NAMING, CLAIMING, AND (RE)CREATING: 
INDIGENOUS KNOWLEDGE ORGANIZATION AT THE CULTURAL INTERFACE

by

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Abstract

This design/research study is located at the disciplinary interstices of Indigenous education and information science. It is motivated by the weaknesses of the dominant library knowledge organization systems (KOS) in representing and organizing documents with Indigenous content. The study first examines the nature of the problem and then explores ways in which Indigenous conceptual, theoretical and methodological approaches can generate new directions for KOS design. It thereby addresses the central research question, “How can Indigenous approaches to knowledge inform principles of design of library knowledge organization systems to serve Indigenous purposes?”

An Indigenous theoretical lens, @ Cultural Interface, is assembled for the study composed of Martin Nakata’s (2007b) Cultural Interface, and Dwayne Donald’s (2009b) Indigenous Métissage. It is integrated with domain analysis in information science (Hjørland & Albrechtsen, 1995) to produce a methodology, domain analysis @ Cultural Interface, used to study the domain of Indigenous knowledge within post-secondary education. Information was gathered through expert interviews with nine Indigenous designers of Indigenous KOS from four countries; a user study with nine First Nations, Aboriginal, and Métis graduate students; and theoretical analyses.

The study produced a theoretical framework for Indigenous knowledge organization based on four main findings: (1) knowledge organization is integral to educational infrastructure and is consequential for Indigenous learners and all learners; (2) a definition of the domain of Indigenous knowledge in post-secondary education, its boundaries and the boundary marker of Indigeneity; (3) an articulation of Indigenous knowledge organization as a field of study including a (partial) history, typology of design practice, objectives, and
evaluation framework; and (4) a design workspace for conceptual enquiry. These findings are synthesized in a theoretical framework, *Indigenous knowledge organization @ Cultural Interface*, which can be applied in the design, study, and critique of knowledge organization for Indigenous purposes. It is noted that this study and its theoretical framework have been constructed incrementally based on selected theorists, particular participants, experiences, and literatures and offer only one of many possible interpretations.
Preface


Ethical Approval for interviews was received from the University of British Columbia, Office of Research Services and Administration, Behavioural Research Ethics Board Certificate Number H08-00261.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIATSIS</td>
<td>Australian Institute of Aboriginal and Torres Strait Islander Studies</td>
</tr>
<tr>
<td>ATSILIRN</td>
<td>Aboriginal and Torres Strait Islanders Library, and Information Resources Network</td>
</tr>
<tr>
<td>AILA</td>
<td>American Indian Library Association</td>
</tr>
<tr>
<td>BBK</td>
<td>Bibliotechno-bibliografichesai Klassifikatsiia</td>
</tr>
<tr>
<td>BC</td>
<td>British Columbia</td>
</tr>
<tr>
<td>BC-BDC</td>
<td>Brian Deer Classification - British Columbia</td>
</tr>
<tr>
<td>BCE</td>
<td>Before current era</td>
</tr>
<tr>
<td>BDC</td>
<td>Brian Deer Classification</td>
</tr>
<tr>
<td>CC</td>
<td>Colon Classification</td>
</tr>
<tr>
<td>CRG</td>
<td>Classification Research Group</td>
</tr>
<tr>
<td>CRSG</td>
<td>Classification Research Study Group</td>
</tr>
<tr>
<td>CS</td>
<td>classification scheme</td>
</tr>
<tr>
<td>CV</td>
<td>controlled vocabulary</td>
</tr>
<tr>
<td>DDC</td>
<td>Dewey Decimal Classification</td>
</tr>
<tr>
<td>FNHL</td>
<td>First Nations House of Learning</td>
</tr>
<tr>
<td>IIRG</td>
<td>Indigenous Information Research Group</td>
</tr>
<tr>
<td>IKO</td>
<td>Indigenous knowledge organization</td>
</tr>
<tr>
<td>KO</td>
<td>knowledge organization</td>
</tr>
<tr>
<td>KOS</td>
<td>knowledge organization system(s)</td>
</tr>
<tr>
<td>LC</td>
<td>Library of Congress</td>
</tr>
<tr>
<td>LCC</td>
<td>Library of Congress Classification</td>
</tr>
<tr>
<td>LCSH</td>
<td>Library of Congress Subject Headings</td>
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<tr>
<td>LIS</td>
<td>Library and Information Studies/Science</td>
</tr>
<tr>
<td>NAN</td>
<td>Nishnawbe Aski Nation</td>
</tr>
<tr>
<td>OCRC</td>
<td>Ojibway and Cree Cultural Resource Centre</td>
</tr>
<tr>
<td>PCC</td>
<td>Program for Cooperative Cataloging</td>
</tr>
<tr>
<td>UC</td>
<td>University of California</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>UBC</td>
<td>University of British Columbia</td>
</tr>
<tr>
<td>UBCIC</td>
<td>Union of British Columbia Indian Chiefs</td>
</tr>
<tr>
<td>UDC</td>
<td>Universal Decimal Classification</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>SAGE</td>
<td>Supporting Aboriginal Graduate Enhancement</td>
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<tr>
<td>IK</td>
<td>Indigenous knowledge</td>
</tr>
<tr>
<td>UNDRIP</td>
<td>United Nations Declaration on the Rights of Indigenous Peoples</td>
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</table>
Acknowledgements

Any dissertation is a long journey whether or not it takes a long time. This particular dissertation took quite a long time and I express my appreciation to everyone who supported me in its twists and turns.

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Thanks for the stalwart support of my colleagues at the Xwi7xwa Library who believed that the work was important to the aspirations of the library. A debt of thanks to Linda Allen, Access Services Supervisor (now retired); and special thanks to Eleanore Wellwood, Technical Services Assistant, and off-hours bibliography checker; appreciation to Dan Slessor and all of the student assistants and GAAs – past-present-future; librarians, Kim Lawson, Sarah Dupont, Nancy Hannum, and Ene Haabniit; and Cameron Duder for IT formatting. I appreciate the early encouragement of Madeleine MacIvor, Longhouse administration, and University Librarian pro tem, Peter Ward. To my backers: siblings, siblings-in-law, pod of nieces and god-daughter Sho, and the big boys: I hope you all come to visit now, and I am free to travel again. Appreciation to my cousin in genealogy, John Rufus, for inspiration to build it – whatever it is.
To the students, my teachers.
Chapter 1  The Metaphor of the Musqueam Map: Library as Territory

“ʔa: siʔem’ nə si:yə, ?eʔ tə nə  šxwqweləwən k’wəns ?i k’wəcnala.”

Elder Larry Grant, hən’q’əmin’əm’ language teacher, welcomed us to class at the Musqueam Elders’ Centre with this greeting. Although I didn’t know it at the time, my interest in knowledge trails began with the Elder’s welcome and a student project for this first-year hən’q’əmin’əm’ language class. The course is offered through the University of British Columbia (UBC) First Nations Language Program, a collaboration between the nation and the university to revitalize the hən’q’əmin’əm’ language. Hən’q’əmin’əm’ is one of three dialects of Halkomelem and, like many Indigenous languages in Canada, it is endangered. Within the context of endangered languages the loss of a language is understood to be like the loss of a world. A team of linguists, Elders, and speakers worked to develop an orthography and curriculum resources for the students. Often the instructors were only one step ahead of the class, producing a curriculum chapter while trying to accurately record and represent the words of the Elders and remain faithful to the spirit and artistry of the tradition.

“ʔəlqsən is the name of this point of land,” Larry Grant began as he introduced the peninsula where the University of British Columbia is located on the traditional unceded

1 My honoured friends and relatives, I’m happy to see you.
2 The term hən’q’əmin’əm’ is not capitalized: the hən’q’əmin’əm’ orthography does not conform to English language conventions.
3 Of the twenty-six surviving First Nations Languages in British Columbia, all are endangered; another six ancestral BC languages have become extinct. UBC First Nations Languages Program website (cf. Shaw, 2001).
territory of the Musqueam people. Musqueam means “people of the river grass.” The Musqueam people have lived here for thousands of years, on the territory encompassing what is now called Point Grey campus. As students we learned how the term Musqueam had been anglicized, and the ways in which the English, French and Chinook languages intermixed with hən’q̓əmin̓əm’ to shape new forms and blended traditions. We learned how the cardinal directions orientating to sea and forest are carried in the clitics\(^4\) of the language, and the verb formations are dependent on visibility and proximity. Histories of contact were shared as well as appropriation of land and resources that occurred when Europeans arrived and with colonization, the Indian residential school system, and the imposition of the Indian Act.

1.1 The Musqueam Map

For my class project I mapped over thirty-five hən’q̓əmin̓əm’ place names on ?əlqsən based on the Musqueam Declaration (Musqueam Indian Band, 1976) and archival research. It included place names for crab apples stands, sturgeon fishing areas, sources of fresh water, bogs, village sites, and transformation sites. These places and their names evoke associated narratives, stories of sustained use, histories, and origins. Musqueam trail systems connected the resource sites with the lookouts on the cliffs and the villages on the river and inlet. In the 19\(^{th}\) century loggers’ skidroads\(^5\) cut through the forest, perhaps overlaying or disrupting the original trails. In 2013, walking paths thread through the second and third growth forests of ?əlqsən in the area now named Pacific Spirit Park. It is not clear to me how

\(^4\) Clitics are syntactic words which also serve as word-parts.

these overlays of the original Indigenous and newer trail systems are related or the points at which they intersect. Mapping the place names provided me with a glimpse of the record written on the land here, and the meanings carried in the hən’q̓əmin’əm’ language: a layered, complex chronicle of thousands of years of Musqueam continuous presence, interactions, and knowledge creation and transmission (Musqueam Indian Band, 2006, 2011) in this place. Learning while walking across Musqueam lands with Elder and teacher Rose Point (Norma Rose Point, 1933–2012), I was one of the many with whom she shared her experience and knowledge. At the end of term, all of the student projects created for the Musqueam language class were returned to the Nation. The hən’q̓əmin’əm’ orthography and the hən’q̓əmin’əm’ language are considered Musqueam intellectual and cultural property.

The University of British Columbia (UBC) Point Grey campus map (University of British Columbia, 2011) is ostensibly a map of the same place. The campus map carries names such as St. John’s, St. James, St. Mark’s, St. Andrews, Macmillan, Macdonald, and Mackenzie: a reflection and assertion of its acknowledged heritage. The campus map does not reference Musqueam presence or Musqueam heritage on this traditional Musqueam territory. There is little recognition of the history of interrelationships between the university and the nation. The campus map is oriented on a grid anchored to magnetic north: the buildings plotted and aligned in a similar manner. The only exception, an anomaly on this map, is the First Nations Longhouse oriented to true north aligning with the sun at the eastern door and the west wind.

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6 All students in the class signed a protocol agreement acknowledging that materials produced for the class belonged to the Musqueam Indian Band. The three-page summary of the Protocol Agreement between the Musqueam Indian Band Council and the University of British Columbia, dated January 20, 1997, was the product of ongoing collaborative efforts intended to respect and protect the cultural and intellectual property of Musqueam Nation.
I have worked as a librarian for over fifteen years with the First Nations House of Learning, Xwi7xwa Library, the Aboriginal library at the University of British Columbia, Point Grey Campus. Xwi7xwa (pronounced whi-wha) means “echo” in the Squamish language and the library is intended to echo Aboriginal voices as part of the mandate of the First Nations House of Learning to transform the university to reflect Aboriginal cultures and philosophies, linking the university and First Nations communities (Kirkness & Archibald, 2001). For many years, prior to and during my tenure, the library was staffed primarily by student assistants. First Nations, Aboriginal, Métis, and other student workers and volunteers sustained the library during this time, and continue to sustain the library. In many ways the students have also been my teachers, an ongoing education. In 2005, the library became a branch of the university library system and is now (2013) the only Aboriginal branch of a university library in Canada. I mention this unique status because it seems to me that its meaning and the possibilities it carries, both now and in the future, depend in large part on the ways in which the library develops, describes and classifies (maps) its collections of Indigenous materials through its knowledge organization systems (KOS).

1.2 The Library as Territory

Library knowledge organization systems (KOS) are like the maps to the contents of the library: they chart the intellectual terrains in collections. The library contents comprise a vast territory composed of such regions as scholarship, tradition, memory, narrative, and creative expression. A library KOS maps this knowledge territory: its structure and (often) contested terminologies are the navigation points. Like any map, a KOS surfaces certain aspects, and excludes others through the selection of vocabulary and the ways in which subjects are named and grouped together (Olson, 1998, 2002). It creates authoritative
accounts through recognition and erases those that do not fall within its purview, rendering them invisible. Territories are delineated by naming, drawing boundaries, and showing relationships: the navigation co-ordinates are not north and south or sea and mountain but semantics and structure.

To me, as a librarian the mapping out (eclipse) of the profound Musqueam presence in this place on the university campus map is akin to the eclipse of the Musqueam presence in the university library collections. The university is built on Musqueam territory. Musqueam people teach and learn at the university as faculty and students, serve as Elders, sit as members of the university senate, consult on advisory committees, and act as hosts at international events. However, when a Musqueam person asks me where the materials on Musqueam are located in the UBC Library, I have to say, “There is no word for Musqueam in the library world.” There is no place on the library shelves for Musqueam materials; there is no category for library materials about the Musqueam people in the university library. The Musqueam Nation is effectively erased in the library territory through the categories and languages of historic disciplines and their classification systems; Musqueam, when referenced, is subsumed under the general category of Coast Salish along with other nations in this area.

The eclipse of Indigenous presence on library maps is not limited to Musqueam. As Maidu poet Janice Gould observes, “there is not a university in this country that is not built on what was once native land” (1992, p. 81). Based on Gould, I suggest that the metaphor of the Musqueam map is a national metaphor; it extends across the country throughout Indigenous territories and their resident academies. Gould asks us to reflect on this possibility and consider what it means about the relationship “of Indians to academia” (1992,
One of the purposes of the research study is to investigate what the knowledge maps of university libraries mean about the relationship between Aboriginal learners and academia, and to enquire into ways of creating maps to Indigenous content held (and hidden) in library collections.

1.3 Teachings of the Musqueam Map

The Musqueam map teaches that maps are not neutral or objective representations. Through the concepts and relations that they select and name (or not), they shape the kinds of questions that can be asked, and the kinds of answers that are possible (Turnbull & Watson with the Yolngu Community at Yirrkala, 1989, p. 54). Maps are shown to schoolchildren to impart a sense of national identity. Maps are also used to assimilate people by depicting them as if they were no different than an undifferentiated mass, as if they do not have a unique identity, and in this way maps can make whole peoples seemingly disappear (Dorling & Fairbairn, 1997, p. 69). At another extreme, maps may also be used to literally exhibit peoples. For example, when tourist maps of sites sacred to Indigenous people are made public they may cause as much harm to Indigenous societies as disease and guns: this type of mapping draws attention to, or makes public, territory that is considered private (Dorling & Fairbairn, 1997, pp. 69–73). Governments use maps to control territory and as a symbol to legitimize conquest; and maps have long supported colonization and empire building.

However, the effects of mapping are not unidirectional and there are long histories of Indigenous representations of space and location though mapmaking and map use (Harley, 1992, p. 527; Lewis, 1998). Contemporary Indigenous cartography serves multiple purposes, including traditional use studies (Tobias, 2000), the (re)assertion of Indigenous territorial claims such as the Musqueam Declaration and Map (1976), and the production of evidentiary
material, such as the “map that roared” in the Delgamuukw’ and Gisdaywa claim which redefined Aboriginal title in Canada (Joseph, 2009, p. 2337, as cited in Burns, Doyle, Joseph, & Krebs, 2009). Indigenous cartography in this sense is also evident in the mapping of intellectual territories seen in Indigenous knowledge mapping in libraries (S. Simpson, 2005).

Maps may stake territory but they are also generative in that they can provide new perspectives by ordering knowledge differently, creating new connections, and enabling unanticipated ones. They can “provide practical opportunities for making connections whenever and wherever it is socially and politically strategic” (Turnbull & Watson with the Yolngu Community at Yirrkala, 1989, p. 62).! The study considers these different forms of mapping: mapping as assimilation and appropriation, as resistance and assertion, and as connection and passage. The latter carries potential for reimagining possibilities by creating knowledge trails through and among different terrains, thereby encouraging redefinition and different perspectives: new mappings.

An example of Indigenous mapping in libraries is the Aboriginal classification scheme used at the Xwi7xwa Library. Originating from the Brian Deer Classification (BDC) and expanded by librarians in British Columbia, it represents an Indigenous ordering of the world. It enables interactions between learners and documents by tracing Indigenous-made boundaries (though classification), and creating knowledge trails (through subject description) to the Indigenous content in the collection that learners may follow or recreate in their own ways. The BDC is a product of the ingenuity and independent thought of Brian Deer. It is also a model of collaborative development as librarians working in Indigenous libraries across the country continue to recreate and adapt it. However, it is a reality of competing priorities that it has not been updated or restructured using newer approaches that
could better accommodate the multidisciplinary and interdisciplinary collections typical of an Aboriginal academic library, and a burgeoning 21st-century Indigenous scholarship. At the Xwi7xwa Library the collections overwhelm the classification scheme as well as the related alphabetic subject vocabularies that depend on the scheme for structure.

Given this immediate real-world problem, I struggled at first with the distinction between map-making and mapping in choosing a focus for the study. Map-making is devoted to the technique and artistry of creating maps, whereas mapping is an interpretation of a world (Dorling & Fairbairn, 1997). The two are interrelated: “Our perception of the world is constantly being moderated by our experiences of mapping, map-making and map use” (Dorling & Fairbairn, 1997, p. 4). I view mapping as a process of interpretation that requires an understanding of the social relations behind map production, the working practices of practitioners, and the relations of power (Dorling & Fairbairn, 1997, p. 74). I reached the conclusion that mapping must precede map-making because interpretation precedes design. As the Hawaiian aphorism counsels, *O ke kahua mamua, mahope ke kūkulu* “The site first, and then the building” (Meyer, 1998, p. iv). The pressing design problem at the library where I work must wait until the (conceptual) site is complete.

### 1.4 Purpose of the Research

The purpose of the research study is to contribute to the development of theoretical approaches and methodology for the design of knowledge organization systems to serve Indigenous purposes. This entails both critical and constructive examination of the ways in which library knowledge organization theory and practice may be consequential for Indigenous learners, and of the ways in which Indigenous approaches to knowledge may (re)define the processes and products of knowledge organization.
1.4.1 Research Question

The main research question asks, “how can Indigenous approaches to knowledge inform principles of design of library knowledge organization systems to serve Indigenous purposes?” It is composed of four sub-questions:

1. How do knowledge organization systems function as infrastructure and to what effect for Indigenous learners?
2. How is Indigenous knowledge conceptualized by Indigenous scholars?
3. What elements of library knowledge organization theory are hospitable to interpretation from Indigenous standpoints?
4. What criteria could be employed to develop Indigenous evaluation instruments for KOS?

1.4.2 Research Design

Guided by a central tenet of Indigenous research methodology to engage Indigenous perspectives and scholarship (Kovach, 2009; Rigney, 2006; Smith 2005), I sought an appropriate Indigenous theory to anchor the study. I choose Martin Nakata’s Indigenous theory of the Cultural Interface (2002, 2007b) as ideal for a highly diverse public post-secondary site, and grounded it with a Canadian research ethic, Indigenous Métissage (Donald, 2009b). This Indigenous theoretical location (Nakata, 2007b; Donald, 2009b) served both as an overarching ethic and as a navigation compass to guide the study. The Cultural Interface is a conceptual space for enquiry about the interrelationships between Indigenous and Western (and other) knowledge systems that gives primacy to the lived experience of Indigenous people in colonial regimes (Nakata, 2007b). As a theoretical space it manifests a tension between the modern/humanist commitment to social change and the
postmodern sensibility characterized by an antipathy to dualisms, and a recognition of the contingent, partial, and fluid nature of experience and knowledge. The research ethic of Indigenous Métissage exhibits a similar tension: it focuses on surfacing Indigenous accounts of presence, participation, agency, and resistance, as well as stories of interaction, in order to create more complex, reciprocal, and interreferential (hi)stories (Donald, 2009b, p. 99). It is intended to unsettle the dominant colonial narrative of separation between Aboriginal and Canadian people that entrenches division and obscures (hi)stories of interrelationality.

I used an interdisciplinary research framework design/research to mediate another type of tension: that between the functionalist goal of designing an information system and a reflective and interpretive practice. Design/research takes into account the social and ethical implications of design processes and design artifacts. Indigenous discourse theory (Nakata, 2007b; Donald 2009b) is used to enquire into the ways that knowledge is made powerful and the ways that Indigenous people are positioned by it and within it. The objective is to enact a change process that transforms one situation into another. Two precepts that emerge from this theoretical location are a commitment to harness the traditional academic disciplines in service of Indigenous interests (Nakata, 2002, 2007b) and to seek common ground for dialogue and integration (Donald, 2009b).

Based on these precepts I investigated ways of integrating Indigenous theory (Nakata, 2007b; Donald, 2009b) and knowledge organization theory. The first integration blends a discourse theoretic analysis of power with the method of domain analysis in information science. It produces a methodology, Domain Analysis @ Cultural Interface, which is used to study four dimensions of Indigenous knowledge domains: (1) a critical study of knowledge organization; (2) a study of Indigenous practices and theory of knowledge organization; (3)
an examination of the concept of Indigenous knowledge; and (4) a user study with First Nations, Aboriginal, and Métis graduate students who use academic libraries. The second integration produces a theoretical framework for Indigenous knowledge organization that melds knowledge organization scholarship with Indigenous theoretical, and experiential perspectives. The latter is based on Indigenous theory (Nakata, 2007b; Donald, 2009b), and interviews with nine Indigenous designers of Indigenous knowledge organization systems and nine First Nations, Aboriginal, and Métis graduate students. I conceptualize the broad-ranging discourse of knowledge organization theory as constituting four dimensions (planes of work) concerned with epistemological, social, discursive, and technical bases of classification. Guided by the Indigenous principle of wholism I propose that Indigenous knowledge organization (IKO) requires an articulation on all four planes. These central findings are used to create a theoretical framework for IKO, Indigenous knowledge organization @ Cultural Interface, which is applied at an Aboriginal academic library in Canada generating seven principles of design.

1.4.3 Researcher Location: One Story

The research is shaped by fifteen years of professional experience and practice as a librarian at the Xwi7xwa Library. It is also informed by my volunteer work with various professional organizations supporting the development of Aboriginal libraries and information services. It is also influenced by my personal and intellectual locations as researcher, learner, writer, and map-maker. Working at the First Nations House of Learning

opened many doors to me: it motivated my coursework as an unclassified student that led to study with the Ts’elk Indigenous Education program, and an invitation to join the SAGE (Supporting Aboriginal Graduate Enhancement) program with Aboriginal graduate students. The Musqueam language program afforded the opportunity to take the hən’q̓əmin̓əm’ language course at the Musqueam Elders’ Centre, which began a whole new path in my education. During this time, I continued to learn more about navigating both others’ expectations and assumptions, and my own expectations of myself as a non-Indigenous person working and studying in Aboriginal contexts.

My heritage is Acadian French (Baie des Chaleurs) and Welsh (United Empire Loyalist)-Scots (separatist). The shores of the Baie des Chaleurs trace the Gaspe Peninsula, Listuguj territory, and northern New Brunswick; the area has historically been a multilingual/cultural mix of Acadian, Mi’kmaq, Québécois, and British people. My heritage, like the heritage of the country, is one of historic (and contemporary) mediations between francophone and anglophone; Catholic and Protestant; and Aboriginal and non-Aboriginal peoples. I am a first generation university student with an undergraduate degree in English and Philosophy and grew up in Toronto, the oldest of five siblings. During the summers as an undergraduate, I worked in the north: the oil patch in northern Alberta, and service industry in the Yukon, and Northwest Territories. In particular the summer I spent in Yellowknife living within the hospitality of a Métis family—(sometimes) fishing at midnight, and working at the Yellowknife Inn announcing the flights up the Mackenzie River on the PA system: “Fort Simpson, Norman Wells, Fort Good Hope, Inuvik”—was formative in my thinking. The Berger Commission on the Mackenzie Valley Pipeline Enquiry was about to begin, and my interest on leaving Yellowknife was in Native law. I wrote the LSAT
at Osgoode Hall but the cost (and climate) of law school was a deterrent, and instead I opted for a one-year master’s program at Library School and two directed studies. The largest was a comparative analysis of the Aboriginal collections at the London Native Friendship Centre, the Spadina Branch Aboriginal collection of the Toronto Public Library, and the London Public Library (Doyle, 1979); the second was the design of a women’s resource centre using language that could surface women’s experiences, contributions, and histories so often erased by a dominant discourse.

1.4.4 Changing the Stories We Tell

Returning to Yellowknife recently for a family eightieth birthday celebration, I explained what I thought was my esoteric research area to an old friend still working underground. He understood me immediately, saying half-jokingly, “I get it—you’re a white woman doing Indian work.” Some Indigenous theorists hold that Indigenous research is research carried out exclusively by Indigenous researchers with and for Indigenous communities (Rigney, 1999, 2001; E. Steinhauer, 2002; S. Wilson, 2003). However, Indigenous research is also conceptualized as a transformative project that seeks institutional and social change, centres Indigenous knowledge, and holds a critical view of power relations but is not necessarily linked to the ethnicity of the researchers (Bishop, 1998; G. H. Smith, 1997; L. T. Smith, 1999, 2005). I situate the research study within this latter paradigm. An expression of my lived experience, family ancestry, and generational perspective coalesce in a critical poststructural approach to research. My interpretation of the nature of the research problem has shaped the criteria I selected for the theoretical positioning within the dissertation. It gives primacy to the interests of diverse Indigenous learners, both current and future generations, and the interests of all Canadian learners,
including new Canadians. I do not view this research area as an Aboriginal issue, I view it as a Canadian issue and cite Wet’suwet’en speaker, Satsan [Herb George] who says, “we need to change the stories we tell and put a new memory in the minds of our children” (George, 2005, p. 13).

1.5 Citation Style

My choice of citation style aims towards transparency of authorial voice and recognition of the accomplishments and influences of others. Following Indigenous scholars (LaRocque, 1999; Sewell, 2001) I write predominantly in the first person and choose not to write as a disembodied third-person voice that assumes a form of objectivity that separates the “word” from the “self.” This is consistent with Nakata’s style (2007b) and is congruent with a poststructuralist approach that seeks to blur the subject-object divide. Within this paradigm it is recognized that researchers are positioned to impose meanings on another’s text, therefore there is a responsibility to strive to make our positions explicit throughout the research process as each researcher is also a producer of discourse (Cheek, 2008, pp. 355–357). For example, Martin Nakata’s use of language is distinctive, and as a new theorist I am hesitant to reword Nakata in my own words because my translation may be overwriting another theoretical discourse or misconstrue his meaning. Therefore in describing Nakata’s theory, for the most part, I retain his language, and when interpreting Nakata’s theory I use my own interpretation in my own words.

The Indigenous designers who participated in the study all agreed to be identified by name. I therefore attribute quotes from their interviews using the full form of their names.8

8 All the designers gave written consent to be identified by name.
This is an important element in the recognition of the importance of names and naming in Indigenous contexts; it also recognizes Indigenous authority and the significance of the designers’ contributions. Similarly, the representation of the Indigenous designers’ views from the interviews is primarily verbatim from the transcripts as is much of the reporting of the group discussions with the Aboriginal graduate students. A purpose of the study is to present Indigenous experience and thought as represented by the participants, and not to rephrase or reframe the voices of the participants; my interpretation, which is clearly marked as either discussion or conceptual framework, is in my own words.

The graduate students who responded to my call for First Nations/Aboriginal students to participate in the study emphasized that the use of any collective term for Aboriginal people is fraught. Aboriginal peoples are culturally and linguistically diverse and do not form a homogeneous group, and therefore collective terminology is problematic. For some of the graduate students, no collective term was acceptable except, in some cases, the name of a particular nation. However, in meeting my promise of anonymity for student participants, I do not identify the participants by nation or community affiliation. In Canada the term First Nations carries particular legal, social and political meanings, and not all Aboriginal people are First Nations (see Chapter 1.7). Métis people are a unique people often considered as being comprised of diverse Métis communities. Thus in this dissertation, I regularly refer to the graduate student participants as “First Nations, Aboriginal, and Métis people” in recognition of Indigenous diversity, and not by the collective term Aboriginal which may be perceived as erasing particularities. The names of the student participants are all fictional and intended to be gender neutral. In citing their quotations, I have prefaced the
fictional names with the focus group number (1 or 2) in order to give the reader a sense of where themes and discussions occurred in both groups.

In recognition of the Indigenous protocols that honour relationship and affiliation, I include the nation of each Indigenous scholar cited from the secondary literature if they have self-identified. Affiliation is represented in brackets following the personal name when I first introduce a scholar’s work. Sometimes an individual is known publicly by two names: a traditional name and an English name. In this instance, I cite the most common usage first, followed by the second name indicated by square brackets, for example, Satsan [Herb George]. To facilitate sharing of scholars’ work, I have given preference to open access repositories rather than licensed databases in compiling sources for the references list. The references list is formatted following the modified APA style sixth edition that cites the full name of the authors, not author initials, for the reasons stated above and for clarity.

Martin Nakata’s Indigenous theory of the Cultural Interface is a particular theoretical construct with specific characteristics and is a key component of this study. It is therefore considered a proper noun and it is capitalized. I apply this theoretical position in various contexts. Specifically, I integrate it with the method of domain analysis in information science and more generally with knowledge organization theory. When it is used in this way, I use the “@” symbol to indicate that the Cultural Interface is conjoined with another concept to produce an integrated theoretical construct. The “@” symbol serves as a marker of Martin Nakata’s theory as an application, and as Indigenous theory-in-action (Archibald, 2008). It is used for example in domain analysis @ Cultural Interface and Indigenous knowledge organization @ Cultural Interface. The primacy of Nakata’s theory of the Cultural Interface is also denoted in the author citation order within the dissertation: when I refer to Indigenous
theory meaning the theory I have developed based on Martin Nakata and Dwayne Donald, it is represented as Indigenous theory (Nakata 2007b; Donald 2009b) i.e. with Nakata preceding Donald.

1.6 Literature Review

The information science literature documents a range of disparate knowledge organization practices in Indigenous contexts. There is a gap in literature that conceptualizes these practices as an interrelated whole, or that articulates the practice and emergent theory as constituting a distinct field of study with particular characteristics, histories, and commitments. I have conceptualized Indigenous knowledge organization in this way, and articulated its characteristics, and its boundaries for the purposes of this study (see Chapter 6). I view the research study itself as being located within this field of study, Indigenous knowledge organization (IKO). Its histories, design principles, and practices of bibliographic classification and description are little documented in the literature.

Svenonius (1981) characterizes the study of bibliographic knowledge organization systems as falling into two categories: (1) those that are evaluative and study performance of knowledge organization systems, and (2) those that are related to developmental research and the design of knowledge organization systems. These two areas of study are necessarily interrelated and inform each other (Svenonius, 1981). Within Indigenous contexts these two areas of study are also present. An international literature falls within the first category, the evaluative study and critique of the dominant knowledge organization systems. For the most part it focuses on critique of the Library of Congress Classification (LCC), the Library of Congress Subject Headings (LCSH), and the Dewey Decimal Classification (DDC) (Berman, 1993, 1995; Blake, Martin, & Pelletier, 2004; Carter, 2000, 2002; Irwin & Willis, 1989;
Joseph, 1994, 1995; Lawson, 2004; Lincoln, 1987, 2003; Martens, 2006; G. Martin, 1995; Moorcroft, 1992, 1993, 1994; Moorcroft & Garwood, 1997; MacDonald, 1993; Olson & Schlegl, 2001; Szekely et al., 1997). However, the second category of study that is particularly relevant to this research study is much less prolific: the research devoted to design and development of bibliographic knowledge organization systems in Indigenous contexts.

In New Zealand, the research related to the development of the Māori Subject Headings invigorates the field and constitutes a seminal body of literature particularly focused on Māori use of libraries and the development of the Māori Subject Headings (de Barry, 1998; Irwin & Willis, 1989; MacDonald, 1993; S. Simpson, 2005; Szekely, 1997). In Australia, the development of the Australian and Torres Strait Islander thesaurus grew out of critique of Library of Congress Classification (LCC) and Subject Headings (LCSH) (Moorcroft, 1992, 1993) that led to the development of a unique set of protocols intended to guide bicultural practice in libraries, and to the Australian Indigenous thesaurus (Garwood-Houng, 2005, 2008; Moorcroft & Garwood, 1997). In 2004, a seminal colloquium held at the State Library of New South Wales on libraries and Indigenous knowledge generated a set of proceedings that highlight the issues and frame the developing discourse in the field (Nakata & Langton, 2005). These materials are considered contextual to the current research study.

In North America as of 2011, the research literature on the design and development of bibliographic knowledge organization systems for materials by and about Indigenous people and topics comprises two graduate student theses: a doctoral dissertation on provisional classificatory models for a tribal college library (Chester, 2006), and a master’s thesis that
develops a classification for Comanche women’s dress (Mahsetky Poolaw, 2000). In addition, the research literature on the development of culturally relevant terminology for the representation of Indigenous names and concepts includes a doctoral dissertation devoted to the representation of Native American Indian names in published documents (Exner Little Bear, 2005) and an article describing a survey on terminology for Indigenous collectives and preferences for the medicine wheel as a classificatory structure (D. Lee, 2011). A separate (but related) thread within the North American literature focuses on professional practice aimed at the modification or adaptation of the dominant universal KOS in order to improve Indigenous representation (Carter, 2000, 2002; Herlihy & Cocks, 1995; Lincoln, 1987, 2003; Martens, 2002, 2006; Tomren, 2003; Young & Doolittle, 1994). Research in North America has begun to respond to the need for theoretical and applied study of the design and development of Indigenous knowledge organization systems.

George G. Chester, Leech Lake Tribal College administrator, identifies the need for classifications that are more compatible with Indigenous worldviews and are based on the knowledge organization systems of Indigenous cultures for use in tribal college libraries in the United States. His doctoral dissertation, *Proposed Tribal College Cataloging Systems: From Isolation to Association* (2006) presents a comparative analysis of the main classes and notation systems of four mainstream systems: Library of Congress Classification (LCC), Dewey Decimal Classification (DDC), Universal Decimal Classification (UDC), and Colon Classification (CC), counterpoised with an Aboriginal system, the Brian Deer-British Columbia Classification (BC-BDC). Several possible hybrid models are developed based on design principles of cultural respect, user friendliness, and adaptability to Internet. Chester tacitly recognizes the authority of community Elders as a principle of design (2006, p. 14).
He recommends moving from hierarchical to associative library knowledge organization systems based on the requirements of each Indigenous community, and local interests and worldviews. He supports the development of KOS through collaborative partnerships at local and global levels (Chester, 2006). Supporting and expanding Chester’s research, Deborah Lee’s case study of the use of academic libraries by six Aboriginal university students in Canada (2001) finds that mainstream systems do not reflect Aboriginal worldviews. Lee’s subsequent survey study on terminology for concepts, “Indigenous Knowledge Organization: A Study of Concepts, Terminology, Structure and (Mostly) Indigenous Voices” (2011), finds that further investigation of non-hierarchical approaches and less linear structures for organizing Aboriginal-related materials are indicated.

Wendy Mahsetky Poolaw (Comanche-Kickapoo) approaches Indigenous knowledge organization from the perspective of clothing as a form of historical document. Her master’s thesis, *Descriptive Classification Analysis of Comanche Women’s Dress* (2000), calls attention to deficiencies in classification and terminology for the description of Native American dress that impede research and learning. She develops a descriptive terminology of construction methods and dress periods to facilitate information retrieval of design and fabrication of Comanche women’s attire over time, and to determine metadata requirements for photographic images. Similarly to Exner Little Bear (2005), she emphasizes the importance of personal names and recommends the creation of metadata to identify Nation and familial relationship, for example Wanada Parker, Daughter of Quanah Parker, as part of Indigenous personal name metadata.

Although not explicitly addressed in her thesis, Mahsetky Poolaw’s treatment of Comanche dress as historical document points to a broader area of theoretical research about
Indigenous approaches to document theory. Such an enquiry could examine expanded definitions of document that resonate with Indigenous records, record keeping, and transmission, to enquire about what Indigenous documents are and do in both traditional and contemporary contexts. Early definitions of the concept document, and its Latin predecessor documentum, denoted not only a material record of some form but also something that served the act of instruction or teaching, that is as a form of oratory or oral presentation (Lund & Skare, 2010). This type of definition is particularly germane in Indigenous contexts and considering what documents are and do in physical, social, and cultural dimensions may be a productive area for Indigenous theorizing within information science.

Frank Exner Little Bear’s doctoral dissertation, The Impact of Naming Practices Among North American Indians on Name Authority Control (2005), later published as Creating Identity: North American Indian Names and Naming (2007), and a related article (2008) examine authority control of North American Indian names in published documents. His analysis identifies three name forms that reflect the histories of the original oral cultures and colonizing cultures in North America: European, traditional and mixed (2005, p. 157). His findings show that personal naming practices of North American Indians allow an individual to have more than one name at a time, and to have names that change over time. These traditional name forms may carry narrative in the form of an autobiographical story of an individual and exert a form a social control in carrying different social expectations in different contexts (2005, p. 44). Citing the significance of names and their potential to carry a record of cultural inclusion, genealogy, histories, expectations, and relationships, he recommends that the AACR2 (Anglo-American Cataloging Rules 2nd edition) and Names of Persons: National Usages for Entries in Catalogues (International Federation of Library

This study builds on the design and development research described above (Chester, 2006; Exner Little Bear, 2005, 2007; D. Lee, 2001, 2011; Mahsetky Poolaw, 2000). It fills in gaps in the literature regarding conceptual, theoretical, and methodological aspects of Indigenous knowledge organization in libraries. It also contributes to empirical research regarding the theory and practice of Indigenous designers, and the thoughts and experiences of First Nations, Aboriginal, and Métis students as users of academic library knowledge organization systems. The critical study of knowledge organization theory also influences the design and development of new KOS in a dynamic and dialogic cycle.

1.7 General Terminology

For the purposes of this research study the following guideline to terminology is provided to clarify the discussion. *First Nations* is used to mean Indigenous sovereign nations in Canada and individuals who identify as members. *Aboriginal* is used as an inclusive category for all Indigenous people in Canada, including Métis, Inuit, First Nations, status Indian, and non-status Indian people. *Indigenous* is used both in local and global contexts to refer generically to tribal peoples and includes *Aboriginal* people (Alfred, 1999; Castellano, 2000; Royal Commission on Aboriginal Peoples [RCAP], 1996). Regarding the representation of Kahnawake, Brian Deer recommended the use of the form *Kahnawake* when writing in English (rather than Kahnawa:ke) (Brian Deer, personal communication, December 16, 2008). This form is used throughout the dissertation.

**Indigenous knowledge(s).** Within the text of the study, I use the term Indigenous knowledge in a general sense, to mean knowledge produced by an Indigenous individual or
collective that in any way draws upon Indigenous experience. The term Indigenous knowledges (plural) indicates recognition of the heterogeneity of Indigenous peoples and therefore of Indigenous knowledge systems. These two terms are used interchangeably within the dissertation. Chapter 5 What is Indigenous Knowledge? Conceptualizing a Domain examines the term Indigenous knowledge(s) in depth not as a concept but as dynamic knowledge domains.

**Indigenous knowledge organization systems.** The dissertation is concerned with knowledge organizations systems used to structure and describe print and digital library materials produced by Indigenous peoples or relevant to Indigenous peoples, topics, and scholarship. The term is used in this sense unless explicitly stated otherwise, and is further examined in Chapter 6 Indigenous Knowledge Organization: Mapping a Field.

**Indigenous scholarship.** Scholarship produced by Indigenous people, including academic scholars and community scholars. The intellectual traditions of Aboriginal communities are considered scholarship.

**Ontology.** An area of study within philosophy (metaphysics) that considers what exists in the world. The term is most often used in this philosophical sense in this dissertation, and not as a form of knowledge organization system unless explicitly indicated.

**Wholism.** Wholism denotes Indigenous understandings of interconnectedness of everything in the universe (Archibald, Pidgeon, & Hare, 2004; Pidgeon, 2008) as an epistemic and a spiritual principle. This spelling is used to distinguish it from the Western philosophical concept of holism.
1.8 Field Guide to Knowledge Organization in Information Science

As this is an interdisciplinary study, I anticipate that there may be multiple audiences. For readers who may not be familiar with the field of information science, this section locates the field of knowledge organization within the discipline of information science, defines some of its key concepts, and includes an introduction to faceted classification referenced throughout the study. Readers may choose to review this section, omit it, or use it as reference. The terminology within the field of knowledge organization in information science is often technical, there are multiple definitions for basic concepts, and synonyms and near-synonyms abound (Broughton, 2006; Hjørland, 2003b; La Barre, 2004; Svenonius, 2000). The terminology used within this section is taken from the disciplinary literature and in the case of multiple definitions the preferred meaning or interpretation is established when it is introduced.

1.8.1 Information Science

Information science is frequently defined as “an interdisciplinary science concerned with the systematic study and analysis of the sources, development, collection, organization, dissemination, evaluation, use and management of information in all its forms, including the channels (formal and informal) and technology used in its communication” (Reitz, 2004, p. 358). This type of definition emphasizes an objectivist, analytical approach and underplays the fundamental human and social dimensions that to my mind are integral to information and communication. The emergent academic programs in the field called iSchools are closer to offering an operational definition that I would like to use for this study, one that focuses on “the human context of a rapidly changing information environment” (University of Toronto, 2012) and situates human interaction at the centre of the relationship between information,
people, technology and society. This type of conceptualization of the field highlights the need for continuing enquiry about the nature of the discipline and its key concepts (Mai, 2002) on the border between social sciences and the humanities, and therefore where discussions of epistemology and interpretive methodologies are important (Hansson, 2005, pp. 102–103).

1.8.2 Knowledge Organization (KO)

Knowledge organization is a broad interdisciplinary field represented in the literatures of science, computer science, education, anthropology especially cognitive anthropology, linguistics, cognitive science, sociology, statistics, psychology, and philosophy (Bowker & Star, 1999; Hjørland, 1998, 2005, 2011a). This breadth reflects the ubiquity of knowledge organization as a basic human activity that seeks patterns and forms relationships as a way of making sense of the world (Satija, 2000). Within information science, the focus of this dissertation, I use a definition of knowledge organization developed by Tennis (2008): “the field of scholarship concerned with the design, study, and critique of the processes of organizing and representing documents that societies see as worthy of preserving” (2008, p. 103).

