), Kovach (2009), Allard and Ferris (2015), Fleras (2004), Gaudry (2011) and others emphasize the importance of the local community taking the lead on any project, from inception to close out and reporting, and each step along the way. “Understand[ing] that they don’t know everything about conducting research with Indigenous peoples” (Lee, 2019, p. 16) is critical for non-Indigenous researchers working with Indigenous communities, and the development of the Inuvialuit Digital Library demonstrates the benefits to all of striving to keep this in mind throughout the life of a project, and beyond.

6.2.1.1 Project Initiation.

The digital library project was community driven from the very earliest stages. Cathy Cockney, the Manager of the Inuvialuit Cultural Centre during the early stages of the project,

articulated a need within the community for broader and easier access to the Centre's cultural resources. This need in turn sparked conversations with researchers at the University who suggested the idea of a digital library, and led to the development of relationships that formed the basis of the project. "The project aims to bridge the digital divide currently experienced by ISR community members. For instance, Cathy Cockney, Inuvialuit elder and director of the Inuvialuit Cultural Resource Centre (ICRC), reports that, while information is available in print or digital form locally held at the ICRC, it is not web-accessible; many people live too far away to visit the ICRC and therefore have limited access to the resources" (Shiri, Cockney, Campbell, Day Nuttall, & Rathi, 2013, p. 6). Ms. Cockney was a collaborator on the initial SSHRC grant and a core member of the team throughout their time at the Cultural Centre. As the project continued and a new manager arrived at the Cultural Centre, there was an effort to share knowledge and project background and together determine whether the project was still of interest, and if the Centre staff felt they had the time, energy, and interest to continue as collaborators in light of all their other priorities and initiatives. The Inuit Tapiriit Tanakami (2007) reminds us that "not all types of northern research will ... inspire the same level of community involvement" (p. 10). It is therefore critical for non-Indigenous researchers to be mindful of, and accept that, community participation is a continuum, and to be "attuned to sentiments and sensitivities of the individuals within the community" (Tharani, 2019, p. 8). This collaborative project has benefited from strong buy in on all sides, and we were fortunate to be able to continue on through these staff changes.

6.2.1.2 Going About the Research.

A second area in which the community drove the project was in selecting the most appropriate and effective methods of gathering information, including the "who", "what",

“when”, and “where”. Although members of the team had some ideas on this based on past experiences as well as literature review and initial discussions with collaborators, there was an understanding of the importance of being flexible and responsive to the local context, and a commitment to learning and adapting as the project progressed.

As Hitomi and Loring (2018) note, “expert is, in any cultural context, a nuanced social position with its own set of locally-defined rules and customs” (p. 831), and so decisions on who could or should be contacted for participation in the information gathering process were driven by community collaborators. For example, from early on we were directed to instructors at various levels of the education system, in particular language and culture teachers, as well as to students at numerous institutions (e.g., senior high school, college). Very often, particular individuals with given roles or areas of expertise were noted specifically as having critical input to provide. We also learned that it was important to hear from individuals of varying ages, with a focus on children and young adults as they are a priority within the community as the future keepers of the language and culture. We also heard of the importance of speaking with men as well as women. As our collaborators explained to us, when it comes to projects around language and cultural revitalization, women tend to be the dominant participants, and so seeking out and incorporating the men’s perspective was seen as extremely important. And finally, collaborators noted the importance of gathering the perspective of IRC staff outside of the Cultural Centre, as they are involved in other aspects of culture and language reawakening in the region and beyond.

The “what” of information gathering consisted of various sources, with what came directly from the community given priority. As with any research project, substantial and ongoing reviews of the scholarly and professional literature around developing digital libraries with and for Indigenous communities were used to provide background and understanding for all

individuals on the team, as well as to provide possible options and alternatives when making decisions about the development and use of the Digital Library. In addition, a scan and review of various technical platforms was undertaken to provide context on a range of options and to inform decisions. The most important sources of information, however, were our community collaborators and the community at large. An information audit was conducted, which involved in-depth discussion with the Cultural Centre staff about the nature of the collection, the users of that collection, and how those users engage with that collection. This surfaced the critical information needed to enable the Digital Library to first and foremost meet the needs of the community. A further source of information was the community at large, engaged through informal and targeted conversations, open houses, interviews, surveys, user testing, observation, and general interactions at events and activities. Throughout the project, what the community at large and our Cultural Centre collaborators indicated should be the priority was what the project team focused on. This enacts what Doyle, Lawson, and Dupont (2015) describe as Indigenous warrant, basing decisions on what is relevant to the needs and interests of the community.

As much as possible, the “when” of information gathering was also driven by the community. Through our collaborators we learned of good times to be in community, which took into account factors such as when the Cultural Centre staff would be most available as they work around other projects and initiatives as well as vacation time, when community members were likely to be in town rather than on the land, when travel between communities was likely to be more reliable, and when the community might be gathered for events or activities such as Inuvialuit Day. This information highlighted good opportunities for engagement through demonstrations, conversations, etc. As researchers and non-community members, we acknowledged that “research is fairly secondary as local life and activities continue” (Inuit

Tapiriit Kanatami, 2007, p. 8) and strove to listen and pay attention to what we were told about better and worse times to engage with community around the Digital Library. There is no doubt that the academic and professional schedules the team were subject to did restrict the windows in which time could be spent in community. Given this, there was concerted effort to make the best use of the time available, such as planning longer trips during the summer, or incorporating shorter trips during breaks in the academic cycle such as winter reading week. The Digital Library project has taught me that if you develop respectful and reciprocal relationships with collaborators and community, together you can find ways of working around schedules on both sides in order to benefit the partnership as a whole.

Because of the significance of place to research with Indigenous communities, the “where” of information gathering and sharing was also driven by the community context. This included insights into the best places to advertise and promote the project (e.g., local radio and television) or set up information tables (e.g., Northmart), all based on intimate knowledge of local communication and information sharing patterns and platforms. Collaborators provided critical information on how to use the Cultural Centre as a community space to engage participants, and where to conduct interviews or open houses, and have conversations or usability sessions (e.g., Cultural Centre in Inuvik, Community Corporation when in the other communities). Most importantly, there was an emphasis on being in community as much as possible, and not only in Inuvik, but in the other five communities as well, as it allows you to “become absorbed into your surroundings, see the areas being talked about, learn the language to use, understand the space you are working in” (Laurent, 2017, p. 47). Although most of the time spent in community to date has been in Inuvik, each of the other communities (except Tuktoyaktuk, due to weather) has been visited once, and ideally will be again. While these visits

were but brief exposure to the local context of each community, they allowed the team to raise awareness of the Digital Library, provided insight and understanding into the unique aspects of each community, and informed how the Digital Library could incorporate and reflect that uniqueness.

6.2.1.3 Shifting Priorities.

A final way in which the community driven nature of the project can be seen is through the various shifts in priorities over time as collaborators and team members changed. In this and other aspects, the team worked collaboratively to privilege and enact the interests and needs of the community, adapting as needed and letting the community lead. As Cathy Cockney, former manager of the Cultural Centre said in an interview with the Inuvik Drum in 2016, “The partnership has been really good. They’re really asking people what they want. That’s really important. Not coming in and saying ‘This is what I made for you’, instead, asking what it is that people want“ (quoted in Ladik, 2016, p. 4).

An example of this is the design and development of a multilingual interface for the Digital Library. This was identified from the start of the project as core functionality, and some preliminary work was done to identify a potential Omeka plugin and to translate a small set of technical terms for use with the plugin. However, with staff change at the Cultural Centre there was a shift in priority to focus on enhanced description of the existing content and improvements to other aspects of the Library, and to make a multilingual interface a longer term goal.

A second example of shifting priorities was the move from an initial strong focus on digitizing and adding the COPE (Committee for Original People’s Entitlement) collection, focusing instead on the already digitized materials in the Cultural Centre collection, and on those resources created by the Centre itself. This decision was driven by the evolving needs and

interests of the community, and was of course accommodated in the project priorities and timelines. As Earhart (2018) reminds us, “to develop trust is to listen to the community’s central interest and concerns, ..., rather than to see such a focus as peripheral to the project” (p. 382).

6.2.2 Using Appropriate and Effective Methods

Becvar and Srinivasan (2009) remind us that methods of working with Indigenous communities should be collaborative and reflexive, accounting for local community contexts and hierarchies and protocols around the sharing and circulation of information. And so the “how” of the Digital Library project, the actual methods used, needed to be driven by, and reflective of, the Inuvialuit community.