1.8.2.1 Document

The term document is understood to include all forms of media, from artistic and musical creations to visual images, three-dimensional objects, and electronic media (James Anderson, 2003; Langridge, 1989).

Knowledge organization may be understood in a narrow sense as the practice of indexing and abstracting, constructing thesauri and classifications, however it has a central
role in the production and communication of knowledge in the context of social, cultural, and historical traditions (Bowker & Star, 1999; Hjørland, 2003b; Hodge, 2000; La Barre, 2006). When the field of knowledge organization is conceptualized in this way it admits critical social analyses of the nature of knowledge and knowledge production. It then has the potential to shift deductive-nomological theoretical approaches aimed at systems designed to reflect reality towards approaches that understand knowledge organization schemes as particular and contingent views of the world (Mai, 2004, p. 40). These broader definitions of classificatory units of analysis build on the work of traditional theorists at the same time as expanding the scope of the field within information science (Mai, 2004).

1.8.3 Knowledge Organization System (KOS)

At the most general level, knowledge organization systems (KOS) may be defined as social systems and institutions that organize knowledge. For example, they are manifest as the structure of universities and scientific disciplines, or more concretely in bibliographic forms such as encyclopedias and dictionaries. They may be embodied in the built forms of material discourse, such as architecture, regalia, or winter counts, or enacted through social institutions such as potlatch, ceremony, and storytelling. In library contexts they are primarily designed to support search and retrieval of information held in library collections of print and digital materials. They encompass various forms, from bibliographic classifications to thesauri and subject headings, to semantic networks and ontologies; they are at the heart of every library, museum, and archive (Hodge, 2000).
1.8.4 Controlled Vocabularies

Controlled vocabularies (CVs) are bibliographic languages that describe the intellectual attributes of documents (author, title, edition and subject) for a particular audience in order to facilitate information retrieval. There are two types of subject CVs; a classificatory CV (classification) is expressed in notation and verbal expression whereas an alphabetic-subject CV uses only verbal expression, such as thesauri, subject headings, glossaries, taxonomies, and ontologies. They perform three functions to disambiguate meaning: the control of terms to prevent multiple terms for the same concept (synonyms); the control of terms to prevent multiple meanings for the same word (homonyms); and the mapping of variants in order to show relationships. The mappings show structured semantic relationships, such as hierarchical, equivalency, and associative relationships, and perform a navigation function in showing users relational knowledge.

A primary requirement of a controlled vocabulary is collocation: the gathering of like materials together. One means of accomplishing this is by eliminating synonyms, and a measure of its effectiveness is called recall. The control of homonyms is required in order to minimize the retrieval of irrelevant results; for example, the word drum could mean a musical instrument, a fish, a sound, or a container for oil. A measure of relevance is called precision. Precision and recall are two primary objectives of and evaluation criteria for CVs (Svenonius, 2003). However, there is ongoing debate about their theoretical grounds and validity (La Barre, 2006, p. 28).

Other kinds of indexing vocabularies include natural language indexing using free-text searching over a whole document, and keyword indexing using significant terms taken from the titles and abstracts of documents. Research studying the comparative effectiveness
of uncontrolled and controlled vocabulary indexing finds that keyword is particularly
effective at retrieval of unique terms (McCutcheon, 2009), and a controlled vocabulary is
mandated when precision and recall are important retrieval objectives. It is generally agreed
that both classificatory and alphabetic subject languages are required to order subjects
effectively (Svenonius, 2003). The design of controlled vocabularies occurs at two levels.
The conceptual level addresses objectives and principles, as well as entities, their attributes,
and relationships; it operates at the level of ideology. The implementation level functions at
the level of technology: it formulates rules that are used by the controlled vocabulary to
create descriptions. There is a delicate balance between the conceptual and technical levels
that may be upset when “technology, theoretically at the service of ideology, loses its
direction and subverts it” (Svenonius, 2003, p. 59). This is a useful warning for Indigenous
knowledge organization.

1.8.5 Classification

Classification in its broadest sense is the process of organizing a universe of
knowledge into some systematic order (Chan & Hodges, 2007). It organizes both concrete
and abstract entities. When the entity to be organized is knowledge it is called knowledge
classification, whereas a library classification or bibliothecal classification organizes books
or documents, and bibliographic classification organizes the subjects contained in documents
(Satija, 2000, p. 222). A primary purpose of library classification is to arrange documents on
a shelf by collocating like materials in a helpful sequence arranged from the general to the
specific, and secondarily to organize the bibliographic records representing the materials in a
systematic order, typically in an online library catalogue for the purpose of information
retrieval.
Thus, classification is both a process of organizing a universe of knowledge, and a scheme or system produced through the process. It is also the “art” of applying a classification scheme once it is designed (Chan, 1994; A. Taylor, 2004). A classificationist designs a classification scheme and a classifier applies a particular scheme (Ranganathan, 1967, Section GA01); and classification theorists conduct classification research and study (Satija, 2000, p. 224). For the purposes of this study, I use the term designers to refer to those who design knowledge organization schemes, including classifications, thesauri, and alphabetic subject heading lists.

1.8.6 Classificatory Structures

The scope of a universal classification scheme is the whole universe of human knowledge, whereas a special classification covers a specific field or domain and is designed for a specific user group (Sayers, 1955, p. 79). A classification scheme (CS) is composed of three parts: a schedule mapping the universe or domain of subjects, an index to the subjects, and a notation that assigns a code to the classes and is composed of numbers, letters, or symbols, or a mix of these. The index to the schedules lists the terms used by the scheme and links each term to its class number (Ranganathan, 1967).

Universal library classifications begin with a universe of knowledge and divide it into successive orders of classes and subclasses eventually systematically listing all topics. A characteristic that is relevant to the class it is dividing is selected as a principle of division at each stage. The division is from general to specific wherein each class is a species of the one above it and a genus to the one below. The classification proceeds gradually down through classes and subclasses from those of great extension (broad scope) to those of greater intension (depth or detail). The structure formed is a hierarchical structure called an inverted
tree (Chan, 1994). It produces *enumerative classification systems* that aim to list every possible topic in a universe as mutually exclusive, jointly exhaustive categories. The Library of Congress Classification (LCC) and the Dewey Decimal Classification (DDC) are the two predominant universal bibliographic classifications in North America and are examples of (predominantly) enumerative classification schemes. However, as is often the case with categories, it turns out they are not mutually exclusive and overlap in many instances (Beghtol, 2008; Svenonius, 2003).

### 1.8.7 Faceted Classification

In the 1930s S. R. Ranganathan rejected a top-down approach beginning with the universe of knowledge divided by main classes and subclasses, and instead used a bottom-up approach to create classifications derived from a dynamic universe of concepts that built upwards to larger faceted classes (Beghtol, 2008) that could represent multiple dimensions or *facets* of a subject. Ranganathan honed his new method of *analytico-synthetic classification* (faceted classification) through the iterative development of his faceted classification scheme, the Colon Classification (CC) and influenced classification research on three continents. His theory was further developed through the Classification Research Group (CRG) in the United Kingdom, the Classification Research Study Group (CRSG) in North America, and the Library Research Circle in India.

### 1.8.8 Advantages and Disadvantages of Faceted Classification

Because an enumerative classification attempts to list all subjects within a universe of knowledge, including the past, present and anticipatable future, it freezes knowledge as soon as it is designed (Coates, 1978, p. 289) and is soon overpowered by the emergence of new
subjects (Ranganathan, 1967, Section CU). Because faceted classification can combine facets freely, it is flexible and responsive to local interests (La Barre, 2006), hospitable to new knowledge, and expressive in its ability to represent compound subjects (Vickery, 1966) and multiple perspectives (Kwaśnik, 1999). As applied in digital libraries it is free of the constraint to arrange physical documents in a linear order on a shelf. In this environment it also can be mapped to and provide a framework for other controlled vocabularies, such as thesauri and subject headings providing enriched access through integrated tools (Broughton, 2006; Ingwersen & Wormell, 1992). Faceted classification offers these advantages to research and development of Indigenous knowledge organization, and to Indigenous knowledge organization systems. It does, however, require more effort to design and construct (Vickery, 1966) and a deeper understanding of the knowledge domain and its users in order to establish relevant facets and fundamental categories (Kwaśnik, 1999). The dissertation is devoted to developing these types of deeper understandings in preparation for undertaking (future) design and construction.

1.9 Outline of the Dissertation

The short title of the study, Naming, Claiming, and (Re)Creating, is meant to evoke active dimensions of Indigenous self-determination (L. T. Smith, 1999) and the generative capacity of Indigenous thought and continuity of traditions. These three dimensions are interdependent and act in synergy with each other to produce transformation. Naming at its most general level is interpreted as Indigenous self-representation. It may manifest as Indigenous naming of nations, concepts, people, and places. It is evidenced in the ongoing endeavour of Indigenous people to find expression of Indigenous experience, thought, and continuity with traditional forms that may be absent in current textual and visual
vocabularies. It also is seen in the Indigenous scholarship that develops and applies Indigenous theoretical, conceptual, and methodological discourses within the disciplines (cf. Teuton, 2008). It simultaneously implies a resistance to external impositions of naming or categorizing or setting the terms of the debates about legitimate ways of knowing, what exists in the world, and the values that are considered important. Indigenous interests in naming not only denote the intellectual and creative processes of imagining and establishing designations for people (collective and individual), places, and things but also in (re)conceptualizing experience, histories, theory, and scholarship at collective and individual levels, in academic and community contexts.

*Claiming* extends the act of naming through assertion in wider public spaces. As an action it hails an audience and “has a certain noisiness to it” (L. T. Smith, 1999, p. 143). It is intersubjective in this sense and in its inherent aspiration to recognition. Recognition is an acknowledgement of existence and of an entitlement to be heard. Its meanings shift with context and use and I draw on Justice (2010) in interpreting it as carrying multiple meanings. It has grammatical meaning in the sense of a common context of perception. It carries a meaning of mutuality in its potential to connect us to others through shared perceptions, experiences, or commitments (Justice, 2010). It may also carry political meaning in the recognition of a collective political voice, for example as seen in a formal acknowledgement of the political existence of a government or nation (Merriam-Webster’s Collegiate Dictionary, 2005). Examples of this range of meanings are manifest in acts as diverse as claiming Indigenous identity as form of self-introduction, or claiming intellectual territory in the academy, or claiming land through blockade of a road, or claiming the right to be heard through hunger strike. Within the context of knowledge organization systems, claiming of
Indigenous self-representation (naming) resonates and creates connections through the web of networks formed by the carriers and material embodiments of knowledge organization systems: library catalogues, databases, archival finding aids, embedded metadata, shared bibliographic utilities, and institutional repositories.

*(Re)Creating* is read as a generative process that is imaginative in origin and is manifest in Indigenous creativity in discourse and practice. It inspires the adaptive and formative processes that continue traditions into the present and the future. It creates new connections and understandings through revisioning precedents or reframing hegemonic forms. In academic contexts it may (re)create or redefine disciplinary concepts or theories through applying an Indigenous approach to another discipline. Within Indigenous knowledge organization it is manifest through integrating Indigenous conceptualizations of knowledge, being in the world, and values to disciplinary theory, practice, and methodology. The reporting and interpretation within the dissertation are organized according to these three dimensions: naming, claiming, and (re)creating.

*Chapter 1 The Metaphor of the Musqueam Map: Library as Territory* draws on the metaphor of the map to compare geographic space with discursive and intellectual space. It presents the mapping out (eclipse) of Musqueam presence on the university campus map as analogous to the eclipse of Musqueam presence on the university library map. In naming and drawing boundaries around scholarship, through the classifications and subject headings that compose its knowledge organization systems (KOS), the library map describes and organizes the contents of the library collections. The map is a metaphor for the research problem, the inadequate representation of Indigenous content and scholarship in library collections through the dominant KOS. It motivates the main research question, “How can Indigenous
approaches to knowledge inform principles of design of library knowledge organization systems to serve Indigenous purposes?"

Chapter 2 Theoretical Location: The Cultural Interface presents the Cultural Interface, a theoretical space developed by Indigenous scholar Martin Nakata (2002, 2007b) to examine the intersections between Indigenous and Western knowledge systems from an Indigenous discourse analytic perspective. It is complemented by the research ethic of Indigenous Métissage developed by Dwayne Donald for Indigenous education in Canada (Donald, 2009b). This assemblage of critical Indigenous theory provides the theoretical location of the study and the research design. It is a particular theoretical location developed for the purposes of the study and when it is applied in conjunction with another concept or method it becomes activated and is represented by the “@” symbol, for example, Indigenous knowledge organization @ Cultural Interface.

Chapter 3 Methodology: Domain Analysis @ Cultural Interface integrates the Indigenous discourse theoretic approach of Nakata (2007b) and Donald (2009b) with domain analysis in information science to produce a methodology for studying Indigenous knowledge domains, Domain Analysis @ Cultural Interface. This approach theorizes a knowledge domain as a projected category of analysis comprised of documents, and discursive and social practices within a power-charged field. Contrary to a view of knowledge organization (KO) as a neutral practice without social consequences, it views social consequences and ethical concerns as integral to knowledge organization in Indigenous contexts. The methodology is applied in four domain analyses of the domain of Indigenous knowledge in post-secondary education: (1) a critical study of knowledge organization and its consequences for Indigenous learners, (2) an analysis of Indigenous
knowledge as a knowledge domain, (3) a study of knowledge organization in Indigenous contexts based on expert interviews with nine Indigenous designers of knowledge organization systems, and (4) a user study with nine First Nations, Aboriginal, and Métis graduate students who use academic libraries. Each domain analysis has its own methods, analyses, and interpretation. The findings and interpretations are presented in three parts: Part One: Naming (Chapters 4 and 5); Part Two: Claiming (Chapters 6 and 7); and Part Three: (Re)Creating (Chapters 8 and 9).

**Part One: NAMING** presents findings and interpretations in two chapters focused on different aspects of Indigenous self-representation. Chapter 4 identifies the operation of power within knowledge organization, the ways in which Indigenous self-representation is effaced, and the effects of this for Indigenous learners and all learners. Chapter 5 explores multiple ways in which Indigenous scholars conceptualize and apply Indigenous knowledge. These multiple Indigenous discourses are interpreted as a dynamic Indigenous knowledge domain within post-secondary education.

**Chapter 4 Knowledge Organization as Infrastructure: Consequences and New Directions** presents an analysis of power relations in knowledge organization (KO) using the concept of infrastructure (Bowker & Star, 1999). I compare infrastructure with the concepts of hidden curriculum and official knowledge used by Indigenous educational theorists (Calliou, 1999; Hampton, 2000) in order to argue that KO is integral to educational infrastructure. Based on findings from the group discussions with First Nations, Aboriginal, and Métis graduate students and the theoretical analysis, I identify negative social, pedagogical, and economic consequences of KO for Aboriginal learners. I then suggest that there is an institutional responsibility to address barriers that library knowledge organization
systems present for Indigenous learners and Indigenous education (Pidgeon, 2008). The graduate student discussions also moved beyond critique to illuminate new directions for KO design. The chapter addresses the research sub-question 1: “How do knowledge organization systems function as infrastructure and to what effect for Indigenous learners?”

Chapter 5 What is Indigenous Knowledge? Conceptualizing a Domain interprets Indigenous knowledge (not as a concept) but as a dynamic knowledge domain comprised of multiple and competing discourses that operate within and influence wider social arenas. Indigenous scholars’ conceptualizations of Indigenous knowledge are examined through three kinds of expression: (1) conceptual descriptions in the secondary literature; (2) practices operationalized as Indigenous knowledge “in action” (Archibald, 2008) in post-secondary education exemplified by Indigenous education, Indigenous research methodology, and Indigenous studies programs; and (3) group discussions with First Nations, Aboriginal, and Métis graduate students based on lived experience. The concept of Indigeneity is identified as a rhetorical marker of Indigenous discourse in order to distinguish it from external discourses for the purposes of knowledge organization. The chapter addresses research sub-question 2: “How is Indigenous knowledge conceptualized by Indigenous scholars?”

Part Two: Claiming comprises two chapters focusing on claiming the field of Indigenous knowledge organization as an Indigenous practice and scholarship, and as Indigenous knowledge in action (Archibald, 2008). It is viewed not only as a form of information scholarship and professional practice but as a social, political, and pedagogical instrument (adapted from Justice, 2011). The section reports on the findings and
interpretations emerging from the expert interviews with nine Indigenous designers of Indigenous knowledge organization systems from four countries and the literature.

Chapter 6 Indigenous Knowledge Organization: Mapping a Field asserts the existence of an Indigenous range of practice with an emergent theory, named Indigenous knowledge organization (IKO) and claims it as an Indigenous field of study. It articulates types of design practice, boundaries, characteristics, and a shared high-level objective of social transformation. These are synthesized in a typology that maps IKO design practice at local and global levels. The chapter first documents oral histories of the development of IKO in Canada based on interviews with three First Nations designers. It then maps an international field of IKO practice according to strategies for change, as manifest through design and described according to jurisdiction, institutional location, scope, and focus. The site of the current research study is then located within this typology. From the perspective of Indigenous experience, the chapter addresses research sub-question 3: “What elements of library knowledge organization theory are hospitable to interpretation from Indigenous standpoints?”

Chapter 7 Indigenous Knowledge Organization: Design Space, Purpose and Evaluation examines the Indigenous designers’ approaches to knowledge and conceptualizations of similarity and difference among Indigenous approaches, and between Indigenous and mainstream knowledge approaches. It is divided into three sections concerned with theory, semantics/structure, and evaluation. The first section examines ethical, philosophical, social, and political aspects of Indigenous knowledge organization.

The second section examines Indigenous approaches to semantics and structure within KOS. The third is an interpretation of IKO purpose that has social, political, and pedagogical dimensions in addition to the technical purpose of information retrieval, and thus entails multiple criteria for evaluation. The chapter addresses research sub-question 4 “What criteria could be employed to develop Indigenous evaluation instruments for KOS?”

**Part Three: (Re)Creating** is composed of two chapters that demonstrate ways in which Indigenous approaches to knowledge shape theoretical, conceptual, and methodological dimensions of knowledge organization. I apply the theory of the Cultural Interface and the empirical findings from the interviews to demonstrate some of the ways in which Indigenous approaches shape the processes of representing and organizing documents within Indigenous knowledge domains.

*Chapter 8 Adding to the Rafters* selectively examines key theoretical debates within knowledge organization theory, mapping them in relation to each other and in relation to the Indigenous perspectives and Indigenous theory articulated in Chapters 1–7. I use the concept of warrant as a boundary object to enable a dialogue between Indigenous theory and KO theory (Beghtol, 1986, 2002a, 2002b; Bowker & Star, 1999; Olson, 2010; Wisser, 2009). I then examine how different approaches to warrant produce different classificatory arguments, and where these intersect or not with Indigenous interests. From Indigenous theoretical perspectives, the chapter addresses research sub-question 3, “What elements of knowledge organization theory are hospitable to interpretation from Indigenous standpoints?”

*Chapter 9 Indigenous Knowledge Organization @ Cultural Interface* summarizes the findings from Chapters 1–8 and synthesizes them through a theoretical framework for
Indigenous knowledge organization, Indigenous knowledge organization @ Cultural Interface. The framework is applied at a particular type of site, an Aboriginal academic library in Canada, to produce seven principles of design and is now ready for future use at the technical level of construction of KOS. It addresses the main research question “How can Indigenous approaches to knowledge inform principles of design of library knowledge organization systems to serve Indigenous purposes?”

Chapter 10 Conclusion: Reflecting on Relations concludes with a consideration of the overall findings, the significance and limitations of the study, and the possibilities for future research. It reflects on the relations involved in mapping of Indigenous knowledge, mapping of Indigenous theory, and possible implications for this type cartography. Table 1.1 Dissertation Map summarizes the organization and contents of the dissertation.

Table 1.1 Dissertation Map

| Naming, Claiming and (Re)Creating: Indigenous Knowledge Organization @ Cultural Interface |
| 1. Metaphor of the Musqueam Map: Library as Territory |
| 2. Theoretical Location: The Cultural Interface |
| 3. Methodology: Domain Analysis @ Cultural Interface |
| Part One: NAMING |
| 4. Knowledge Organization as Infrastructure: Consequences and New Directions |
| 5. What is Indigenous Knowledge? Conceptualizing a Domain |
| Part Two: CLAIMING |
| 6. Indigenous Knowledge Organization: Mapping a Field |
| 7. Indigenous Design, Purpose and Evaluation |
| Part Three: (Re)CREATING |
| 8. Adding to the Rafters |
| 9. Indigenous Knowledge Organization @ Cultural Interface |
| 10. Conclusion: Reflecting on Relations |
Chapter 2  Theoretical Location: The Cultural Interface

A theoretical location establishes the researcher’s assumptions about the nature of reality, what and how we can know, and the values that underpin the design of the study: ontology, epistemology, and axiology (Creswell, 1994, 2009). Although often hidden (Slife & Williams, 1995), these assumptions shape the methodology, the procedures of enquiry, and the specific methods of data collection and its interpretation (Creswell, 2009, pp. 3–5). In selecting a theoretical location, my primary criteria were fit with the site of the question, the purpose of the research, the interests of the participants, and my interests (and location) as a researcher. I therefore sought an Indigenous theory to ground the design and drive the methodology for this study of Indigenous approaches to knowledge (Archibald, 2008, p. 36). It needed the capacity to theoretically accommodate a highly diverse user group of Indigenous learners (and other learners): a theorization of Indigenous diversity and a universe of interrelationships. Finally, it was important to me to establish a theoretical location where I could maintain my own integrity as a non-Indigenous researcher within the shifting intersections of disciplinary, social, and cultural fields of the study.

Martin Nakata’s Cultural Interface (2002, 2007b) is an Indigenous theoretical space developed for examining intersections between Western and Indigenous knowledge systems. It is “constituted by points of intersecting trajectories” within a space of dynamic relations that abounds with “ambiguities, conflict and contestation of meanings” (Nakata, 2007b, p. 199). As a postmodern approach, it views the maintenance of structural oppositions, such as those between them-us or traditional-Western, as unhelpful in explaining complexity and instead examines contests over meanings and the ways in which knowledge is made
powerful. Martin Nakata also examines intersections between Indigenous knowledges and libraries (Nakata, 2002, 2003b, 2007c; Nakata & Langton, 2005), which is a fairly rarefied field and I felt elated to find a theorist, and an Indigenous theorist, working at these intersections. The discourse analytic approach of the Cultural Interface contributes insights into the ways in which Indigenous identity and Indigenous knowledge are discursively constructed through various forms of dominant discourse. These characteristics of the Cultural Interface met and exceeded the criteria I had established for the study’s theoretical location: it provides a critical poststructural Indigenous theory, in addition to understandings of the socially constructed nature and associated consequences of discourse within Indigenous contexts.

Secondly, in seeking an axiology to establish an ethical compass for the study, I selected Dwayne Donald’s Indigenous Métissage (2009a, 2009b) because it shifts the ethic to a place-based site of enquiry, and articulates specific objectives that might be operationalized in a knowledge organization system located at a post-secondary institution in Canada. It enlivens the ethos of the project with a relational ethic based on principles of interconnectedness and renewal. Indigenous Métissage as an ethic is informed by a philosophical commitment to ecological understandings that view human relations as relations with all beings in the world, and our futures as people are tied together. Indigenous Métissage uses specific places and their related artifacts in Canadian landscapes (symbolic and concrete) as sites of enquiry: it first gives primacy to Indigenous accounts, experiences, and philosophies, then critically examines the colonial context, and finally strives to surface histories of interaction in order to shift often reductive narratives of a place and create a more “complex, reciprocal, and interreferential story” (Donald, 2009b, p. 99).
The chapter introduces the Cultural Interface (Nakata 2002, 2007b), including the responsibilities of researchers, the development of the theory, analysis of the ways in which Indigenous identities are constructed through dominant discourses, and the effects on people’s lives. It next examines the Cultural Interface as a social ontology and an approach to enquiry intended to shift dominant discourse to produce more useful representations of Indigenous people in the hope of social change. It then offers a contextual (re)reading of this theoretical space to examine perceived tensions within it, and to identify how, for the purposes of this study, I balance these tensions through a relational ontology-epistemology (Haraway, 1991b) and axiology (Donald, 2009b, 2011) at the Cultural Interface (Nakata 2002, 2007b). The final section examines the ways in which this interpretation of the Cultural Interface will drive the methodology of the study and shape the development of a theoretical framework for knowledge organization in Indigenous contexts.

2.1 The Cultural Interface: Development of a Theory

Martin Nakata conceptualizes the Cultural Interface as a theoretical space from which to view the interrelationships between Indigenous and Western knowledge systems and to consider their possibilities for advancing Indigenous aspirations as determined by Indigenous people (Nakata, 2002, 2006, 2007a, 2007b). A space of conflicting and competing discourses, it is continuously (re)negotiated as the responses and priorities of individuals and collectivities within it are fluid and heterogeneous. The intersections of Indigenous and Western knowledge systems are seen to offer potential for producing new knowledge relevant to Indigenous interests as well as world knowledge. It is assumed that positioning different knowledge systems as singular oppositional dualities is an inadequate basis from which to theorize complex relations because it leads to analyses that obscure the complexities
of both systems and assume a fixity across time and space within both that is “inherently false” (Nakata, 2002, p. 284). Therefore an examination of the epistemological bases of the (potentially) interacting theoretical positions is required in order to understand where there may be similarities across categories and differences within them (Nakata, 2002).

Researchers at the Cultural Interface face the challenge to maintain the continuity of an Indigenous knowledge system while simultaneously harnessing the potential of another and ensuring that Indigenous interests are served (Nakata, 2002). They are charged with a responsibility to read their discipline as the discipline reads it, and as it is read from Indigenous perspectives. This dual commitment is intended to foster dialogue between the disciplinary discourses and to extend them by including elements that may have been submerged, Indigenous understandings of them, and the ways in which they give expression to power (Nakata, 1998a, p. 4). The challenge for my particular study is to present a reading of knowledge organization theory from a disciplinary perspective as well as one that engages Indigenous perspectives. The aim is to further understandings of the ways in which Indigenous approaches to knowledge might inform knowledge organization theory, and how the theory and practice of knowledge organization may prove useful (or not) to Indigenous interests.

2.1.1 Lived Experience

The development of the theory of the Cultural Interface is grounded in the lived experience of Martin Nakata and articulated through his scholarship over time (cf. 1991, 1995, 1997, 1998a, 1998b, 2002, 2006, 2007a, 2007b, 2008, 2010). Martin Nakata identifies as a Torres Strait Islander whose heritage links to the islands within the Torres Strait, north of Australia. The Strait was (re)named after a Spanish explorer in the 17\textsuperscript{th} century,
overwriting the local names of the island communities with a single anglicized name, a collective identity imposed, and traditional boundaries and affiliations obscured (Nakata, 1995, p. 42). The Second World War resulted in socio-economic and political changes for the Torres Strait Islander people who gained the federal vote (1962), and the state vote (1965). The schools were desegregated in the 1960s, although access to secondary school education on the Australian mainland was unavailable until the early 1970s (Nakata 2007b), when Martin Nakata navigated the school system. As an employee and later as a graduate student he found that his views were often either patronized or discounted, and he was corrected by non-Indigenous experts claiming to know more about his history and experience than he did, or who suggested that other Islanders may be more authentic. This experience sparked his research interest in the ways in which Western discourse positioned him as an Indigenous person and dominated understandings of Islanders.

Through sharing these experiences with his readers, I suggest Nakata achieves multiple goals: an educational goal of informing readers about Indigenous people and of the Torres Strait Islands; a social goal of offering a form of solidarity with Indigenous students who may be enduring similar experiences; and a political goal through the rhetorical form of autobiographical resistance (Moreton-Robinson, 2003) and a demonstration of Indigenous agency (and ingenuity). Finally, the issues he identifies serve as markers of engagement for others because they represent not only a single individual’s (his)story, but also represent shared Indigenous experience, and thus begin to map out on macro levels, potential national and global points of intersection among diverse Indigenous peoples, and between Indigenous

10 Martin Nakata is the first Torres Strait Islander to graduate with a Ph.D. (James Cook University, 2011).
and non-Indigenous people. While the specific experiences of a Torres Strait Islander scholar are localized, individual, and grounded in place and time, the patterns resonate with a wider Indigenous experience which Nakata translates into a both a theoretical location, the Cultural Interface, and a method of enquiry, Indigenous standpoint theory.

2.1.2 Discursive Constructions of Indigenous Identity

In his analysis of the ways in which dominant discourse positions Indigenous people, Nakata examines three exemplars of Western text: an early missionary account, a historic scientific report, and contemporary education policy. His aim is to identify their underlying assumptions, demonstrate how these are replicated in contemporary discourse, and examine continuing effects on the lives of the Indigenous people (Nakata, 2007b, pp. 2–11). These are canonical exemplars of the discursive construction of Indigenous identities in different genres of Western texts. I suggest that knowledge organization systems (KOS) are another genre that discursively constructs the identities (individual and collective) of Indigenous people.

2.1.2.1 Missionary Discourse: The Cannibal, the Noble Savage, and the Lost Soul

Using an early text of the London Missionary Society (LMS), Nakata examines how it positioned the Torres Strait Islanders as both subject and object of the missionaries, and as savages in need of a soul. The missionary’s account claimed ignorance of the country of “cannibals and genuine savages” (MacFarlane, 1888, p.15, as cited by Nakata, 1997, p. 44) although there had been numerous recorded visits during the three hundred years prior to this mission (Nakata cites fourteen). The account represents Victorian society’s image of the noble savage and a vision of a progressive as yet unreached ideal state. The missionary role
was to deliver the lost souls of the Torres Strait to the ideal state through the Christian gospel. Christian texts and curriculum materials were developed in the six local languages and dialects as part of the imposition of a Christian belief system. This spiritual colonization went hand in hand with secular colonization and appropriations of land, natural resources, and labour. For Martin Nakata, missionary discourse marks the beginning of a systematic way of outsiders thinking about Islanders, imagining who and what they are and what should be done “for” them (Nakata, 2007b, p. 25).

2.1.2.2 The Discourse of Science: The Historic Evolutionary Subject

The second text examined is the Haddon Report, which documents a research project to study the Torres Strait Islander people in 1889. It culminated in a six-volume report, *The Cambridge Anthropological Expedition to the Torres Strait Islands of 1898* (Haddon, 1901, 1935), which aspired to new standards of rigour in scientific investigation of “the savage mind.” It compared Islanders and Europeans on a range of tests in order to provide “a window onto human evolutionary history” (Nakata, 2007b, pp. 30–43). It was based on theory that postulated that different levels of brain function developed in an evolutionary manner and this tied anthropology and psychology to the biological sciences. Difference was defined as relative to a superior European standard and then on an evolutionary scale of less to more developed/civilized (Nakata, 2007b, p. 44). It also reflects the travel writing and ethos of the Victorian era, claiming for example that, “savages can see objects and hear sounds which escape the most acute European” (Rivers, 1901, p. 12, as cited in Nakata, p. 46, 2007b).11

The report fails to document exploitative labour practices or express concern

11 These historical secondary citations were used by Nakata in developing his theory and are included here as examples of the tenor of the original text and the logic of Nakata’s research.
regarding the wellbeing of the Islanders and loss of life in harvesting sea cucumber (C. Myers, 1903, p. 142, as cited in Nakata, 2007b, p. 77). Its analysis of colour recognition again rested on evolutionary theory that ties colour to cultural stages of development based on a naming. The term *kulka* for red was translated as “blood” not “dawn”; one consequence was that Martin Nakata grew up learning that the name of his home community, *Kulkalaig*, meant “bloodthirsty people” not “Eastern people”—the place where the sun rises (Nakata, 2007b, pp. 56–60). The research in structural linguistics aimed to create a global taxonomy of linguistic differences plotted on an evolutionary scale, wherein each language was studied as a static entity, excluding historical and socio-political contexts. Nakata views this synchronic (structuralist) approach to Islander languages as impoverished: “It is their speech, not their meanings, that is seen as the important part of the act of speaking. They are heard but not listened to” (2007b, p. 37).

### 2.1.2.3 Contemporary Colonialisms: The 20th-Century Evolutionary Subject

The 19th-century desire to plot peoples on an evolutionary scale is now considered obsolete and even by the time the last volume of the Haddon report was published (1935) one scholar described it as “strikingly archaic in its format, language and concerns” (cf. Urry, 1998, p. 233). Nonetheless, the Haddon report continues to be cited as a key reference about the Torres Strait Islander people; it is studied in schools and read in related disciplines in Australia. Nakata holds it up as an example of research that purports to be scientific (objective) but that interweaves the moral and epistemological assumptions of Victorian England, salvage anthropology, and structural linguistics into the corpus of knowledge about the Torres Strait Islanders that continues to be disseminated today. It does not belong to a
long-gone historical past but continues to be present in the intellectual and scientific
disciplines in which current practice remains embedded (Nakata, 2007b, p. 128).

As testament to Nakata’s thesis, in 1998, over a century after the Expedition, a
centenary volume was issued that celebrates its achievements, lauding the Expedition’s
“innovative theoretical and methodological approaches” that contributed to “the foundations
x). One reviewer noted the absence of Indigenous authorial content in the volume, stating:
“It might have been insightful to have the final word go to a native scholar or community
leader who could have interpreted the impact of the Expedition through a different set of
eyes” (Griffiths, 2000, p. 197). Although Martin Nakata was a Torres Strait Islander doctoral
student conducting research on the Expedition at the time, his views about the impacts of the
Expedition and of its report for Torres Strait Islander people are absent from this volume. ¹²

2.1.2.4 Education Policy Discourse: The Cultural Subject

Nakata notes that although 20th-century research in education has improved public
knowledge about Torres Strait Islander people, it has not resulted in improved educational
outcomes for Islander students. He attributes this failure to the powerful influence of
Western disciplinary assumptions that continue to underpin contemporary educational policy
research. For example, material conditions continue to be translated into abstract universal
categories: historical universal categories such as “lost souls” and “savages” become
contemporary universal categories such as “habits,” “languages,” and “culture” (Nakata,
2007b, p.159). This reifies a cultural subject as part of a unitary group and erases the

¹² Martin Nakata published a commentary article, Anthropological Texts and Indigenous
particularities of individuals—age, gender, religion, interests, politics, education, economic circumstances—subsuming them under a normative and static “cultural other.” Nakata calls this discursive move “culturalism” (Nakata, 2007b, p. 10; cf. McConaghy, 2000). When the discourse of culture lacks political analysis it elevates art, song, and dance but silences Indigenous claims to land, sea, and air rights. It locks Indigenous people in a distant tradition called “culture” and precludes a history of agency, resistance, and adaptation in dealing with invasion and the alienation of lands and resources (Nakata, 2007b, pp. 179–181).

Used as an organizing principle, the construction of Indigenous people as “culturally different” may set up cultural maintenance in opposition to equal educational outcomes (Nakata, 2003a). Individual or collective cultural subjects become vulnerable to stereotyping and being cast as culturally exotic, traditional, or aesthetically rich, which in turn invites others to expect Indigenous people to conform to the stereotype. This may lead Aboriginal individuals to internalize and conform to the image, or use it as a lens for both viewing and resolving problems. A culturalist agenda silences the heterogeneity of Indigenous viewpoints and experiences, and therefore tends to produce educational theories about the most appropriate ways to educate the group, or practices that test for cultural appropriateness of curriculum and pedagogy for the group. It fails to challenge contemporary neocolonial practices and institutions, and also fails to address concrete, specific material and social conditions (Nakata, 1995, p. 56).

2.2 The Cultural Interface: A Social Ontology

Nakata rejects the dominant characterization of Indigenous/non-Indigenous interaction as a culture clash and instead conceptualizes it as a cultural interface. This social ontology is intended to accommodate multiple, contested, and negotiated meanings, and to
mediate between theoretical and empirical realms. It becomes knowable through understanding historical specificities of the discursive constructions of Indigenous peoples, and Indigenous responses to these discourses that continue to shape contemporary understandings (Nakata, 2007b, pp. 198–99). Constituted by points of intersecting trajectories in dynamic relation, it is multi-layered and multi-dimensional in time and space. It comprehends many shifting and complex intersections between different people with different histories, experiences, languages, agendas, aspirations, and responses. It is a space where different systems of thought, competing and contesting discourses within and between different knowledge systems, and different systems of social, economic, and political organization interact.

As much as it is overlaid by various theories, narratives, and arguments that work to produce cohesive, consensual, and co-operative social practices, it also abounds with contradictions, ambiguities, and contestation of meanings that emerge from these various shifting intersections (Nakata, 2007b, p. 199). All of these elements and relations create the possibilities of what can be seen, spoken, heard, and understood (or not); what knowledge can be accepted or legitimized (or not); and what individual and collective actions are possible. As a lived location, it is the space where Indigenous people, collectively and individually “live and act on a daily basis” and in this sense is both a personal and a civic space (2007b, pp. 199–210). Indigenous experience is constituted both in and through interactions between lived experience and discursive constructions within the Cultural Interface. Because of this complexity and because it is open to interpretation, the Cultural Interface is primarily a site of struggle over the meaning of Indigenous experience.
2.2.1 Characteristics of the Cultural Interface

The Cultural Interface gives primacy to the lived experience of Indigenous people in colonial regimes. It aims to shift discourse from one using only colonial referents to one that gives accounts of both sides of colonial contact, as well as the contact situation itself. Three objectives emerge from this: (1) to give voice to Indigenous positions that have been overwritten by Western discourse; (2) to support Indigenous goals of equality with others; and (3) to contribute to the maintenance of cultural distinctiveness and interests as determined by Indigenous people (2007b, p. 209). Applied within educational contexts, it aims towards the reform of institutional practices, policies, and programs. Prevalent theoretical elements within this space include time conceptualized as a continuous present, an aversion to binary oppositions, the centrality of lived experience and Indigenous agency, and a complex view of orality.

2.2.1.1 The Primacy of the Present

The effects of theorizing Indigenous people as being from and of the human past are often overlooked in analyzing the ways in which Indigenous people are positioned in the present. Within this construction no primacy is given to Indigenous lived experience and thought: they are overwritten and retold in the language and logic of the Western order of things (Nakata, 2007b, pp. 202–203). Indigenous culture is to be understood as always already in a dynamic present and Indigenous history is continuous with that present. History must be understood as Indigenous peoples’ “own construction of historical understanding”: the whole trajectory of the past living in the present and to be carried forward into the future as ways of being, thinking, and knowing (Nakata, 2007b, p. 203). There is no requirement to meet academic criteria in recognizing the explanatory roles of this construction for
Indigenous people making sense of the world and establishing aspirations for the future. “We are not content with being subjected as ‘Other’ to everybody else. We reference ourselves to an entire universe not just to Western imperialist projects” (Nakata, 2007b, p. 162).

2.2.1.2 Continuity of the Past

The history of Indigenous agency must inform the analysis of both historical and current positions at the Cultural Interface. This caveat arises due to the inscription of Islanders into other knowledge systems that render Islanders discontinuous with their own histories through denying Islanders as “actors in their own present” (Nakata, 2007b, p. 204). Therefore the Cultural Interface seeks to surface how Indigenous peoples maintain(ed) their own ways of thinking, doing, being, narrating, analyzing, adapting, and negotiating who they are both individually and collectively. Often presented as one of diminishment and loss, the historical position of Indigenous people is also one of strength, dignity, and intellect: it is a history of how Indigenous people “acted in the present of that historical period” (Nakata, 2007b, p. 205). Islander people move forward by reconstructing stories and practices; their lives continue to be attached to Islander identity as they participate as students, workers, citizens, consumers, and in all of the roles and responsibilities of global life.

2.2.1.3 (Op)positions

Explanations of Indigenous positions through (op)positions such as “them-us” or “traditional-Western” do not offer a framework that is useful for explaining complexity. While an Indigenous position may be conditioned at these intersections it is not reducible to a single relation. The boundaries that emerge between categories such as “traditional” or
“Western” are fuzzy and choices that emerge in lived realities do not neatly emerge from or support one or the other (Nakata, 2007b, p. 200). The contests over meaning also include those among Islanders themselves, all of whom are positioned differently, and mediate understandings of experience differently. Nakata rejects conceptualizing any continuum of authenticity in relation to Indigenous identity or Indigenous experience. For example, he holds that an Islander elder who has lived a largely subsistence life in a remote community is no more “authentic” than a younger Islander who has a government job and lives in a town. Both individuals are Islanders and their experiences and interpretations of their lived realities may vary but are equally legitimate. It may be that their analyses prove to be quite similar, it may also be that their differing analyses could lead to more useful explanations because they uncover differing effects of the many elements that condition their experiences (Nakata, 2007b, p. 211).

### 2.2.1.4 Embodied Experience

Nakata argues that the tensions of being constrained by an untenable choice between “a whitefella and a blackfella perspective” (Nakata, 2007b, p. 215) are physically experienced. This corporeal sense (or embodied knowledge) and the memory of it play a role in informing choices. It is recognized that embodied experience can both inform and limit knowledge, and it is included as part of the set of elements that shape the range of Indigenous responses (2007b, p. 216). “The everyday—where active, knowing Indigenous subjects continuously negotiate changes manifest in their everyday lives—must be theorised into any analysis of the Interface, otherwise the position of Indigenous subjects at the Interface cannot be understood via their experience of the it” (Nakata, 2007b, p. 207).
2.2.1.5 Orate-Literate Divide

Nakata holds that “the oral and literate world are not separate but entwined, inter-tekstual and continue to evolve as traditions and artefacts of our engagements with each other; we all continue to live in times where there are oral traditions” (2007b, p. 176). The assumption that Indigenous students come from an oral tradition positions students as being outside of literate traditions, and separate from the complex interactions of the past hundreds of years. Theories of socio-linguistic differences between literate and orate traditions overlook many factors, such as degrees of media exposure including print exposure; educational levels and university degrees; influences of second language; social and linguistic backgrounds; and the fluidity of mobile populations moving between and among metro-urban, rural-urban, and rural non-traditional communities (Nakata, 2007b, pp. 172–173). Constructing Native language communities at one end of a spectrum and English language communities at another sets up a falsely polarized framework from which to approach problems and envision reform. It also obscures English language and other language communities’ historic and present oral traditions.

2.2.1.6 Indigenous Standpoint Theory: An Epistemology

Nakata proposes Indigenous standpoint theory as a means by which to articulate the politics at the Cultural Interface and provide an analysis of why and how they produce “different realties” for Indigenous collectives and individuals as compared with others. Standpoint theory has been adopted variously by groups whose accounts have been excluded or marginalized within intellectual knowledge production in order to assert their interests and accounts of experience (Nakata, 2007b, p. 213). As a genre its first premise is that the social position of the knower carries epistemological significance and secondly that more objective
knowledge is produced by critically reflecting on one’s experience within the social order where knowledge is produced (Nakata, 2007b, p. 214, as quoted in Pohlhaus, 2002, p. 285).