The project had always envisioned a mixed methods approach to engaging with community participants, proposing the use of surveys, focus groups, and interviews among other tools. However, this approach evolved and became more nuanced as the project began in earnest. Through meetings with project collaborators in the summer of 2015, it was suggested that surveys would be a useful tool for gathering information from the community at large, and would be particularly appropriate in school settings. What also became clear through that summer was that individuals within the community preferred completing surveys or engaging in informal conversations over formal interviews or focus groups. As one participant noted, “because there’s some elders too who have a lot of knowledge of things but as soon as you start pulling out these devices to record them they shut down. They don’t want nothing recorded they just want you to sit and listen to them” (Participant P56). Open houses were also a popular method of engaging and gathering information, as they bring people together in a relaxed, conversational setting with refreshments, all of which is conducive to fruitful discussion. The trips to the smaller communities were centred on open houses and demonstrations at the Community Corporations,

where community members came together to learn about the Digital Library, talk with each other, and share stories prompted by resources in the Library. As one participant in Sachs Harbour noted, the best way to engage in research is to come to the community, to be there for a time, to experience it, to talk to people (Fieldnotes, May 2017).

The methods for promoting the project and soliciting participants were very much reflective of the ways in which the community works. Collaborators explained that the best ways to advertise were to have a brief advertisement on the local scrolling news channel, to place the ad as a poster in key areas in town, such as Northmart, the Post Office, and the Public Library, and to post it on a few local Facebook groups. They also suggested setting up information tables at the Public Library and the Community Centre, as well as at key events such as Inuvialuit Day or the Northern Arts Festival. Arrangements for interviews with the local radio show and local newspaper were also made as these are key tools for information circulation within the community.

Specific tools and techniques used in the above approaches were informed by the local context. Newsletters and advertisements were reviewed and vetted by project collaborators, who provided useful feedback on how to make them more community appropriate. They also suggested that an effective information table would have some small snacks (e.g., juice boxes, granola bars) as well as some items from the Cultural Centre (e.g., DVDs, story booklets) for visitors to take away, and kindly provided these items. They also ensured that local caterers were used for the open houses, and that traditional foods and popular beverages were what was on offer.

Collaborators provided critical input on how and where to conduct interviews, or have those targeted but informal conversations. They noted that the Cultural Centre was a known and

comfortable place for many community members, and so was a very good option. The initial contact and project description letter would be more inviting, they explained, if the amount of text were reduced, what remained was listed as bullet points, and if the Cultural Centre and IRC logos were included. Noting that elders and others within the community are not always comfortable talking about themselves, they suggested that framing the somewhat standard ‘tell me about yourself’ question in terms of the individual’s role in the community and the kinds of knowledge they have and are often asked about would be more effective and appropriate, and likely to solicit richer responses.

Project collaborators were critical in interpreting what we were seeing and hearing as we engaged with community. They explained, for example, that Inuvialuit tend to be quiet and reserved, and modest, and so noting body language and facial expressions was critical. Community members often seemed more comfortable and opened up more when events and activities included collaborators, so having them a part of these activities was extremely important and provided insights and learning opportunities for the project team that would not have been possible otherwise. As one collaborator noted after a community presentation, they could see the pride and interest in the eyes of the Inuvialuit in attendance even if they did not have questions or follow up comments for the team at large. Having staff at the Cultural Centre and local elders as a part of the team helped us better understand what the community was telling us, and how that could be translated into the Digital Library.

6.2.3 Engaging with the Community

Lee (2019) notes that “we [Indigenous peoples] value research projects that involve participants we know and those that undertake long-term relationship-building practices” (p. 9). An important aspect of getting to know people and building that trust and familiarity is for

researchers to engage with the community outside of the context of the research project. This is a theme that has come up again and again in the DLN project and in my own research, and is something to which the team has been thoroughly committed.

During the periods of living and working in Inuvik, the team strove to develop connections and become active members of the community. At one level, this involved simply being out and about in the community, carrying out one's daily business including shopping, banking, and social activities. There were also deeper commitments such as volunteering at the community greenhouse, taking lessons in local arts and crafts, and sharing updates and progress on the project through public talks. There was also an interest in contributing to the social events that build community, such as attending the local high school graduation ceremony, attending a hockey game on a Friday evening, and shopping for locally made food at the summer outdoor market. Working with community means "prioritizing interaction through preexisting community events, meeting people where they are" (Barry, 2017, p. 24).