Nakata’s Indigenous standpoint theory also assumes that the interpretation of experience is shaped by previous and current theory and discourse, which sit in complex relation to each other. A standpoint is produced through critical enquiry: Indigenous people’s lived experience is a point of entry to investigation, it is not the case under investigation (Nakata, 2007b, pp. 214–215). Indigenous standpoint theory is not opinion or a collection of stories derived from lived experience, or “hidden wisdom” waiting to emerge, nor is it equivalent to data collected through opinion polls, surveys, consultative processes, or Indigenous presence in the bureaucracies of various sectors (Nakata, 2007b, pp. 212–214).

The goal is not to produce the “truth” but to reveal how knowledge production works, and how Indigenous people are caught up in it. The motivation is the hope of more useful representations of and knowledge about Indigenous people within the larger project of social transformation relevant to Indigenous lives (2007b, pp. 209–215). As a form of critical analysis, Indigenous standpoint is in itself a discursive construction, as well as a mode of persuasion and a technique to surface what may have been subjugated. It is intended to shift Indigenous knowers from a narrative position (wherein they “tell their stories to” or “advise” others) to one that can be activated on a theoretical plane and has the power to disrupt a dominant discourse (Nakata, 2007b, p. 210).

Nakata argues that by bringing in accounts of those who have traditionally been outside the institutions where knowledge of their social life is both produced and classified, it produces better accounts by including relations to which more privileged knowers are not attentive (Nakata, 2007b, pp. 214–215). He is committed to producing better accounts
through a demonstration of validity in order that Indigenous standpoint theory is accepted as a legitimate part of academic theoretical discourse. Its benefits are in the potential to strengthen Indigenous identity when negotiating with an outside world (2003c, p. 14), and as a theoretical tool for Indigenous students to claim as a legitimate academic approach through which to view their positions (1998a, p. 11). This supports his overall goals of improving curriculum (2003a, p. 144), establishing an influential Indigenous scholarship at the centre of academic life (2004, p. 3), and the recognition of Indigenous Education (2007a, p. 7) and Indigenous Studies (2006, p. 267) as discrete academic disciplines.

2.3 (Re)Reading Nakata: Towards a Relational Epistemology

Part of the generative and analytic power of Nakata’s theoretical framework is that it establishes theoretical space for Indigenous voice but it prescribes and proscribes no characteristic content of that voice. While Nakata draws on his Indigenous lived experience and establishes connections to land/sea, family, and community, he leaves completely open the content and context of Indigenous knowledge(s). Nakata’s Indigenous standpoint theory and the Cultural Interface could potentially be utilized as a theoretical position by any Indigenous theorist or Indigenous authorial voice to fill up with their own interpretation. The Cultural Interface is not deterministic, it is “a space of possibilities as well as constraints which can have negative or positive consequences for different people at different times” (Nakata 2007b, p. 200). While Nakata’s framework provides conceptual and analytical resources for engaging with theoretical discourse in ways that express and mobilize Indigenous interests, it also draws on a range of theoretical approaches that stand in relation to others in the Western canon. In some cases, the approaches he engages may be seen as commensurate in the sense that they share common goals. In other cases, when he selects
one theoretical approach, he is implicitly rejecting others because the theories are incommensurate.

Nakata’s conceptualization of the Cultural Interface is characterized by multiple identities, contingent historical contexts, and the rejection of theoretical dualisms, concepts that are associated with postmodern thought. These postmodern characteristics are incommensurate with Enlightenment thought written in concepts such as the autonomous knower, ahistorical objective reality, and mutually exclusive categories. Standpoint theory as a theoretical genre employs the concepts and methods of Enlightenment thought, and its related notions of validity, truth, objectivity, and privileged knowledge. Also through his critical analysis of the discourse(s) of science Nakata implicitly rejects the concepts of universal human subjects and teleological progress found in the philosophies of modern humanism. These components of Nakata’s theoretical framework may be seen to be incongruous because the postmodern ontology expressed in the Cultural Interface and the Enlightenment epistemology and modern humanist concepts embedded in standpoint theory seem to be at odds. In considering this apparent paradox, I turn to the lineage of feminist standpoint theory upon which Nakata draws (Harding, 1991; Hartsock, 1983; Pohlhaus, 2002; D. Smith, 1987).

2.3.1 Mediating Standpoint Theory

Feminist standpoint theory emerged as a response to Enlightenment thought, including the notion of scientific objectivity, within the context of political struggles to have women’s interests represented in public policy and in the natural and social sciences disciplines that influenced that policy (Harding, 1998, p. 149). It used the tools of these dominant traditions to defend feminist knowledge claims as adequate, valid, and authoritative.
in relation to the authority of science that excluded them. It continues to struggle with this inheritance and its conflicted philosophical legacy: African American feminist, lesbian poet (and librarian) Audre Lorde expresses the quandary as, “the master’s tools will never dismantle the master’s house” (1984).

Modern scientific method claims that there are connections between ideas (scientific theories), experience (what we know through the senses), and reality (what really exists in the world). Other approaches to knowledge derive from different ontologies, beliefs about what really exists and the kinds of things that exist, and as a consequence produce different epistemologies about how we come to know. Epistemologies specify normative rules for what constitutes legitimate knowledge, and what criteria may be used to establish knowledge as adequate or valid (Ramazanoğlu & Holland, 2002, pp. 29–41). In Western philosophy, three influential epistemological families are relevant to standpoint theory: empiricism, realism, and relativism. Empiricism relies on observation and experiment to make knowledge claims; it accepts no a priori knowledge that is independent of experience. It holds that knowledge of reality derives from factual evidence that can be observed independently of researchers’ values and replicated by others adhering to the proper method. Empiricist methods (purported to) scientifically establish the inferiority of women and Indigenous people in the 19th century by examining brain size and bodily differences (cf. Nakata, 2007b).

Constructivist theorists challenge empiricism, arguing that social location(s) and power relations shape the identification of the problems to be studied, selection of the research methods, and the interpretation of the findings. Also in contrast to empiricism, realist epistemologies claim that although reality is not fully knowable it can be approached
through a combination of both observation and theory; the latter is required in order to imagine what is blind to the senses and cannot be directly observed. Relativists, on the other hand, claim that it is not possible for researchers to access reality independently of how they think about it and of the language that mediates thought. Because theorists draw variously on these epistemological traditions, there is a range of standpoint theories that differ in their conceptualizations of the nature of experience, thought, and reality and the connections (if any) between them (Ramazanoğlu & Holland, 2002, pp. 12–30). Nakata develops Indigenous standpoint theory within this legacy and articulates his position plotted at various points between the polarities of objective scientific method and radical relativism.

Feminist theorists do not agree about whether feminist standpoint is theory, epistemology, both, or neither (Ramazanoğlu & Holland, 2002, p. 63). Ramazanoğlu and Holland (2002) argue that in addition to being both political and theoretical, standpoint theory necessarily entails an epistemological stance because it assumes the inseparability of power and knowledge.13 Moreover, it considers how people think about oppression and how people know what they know, and ultimately strives to show that standpoint makes a stronger claim or “better accounts” than any other theoretical or epistemological position (Ramazanoğlu & Holland, 2002, p. 67). Although Nakata (drawing on Dorothy Smith, 1987) describes Indigenous standpoint as a method of enquiry (2007b, p. 213, 215), he also agrees with and quotes Pohlhaus (2007b, p. 214) who states that a premise of standpoint is that the

13 Some theorists understand feminist epistemology, including standpoint, as a form of social epistemology (Grasswick & Webb, 2002), that is the conceptual and normative study of the role of social interests, social relations, and social institutions in knowledge production. This is distinct from the sociology of knowledge, which is interested in the empirical study of contingent social conditions or causes of what is accepted as knowledge (Schmitt, 1998).
social position of the knower is epistemically significant and has the potential to produce more objective knowledge (Pohlhaus, 2002, p. 285). This suggests that Indigenous standpoint may also be viewed as an epistemological approach and not simply a strategic move to gain leverage in power-laden discussions for Indigenous voice.

Nakata advocates Indigenous standpoint because of its indisputable strength in giving primacy to Indigenous experience and Indigenous perspective. At the same time, he acknowledges that standpoint theory in general is criticized (2007b, p. 215). One weakness is that it relies on “who” can know rather than “what” can be known. It therefore tends to centre politics of identity and location, and may create boundaries between those with common concerns. There may be advantage in positioning Indigenous standpoint as epistemology in terms of the potential to strengthen its authority, and in the provision of a theoretical and practical methodological tool for Indigenous interests and Indigenous students, two of the aims of Nakata’s framework. If Indigenous standpoint is conceptualized as an epistemology then it needs to be able to establish criteria for evaluating whether (and how) one claim is better or stronger than another. Standpoint has a tendency towards relativism wherein all views are considered to be relative to their conditions of production and are therefore considered equally valid. One way to avoid relativism could be to proffer standpoint as valuable in conjunction with other possible epistemologies, however this tactic tends to produce finely nuanced distinctions among a proliferation of unprivileged identities/knowledges and split them from a unitary dominant group, which then sets them in dualistic opposition again (Harding, 1986, p. 660).
2.3.1.1 Objectivity, Reason and the Knowing Subject

In order to balance this slide towards extreme relativism on the one hand and an aversion to strong empiricism on the other, Nakata calls upon Sandra Harding’s conceptualization of strong objectivity to establish the authority of standpoint. Objectivity is a polysemous concept but can be understood as producing knowledge that is free from bias and subjectivity (Ramazanoğlu & Holland, 2002). Strong objectivity is conceptualized as producing less partial and less distorted knowledge because it makes explicit the social location, position and values of the knower/subject. It also thereby moves to conflate the division between subject/object of knowledge. Standards that maximize strong objectivity include a reflexive subject (researcher) who positions herself on the same critical plane as objects of knowledge through specifying who the knowledge is for, by what means it is produced, with what funding, and in what social situation it is produced. Both researcher(s) and participant(s) are treated as embodied, visible, and heterogeneous. The research agenda is located within a political and epistemic community rather than being produced by an individual (Harding, 1993, pp. 68–69).

Advocates of Enlightenment thought claimed that the path to freedom and autonomy lay through the exercise of reason through which individual scholars discovered and made progress. The Cartesian separation of subject (pure thought) and object (matter) generated a model of scientific investigation focused on the discovery of an external world (that really exists) that is not necessarily known but is knowable through the agency of a “knowing self” (Ramazanoğlu & Holland, 2002). The theoretical consequences associated with splitting the world in this way are that the body is treated as matter that is to be mastered by reason, and a high value placed on scientific method produces expert professions that require specialist...
training. Expertise therefore becomes increasingly institutionalized, as does the legitimization of what counts as authoritative knowledge, and there is a concomitant tendency to exclude certain categories of knowers from institutions of knowledge (Harding, 1991). Because the capacity to reason was defined as residing in the domain of European masculine thought, one of the first struggles for those excluded from this domain was for access to education and claims to be reasonable.

All standpoint theorists face this same challenge and along with other critical theorists must decide whether to retain the Enlightenment concept of reason or to reclaim it in some other mode (Haraway, 1991a, pp. 71–80). (I think) Nakata responds to this challenge by reclaiming reason such that it is inclusive of Indigenous authority, and cognizant of power relations. Through giving account of his feelings and his commitment to Indigenous education, Nakata construes emotion not as subversive to but as constitutive of knowledge, and so further extends the parameters of traditional concepts of reason (based on Jaggar, 2008b, p. 378). His critique of Western “experts” as “discoverers and conveyors of truth” exemplifies an Indigenous critical account of the Enlightenment narrative of the subject and object of reason; however, he does not jettison but “reclaims” reason for Indigenous theory.

The concept of the knowing subject is central to both the scientific tradition and to modern humanism. A central characteristic of the latter is the notion of the universality of humanity, and its associated (and problematic) claim to represent the human race. A humanist approach conceives of progress as the emancipation of subjugated groups through reason: it is based on a premise of a unitary category that is subject to some shared form of oppression from which individuals can be liberated. It produces discourses of social justice and universal human rights at the same time as it elides actual intra-group inequalities and
differences, and therefore differences in power relations within a group (Ramazanoğlu & Holland, 2002, pp. 33–38). There is a set of contested problematics clustered around the use of humanism: unitary categories; questions about the notion of progress and what it may constitute; who envisages what should be transformed and for whom. However, critical theorists with a commitment to social change find it difficult to abandon these notions and are hard pressed to escape replicating existing power relations. They must continuously mediate the contradiction that there are both emancipatory and reactionary effects deriving from notions of teleological progress and the transcendental humanist subject (Lather, 1991, p. 37; McLaren, 1988). Western thought itself may be read as a history of revolutionary projects that were envisioned as emancipatory: the 15\textsuperscript{th}-century bourgeois revolution, 18\textsuperscript{th}-century Marxist revolution, and 19\textsuperscript{th}-century anti-colonial projects. Each of these aspirant transformative projects positioned privileged knowers/knowledge at the heart of its theoretical framework. How can standpoint theory redefine the relations of power if it establishes yet one more privileged knower/knowledge (Harding, 1986, p. 656)?

2.3.1.2 Balancing: The Modern and Postmodern

While standpoint theory may trouble the foundations of Enlightenment thought, postmodern thought disassembles the foundations brick by brick: reason, the knowing subject, scientific method, truth and reality. Instead it asks how knowledge is made powerful. Through contesting the unified conception of a group, it challenges any standpoint of a collective or notion of knowledge grounded in the experience of a group, indeed it questions even the possibility of producing valid knowledge of a world viewed as a discursive construction (Ramazanoğlu & Holland, 2002, pp. 84–86). Yet, standpoint theorists insist on retaining a material reality that is “really real,” and that has consequences
for people’s lives, and this insistence is compelling because of its appeal to common sense and its political exigency. The power of standpoint is precisely its ability to name experiences that previously were undefined or defined through dominant concepts and categories that rendered harm invisible (Harding, 1986, p. 646; Hirschmann, 2004, p. 324), and to produce knowledge that does not exist in dominant discourses (D. Smith, 1997).

A critique of the postmodern holds that its emphasis on difference tends to produce an extreme form of relativism that does not distinguish one type of identity or struggle over another. This renders real poverty, global hunger, and social exclusion as invisible or abstract and produces a “tyranny of difference.” In order to break out of this tyranny, a political and ethical position that aligns with unprivileged/negated classes must be advocated (Žižek, 2000). Being weighed in the balance are the potential strengths of scientific method and the Enlightenment legacy, and considerations of moral agency and emancipatory theory (Ramazanoğlu & Holland, 2002, p. 97). Postmodern thought rejects the dualisms inherent in modern thought: culture/nature, reason/passions, objectivity/subjectivity, mind/body, abstract/concrete, and their siblings. Nonetheless, these dualisms structure public policy, the organization of the disciplines, and institutional and social practices. Although they are empirically false, they cannot be dismissed as irrelevant as long as “they structure our lives and our consciousnesses” (Harding, 1986, p. 662).

An intermediary position views the tensions between the modern/postmodern as producing areas of “fruitful ambivalence” that offer potential not so much as a coherent framework but more as a process for re-theorizing the experiences and objects of everyday life (Harding, 1986, p. 664; Lather, 1991, p. 212). These tensions could prove to be characteristic of a second wave of standpoint theory that incorporates strands of
poststructuralism and postcolonial approaches (Selgas, 2004, p. 302). Theorists may choose not to play postmodern games by their rules and instead decide not to abandon investigation by knowing subjects of specific power relations, their intersections, histories, materiality, morality, and effects (Ramazanoğlu & Holland, 2002, p. 103). Foucault counsels that we salvage liberatory projects by displacing the knowing subject with the singular, the contingent, and the strategic. He advocates a critique of what we are that entails a historical analysis of the limits that are imposed on us, as well as experimenting with the possibility of going beyond these limits. Foucault’s approach of attending to how we are constituted as subjects of our own discourses and not to formal structures and universals is clearly central to Nakata’s work.

As I (re)read Nakata in light of these considerations, I come to view his position at the intersection of knowledge, power and ethics, like Foucault’s, as being neither “for” or “against” Enlightenment thought but rather against knowledge presented as complete, and for a continuous critique of ourselves “always in the position of beginning again” (Foucault, 1984, pp. 46–47). This (re)reading of Nakata leads to my current understanding that the perceived paradox of a postmodern social ontology and a modernist epistemology within his framework reflects a larger paradox within contemporary social theory and philosophy. The political and ethical commitments of Indigenous standpoint theory call for practical application and action in the world that lean on the logics and the efficacies of modern thought, including a modern commitment to better accounts, and humanist ideals of a better world however fraught these may be. Indigenous standpoint is committed to a conceptualization of some form of objectivity in order to demonstrate validity and justify its accounts as counter readings of social and historical conditions as well as the possibilities of
renewals. Within Nakata’s framework, epistemology can no longer exclude social and political dimensions as components of a theory of knowledge. The demonstration of validity need not meet the criteria of truth claims of a positivist scientific method but demonstrate coherence, accountability, and internal consistency.

2.3.2 Situated Knowledges

For myself, as a non-Indigenous theorist within the Cultural Interface, I adopt a relational epistemology: one that is based on my chosen position as a “situated knower” with multiple identities and multiple subjectivities to engage with Nakata’s theoretical framework and to seek resonances and shared goals. I draw on a Donna Haraway’s conceptualization of situated knowledges (1988/1991b), which shifts the subject from a location within subjugated knowledges to one that is situated as heterogeneous, partial, locatable, and critical. Within constructed dichotomous relationships that then emerge from this position, it is understood that these are not conceptualized as discrete (mutually exclusive) but as continua of tensions and resonances in a power-charged field. A heterogeneous subject is neither fixed nor predictable and is always constructed in contexts, thereby creating the possibility to “join with another, to see together without claiming to be another” (Haraway, 1991b, p. 195). This thesis seeks perspectives that strive to construct knowledge that is “less organized by axes of domination” within ourselves and others and expresses hope for transformative knowledge

14 Donna Haraway introduced the concept of situated knowledges to feminist theory (Jaggar, 2008a) through her article “Situated knowledges: The science question in feminism and the privilege of partial perspective” (1988, 1991b) which originated as a commentary on Sandra Harding’s The Science Question in Feminism (1986) (Haraway, 1991a, p. 248), a key text for Nakata.

Situated knowledges derive from a view from a body that is conceptualized as always complex, contradictory, structuring, and structured (Haraway, 1991b, p. 195). Positioning is therefore the key practice that is used to ground knowledge and to avoid essentializing social categories in order that they are understood as always in relation to a continuously changing context wherein subjects construct, rather than discover, meaning and values. As individuals are subjects of, and subjected to social construction, it follows that “ethics and politics ground struggles over what counts as rational knowledge” (Haraway, 1991b, pp. 193–195). As situated knowledges are both embodied and discursive in this sense, they are suited to a material-semiotic technology\textsuperscript{15} (Haraway, 1991b, p. 192). Material-semiotic meaning systems are tied to the material worlds and the bodies that they structure, and by which they are structured (Haraway, 1991b, p. 194).

I choose a situated knowledges position as an alternative to a standpoint position for two reasons: firstly, by definition Nakata’s formation of Indigenous standpoint excludes non-Indigenous knowers, that is, this definition excludes me as a non-Indigenous knower; secondly, and perhaps more significantly, for the reasons outlined in Section 2.3.1, I think the conflation of identity-knowledge is theoretically problematic both as an epistemology and as a method that reproduces privileged knower/knowledge positions. A situated knowledges

\textsuperscript{15} Drawing on Foucault, the term technology is understood as a conscious form of rationality that organizes practical systems manifest in what we do and the ways we do it. The freedom with which we act and react within these practical systems and modify the rules of the game is considered to be the strategic side of these practices. Foucault distinguishes practical systems as differing from both the representations that individuals give of themselves, and the various conditions that determine them without their knowing (Foucault, 1984, p. 48).
position mediates this tension: it retains the historical contingency of knowledge claims and knowing subjects, combined with a “critical practice” for recognizing our own discursive technologies and their effects, and is leavened with a commitment to (more) faithful accounts of a “real” world (Haraway, 1991b). This conceptualization of an epistemic position I believe sits comfortably with and is activated within Nakata’s ontology of the Cultural Interface, and is compatible with Nakata’s political and ethical commitments and, at a philosophical level, the confluence of the modern and postmodern through a material-semiotic conjunction; this is my political and ethical standpoint within the Cultural Interface. This interpretation of the Cultural Interface has been crafted as the ontology-epistemology for the study. The final component of the theoretical location is the axiology.

2.4 The Research Ethic of Indigenous Métissage

Axiology may be defined as the philosophical study of values (Flew & Priest, 2002) and axiological ethics as a focus on the question of “what is worth doing and what should be avoided” (Hiles, 2008, p. 53). The answers will include assumptions about the values a theory might reflect, or its organizing principle, or how it might contribute to society. I selected Indigenous Métissage as the research ethic for the study. Developed by Dwayne Donald\(^{16}\) for Indigenous education in Canada (Donald, 2003, 2009a, 2009b, 2011), it is rooted in an Indigenous ethic of relationality, which is congruent with my situated-knowledges position. Indigenous Métissage has a philosophical commitment that is based on an ecological understanding, and views human relations as relations with all beings or entities that inhabit the

\(^{16}\) Dwayne Donald is a descendent of the Papaschase Cree whose traditional territory encompasses Edmonton, Alberta. Donald has worked as a teacher and learner with the Kainai people on the (Blood) reserve (Donald 2009b).
world: the environment is not separate from this complex web of relationships. It acknowledges “how our histories and experiences position us in relation to each other, and how our futures as people in the world are tied together” (Donald, 2011, p. 4).

The term métissage derives from the Latin *mixtus* meaning “mixed,” which referred to a cloth of two different fabrics (Chambers, Hasebe-Ludt, Donald, Hurren, & Oberg, 2008). It evokes the potential to transform, and through admixture to oppose naturalized (made to appear natural) ideas, and thus troubles the boundaries of concepts and logic (Donald, 2009b). It has been engaged in life-writing inquiry as a form of self-authorization of individual and collective representations and for possible retrieval of community knowledge and values (Zuss, 1997). The genealogy of métissage reaches back to the notion of a bricoleur who creates a bricolage as an emergent response and proffered solution to a concrete situation. It is emergent in that it takes shape and reforms as different perspectives, methods and techniques are applied (Denzin & Lincoln, 1994). It may braid personal and family stories with those of nation and nationality (Donald, 2009a, p. 8). As a textual braid, it interweaves diverse texts to represent juxtaposing perspectives, highlighting differences while simultaneously identifying points of affinity (Chambers et al., 2008, p. 142). Donald extends the concept of métissage to serve as an interpretive research sensibility, a textual practice, and a curriculum approach for Indigenous education in Canada. Intended as a counter narrative Indigenous Métissage holds the potential to transform, and to oppose naturalized ideas and dominant narratives (Donald, 2009b) premised on the organizing principle of relationality.

Donald views the artifact of the fort in Western Canada as a mythic symbol and as a site of inquiry into the colonial narrative that entrenches separation and difference between
Aboriginal and Canadian people and elides interrelationality. A central challenge is contesting the idea that the experiences of Aboriginal people are theirs alone and separate from the rest of the country (2009b, p. 6). The enquiry at the site of the fort is an example of place-based enquiry: “Often, cities, towns and communities across Canada have been built on places that have specific cultural, spiritual, and social significance to Aboriginal peoples, and Canadians living in those places do not and cannot have those same connections” (Donald, 2009a, p. 10). The stories that Aboriginal people tell about these places and artifacts might dislodge those dominant beliefs. Donald proffers these place-stories as a way to facilitate dialogue and expand understandings. Place-based enquiry begins with Indigenous experiences, philosophies, and ways of knowing as a point of entry and then expands inquiry through interpretation in a Canadian context. The overarching goal is to contribute to repairing the dominant colonial narrative in Canada through surfacing Indigenous stories of presence, participation, agency and resistance in order to create a more “complex and reciprocal story” (Donald, 2009b, p. 99).

Guided by ecological understandings of interconnectivity and renewal Indigenous Métissage aims to tell stories from Indigenous pedagogical and philosophical perspectives and centre the wisdom traditions of Indigenous peoples (Donald, 2009b, p. 144). It critically examines the unequal power relations within Aboriginal/Canadian relationships, and surfaces histories of interaction in order to create a more “complex, reciprocal, and interreferential story” (2009b, p. 99). As part of a narrative tradition, the practice of Indigenous Métissage requires attentiveness to language, its use, polysemous nature, and its historical locatedness. It recognizes the interpretability of life, experience, and knowledge and explores the ways in which interpretation offers pedagogical tools to critically analyze what is going on and to
choose alternatives (Donald, 2009b, pp. 145–151). In centring Indigenous accounts and lived experience both the Cultural Interface and Indigenous Métissage are part of a larger Indigenous research tradition that strives to “honor and illuminate Indigenous worldviews and perspectives” (S. Wilson, 2003, p. 170) through (re)surfacing and explicitly acknowledging the contributions of Indigenous peoples (Rigney, 2001).

2.5 Discussion: @ Cultural Interface

My integration of the Cultural Interface and Indigenous Métissage, developed in this chapter, theoretically anchors and guides the study (Haraway, 1991b; Nakata, 2007b; Donald 2009b). For the purposes of the study it is indicated with @ and represented as “@ Cultural Interface”: it articulates the ontology, epistemology and axiology underpinning the overall research design and my approach to knowledge organization in Indigenous contexts. It shapes the methodology, the methods of data collection, representation, and interpretation of the findings. As a critical interpretive space it is committed to social transformation. It centres the role of discourse in the maintenance of unequal power relations; however, it also views discourse as constructive and aims to create more complex and interreferential representation in the hope of shaping meaning within discourses, and thereby transforming them. Discourse is understood as constitutive in that it plays a role in producing the social world including knowledge, identities, and social relations, as well as in sustaining or destabilizing them.

The Cultural Interface gives primacy to complexity of Indigenous lived experience in colonial regimes, and sets a research agenda intended to shift discourse from one using only dominant discourses to one that gives accounts of both sides, as well as the contact situation itself. The objectives here are to give voice to Indigenous accounts, and to support
Indigenous equity and Indigenous cultural distinctiveness. At the same time it establishes principles that shape theory and methods, notably an aversion to reducing complexity to dualist oppositions, and an inclusion of lived experience. It asserts the primacy of Indigenous present in relation to the past, and the recognition of Indigenous agency. One consequence of using a discourse theoretic approach is a requirement for researchers to be accountable for the ways in which they construct meanings and to commit to theoretical and methodological transparency, explaining decision-making in the development of theory and stating the researcher positionality, as Nakata models in his works.

A commitment to social change within a political and epistemic community rebalances a poststructuralist impulse to multiple, perspectival accounts (relativism) to one that retains transformation as an ethical objective and a design commitment. This entails the (modern) defence of knowledge claims that offer a reasoned, logical rationale and empirical data in support of stronger arguments, or less false accounts. It brings ethical and political elements into the field of epistemology that traditionally has excluded them based on a (contested) claim to objectivity and neutrality. Political and ethical elements are viewed as constitutive of knowledge, as warrant for knowledge claims, and therefore as evaluative criteria of those claims. Thus, within this framework social, including embodied, sources of knowledge are incorporated in a reworked epistemology. It includes evidence of inequitable social and material conditions as justification for change, which leads to the inclusion of every-day lived experience as integral to knowledge and knowledge production. At the same time, the power of language is recognized in shaping the social world, and so two forces are at work: the material and the discursive.
The Cultural Interface is particularly relevant to the study of knowledge organization in Indigenous contexts. Contrary to the opinion that 19th-century attitudes, values, and epistemological assumptions are obsolete, it demonstrates that they are still embedded in contemporary disciplines, institutions, policy, and practice. The analysis of the ways in which Indigenous identities and knowledge are discursively constructed through dominant texts informs analysis of knowledge organization systems as “text,” and to examining the effects of knowledge organization on the lives of Indigenous learners. Nakata’s discourse theory leads to my conceptualization of the “object” of study of knowledge organization as dynamic knowledge domains constituted through interactions in power-charged fields, with associated implications for the ways in which entities and concepts are imagined. The epistemology @ Cultural Interface requires the inclusion of social and ethical elements within knowledge organization: the processes of representing and ordering knowledge in documents that may lead to new approaches and possibilities for knowledge organization in Indigenous contexts.
Chapter 3  Methodology: Domain Analysis @ Cultural Interface

3.1  Prologue: Stopping in Order to Begin

The purpose of the study is to investigate how Indigenous approaches to knowledge inform the design of knowledge organization systems to serve Indigenous purposes. My initial strategy focused on the comprehensive faceted classification theory of S.R. Ranganathan (1957, 1967), supplemented by the work of members of the Classification Research Group (CRG) in the UK (Coates, 1978; D. J. Foskett, 1974; Langridge, 1976, 1989, 1995; Vickery, 1960, 1966,) and contemporary classification theorists (Beghtol, 1986, 2002a; Broughton, 2006; La Barre, 2006) to support my original intention to design a prototype faceted knowledge organization scheme (KOS) to facilitate Indigenous scholarship. The classification literature describes procedures for designing KOS based on the premise of an objective representation of information for the purpose of facilitating effective information retrieval (Feinberg, 2008; Mai, 2008). It is described as a stepped process: a five-step process by Mai (2006), three steps by La Barre (2006), six or seven steps by Vickery (1960, 1966), and more generally by Langridge (1992) and Ranganathan (1967).

At a technical level there are well-developed instructions on, for example, the form of terms, disambiguation of terms, relationships between terms, and facet analysis of compound subjects (Aitchison, Gilchrist, & Bawden, 2000; Ranganathan, 1967; Soergel, 1974). I have entitled Mai’s summation (2006, p. 17) *Five Steps for Classification*:

1. Analyze the literature, needs, actors, tasks, domains, activities, etc.
2. Collect, sort, and merge terms.
3. Select descriptors and establish relationships.
(4) Construct the classified schedules.

(5) Prepare the final product.

However, as Mai (2006) notes, the first step is complex and the established procedure does not offer much assistance with it. For example, Ranganathan counsels that we study the “universe of knowledge” (1953) and La Barre that we “survey the field” (2006). There is a gap in the literature at this conceptual level that involves establishing a philosophical position that in turn will inform how the related issues and decision-making processes are addressed (Feinberg, 2008; Mai, 2006, 2008). This initial step determines, in a theoretical sense, what exists in the world, how we come to know, and who may be a knower. It therefore shapes design decisions at every level including notions of authority and warrant, “what counts as a concept” (Feinberg, 2008, p. 28), and the “methodological aspect of the design and construction process” (Mai, 2008, p. 17).

The Five Steps for Classification present design as a well-defined problem (build a retrieval tool) and it assumes the decision to build a certain type of retrieval tool has already been made. However, as Feinberg suggests, if the decision was not already made and if we did not know, for example, the purposes and objectives envisioned for such a tool then the problem becomes “not to create a retrieval tool but to figure out what to create” (2007a, p. 38). It appears that the formulation of the problem is in fact the problem, and that both the problem and the solution gradually emerge in tandem, a process Feinberg describes, citing Schön (1983), as a “reflective conversation with the situation” (2007a). Engaging in reflective conversation at this point I decided to stop: I stopped undertaking a research study designed to create a solution (build a faceted classification prototype) and instead began an enquiry into the nature of the problem. The stated purpose of the study remained the same:
to investigate how Indigenous approaches to knowledge inform the design of knowledge organization systems to serve Indigenous purposes. However, the imagined product shifted from an artifact to a process, and the possibility of creating in the first instance not an artifact but a conceptual space for enquiry and for design (Feinberg, 2007a).

3.2 Design/Research

Beginning again, I chose design/research as a research framework because it explicitly theorizes the social implications of design and supports efforts to integrate two (or more) disciplines to address a real-world problem. Thus the current study is a design/research study located at the disciplinary interstices of Indigenous education and information science. As an interdisciplinary field design/research examines questions from the perspectives of two or more knowledge domains and seeks synergies between them in order to solve a problem. The insights generated, and the action taken on these insights, are called integration. Integration seeks to reconcile disparate perspectives or approaches to result in something altogether new or beyond the limits of individual disciplinary knowledge: it aims to draw elements together to produce a new, coherent, and functional whole (Repko, 2008, p. 116). A goal of interdisciplinary enquiry may be a comprehensive understanding as much as a concrete product: the process of moving toward integration is considered valuable in and of itself (Repko, 2008). The ultimate objective is enacting a change process that transforms one situation into another (Simonsen, Bærenholdt, Busher, & Scheuer, 2010, pp. 202–203).

Design/research integrates two research traditions. The first is a scientific tradition; it is functionalist and aims to develop systematic knowledge and is only connected loosely with reflective practice. The second studies how design works, including studies of actors, including designers and users and their practices, as well as studies of products themselves
(Simonsen et al., 2010, pp. 2–4). Thus, both post-positivist and constructivist influenced approaches are present in design/research and it is understood as being both analytic and generative, demanding both critical problem solving and creative thinking processes (Boradkar, 2010, p. 281).

Each design problem poses a unique set of challenges that draw on a unique set of approaches as called for by the specificity of the problem. These may draw upon various theoretical domains from the humanities and the social sciences, as well as the technical knowledge domains that are required by the envisioned product (Boradkar, 2010, pp. 278–283). In recognition of the increasing convergence of the social, material, and scientific in knowledge production, design/research incorporates critical enquiry into design and is committed to engagement with the social, ethical, and political dimensions of design and of research, including the responsibilities of the researcher/designer. Within Indigenous contexts, these considerations draw upon the discourses of Indigenous research methodology.

3.3 Indigenous Research Methodology

The history of research with Indigenous people is a complex and contentious one. From Indigenous perspectives, it is axiomatic that Indigenous peoples have been “researched to death” (Kovach, 2005; Rigney, 1999, 2001; L. T. Smith, 1999; S. Wilson, 2003). The extraction, control, and storage of Indigenous knowledge through research and subsequent claims to ownership have consolidated the academic careers of researchers (Rigney, 1999, p. 109). Very little of the resultant research has benefited Indigenous peoples (Crazy Bull, 1997; K. Martin, 2003; E. Steinhauer, 2002). This history has resulted in a generalized distrust of research and researchers producing a “huge credibility problem” for the research community (L. T. Smith, 1999, p. 118). In attempting to address this
challenge, I began with a precept of Indigenous research methodology to centre Indigenous experience and scholarship (K. Martin, 2003; Rigney, 2001, 2006; L. T. Smith, 2005). In general, methodology shapes the questions, determines the methods used, guides the analysis of research (Denzin & Lincoln, 2005), and links the methods to the outcomes (Creswell, 2009). An Indigenous research methodology is also concerned with the strategic goals relating to a broader Indigenous research agenda (L. T. Smith, 1999, p. 143).

This study is informed by an Indigenous research ethic that strives to “honor and illuminate Indigenous worldviews and perspectives” (S. Wilson, 2003, p. 170), and to (re)surface the contributions of Indigenous peoples (Rigney, 2001). The placement of the Indigenous theoretical location of Nakata (2002, 2007b) and Donald (2009b) at the beginning of the dissertation asserted its primacy, and established it as driving the research design and the methodology for the study. It explicitly stated the philosophical ideas informing the related theoretical positions in the study and served as a resource for reflection (Cresswell, 2009). The use of the Indigenous theoretical location may offset distrust through a commitment to surfacing Indigenous accounts within the study. It also offers ways of going beyond the disciplinary research traditions that have systemically replicated exclusionary practice and theory to the detriment of Aboriginal learners. The theoretical location assembled for the study, @ Cultural Interface, is designed for an intercultural context, such as a public post-secondary institution, and it is a critical location. Critical research has two aspects: it is focused on both critique and transformation (Myers & Klein, 2011). Critique is concerned with revealing underlying assumptions behind our taken-for-granted interpretations and analyzing the relations that determine what counts as knowledge. Transformation seeks new possibilities, or transformative redefinition, that may lead to better
outcomes for Indigenous learners and all learners, and a more complex and interreferential narrative (Nakata, 2007b; Donald 2009b).

### 3.3.1 Researcher Responsibilities

Indigenous research methodology requires us to bear in mind how the researcher is implicated in the conduct and the interpretation of the research. It encourages researchers to create meaning through interpretation rather than simple reportage of findings (Donald, 2009b, pp. 145–151). Research not only creates a representation of the world, it also creates effects in the world (Nakata, 2007b; Donald, 2009b). The researcher therefore has a responsibility to strive for a transparent description of self-location, decision-making, and representation. Developing a form of “decision trail” contributes to transparency within the research process by explaining theoretical decision-making processes, and articulating the theoretical framework underpinning the analysis (Cheek, 2008). I therefore regularly referred to my own perspectives within the narrative in order that readers are reminded and might recognize the various ways that my roles and views shape the text (White, 2007).

As the researcher my responsibility is not to be a conduit but to interpret the issues that I saw emerging from the individual and group interviews in order to contribute to new knowledge. However, I also consciously retained the voices of the participants as clearly as possible in the text as is required by the Indigenous methodology and Indigenous ethics of the study. In this way the words of the participants (and not only my interpretation) might become the authoritative texts in the practice of knowledge production. The ways in which researchers represent themselves and the participants in their studies influence the data we collect, interpret, and publish (Pidgeon, 2008, p. 73).
3.3.2 Two Kinds of Rigour: Trustworthiness and Credibility

The Cultural Interface requires an active balancing of modern interests in producing better accounts with a postmodern sensibility of the partial and contingent nature of knowledge. The study is a problem-focused enquiry carried out with the participants to solve a shared problem within the context of a larger Indigenous research agenda: social change. It is therefore committed to a demonstration of validity in order to justify its accounts as counter readings of social and historical conditions as well as its possibilities for renewals. Within Nakata’s framework, epistemology (claims to better accounts) can no longer exclude social, ethical, and political dimensions as components of a theory of knowledge. They can be evaluated in terms of the political aims that the researcher sets in her agenda (L. T. Smith, 1999). A demonstration of validity need not meet the criteria of truth claims of a positivist scientific method but must demonstrate accountability, coherence, and internal consistency. Lincoln and Guba (2000) suggest that this movement tends to conflate method and interpretation producing “two kinds of rigor”: recognition of plausibility by a constituency and defensible reasoning. I have interpreted these “two kinds of rigor” as trustworthiness and credibility.

The notion of trustworthiness is based on the idea that valid knowledge arises in part from relationships between members of an epistemic community or community of practice. It therefore must meet a communal test of validity. Trustworthiness is not fixed but is created through community narrative and is contingent on temporal and historic conditions that gave rise to the community. The interpretation must be recognizable to the members as part of the discourse, and be trusted to provide some purchase on a reality in order to serve as a basis for action (Lincoln & Guba, 2000, p. 178). Credibility derives from a demonstration
of defensible reasoning, which is characterized by qualities of coherence and internal consistency. In empirical accounts it requires the presentation of a range of participant views in order that the imperative to create a thematic narrative does not erase differences of thought and experience among participants. Within interdisciplinary practice it may be assessed to the extent to which it is generative and creates new insights or strategies. A final criterion is that of reflexivity on the part of the researcher that gives account of the multiple subjectivities of the self: as researcher, enquirer, and learner. Writing is viewed as a process of discovery of the dimensions of the subject of study, of the problem, and as a discovery of self (Lincoln & Guba, 2000, pp. 177–185).

3.4 Constructing a Methodology

Guided by the ethos of Indigenous Métissage (Donald, 2009b), and the aim at the Cultural Interface to harness the disciplines to serve Indigenous interests (Nakata 2002, 2007b), I sought intersections between knowledge organization theory and Indigenous theory. Domain analysis in information science provided a common ground for dialogue with Indigenous theory through its recognition of the social dimensions of knowledge domains, and its view of domains as discourse communities. The study integrated elements of domain analysis (Hjørland, 2002; Hjørland & Albrechtsen, 1995; Mai, 2004) with the Indigenous theory of the Cultural Interface (Nakata 2002, 2007b; Donald 2009b). This produced a methodology, domain analysis @ Cultural Interface, with which to conduct empirical and conceptual studies of Indigenous knowledge domains.
3.4.1 Domain Analysis in Information Science

Domain analysis in information science is an approach developed to inform a conceptualization of a field of study\(^{17}\) or knowledge domain in order to design or improve its information systems (cf. Feinberg, 2007b; Hjørland & Pedersen, 2005; Mai, 2005, 2008). First introduced by Hjørland and Albrechtsen (1995) and further developed by Hjørland (1997, 2002, 2011a), Hjørland and Albrechtsen (1999), Hjørland and Hartel (2003a, 2003b), Mai (2004, 2005, 2008), and Feinberg (2007b), it views knowledge domains as “thought or discourse communities” (Hjørland & Albrechtsen 1995, p. 400). While KO theorists often focus on either the document or the user in designing information systems, domain analysis theorists take a more holistic view and take account of context and task, as well as culturally mediating factors, such as meanings, goals, and values, in addition to documents (Hjørland, 2002, p. 431). In domain analysis the domain itself is the analytic category: the language of the domain and its users are privileged (Mai, 2004, p. 600). A domain is comprised of ontology, epistemology, and sociological factors, each of which may be multifarious within socio-historical and cultural contexts (Hjørland 1997; Hjørland & Hartel, 2003a, 2003b).

Philosophical and theoretical approaches necessarily influence the definition of a domain, its culture, and its practices (Hjørland & Hartel, 2003a, p. 242).

Domain analysis offers eleven techniques for studying a domain, each of which may be used separately or together to offer multidimensional readings of a domain and/or its sub-

\(^{17}\) The approach has been modified to extend beyond academic knowledge to include discourse communities such as those connected to a political party, religion, hobby, or trade (Hjørland, 2011a, p. 1650), and various areas of expertise, or literature, or “a group of people working together in an organization” (Mai, 2005, p. 605).
domains (Hjørland, 2002, 2011a). Two of the methods produce information artifacts, such as literature guides, subject portals, special classifications, and thesauri; the others are forms of empirical or conceptual study including user studies, epistemological and critical studies, and terminological studies or discourse studies (Hjørland, 2002). Viewing epistemology as a central concern of domain analysis, Hjørland counsels that each analysis should begin with a “high-level or interpretive study of a subject or community of interest” in order to uncover different conceptions of the area (Hjørland & Hartel, 2003a, p. 242; Hjørland, 2011b).