Taking an earnest interest in learning about the language, culture, and history of the Inuvialuit through self-study, listening to collaborators and community elders, and engaging with the materials at the Cultural Centre and in the Digital Library was also important. As Wilson (quoted in Den Ouden, 2017, p. 145) notes, it is important to take on the role of "a learner, which include[s] first and foremost placing oneself in a position of vulnerability and acknowledging that one is not an authority or expert on [the] history or culture of the community, but rather a student of theirs". For example, making the effort to learn about each of the communities to be visited to tailor the discussion and demonstration to that community, and to learn about some of the families who call that place home. Visiting a community meant not just showing up to do a demonstration, but spending time exploring the town, speaking with the people you met, and

soaking in and reflecting on the unique character of each community. Much time was spent listening intently and learning as much as we could from those we had the privilege of talking with. As one long-time non-Inuvialuit resident researcher noted, “as a white woman showing up in this new community not really knowing anybody or anything, in a lot of ways it [learning traditional sewing] has been a great way for me to connect with people” (Participant R34).

An additional important component to this broader community engagement was getting to know other researchers and learning about other projects, both from the past and ongoing. Doing so not only allowed us to gain a better understanding of the overall research landscape in the region and how this project fits within it, but enabled us to seek out potential collaborations and partnerships that could enhance the benefit to the community while also reducing any associated burden or workload. The team listened to advice from community collaborators and members on others we should speak with, and took that advice to heart and followed up on it. Tharani (2019) reminds us that community based research is not simply about checking off items on a project to-do list, but rather is about building relationships and trust and working together on a personal level.

6.2.4 Working with Community Collaborators

Shell-Weiss, Benefiel, and McKee (2017) remind us that when working collaboratively with Indigenous communities, how the team works together is every bit as important as the products of that work. Within the project to develop the Inuvialuit Digital Library, this was something the team recognized and emphasized, and therefore strove to be open and flexible and to “research together differently” (Fleras, 2004).

One aspect of this approach involved regular and full team meetings where all members came to the table with equal expertise and knowledge to contribute. Any time a team member

was in the community, arrangements would be made for a team meeting, including any members still back in Edmonton. Additional meetings were held in Edmonton, with community collaborators funded for travel. In between these larger meetings, regular smaller meetings occurred over Skype or phone. All team members strove to keep the others up to date on progress and related projects, and to check in regularly. In this way, we learned a great deal about the most effective and appropriate means of communicating with our community collaborators.

A second aspect which was common throughout was joint publication and presentations (when possible). The entire team worked on conference and journal proposals, and contributed to and reviewed the materials from initiation to completion. The papers and/or presentation slides were all saved in a shared team space (Google Drive) so that everyone had access to them, and could make use of them for other presentations and publications. Cathy Cockney was listed as a co-author on several publications and presentations. Related to this, all team members participated in open houses and demonstrations, each bringing their own perspective on the project and the Digital Library and communicating that in their own way to attendees. Speaking passionately to their friends and colleagues about the project and the Digital Library created a sense of ownership among the community collaborators, and engaged the broader community with the Library in a very different way. What was critical was that every member of the team was a researcher and an equal partner in the project.

Another way in which the team strove to work effectively and appropriately is evidenced by the way in which community members, elders, and knowledge keepers were engaged as members of the team. At several points throughout the project, a need for individuals from within the community with specific skills and expertise was identified, and the Cultural Centre

staff played a key role in guiding the process of bringing them on to the team for a time. Two specific instances of this are worth noting. The first involved the planned trips to the smaller communities to hold open houses and demonstrate the Digital Library. Cultural Centre staff explained that the process would go smoother if the team had not only the Regional Language Coordinator but also a community elder involved. Having these two individuals involved in all aspects of the sessions made the events more comfortable for community participants, and helped address any linguistic and cultural barriers that arose. They identified and recruited a specific elder and outlined for the team what the appropriate compensation would be to ensure we were going about things in a good way. There is no doubt that the elder's presence at these community sessions ensured their success, and also allowed for additional contacts to be made within those communities. The second instance involved the hiring of a community language consultant to create descriptions for resources in the Digital Library. This again involved the Cultural Centre staff identifying an individual and laying out the necessary aspects of workflows as well as processes for remuneration. This worked so well because it was initiated and executed appropriately, which is due to the knowledge, ethics, and professionalism of our community collaborators.

A final aspect that made the project successful and the working environment positive and productive was the effort on all sides to be flexible to changing conditions, and to develop and build strong relationships that help manage those changes. As with any project, change, whether in terms of goals and priorities, timelines, or participants, is inevitable. In community based projects, however, where there are interests and needs on both the research team and community team sides, change can often be more frequent. Through the course of the project, there were several staff changes at the Cultural Centre that the team as a whole worked together to manage.