From the perspective of Indigenous theory (Nakata, 2007b; Donald, 2009b), domain analysis offers the advantages of: (1) a view of a knowledge domain as a discourse community, and as the unit of analysis; (2) the recognition of the contextual nature of knowledge and its documentary forms including the social, historical and cultural dimensions of knowledge, and the contingencies of space and time; (3) recognition of multiple paradigms within a domain that may be in contention with each other; and (4) an explicitly philosophical approach to KO that distinguishes among a variety of epistemic warrants and advocates epistemic pluralism (Hjørland, 2002; Hjørland & Albrechtsen, 1995). Domain analysis is consonant with the Cultural Interface at the level of social theorizing, and in a more complex conceptualization of the “object of study”; in this case Indigenous knowledge, as the interactions of subjects (actors), concepts, documents, and institutions. However,

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18 Hjørland’s eleven approaches to domain analysis are: 1. Producing literature guides or subject gateways. 2. Producing special classifications, including thesauri. 3. Research on indexing and retrieving specialties. 4. Empirical user studies. 5. Bibliometrical studies. 6. Historical studies of information exchange. 7. Document and genre studies. 8. Epistemological and critical studies. 9. Terminological studies, languages for special purposes, discourse studies. 10. Studies of structures and institutions in scientific communication. 11. Studies in professional cognition and artificial intelligence (2011a).
efforts at integration may be more successful at the level of social commitment and pragmatics than at a philosophical level because of divergent approaches to scientific realism.

### 3.4.2 Realism: The Word and the World

The tension between Indigenous theory and domain analysis occurs at the level of ontology (what exists in the world) and in the relationship between the word and the world. Hjørland asserts the classic realist claim that a mind-independent reality exists and that it is knowable (2004, p. 488). He holds a view of knowledge (as “justified true belief”) that requires that it reflect parts of reality and demonstrate a correspondence between a claim and reality (Hjørland & Hartel, 2003a, p. 240). This entails a commitment to the discovery of entities and their associated properties in the real world. Some pragmatists recommend that we put aside the debates about realism and agree that the meaning of a proposition inheres in the “practical consequences” for human experience (Chakravartty, 2011). However, it is significant in terms of design of knowledge organization systems for Indigenous purposes.

The Cultural Interface theory requires that social and political factors are recognized as epistemically significant, and that knowledge is viewed as contingent: as historically, socially, and culturally constructed through scientific and other discourses. If meaning is viewed as being constitutive of and constituted by social institutions, then the meanings of scientific terms (inter alia) become products of social negotiation. Nakata rejects a correspondence theory of meaning; that is, he rejects a transparent view of language wherein language derives its meaning as a reflection of reality, and the truth-value of a statement lies with its correspondence to an external reality. Nakata argues that meaning is constructed through power-charged discourse, and produces social effects in the world. Discourse plays
a constitutive role in forming objects and subjects, not the converse (Howarth, 2000, p. 52). Indigenous theory (Nakata, 2007b; Donald, 2009b) is incommensurate with realist philosophy: it does not argue against metaphysical realism, i.e., that physical objects do not exist, but rather that their meaning is acquired through discourse.

3.4.3 Discourse Theory: Discursive Constructions of the World

At the Cultural Interface Indigenous perspectives are rooted in the actualities of lived experience and the local particularities anchored through our bodily being (2007b). How are we to understand this material-semiotic relation within a discourse? Discourse theorists conceptualize discourse as a form of social practice that is both constitutive and constituted. It both reproduces and transforms knowledge, identities, and social relations and at the same time it is shaped by existing social practices that have both discursive and non-discursive elements (Jørgensen & Phillips, 2002, p. 65). As an example, the discourse of medicine produces objects, such as “HIV” and “otitis media” (ear infection) as things that are distinct and countable. At the same time, discourse functions to produce the identities of subjects (persons), such as doctors and patients, each with their own distinct authority and knowledge. These subjects and objects emerge through associated discursive practices that have developed the discourses over time. They shape medical practices, such as diagnostic procedures, medical record keeping, and even the architecture of medical spaces that are comprised of both discursive and non-discursive elements (Jørgensen & Phillips, 2002). On this reading, knowledge organization is a discourse that acts to both constrain and enable what we know. Nakata’s analysis has demonstrated the ways in which the discursive construction of social categories and identities of Indigenous subjects (individual and collective) create distinct hierarchies of knowledge and authority.
Discourse is conceptualized in three ways: (1) language use within a social practice, (2) the kind of language used in a particular social field, such as academic discourse or political discourse, and (3) generally as any way of speaking that gives meaning to experience from a particular perspective (Jørgensen & Phillips, 2002, pp. 66–67). An order of discourse comprises all discourse types used within a social field or institution, such as the media or a university. Discourse types are made up of discourses and genres: the latter is a particular use of language within part of a social practice, such as a news genre. Discursive practices are the means by which texts (spoken, written, multimodal, and digital) are produced, consumed, and interpreted. Structural conditions, for example, social categories, such as ethnicity, gender, or class, can constrain access to discourse and not all actors (individuals and groups) have the same access to subject positions. Power relations also limit the “possibilities for change” by determining the access of different subjects to different discourses so that not all have equal access “for doing and saying things in new ways and having their rearticulations accepted” (Jørgensen & Phillips, 2002, p. 56).

3.4.4 Domain Analysis @ Cultural Interface

The formation of domain analysis @ Cultural Interface is explicitly informed by an Indigenous discourse theoretic approach (Nakata, 2007b) and assumes that (1) the primary elements of a knowledge domain include discourse, order of discourse, institution and social field; (2) a knowledge organization system, for example a classification scheme, is viewed as text and as discursive practice; and (3) it has social and material consequences for people’s lives. Hjørland suggests that a discourse theoretic approach seems to be “more adequate for analyzing biases in existing systems than for developing criteria for designing new ones”
However, I suggest that the analysis of power and social effects of discourse are integral to knowledge organization critique, study, and design in Indigenous contexts.

Different theoretical approaches produce different ideas about what constitutes an adequate definition. As a discourse theoretic approach, domain analysis @ Cultural Interface rejects an empiricist requirement for an operationalizable definition that is replicable and generalizable. Nonetheless, the question remains even if there is no “really real” unifying principle to the concept of a domain, how are we to think about determining the boundaries of a domain in order to study it? A domain @ Cultural Interface is therefore treated as an analytical concept, “an entity that the researcher projects onto the reality in order to create a framework for study” (Jørgensen & Phillips, 2002, p. 143). The question of delimitation of the boundaries of a knowledge domain is therefore viewed as a strategic question that depends on the aims of the research. Discourses are viewed as objects that the researcher constructs rather than objects that exist pre-formed as entities in reality waiting to be mapped. However, the researcher must clearly articulate the rationale for the construction. In the case of knowledge organization system this will be informed by the designer’s purpose and the purpose of the classification.

In considering the boundaries that might be drawn around a domain in order to study it, scope, focus, and intersections are useful elements. For example, a particular discourse, such as “medical discourse,” might be differentiated from “alternative treatment discourse.” A study could consider the interrelationships between these two discourses and their larger associated discourses. Alternatively, it could dwell exclusively on a single discourse and this close focus may reveal disagreements about meaning that are indicative of additional smaller discourses within it (Jørgensen & Phillips, 2002). Tennis (2003) suggests two axes for
analyzing domains: the area of modulation defines the scope (extension) and the naming of a domain; the degree of specialization (intension) defines the focus and the domain intersections that are chosen as the object of study (Tennis, 2003, p. 194). The definition of the domain boundaries is then comprised of two dimensions: the area of modulation that specifies the scope and designation (name), plus the degree of specialization that specifies the focus and the intersections (Tennis, 2003, p. 194). The aims of the research will determine the distance the researcher takes in relation to the material. For example, a focus at the level of an order of discourse would study the intersections between discourses and treat them each as separate (Jørgensen & Phillips, 2002, p. 144). Alternatively, a focus on a specific discourse might divide it into different discourses. For example, Indigenous theorist Christopher Teuton (2008) analyzes Indigenous literary theory as comprising three interrelated sociocritical modes, and Shawn Wilson (2003) analyses six main phases of Indigenous research.

3.5 **Application of the Methodology: Four Domain Analyses @ Cultural Interface**

At an empirical level domain analysis @ Cultural Interface is intended to provide a working tool for studying a knowledge domain in order to design a KOS, such as a classification or thesaurus, which serves to stabilize the dynamic space of the Cultural Interface for a particular purpose. At the same time, this approach that theorizes power and social effects within a domain may also serve as a heuristic to view (evaluate) an existing classification. Thus the theory engages with questions regarding the ways in which classification (as a product and a process) structures an order of discourse and the social effects that it produces (for example, the effects on the subject positions of groups and individuals, such as Indigenous actors). It may pose questions regarding how the overt object
of the classification creates subject identities, what conditions have enabled its construction, the institutional and spatial-temporal location of the classification, the identities of the actors including the creator(s), those who accept or use it, those who may critique it, and its criteria for inclusion and exclusion (Snyder, 1984, p. 211).

Domain analysis @ Cultural Interface was applied as a method to study Indigenous knowledge domains within post-secondary education. Four Domain Analyses were conducted: (1) a critical study of knowledge organization and its consequence for Indigenous learners, (2) an analysis of Indigenous knowledge as a knowledge domain, (3) a study of the knowledge organization in Indigenous contexts based on expert interviews with nine Indigenous designers of knowledge organization systems, and (4) a user study with nine First Nations, Aboriginal, and Métis graduate students who use academic libraries. The data analysis methods were analytic, interpretive, and reflective based on close reading of the texts of experience, situated conversations, disciplinary, and other literatures. The analyses are summarized in the following table: Table 3.1: Four Domain Analyses @ Cultural Interface: Sources of Information, Research Questions, and Findings Chapters.
### Table 3.1  Four Domain Analyses at Cultural Interface: Information Sources, Research Questions, and Findings Chapters

**Research Question:** How can Indigenous approaches to knowledge inform principles of design of knowledge organization systems to serve Indigenous purposes?

<table>
<thead>
<tr>
<th>Domain Analysis</th>
<th>Information Sources</th>
<th>Research Sub-question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Critical examination of knowledge organization in information science</td>
<td>Literature: sociology of knowledge; Indigenous education; library and information science</td>
<td>Sub-question 1: How do knowledge organization systems function as infrastructure and to what effects for Indigenous learners? Findings: Chapter 4</td>
</tr>
<tr>
<td></td>
<td>Empirical: group interviews with nine First Nations, Aboriginal, and Métis graduate students</td>
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<tr>
<td></td>
<td>Empirical: group interviews with nine First Nations, Aboriginal, and Métis graduate students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Empirical: expert interviews with nine Indigenous designers of knowledge organization systems</td>
<td></td>
</tr>
<tr>
<td>4. User study with First Nations, Aboriginal, and Métis graduate students</td>
<td>Empirical: group interviews with nine First Nations, Aboriginal, and Métis graduate students</td>
<td>Sub-question 1 &amp; Sub-question 2: How do knowledge organization systems affect Indigenous learners? Findings: Chapters 4, 5</td>
</tr>
</tbody>
</table>

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3.5.1 Domain Analysis 1: Critical Study of Mainstream Knowledge Organization

The critical analysis of knowledge organization drew upon the literature of library and information science (LIS), sociology of knowledge, Indigenous education, and group interviews with First Nations, Aboriginal, and Métis graduate students who used the university library systems. It examined power relations in knowledge organization using the concept of “infrastructure” (Bowker & Star, 1999), and then compared infrastructure with the concepts of hidden curriculum and official knowledge used by Indigenous critical theorists (Calliou, 1999; Hampton, 2000). This analysis positioned knowledge organization systems as integral to educational infrastructure. The theoretical connection of knowledge organization with Indigenous education also leveraged Indigenous concepts and scholarship (Hernon & Metoyer-Duran, 1992; Lomawaima, 2004; Manitoba Indian Brotherhood [MIB], 1974). The secondary literature by Indigenous practitioners and scholars describes two social effects of the dominant knowledge organization systems (KOS): silencing of Indigenous voice and theft of Indigenous knowledge. These effects were identified in Canada (Blake et al., 2004; Joseph, 1995; Lawson, 2004; D. Lee, 2001), the United States (Mahsetky Poolaw, 2000; R. Taylor, 2001; Webster, 2005), New Zealand (de Barry, 1998; Irwin & Willis, 1989; MacDonald, 1993; S. Simpson, 2005; Szekely, 1997), and Australia (Fourmile, 1989; Shilling & Hausia, 2001). The themes of theft and silencing were replicated and expanded by the First Nations, Aboriginal, and Métis graduate students who took part in the group discussions regarding library systems at the University of British Columbia. This domain analysis addressed research sub-question 2, “How do knowledge organization systems function as infrastructure and to what effect for Indigenous learners?”
The findings and interpretations are reported in Chapter 4: Knowledge Organization as Infrastructure: Consequences and New Directions.

3.5.2 Domain Analysis 2: Conceptualizing a Domain

This domain analysis examined the question, “What is Indigenous knowledge?” through the lens of the Cultural Interface (Nakata, 2007b; Donald, 2009b). First it examined the discursive constructions of Indigenous knowledge in the fields of science, international development, and library and information studies. It then analyzed Indigenous scholars’ descriptions of Indigenous knowledges and the practices of Indigenous knowledge “in action” (Archibald, 2008) in the fields of Indigenous education, Indigenous studies, and Indigenous research methodology. Lastly, it presented group discussions with nine graduate students who self-identified as First Nations, Aboriginal, or Métis people and described their experiences with the ways in which classification shapes identity and access to knowledge. The combined sources of literature and interviews began to reveal the diversity of Indigenous knowledge as conceptual, theoretical, and methodological approaches, paradigms, and areas of study within post-secondary education. In addition, the terminology of Indigenous knowledge was also adopted by external discourses such as those of government and commercial sectors, and the mainstream academic disciplines. The domain analysis examined the concept of Indigeneity as an applied tool for identifying Indigenous discourses and distinguishing them from external discourses. This domain analysis addressed the research sub-question 1, “How is Indigenous knowledge conceptualized by Indigenous scholars?” The findings and interpretations are reported in Chapter 5 What is Indigenous knowledge? Conceptualizing a Domain.
3.5.3 Domain Analysis 3: Conceptualizing a Field of Study

This domain analysis examined the practice and emergent theory of knowledge organization in Indigenous contexts through individual interviews with nine Indigenous designers of knowledge organization systems. It then contextualized the interviews with a review of the international literature describing the design of Indigenous knowledge organization systems. Lastly, it examined and interpreted the Indigenous designers’ views of the purposes for, and the evaluation of, Indigenous knowledge organization systems. This is a sustained analysis of Indigenous expert knowledge in the field and the findings and interpretations are reported in two chapters.

First, I interpreted the interviews with the three First Nations designers as producing an oral history of the development of Indigenous knowledge organization in Canada. Oral history is recognized as a technique that captures personal narratives representing an individual or sets of individuals’ life stories, and is considered to be particularly suited to giving voice to those previously silenced (Janesick, 2010). Also practitioners often do not have the time, the inclination, or the opportunity to publish. Moreover, their publications tend to be more issue-focused rather than being devoted to personal history or to professional self-reflection. I suggest that the study provided a vehicle through which the history of First Nations practice in Canada could be shared. In doing so it surfaced some of the First Nations activism and leadership in what is perhaps a little known field, and also contributed to the larger discipline.

Secondly, a literature review of knowledge organization practices in Indigenous contexts produced a working definition of “Indigenous knowledge organization” as a field of study, and as a distinct knowledge domain with multiple discourses. I viewed these practices
at the level of an order of discourse, and then mapped the differences in the practice according to institution, jurisdiction, scope, and focus that produced a typology of the field of practice according to design strategy. Finally, I examined the designers’ approaches to theory and practice through a focus on design and evaluation of information systems that produced articulations of purpose, design principles, and assessment criteria. This domain analysis addressed two research sub-questions from the perspectives of the Indigenous designers: (1) What elements of library knowledge organization theory are hospitable to interpretation from Indigenous standpoints?; and (2) What criteria could be employed to develop Indigenous evaluation instruments for KOS? The findings and interpretations are reported in Chapter 6 Indigenous Knowledge Organization: Mapping a Field, and Chapter 7 Indigenous Knowledge Organization: Design Space, Purpose, and Evaluation.

3.5.3.1 Method: Expert Interviews with Indigenous Designers

Individual expert interviews were conducted with eight Indigenous designers of knowledge organization systems from Canada, United States, Australia, and New Zealand, and with one Indigenous educational administrator planning a new library for a First Nations post-secondary institution in Canada, for a total of nine interviews. The term designers was used to identify Indigenous individuals who had designed or were designing Indigenous knowledge organization systems, such as a classification scheme, thesaurus, or subject heading lists. It included individuals who worked or were working as a member of a design team and those who had significantly re-designed or modified an existing KOS. All of the participants were provided information regarding the purpose, procedures, potential benefits of the research, and right to withdraw at any time. Written consent to voluntarily participate in the study and to be identified by name was received from the participants, including John...
D. Berry, Oklahoma, USA; Brian Deer, Kahnawake Quebec, Canada; Alana Garwood-Houng, Australia; Gene Joseph, British Columbia, Canada; Cheryl Metoyer, Washington, USA; Bert Morrison, Moosonee, Ontario, Canada; Deanna Nyce, British Columbia, Canada; Ann Reweti, Wellington, New Zealand; and Kelly Webster, Maine, USA. Appendix A: Interview Dates and Places summarizes the details of the date, place, and type of interview.

The primary purpose of the expert interviews was to understand the participants’ experiences in design and determine their design principles, epistemic perspectives, and aspirations for contemporary Indigenous knowledge organization. This focus on professional expertise is reflected in the tenor of the interview guiding questions. Design/research recognizes the unique value gained through learning from the knowledge and experience of practitioners (Schön, 1983). In Indigenous contexts, this is highly specialized knowledge and there are very few library knowledge organization experts. Each designer brings unique knowledge and experience to the field and to the study. Within Indigenous contexts the social and political dimensions of practice are, as Nakata points out (2007b), highly complex and often contentious. Expert knowledge is composed of technical knowledge, process knowledge, and interpretive knowledge that is not limited to a particular realm (Bogner, Littig & Menz, 2009, p. 7). Experts are also more strongly positioned to be able to put their own interpretations into practice. Three of the eight designers developed and implemented their own KOS, three participated in implementation, and one designer’s system was in development.

The Indigenous designers were identified through a literature review, the researcher’s professional contacts in the field, and through email distribution. Although there are a number of non-Indigenous designers who have worked and/or continue to work in the field,
invitations were extended only to Indigenous designers because the research question was specifically focused on how Indigenous approaches to knowledge might inform principles of design. For the purposes of this study, I decided that it was conceptually clearer to focus solely on Indigenous designers based on my assumption that lived experience of individuals who identify as Indigenous differs from non-Indigenous (in a racist and colonial society) and that lived experience shapes knowledge and knowledge production. Of the seven designers who were contacted directly by email and invited to participate, six agreed to be interviewed, and one declined but recommended a colleague who agreed to participate.

Email invitations were distributed to the listservs of the American Indian Library Association, the British Columbia Library Association First Nations Interest Group, and the Canadian Library Association Aboriginal Interest Group listservs. This generated an expression of interest from an administrator of a First Nations post-secondary institution whom I have included because of her administrative interest in the design and implementation of an Indigenous knowledge organization scheme for a First Nations post-secondary institution. I attempted to recruit a second administrator of a First Nations post-secondary institution in order to balance this perspective but was unsuccessful. In addition, there were expressions of interest from individuals who were generally interested in the field but did not fit the selection criteria. This process resulted in interviews with eight Indigenous designers and one First Nations administrator with a professional interest in the area of Indigenous knowledge organization in relation to a First Nations post-secondary institute, for a total of nine interviews.

The expert interviews were semi-structured based on 10 open-ended questions that are included in Appendix B: Guiding Questions for Expert Interviews with Indigenous
Designers. The interviews were conducted between December 16, 2008 and May 25, 2009 in person, via email, and by telephone. A separate professional meeting devoted to Indigenous knowledge organization (January 2009) hosted by Dr. Hope Olson at the University of Wisconsin-Milwaukee provided an opportunity to meet four of the designers and conduct in-person interviews with two of the designers in Milwaukee. All of the interviews were digitally recorded with the prior permission of the participants. After each interview was completed, it was transcribed and a transcript of the interview was emailed or mailed to the participant for vetting. Two participants requested and were provided with a DVD of the voice file. Six participants submitted corrections and the transcripts were edited noting the corrections where marked. In cases where the corrections were not marked, the participants’ corrected versions of the transcripts were accepted as submitted. Three participants did not submit corrections. After completing a final draft of the dissertation sections where the participants were directly quoted or their life stories were shared, I provided an opportunity for the participants to review the relevant sections in the context of the write up and send changes: six participants responded and their edits are reflected in the report; three did not respond.

An acknowledgement gift was given to each participant as a symbol of reciprocity and respect for the gift of their contribution to the study. Within this study there were ethical decisions regarding data collection of knowledge organization systems (KOS) (classification schemes, thesauri and subject vocabulary). While the examination of existing Indigenous knowledge organization schemes is relevant to design research, Indigenous KOS are often considered proprietary. For example, the National Native American thesaurus (University of California [UC] Berkeley) and the Mashantucket Pequot thesaurus are both considered
proprietary at this time, as are vocabularies that Gene Joseph has developed for First Nations in Canada. Similarly, there are multiple Deer classification variants, a number of which are considered private. Other systems fall within a grey area: they have been public at one time but may no longer be considered public. Considering the sensitive or proprietary nature of classifications in Indigenous contexts, I did not request that the participants provide me with information about other organizations or communities that had developed Indigenous KOS, that is First Nations or Aboriginal organizations. The following section introduces the Indigenous designer participants and their KOS.

3.5.3.2 The Designers and their Knowledge Organization Systems

This introduction to the Indigenous designers is grouped by country in the following order: Canada, United States, New Zealand, and Australia. Table 3.2: Indigenous Designers Interviewed: By Name, Knowledge Organization Scheme, and Country summarizes the information.
Table 3.2  Indigenous Designers Interviewed: By Name, Knowledge Organization Scheme, and Country

<table>
<thead>
<tr>
<th>Designer</th>
<th>Knowledge Organization Scheme</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian Deer</td>
<td>Brian Deer Classification—National Indian Brotherhood; Kahnawake Cultural Centre; Ojibway-Cree Cultural Centre</td>
<td>Canada</td>
</tr>
<tr>
<td>Gene Joseph</td>
<td>First Nations House of Learning Subject Headings; Union of British Columbia Indian Chiefs—Deer Classification; First Nations House of Learning, Xwi7xwa-Deer Classification</td>
<td>Canada</td>
</tr>
<tr>
<td>Bert Morrison</td>
<td>Ojibwe Cree Cultural Centre Classification</td>
<td>Canada</td>
</tr>
<tr>
<td>Deanna Nyce</td>
<td>President and CEO, Wilp Wilxo’oskwhl Nisga’a Institute</td>
<td>Canada</td>
</tr>
<tr>
<td>John D. Berry</td>
<td>University of California, Berkeley. National Native American Studies Thesaurus</td>
<td>USA</td>
</tr>
<tr>
<td>Cheryl Metoyer</td>
<td>Mashantucket Pequot Tribal Nation. American Indian Thesaurus</td>
<td>USA</td>
</tr>
<tr>
<td>Kelly Webster</td>
<td>American Indian Library Association. LC Sacco Funnel</td>
<td>USA</td>
</tr>
<tr>
<td>Ann Reweti</td>
<td>Ngā Upoko Tukutuku. Māori Thesaurus</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Alana Garwood-Houng</td>
<td>Aboriginal and Torres Strait Islander Australian Thesaurus</td>
<td>Australia</td>
</tr>
</tbody>
</table>

The four experts interviewed from Canada included three designers: Brian Deer, Gene Joseph, and Bert Morrison, and a post-secondary institution administrator, Deanna Nyce. Brian Deer, Kahnawake Mohawk, designed and implemented the Brian Deer Classification (BDC) scheme for the National Indian Brotherhood resource centre (1974–1976) (Brian Deer, personal communication, December 16, 2008). The BDC has served as an inspiration and a model for Indigenous knowledge organization in Canada for almost forty years. Gene Joseph, Dakehl, created the Gene Joseph subject headings, which formed the core of the First Nations House of Learning (FNHL) Subject Headings, University of British Columbia (UBC) that remain in use, and are continuously developed at the Xwi7xwa Library. In addition, Joseph developed various subject vocabularies for First Nations in Canada, notably for the Delgamuukw Gisdaywa court case. Gene Joseph has created a number of variants of the Deer classification, including the NITEP and FNHL variants, and
contributed to the Union of British Columbia Indian Chiefs (UBCIC) Deer variant (Gene Joseph, personal communication, April 20, 2009).

Bert Morrison, Mushego (Mushkegowuk) Cree, is a former Co-ordinator of the Ojibway and Cree Cultural Centre, Resource Centre (OCRC) of the Nishnawbe Aski Nation (NAN) in Timmins, Ontario. Bert Morrison participated in the decision to design a separate classification system for the OCRC, and was instrumental in a design partnership between members of the OCRC and local librarians at the Ontario North Central Library System. The result was the design and implementation of the longstanding OCRC classification scheme (Bert Morrison, personal communication, May 25, 2009) that continues to underpin the online web-based OCRC Library catalogue (Ojibway & Cree Resource Centre 1978, 1981, 1982, 2012). Deanna Nyce, Nisga’a, is the Chief Executive Officer of Wilp Wilxo’oskwhl Nisga’a (Nisga’a House of Wisdom), the Nisga’a University College. As an educator and educational administrator Deanna Nyce has a professional interest in the design of knowledge organization systems in libraries and archives for Nisga’a education, and as a corrective to the representation of First Nations in public school and public library catalogues in Canada. She is also a Ph.D. candidate (Deanna Nyce, personal communication, May 25, 2009).

The three designers interviewed from the United States were John D. Berry, Cheryl Metoyer, and Kelly Webster. John D. Berry, affiliated with the Cherokee Nation of Oklahoma and Choctaw Nation, and Native Studies Librarian, has established and continues to develop the National Native American Thesaurus for the Native American Studies Collection of the Ethnic Studies Library at the University of California, Berkeley. He had begun working on the thesaurus prior to his appointment at UC Berkeley in 2001. At the
time of the interview it comprised about 34,000 entries, and was about 70 percent error-
corrected (John D. Berry, personal communication, January 14, 2009). It is a stand-alone
thesaurus, a significant undertaking for a sole compiler, and it is proprietary at this time.
Kelly Webster, Oneida Tribe of the Indians of Wisconsin, is Head of Metadata Services at
Boston College Libraries, and as President of the American Indian Library Association
(AILA) 2004–2005 she formed the AILA Classification and Subject Access Committee to
develop expertise among AILA members to submit new and changed headings formally to
the Library of Congress, and ultimately to create a Native American Funnel Project through
the Library of Congress (LC) Program for Cooperative Cataloguing (PCC). The aspiration
was to actively build a thesaurus for sharing and to correct historic errors in LC classification
and subject headings (Kelly Webster, personal communication, April 21, 2009).

Cheryl Metoyer, Cherokee, is an Associate Professor at the Information school
(iSchool) at the University of Washington, where she is also Director of the Indigenous
Information Research Group (IIRG) and serves as Associate Dean for Research. Over the
years Cheryl Metoyer has had the honour of working with a number of tribal nations and
organizations. It was when she was asked by the Mashantucket Pequot Tribal Nation in
Connecticut to be part of the building of the museum there (including the museum and
research centre comprised of two tribal libraries and the tribal archives) that she began to
work on the design, development and implementation of the Mashantucket Pequot Thesaurus
which is under development and proprietary at this time (Cheryl Metoyer, personal
communication, January 20, 2009).

The designer from Australia is Alana Garwood-Houng, a Yorta Yorta woman and the
senior collections officer at the Australian Institute for Aboriginal and Torres Strait Islander
Studies (AIATSIS). She co-authored the *Aboriginal and Torres Strait Islander Thesaurus* (1997), is a contributor to the AIATSIS three-part online thesaurus, *Pathways* (AIATSIS, 2012), and has been active in the development of and education about the *Aboriginal and Torres Strait Islander Protocols for Libraries, Archives and Information Services* (ATSILIRN, 1995, 2005, 2012). Ann Reweti, Māori, a Matanga Kiritaki/Customer Specialist, Ratonga Māori, Te Matapihi ki te Ao Nui/Wellington City Libraries, is the designer from New Zealand, and participates in the development of the *Ngā Ūpoku Tukutuku* (Māori Thesaurus). As a librarian, Ann Reweti has worked briefly as a cataloguer and currently works primarily as a reference librarian. Since 2006 she has served in her current position as the Māori Specialist librarian. During that year she began working as part of a team composed of two cataloguers from the National Library of New Zealand and three Māori librarians on *Ngā Ūpoku Tukutuku*. The team was originally instructed to develop only 500 terms (Ann Reweti, personal communication, March 8, 2009), however the thesaurus is now over 1000 headings (National Library of New Zealand et al., 2012). These two national level thesauri, developed in Australia and New Zealand, are publicly available on the web in download formats. *Ngā Ūpoku Tukutuku* Māori Thesaurus is available in .xml, Unicode and Marc8 formats, and the Pathways Thesauri including the subject, language, and place thesauri are available in .pdf and .rft file formats.

### 3.5.4 Domain Analysis 4: User Study with First Nations, Aboriginal, and Métis Graduate Students

This domain analysis employed a group interview method to better understand the thoughts and experiences of First Nations, Métis, and Aboriginal graduate students regarding their approaches to and use of library systems. As a user group, the graduate student
participants were experienced users of the university libraries and library system. The strengths offered by a group interview method are the provision of a comfortable space for students to engage in a collective exploration of how categories and meanings are constructed in Indigenous contexts, as well as a way to document the similarities and differences of individual perspectives within the group (Morgan, 1997; Morgan, Krueger, & King, 1998).

An invitation for Aboriginal graduate students to participate in the study was distributed by electronic mail to the University of British Columbia (UBC) First Nations graduate student listserv and the Supporting Aboriginal Graduate Enhancement (SAGE) Program provincial listserv. Some of the UBC liaison librarians distributed the invitation through their faculty and department email lists. Advertisements were displayed at the Xwi7xwa Library table at the First Nations House of Learning Welcome Back Barbeque (2009), and posted in the social lounge at the UBC Longhouse. This recruitment process resulted in nine graduate student participants who self identify as First Nations, Aboriginal, or Métis. The graduate student participants are future leaders, and in some cases are current leaders in Aboriginal spheres at local and national levels. At the time of this study, all of the graduate student participants were undertaking research explicitly intended to be relevant to Indigenous interests. My affiliation with the First Nations House of Learning as a staff member, and the students’ familiarity with me both as a librarian and as a co-student, may have gained me passage. I appreciate the generosity of the graduate students in taking time to participate, and in risking (against the odds) that I might represent their positions in ways that they would choose to represent themselves.
Two group interviews were held at the First Nations House of Learning Longhouse at the UBC-Vancouver campus. There were five participants in the first group and four participants in the second group, for a total of nine graduate students. All participants were provided information regarding the purpose, procedures, and potential benefits of the research, and the right to withdraw at any time. Written consent to voluntarily participate in the study was received from the participants. The groups were held over the noon hour and lasted approximately one hour. The guiding questions for the group interviews are included in Appendix C: Guiding Questions for Group Interviews with Aboriginal Graduate Students. Lunch was provided with provisions made for dietary preferences, and the students were offered a gift of $15.00 for their participation. Two of the students declined the gift and requested that it be donated to the Xwi7xwa Library. With permission of the participants, the discussions were digitally recorded with a microphone and recorder at two sides of the squared circle of tables. The students were guaranteed anonymity. In order to honour the promise of anonymity and due to the small number of Aboriginal graduate students at the university, there is no information provided regarding faculty, area or year of study, specific nation or community affiliation, or gender of the graduate students. All names used in reference to the graduate student participants are fictional. The recordings of the discussion groups were transcribed, and some of the participants requested that I inform them when the dissertation was completed so that they could read about their input.

3.5.5 Analysis and Reporting of Individual and Group Interviews

The following section describes the analysis of the interview transcripts for all of the interviews with both groups of participants: the Indigenous designers and the First Nations, Aboriginal, and Métis graduate students. The analysis of designer interview data was goal
directed, as I was interested in the principles of design, and epistemic approaches of the designers in designing KOS, as well as the history of the development of Indigenous knowledge organization in Canada. In one sense it was an instrumental approach and in another sense it is a narrative approach. Using Atlas Ti, qualitative data analysis software, I coded the transcripts during a first read through resulting in over 200 codes. I then reviewed the codes, merged the synonyms and then recoded my codes so that they were structured and collocated together, and used that revised set of codes to guide the creation and structuring of families in Atlas-Ti. For example: various characteristics of Indigenous knowledges became IK-humour, IK-helping, IK-education which all became part of a larger IK family. During the second reading of the transcripts, I read beyond words for feeling and nuance. After the second reading I reduced the number of codes and put them into families. Sometimes I put a single code into multiple families. My interest was not a rigid cross-tabulation of participant responses but to widely explore the field. I was not explicitly attempting to build theory or to construct an argument with this data but rather trying to really hear the multiple meanings of the designers’ words and experiences.

The analysis of the graduate student participants’ discussions followed a similar process of multiple readings and multiple codings of the transcripts. There was no commitment to share transcripts with the students. The student responses to libraries and library systems were quite diverse and ranged from a happy relationship with Google, a widely reported student research strategy (Randaree & Mon, 2011; Wilkes & Gurney, 2009), to a demand for better library services for Aboriginal scholars. Two students approached me individually after the group discussion to talk about specific research needs and to offer suggestions for services that they would like to see provided by the Xwi7xwa Library. In
coding the data eleven themes emerged, two of which intersected with the designer themes: Aboriginal experience, and researchers’ responsibilities. For the purposes of this study, software like Atlas-Ti served as a useful first step to assist with thinking, considering patterns, and collecting quotes attached to themes. The interview data was interpreted as narrative, consistent with the constructivist view taken within the study.

The reporting and interpretation from the group interviews with the Aboriginal graduate students was integrated into the dissertation to provide student views of knowledge and knowledge production, as well as experiences in using library systems. Student participation was reported in two chapters: Section 4.2.2 Student Voices: Experiences in the Library in Chapter 4 Knowledge Organization as Infrastructure: Consequences for Indigenous Learners and Section 5.2 Student Voices: On the Ground with Research in Chapter 5 What is Indigenous Knowledge? Conceptualizing a Domain. The related appendices are Appendix A: Interview Participants, Dates and Places, and Appendix C: Guiding Questions for Group Interviews. The findings from the expert interviews with the Indigenous designers were reported in Chapter 6 Indigenous Knowledge Organization: Conceptualizing a Field and Chapter 7 Indigenous Design Space, Purpose and Evaluation. Consideration of both the student and the designer participant interviews is reflected throughout the dissertation, and shapes the discussions in Chapter 8 Adding to the Rafters, and Chapter 9 Indigenous Knowledge Organization @ Cultural Interface.

3.6 Experiences of Researcher

My experience during the conduct of this study has been that the research design was emergent, and as Guba and Lincoln predicted while “positivists begin an inquiry knowing (in principle) what they don’t know, constructivists typically face the prospect of not knowing
what it is they don’t know” (1989, p. 175). The dissertation is presented as a process that was made up of a series of empirical and conceptual enquiries (domain analyses) and as a theoretical dialogue. The research questions have remained the same as those posed in the original research proposal, however my understanding of their meaning(s) has changed over the course of the study. I came to view sources of evidence (data) as unbounded: discourse, text (including writing, speech, visual image or any combination of these), interpretation, intuition, and reflection, all constitute data from a constructivist perspective. In consideration of the purposes and questions of the study, discourse, interpretation, and empirical information assumed the same status as data (Masha, 2007). The data were interwoven throughout the dissertation by means of (re)interpretation, analysis, and reflection (Alvesson & Sköldberg, 2000).

The development of these understandings has had structural implications and the dissertation does not follow a standard dissertation format. The literature review was not a single preliminary product serving as an introduction to the research problem, although the dissertation conforms to this research paradigm that ascribes the literature review a lead role in the dissertation in order to identify similar research studies. I also viewed the literature as data and as an object of study; for example, as reflected in Table 3.1: Four Domain Analyses @ Cultural Interface (above), each domain analysis integrated secondary literature with empirical information sources. Consistent with a “multisubjectival” view, I considered myself as a researcher and author; as a participant and a learner in the study; and as a subject and agent within the domain of Indigenous knowledge organization. The dissertation itself I view as part of an Indigenous studies knowledge domain.
The interviews with the graduate student participants conducted in 2009 continued to influence my thinking during the writing of the report, and motivated my efforts to develop a more informed theoretical analysis. Rereading the interviews with the designers I was aware that my own fears of reproducing a dominant narrative or of creating “just one more colonial artifact” were also echoed in the cautions (and the cautious encouragement) of the designers as they counselled: “We have to be careful” (Gene Joseph, personal communication, April 20, 2009); “There are boundaries in doing this type of research” (Cheryl Metoyer, personal communication, January 20, 2009); “We have to—we can’t not do it” (John D. Berry, personal communication, January 14, 2009); “Perhaps you need to be brave” (Ann Reweti, personal communication, March 8, 2009).

3.7 Summary

I conducted a series of enquiries using the methodology, domain analysis @ Cultural Interface, that was constructed for the purpose of examining different dimensions of the domain of Indigenous knowledge in post-secondary education: the first critically examined mainstream knowledge organization from Indigenous perspectives; the second examined the discourse of Indigenous knowledge(s) as an object(s) of study of the discipline knowledge organization; the third conceptualized the emergent theory and practice of knowledge organization in Indigenous contexts as a field of study; and the fourth studied the experiences of First Nations, Aboriginal, and Métis graduate students with library knowledge organization systems. I used multiple sources of data: expert interviews with nine Indigenous designers; group discussions with First Nations, Aboriginal, and Métis graduate students at the University of British Columbia; theoretical and descriptive literatures from the fields of Indigenous education, library and information science, and the sociology of
knowledge; and reflective practice. Table 3.1 summarized the four domain analyses at Cultural Interface, including the sources of information, the research question addressed, and the findings in chapters four to seven.

This chapter has described the research design, including the epistemology, ontology, axiology, and methodology developed for the study. Consistent with an interdisciplinary approach and Nakata’s guiding principle to harness the disciplines in service of Indigenous interests, it synthesized theoretical approaches from two disciplines: Indigenous education and information science. The resulting construction, domain analysis at Cultural Interface, also addressed one of the study’s research sub-questions, “What elements of library knowledge organization theory are hospitable to interpretation from Indigenous standpoints?” through demonstrating an integration of Indigenous theory and knowledge organization theory. Guided by the research sensibility of Indigenous Métissage it has aimed to surface, engage with, and apply the work of Indigenous scholars, including academic scholars, practitioner scholars, and student scholars. The Indigenous theoretical location assembled for the study is also applied in developing a theoretical framework for Indigenous knowledge organization at a particular type of site, an Aboriginal academic library in Canada. It is applied in this way in Chapter 9: Indigenous Knowledge Organization at Cultural Interface. It is noted that this conceptualization has been constructed incrementally based on selected theorists, particular participants, experiences, and literatures and is only one of many possible interpretive frameworks for knowledge organization.
Part One: NAMING

Naming at its most general level is interpreted as Indigenous self-representation. This section comprises two chapters concerned with naming through the processes of knowledge organization. Chapter 4 Knowledge Organization as Infrastructure: Consequences and New Directions is a critical study that identifies the operation of power within knowledge organization and the ways in which Indigenous self-representation may be undermined through it. It names negative consequences of KOS for Indigenous learners and all learners, as well as pointing to new directions. Chapter 5 What is Indigenous Knowledge? Conceptualizing a Domain studies the multiple ways in which Indigenous scholars conceptualize and apply Indigenous knowledge and Indigenous discourses in naming the world. These multiple discourses are interpreted as constituting the dynamic domain of Indigenous knowledge within post-secondary education.
Chapter 4  Knowledge Organization as Infrastructure: Consequences and New Directions

The library and information science literature identifies inadequacies in the dominant knowledge organization systems (KOS), such as the Library of Congress (LC) and the Dewey Decimal Classification (DDC), for Indigenous representation (S. Simpson, 2005). This chapter extends the critical literature by presenting a theoretical analysis of the power relations underlying these inadequacies and of the consequences for Indigenous learners. I draw on the concept of infrastructure (Bowker & Star, 1999), the analysis of Indigenous critical scholars, and group interviews with nine graduate students who self-identify as First Nations, Métis, or Aboriginal people to examine knowledge organization (KO), its consequences, and its possibilities. The chapter addresses the dual dimensions of research sub-question 1, “How do knowledge organization systems function as infrastructure and to what effects for Indigenous learners?”

The first section, Theorizing Power, presents an analysis of the ways in which power operates through classification systems embedded in social infrastructure (Bowker & Star, 1999). I draw an analogy between Bowker and Star’s concept of infrastructure and the concepts of hidden curriculum and official knowledge that are employed by Indigenous critical theorists to examine the consequences of mainstream education for Indigenous learners (Calliou, 1999; Hampton, 2000). Positioning KO as an integral part of educational infrastructure opens it to analysis using the lens of Indigenous critical pedagogy (Lomawaima, 2004; Manitoba Indian Brotherhood, 1974; Pidgeon, 2008), which identifies it as an access gatekeeper. Drawing on Pidgeon’s analysis (2008) which holds institutions accountable and responsible for addressing gatekeepers (barriers) to Aboriginal learners and
Indigenous education, I suggest a similar institutional accountability regarding the role of knowledge organization as a systemic barrier to Indigenous education.

The second section, Consequences of Knowledge Organization, demonstrates the ways in which the dominant knowledge organization systems operate as barriers to Aboriginal learners and all learners. It identifies four salient themes emerging from the secondary literature by Indigenous educators that indicate ways in which KOS impede Indigenous education: (1) the silencing of Indigenous voice, (2) theft of Indigenous heritage, (3) detriment to Indigenous wellbeing, and (4) contributing to the global spread of this harm through information networks. These themes were amplified in the group discussions with the Aboriginal graduate students who are users of academic libraries and library KOS and who shared a diversity of experience and perspective. The experiences of Aboriginal graduate students were interpreted as indicating a range of social, cultural, educational, and economic consequences for Indigenous learners. The graduate student discussions also generated expanded conceptualizations of knowledge and possibilities for new directions in knowledge organization.

4.1 Theorizing Power: Knowledge Organization as Infrastructure

In a widely cited work, *Sorting Things Out: Classification and its Consequences*, Bowker and Star (1999) analyze classification as infrastructure and consider its effects. Although as an underlying foundation these systems are largely invisible, they have powerful influences on our daily lives. They both reflect and embody concentrations of power and function as instruments through which access to knowledge is managed (1999). Case studies of apartheid race classification in South Africa (1950–1990) resonate with the classification of Native American tribes and individuals through state-imposed categories of membership
to demonstrate the ways in which classifications shape and constrain people’s lives (Bowker & Star, 1999). Every established infrastructure carries a narrative of its own genesis related to who made its design decisions, what was lost or omitted in those decisions, and whose interests it serves. It may be read for cultural values, as well as for the assumptions embedded in what is taken for granted.