This meant taking time to bring all new members on board with the project as well as adjusting to shifting priorities and differing areas of interest and expertise. On the UofA team side there was change (and reduction) in student staffing as the initial grant funds were expended, as well as the usual pressures of winding down one component of a larger initiative while seeking ways of securing resources to continue it on in other ways. Ongoing open and honest communication, a willingness to ask and answer tough questions, and a commitment from all involved to ensure the Digital Library continues to grow and develop as a community resource helped all sides to find ways of negotiating and managing change through compromise and cooperation.

6.2.5 Giving Back to the Community

Latulippe (2015) and others who carry out collaborative, community based research, emphasize the importance of giving back when researching alongside Indigenous communities. They note, however, that this must be done in ways that are “relevant, grounded in existing needs, and accessible” (p. 11). This refers not only to the research project itself, but to how the team goes about working with and contributing to the community through that research and beyond.

With respect to the workings of the project itself, several examples of giving back can be noted. When needed, as guided by community collaborators, individuals from within the community were brought onto the project in a more formal capacity, such as to work on resource descriptions, or provide linguistic and cultural expertise. When this happened, those individuals were always members of the community itself, and were compensated according to appropriate best practice as advised by our community collaborators. A second example, though small, was that gifts of thanks were always brought for collaborators and others closely involved at each

community visit. This was a way of acknowledging the time and expertise of our collaborators, and thanking them for being such wonderful colleagues.

Several examples of giving back to the community beyond the research project itself can also be noted. They included volunteering for community events and activities (e.g., community greenhouse, arts festival), providing assistance in organizing and managing information resources (e.g., creating inventories of booklets and photo albums at the Cultural Centre, transferring old typed audio interview transcripts into usable digital formats), and helping out at the Cultural Centre (e.g., talking with visitors about the Digital Library, crafting promotional cards or pamphlets), among other activities. This in essence is about being committed to being good citizens and guests in the community, and enacting that commitment in a variety of ways. As one project collaborator noted at the end of one of the team trips to community, they feel this research project is different in that it is not simply about taking, but is about giving back to the community in positive ways.

6.3 Challenges

Glass (2015) notes with honesty that “collaboration is much easier to celebrate as a goal than it is to enact in practice” (p. 20). Indeed, as McMullen (2008) reflects, “not all collaborative projects end with resounding successes” (p. 56). Certainly, the project to develop the Inuvialuit Digital Library has had its own challenges, and we have all learned a great deal as we worked to address and overcome these challenges.

A challenge that arose from time to time was related to organizational and project resources. The nature of grant funding is that the monies are finite and have rules and restrictions around how and when those monies are spent. Financial resources were also an issue as the grant funds were expended and I continued on as an individual researcher without a large grant

backing up my work. In addition, the Cultural Centre has finite financial and human resources, while at the same time being involved with numerous projects and initiatives and needing to meet priorities of its parent organization. These factors combined have resulted in many honest and open conversations about project goals, timelines, and priorities, and ongoing negotiation of all components of the project.

A further challenge involved work to ensure the long term sustainability of the Digital Library through “structurally embedding relationships within organizations, relationships which cannot just be based on a connection between individuals” (Laurent, 2017, p. 48). This challenge surfaced in the form of staff change at the Cultural Centre, as the team had to work to assist new staff in getting to know the project, review its place and priority, and plan for next steps. A concrete example was the change in leadership at the Cultural Centre when Cathy Cockney departed. Because of this loss of an individual with particular expertise in libraries and background knowledge of the project, the team worked to engage with the new manager in order to get them up to speed so that they could continue to support the project. This challenge was also addressed in the ongoing efforts of the team to ensure that the Digital Library is neither dependent solely on grant funding, nor tied to the work or research of particular individuals, but rather embedded into the regular workflows and processes of the Cultural Centre.

A final challenge to be noted is that of owning up to one’s mistakes. As with any relationship, errors will happen and mistakes will be made. While it can be difficult to admit one’s mistakes, an honest effort to own them, apologize for them, and learn from them “shows you are fallible and willing to learn from mistakes” (Lyons, 2011, p. 92), and that you are holding yourself accountable to the community. “You have to have the ability to admit to making mistakes or being wrong. It may require a deeper level of consciousness and willingness but with

hard work, you can change” (Inutiq, 2019). This is indeed a skill that has to be worked at continuously, but one which was certainly helpful in building honest and strong relationships with our collaborators.

Such challenges are not uncommon to community based research, but the way in which they can be addressed had to be reflective of the unique context of this community, this project, and this team of collaborators. While not every challenge can necessarily be surmounted, nor every problem necessarily be solved to the satisfaction of all, what I have learned through experience is that if there is a shared sense of the value of a project and a desire to do things in a good way - through respectful, reciprocal, and equal partnership - then we can find ways forward together.

Chapter 7: Conclusion

As my dissertation work comes to a close and my relationship with the Inuvialuit community and the Inuvialuit Digital Library comes to *an* end, though not *the* end, it is important for me to reflect on what has been done as well as what still lies ahead. In Section 7.1 I summarize the results of my study, discussing the framework, how it surfaced, and limitations of it. In Section 7.2 I describe areas for further research and investigation, such as furthering the framework and exploring additional questions. In Section 7.3 I describe the contributions of my research to the community, scholarship, and practice, and in Section 7.4 I provide one final reflection on my study and how it has impacted me.

7.1 Looking Back

7.1.1 *The Framework*

One goal of my research was to gain insight into how Indigenous communities in the northernmost region of Canada conceptualize culturally responsive metadata frameworks for digital libraries of cultural resources through a participatory case study of the Inuvialuit Digital Library.

Through shared exploration my collaborators and I have come to understand that the framework is much more extensive than is the norm. The framework must exhibit certain general characteristics, which are sustainability, user-friendliness, and responsiveness. Sustainability must be a part of the technical platform for the Digital Library, as well as the tools and processes for the description of its content. Responsiveness must be reflected in the framework itself and the technical platform, and exhibited by those individuals working with and on the Digital

Library. User-friendliness is demonstrated by always putting the needs and interests of the community first when making decisions about any aspect of the framework.

The framework must incorporate community-based knowledge organization. In the case of the Inuvialuit Digital Library this means organizing content according to themes and topics important to the community, such as place, language and dialect, curated exhibits, resource type, themes, people, and seasons. The framework must allow for ease of exploration and navigation within the Digital Library according to properties important to the community, such as topic, people, places, and language. Description of resources and content in the Digital Library must include the properties identified as most important from the community perspective, and display them in a logical and intuitive manner. The general appearance of the Library must be reflective of the community in terms of colour schemes, logos, and other branding, and must include a social media component for engaging users from the community.

The metadata elements themselves must be reflective of community needs and interests. The elements must be those deemed most relevant, such as title, topic, and date, and must be labelled so that they are obvious and clear. Using element labels such as People rather than Creator or Contributor, and Places rather than Spatial Coverage are examples of this approach. The elements must capture the information in the way the community wishes to see it, which means allowing for traditional and colonial forms of the names of people and places, and for local terms for objects and concepts. The framework must allow for variations according to the three dialects in the community, and for variant spellings within a single dialect. The elements must incorporate expressions of relationships between resources, and provide ways in which community members can share, reuse, and reference the resources.

An important part of my doctoral work has been to use the knowledge gained to enhance the design and functionality of the Digital Library. Together with community collaborators and other partners, I have been able to enact additional aspects of the framework within the Library, such as the renaming of metadata elements, creation of culturally responsive icons and default thumbnails, and redesign of the home page and top level navigation. We have also been planning for how additional aspects of the framework can be incorporated over time. This is an example of respectful collaboration and the co-creation of a digital library.

7.1.2 Surfacing the Framework

A second goal of my research was to understand what methodologies and approaches are appropriate and effective for working with an Indigenous community to develop such a framework, using the Inuvialuit Digital Library project as a case study.

As a member of the Digital Library North team and an independent graduate student researcher, I examined and reflected on the ways in which the work with community collaborators and members at large unfolded, and came to understand and appreciate how non-Indigenous researchers can and do work effectively and appropriately with the Inuvialuit community. First and foremost is the importance of being reflective, not only about the what and why of the project, but about how one is working with the community in a respectful way.

Building and sustaining relationships is critical to working with a community. This work involves taking the lead from the community in all aspects of the research, from project initiation to shifting priorities as needs and interests of the community shift. Using appropriate methods for gathering and analyzing information is critical, and must be informed by the community context. In the case of the Inuvialuit Digital Library, this important approach included making heavy use

of informal conversations and open houses, and relying on the expertise of collaborators to understand observations.

Engaging with the community outside of the strict research project is important to working together effectively. This includes not only being in community as much as possible, but also participating in community events and activities, showing an interest in learning about the language and culture, and connecting with other researchers in the area to increase overall benefit to the community.

One must work respectfully and appropriately with community collaborators. This includes engaging in truly equal and collaborative partnerships where every team member is recognized as bringing their own expertise to the table. Engaging community members at large as team members as needed, and compensating them appropriately is core to building good working relationships. Being flexible and willing to change directions and priorities in response to community is a further way in which effective relationships can be built and projects completed successfully.