Bowker and Star shift understandings of classification from a predominant decontextualized and cognitive model to one that recognizes the situated, collective and historically contingent nature of classification systems anchored in social practice and politics. They become taken for granted when the contingencies of their creation and their situated nature are stripped away and they are so commonplace that people do not notice them (p. 299). For example, in urban spaces we take for granted objects, such as light switches and running water, and it requires an effort to think about contexts where these objects are not naturalized in this way. Objects can be defined as anything, including tools or artifacts, techniques and ideas, stories and memories, that is treated as consequential by members of a community (Bowker & Star, 1999, p. 298). They become naturalized within specific social worlds, and we are all understood as belonging to multiple social worlds (communities of practice).

As an example, we may be members to varying degrees at various times within disciplinary, political, ethnic, or religious communities (Bowker & Star, 1999, p. 294). These types of communities are in part defined through co-use of objects. The same object may inhabit multiple communities and have both local and shared meanings (p. 293). In a similar way, people may have memberships in multiple communities and the nature of the membership is a process that shifts along a continuum having elements of both ambiguity
and continuity. The interactions of multiplicity and heterogeneity of people and things may be constructive or coercive. In the example of race classifications Bowker and Star demonstrate the ways in which an object (classification) causes violence and harm, and has material effects on people’s lives. They suggest that the materiality of anything, whether it is an idea, an action, a hammer, or a gun, is drawn from the consequences of its situation (1999, p. 289). Every classification by definition valorizes some point of view and silences another; its consequences are known through the advantages or disadvantages that it may give or take for any individual or group. Because it is consequential in this way, it is ethically and politically charged and therefore the choice of a classification system is viewed as an ethical choice (Bowker & Star, 1999). However, discussions of power and knowledge are often absent from the highly formal discussions of classification theory, and there are few empirical studies of the use or impact of classification schemes (Bowker & Star, 2000, p. 148) both of which are addressed in this chapter.

Classification systems function within social infrastructure and embody the characteristics of infrastructure, which include: (1) it is typically embedded in other social arrangements, technologies and structures; (2) it is transparent in that it invisibly supports tasks and does not have to be reinvented or reassembled each time; (3) it has a temporal and spatial reach that extends beyond a single event or site; (4) because it is inscribed in the conventions of everyday practice, it is learned as part of membership in a group, and is taken for granted by the group; (5) it shapes and is shaped by these conventions of a community of practice, and inherits legacy systems from it; (6) it embodies standards and becomes transparent by connecting with other infrastructures and adopting its tools in standardized ways; (7) it develops from an installed base and is both strengthened and constrained by that
existing base; (8) because it functions in the background and is normally invisible, it tends to become visible only when breaking down; and (9) it is big, layered, and complex, carries different meanings in local contexts, and may only be changed incrementally, not from above or globally. Changes take time, negotiation, and adjustment with other aspects of the infrastructure (Bowker & Star, 1999, pp. 34–35; Star & Ruhleder, 1996). Infrastructure is both material and symbolic. For example, it manifests physically in the built environment in material objects such as plugs and silicon chips, and conceptually in patterns and resources for organizing abstractions (Bowker & Star, 2000, p. 152). This material-symbolic field is also exemplified in the counterpoising of standards and technical networks with politics and knowledge production (Bowker & Star, 1999).

4.1.1 The (Hidden) Curriculum and Textbooks

The idea that culture, value, and advantage are transmitted through underlying social infrastructure is also present in the discourse of critical pedagogy in education (Apple, 2000; Giroux, 1983; Hampton, 2000). First Nations educator Eber Hampton (Chickasaw, Oklahoma) argues that educational institutions teach about Aboriginal people through a hidden curriculum, one that tacitly transmits dominant attitudes, values, and beliefs about the legitimacy, credibility, and place of Aboriginal peoples in Canada. He decries the fact that all leaders in public education, including policy makers, bureaucrats, administrators and teachers, go through an educational process from kindergarten to graduate school that conveys a dominant, Eurocentric tradition: a tradition presumed to be universal, truthful, and right (Hampton, 2000). Educator Sharilyn Calliou (Michel First Nation) observes that the regular agenda of the school day is enacted through the use of curricular resources that are not politically, spiritually, psychologically, or otherwise neutral (1999). This type of taken-
for-granted system that transmits and organizes concepts and their interrelationships shapes how we come to know and understand the world is congruent with the concept of infrastructure: an educational infrastructure.

The dominant tradition that is transmitted implicitly through the hidden curriculum is also transmitted formally through textbooks that function as conveyors of official knowledge, the knowledge sanctioned by educational institutions. A textbook is not just any book because it has prescriptive characteristics: it is authorized by institutions, promoted by instructors, and is required reading for students. To the extent that textbooks are integrated into curriculum, they contribute to establishing the organized knowledge system of society and to shaping what a society recognizes as legitimate and truthful (Apple, 2000, p. 46).

An early content analysis of Aboriginal people in textbooks, *The Shocking Truth about Indians in Textbooks* (Manitoba Indian Brotherhood [MIB], 1974), concluded that social studies textbooks in Canada are derogatory, incomplete, and distorted as regards Indian people. Similarly, the seminal policy document, *Indian Control of Indian Education*, (National Indian Brotherhood, 1972) found that Aboriginal learners will “continue to be strangers in Canadian classrooms” until the curriculum recognizes Aboriginal customs, values, languages, and the Aboriginal contributions to Canadian society (p. 26). Although these early studies were conducted during the 1970s, almost forty years later current research continues to report exclusions and stereotypical portrayals of Aboriginal people in textbooks (Clark, 2007; Fixico, 1997; Loewen, 1995). Consequently Aboriginal learners continue to be “systematically excluded from, marginalized within or brutalized by curricular content” and

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19 It identified ten types of bias: bias by omission, defamation, disparagement, cumulative implication, lack of validity, inertia, obliteration, disembodiment, lack of concreteness, lack of comprehensiveness (1974, p. 1a).
the perceptions of all students and their teachers are shaped by these representations (Lomawaima, 2004, p. 452).

4.1.2 Knowledge Organization as Educational Infrastructure

Based on these findings, I suggest firstly that the mainstream library knowledge organization systems (KOS), such as the Library of Congress Classification and Subject Headings, and the Dewey Decimal Classification, are integral to educational and social infrastructure, and secondly that they operate both as hidden curriculum and as a text(book) in transmitting dominant attitudes, values, and beliefs that undermine the legitimacy, credibility, and place of Aboriginal peoples in Canada. KOS are frequently invisible or taken for granted as transparent and neutral tools. This naturalization obscures the ways in which they shape educational processes and institutions, entrench existing power relations implicitly (through structure) and explicitly (through semantics), and convey the dominant culture’s beliefs and values about Aboriginal people. That is, KOS function as hidden curriculum in reflecting and reproducing dominant accounts through the language and logic of library classification and description. This dynamic of the hidden curriculum (Hampton, 2000) concealed in infrastructure (Bowker & Star, 1999) is also described in various ways by Indigenous theorists. Dwayne Donald conceptualizes it as “the curriculum of the fort” in Canada (Donald, 2009b). Martin Nakata articulates it as the discursive construction of Indigenous identity (Nakata, 2007b).

KOS function materially and symbolically as textbooks in the authority and influence they carry in transmitting official knowledge and in their prescriptive nature. They impose rules for search and retrieval, constrain alternative vocabularies, and are regulated by policy and standards bodies that are sanctioned by institutions. They reflect and reproduce
dominant curricular structure and content, and operate as “required reading” in that it is necessary for users to absorb and replicate their structure and semantics in order to navigate them (form search strategies) and find resources in library collections. Indexers are similarly constrained by these strictures. KOS become embedded in educational infrastructure through both reflecting and mapping curricular content and once embedded in this way continue to shape future thought. Read through the lens of Indigenous critical pedagogy (cf. Lomawaima, 2004; Manitoba Indian Brotherhood, 1974), KOS function as hidden curriculum and textbook embedded in layered educational and social infrastructures. I suggest that they have a range of negative consequences for Indigenous learners who are “systematically excluded from and marginalized” (Lomawaima, 2004, p. 452) by them.

In examining access gatekeepers (barriers) to Aboriginal student success, Indigenous researcher Michelle Pidgeon (2008) cites examples such as a required high school course that is unavailable in rural school systems, recruitment materials that do not represent Aboriginal students, or recruitment personnel who are not culturally aware (Pidgeon, 2008, p. 8). I suggest that KOS too function as access gatekeepers to the extent that they do not represent Aboriginal accounts and perspectives, or recognize contemporary Indigenous scholarship. In this way they are gatekeepers to Aboriginal student success in addition to undermining diverse scholarship and knowledge production. Drawing on Pidgeon (2008), I suggest that KOS function as gatekeepers at an institutional level as institutional gatekeepers. Therefore institutions may be assigned accountability and responsibility for addressing these barriers, and libraries assigned responsibility for the stewardship of existing Indigenous collections, development of new Indigenous collections, and effective access to those collections vis-à-vis their role in supporting Indigenous education, access, scholarship, and research.
4.1.3 Who is the Public? Gatekeeping at the Library

Although librarians typically disavow any agency in the production of knowledge, contrary to the profession’s avowed core values (cf. American Library Association, 2011), libraries are not always innocent shepherds of access, democratization, and the public good. Libraries have historically functioned to perpetuate the dominant social, political, and intellectual cultures that have been sustained, at least in part, through a professional tendency to claim a non-existent neutrality that is without political implications and to deny professional and personal agency in the production of knowledge (Wiegand, 1988). Existing power relations underlie the professional practices of selecting, describing, and organizing library materials and disseminating classificatory/representational abstractions.

Rhonda Harris Taylor (Choctaw) argues that librarians assign value through determining what is worth collecting and preserving, embodying beliefs about what is “authentic” or “scientific” and deciding what is provided access (or not) through subject description (2001, p. 25). Library collections and their representation in knowledge organization systems also affect the interpretation of knowledge (Moorcroft, 1993). They shape current and future research patterns, and the ways in which students and scholars come to view themselves, and their relation to both their academic community and to the larger society. In these ways, the professional practice of librarians contributes to the maintenance of an elite heritage (Manoff, 1992, pp. 2–4). These often unacknowledged politics of cataloguing (Bowker & Star, 1999) manifest moral and ethical choices that in turn influence people’s identities, aspirations and dignity (Manoff, 1992).

In considering the ways in which library policy and practice exclude Indigenous people, Dr. Cheryl Metoyer (Cherokee) asks, “Who is the public?” Metoyer points out that
an often unspoken and exclusive conceptualization of the public bars those outside official sanction. It underpins the mandates and goals of libraries as public institutions, and has related policy and research implications (Hernan & Metoyer-Duran, 1992; Metoyer-Duran, 1993a). Similarly, Olson’s analysis (2000) reveals that an exclusive and historical conceptualization of the public is embedded in *Cutter’s Rules for the Dictionary Catalog* (1904), a formative library standard underpinning the Library of Congress Subject Headings. Cutter’s rules establish “the public” as the arbiter for the language used in the library catalogue, instructing cataloguers to select terminology in accord with that which “will probably be first looked under by the class of people who use the library” (Olson, 2000, p. 55). This 19th-century conceptualization of the public as an exclusive homogeneous class has become embedded in contemporary cataloguing policy and practice (Olson, 2000). It exemplifies one way in which the dominant KOS continue to tacitly transmit the ideological views of their 19th-century origins (Lincoln, 2003, p. 281).

From Martin Nakata’s (2007b) perspective too, this would constitute another example of the way in which beliefs and attitudes now considered obsolete inexorably shape contemporary educational policy and procedure. As a consequence institutional doors and collections are closed to those deigned outside their boundaries (Metoyer-Duran, 1993a; Olson, 2000). As Māori scholar Linda Tuhiwai Smith observes, it simultaneously presents the views of Western knowledge as a superior knowledge and silences Indigenous ways of knowing and Indigenous knowledge (1999, p.15), and obscures the historical realities of colonialism (Moorcroft, 1993). The exclusion of whole groups of people from intellectual, literary, and cultural canons and the supporting practice in libraries directly affects the ways in which excluded individuals and groups perceive themselves and their histories (Wiegand,
1988). In these ways, classifications both reflect and embody concentrations of power and function as instruments through which access to knowledge is managed (Bowker & Star, 1999). However, although the educational infrastructure that carries the dominant cultural narrative is pervasive, Indigenous resistances and creativity disrupt exclusive policy and practice of public institutions in a variety of ways.

### 4.1.4 Resistances, Mediations, and Boundary Objects

Increasing Indigenous demand for access to, and in some cases control of access to and control of handling of, Indigenous heritage and historic material (cultural and intellectual property) held in public institutions is shifting institutional policy (Jane Anderson, 2005, p. 72). Indigenous deconstruction and rewriting of narratives and histories produced from and by public institutions and their collections are changing dominant discourses (L. T. Smith, 1999). Indigenous initiatives in the practice of knowledge organization have rejected or reframed the dominant KOS and their standards to develop a range of Indigenous approaches to design (discussed in Chapter 6). These approaches range from adaptations and innovations to the slow gradual change of the ubiquitous mainstream systems. The diversity of Indigenous resistances and mediations is indicative of differing kinds of Indigenous interests, various levels of responsiveness of institutions, and the porous nature of information systems. These contextual elements allow space for Indigenous accounts and representations to change the discourse and shape behaviour.

Within this constellation of discourses, institutions, and people as agents and interpreters who themselves are part of multiple communities, there are objects that sometimes reside in several communities of practice and meet the informational requirements of each of them. Bowker and Star call these *boundary objects* (1999, p. 297). Boundary
objects may be abstract or concrete and serve as a means of cooperation across social worlds because they have both local and shared meaning (p. 293). They are “plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use and become strongly structured in individual-site use” (p. 297). Thus, they are both ambiguous and constant (p. 16). Classification systems in libraries as information technologies might be used to communicate across boundaries and meet the needs of heterogeneous communities—some cooperative and some coercive (p. 286). Bowker and Star suggest that classifications can function as boundary objects and facilitate co-operation across social worlds (1999, p. 15).

4.2 Effects of Knowledge Organization Systems for Indigenous Learners

This analysis of the ways in which knowledge organization systems (KOS) function as infrastructure establishes a framework for further examining the ways in which they are consequential for Aboriginal learners. The following section examines the group discussions with nine graduate students who identify as First Nations, Aboriginal, or Métis people. It surfaces the coercive characteristics of KOS in libraries and their effects for Aboriginal learners and Indigenous education. Next, inspired by the graduate students who envisioned new directions for knowledge, I consider the cooperative possibilities of infrastructure, such as the potential of boundary objects, that might serve Indigenous interests and hold promise for Indigenous education.
4.2.1 The Literature of Indigenous Critique

An extensive library and information science (LIS) literature critiques bias in the historical and global adoption of the dominant knowledge organization systems (S. Simpson, 2005). Indigenous scholars and practitioners in Canada (Blake et al., 2004; Joseph, 1995; Lawson, 2004; D. Lee, 2001), the United States (Mahsetky Poolaw, 2000; R. Taylor, 2001; Webster, 2005), New Zealand (de Barry, 1998; Irwin & Willis, 1989; MacDonald, 1993; S. Simpson, 2005; Szekely, 1997), and Australia (Fourmile, 1989; Schilling & Hausia, 2001) ground and expand the critique. Mechanisms of bias are identified as lack of specificity, omission, lack of relevance, lack of recognition of tribal groups, lumping Indigenous populations into a monolithic whole, and the representation of Indigenous people as extinct or remnants of historic groups “lost in the past,” for example through the relegation of Indigenous people to the LC class E 98 for North American History (Carter, 2002, p. 25).

The continued use of the term Indians is considered offensive and inaccurate, and the reliance on anthropological terminology for names of cultural and tribal groups and concepts undermines Indigenous self-identification and Indigenous self-representation (Berman, 1993, 1995; Lincoln, 1987, 2003; Martens, 2006; G. Martin, 1995; Moorcroft, 1992, 1993; Olson, 2002; Strottman, 2007; Webster & Doyle, 2008; Young & Doolittle, 1994). National library and archives institutions are criticized for maintaining classifications that are inadequate for describing material specific to Indigenous cultures,

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histories, institutions, and languages (S. Simpson, 2005). An early recommendation for improvements to LC (Yeh, 1971) elicited a dismissive response from a Library of Congress cataloguer who defended the legitimacy of representing “modern Indians as remnants of a vast group of peoples who once populated the entire New World” (Frosio, 1971, p. 129). In 2007, the call continued for the dominant KOS to demonstrate social and political leadership in changing the 19th-century ideologies embedded in their classifications and descriptions (Strottman, 2007). However, as librarian Deborah Lee (Cree Mohawk) reports, the late David Farris stated that his counterparts at the Library of Congress do not “recognize problems with the existing headings as a large enough concern to act on” (Lee, 2011, p. 8 cites a personal email from David Farris, August 4, 2009).

4.2.1.1 Silencing and Theft

Two prominent themes in the international professional literature are the silencing of Indigenous voice and the theft of Indigenous knowledge (Fourmile, 1989; Hagan, 1978; Irwin & Willis, 1989; Joseph, 1995; Joseph & Lawson, 2003; Lawson, 2004; Moorcroft, 1993; Schilling & Hausia, 2001; Willmot, 1985). They are profiled in articles such as “The Construction of Silence” (Moorcroft, 1993) and in Henrietta Fourmile’s (Gimuy Walubarra Yidinji) analysis of being held captive in the archive (1989). Scholars decry the lack of intellectual access to Aboriginal cultural heritage and historical records in national repositories (Moorcroft, 1993; Willmot, 1985): “The hundreds of thousands of books, manuscripts, films, pictures and recordings of our people and our culture have been kept in

21 The late David Farris was an editor of the Canadian Subject Headings (CSH), and was receptive to Aboriginal concerns regarding representation.
libraries and museums and other institutions away from the people who own that culture and knowledge” (Schilling & Hausia, 2001, p. 18).

Māori scholars view the systemic barriers to access Māori materials as institutional and personal racism against Māori people (MacDonald, 1993, p. 22; S. Simpson, 2005; Szekely, 1997, p. 62). Similarly a Library and Archives Canada community consultation finds that issues of “racism and ignorance are raised by present cataloguing standards and terminology” (Blake et al., 2004, p. 23). In Australia, Moorcroft argues historical ignorance of the country’s past and the place of Aboriginal Australians in it contributes to the racism that is evident in Australia today (Moorcroft, 1993, p. 30). Racism is understood as both an expressed hostility and the consequences that follow from conscious or unconscious actions that defend privileged groups, as well as institutional racism defined as systematic discrimination against identifiable groups through means such as institutional rules (Moorcroft, 1993). One consequence of failing to adequately represent Indigenous materials in library catalogues is that all students, Aboriginal and non-Aboriginal, lack accurate information about Aboriginal histories including the Aboriginal persistence in resisting colonization (Moorcroft, 1992).

Library materials documenting the cultural and intellectual legacies of Indigenous peoples are rendered inaccessible by inadequate KOS that result in diminishing the potential of these resources to accrue cultural, economic, social, and educational benefits to Indigenous peoples. These include cultural continuance through cultural and language revitalization, rights and titles claims (Burns et al., 2009; Hagan, 1978; Irwin & Willis, 1989; Nakata, Byrne, V. Nakata, & Gardiner, 2005; S. Simpson, 2005), and the potential to sustain contemporary Indigenous expressions of identity and to strengthen Indigenous physical,
mental, and spiritual wellbeing (Joseph, 1995, p. 37; Lawson, 2004; Schilling & Hausia, 2001, p. 21). This inaccessibility results in the charge of theft of cultural and intellectual property being levelled at public collecting institutions that are effectively gatekeeping Indigenous heritage and contemporary Indigenous scholarship.

4.2.1.2 Information Policy

In Australia, recognition of Indigenous land rights is changing the ways libraries and archives treat their documents relating to Indigenous cultures. The Aboriginal Land Rights (Northern Territory) Act, (1976) (Cth) and the Commonwealth Native Title Act (1993) legislate the provision of adequate access to library and archival materials that may be used as evidence in support of Indigenous land claims (Koch, 2008, p.156). In New Zealand, the burgeoning research literature on the relationship between Māori and libraries, including the development of Ngā Ūpoku Tukutuku (Māori Subject Headings), coincides with the establishment of the Waitangi Tribunal (1975), which is intended to adjudicate breaches of the Treaty of Waitangi by the Crown (Lilley, 2008). In Hawaii and Alaska, legislative provisions for Indigenous language education have resulted in changes to library practices relating to the collection and provision of access to Indigenous language materials (Ka’awa, 2001; Lincoln, 1987, 2003). However, in Canada, no record of similar legislation was found that might encourage public institutions, including university libraries, to improve access to materials relating to Indigenous knowledge and Indigenous heritage within their collections and thereby address a systemic barrier to Aboriginal learners and Indigenous education.
4.2.1.3 Global Reach

As Olson (2002) points out, the dominant KOS are used on a global scale and they have an unprecedented power to overwrite local knowledges and disseminate misrepresentations of Aboriginal people worldwide. The Dewey Decimal Classification (DDC), used in over 135 countries and translated into over 30 languages, is “the world’s most widely used classification system” (Online Computer Library Center [OCLC], 2007). The Library of Congress Classification aims to organize and classify the world’s knowledge, and the Library of Congress Subject Headings (LCSH) are gradually becoming an “international subject language” (Olson, 2002, p. 13). Shared bibliographic databases known as utilities facilitate the international sharing of catalogue records among libraries. While the global dissemination of standardized knowledge organization systems enables unprecedented sharing of knowledge, it also effectively eclipses local knowledges and establishes the cultural perspectives of mainstream North America as a global norm (Kim, 2003; Olson 2002). In doing so these systems reproduce harm to Indigenous people at national and international levels. They stymie the achievements of Indigenous people in asserting the right to preserve Indigenous heritage at international levels through mechanisms such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), Article 13.1:

> Indigenous people have the right to revitalize, use, develop and transmit to future generations, their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons. (United Nations, 2007, Article 13.1)

Although Article 13.1 was adopted by the United Nations General Assembly on September 13, 2007, and latterly endorsed by Canada on November 12, 2010, the realization of these rights and aspirations would require significant modification of the ubiquitous
knowledge organization systems that dominate North American and increasingly international bibliographic control.

The scarce library research examining the effects of KOS on Indigenous learners in higher education reports a lack of relevant Aboriginal collections, and a lack of intellectual access to those collections which is found to be detrimental to Aboriginal learners’ research, scholarship, and sense of belonging at post-secondary institutions in Canada (D. Lee, 2001), the United States (Patterson, 1992), New Zealand (Irwin & Willis, 1989), and Australia (Novak & Robinson, 1998). A study at the University of Queensland in Australia finds that some Aboriginal university students experience physical and psychological intimidation in libraries through alienation of culture and inhospitable spaces. The students report experiencing the denial of their histories and observed that “white Australia” rests upon (an unacknowledged) “black past” (Novak & Robinson, 1998). In New Zealand, Māori students criticize university libraries for failing in their role as a national educational resource (Irwin & Willis, 1989). In the USA, Metoyer reports a dearth of research on the information needs, expectations, and satisfaction of academic library and information services to culturally diverse groups (Metoyer, 2000). There is a need for the articulation of clear problem statements, objectives, and research questions, including recognition of the potential artificiality and subjectivity of “preassigned ethnic and racial classifications” in this field of research (Metoyer, 2000, p. 158).

4.3 Student Voices: Experiences in the Library

The graduate student participants, who identify as First Nations, Aboriginal, or Métis people at the University of British Columbia, offered an “on the ground” users’ view of knowledge organization in academic libraries. The student discussions echoed the themes
identified in the literature: silencing, theft, and detriment to Indigenous scholars and scholarship. There was awareness that much of the Native American material in the university libraries is found in the Library of Congress History class (Class E98 “History of the Americas”), which reproduces the dominant narrative of Indigenous people locked in the past: a ubiquitous stereotype. One student dryly commented, “E98. So that’s the obvious example—right?—of who the information system is really organized for” (2: Kyle).

Most of the graduate students were familiar with standard library search techniques, such as Boolean operators and truncation, and the use of bibliographic management software. They relied on Google for quick information and used various means of tracing citations of known scholars. Despite knowledge of library information systems and skilled use of them, almost all of the graduate students reported difficulties in finding relevant research for their literature reviews and research, and described remarkably similar experiences: (1) search the library information systems and find little or no relevant material; (2) reiterate the search using various strategies; (3) ultimately end up wondering whether the failure to find relevant material is a result of their own research skills or an absence of Indigenous scholarship in their field(s).

A key characteristic in this protracted process is lack of certainty: it is difficult to determine if there are no materials, if there are inadequate systems (KOS) for finding materials, or if the student research skills might be improved. It is possible that all three factors are operational. The focus of this chapter is on the inadequacies of the KOS and on the ways in which these inadequacies are consequential for Aboriginal learners.
4.3.1 Student Experience: Is It There? I Can’t Find It

Seven of the nine graduate students explicitly remarked on the absence of library materials (of all types and formats) relevant to their areas of Aboriginal research.

And doing research here [at UBC]…I can’t find anything…. I’m looking for best evidence or research-based practices…in this area, and there’s nothing specific to [Aboriginal], and I’ve been really disappointed. And I don’t know if it’s my own inability to access the resources. (1: Alex)

On my topic there’s hardly anything written. So, and I think that is the biggest struggle, is you want to look for stuff and it doesn’t exist. You’re like, “Well, why isn’t there something on that? It has to be somewhere.” (1: Jessie)

I really had a hard time to locate anything, and I think part of it is because there’s not a lot written on the topic yet. (1: Jamie)

Really…there’s actually very little work done around it. Very little work particularly in Canada. Almost nothing [laughs] in terms of Indigenous. (2: Kyle)

And then I would think, “Well, there must be more.” And what ended up happening was…I would go back to the catalogue and I would look and I would still go back to the same place. (2: Carson)

Yeah, I’ve had a lot of problems finding Aboriginal literature, I guess. But, so I just have to take it from general [literature]…I don’t think it’s being dealt with in a culturally appropriate way…I may have to go to the States and look at some things because Canada’s quite quiet. (1: Teagan)

But what I find is…a lot of it tends to be sort of this waving your hands kind of stuff. Some sort of pan-Indian concept of what it means to be Native. (1: Frances)

As the graduate students discussed the difficulties in finding relevant research literature, they also generated strategies to help each other in this library hunt. One strategy was to expand the scope and suggestions included: “Try Africa…Try Australia…Try Web of Science…Try Chicano/a…Try Mexican”…“It means you have to broaden the scope and look for experiential things.” One of the problems with expanding the scope or using multiple synonyms, or near synonyms, is the lack of precision in the search: the search retrieves too many hits and the relevance is low.
4.3.2 Glut: Too Many Words

The students specifically cited the retrieval problems encountered due to the existence of multiple terms for the collective concept of “Indigenous-people-in-Canada.”

There are a number of words I have to use to find information, like First Nations, Indian, Native, Aboriginal. (1: Jamie)

Adding to your list, Native American, Chicano, Mexican. (1: Frances)

I typed in...Aboriginal, Indigenous, North American Native, Native. Never tried Indian. And I get...some publications that the government put out, but they’re more statistical in nature, so they’re just giving you demographics, you know, that kind of stuff. (1: Alex)

There’s certain words that you have to use. And I didn’t learn that until I was already transcribing all my interviews. I was like, “Oh, that might have helped me a year and a half ago” if I knew that there were specific words—that it’s all American terminology. (1: Jessie)

At the same time, there was also a sense that any collective terminology for Indigenous people is contentious. One student commented that the term “Indian” is derogatory, and another student responded that the terms “Native” and “Aboriginal” as well as “Indian” are derogatory terms. The whole concept of any collective term for Indigenous peoples some considered offensive, inaccurate, and a residue of colonialism because Indigenous peoples are not a homogenous group, and any collective terminology is highly problematic. One student observed that not only do Aboriginal students feel offended by the collective term “Indians of North America” but reference librarians may feel embarrassed being forced to use obsolete terminology that they know offends the students. “Sometimes when I go to the librarian and ask for a bit of help, a few people apologize for having to use the word “Indian,” because it’s so derogatory” (1: Jamie).
4.3.3 Absence: No Words

A related concern was the absence of accurate, contemporary, and controlled terminology for names of nations, and lack of an appropriate level of specificity in terminology resulting in too few results. As a consequence, the students experienced not being able to find library materials about their specific nation or community.

When I go into the library and I pull up the name of my nation, hardly anything comes up. (1: Jamie)

We don’t even know how many theses and dissertations or reports, government or NGOs on [my First Nation] people, or in [my First Nation] areas of all Indigenous peoples and those areas. It would be neat to have a section that just said, “This is all the research pertinent to the people of the [my First Nation].” Or of the Nlaka’pamux, or any of forty other tribes that are out there in BC. I mean, it doesn’t have to be organized in the library like that, but it would be nice to have a list of those things. (1: Frances)

In addition, local Indigenous place names were often absent: “local names are often not on the map at all, and orthography pieces are not there either” (2: Sage). Previous student discussion about the interrelationships between identity and stolen lands and natural resources led into a discussion that connected material dispossessions with the notion of stolen histories, and by association stolen memory and stolen knowledge.

And I just feel like there needs to be recognition that, like it’s that stoleness that [we] spoke about, everything was just stolen. And yeah, nobody knows the history, nobody knows. It’s like even the history they’ve written about [my home town] is of the people that came to develop the [natural resources]. (1: Alex)

The scholarly literature may not address Indigenous accounts or Indigenous perspectives. This leads to the Aboriginal students (et al.) seeking alternatives and a greater reliance on grey literature, primary source materials, and community-published scholarship.

I’ve also been able to use Google to bring up materials that aren’t found in scholarly databases, and that’s been helpful for…obscure things written by communities or whatever, and also the policy websites have also been useful. (2: Kyle)
When asked about the possible value of an Indigenous knowledge organization in comparison with more cost effective mainstream systems the student thought was diverse: As Jamie stated “I think it would be better if we had things classified in a way that’s more understandable for Indigenous researchers and scholars.” However, Frances held a different opinion:

I don’t worry too much about the hierarchy of how it’s organized, because with the modern technology it seems like brute force method [works]. Like Google and Yahoo, and all of those search engines, all do it by brute force. (1: Frances)

Nonetheless the idea that the powerful “brute force” of technology obviated the need for controlled vocabulary for Indigenous materials (1: Frances) was countered later in the discussion by the observation that finding library materials (specifically dissertations and report literature) on a particular nation is difficult. “So maybe we should work on setting up an online bibliography of all things [by/for/about My Nation]” (1: Frances). There was general agreement around the room that this was a good suggestion—which was discouraging from a librarian’s perspective because, of course, that is exactly what a library catalogue is expected to do, and fails to do for Indigenous learners.

4.3.4 Not the Right Words

Student discussion raised the contentious issue of the use of an English language term for a specific First Nation: “…you have to use English to describe your own nation though. Which I don’t think is right” (1: Jessie). It also raised the problems of homonyms, for example, where the name of a cultural group, the name of a specific nation, and the name of a language are the same or similar.

I thought that the representation for [my nation] was dubious at times because, for our nation, there’s a mixture of so many tribes that are [within the cultural group], but often the books that we see are mixing the terms for [the cultural group name] with
[the nation name], and [variant spellings for the cultural group] is representative of the whole…all nations that are [within the cultural group]. Sorry. Maybe I’m not getting that right. There’s the family…and then there’s the tribe…. And then when you start talking about language, it can get very complicated. (2: Aden)

Other issues included the lack of accurate representation of orthography, and classificatory issues such as erroneous hierarchical relations, for example “if you’re looking for ‘hunting,’ you’ve got to go under ‘recreation’” (2: Sage).

4.3.4.1 Two Literacies

One student described these types of complexities as necessitating “two literacies”: one in the scholarly language of the traditional disciplines and one in the language of Indigenous scholarship, both of which are intertwined in various ways, and the latter also draws upon and informs the popular or ordinary language of communities.

There’s two literacies going on…you have your Indigenous knowledge map and then you have this scholarly database type map that looks very different…there’s a whole body of knowledge, under Indigenous knowledge or traditional knowledge [laughs] or traditional ecological knowledge. And because it’s so interdisciplinary, you know, you really have to know the EBSCOs. (2: Sage)

As the student participants pointed out, the Indigenous knowledge discourse itself is also multidisciplinary and interdisciplinary, and synonyms abound. Sage (above) observed that students researching in Indigenous contexts must undertake additional work: “all this extra work needs to happen [laughs] that I’m not sure that other knowledges have to go through or ways of studying if you’re only using the library system” (2: Sage).

Discussion of the challenges gave rise to suggestions for improvement to knowledge organization systems used in libraries and for reimagining possibilities for an information infrastructure capable of supporting Indigenous learners, scholars, and education. The
suggestions generated by the graduate students were all tied to the creation of access (broadly defined) for Indigenous learners.

4.3.5 Diverse Access: Access to Diversity

Access, broadly defined, was seen as a crucial element for the graduate students: access to diverse forms of knowledge and opinion, and diverse modes of access to knowledge bases for a wide array of users.

Well, accessibility of course is the most important thing, but accessibility in a more…diverse way as possible I think. That would be the most important thing, is to have a more diverse way of representing knowledge. (2: Aden)

Dale Turner’s thesis (2006) that “different Indigenous scholars have different jobs to do” was cited as an example of the diversity of Indigenous scholars’ information needs shaped by disciplinary and professional interests.

It’s not everybody’s job to do traditional research into medicines, for example. Some of us have to do stuff around expressions of racism in the media…. We all have different work and how we’re going to see the world is really a reflection of the work that we’re doing at the time, and that we change hats over time. (2: Kyle)

When asked if it would be useful to indicate self-identified Indigenous scholars on a library catalogue or database, there was a varied response: some students thought it would be useful and others considered the content more important than the authorship—sometimes.

On a local level for myself, there’s where I would need the names of scholars because probably, being [a First Nation person], you’d want someone to speak about a [First Nation] thing. [laughs] Not necessarily though. So on a broader perspective, I think then I wouldn’t go by the author as much, it’d be more the content. (2: Aden)

Traditional oral modes of transmission were suggested as alternative structures for archiving Indigenous knowledges and for improving ways of organizing knowledge, through providing “more of a balance between text and oral in universities” (2: Aden). The need for reliable and functional systems was also observed: “Some organizations just need help with
organizing their collections in a more conventional way that works” (2: Kyle). Stability and sustainability were seen as being key. “The strategies that I need to learn to find information need to be stable…if we can somehow codify it so that it’s reliable and sustainable, that would be my wish, and then I’m happy to learn any framework to find knowledge” (2: Kyle).

4.3.6 Native Libraries: Strengthening Connections

In considering factors that led to successful outcomes for graduate student library research, Jesse noted, “one of the things I think worked for me is to go to Native libraries” (1: Jesse). Students valued a welcoming atmosphere, exclusively Aboriginal collections, and staff who were both caring and knowledgeable. As Jesse noted, “They actually ask you, when you walk into Xwí7xwá, like, “Can I help you find something?” Whereas like you walk into the other library, they’re like, “Ah, you owe us $2.25 [laughs].”

When there’s someone sitting at that computer, that’s very helpful…. I learn a lot about different terminology, I learn a lot about how to rearrange words or, you know, how to look at something differently and how to search…. It’s because the person at the desk knows the map. (2: Carson)

Another student expressed confidence in their library research skills: “I feel pretty comfortable finding things…. I don’t really use librarians. I find that I can find the exact same information.” There was, however, exception made for a Native library:

unless I go to a Native library, they are helpful, because they understand Aboriginal books, like what’s set up and they know what books are coming out and being published…. Other librarians in other libraries, I wouldn’t bother asking. (1: Teagan)

The Aboriginal library was urged to collect and preserve public presentations of community scholarship that Elders’ were sharing at public venues. This is highly valued knowledge, and it is ephemeral if it is not recorded in ways that can be later shared and disseminated.

there are a lot of Elders who are speaking in communities right now, you know, that it’s probably the most valuable things, valuable speeches that will ever exist, and
they’re probably at conferences and they’re recorded in all sorts of ways. And so what we really need to do is find a way to capture that digitally and make it accessible to students. (2: Aden)

Although access to Indigenous materials in libraries was seen as important, it was viewed as part of much broader conceptualizations of access that I interpret as an ethic of access.

As an overarching ethic, the notion of access included access to education, access to educational institutions, and access to knowledge broadly conceived and heterogeneous. Equitable access to knowledge was seen as serving the ultimate goal of strengthening Indigenous communities and community connections. The students identified multiple types of communities in considering ways to strengthen personal, professional, and research-related interconnections. For example, connections between the academic and wider Indigenous community, and between Indigenous students and Indigenous scholars were sought. Integrative approaches to community and academic knowledge were suggested, as well as ways to identify and to promote the scholarship of Indigenous scholars more widely. One participant suggested connecting all existing (public) Aboriginal/First Nations collections of materials and online catalogues to create an Aboriginal/First Nations network of collections, and thereby ensure that access was available to all Aboriginal communities and individuals. The sharing of cataloguing data was seen as a way to serve all Aboriginal collecting institutions and foster partnerships “with other community resources or kind of complementing what some of the communities are doing” (1: Jamie).

Raising the profile of Indigenous scholarship through making it accessible and collecting and preserving public Indigenous knowledge were seen as ways to serve the education of all learners, both Aboriginal and non-Aboriginal, and to increase Aboriginal awareness among the wider public. The creation of a dedicated digital open access archive
of Indigenous knowledges was suggested as a way to foster knowledge sharing, extend access, and promote education for all. The theme of information technology threaded the discussions with the graduate students as IT was generally viewed as facilitating the student interests in access, strengthening the interrelationships among circles of community, and extending Indigenous presence and scholarship.

University knowledge was viewed as only one form of knowledge. Knowledge creation was presented as a reciprocal process that ideally would encourage all interested First Nation / Aboriginal community members to contribute not only to research but also to the classification of research. Related to classification, a citizen science project was cited as a model that could be adapted in Aboriginal contexts for Aboriginal knowledge bases: the project trains volunteers to identify and classify galaxies. This type of broad participation in knowledge creation could draw on a wide pool of people, and thereby benefit from diverse Aboriginal participation and be of benefit to Aboriginal people and communities. It was pointed out that knowledge produced at the university is only partial: “Knowledge cannot just come from the top. The community has to, at some point, be part of that knowledge pool, and I think that’s where we’ll get beyond just what we have here at the university” (2: Aden). As Frances observed, scholarship informed by Indigenous philosophies and intellectual traditions would function to broaden and rebalance the Western canon, shifting knowledge to include things that aren’t included right now—away from just being a humanitarian kind of concern to being a concern of all things that are interconnected. So the inter-generational knowledge, and the knowledge more focusing on learning from other beings other than just human beings, is being incorporated as something we can talk about as part of the Western body of knowledge, the Western canon. (1: Frances)
4.4 Discussion: Consequences and New Directions

The graduate student discussions echoed the dual theme of silencing of Indigenous voice and theft of Indigenous knowledge identified by Indigenous scholars in the literature (cf. Fourmile, 1989; Joseph, 1995; Lawson, 2004; Moorcroft, 1993). I have interpreted it as a central theme and a consequence of mainstream KOS for Indigenous learners. In this section I also address consequences in relation to the use of an enemy language, library climate, intergenerational impacts, institutional accountability, and new directions for research and design.

4.4.1 Theft of Indigenous Knowledge

The participants connected the material dispossession of Indigenous lands and resources with the dispossession of Indigenous histories and memory and knowledge that I suggest is continued through the mainstream KOS. The graduate students commented on an absence of library materials in their Aboriginal research area, an absence of Aboriginal perspectives in library collections, and an absence of Canadian Aboriginal content in library collections and their representations in KOS. These experiences are consistent with the research findings reported by D. Lee (2001). Student discussions also identified an absence of local materials that are specific to Indigenous nations and communities as opposed to pan-Indian generic materials. This interest in culturally specific materials was echoed in the resistance to the use of collective terminology for Indigenous people, and (perhaps) resistance to the use of collective terminology for Indigenous peoples in library KOS.
4.4.2 The Enemy’s Language

Contrasting with these perceived absences was a terminological glut: a proliferation of undifferentiated concepts and keywords that results in part from a lack of controlled terminology to describe Indigenous materials, including a lack of syndetic structure to show relationships (hierarchical, equivalent, and associative) and establishing preferred terms with links to variant forms and spellings. It also appears to be due to a failure to develop and use terminology that respects Indigenous self-representation. This is manifest in the omission of Indigenous-identified names of Indigenous nations, communities, and languages, and the lack of vocabulary or lack of specificity for Indigenous concepts. Drawing on (Indigenous women writers) Harjo and Bird (1997), I have used the term the enemy’s language as a way of expressing how a dominant discourse controls the expressions of Indigenous experience and in that process manipulates how Indigenous people are perceived and may perceive [ourselves] in relation to the world (Harjo & Bird 1997, p. 21).

At a functional level (search and retrieval of information), the standard critical enquiry and library research skills taught in library bibliographic instruction classes may fail Indigenous learners because training relies on KOS compliance with bibliographic standards of controlled vocabulary with comprehensive and expressive terminology, and the dominant KOS do not meet these basic standards for Indigenous materials. Due to this inadequacy it appears that the successful acquisition of standard library research skills is insufficient to undertake successful library research in Indigenous contexts. To the extent that KOS fail to make Indigenous materials visible, they undermine Indigenous approaches and Indigenous knowledge, and contribute to reproducing inaccurate and partial histories at local and national levels that exclude Indigenous accounts in the dominant narratives of Canada. This
entrenches the dominant narrative and precludes diversity and diverse representation that shapes public opinion, and current and future research patterns. The consequences for Indigenous learners are also consequences for all learners and the wider Canadian public.

4.4.3 Library Climate

The graduate students expressed feeling offended by the language used in the library catalogue, embarrassed by the derogatory terminology that others were forced to use, and affronted by lack of recognition of the dispossession of Indigenous lands, resources, and knowledge. This affective dimension I suggest is a prominent one, and to the extent that it is felt as an assault on individual and collective integrity, I suggest that it constitutes as much of a barrier to Indigenous learners and Indigenous education as poor usability of the library collections and library KOS. Student dissatisfaction with library collections and the usability of library KOS is indicated by use of words such as “struggle,” “having a hard time,” and the sense of frustration at having to learn “two literacies” within the group discussions. If the knowledge organization systems used by a university library are offensive or derogatory from Indigenous perspectives, they may also contribute to an alien climate for learners, with associated impacts on identity, sense of belonging, the ways in which learners perceive themselves, and their histories. Research shows that a sense of being accepted and valued shapes academic identities and achievement (Steele, 2004).

At the Cultural Interface historic and colonial assumptions were seen to be embedded in contemporary scholarship, policy, and practice although they are often considered to be obsolete (Nakata, 2007b). This chapter has demonstrated how they manifest in KOS and the ways in which they situate Indigenous people as people from the past, and the residual racism and colonialism attendant within this construction (Nakata, 2007b). The findings in this
chapter suggest that educational, social, economic, and health consequences flow from the misrepresentations of Indigenous accounts and perspectives in KOS and a consequent lack of access to Indigenous materials and Indigenous scholarship held in libraries. The dominant KOS function as systemic barriers to access to Indigenous knowledge (retrospective and historic) and Indigenous scholarship (contemporary and ongoing), and possibly to non-Indigenous research about Aboriginal people(s). This is interpreted as being detrimental to Indigenous scholars and scholarship, including teaching, learning, and research by Indigenous learners. The impact on successful educational outcomes and retention is unknown.

4.4.4 Intergenerational Impacts

I suggest that the negative consequences that accrue from the dominant KOS are intergenerational for Indigenous learners: they can be expected to be compounded over time because each successive (academic) generation will be disadvantaged in similar ways and the volume of Indigenous scholarship continues to grow exponentially. One of the graduate students cited a traditional story that teaches that it can take more than a single generation to resolve significant problems. This story speaks to the necessity to pass on knowledge from generation to generation for present and future learners. However, although the Indigenous graduate students in this study were all undertaking research intended to be in some way reparative and to contribute to Indigenous interests, their published research will be likely be difficult to identify and disseminate through scholarly and community channels. The effects of gatekeeping Indigenous scholarship and knowledge legacies through inadequate representation in library knowledge organization systems I suggest are intergenerational for Indigenous learners.
4.4.5 Institutional Accountability

While libraries and their KOS are part of larger social and political worlds, institutions may still be held accountable for the care of local collections that address local issues. To the extent that Indigenous knowledge held in libraries is hidden by a KOS, institutional assets may not have been ideally managed and libraries may not be meeting the obligation for responsible stewardship of collections, specifically, not only to collect and preserve but crucially to make accessible the materials they have acquired. Although funding agencies require that research products be made freely available, digital formats do not guarantee intellectual access if their retrieval systems (KOS) do adequately describe the research pertinent to Indigenous people and Indigenous scholarship through culturally relevant and discipline-appropriate metadata. The student discussions indicated that Indigenous-led research is particularly relevant to Indigenous learners and this type of research is not well described. As Pidgeon (2008) suggests, these types of gatekeepers (barriers) to Indigenous learners may be seen as institutional barriers to Indigenous education, and articulated as an institutional responsibility to address. When viewed as an organizational consequence, these types of barriers may factor into the recruitment and retention of Aboriginal students and faculty, and the broader commitment to a diverse representation of scholars, the production of new knowledge and relevant social policy.

4.4.6 Discussion: New Directions

Staunch defenders of the existing mainstream systems cite the efficiencies of well-established and funded knowledge organization infrastructure in libraries. There may be resistance to the idea that these dominant tools are not only unsuitable technologies for Indigenous materials and Indigenous scholarship but also can cause harm to Indigenous
learners. The theoretical concepts of infrastructure and hidden curriculum were used in part as a counter argument to the defence of the status quo. They were also used as conceptual tools to think about the ways in which Indigenous knowledge is silenced and Indigenous learners are disadvantaged by mainstream KOS within educational institutions. Access to knowledge was identified as a key issue for Indigenous learners, and access was conceptualized as constituting a range of dimensions. Therefore the consequences of lack of access to knowledge for Indigenous learners are multidimensional. I suggest that the generative possibilities of improved access and representation for Indigenous learners and all learners are equally multidimensional. For example, Indigenous approaches could create maps to intergenerational knowledge (rather than barriers). Recognition of Indigenous self-representation could contribute to a more welcoming library and institutional climate, and to diversity in representation and in thought, could facilitate effective library research and library research skills development in Indigenous contexts, and could serve Indigenous information literacy for all learners.

In considering possibilities and new directions the Aboriginal graduate students suggested broader conceptualizations of knowledge and of access to knowledge. Encouraging a “more diverse way of representing knowledge” (2: Aden), academic scholarship was viewed as only one, and only a partial form of knowledge. Indigenous academic and community knowledge are envisioned as interdependent, and an integral part of the world knowledge pool. The graduate student discussions encouraged more inclusive views of knowledge and of Indigenous knowledge that are multiple and heterogeneous. The reimagining of possibilities for Indigenous information infrastructure resonated with Bowker and Star’s concept of multiplicity-heterogeneity over space and time for information
systems design (Bower & Star, 1999). Boundary objects might traverse multiple Indigenous communities of practice and have differing meanings at local and shared levels that could serve to bridge different Indigenous knowledge domains, paradigms, and ways of knowing. The concept of boundary object could also bridge between Indigenous knowledge domains and other knowledge domains. The use of boundary objects in Indigenous contexts is explored further in Chapter 8 Adding to the Rafters. The graduate students raised issues relating to how conceptualizations of Indigenous knowledge function to construct identities of Indigenous people, and facilitate or constrain Indigenous interests and actions in the world. The following chapter continues this enquiry through posing the question, “What is Indigenous Knowledge?”
Chapter 5  What is Indigenous Knowledge? Conceptualizing a Domain

Historically Indigenous knowledge was positioned as an obstacle to progress and as the counterpoint to the civilized mind, however in contemporary contexts it has become increasingly ubiquitous and polysemous (Nakata, 2002). Indigenous knowledge discourse circulates in a range of sectors from international development to social policy, from science and commerce to the academic disciplines of the social sciences, humanities, health, and education. It is present on local, regional, national, and international political levels within governmental, non-governmental, and Indigenous community arenas (Nakata, 2002). The discourses of Indigenous scholars flow within and through these heterogeneous contexts. This chapter examines them as they are represented in the literature, and expressed by graduate students who identify as First Nations, Aboriginal, or Métis people. Using the methodology of domain analysis @ Cultural Interface, I examine Indigenous knowledge as a knowledge domain comprised of multiple orders of discourse operating within different social fields. The domain of Indigenous knowledge within post-secondary education is composed of multiple and competing Indigenous discourses, that are separate from but intersect with and influence those of other sectors (Nakata, 2002) and disciplines (Thornton, 1977). The chapter identifies characteristics of the domain, establishes its boundaries using the concept of Indigeneity as a marker, and identifies Indigenous knowledges in action (Archibald, 2008) within the academy as Indigenous disciplines for the purposes of the study. This chapter thereby addresses the research sub-question 2 “How is Indigenous knowledge conceptualized by Indigenous scholars?”
The first part of the chapter is contextual and critically examines ways in which the concept of Indigenous knowledge is constructed through the field of international development and the discipline of library and information science (LIS) (Lindh & Haider, 2010). This is followed by empirical accounts of Aboriginal students as student-scholars who consider the ways in which identity classifications have shaped access to knowledge and their experiences as learners and scholars. I then examine the ways in which Indigenous scholars conceptualize Indigenous knowledge in the scholarly literature, and as applications of Indigenous knowledge in action (Archibald, 2008) in the fields of Indigenous education, Indigenous studies, and Indigenous research methodology. The final section examines the concept of Indigeneity and applies it as a guide to distinguishing Indigenous knowledge domains from other knowledge domains for purposes of study and design of knowledge organization systems.

5.1 Discursive Constructions of Indigenous Knowledge

Indigenous knowledge (IK) is often characterized by its distance from scientific knowledge and by varying degrees of proximity to local knowledge (Nakata, 2002). It is constructed in this way, for example, through the interrelated discourses of international development, science, and LIS. International development as a sector that researches sustainable development in developing countries has a pragmatic interest in local knowledges to solve local problems. Due to the practical nature of its concerns, the construction of Indigenous knowledge in development discourse tends to emerge in applied fields such as agriculture, ecology, and environmental and resource management (Nakata, 2002). Lindh
and Haider (2010) identify large development agencies\textsuperscript{22} as exerting a highly influential definitional power within this sector. IK is appropriated through the creation of dominant descriptions, definitions, and representations that are then passed back to local levels during implementation phases of development projects (Lindh & Haider, 2010, pp. 10–12). Through this discursive dynamic the international development sector links IK to its own interests in poverty and marginalization which sustain its larger project. Scholars in scientific fields of study also express interest in Indigenous knowledge to fill gaps in baseline data for natural resource and environmental management (L. Simpson, 2004), and to support activities related to biodiversity, global sustainability, conservation, genetic harvesting, and commercialization of traditional medicines (Nakata, 2007c). Overarching all of these diverse interests are commercial interests in IK as a commodity (Nakata, 2002, 2007a).

The discursive construction of IK as an alternative knowledge in contradistinction to the normative standards of science serves to assert the primacy of Western thought (G. H. Smith, 2000, p. 211), and reproduce “us and them” relations (Agrawal, 2005; Lindh & Haider, 2010). Embedded in this oppositional formation is the idea that science and technology are necessary for progress and for the development of impoverished populations (Escobar, 1995; Lindh & Haider, 2010). The concept of development itself remains unexamined and continues to be conflated with progress and modernity, thereby neglecting an exploration of the inequities of development (Escobar, 1995; Pyati, 2009). The causal linking of poverty to lack of knowledge is also presented in the LIS discourse through

\textsuperscript{22} Development agencies cited include the World Intellectual Property Organization (WIPO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Council for Science (ICSU), the United Nations Development Programme (UNDP), the World Bank, and the IFLA (International Federation of Library Associations and Institutions).
concepts such as “information poverty” that position the holders of Indigenous knowledge as poor and marginalized and call for intervention (Lindh & Haider, 2010). An increasing LIS focus on Indigenous knowledge responds to external demands for its electronic documentation and the development of related databases. Typically this is a decontextualized practice dedicated to leveraging the value of and access to Indigenous knowledge through collecting, describing, documenting, and archiving it for external interests (Lindh & Haider, 2010; Nakata, 2002, 2007a).

To the extent that LIS adopts the discourse of international development, Indigenous knowledge tends to be positioned as homogenous and distinctive, loosely linked to poverty and development, and clearly contrasted with “modern” science (Lindh & Haider, 2010). Framing IK as threatened and therefore requiring documentation for its continued survival fuels LIS enquiry into best practices for instrumental purposes of Indigenous knowledge management (cf. Muswazi, 2001; Ngulube, 2002; Stevens, 2008; Subba Rao, 2006). However, the lack of critical analysis within LIS research results in a failure to examine the discursive constructions of Indigenous knowledge, the power relations embedded in the concept, how it is collected, by whom and for whom. When LIS practitioners do not question the theoretical foundations and interests underlying the definition and use of core concepts, such as Indigenous knowledge, and defer to the authority of the dominant discourses, such as international development and science (Lindh & Haider, 2010), harmful constructions (of Indigenous identity and Indigenous knowledge) may be reproduced.

This analysis reveals some of the ways in which LIS theory, practice, and institutions may be understood as extensions of power (Lindh & Haider, 2010) that denigrate Indigenous thought and experience and how IK is appropriated and re-shaped by dominant actors.
Paradoxically, while these interrelated discourses fragment and extract IK, and dislocate it from its rootedness in particular cultures, lands, and languages (Nakata, 2002) they also position Indigenous knowledge as unitary and monolithic through placing it in opposition to the paradigm of science, progress and modernity. It is evident why Martin Nakata considers the conceptualization of Indigenous knowledge as an enterprise, like the enterprise of colonialism, to have everything and nothing to do with Indigenous peoples (2002). Using the lens of domain analysis @ Cultural Interface I interpret disciplinary and sectoral discourses as being external to Indigenous knowledge discourse when they fail to theorize power within the characterization of the domain or when their discursive constructions of Indigenous knowledge and Indigenous subjects (people) serve to reproduce rather than transform dominant narratives.

5.2 Student Voices: Experiences as Learners and Researchers

The graduate student participants, who I am viewing as student-scholars, integrated Indigenous theory and experience with academic research and practice to create scholarship intended to engage Indigenous communities and strengthen Indigenous futures. As previously noted, the graduate students who participated in the discussion groups were all engaged in research that was intended to contribute in these ways. The student-scholars not only create new knowledge but also offer expanded conceptualizations of knowledge and scholarship, and the processes through which they may be produced. In addition, the graduate students each brought a life-long experience in negotiating the complexities at the Cultural Interface, and many had honed nuanced understandings and vocabularies for mediating others’ preconceptions and categories.
5.2.1 Identity, Classification, and Access to Knowledge

During the group discussions the student-scholars considered the ways in which identity (and identity classification) has limited access to knowledge at both institutional and community levels. One participant reflected on the ways in which multiple and legislated categories of identity constrain and enable different forms of access to knowledge:

I’d be glad to share my experiences of what shaped, and how I’m being shaped as I go through a [graduate degree] by my identity as an Aboriginal person…. My family went through a lot of governmental changes, historic changes that have changed our identity in terms of who we could claim to be, which would be full status. At one point, the government identified us as Métis...although we knew better, we knew who we were, we could only claim to be Métis. And at another point, the government changed the laws and brought in Bill C-31, I think, and then they said, “Okay, you have full status. Your mother can regain her status,” and then we had to live an identity that was full status. And so those kind of things I think had a very big impact on the way I would be able to, in the future, access information such as knowledge, whether it’s at an academic level or at the community level. And so I think, growing up, my accessibility to knowledge was limited by those aspects. (2: Aden)

A latecomer to this circle of introductions also began with an explanation of identity related to government status classification, and its effects on access to education:

And I identify as—government-wise—I’m a full status person. And I originally started as a [First Nation] under my dad’s band, which is where my study is, and I’m now under my mom’s band…because…they were only able to work with one degree. (2: Sage)

Some of the participants were living in urban centres, and identified as urban people:

“You know, we’ve got third generation, fourth generation of people being raised in urban centres from all over. And the vast majority of our people are actually like that or non-status” (2: Kyle). Within this context, the use of any collective term, such as Indigenous or First Nation, was seen by some of the participants as contentious and power-laden:

The word “Indigenous”—that use of that term is all about power, right? And about who gets included and who gets marginalized…. And today we’re talking about I guess Indigenous…what you’re calling Indigenous groups, which actually marginalizes me. (2: Kyle)
There’s this whole spectrum of people that are excluded…. And what’s scary is that the ones that have the power are the ones that are saying, “Oh, only First Nations people.” First Nations being a really restricted group of people. (1: Frances)

Subsequent student reflection identified multiple ways in which identities are disrupted, (re)formed or shifted through relationships with people, places, resources, and communities of practice. Relationships with parents, grandparents, partner(s) or spouse(s) were cited, as well as an individual’s or a collective’s location as either urban or land-based or both, and membership in other types of community, such as a ceremonial community or an Indigenous academic community: all in addition to affiliations with non-Indigenous communities and various social and political commitments. In some cases, traditional practices (that shaped identity) were tied to a resource base that was depleted or had disappeared, generating a whole range of negative social, cultural, economic, and ecological effects. These considerations were in addition to a dominant concern and ongoing negotiation with the experience of being the object of identity classifications imposed in social, political, legal, or academic contexts.

Again, I think along with most people, identity issues are the biggest one because we flow through these intersections of identity at different times, and Aboriginal ethnicity is kind of an awkward statement because there is no such thing as Aboriginals, or Indians, or Natives or whatever other nomenclature we have for us as a group. I guess the only main thing we can say is that we’ve all had things stolen from us collectively, and it’s not going to be given back, at least not in my lifetime. So…maybe that’s the definition of Aboriginal—Those who’ve had things stolen from them and they’re not going to get them back. (1: Frances)

5.2.2 Naming and Researcher Responsibility

Historic and ongoing dispossessions conjoined with the effects of social classifications directly affected individual and collective identity, as well as access to material and social resources including education. Due to the significant impacts of naming
in the sense of social classification, one student emphasized the responsibility for scholars working in Indigenous contexts to be accountable in their use of terminology as a dimension of ethical conduct within their own research and academic careers:

We all have to ask ourselves, politically how do we want to identify Aboriginal people…. I think that’s a real responsibility that we have as researchers at UBC, is owning that sort of political landscape. If we do want to believe that we’re only talking about a certain group of people, we should really state that. (1: Frances)

5.2.3 Indigenous Knowledges and Other Knowledges

Some participants spoke about ways in which Indigenous knowledge and experience were dissonant with the dominant culture. For example, one participant recounted a parental instruction to memorize and be able to recount, but not to believe, the lessons taught in elementary school.

And I remember when I was a very, very young child and we were in school, we were learning about the Bering Strait theory. My mom said, “Your job is to remember what they teach you, not to believe it,” and so…those kind of comments framed my whole educational experience, that what I was being taught was not truth. [laughs] And so, you know, my whole educational experience was shaped by my Aboriginalness. (2: Kyle)

In another context, when asked if instructional sessions on library research skills in Indigenous contexts would be useful, there was some interest expressed but one participant stipulated that the instruction be held with Native people only:

I want to be around Native students, and I want to be around Native scholars…if I’m going to learn about Indigenous knowledge and Indigenous scholarship, I want it to be around Indigenous people who are to me, all mentors that I can learn from, and that’s when I would go. (1: Jesse)

This led to a suggestion that the real Indigenous knowledge is transmitted orally by Indigenous people, and that there is a distinction between traditional cultural knowledge and academic knowledge. Another participant identified a disconnect in translating the value of Indigenous community knowledge to an academic research perspective.
One of the things that I really find frustrating when I’m looking for material and trying to articulate exactly what it is that I’m thinking from the inside out, or from my heart, is really difficult to find in a library. And it’s really difficult to explain to Western-educated people…exactly what method I’m trying to get at. (1: Jamie)

Within the context of conducting community-based research, one student-scholar recounted experiencing conflicting expectations and protocols between the community and academy.

5.2.4 Broadening the Discourse

Regarding methods, another participant observed that “I use the same tools that everybody else is using” but the difference was the motivation that stemmed from both individual and collective bases. In part motivation was attributed to resolving identity issues: there is both intellectual and emotional work related to reclaiming identity and an associated need for safe environments where this type of enquiry can occur. At a collective level, it was observed that some challenges require collective and intergenerational thought to address:

So, my dad used to talk about…one of the really big narratives that the [First Nations] people in the south always talked about is when we have difficult problems, the generation that the problem exists [for] may not solve it. So, it’s the training of those that are coming up that will eventually solve the problems…we can talk about multi-generational solutions. (1: Frances)

I think it’s important to point out that the student scholars were experts in their social and cultural fields of knowledge and were seeking ways to bring this expertise to their fields of research. Each participant brought a unique perspective as an individual, as an Aboriginal person, and as an Aboriginal person with a particular lived experience; all of which inform and shape scholarship. It was observed that this unique scholarship, informed by Indigenous philosophy and intellectual traditions, can function to broaden and rebalance the Western canon.
The prevalent themes related to Indigenous knowledges within the Aboriginal graduate student discussion groups included those of identity, dissonance between different traditions, and reconciling these tensions. The students delineated tensions between the dominant society and Indigenous thought and experience. Equally the participants identified differences between Indigenous community and Indigenous academic expectations and knowledge. A strong focus on identity raised multiple, complex, emotionally charged considerations of social classification and naming that directly affected access to resources, including land, language, and natural resources, as well as access to education and access to knowledge. This evidences ways in which social classification and naming inexorably shape the lives of Indigenous students, constraining access to resources as well as potentially facilitating access depending on context. I view the Indigenous student-scholars’ approaches to knowledge as generative and holding potential to transform the ways in which knowledge and knowledge production are imagined in the academy. The discourse within the Indigenous scholarly literature similarly exhibits diverse traditions and shares this commitment to social transformation.

5.3 Indigenous Scholars Conceptualize Indigenous Knowledges

Within the field of Indigenous education, Indigenous scholars conceptualize Indigenous knowledge(s) variously as political and pedagogical strategies, as content, as theory, and as practice. The plural form of the term is used to emphasize its primary characteristic: heterogeneity—Indigenous knowledges are multiple, diverse, and dynamic, being produced by multiple and diverse peoples, languages, and intellectual traditions that are continuously changing. The plural form is often preferred in Indigenous contexts as it serves to both identify and reject the dominant discourses that subsume diversity under the
unitary term “indigenous” (Pidgeon, 2008). Mi’kmaq scholar Marie Battiste traces the emergence of the term within the field of Indigenous education to the 1980s when Indigenous educators took it up as a strategy in order to mobilize Indigenous pedagogical projects and improve educational experiences for Aboriginal students (Battiste, 2002).²³ Six Nations scholar David Newhouse views the act of naming Indigenous knowledge (IK) by Indigenous scholars as a “powerful act of decolonization” that asserts Indigenous intellectual traditions and contemporary thought as knowledge (2008, p. 190).

Indigenous scholars in different disciplines name Indigenous knowledge as scholarship and pedagogy inter alia, in order to claim its legitimacy and legitimacy of place within the academy. Developing discursive strategies that assert and defend Indigenous knowledges is seen as a key role for scholars: Dale Turner (Teme-Augama Anishnabai) calls upon Indigenous scholars to act as word warriors (2006) in defence of Indigenous knowledge. Charles Vizenor (Anishinaabe), crafts wordarrows as survival tools in word-wars with dominant social and political categories (1978). Naming Indigenous knowledge and claiming its value is also an act of resistance against blatant and subtle deficit models that represent Indigenous people and Indigenous knowledge as oppressed, exploited, or subjugated (G. H. Smith, 2000). Māori scholar Graham Hingangaroa Smith stresses the importance of asserting Indigenous authority and agency: “We must name the world for ourselves” (2000, p. 210). Indigenous naming of the world affirms the value and utility of Indigenous intellectual legacies and active contributions (Rigney, 1999; L. T. Smith, 2005) at the same time as it identifies the boundaries of colonial discourse (Newhouse, 2008). Literary theorist Craig

²³ Battiste traces the genealogy of the term “Indigenous knowledge” within the academy to the original use of the term “traditional knowledge” during the 1950’s in ethnoscience, a subfield of anthropology (2002).
Womack (Muskogee Creek Nation) considers Indigenous self-representation as one of the most salient ethical questions in his scholarly life. He consciously brings Indigenous self-representation into Indigenous theorizing, and assesses it according to a standard that asks whether the subjects of academic theorizing see themselves accurately portrayed through his classroom lectures and various forms of scholarly communication (Teuton, 2008, p. 204).

5.3.1 The General and Specific

Indigenous scholars also describe Indigenous knowledges at general levels as a web of relationships within specific ecologies and languages that carry local meanings, have customary ways of acquiring and sharing knowledge, and have associated responsibilities (Battiste, 2002). They are often characterized as deriving from long-term sustainable relationships with specific lands and beings (Cordova, 2004; Kidwell, 1999; Marker, 2006; Ortiz, 1970) that have “developed over thousands of years of sustained living on this land” (Rains, Archibald, & Deyhle, 2000, p. 337). The land is viewed as a teacher, and the environment as a classroom of lessons and a source of metaphor (Meyer, 1998; Watt-Cloutier, 2000). Oral traditions are affirmed as a rich and unique source of Indigenous knowledge. Gail Valaskakis (Lake Superior Chippewa) states, “There are vast pools of knowledge held in the oral tradition of Aboriginal people—it is like a ‘classroom without walls’” (2000, p. 86). The structures of Indigenous languages, and Indigenous political and spiritual systems are seen as encoding these relationships (L. Simpson, 2004, p. 378). From land-based Indigenous perspectives, self-determination and recovery of Indigenous lands, languages, and cultures are key to the renewal of Indigenous knowledges although these imperatives are often absent from non-Indigenous conceptualizations (L. Simpson, 2004).
Indigenous spirituality is widely accepted as central to Indigenous philosophical thinking; “in a sense it is the most significant difference between indigenous and European world views” (Turner, 2006, p. 110). Knowledge is seen as a process from creation that has a sacred purpose (Battiste, 2002, p. 14; Calliou, 1998) and all its lessons are connected to spirit, which is conceptualized as being at the centre of existence (Skinner, 1999). For example, from a Yupiaq perspective, the interconnectedness of all things in the world is bestowed by Ellam Yua (the Spirit of the universe) and it flows through and exists in everything (Kawagley, 1995, p. 35). From the perspective of a traditional mid-Columbia plateau worldview humans are on the same level with all other beings—animals, plants, water and rocks—all having shukwat (spirit) and a conscience (Close, Fitzpatrick, & Li, 2002, p. 22). Marlene Brant Castellano (Mohawk Nation, Bay of Quinte) identifies three sources of knowledge valued in Indigenous society: traditional knowledge transmitted through the generations; empirical knowledge gained through observation of the world; and the knowledge revealed through dream, vision, and intuition that is understood as spiritual in source (2000, p. 24). Spirituality is tied to values of sharing, cooperation, and giving thanks (Kawagley, 1995; Skinner, 1999). Living in a good way requires practicing the values of respect, reverence, responsibility, and reciprocity (Archibald, 2008; Kirkness & Barnhardt, 1991). Relationship is linked with reciprocity: “A Hawaiian was never alone because nature was relational and hence, many aspects of life had the capacity to reciprocate (Meyer, 1998, p. 42). “In our world, relationships are important and sustaining them is valued” (Fixico, 2003, p. xi).

Some scholars argue that while generalized descriptions of Indigenous knowledge may serve political purposes of naming it, and claiming its legitimacy as knowledge in the
academy and more broadly, they also tend to reproduce IK as homogeneous and unitary. They emphasize the diversity among Indigenous peoples, noting that even pre-colonial societies were never simple or heterogeneous (Fitzsimons & Smith, 2000), and that contemporary contexts are complex, fluid, and homogeneous. Manulani Meyer describes Indigenous Hawaii as “an ocean of diversity given the nuance of environment, foods, gods, gender, age, class, point in history or political climate” (1998, p. 13). Within educational contexts, Anne Poonwassie describes a diversity of Aboriginal university students’ views of their relationship to the world as being variously “traditional, in transition, assimilated, universalist or anomic in regards to their cultural identity” (Poonwassie & Charter, 2001, p. 132).

Tsianina Lomawaima (Muskogee/Creek Nation of Eastern Oklahoma—not enrolled) advocates for specific, analytic, and complex descriptions of particular nations and societies that incorporate multiple levels of understanding as being the most useful in representing and teaching about Indigenous knowledges. She contrasts these with general descriptions that offer “never well defined” conceptualizations of Indigenous knowledges as holistic or spiritual or ecological (Lomawaima, 2004, p. 454). Specificity also serves the education of the general public; for example, the Delgamuukw-Gisdaywa court case in part served to educate the court and the Canadian public at large through the Wet’suwet’en Elders’ account of their adaawk (true history) as Satsan (Herb George), Speaker for the Wet’suwet’en, recounts:

We went into the Supreme Court of Canada at that time (1997) to say to the court, “We are a people. We are a people with a history, we are a people with a land, we are a people with a language and we are a people with a spirituality, a people with a government, a people with laws, a people who have managed their time on this land for thousands and thousands of years.” (George, 2005, p. 13)
Satsan’s statement and Lomawaima’s analysis are important, I think, because they direct our attention away from abstract categories of Indigenous knowledges, and away from a tendency to characterize Indigenous knowledge systems as some kind of counterpoint to European knowledge systems (and vice versa). David Newhouse (Six Nations) finds in his experience as a university curriculum developer that generalized approaches to IK generate lack of clarity. He prefers culturally specific curriculum, for example, curriculum that is specific to Bimaadiziwin (Anishnaabe) or Atonhetseri:io (Haudenosaunee) societies (2008). This approach generates understandings of IK as complex and dynamic sets of meanings that are specific to a particular Indigenous society including “theories of the universe and how it works; the nature of human beings and others; the nature of society and political order; the nature of world and how to live in it; and human motivation among many other aspects of life” (Newhouse, 2008, p. 187).

5.3.2 Approaching Dualisms

In addition to the tension between general and culturally specific accounts, there are other types of competing discourses within Indigenous scholarship: one type champions Indigenous knowledge by describing the ways that it differs from academic knowledge (cf. Battiste, 2002; Battiste & Henderson, 2000). For example, Battiste argues that the notion of a literature review of Indigenous knowledge is an oxymoron because Indigenous knowledge is by definition an oral or material embodiment of cultural experience and teachings and is not to be found on the library shelves (Battiste, 2002, p. 2). On the other hand, another paradigm within Indigenous discourse argues against the construction of binary and unitary conceptualizations of knowledge (cf. Battiste, 2002; Brascoupé & Howard, 2001) that construct rigid divides between Indigenous and Western knowledge or between academic
and community knowledge. For example, Métis educator Carl Urion suggests that every knowledge tradition is complex and multiple. The initial positing of polarities between the discourses may become agonistic if one discourse trivializes or ignores the other (Urion, 1991; Urion & Others, 1995). The notion that tribal traditions cannot be taught at the university is a recurrent theme in the literature (Battiste, 2002; Couture, 2000; Newhouse, 2008), however Urion (1991) suggests that the tendency to create dualisms might be offset by asserting the premise that an integrity or unity exists within a given context. Urion draws upon a form of traditional First Nations oratory and diplomacy that asserts “the discourse is one of discovering the properties of the unifying context, and finding out how the discoursing individuals fit within the context and thus come to unity” (Urion, 1991, p. 5). In this way the legitimacy and value of both discourses, for example community discourse and academic discourse, are affirmed and seen as constituting multiple dimensions of knowledge. The issue then becomes not one of translation of worldviews but one of access to and understanding of multiple perspectives.

5.3.3 The Indigenous/Western Knowledge Divide

While some scholars draw on Indigenous traditions of diplomacy (Urion, 1991; Calliou, 1998) to disrupt rigid binary distinctions, others draw on the logic of historical evidence to question oppositional constructions, such as those between Western and Indigenous knowledge (Agrawal, 1995a, 1995b, 1996; Nakata 2002, 2007b). Agrawal argues that categorizing knowledge into homogeneous and incommensurate dualities is inherently false because it assumes a fixity across time and space of both systems, and characterizes knowledge as discretely bounded, independent, and static. Secondly, the denial of cultural exchange is historically inaccurate because the knowledge systems known as
“Indigenous” and “Western” have been in interaction since at least the 15th century (Agrawal, 1995a, p. 422) with ongoing exchange, learning, and mutual transformation (Agrawal, 1995b, p. 3). Additionally, the logic that creates two mutually exclusive categories of knowledge relies on the premise that a finite and small number of characteristics can define the elements within the categories. However this premise is untenable because knowledge systems are shaped by multiple historical, social, and political influences. There are similarities and shared categories, as well as substantial differences within each of the categories that a simple separation based on characteristics fails to give account: there are both striking differences among philosophies and knowledges commonly viewed as either Indigenous or Western, as well as any range of similarities in elements (Agrawal, 1995a, pp. 420–422).

Another type of argument in support of a conceptual divide between Indigenous and Western knowledge characterizes science as an open quest for knowledge that systematically builds on previous achievements through rigorous and objective practice. This is held to differentiate it from common sense or other types of knowledge, such as Indigenous knowledge, that are characterized as being closed and lacking both systematic methods and conceptual bases. Contrary to the dualist argument, both science and Indigenous sectors exhibit a wide range of attitudes towards new knowledge. For example, contemporary philosophy of science has abandoned arguments that separate science from non-science: far from being an open quest, science has been convincingly critiqued on its dogmatism and intolerance to knowledge and methods outside its institutional boundaries (Feyerabend, 1975). At the same time, science has been opportunistic in adopting non-Western forms of knowledge throughout history (Harding, 1998). Another type of distinction suggests that
Indigenous knowledge is contextually based and in harmony with those who created it while scientific knowledge is characterized as abstract and divorced from people’s lives. However, since the 1970s the sociology of science has demonstrated the inherently social bases of science, disputed its claims to objectivity and rationality, and conceptualized it as a practice and a culture that is multiple, heterogeneous, and partial by nature (Agrawal, 1995a).

5.3.4 Indigenous Knowledges In Action

These views suggest that science is as socially situated as any other knowledge system, and that a critical difference between Indigenous knowledge and Western knowledge, called science, is power (Agrawal, 2002). Indigenous scholarship seeks means by which to rebalance power relations by bringing Indigenous intellectual thought and experience into relationship with the academy. Ideally the role of the academy is to bring human knowledges into dialogue together in order to better understand the universe (Newhouse, 2008). As an Indigenous ethos, Newhouse terms this “adding to the rafters,” a Haudenasaunee term that describes addition(s) to a longhouse when it is expanded to accommodate more extended families (Newhouse, 2008, p. 196). The moral intention of “adding to the rafters” is incorporated into the Haudenasaunee constitution as a political process and form of applied governance to formalize changes to a law. It is seen as a protocol for this kind of adaptive and inclusive process. In one sense, it leads to a conceptualizing and extending of an Indigenous house of knowledge to accommodate an academic tradition; in another sense, it may be seen as Indigenous scholars and scholarship within the university extending the idea of (the walls of) the university in order to transform it (again); or perhaps as a mutual process of interaction.
Indigenous scholars are “adding to the rafters” within the university through generating multiple Indigenous discourses, and developing Indigenous fields of study within the humanities, sciences, and professions, such as Indigenous education and Indigenous studies. Indigenous scholarship is reframing the traditional academic disciplines through the application of Indigenous conceptual, theoretical, and methodological approaches. I interpret these interactions as a manifestation of Indigenous knowledges “in action” in the academy (adapted from Archibald, 2008), which as they are applied and enacted become embodiments of Indigenous knowledge in institutional contexts. This form of discursive practice produces discourse that is institutionalized and is a form of action. The following section examines Indigenous knowledges in action within the academic arenas of Indigenous education, Indigenous studies, and Indigenous research methodology.

5.3.4.1 Indigenous Education

Education is described generally as the creation and transmission of culture and language from one generation to the next (Royal Commission on Aboriginal Peoples [RCAP], 1996, p. 435). Like all societies First Nations societies have always had established systems of education (Kirkness & Bowman, 1992). The particular characteristics of Indigenous education systems prior to European contact were shaped by factors such as location, economies, languages, and social structures (Castellano, 2000). Archival records document Indigenous leaders’ articulations of Indigenous education since at least the 16th century in North America (Battiste, 1986; Castellano, Davis & Lahache, 2000; Dickason 2002; Longboat, 1987), including Seneca chief Red Jacket in 1744 (Longboat, 1987) and Haudenosaunee speaker Kanickhungo in 1736 (Nerburn & Mengelkoch, 1991), both advocates for the value of traditional Indigenous education. Similarly seminal documents
such as the National Indian Brotherhood’s position paper, *Indian Control of Indian Education* (ICIE) (1972) assert Indigenous sovereignty (Cardinal, 1969; Manuel & Posluns, 1974) and Indigenous jurisdiction in education. The term Indigenous knowledge is not explicitly employed in the earlier archival documents, however the concept is integral to them. In contemporary contexts, Indigenous education continues to be seen as an expression of and instrument for Indigenous self-determination (Hampton, 2000) and as a necessity for broader social change (Battiste, 2002; Cajete, 1994; Castellano, 2000; Grande, 2004, G. H. Smith, 1995).

The term Indian education has a range of meanings from the education of Aboriginal children by their parents and extended families to the imposition of harmful practices on Aboriginal people by colonial authorities (Lomawaima, 1999). Eber Hampton (Choctaw Nation) identifies four modes of Indian education that I interpret loosely as variants of colonial education and transformative education (1995). Colonial modes are typified by the systemic genocidal practice of the residential school system (Calliou, 2001; Chrisjohn, 1997) and by government policies intended to reinvent Native American people in “the likeness of white people” (Begaye, 2004, p. vii). Contemporary forms of assimilationist education are often implicit and communicated informally through mechanisms such as the hidden curriculum (see Chapter 4.1.1). The underlying assumption of assimilationist education is that the dominant culture will erode and erase the Aboriginal one (Urion, 1991). Indigenous responses to assimilationist education are written as “critique of the colonial mind.” (Meyer, 1998, p. 17) and “Indigenous resistance to the grammar of the empire” (Grande, 2004, p. 167); the concepts of oppression and resistance are integral to understanding contemporary First Nations experience (Hampton, 1995; Lightning, 1997).
The term Indigenous education also includes transformative modes that aspire to Indigenous-controlled education for self-determination that transcend colonial institutions, ideologies and practices “to give expression to aboriginal philosophies, world views, and social relations” (Castellano, 2000, p. 23). Time is conceptualized as “the long now” and the past, present, and future are understood as one (Akan, 1999, p. 34) that space imbues with its own particularities. The ultimate mode of *sui generis* (a thing of its own kind) Indigenous education draws upon the structures, the values, and the knowledge of Aboriginal cultures to address the contemporary local and global challenges of the 21st century (Hampton, 1995, p. 10). It is committed to social change at local and global levels. Indigenous scholars imagine revitalized educational and intellectual spaces in works including: Taiaiake Alfred’s *Wasáse Self-conscious Traditionalism* (2005); Jo-ann Archibald’s *Indigenous Storywork* (2008); Richard Atleo’s *Tsawalk* (2004); Sandy Grande’s *Fourth Space* and *Red Pedagogy* (2004); Eber Hampton’s *Sui generis Education* (1995); Graham H. Smith’s *Kaupapa Māori* (2000); Dale Turner’s *Word Warriors* (2006); Gerald Vizenor’s *Survivance* (1994); Robert Warrior’s *Intellectual Sovereignty* (1992); and Weaver, Womack, and Warrior’s *Aboriginal Literary Nationalism* (2006).

Sandy Grande’s theory of Red Pedagogy (2004, 2008) is one exemplar of 21st-century Indigenous educational theory: it is dedicated to the reinvigoration of Indigenous knowledge and praxis (Indigeneity) based on a dream of sovereignty and commitment to decolonization. It theorizes Indigenous discursive and material conditions, and addresses concepts of sovereignty and identity (2004, p. 166). In reclaiming educational assessment it measures achievement in degrees of Indigenous political, intellectual, and spiritual sovereignty in the context of socio-economic urgency to build coalitions within global capitalism, and to create
intellectual space for social change (2004, pp. 118–166). It espouses four primary
commitments: (1) sovereignty is its political focus, (2) Indigenous knowledge is its epistemic
foundation, (3) the earth is considered its spiritual centre, and (4) Indigenous traditional ways
of life are its socio-cultural frame of reference (Grande, 2008).

Red Pedagogy uses the concept of multisubjectivity, meaning multiple and
intersecting layers of identity, to disrupt attempts to impose or to claim authentic identity.
The challenge then becomes one of balancing multisubjectivity with the political project of
linking Indigenous identity and sovereignty to connections to both land and place (Grande,
2008, p. 239). While many Indigenous theorists resist singular approaches to being/identity
they also work to retain and rebuild the distinctive ways of particular nations and languages
(Grande, 2008). At the same time an Indigenous theory of subjectivity must also address the
socio-economic imperative to build inter-tribal, intra-tribal, and transnational coalitions
theorizes the structural and material conditions that create differential (inequitable)
opportunities in people’s lives (Grande, 2008; Nakata, 2007b). Similar to Nakata, Grande
rejects approaches that divert attention away from issues of power and are “amnesiac”
towards the lived realities of oppression and dispossession (2008, p. 242). As a discursive
strategy Red Pedagogy resists “rhetorical imperialism” (Lyons, 2000) defined as the
dominance of colonialism in controlling the possibilities of discussion by setting the terms of
the debate. It strives to create self-determined conceptual space for Indigenous intellectuals
to critically navigate the dominant disciplines through drawing upon native cultural referents
to enliven the legacy of Indigenous intellectual traditions and continue the work of early
Indigenous leaders who named and claimed the place of Indigenous knowledge(s) within the academy in the early 1970s.

5.3.4.2 Indigenous Studies

The First Convocation of American Indian Scholars (1970) resulted in a decision to create a new discipline, Native American Studies (NAS), and to develop bodies of Indigenous knowledge in the academy (Champagne & Strauss, 2002; Convocation of American Indian Scholars, 1970, 1974; Cook-Lynn, 1997). The disciplinary goal was to address the real-world concerns of Native people and communities (Champagne, 2007; Kidwell, 2009) in addition to revisioning the traditional academic disciplines, including anthropology, history, and literary studies, which take Native American people as their object of study (Kidwell, 2009). An early articulation by Russell Thornton envisioned NAS as an endogenous study of Indigenous societies, history, culture, and contemporary issues (1977, p. 13). He advocated a holistic methodology in order to better understand traditional Indigenous societies in ways that are congruent with the nature of undifferentiated societies, which do not divide religious, economic, political, educational, and family life. Following this precept he stated, “while it may be important to separate out components of the world to study them, it appears necessary to bring them together to understand them” (1977, p. 13).

In subsequent debates over establishing the “disciplinary validity” (Metoyer-Duran, 1993b) of NAS, Thornton distinguished between endogenous study originating from within American Indian cultures, and exogenous study originating from within the established disciplines; both useful but distinct (1977, p. 13). Since its inception NAS had developed to support Indigenous nationhood through enquiry in three general areas: (1) Indigenous cultures, including languages, art, music, literature, and ways of viewing the world; (2)
critique and revision of the humanities and social sciences; and (3) the applied disciplines,
such as Indigenous education, Indigenous social work, and Indigenous health care, that
attempted to make the professions more relevant to Indigenous interests. However, Thornton
argued that these three areas are outside the bounds of NAS because their approaches do not
represent the development of intellectual integrity for it and therefore do not further its
advancement as an academic discipline (1977, p. 14).

Almost twenty years later, Crow Cree Sioux scholar Elizabeth Cook-Lynn envisions
Indigenous studies as centring on two basic concepts: “indigenousness (culture, place, and
philosophy) and sovereignty (history and law)” (1997, p. 11) with its disciplinary principles
drawn from tribally specific, nation-to-nation, and pan-Indian theories (Cook-Lynn, 1997).
Indigenous studies is distinct from ethnic studies and from the discourses of multiculturalism
because of the unique status of Indigenous peoples as original peoples with traditional
territories, and interests in reclaiming and retaining land/territory, self-governance, and the
revitalization of cultures and languages (Champagne, 2007). Indigenous peoples assert an
inherent right to sovereignty grounded in treaties with nation states (Kidwell, 2009) and the
field is therefore founded on a political commitment to Indigenous sovereignty whether
sovereignty is defined in relation to a cultural group or government-to-government
recognition. It is committed to the preservation and revitalization of Indigenous languages,
and language is understood as a foundation of worldview and epistemology. Oral history and
oral tradition are valued as important sources of evidence in providing balanced accounts of
intercultural contact that requires that a story is told from both sides. A final premise accepts
creative expression, such as music, dance, art and literatures, as a vehicle that carries
traditional teachings and values into contemporary life (Kidwell, 2009, p. 4). Key theoretical
issues motivating the field include the question of what constitutes Indigenous knowledge and its corollary: what constitutes Indigenous identity (individual and collective) in the 21st century (Kidwell, 2009).