Giving back to the community in various ways demonstrates the commitment of the researcher and research team, and goes a long way toward building better relationships. Giving back involves a range of activities, from volunteering at community organizations, to carrying out needed work at the Cultural Centre such as creating inventories, to hiring local elders and experts to carry out critical project work. Each of these demonstrates a commitment to doing things in a good way.

An important part of my doctoral work has been to continue to build on and grow the relationships, with close community collaborators and the community in general, that have developed over the life of the project. Being mindful of what I have learned along the way,

striving to enact these principles each and every day in my own work, and being open to new insights and learning is helping me to be a good relation, and to continue to work together into the future in a good way.

7.1.3 Limitations of the Framework

The results of any study have limitations, and those described in the dissertation are no exception. Representing as it does one cultural and community context, the metadata framework cannot be assumed to be appropriate or relevant in another context, which suggests avenues for further research as discussed in Section 7.2. Although numerous voices and multiple perspectives from within the Inuvialuit community were a part of the study, there are always others that were not, and so ensuring that new voices can be heard and contribute to the living framework is critical. Lastly, while my understanding of the emerging framework was regularly checked against the understanding of my community collaborators, there is always a chance for misinterpretation. Continuing to work closely with the community on the framework moving forward is a means of accounting for and addressing this potential.

7.2 Looking Forward

7.2.1 Furthering the Framework

Similar to any doctoral study, mine has seen some tasks completed and some questions answered. But there are some things remaining to be done, and additional questions have surfaced that need to be explored.

Ideally, the Inuvialuit Digital Library is a living entity which will never be ‘finished’ as it will continue to grow and change as the community itself grows and changes. Intuitively, then, the work to understand and enact a knowledge organization and resource description framework

that reflects this will also never be ‘finished’. Based on what has been surfaced to date through our collaborative explorations, there are several areas of the metadata and description framework that need to be articulated and then enabled in the Library. The first of these involves working with the community to understand the nuances of how they would like to approach issues of access and rights in relation to the Digital Library, and to work through the ways in which this can be expressed effectively and appropriately to its users.

A second area in need of further work with the community is the organization and description of resources around key themes including people and seasons. There is discussion to be had to understand just how this is envisioned within the community and how this can be represented in the framework so that it is respectful, effective, and intuitive for the community. This will involve much consultation and discussion with a broad range of individuals within the community, and is likely to require creative approaches to enabling this through technology.

A final area of future work relates to a new phase of the project just getting under way, the Inuvialuit Voices project, which seeks to enhance the Digital Library with real-time digital storytelling functionality. How this fits within, and relates to, the overall metadata framework is still to be understood as we continue work with the community. Do these resources have properties that are not yet accounted for in the available metadata elements? How would these enhance an organizational pathway around people or places? How might stories about other resources in the Digital Library become part of the description of those resources? These are all questions still to be explored as we move into the future.

7.2.2 Exploring Additional Questions

As discussed briefly in 5.6 (Observations on the Framework), it is interesting to observe the ways in which the framework surfaced in the Inuvialuit community context is both markedly

different from, and yet astoundingly similar to, those developed by and for other Indigenous communities. Exploring the nature of these differences and their potential causes would be an interesting, if challenging project. What role might remoteness of community play? Do levels of immersion in culture and language within the community play a role? A reasonable scope might be to start by looking at digital libraries from Inuit communities internationally.

A second area of questioning worth pursuing relates to the nature and role of multilingual functionality in digital libraries for and by Indigenous communities. In the Inuvialuit context, we have a community with few remaining fluent speakers of Inuvialuktun, and many learners of various ages. In other communities, speakers of the traditional language may be in the majority. How do these different contexts impact the design and functionality of digital libraries? What role can and do multilingual digital libraries play in language revitalization and growth? Exploring what other Inuit communities, or other Indigenous communities where the balance between fluent speakers and learners is similar, would be a worthwhile starting point.

A third set of questions relates to the role of user-contributed resources and information for Indigenous digital libraries. In the Inuvialuit context, there is a strong desire for this type of functionality, yet also many questions. Given the common practice of sharing information through digital platforms, how well might this functionality be taken up by members of the community? How would content and descriptions gathered in this way fit within the broader metadata framework? How would issues of privacy and accountability work in this context? How might this impact sustainability of digital libraries, both positively and negatively, in contexts where resources are often already spread quite thin? Exploring if and how other Indigenous communities have addressed these questions in their own digital libraries, and/or

examining how non-Indigenous organizations have partnered with Indigenous communities to do so, might be opportune places to start.