Specific forms of Indigenous studies in national contexts, such as Native American studies in the United States or First Nations studies in Canada, are located within the broader field of Indigenous studies which examines Indigenous cultural, political and human rights at local and global levels. At the international level there is a shared orientation to community preservation and related political and cultural contestations with local nation states. Just as the traditional academic disciplines in North America generate analysis, theory, and policy relevant to the issues and interests of North American society, so it is expected that Indigenous studies at local, national and international levels will produce empirical and theoretical research, and policy analysis to support the goals and values of Indigenous societies (Champagne, 2007, p. 371). Indigenous studies have been critiqued as constituting a form of advocacy rather than a form of scholarship, however Kidwell argues that the purpose of the academic disciplines is to seek new knowledge, and in academic contexts the method to achieve this is research. Research implies that we are seeking to learn things that we do not already know, and it is this assumption that distinguishes scholarship from advocacy. Indigenous studies, like all academic disciplines, seek new knowledge through research (Kidwell, 2009, p. 12).

Political philosopher Dale Turner, Teme-Augama Anishnabai, views Indigenous philosophies as intellectual orientations that serve as maps for discovering knowledge about the world and as tools for generating new knowledge (2006, pp. 115–116). Indigenous word warriors have dual roles: to deconstruct colonialism and to defend Indigeneity (2006, p. 113).
Both Turner (2006) and Nakata (2007b) argue that these dual roles require dual areas of expertise: understandings of an Indigenous knowledge system as well as the histories and logics of the academic disciplines. For Nakata this ability exhibits “locatedness”: a contemporary form of a traditional way of knowing that attends to and is attuned with the elements in the surrounding environment. As an epistemic stance it recognizes the affordances within a given situation as they relate to Indigenous interests (Nakata, 2006, p. 273). Conceptualizing knowledge systems as complex discursive environments of theory, concepts, and sets of meanings also holds the possibility of viewing the encounter itself as a source of new meanings and new interpretations: these may or may not look Indigenous but might serve Indigenous interests by connecting “older traditions in ways that continue them” (Nakata, 2006, p. 273).

Christopher Teuton’s (Cherokee Nation) analysis of three Indigenous sociocritical modes (2008, pp. 200–208) provides a useful heuristic for viewing diverse currents within Indigenous scholarly discourse. Mode-one criticism, inflected by anthropological and ethnographic study, is inevitably drawn into issues framed through concepts such as cultural authenticity and cultural identity. Emerging out of the mid-1970s, its primary concern is in establishing Indigenous scholarship as legitimate and in developing a Native canon. Mode-two criticism aims to serve as a corrective to the misrepresentation of Indigenous peoples and cultures through authoring counter-narratives to the dominant academic and popular understandings. It is prone to engagement using concepts and representations established by the dominant discourse, and to discussions of identity politics stipulating who can be authorized as speakers and knowers. Mode-three criticism is less concerned with questions of representation and more concerned with theorizing how “academic work can be made
accountable and put into dialogue with Native people, communities, and nations” (Teuton, 2008, p. 201). It is process-oriented and speculative, asking, “How are we Native people and nations to become what we want to become?” (Teuton, 2008, p. 201). These three modes developed historically, however they are not strictly chronological or discrete but rather interdependent modes that interact to generate discussion and new thought within scholarly discourse.

### 5.3.4.3 Indigenous Research Methodologies

Multiple traditions of Indigenous research since contact times in North America, Australia and New Zealand demonstrate that the conceptual elements (ontology, epistemology, and methodology) of an Indigenous research tradition are always-already present and embedded in the philosophies, the languages, and the cultures of Indigenous people (K. Martin, 2003; Porsanger, 2004; L. T. Smith, 1999; E. Steinhauer, 2002; P. Steinhauer, 2001; S. Wilson, 2003). An Indigenist research tradition, where Indigenous scholars assert exclusively Indigenous perspectives and scholarship (K. Martin, 2003; Rigney, 2006; L. T. Smith, 2005), generates diverse Indigenous paradigm(s) (P. Steinhauer, 2001) which “emanates from, honors, and illuminates Indigenous world views and perspectives” (S. Wilson, 2003, p.170). Some Indigenous scholars include decolonization within a definition of Indigenous research because of the importance of challenging Western methodology and seeking ways to Indigenize it. Decolonization strategies surface the contributions of Indigenous peoples, and are intended to move Indigenous scholarship, identities, and knowledge from invisible to visible (Rigney, 2001, p. 10). They recognize the legacies of Indigenous territories as well as Indigenous intellectual legacies to the academy and country (L. T. Smith, 2005; Rigney, 1999). Others argue that a focus on critique and on
the object of critique detracts from efforts to centre the Indigenous world (Champagne, 2007, p. 359; P. Steinhauer, 2001) and instead devote enquiry to the examination and application of specific Indigenous knowledge traditions (Newhouse, 2008). This type of resistance/assertion dynamic, which both asserts Indigenous aspirations and worldviews at the same time as it resists dominating forces (Pihama, Cram, & Walker, 2002), I view as a characteristic of the dual dimension of Indigenous research methodology: a celebration of spirit and a pragmatics of protection.

A diversity of thought is expressed regarding the role of mainstream research methodologies within Indigenous research. Some Indigenous scholars hold that as long as research generates theory and empirical knowledge that is made accessible to nations and communities then it is meeting its role as research (Champagne, 2007, p. 355). The intellectual space created through critical and social justice enquiry is often valued (Kovach, 2005; K. Martin, 2003; L. T. Smith, 1999; S. Wilson, 2003), and individual scholars see congruence with critical theories, such as feminist analysis (L. T. Smith, 2005; Rigney, 1999), critical hermeneutics (Meyer, 2001), decolonization (Champagne, 2007), and postcolonial theory (Champagne, 2007; Rigney, 1999, 2001, 2006). However, modes of critical theory are considered deficient when they do not address the overarching and international aspirations of Indigenous peoples to self-government, land retention, and revitalization of culture and language (Champagne, 2007, p. 356). The ubiquitous (and often useful) categories of race, class, ethnicity, and nation may be criticized when they make epistemological assumptions that are foreign to Aboriginal communities and traditions, do not include colonialism as an analytical category, and do not offer a wholistic approach.
Similarly, race and critical race theories tend to aspire to equity and inclusion into the dominant society as a “primary goal”; however, social equality may not be the primary goal or the only goal for Aboriginal people interested in self-determination (Champagne, 2007). The existing disciplinary analytical tools provide only partial explanations for the cultural and political organization of Indigenous peoples and for Indigenous persistence into the present (Champagne, 2007, p. 353). Finally an Indigenous paradigm differs from critical, constructivist, and emancipatory approaches because it holds that knowledge is relational and is shared with all creation, thereby transcending the notion of individual knowledge (S. Wilson, 2001, p. 2). Nonetheless an Indigenous research paradigm is pragmatic in adapting research that is relevant to Indigenous interests. Indigenous scholars uphold the value of blending multiple methods and strategies for Indigenous purposes and collaborative projects (Rigney, 1999).

Although many of the academic disciplines include Indigenous issues within their empirical and theoretical frameworks, this may largely serve their own theoretical purposes (Champagne, 2007, p. 354; Deloria, 1969, pp. 78–100). The discipline-based university curriculum reflects the organization of the academy, and the interests of the broader society and the nation-states that are competing within global markets. These social structures in turn shape the ways in which knowledge is reproduced and distributed in schools and in society (L. T. Smith, 1999, p. 129). Universities conduct research and generate theory that aim to contribute to human knowledge, however human knowledge is usually understood from within a Western worldview in order to address the issues of concern to Western society (Champagne, 2007, p. 355). Indigenous societies have their own interpretations of individual and collective good and well being that seek moral and spiritual balance.
(Champagne, 2007; Grande, 2004). Nonetheless, many Indigenous scholars work to retain the connections between academic researchers, Indigenous communities, and the larger political movement of decolonization because separation would replicate at profound levels the colonial experience of education. Although connections may be difficult to maintain they are thought to offer the best chance for transformation for Indigenous peoples and for transformation of the institution of research (L. T. Smith, 2005, p. 88; Rigney, 2001).

5.4 Discussion: Theorizing Indigeneity

we are narrators narratives voices interlocutors of our own knowings
we can determine for ourselves what our educational needs are
before the coming of churches residential schools prisons
before we knew how we knew we knew


As Peter Cole suggests, Indigenous narrators use discursive resources to create new constellations of word and meanings, and individual creative acts can cumulatively restructure orders of discourse. Through the production of new discourses Indigenous scholars function as agents of discursive and social change (based on Fairclough, 1989, p. 172, as cited in Jørgensen & Phillips, 2002, p. 17). I view this dynamic and actionable use of language as a shared characteristic linking the three areas of Indigenous scholarship and Indigenous knowledges in action in academic curricula and programs examined in this chapter: 24 Indigenous scholars name this Indigeneity.

Increasingly the term *Indigeneity* and its variants (Nakata, 2006; L. T. Smith, 1999; Turner, 2006) are used to express processes that assert Indigenous intellectual presence and

24 viz., Indigenous education, Indigenous studies and variants, and Indigenous research methodology.

These different interpretations represent paradigmatic currents within Indigenous intellectual discourse. While a predominant theme within the literature emphasizes nationhood, sovereignty and traditional cultural revitalization, there is also a less dominant theme that is also present in the graduate student discussions. This smaller but still audible voice cautions against the imposition of exclusive categories, asserts multiple and complex identities, and recognizes diverse and shifting ranges of “Indigenous” experience (Donald, 2009b; Langton, 1993; Nakata, 2007b; Urion, 1991). I view these paradigmatic currents as being similar to Indigenous critical modes described by Teuton in that they differ not only in the central questions they ask but in the ethical positions they construe in relation to the social contexts (Teuton, 2008, pp. 200–208). Mode-three criticism, similar to Nakata
(2007b) and much of the graduate student discussion, is concerned with theorizing how “academic work can be made accountable and put into dialogue with Native people, communities, and nations” (Teuton, 2008, p. 201). There is a related charge from a student-scholar participant for researchers to take the responsibility to be accountable for use of terminology: “If we do want to believe that we’re only talking about a certain group of people, we should really state that” (1: Frances). Identity was a key issue for the student participants at individual and collective levels, as it is for Indigenous theorists, many of whom share a concern that it not deteriorate into identity politics and threaten to fragment Indigenous interests (Alfred, 1999; Grande, 2000, 2008; Kidwell, 2009; Langton, 1993; Nakata, 2007b).

5.4.1 Indigeneity and Knowledge Organization

In considering design of knowledge organization systems (KOS) for diverse audiences of Aboriginal university students (for example, land-based, rural, urban; multidisciplinary and interdisciplinary; traditional and cosmopolitan), I draw on Grande’s concept of “multisubjectivities”: multiple and intersecting layers of identity. The concept disrupts attempts to impose or to claim authentic identity, and is congruent with the rejection of authenticity as a principle within Cultural Interface (see Chapter 2.2.1.3). Indigeneity in educational contexts is viewed as a means for self-determination and sovereignty, and equally as a means of creating the social and intellectual space for Indigenous learner-scholars to imagine or re-imagine what it means to be Aboriginal in contemporary society (Grande, 2008, p. 240; Nakata, 2007b; Turner, 2006).

Thus in developing an approach to Indigenous knowledge organization (IKO), I read Indigeneity as a disciplinary ethic that is committed to centring Indigenous agency,
participation, and accounts in their full range of expressions. It accepts that Aboriginal learners are not served solely by access to Indigenous content alone but need to be able to bring a wide range of Indigenous perspectives to scholarship rather than being defined by those perspectives (Nakata, paraphrased by Trounson, 2011, p. 2). This is a caution that recognizes the power of IKO to construct identities.

The concept of *Indigeneity* may also be applied in considering the multiple Indigenous discourses, and in distinguishing Indigenous scholarship from other orders of discourse that use the same or similar terminology but have different social and political commitments. For example, adapting Tennis’s (2003) model for defining domain boundaries, the concept of Indigeneity is the area of modulation, it defines the scope and the naming of a domain; it distinguishes an Indigenous knowledge domain from other orders of discourse. Within the Indigenous knowledge domain of post-secondary education, prominent tensions and efforts to resolve them centre on constructions of differences and similarities between Indigenous knowledge/Western knowledge, community knowledge/academic knowledge, pan-Indian/culturally specific approaches, and decolonization/cultural revitalization. Indigenous scholars take up various positions in relation to these debates ranging from strongly dualist, to located somewhere along a continuum, to contextual and open to negotiation.

From my domain analytic perspective, these diverse approaches comprise different Indigenous discourses and paradigms, all of which are conceptualized as part of the domain of Indigenous knowledge due to their (variously enacted) commitments to Indigeneity: a social and political commitment at the level of social practice. For the purposes of articulating domain boundaries and characteristics within the study I use the concept of
Indigeneity as a marker that indicates an Indigenous knowledge domain. I take this marker to be present in the fields identified as Indigenous knowledges in action (Archibald, 2008) in the academy, and for the purposes of discussion I name them the Indigenous disciplines. Within this chapter, I have examined the Indigenous disciplines of Indigenous education and Indigenous studies, and viewed both through the lens of Indigenous research methodology. Additional Indigenous disciplines potentially could include any applied, artistic, or theoretical discipline engaged by Indigenous thought or a new Indigenous emergent field. This is a more relaxed definition than those proposed by theorists dedicated to Indigenous studies as an endogenous study (cf. Cook-Lynn, 1997; Thornton, 1977) and relies more on an ethos, such as the Cultural Interface, that recognizes new forms and blended traditions as potentially generative and relevant to Indigenous interests, particularly within a field (Indigenous knowledge organization) that strives to represent and organize their documents.

Depending on the Indigenous theoretical lens used, a related discourse may or may not be defined as falling within the Indigenous knowledge domain. A challenge for Indigenous knowledge organization is to develop the conceptual tools to distinguish between and represent different orders of discourse within the domain of Indigenous knowledge. For Turner, Indigenous word warriors have dual roles in deconstructing colonialism and defending Indigeneity/ies (Turner, 2006, p. 113). Both Turner (2006) and Nakata (2007b) agree that these dual roles require dual areas of expertise: understandings of an Indigenous knowledge system, as well as the histories and logics of the academic disciplines. This entails, I think, a requirement to retain some process for representing harmful hegemonic discourse found in the literature in order that it may be identified and retrieved for critical
examination. Obscuring it with language that meets our current standards may not serve Aboriginal students and scholarship.

This chapter aimed to contribute to understanding the intellectual and social characteristics of the domain of Indigenous knowledge in post-secondary education including disciplinary goals, problems addressed, research objects and topics, and Indigenous learners and scholars. Due to a shared high-level disciplinary goal of serving Indigenous communities and Indigenous interests, the building of scholarly reputation for Indigenous scholars may not depend solely on the recognition of specialist colleagues but perhaps equally on diverse lay audiences of Indigenous collectives (derived from Fry & Talja, 2007). Research problems are frequently grounded in Indigenous formulations and in seeking ways to directly or indirectly strengthen Indigenous communities and Indigenous presence in broader social worlds, including the academy. This may entail a clear distinction being drawn between Indigenous interests and those of a nation-state. A better understanding of the domain of Indigenous knowledge within the academy may contribute to understandings of how to design and develop knowledge organization processes and systems for it.

Chapters 4 and 5 together composed Part One of the dissertation: they focused respectively on naming the consequences of mainstream knowledge organization systems and processes for Indigenous learners; and on the naming of Indigenous knowledge not as a concept but as dynamic knowledge domains composed of interactions between actors, concepts, documents, and institutions that are distinguished from other cognate knowledge domains though the concept of Indigeneity.
Part Two: CLAIMING

Claiming extends the act of naming through assertion in public spaces, it hails an audience and demands recognition. This section is composed of two chapters concerned with claiming the field of Indigenous knowledge organization (IKO) as a practice and a scholarship based on expert interviews with nine Indigenous designers of Indigenous knowledge organization systems from four countries.²⁵ It is also interpreted as Indigenous knowledge in action (Archibald, 2008), and in this sense it is viewed as a social, political, and pedagogical instrument (adapted from Justice, 2011). Chapter 6 Indigenous Knowledge Organization: Mapping a Field begins with a (partial) history of the development of IKO in Canada, followed by a typology of practice at local and global levels based on the interviews and the literature. Chapter 7 Indigenous Design Space, Purpose and Evaluation explores aspirations for Indigenous design, stories of experience, relations between Indigenous and Western approaches, and the role of information policy. It concludes with a conceptualization of multiple purposes and therefore multiple evaluation criteria for Indigenous knowledge organization.

Chapter 6 Indigenous Knowledge Organization: Mapping a Field

Contemporary and historic accounts record the persistence of First Nations in Canada and tribes in the United States in developing community libraries, archives and cultural centres despite ongoing systemic exclusions and underfunding by federal, provincial/state, and municipal governments of library and information services by and for Aboriginal people (J. Carlson, 1980; Edwards, 2005; Heyser & Patterson Smith, 1980; Hills, 1997; Joseph, 1980, 1994, 1995; Lawlor, 2003; Ongley, 2005). This suggests a relationship between the multiple and longstanding barriers to Aboriginal people to basic levels of library and information services and the paucity of Indigenous-related scholarship within library and information science, a professional curriculum lacking relevant content,\(^{26}\) the struggle of the information professions to recruit and retain Aboriginal librarians and archivists, and the underrepresentation of Aboriginal people as staff and users in libraries, and faculty in library schools (Joseph, 1993; D. Lee, 2001, 2008; Roy & Smith, 2005; Patterson, 2000; Szekely, 1997, 1999; R. Taylor, 2001; S. Taylor, 2003; Webster, 2005; Webster & Doyle, 2008; Williams, 1999). At the same time it is also testament to the perseverance and innovation of Indigenous people that Indigenous libraries and Indigenous knowledge centres continue to be developed, and that there is an identifiable Indigenous practice of knowledge organization in the field, albeit often unpublished and un(der)funded (Patterson, 2000; Roy & Smith, 2005).

The library and information science (LIS) literature documents a range of disparate knowledge organization activities in Indigenous contexts, however the literature does not

\(^{26}\) Notable exceptions include the Knowledge River program at the University of Arizona School of Information Resources and Library Science (Montiel-Overall & Littletree, 2010), and a nascent curriculum concentration at the University of British Columbia (UBC iSchool).
conceptualize these activities as an interrelated field of practice with particular characteristics, histories, commitments and an emergent theory enacted at various sites at local and global levels. While these Indigenous initiatives are diverse I suggest that they share an overarching commitment to serving Indigenous interests and in this sense aspire to be transformative. The purpose of this chapter is to conceptualize Indigenous knowledge organization (IKO) as a distinct field of study and practice, map some provisional boundaries for it, and identify some of its characteristics, including its object of study. I have conceptualized IKO as a strategy for social change, and mapped four types of practice (design strategies) within the field shaped by the contextual elements of jurisdiction, institution, focus, and scope, which are presented as a (possible) typology in Table 6.1 Indigenous Knowledge Organization: Mapping Design Practice. The practices are heterogeneous but among the heterogeneity there is continuity in the aspiration to serve Indigenous interests (at a particular site).

The chapter is divided into two parts: an oral history of three First Nations designers, and an international survey of practice that is presented as a typology of practice. The oral history with First Nations designers Brian Deer, Gene Joseph, and Bert Morrison contributes to the record of the emergence of Indigenous knowledge organization (IKO) (in libraries) in Canada. It is followed by a survey of Indigenous knowledge organization systems interpreted as four types of design strategy: (1) Indigenous knowledge-based systems, (2) hybrid systems, (3) local adaptation of a universal KOS, and (4) institutional change of the dominant KOS. It then situates the site of this research study within a larger international field. The chapter demonstrates the ways in which Indigenous people have adapted the science of knowledge organization to serve Indigenous interests. It thereby addresses
research sub-question 4: “What elements of library knowledge organization theory are hospitable to interpretation from Indigenous standpoints?”

6.1 Indigenous Knowledge Organization in Canada: The Past in the Present

Oral history is recognized as a vehicle for personal narrative that can represent an individual or sets of individuals’ life stories (Janestick, 2010). In this study it is drawn upon to document a largely unrecorded personal and professional history of First Nations practitioners, and thereby contribute to an understanding of Indigenous knowledge organization in Canada through its historic development. Indigenous scholars view oral history as important sources of evidence in surfacing what may be hidden and providing balanced accounts of intercultural contact (Kidwell, 2009, p. 4). The oral history presented here may be seen as a record of the past in the present as traced through the development of and interrelationships between three knowledge organization systems in use in Canada: the *Brian Deer Classification*, the *Ojibway and Cree Classification*, and the *Gene Joseph Subject Headings*. It is based on expert interviews with three designers who lived and worked in three different provinces, but all of whom knew of each other, attended post-secondary institutions during the same time period, and were motivated by a common commitment to Aboriginal interests and rights. Appendix A: Interview Dates and Places includes details on the interview dates and places.

The prevailing influence of social Darwinism in federal Indian policy was in decline following the Second World War in Canada, as elsewhere (see Chapter 2.1.1). The federal vote was granted to Indian people in 1960 and during the same decade the federal government, responding to pressures from First Nations leaders and others, began to provide opportunities for Indian post-secondary education (Stonechild, 2006). It was an era of
international student movements and increasing Native activism in Canada. Slowly these changes began to open institutional doors to post-secondary education for Aboriginal people (MacIvor, 2012). Three First Nations students who were to become leaders in developing library knowledge organization systems in Canada were among those who entered: Brian Deer, Kahnawake Mohawk, Gene Joseph, Dakehl, and Bert Morrison, Mushkego Cree.

6.1.1 Brian Deer

In 1970 Brian Deer encountered his first teach-in^27 at McGill University in Montreal: it was on the North American Indian. His ongoing interest in Native American activism met his emerging interest in knowledge classification when he was working with the Native North American Studies Institute (Montreal) organizing its library collection. This led to his decision to enrol at the McGill Graduate School of Library Science (1972–1974) where his coursework included advances in classification, and alternative and critical classification, with an independent Welshman, David Batty. Reflecting on some of his intellectual influences Brian Deer identifies leading Indigenous scholars Vine Deloria and Harold Cardinal; he also remembers professor Batty. Brian Deer practiced as a librarian only briefly during the years 1974–1976, however his innovation and creativity sparked the development of Indigenous library classification in Canada and continues to influence and inspire its expansion.

In March 1978, Brian Deer began a new position as the first Director of the Cultural Centre at Kahnawake, and he also played a formative role in the establishment of the Kahnawake Survival School in September of 1978. Deer has owned and operated the video

outlet Otiohkwa Video at Kahnawake since 1989 where he continues to consider principles of knowledge organization in the ordering and arrangement of the video collection. Brian Deer teaches an introduction to the Iroquois course in the Religion Department at Concordia University, and has been a guest speaker on Native activism and Iroquois studies in other university classes in Montreal, as well as at the University of Massachusetts, Amherst (Brian Deer, personal communications, December 16, 2008; October, 2011).


When Brian Deer graduated from McGill library school in 1974, the National Indian Brotherhood (NIB) in Ottawa was seeking a replacement for their librarian and actively recruited him. As Deer recalls, “a First Nations librarian was almost unheard of at that time.” The NIB office manager, having no contact information for Deer, contacted the Kahnawake police and asked them to find him for her, which they did. Shortly thereafter Brian Deer began work as a NIB librarian. The NIB was a corporate library comprised largely of closed case files. NIB staff acquired documents while working on an active file and then deposited them in the library when the file closed. Current material was retained in staff offices, and the library served primarily as a repository for the NIB (historic) research materials and documents. At the time the collection comprised approximately twenty-four filing cabinets (Brian Deer, personal communication, December 16, 2008).

Brian Deer began to design a classification system to organize the collection sitting at a boardroom table at the back of the library with the contents of the filing cabinets spread out before him. He grouped and arranged the materials according to the areas of activity of the NIB. Without the luxury of closing the library to its users, he worked at the system design
and the reorganization of the collection at the same time as handling the daily operations and
reference service to users while under the project deadline. At the end of the fiscal year in
1975 the NIB devoted year-end monies to fund Brian Deer to travel across the country and
share his work on classification with First Nations affiliates in Ontario, Manitoba, British
Columbia, the Yukon, and the Northwest Territories. On return, he continued working with
the NIB for another year until the summer of 1976 (Brian Deer, personal communication,
December 16, 2008). At that time Keltie McCall took up the position of librarian at the NIB.
Brian Deer had worked with the NIB from approximately August 1974 to July 1976.

Although Brian Deer did not return to the field of librarianship, he continued to do
library work as a “sideline.” While serving as the Director of the Cultural Centre at
Kahnawake, he drafted another version of the Brian Deer classification to organize the
Iroquois Studies materials there.28 Deer states that the official name is “Kanien’keha:ka
Onkwawen:na Raotito’h’kwa Language and Cultural Center” but that people in Kahnawake
call it the “Cultural Center.”29 It was at the Cultural Centre that Brian Deer began to develop
subject headings for its collection. He drew upon the UNESCO thesaurus for this project as
he considered it an instructive model due to its international scope. He questions the critique
of his use of the UNESCO thesaurus by students MacDonnell, Tagami, & Washington
(2003) on the University of British Columbia (UBC) School of Library Archival and

28 All other materials at the Cultural Centre at Kahnawake, including the Native Studies
books, were classified using DDC (Brian Deer, personal communication, October 6, 2011).
29 As noted in Chapter 1: Terminology Notes, when writing in English Brian Deer advises the
use of the term Kahnawake (instead of Kahnawa:ke) which has been used throughout the
dissertation. The full colon “:” is a vowel lengthener, so that you would say “waa” or “waaa”
instead of “wa” (Brian Deer, personal communication, December 16, 2008).
Information Studies (SLAIS) website, however he considers the website to be a fairly accurate treatment of his intentions with the Brian Deer classification.

They did a critique of this scheme and they got things right, from my perspective, on both sides, what I was trying to do and what I was not trying to do and they said so…. The only error they made was they passed on somebody else’s error, which was Gordon Hills’, he got the Mohawk Nation office mixed up with the Cultural Centre. (Brian Deer, personal communication, December 16, 2008)

MacDonnell et al. (2003) replicated Hills’ error (1997, p. 138) that Deer used the UNESCO Thesaurus when he worked at the Mohawk Nation Office. Deer corrects this error, stating that Hills should have referred to the Cultural Center at Kahnawake as the Library that Deer was responsible for (during the late 1970s and early 1980s) and where he used the UNESCO Thesaurus as a basis for developing subject headings, not the Mohawk Nation Office. At the time Gordon Hills visited him (1988), Deer was working at the Mohawk Nation Office and using an altogether different scheme to organize the papers there. Deer also commented that the students’ use of the official John Deere logo on their student website (MacDonnell et al., 2003) was a form of cultural appropriation, and that the spelling of his name is Deer (not Deere).

My name is Deer not Deere. My name is the translation of a Mohawk name, Skenontona, which comes out as Shenandoah in Virginia, the Shenandoah Valley and Shenandoah is also a last name in Onondaga (but not among the Mohawk)…. So, you know, there’s a clash there, linking my name to John Deere tractor, because I’m Mohawk he’s English. So it’s cultural appropriation actually, what they’ve done. (Brian Deer, personal communication, December 16, 2008; October 11, 2011)

6.1.2 Gene Joseph

During the same time period that Brian Deer was attending the Native American Indian teach-in on the McGill campus in Montreal, Gene Joseph was attending Native land claims demonstrations in Vancouver. Joseph had followed her sisters and brother down from
the village of Hagwilget in north central British Columbia to the city of Vancouver for post-secondary education. She attended Vancouver Community College (VCC) Langara, with a group of ten or fifteen First Nations students, among the first groups of Aboriginal post-secondary students in the province. The Union of BC Indian Chiefs (UBCIC) had just been formed in 1969\(^\text{30}\) and the First Nations political activism in the province sparked her interest in Indian land claims.

The Indian movement had just really started when I went to college. And so it was a very exciting time…. And we were all very pleased and excited because we were probably the first—I guess you would almost say “cohort”—group of Indian students to go to college in Vancouver. There was a small group at UBC, but there weren’t that many students at UBC either at that time. And because of our interest in the Union of BC Indian Chiefs and being young people, we attended a lot of demonstrations and protests and such, and a lot of them had to do with land claims. And so I decided at that time that—for my career, for my work area—I wanted to do something that would be of assistance or use in the area of land claims. (Gene Joseph, personal communication, April 20, 2009)

Joseph’s first summer job in Vancouver was with the BC Indian Education Resource Centre at the University of British Columbia (UBC). It housed the small research collection for the BC Native Indian Teachers Association (BCNITA) that was instrumental in establishing one of the first Native Indian Teacher Education programs in Canada, the NITEP program at UBC (1974). She was also a co-worker with a group of students at the BC Native Studies research collection at VCC Langara, which led to the publication of *The Handbook of Indians of British Columbia*.\(^\text{31}\) In 1978 after graduating with a Bachelor of Arts in history from UBC, she applied for a position at the Union of BC Indian Chiefs (UBCIC) and was not

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\(^{30}\) The UBCIC formed in November 1969 with the goal of supporting the work of Indian people to fight for recognition of Aboriginal rights and respect for Aboriginal cultures and societies (UBCIC website http://www.ubcic.bc.ca).

hired. However, after a successful appeal to George Manuel she began working with librarian Keltie (Frances) McCall\(^{32}\). The following year, McCall left the UBCIC and Joseph filled the librarian position but soon found that it required professional training.

And by 1980 I just realized that I really needed to have my Master’s Degree in Library Science. I think that I was really held back by the fact that I didn’t have a degree, and I wasn’t recognized professionally as a librarian. And by that time I had also met Brian Deer and Roberta Miskokomon, Lillian Monture, and Bert Morrison. (Gene Joseph, personal communication, April 20, 2009)

Gene Joseph entered the UBC School of Library Archival and Information Studies (SLAIS) graduate program in 1980 and received an MLS in 1982; she was the first First Nations SLAIS graduate.

6.1.2.1 The BC-Deer Classification: The Union of British Columbia Indian Chiefs’ Library (1979–1980)

Gene Joseph recalls, “George Manuel was a big supporter of libraries” and when he left the National Indian Brotherhood (NIB) in Ottawa to return to BC as elected President of the Union of British Columbia Indian Chiefs (UBCIC) (1979–1981), he brought NIB librarian Keltie McCall with him. Keltie McCall set up the UBCIC Library using the NIB-Brian Deer classification. From Joseph’s perspective, the Brian Deer Classification (BDC) was very basic, however it did provide access to First Nations names and concepts. At the time, the use of anthropological terminology was prevalent and widely used in libraries, as it continues to be in 2013. Terminology such as Niska Indians, Carrier Indians, and Shuswap Indians, was widely accepted\(^ {33}\) (Gene Joseph, personal communication, April 20, 2009).

\(^{32}\) At this time Keltie Frances McCall was often known as Keltie McCall (cf. UBCIC 1978).

\(^{33}\) The subject headings Niska Indians, Carrier Indians, and Shuswap Indians are still the authorized terms in the Library of Congress Subject Headings (LCSH), and continue to be used as authorities in the University of British Columbia Library Catalogue as of January 2012.
These were the anthropological terms that had been provided by early anthropologists and perhaps by, non-Indian government or missionaries or whoever—early European travellers—had assigned to the First Nations. We’d become used to using the term ourselves, for example, saying we’re Carrier Indians\(^{34}\) and such. And so in the late ’70s and early ’80s, a lot of our people were bringing back the use of our own names, of our own nations, as well as bringing back the names of our own villages, our terminology, our spellings and such. So there was a lot of activity in that area as well. And it became a point of pride to be able to access information by our own name, rather than something that, you know, we at times felt could be derogatory, or that we just plain and simple didn’t identify with. (Gene Joseph, personal communication, April 20, 2009)

During 1978–1979 Keltie McCall and Gene Joseph expanded the BDC for the UBCIC Library. They began by adding the major First Nations cultural areas in British Columbia, for example Haida, Coast Salish, Interior Salish, and Tsimshian. They also rearranged some of the classes, and after Keltie McCall left the UBCIC, Gene Joseph continued to make adjustments to the BC version of the BDC to reflect the unprecedented levels of political activity, and cultural, historical and linguistic research of the times.\(^{35}\)

And so I just felt that the classification and our subject headings needed to reflect that. And so I tried to keep the classification terminology and the subject headings terminology consistent with the times that we were working in. And that’s why there were these gradual changes that came about. (Gene Joseph, personal communication, April 20, 2009)


While a graduate student at SLAIS (1980–1982), Gene Joseph undertook a research project on First Nations terminology and collected subject headings from around eight First Nations libraries across Canada, recording her data on three-by-five inch cards.

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\(^{34}\) Carrier Indians is the anthropological term for Dakehl. Gene Joseph is of Wet’suwet’en—Dakehl heritage.

\(^{35}\) For the purposes of this study, I have named the British Columbia modifications to the BDC as the BC-Brian Deer classification (BC-BDC) in order to distinguish the differences in structure and content from the original BDC.
I entered all of these thousands of subject headings. And cross-referenced them, and tried to bring some consistency to them. And that’s where my subject headings list came from. It was a compilation of all of these First Nations libraries and what they were using… So that’s where the [NITEP] list came from. And I used it as a basis for most of my work after that. (Gene Joseph, personal communication, April 20, 2009)

In 1984, Joseph was hired to organize the NITEP collection, which had recently been taken out of storage, and she catalogued it using the subject headings that she had developed as a SLAIS student, entering them into the NITEP Library database.36 During this time, the headings list was expanding as First Nations’ interests developed in political, economic, spiritual areas, resulting in new and changing terminologies. Although Joseph thought that the BC-BDC still needed work, she focused on the development of subject headings because advances in computer technology held promise of increasingly sophisticated subject searching. Joseph felt that classification was useful for shelf access but did not provide the much-needed subject specificity offered by subject vocabulary (Gene Joseph, personal communication, April 20, 2009).

By 1990 planning had begun for a new First Nations House of Learning (FNHL) facility with a Longhouse and a separate Aboriginal library at the University of British Columbia. The decision was made to transfer the NITEP library collection to the new FNHL Library with an expanded collections mandate. The new library was given the name X̱wi7̱xwa (pronounced whi-wha) by Chief Simon Baker, Squamish Nation, at the official opening of the FNHL facility May 25, 1993. The classification became known as the FNHL classification and Gene Joseph continued to expand it for the X̱wi7̱xwa Library. Initial work

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36 In 1996, the UBC Library Systems Division mapped and migrated the NITEP bibliographic records into the UBC Library catalogue. The author, a systems librarian at the time, worked on the migration.
expanded the classes for curriculum materials, archives, and art. Later work expanded the Coast Salish and Interior Salish cultural groups, and developed the whole language class. Some classes, such as Health were expanded geographically and the curriculum class was expanded to include levels of pre-school, elementary, secondary, and adult. This work increasingly reflected the nature of the First Nations House of Learning, Xwi7xwa Library as an Aboriginal post-secondary academic library. Deliberations soon began about the possibility of the new library becoming a branch library within the UBC Library system; this was to take over a decade to achieve (MacIvor, 2005). Key considerations were the retention of Xwi7xwa’s unique Indigenous knowledge organization systems: the FNHL-BDC classification scheme and Gene Joseph subject headings.37

And that was one of my main concerns about becoming part of the UBC library system, was that we’d lose control of the catalogue. And more particularly, I was concerned about the subject access. If we had to drop Brian Deer, I thought, okay, I could let it go. (Gene Joseph, personal communication, April 20, 2009)

During this time period, Gene Joseph also consulted on a number of knowledge organization projects within the province, including one for the Heiltsuk Nation in northwest British Columbia.

6.1.2.3 Heiltsuk Cultural Education Centre Classification: Heiltsuk Cultural Education Centre (1984–present)

While on a contract with the Heiltsuk Cultural Education Centre (HCEC) in 1984, Gene Joseph worked with Jennifer Carpenter, Director of the HCEC, to design a hybrid Deer/Ojibway-Cree Classification System for the HCEC. About ten years later they tried, unsuccessfully, to redesign it and ultimately decided to retain the original hybrid. Gene

37 The Gene Joseph subject headings were to become the basis of the First Nations House of Learning (FNHL) Subject Headings.
Joseph and Jennifer Carpenter continue to work together intermittently on knowledge organization for the HCEC (Gene Joseph, personal communications, April 20, 2009; June 22, 2011).

### 6.1.3 Bert Morrison

Across the country, again during the early 1970s, Bert Morrison left his home in Moose Factory on the shores of James Bay (Ontario) to go back to school after a ten-year hiatus. He was pursuing qualifications for the jobs that were becoming available due to the formation of new Native organizations.

Back in the early seventies, mid-seventies—in Ontario, I can’t speak for the other provinces—all these organizations were starting to form: political organizations and cultural centres, friendship centres and so on. And in our area we had a political organization called Grand Council Treaty No. 9. It’s now called Nishnawbe Aski Nation. You’ve probably heard of them. They serve the James Bay Treaty No. 9 area which is from the Manitoba border to the Quebec border and Northern Ontario. It’s a vast area with about fifty First Nations communities. And when they first started out, they started out with six major programs—Rights and Treaty Research, Social and Economic Development, Cultural Programs, Education and Cultural Programs—about six of them—Health was another one. (Bert Morrison, personal communication, May 25, 2009)

Bert Morrison recalled, “I was working for my people in various areas” with the Grand Council Treaty No. 9 travelling to First Nation communities to determine the kinds of services available and helping the communities with their growth and development. In urban centres such as Timmins, Cochrane, and Kapuskasing, Morrison researched service levels and representation of Aboriginal people on the police force, or in the hospitals as nurses, doctors, or other health workers.

And then one day Earl Commanda came up to me and asked me if I’d be interested in working with the Cultural Centre and helping with this task (of setting up the library), and that’s how I got into the library field. (Bert Morrison, personal communication, May 25, 2009)
As Co-ordinator of the Ojibwa and Cree Resource Centre from the late 1970s to the 1980s, Bert Morrison was instrumental in the development of the Ojibway-Cree Classification System, still in use (and online) at the Ojibway and Cree Cultural Centre in Timmins, Ontario. As of 2009, Bert Morrison resides in Moosonee and continues his interest in the Ojibway and Cree heritage, histories and languages through the compilation of a (as yet unpublished) bibliography of resources related to the Nishnawbe Aski Nation and the Nation’s territories, *Bibliography of Materials on or Relating to Nishnawbe Aski Nation and the James Bay Treaty*.

6.1.3.1 The Ojibway and Cree Resource Centre Classification: The Ojibway and Cree Cultural Centre Resource Centre (1980–present)

When the Nishnawbe Aski Nation (NAN)\(^{38}\) first started out, it was decided that the Cultural Education Programs would be the right vehicle to start a library, but it was only meant to be an in-house library, when the organization was first starting out. There were vast amounts of material all over — documents like the treaty itself and government documents relating to the treaty and government services, like housing, education, health, and all those. There was tons of material there, and it had to be organized somehow, and housed in a library-type setting within the organization. So it was only meant to be an in-house library for the use of the staff, so they would have all this material at hand’s reach so that they could use it. (Bert Morrison, personal communication, May 25, 2009)

Earl Commanda and Bert Morrison started to look for funding to support the establishment of a library for the Nishnawbe Aski Nation. The NAN communities were in different states of organization, some of them as small as one hundred people, and many needed basic physical infrastructure such as housing, and health services, “and a library, a physical library setting

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\(^{38}\) Nishnawbe Aski Nation (NAN) is an Aboriginal political organization representing 49 First Nation communities within James Bay Treaty 9 territory and the Ontario portions of Treaty 5 that covers two-thirds of the province of Ontario. NAN (known as Grand Council Treaty No. 9 until 1983) was established in 1973 (NAN website http://www.nan.on.ca/).
was the last thing on their mind” (Bert Morrison, personal communication, May 25, 2009).

At the same time, a number of the NAN communities expressed an interest in a library service to support their schools. This was not envisioned necessarily as a physical library in each community but rather a service-based model that could, for example, ship a collection of materials to a school where it could circulate for a few months and then be returned. This type of shared resource model was attractive to the communities and they supported it.

So we met with the chiefs, and we wrote a BCR, a Band Council Resolution, and in that resolution we stated that if they could turn over their portion of the money [per capita library funding] to us, we would ensure that they were provided with library services from our centre. (Bert Morrison, personal communication, May 25, 2009)

Morrison recounts that the proposal was successful: “about twenty-five or thirty of the chiefs consented to such a request, and so we got their portion of the money. So that’s how we got a bulk of the money to help us do our work and all that. And the library still runs this way getting a portion of that per capita funding.”

Now we didn’t have library experience at all, just our knowledge about going to the library and borrow a book and take it out, return it and all that. So we met with the professional librarians in different parts of the province…who had degrees and diplomas in Library Sciences and all that to help us with this task. (Bert Morrison, personal communication, May 25, 2009)

The staff of the Ojibway and Cree Cultural Centre went ahead and started to develop and organize the library materials but then encountered the next big challenge—classification.

But then when we looked at the classification systems that were available, like the Dewey system…the Library Congress…. We weren’t too satisfied with the way their classes were laid out. And when we looked, “books on Aboriginal people” were basically lumped into one category under General Geography and History: 970…. Almost everything was under that no matter what it was about, what the book was about or materials about. And they had our traditional games, like hand games and sports games, lumped under Toys or Playtime, Children’s Games, or something like that. (Bert Morrison, personal communication, May 25, 2009)
Morrison recounted that some ceremonial practices and ceremonies were classed under Black Magic and that, ultimately, “the available classifications did not appeal to our needs.”

That was one of the main reasons we decided not to go with the Dewey System. And the Library Congress wasn’t much different than the Dewey. So we kind of scrapped them and worked on developing our own. It took us about a year and a half, I guess — to come up with the systems. And so that’s when we did our own classes. (Bert Morrison, personal communication, May 25, 2009)

The Ojibway and Cree Classification has classes that arrange and describe both traditional and contemporary forms of knowledge, experience and creative expression. It classifies subjects of interest to the NAN community members such as environmental issues, resource management, and legal topics; it also has separate classes for music, the performing arts, and media. The Ojibway-Cree language is treated as a unique and distinct language, and the classification distinguishes between Cree-speaking societies across Canada: for example, Mushkego Cree in Ontario, Plains Cree in Alberta, and Swampy Cree in Manitoba. This type of specificity “makes it very easy for the person to come in, especially a non-Native person, and do research in our library” (Bert Morrison, personal communication, May 25, 2009).