A final set of questions would flow from the use of this framework as the basis for a digital library of cultural heritage resources in another community setting. This would provide an opportunity to evaluate the effectiveness and responsiveness of the framework in this new context, and determine what changes need to be made to meet the needs and interests of that particular community.

7.3 Contributions

In doing community based doctoral research, one hopes to make a positive contribution first and foremost to the community, as well as to scholarship and practice in general. I believe and hope that the work I have done is seen as having a positive impact in several ways.

7.3.1 To Community

In working together with the Inuvialuit to understand what their community perceives to be a responsive and appropriate metadata framework, and to enact that framework, I believe we have created a Digital Library that the community sees as its own, that it can be proud of, and that it can and will continue to grow and develop into the future. The framework, although needing to be further defined and refined in certain areas, can form a solid basis from which to continue to grow the Digital Library and bring other staff and community members on board with the work involved. It can also act as a foundation for other communities who may want to develop their own digital library.

In striving both individually and as a member of the larger Digital Library North team to approach this project with respect and in the spirit of reciprocity, and to carry out the work in a

good way, I hope that I have been a good relation and guest in the community, and demonstrated through action how Indigenous and non-Indigenous individuals can work together respectfully and collaboratively to share knowledge and bring about positive change.

7.3.2 To Scholarship

In undertaking community based, action oriented doctoral research work, I have contributed to the broader body of scholarship examining questions of community driven knowledge organization frameworks for digital libraries of Indigenous cultural heritage. In particular, working with the Inuvialuit contributes knowledge of a community and a geographic region that has been underrepresented in this area of scholarship, and enhances what we can learn from projects with individual communities with their own unique needs and interests.

The multifaceted framework that has surfaced as appropriate and reflective in this context contributes to a body of scholarship which has often taken an atomistic approach to this question, focusing on specific areas of organization and description such as subject headings, or viewing components of metadata description as unconnected. The ways in which the framework for the Inuvialuit Digital Library captures the holistic nature of knowledge organization and resource description, and the connectedness to technology and people, provides an alternative lens through which we can examine frameworks in other contexts.

My research contributes in a small way to the body of scholarship in library and information science that incorporates Indigenous theories and theorists. In addition, it also has potential to be situated within ongoing discourses, within and without library and information science, about intellectual freedom and social responsibility, as for example in the sensitive area of cultural appropriation.

As a final contribution, this work with the Inuvialuit community demonstrates the importance of community based, action oriented research, and validates its label as scholarship. We increase our knowledge and understanding through doing and building, and every piece of research that demonstrates this contributes to the validation of this methodology in library and information science, and helps pave the way for others to undertake similar work.

7.3.3 To Practice

The framework that has emerged for the Inuvialuit Digital Library, and how it was surfaced, may act as a model for other Indigenous communities and those who work with them. It is possible that other communities may take up the framework and adjust it to suit their own context. Or perhaps they might take up some of the methods and approaches used in order to explore and articulate their own framework. It is also possible that those working with other traditionally underserved communities might take something from this work to enable effective and appropriate collaborations with their partners. Each and every community and context will be unique but my hope is that there will be something others can take and build on, as I have been fortunate to take from and build on the work of others.

7.4 A Final Reflection

The work that I have done and the relationships I have built along the way have changed me profoundly as a person, as a scholar and teacher, as a student and researcher, and as an information professional. Each and every day I ask myself if the work we are doing together matters in the grand scheme of things, wonder if I am up to the task, and ponder whether it is even my place to be doing it. I wonder when we might get to a time where the tools, platforms,

and standards used for developing digital libraries will work as easily and as well for Indigenous communities as they do for any other community.

But when I think about some of the powerful community interactions with the Inuvialuit Digital Library that I have witnessed, I am reminded that this work is important. I am reminded that working together respectfully is about doing the right things and doing things right. It is about understanding what I know and what I still need to learn, and engaging in reciprocal knowledge exchange with the community. It is about coming in good faith with good intentions, being responsible to the community, and giving back. It is about not being afraid to take small steps. As Cree author Harold Johnson writes, “to get to the future, we need a vision, then we must imagine the steps we must take to get to that vision. We cannot ignore our vision because it seems utopian, too grand, unachievable. Neither can we refuse to take the first steps because they are too small, too inconsequential (quoted in Duhamel, 2018, p. 15). I hope that my work, and how I have gone about that work, has contributed in some small way to a process of settlers and Indigenous alike stepping forward together in research in a new and better way.

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