The Ojibway and Cree Cultural Centre Library grew from an idea for a staff in-house library to that of a library service for the almost fifty First Nations communities of the NAN territory that covers two thirds of the province of Ontario, and included community workshops for those interested in the library field. The Ojibway and Cree Cultural Centre Library continues to serve the communities of the Nishnawbe Aski Nation, as well as serving as a research library for the general public, students, teachers, and researchers who travel to access the collections at the Ojibway and Cree Cultural Education Centre. (Bert Morrison, personal communication, May 25, 2009)
6.1.4 The Original Peoples’ Library Association

Bert Morrison, Brian Deer, and Gene Joseph designed classification schemes for First Nations libraries in Canada, including the National Indian Brotherhood, the Union of British Columbia Indian Chiefs, the First Nations House of Learning Library, and the Ojibway and Cree Cultural Centre among others. They were also among five or six First Nations librarians in Canada who worked to establish a national Aboriginal library association in Canada, the Original Peoples’ Library Association.39

And the only opportunity we could meet was at these CLA [Canadian Library Association] conferences. And we just couldn’t get together enough times to get the association established, and on its feet because we were spread out so far. (Bert Morrison, personal communication, May 25, 2009)

Gene Joseph added that when the group tried to form in the late 1970s, they were also struggling with terminology and an appropriate name for the group.

We were still struggling with trying to find a term to use for ourselves, because we didn’t want to use the term “Indian” because we recognized that we weren’t Indian. And so we needed another term. And were trying out Aboriginal, Indigenous, and all kinds of terms. And one of the terms that we thought for our librarians’ group was Original Peoples Library Association, because we were original people in this country, in this land. And so this was, I thought, a reflection of all the struggles that we were trying to use to self-identify with ourselves. So, just even the term “First Nations” was something that took a lot of people a few years to get that forward. And even then, it took a long time for it to become common usage. And it took right through the ‘90s for it to become, you know, really quite a common term. (Gene Joseph, personal communication, April 20, 2009)

The struggle of Indigenous peoples to name their experiences and perspectives within colonial contexts, to publicly claim them, and have those assertions recognized is an ongoing one. The activism and intellectual leadership of Indigenous scholars, such as Brian Deer,

Gene Joseph, and Bert Morrison were formative in the development of Indigenous knowledge organization in Canada. At the same time, their efforts continue to serve to educate a wider public about the diversity of Indigenous contributions in a range of sectors, and to rebalance the historical record and contemporary understandings of the nation’s social and political climates. The efforts of the designers were in large part precipitated by the barriers presented by the dominant knowledge organization systems (KOS) and collecting institutions (also discussed in Chapter 4). In this section, I have also suggested that there are variants of the Deer classification across the country that have been variously adopted, adapted and reworked. Some of these are identifiable and are unique to particular sites, and I have named them as such. It is an open question as to whether or when an adaptation might be considered a new scheme or what criteria might be used to distinguish between related KOS.

6.2 Indigenous Knowledge Organization: A Range of Practice

Indigenous initiatives that address the challenges presented by the dominant KOS continue to occur simultaneously at local, national and international levels. While they are diverse they may be characterized as sharing an overarching commitment to serving Indigenous interests and in this sense aspire to be transformative. The possibilities for change at a particular site are shaped by historic and contemporary contexts, including collections and institutions, and by the political, social and legal landscape that indelibly shapes the field. I interpret these strategies for change as interrelated and sometimes overlapping. The purposes and the related evaluative criteria for the KOS produced by each type of strategy and site can be expected to differ according to the specific context. Similarly the expression of issues that are characteristic of Indigenous knowledge organization (IKO),
such as cultural and intellectual property, access protocols, and care and handling of materials will be shaped by the particular context. The following section maps these four types of Indigenous approach to KOS design as (1) Indigenous-based system, (2) hybrid system, (3) local adaptation of a universal KOS, and (4) institutional change of a universal KOS. This range of practice is summarized at the end of the section in Table 6.1: Indigenous Knowledge Organization: Mapping Design Practice.

6.2.1 Indigenous Knowledge-Based Systems

Indigenous knowledge-based systems are those initiated by Indigenous individuals or collectives, and are not adaptations of mainstream systems. For purposes of this study they include classifications, alphabetic subject languages, and local knowledge bases: (1) Classifications: Brian Deer (BDC), the Ojibway and Cree Cultural Centre Resource Centre (OCRC), and the Native American Educational Services (NAES); (2) Alphabetic Subject Languages: National Native American Studies Thesaurus (University of California, Berkeley), Thesaurus of American Indian Terminology (Mashantucket Pequot Tribal Nation), and the First Nations House of Learning (FNHL) Subject Headings (University of British Columbia [UBC]); and (3) the local knowledge bases, such as proprietary knowledge management systems developed by tribes and nations for local use are included as a category but not described as they are outside the scope of the study (focused on public KOS).

6.2.1.1 Classifications

In his seminal study on Native libraries, Gordon Hills documents “about four” Native library classifications in use in North America in 1995: (1) the Ojibway-Cree Cultural Centre, (2) Brian Deer classification and variants, (3) a possible Inuit Tapirisat scheme, and
(4) the historic Indian Historical Society classification, in addition to anecdotal accounts of local modifications to the “standardizing and homogenizing library classification” (1997, p. 140). Of these four classifications only the Ojibway-Cree and the Brian Deer and its variants were found to be extant in public space in 2009, although there continue to be anecdotal accounts of locally developed classification schemes that are not publicly accessible or are small in-house classifications.

6.2.1.1 Brian Deer Classification

The Deer classification (BDC) is eponymous with Kahnawake Mohawk librarian Brian Deer, one of the first Aboriginal librarians in Canada and designer of the scheme. Designed initially for the National Indian Brotherhood (now the Assembly of First Nations), BDC variants have been used “by libraries connected with the National Indian Brotherhood” (Mark, Pilon, & Zuliani, 1979, p. 1) and further developed in British Columbia by the Union of British Columbia Indian Chiefs (MacDonell, Tagami, & Washington, 2003), the Eno’wkin Cultural Centre (Lawson, 2004, p.167), and at the Xwi7xwa Library (MacIvor, 2005; Tomren, 2003). Brian Deer describes his approach to design as being based on the needs of a specific collection and on the principle of simplicity, as he is keenly aware that most Aboriginal organizations do not have resources for dedicated staff to maintain a library. Deer observed that “Native libraries are in need of general classifications and subject

40 The Indian Historical Society classification was developed by the Indian Historian Press, San Francisco California, in the 1970s for its Indian Library and Archives. Six main classes preceded by an alphabetic author notation and optional digit were provided and an access point by tribe in addition to author, title and subject (Convocation, 1972, pp. 279–80). No published record of the Inuit Tapirisat classification was found.

41 In a transcript cited by Hills (Hills, 1997, pp. 138–139).
headings that are modern and sensitive to Native concerns in the 20th century” (Deer, quoted by Hills, 1997, p. 138).

Graduate student research based on Hills (1997) and on case studies of libraries that use or have used the Deer classification (MacDonell et al., 2003; Tomren, 2003), and other research contributes to the study of the unique contribution of Brian Deer to Native classification (S. Simpson, 2005; Van Der Velden, 2008). There is a gap in the literature describing variants to the BDC that is partially filled by the oral history in this chapter (see section 6.1.2).

6.2.1.1.2 Ojibway and Cree Cultural Centre Classification

At its inception in the 1970s the Ojibway Cree Resource Centre (OCRC) staff consulted widely regarding the design of a suitable classification (Morrison, 1981). Brian Deer, who was one of three Canadian Indians with a master’s degree in Library Science at the time, “developed a classification outline of twenty-three (23) basic headings and supplemented them with accession numbers e.g. Culture—B101, B102, etc.; Legends—E101, E102, etc.” for the OCRC (Morrison, 1981, p. 1). Because the original OCRC Deer classification system was not fully developed as originally intended, the collection outgrew the classification by 1979 (Morrison, 1981, p. 2). The OCRC staff then partnered with librarians from the North Central Regional Library System in Ontario to identify and

42 Graduate student interest in the Brian Deer classification is demonstrated by ongoing student requests for interviews with librarians at Xwi7xwa and the UBCIC. There is a variety of coursework and unpublished papers distributed on the web (cf. MacDonell et al., 2003; Tomren, 2003). In addition, University of British Columbia publications related to Aboriginal initiatives refer to the Deer classification (Lin, 2004; MacIvor, 2005). There are also articles co-authored and authored by the researcher that touch on the Deer classification (Doyle 2006; Webster & Doyle, 2008).
evaluate classification options for a new system. Several, such as the Dewey Decimal Classification (DDC), were rejected as being “too prejudicial against native people or too unwieldy” (Mark, Pilon, & Zuliani 1980, p. i), and eventually a hybrid classification was designed that combined a Deer expansion with the Cooperative Documents System (CODOC) classification. Each new class was tested against the collection to evaluate its workability and to improve specificity for ease of access and retrieval while not completely replacing the original Deer classification. This system, originally known as the Hydra Classification, became the OjiCree Classification (Mark et al., 1979, 1980; OCRC, 1982). The oral history provided by Bert Morrison in this chapter (see section 6.1.3) contributes to documenting the development of the Ojibway and Cree Cultural Centre Classification.

6.2.1.3 Native American Educational Services (NAES) Classification

The Native American Educational Services (NAES) Classification has come and gone since the time of Hill’s research (1997). It is characterized as a “home-grown, tribally centered classification system” (NAES website, 2002) that grew out of a need to better reflect the collections and serve the information needs of the NAES faculty of the College Public Policy and Tribal Research Center, Chicago, Illinois. Adopted in March 2003, it was retired in December 30, 2008, when the NAES College of Native American Educational Services

43 CODOC is a government publications classification system developed at the University of Guelph (Ontario) in the 1960s.

44 Sources on the history of the development of the Ojibway Cree Cultural Centre Classification include introductions to the catalogues (1978, 1981) and report literature by the design team (Mark et al., 1979, 1980; Morrison, 1981). Contextual material is found in the transcripts of the Royal Commission on Aboriginal Peoples (1996) community hearings that relate the importance of the resource centre itself to the community (Canada, 1997) and formation of the Anishnawbe Kaskantomawin—Native Information Service (J. Carlson, 1980).
Services, Inc. permanently closed (NAES, 2002, 2003). Tomren (2003) considers the strengths of the NAES classification to be its scope, use of Native American terminology, coverage of international Indigenous peoples, and expression of a Native American approach to knowledge. This assessment reflects the designers’ commitment to the institutional mandate to ensure that tribal knowledge, traditions and values played a major role in the higher education of Native students (NAES, 2002).

6.2.1.2 Alphabetic Subject Vocabularies

There is very little literature on the development of three Indigenous-based alphabetic subject vocabularies in North America that were in use and/or in development as of 2009: (1) the National Native American Studies (NAS) Thesaurus, (University of California (UC), Berkeley); (2) the Thesaurus of American Indian Terminology (Mashantucket Pequot Nation); and (3) the First Nations House of Learning (FNHL) Subject Headings, University of British Columbia (UBC). The first two are proprietary systems, and the third is available online as an integral part of the UBC Library catalogue. The National Native American Studies (NAS) Thesaurus is used to describe the NAS collection, one of four special collections housed in the Ethnic Studies Library (UC, Berkeley). Historically the NAS collection used a modified Library of Congress Classification (LCC) that collocated tribes and tribal relations and thus facilitated shelf browsing by tribe and contributed to Indigenizing the structure of the physical collection, however it was discontinued due to maintenance costs in approximately 2001. The Thesaurus of American Indian Terminology

45 The designers of these systems, John D. Berry, Cheryl Metoyer, and Gene Joseph, were interviewed as part of this study. The First Nations House of Learning subject headings are continuously updated and maintained at the Xwi7xwa Library.
led by Dr. Cheryl Metoyer is intended to describe and provide access to the collections of The Mashantucket Pequot Museum & Research Center (Connecticut). It holds educational resources on Native American history and culture with a focus on the northeastern USA and is one of the largest Native American Studies collections in the world (Frawley, 2009, p. 5). The First Nations House of Learning (FNHL) Subject Headings were initially created and maintained by Gene Joseph and are based on her unpublished research (Joseph, 1982).

6.2.1.3 Indigenous Local Knowledge Bases

Increasingly Indigenous communities are using information and communication technologies (ICTs) to develop local proprietary knowledge bases for compiling, describing, and controlling their own local knowledge systems. There are a range of international projects, many of which are undertaken collaboratively with external development agencies, libraries or consultants in Australia, Africa, Latin America, and Asia (Christie, 2003; Hunter, 2005; Van Der Velden, 2008). Michael Christie states, “For it to be an indigenous database, its architecture and structure, its search processes and interfaces, its ownership and uses must also reflect and support context specific indigenous ways of being and knowing, and people’s control over their own knowledge” (Christie, 2003, section, “Towards an indigenous database”, para. 2). Open source software affords flexibility in managing complex customary access rights and fostering traditional approaches to knowledge organization required for virtual repatriation and community research projects, such as local mapping.

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46 Virtual repatriation is a process whereby Indigenous communities search for their cultural property carried in objects, images, documents, and recordings that are held by collecting institutions, churches, individual researchers, missionaries and others. The process creates local digital collections of copies of these materials to bring the knowledge home to the originating communities.
Compatibility and sustainability issues threaten to arise with databases proliferating on multiple platforms and in multiple formats particularly when they are tied to short-term research project funding (Nakata, 2007b). Although a review of Indigenous knowledge management (IKM) activity is beyond the scope of this study, it is included here because the commitment to tribal self-determination places it within the study’s definition of the field of Indigenous knowledge organization. It may also point the way towards Indigenous-driven curation of Indigenous collections in mainstream institutions such as a collaborative project between the Plateau peoples of the Columbia River and the State University of Washington (Christen, 2011).

6.2.2 Indigenous Hybrid Systems

Indigenous hybrid systems explicitly designed to serve Indigenous interests but also to supplement and conform to the standards used by universal KOS\textsuperscript{47} are present at disciplinary and national levels. National-level Indigenous thesauri in Australia and New Zealand have been produced through partnerships between national libraries, research institutions, Indigenous practitioners, and professional associations with various forms of community involvement. They aim to better represent Indigenous peoples’ documentary heritage while simultaneously being compliant with Library of Congress standards in an effort to both supplement LC and to shape its development. Exemplars include: the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Thesauri

\textsuperscript{47} See Chapter 1.8.1 for a definition of universal KOS.
(AIATSIS, 2009/10, p.1; Stroud, 2008, p. 861); the Australian Aboriginal and Torres Strait Islander Protocols (1995, 2005, 2012) and Thesaurus (Byrne, 1995; Garwood, 1995; Garwood-Houng, 2008; Moocroft & Garwood, 1997); and the Māori Library Research and Subject Heading Project. The latter coincided with the Treaty of Waitangi Tribunal guarantee of the active preservation and protection of tāonga (cultural treasures) (De Barry, 1998; Lilley, 2008; Murray & Barnett, 2007; National Library of New Zealand website (NLNZ)48; S. Simpson, 2005; Szekely, 1997, 1999, 2002). Disciplinary supplements include the National Indian Law Library Thesaurus (Martens, 2006), the Lincoln Revision to the LC class for Hyperborean languages (Lincoln, 1987; 2003), and Native Law LC classification correctives by Carter (2002).

6.2.3 Local Indigenous Adaptation of a Universal KOS

The Luiseño Culture Bank is an early virtual repatriation project that exemplifies an Indigenous adaptation of a dominant system to meet local needs. In the 1970s, Luiseño Elders in California repatriated copies of photographs, tapes of stories and songs, and ethnographic records of Luiseño people to create the Luiseño Culture Bank. During the 1990s, the Elders partnered with a local university to design a hybrid scheme that selectively conjoined the LCSH (Library of Congress Subject Headings) with categories created by the Elders. Access to some parts of the Culture Bank is restricted to Luiseño people in

48 De Barry’s master’s thesis (1998) documents earlier efforts to address subject access to Māori materials comparing three Indigenous knowledge organization systems (KOS) on the criteria of scope, authority, consultation, linguistics, orthographies, tribal differences, issues and problems. She examined the Aotearoa/New Zealand Thesaurus/He Puna Kupu Māori project (National Library of New Zealand), the University of Waikato Library’s Māori Subject Headings, the Aboriginal and Torres Strait Islander Protocols (1995) and Aboriginal and Torres Strait Islander Thesaurus (1997).
respecting local protocols, and the Elders are responsible for naming sensitive or sacred
materials (Herlihy & Cocks, 1995). Other local adaptations are exemplified in the reworking
of the DDC at the American Indian Resource Centre (AIRC) (Tomren, 2003), and of LCC at
the Union of BC Indian Chiefs, Vancouver, British Columbia (Lawson, 2004).

6.2.4 Advocacy for Institutional Change of a Universal KOS

The designers emphasized the importance of the recognition of Indigenous self
representation by the dominant KOS (DDC, LC and LCSH), which continue to use non-
Indigenous sources as authorities for the naming of Indigenous communities, Indigenous
peoples, languages, places and concepts. As educator and CEO, Deanna Nyce, stated, “it
really does need to be changed. You know, it needs to come into the 20th century like
knowledge has, or 21st century like knowledge has” (Deanna Nyce, personal communication,
May 25, 2009). Kelly Webster, former president of the American Indian Library Association
(AILA) (2004-2005), stated that her advocacy for change of LC headings during her term as
president was motivated by frustration at LC’s representation of Native people. Webster and
her colleagues formed the AILA Subject Access and Classification (SACC) committee in an
effort to be recognized by the Library of Congress (LC) as qualified to serve in an advisory
capacity to LC on Native American subject representation,49 if one were offered. Kelly
Webster recalled the group efforts:

In 2006, I started chairing the group and was lucky to have a couple of energetic
members on board. One was Kathleen Sleboda (then Kathleen Burns). She was able
to move the discussion forward into a clear plan: to develop expertise among AILA

49 The AILA SACC committee was changed from a standing committee to an ad hoc
committee by the AILA Executive Board in 2010. (Memo to AILA listserv from Liana
Juliano, AILA President 2009-2010 on June 18, 2010).
members in submitting new and changed headings formally to the Library of Congress, to build our reputation as experts, and ultimately create a Native American Funnel Project where we could actively build a thesaurus that would be shared by the vast majority of libraries, and correct historic errors in both LCC and LCSH. (Kelly Webster, personal communication, April 21, 2009)

For two years Webster and Burns submitted proposals to the SACO program,\(^{50}\) and although some of the proposed headings eventually became part of LCSH it is unclear whether this was a result of the AILA efforts. Nonetheless, Webster felt encouraged to see that changes could be made to LCSH and affect the ways that materials on Native subjects were represented and accessed all around the world (Kelly Webster, personal communication, April 21, 2009).

In Canada, Gene Joseph identified roles for Library and Archives Canada and Canadian research libraries in working to change the dominant subject languages and incorporate Indigenous names and terminology for Indigenous peoples, places, languages, and concepts.

And I think at the very least, that Library of Congress and Sears should be asked to use those [Indigenous] terms—should be told to use those terms.

... So I think UBC could do something like that to make sure that, the First Nations terms—names for themselves—are as accurate or up to date as the First Nations themselves wish them to be.

... what I think, is that it can be done at the national level. I don’t see why the National Library and Archives can’t do that (Gene Joseph, personal communication, April 20, 2009).

In Australia and New Zealand, both the AIATSIS Pathways Thesaurus and the Māori Subject Headings aim to have their headings incorporated into the Library of Congress Subject Headings (LCSH) in order to improve the representation of Indigenous topics locally.

\(^{50}\) SACO. Library of Congress. Subject Authority Cooperative Program of the PCC (Program for Cooperative Cataloguing).
and globally. In the United States, Cheryl Metoyer clearly stated that the research and development program for the design of the *Thesaurus of American Indian Terminology* intends to be influential with the Library of Congress. Designed with a tribal ethos, the Thesaurus is intended to resonate with individual tribes and to inform wider national and global audiences.

From the very beginning, the idea was that we really could give something to LC that the cataloguers could then use as they distribute subject headings that would be far more meaningful than those they provided in the past. That’s very grandiose, but that’s what we’re aiming for. We really would like that to happen (Cheryl Metoyer, personal communication, January 20, 2009).

I note, however, that unlike, for example, the established programs for African-American or Judaica knowledge domains, according to the LC SACO Subject Authority Co-operative Program website there is no Name or Subject PCC explicitly devoted to Native American, First Nations, Aboriginal, or Indigenous materials (Library of Congress, n.d.). The power of institutions to enable or constrain change points to the ways in which institutional mandates shape appropriate intellectual access. This is manifest in the types of materials the institutions collect, the types of services they provide and their infrastructure; and the knowledge organization systems that mobilize both collections and services.

In this section, the practice of Indigenous knowledge organization was analyzed as a single order of discourse and mapped (using selected examples from the literature) according to four Indigenous approaches to design: (1) Indigenous knowledge-based; (2) Hybrid; (3) Local adaptation of a universal KOS; (4) Advocacy for change of a universal KOS. These approaches are distinguished by the elements of institutional site, jurisdiction, domain focus and scope, as summarized in Table 6.1: Indigenous Knowledge Organization: Mapping Design Practice.
The table shows that seven of the 13 KOS were under Indigenous jurisdiction, including three educational or cultural education institutions, two political organizations, one tribal, and one legal organization. Six of the KOS were under non-Indigenous jurisdiction including two universities, one public library, one national library, and two federally funded institutions. Different jurisdictions will offer differing types of constraints and possibilities, and differing institutional mandates will also shape the purpose of the KOS. This type of framework may be useful in examining similarities and differences within IKO by drawing boundaries, and identifying site-specific objectives. The contextual elements influence design and also the ways in which shared issues are addressed, such as cultural and intellectual property, and distinctions between public and private knowledge.
Table 6.1 Indigenous Knowledge Organization: Mapping Design Practice

<table>
<thead>
<tr>
<th>Design Strategy</th>
<th>Institutional Jurisdiction</th>
<th>Institutional Site</th>
<th>Type of KOS</th>
<th>Domain Focus</th>
<th>Domain Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Indigenous knowledge - based design</td>
<td>Indigenous</td>
<td>National Indian Brotherhood</td>
<td>Classification</td>
<td>Rights &amp; Title</td>
<td>National–Canada</td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td>Ojibway &amp; Cree Resource Centre</td>
<td>Classification</td>
<td>Self determination (cultural)</td>
<td>Regional–Canada</td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td>Native American Educational Services</td>
<td>Classification</td>
<td>Self determination (higher education)</td>
<td>National–USA</td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td>Mashantucket Pequot Museum and Research Centre</td>
<td>Thesaurus</td>
<td>Self determination (cultural)</td>
<td>National–USA</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>Native American Studies Collection</td>
<td>Thesaurus</td>
<td>Indigenous Studies (higher education)</td>
<td>National–USA</td>
</tr>
<tr>
<td>2. Hybrid design</td>
<td>Indigenous</td>
<td>Native American Rights Fund</td>
<td>Thesaurus</td>
<td>Rights &amp; Title</td>
<td>National–USA</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>First Nations House of Learning (1993–2005)</td>
<td>Classification &amp; Subject Headings</td>
<td>Indigenous education (higher education)</td>
<td>Regional–Canada</td>
</tr>
<tr>
<td></td>
<td>National library</td>
<td>Māori Subject Headings</td>
<td>Thesaurus</td>
<td>Public access to Māori material</td>
<td>National–New Zealand</td>
</tr>
<tr>
<td></td>
<td>Federal research institution</td>
<td>Australian Institute of Aboriginal and Torres Strait Islander Studies</td>
<td>Thesaurus</td>
<td>Public access to Australian Aboriginal material</td>
<td>National–Australia</td>
</tr>
<tr>
<td>3. Local adaptation of universal KOS</td>
<td>Indigenous</td>
<td>Luiseno Tribal Cultural Centre</td>
<td>Subject headings</td>
<td>Self-determination (cultural)</td>
<td>Local–USA</td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td>Union of British Columbia Indian Chiefs</td>
<td>Classification</td>
<td>Rights &amp; Title</td>
<td>Regional–Canada</td>
</tr>
<tr>
<td></td>
<td>Public library</td>
<td>American Indian Resource Center</td>
<td>Classification</td>
<td>Public access to Native American materials</td>
<td>Regional–USA</td>
</tr>
<tr>
<td>4. Advocacy for change of universal KOS</td>
<td>Federal cultural institution</td>
<td>Library of Congress</td>
<td>Classification &amp; Subject headings</td>
<td>Public access to Indigenous materials</td>
<td>National–USA International</td>
</tr>
</tbody>
</table>
6.3 Discussion: Naming and Claiming Indigenous Knowledge Organization

This chapter conceptualized Indigenous knowledge organization as constituting a range of practice within a single field characterized by a commitment to Indigenous interests as articulated by Indigenous people. Contextual elements (jurisdiction, site, and domain focus and scope) shape practice and are in a mutually constitutive relationship with the purposes designated for a KOS. The design strategy (the type of KOS) and its particular site carry both opportunities and constraints for design and for social change, and shape the nature of its discourses. For example, on the local/global scale an ethical concern to safeguard diversity might be expressed at a local level in terms of individual, family, and collective, while at global levels the ethic may be expressed as a concern with intercultural understanding and the representation of local concerns in the language of international political discourse, such as Indigenous discourse within the United Nations. Another example is the specific site of the library that generated the questions posed by this research study. It is highlighted in grey in Table 6.1: the First Nations House of Learning (FNHL) classification and subject headings.

The current FNHL KOS design is in transition due to changes over time in its jurisdiction and related aspirations for the library that have resulted in (among other developments) an increasing standards-compliance. Originally positioned as an Indigenous-knowledge based system, the KOS faced less constraint to meet external standards for structure, semantics, and bibliographic records and was therefore was less resource intensive. At the same time, its original capacity to disseminate its intellectual work to a heterogeneous user base of multiple publics—student-faculty, cataloguers and metadata librarians, other institutions, and general users—was less, and therefore its capacity to influence and share its
intellectual work (new knowledge) was less. Conversely as a Hybrid system that is required both to innovate (develop new descriptive and structural vocabulary) and to conform (comply with multiple external standards), it is more resource intensive. Simultaneously, its capacity for dissemination, sharing, and sustainable use of its products (and methods) is magnified due to its repositioning as a part of the existing educational and information infrastructure that was consolidated when the library became a branch of the university library system in 2005.

As of 2012, the location has clearly shifted from an Indigenous-based system to a Hybrid system that is compliant with MARC bibliographic record and LCSH subject headings standards. It has the potential to contribute to a national and international Indigenous bibliography, to mobilize university library collections to Aboriginal communities, and to develop meaningful bridges between community and university through collaborative Indigenous KO projects (cf. Christen, 2011). To the extent that the Indigenous KOS is embedded in the university library infrastructure its reach is extended to Indigenous, professional, and academic communities of practice through networked information technologies and global bibliographic networks. It may generate related opportunities for education, training, scholarship, and research at the same time as it leverages (and mobilizes the content of) the existing library resources that may be currently hidden by the dominant KOS (as described in Chapter 4). At the same time, its relevance is limited by its design, its distance from particular land-based or urban Indigenous communities, and the types of collections it represents as an academic institution.

Irwin and Willis (1989) drew a useful distinction between iwi-based learning resources that are intended to reaffirm “the mana of tribal identity” at a local level, as
opposed to more general Māori-based materials (1989). This important distinction points to differences in jurisdiction and purpose with related political and cultural commitments in design for different types of systems. A similar tension was expressed at a hui focus group during the design of Ngā Ūpoku Tukutuku / Māori Subject Headings. The design framework is conceptualized as representing Māori worldview using Māori concepts and language (Te Reo Māori), however a hui participant pointed out that cataloguing “from Māori perspectives” entails more than simply using Māori language and concepts; it must also incorporate a Māori consciousness. The question was asked, “So is it possible to come up with a headings system that is subconsciously within a Māori framework? I don’t know what the hell that is, but at least work on it” (Tamaki Makaurau representative, cited in S. Simpson, 2005, p. 51).

It is accepted that purpose(s), audience(s), and collection(s) will shape design of the framework but the participant’s question raises at least two more questions: one is, “which Māori framework?” Also, if meaning in classification is carried dually and reciprocally in semantics (and its underlying warrant) and structure, a second question is “how to articulate structure?” Universal classifications, such as the Library of Congress and Dewey Decimal systems, draw on the traditional academic disciplines as a structural base, whereas domain-specific KOS draw on a specific knowledge domain composed of actors, institutions, documents and purpose. The Māori hui participant suggests that a question for Indigenous research could be framed as “what would a knowledge organization system structure look like based on a specific Indigenous framework?”—that is, a framework grounded in a particular Indigenous ontology, epistemology, and responsive to information needs and aspirations of a specific nation or iwi, recognizing the contingent relationship between
epistemology and classification. The types of questions raised, I suggest, point to a
distinction between a culture (iwi or tribal or nation) specific classification and an academic
classification, which is discussed further in Chapter 8.2.4.1.4.

My conceptualization of Indigenous knowledge organization as an integrated field of
practice with an emergent body of research and theory is informed by Māori scholar Graham
Hingangaroa Smith (1999), who argues that multiple sites and multiple strategies are
required for social change. Within the pluralistic IKO framework presented here, each type
of strategy has its own inherent constraints and possibilities, and each by definition is also
limited in the objectives it has the capacity to achieve. For the purposes of this study, this
broad range of theory and practice is marked by a commitment to social transformation that
is viewed as delimiting the field of Indigenous knowledge organization. The oral histories
with three First Nations designers demonstrate the continuity of Indigenous practices of
knowledge organization in libraries over space and time in Canada. Drawing on Linda
Tuhiwai Smith, it is important to remember that the field did not emerge suddenly; the
genealogy of Indigenous approaches to knowledge organization and the fact that they can be
(partially) documented in this chapter indicates that they have not simply appeared overnight
with the current external interests in Indigenous knowledges nor do they exist without a
politics of support, without a historic and continuous Indigenous knowledge base, a resolute
struggle for sovereignty and commitment to Indigenous education (Smith, 2005, p. 87).\footnote{51}

Conceptualizing Indigenous knowledge organization as a single field of practice with
a related scholarship may hold potential benefits. As a field that encompasses multiple (and
competing) discourses cohered by a shared commitment to Indigenous interests, it has the

\footnote{51} Linda Tuhiwai Smith makes this point in relation to Indigenous approaches to research.
advantage of drawing on diversity of thought and experience in addressing shared challenges in the real world. Developing a typology, such as the four design strategies above, provides a framework for examining similarities and differences across sites at local and global levels that can have practical applications. Typologies based on actual (and future) practices that include concepts, protocols, and methodologies may have the potential to leverage this area as a focus within information studies and within Indigenous scholarship. This may result in drawing scholarly, community, and professional attention with associated benefits for communities and institutions.
Chapter 7 Indigenous Design Space, Purpose, and Evaluation

In this chapter I explore Indigenous approaches to the design and evaluation of knowledge organization systems through expert interviews with nine international Indigenous designers\(^{52}\) who discuss similarities and differences among Indigenous approaches to knowledge organization, and between Indigenous and mainstream knowledge organization. Underlying ontological and epistemological assumptions and their concrete manifestation in practice are explored in the first two sections, which respectively address issues of theory and practice. The first part discusses ethical boundaries within the field and aspirations for Indigenous design. It weighs the potential advantages and disadvantages of the academy as a research site, acknowledging the constraints of funding and the related requirement of sustainability as a principle of design. Four experiential themes emerge from the discussions, including Indigenous authority, Indigenous diversity, shared experience, and ontological wholism.\(^{53}\) The second section, Indigenous Semantics and Structure, focuses on practice and examines the negotiation between Indigenous and non-Indigenous domains in the development of terminology, classificatory structure, and the pragmatics of cataloguing standards.

The final discussion section revisits the purposes of Indigenous knowledge organization and their relationship to evaluation. The canonical goal of search and retrieval

\(^{52}\) For details see: Appendix A: Interview Participants, Dates and Places and Appendix B: Guiding Questions for Expert Interviews with Indigenous Designers.

\(^{53}\) Wholism denotes Indigenous understandings of interconnectedness (Archibald, Pidgeon, & Hare, 2004; Pidgeon, 2008) as an epistemic and a spiritual principle. This spelling is used to distinguish it from the Western philosophical concept of holism.
is extended to include purposes of Indigenous knowledge organization operating on social, political, and pedagogical levels. These translate to three objectives of naming, claiming, and educating, all of which aspire to an overarching goal of transformation. A statement of purpose is a lynchpin in the design of a KOS because it defines the objectives of the system and states what a KOS is to accomplish, thereby guiding the development of its design principles. The evaluation criteria developed for the assessment of a KOS are derived, in part, from the purposes articulated for it. Thus a statement of purpose serves a dual role in guiding design and in establishing criteria for assessment (Svenonius, 2000, pp. 11–12). Through examining the interrelationship between purpose and evaluation this chapter addresses sub-question 4, “What criteria could be employed to develop Indigenous evaluation instruments for KOS?”

7.1 Indigenous Design Space

Within Indigenous design space there are shifting and context-sensitive ethical considerations regarding Indigenous representation. The designers expressed a general feeling of unease about outsiders working in the area of Indigenous knowledge organization. “I get worried about non-First Nations or people from a different culture trying to do it, and trying to create the cultural classification or subject headings” (Gene Joseph, personal communication, April 20, 2009).

I also think I perceive a sensitivity to people understanding that there are boundaries in doing this kind of research, in terms of the Indigenous community and recognizing how far someone who’s not from that particular community can go in terms of trying to understand the people. (Cheryl Metoyer, personal communication, January 20, 2009)

In addition, caution was raised against any design of any “across the board” Indigenous classification. John D. Berry noted the differences between a tribal classification and a
classification designed for a Native American academic collection at a university, reminding us that the term “Indigenous” is not a unitary concept and to treat it as such makes it meaningless.

And we are not dealing with a singular concept. So in order to make it wide or broad enough to do that, it then becomes in itself sort of meaningless. The danger is that we will choose a model and say, “This is the one!” and exclude all others because it doesn’t fit, at which point we have become the enemy which we oppose. (John D. Berry, personal communication, January 14, 2009)

Trying to make a classification system work all across the board would create a Pan-Indian culture, and I wouldn’t want to be saying that this is something that could be applied across the board. (Gene Joseph, personal communication, April 20, 2009)

Reflecting on her work at the community level in designing knowledge organization systems that describe ongoing relationships to land and culture of First Nations to support Aboriginal rights and title claims, Gene Joseph was cautious but concluded that the work is needed:

We have to be careful. But at the same time, we still need to access the information as much as we possibly can. And so I think the work is still important and relevant to us in this day and age. It’s still relevant, and it’s still useful.”(Gene Joseph, personal communication, April 20, 2009)

From a post-secondary academic library perspective, John D. Berry observed a challenge for design is that “we are not just serving one population”: we need to find a balance between Indigenous diversity and shared experience and interests:

We have to—we can’t not do it…if you can find something that is flexible enough and adaptive enough to be able to work, so that we can all understand one another, then I think that’s a desirable goal. That’s what I would try to develop. (John D. Berry, personal communication, January 14, 2009)

Thus, the designers raised cautions about the appropriation of knowledge and the imposition of universal standards, and expressed resistance to a universal approach to definition,
categorization, and classification. Nonetheless, there was agreement on the need for improved organization and description of Indigenous materials in libraries.

7.1.1 The Academy as Research Site

In considering the academy as a potential research site for design and development the designers again expressed a cautious endorsement. To the extent that the academy is considered a centre of knowledge and knowledge transmission, it was seen as an advantageous site. Indigenous KOS developed at an academic library could contribute to expanding the representation of human knowledge beyond those of the dominant systems that are largely restricted to Western Judeo-Christian perspectives.

So you’d have a broader sense of knowledge. And what better place than an academic setting for this to be brought forward? That seems to be a real, a basic reason to me. Knowledge wouldn’t be corralled into this one perspective, which I think is what it is now. (Gene Joseph, personal communication, April 20, 2009)

At the same time, the designers were ambivalent about an academic library setting. Cheryl Metoyer’s response was lukewarm: “There’s nothing wrong with the academic library setting, per se” (Cheryl Metoyer, personal communication, January 20, 2009). This characterized a reticence expressed by several designers who responded with provisos that the work would be conducted in a “native-centred” academic library, that it would serve Aboriginal students or that it would have utility for the Indigenous community. The designers were very much aware of the threat of being overwhelmed by an institutional culture or larger institutional agendas that might lose track of or redefine commitment to serving Indigenous peoples’ interests. Additionally, research located in an academic setting may pose the disadvantage of producing KOS with an academic bias inappropriate for a non-academic collection due to the nature of its collections (Kelly Webster, personal
communication, April 21, 2009), and it may make it difficult to get input from people in communities, particularly remote communities (Alana Garwood-Houng, personal communication, January 14, 2009). Brian Deer too was circumspect about the possibility but in the end suggested it could be useful: “Everybody needs examples to go by. So, any examples that are in existence can help” (Brian Deer, personal communication, December 16, 2008).

Ultimately the general feeling among the designers regarding conducting Indigenous KO design research in an academic setting seemed to be one of cautious optimism:

My feeling is perhaps you need to be brave, and put some sort of test out there that we all back off because it might not be right. In the end, I don’t know, I think you run the risk of losing more than you get by backing off. However, if it cuts across the people at the grassroots then you’ve got no right to trample over top of them have you? (Ann Reweti, personal communication, March 8, 2009)

The multiple and shifting dimensions of the discussion about who and how and where Indigenous KOS might be ethically designed are indicative of the complexity of historic and contemporary relationships, diversity of Indigenous knowledge, and different types of libraries and clientele. Nonetheless, the potential of improved representation was viewed as compelling, and in considering the possibilities for Indigenous knowledge organization the next challenges identified were practicalities of funding and a related imperative for sustainability.

7.1.2 Funding and Sustainability

Deanna Nyce emphasized the realities of financial constraints, and from a community perspective particularly those of population-based funding:

I think that’s important to say in your paper that there is an economic side of this. And the economic side, you know, it is the rudder—it’s the lever that determines
what you can do and what you cannot do. (Deanna Nyce, personal communication May 25, 2009)

From an academic perspective, a challenge is to articulate knowledge organization research in ways that can garner the levels of grant funding required to do the research and to ensure its sustainability.

One of those challenges is to get the level of financial support that’s necessary in order to do this perhaps the way we really would like to do it and that it should be done, with that kind of depth and scale. (Cheryl Metoyer, personal communication, January 20, 2009)

Institutional stability and an increased opportunity for grant funding and collaboration were seen as potential advantages of an academic location.

One advantage is a more stable funding base (so many projects in tribal libraries in the US are dependent on grant funding and die when that money runs out)…. It also might be more difficult to take into consideration some barriers faced by tribal libraries (dearth of funding, staff, resources, high turnover and change in tribal governance) that could affect the success of implementing IKO tools. (Kelly Webster, personal communication, April 21, 2009)

I think what’s very important is that there is a sense of us not wanting everybody to go off and do their own little thing. It’s such a huge issue that opportunities for collaboration, I think, are important. (Cheryl Metoyer, personal communication, January 20, 2009)

In addition to practical considerations the designers discussed conceptual considerations, a primary one being the development of Indigenous design space. The following section introduces two components of design space: design language and design principles.

### 7.1.3 Indigenous Design Language

In considering design for Indigenous knowledge organization, Cheryl Metoyer began by noting that one of the first questions is whether even the basic terminology for concepts in information science, such as “order,” “system,” or “knowledge,” is the same as that of the Indigenous population, and specifically that of any one given tribe or nation. Metoyer
counselling that keeping in mind that there are many Indigenous perspectives, with some things in common and some things different, even the word “system” may require that we consider a much broader definition than what we’ve thought about in the past. So one of the first challenges is to consider how to develop an Indigenous design language with its own terminology: an acceptable or workable definition of some of the key terms that we use all the time, with a common understanding of what those are and recognizing that there may be a very different interpretation of that idea from another perspective, from an Indigenous perspective. (Cheryl Metoyer, personal communication, January 20, 2009)

In addition to considerations of the task of developing a language for Indigenous design (within particular contexts) that might include the reframing, reclaiming or jettison of conventional concepts and processes, the designers engaged in a free-ranging discussion of experiences that I have synthesized into four themes, some of which are presented in a storied form.

7.1.4 Stories of Experience

Four themes of experience emerged from the discussions with the designers, which are interpreted as wholism, Indigenous authority, Indigenous diversity, and Indigenous continuity.

7.1.4.1 Wholism

The conceptualization of the object of study is a key ontological question within a theory of knowledge and equally in a theory of design. As Cheryl Metoyer explained, one way of viewing the subject content of a document is as a static object of study, for example if it’s a book about peace pipes, then we think about peace pipes as an object, a physical thing.
However, from a traditional Cherokee perspective, it would not be possible to think about or write about a peace pipe with only that idea in mind, that is the idea that it is a simply an object, because the object is part of a whole constellation of meaning which has multiple dimensions. All of the dimensions are of equal importance and if one dimension is removed or a single one emphasized, it takes away from the meaning.

In doing this you’ve changed the very thing that you’re trying to describe. So, it’s very important that the relationships between whatever entities you’re dealing with, that those relationships are taken into account when you try to understand the system, or describe this content that you’re trying to describe. That’s where the complexity resides, in my mind. (Cheryl Metoyer, personal communication, January 20, 2009)

I have interpreted the principle underlying this distinction as the principle of Indigenous wholism. Wholism views all things in the universe as interconnected and emphasizes the relationships between them, relationality. One implication is that the meaning of an object cannot be understood independently of its context.

7.1.4.2 Indigenous Authority

The designers asserted the wisdom of Indigenous intellectual traditions and experiences, which I have presented as assertion of Indigenous authority. This section recounts two vignette-stories shared by the designers as expressions of the wisdom of Indigenous knowledges.

7.1.4.2.1 The Story of Wilp Wilxo’oskwhl

Wilp Wilxo’oskwhl is the name of the Nisga’a post-secondary institute in British Columbia: as Deanna Nyce explained, “wilp” means house and “wilxo’oskwhl” means wisdom or to be wise. She recounted a time when she was struggling to describe Nisga’a epistemology for an academic assignment. She had reached an impasse when she looked
with fresh eyes on the word \textit{wilxo ‘oskwhl}, Nisga’a knowledge: a journey towards wisdom, a state of being/becoming. It inspired her to be able to articulate \textit{wilxo ‘oskwhl} in the academic language of epistemology, thinking to herself “ahh, it was right here all along!” (Deanna Nyce, personal communication May 25, 2009)

7.1.4.2.2 \textbf{The Story of the Indian Women and the Museum}

Cheryl Metoyer recounted the experience of working with Mashantucket Pequot Nation when a request from the Executive Director was broadcast over the intercom, “Will all the Indian women please report to the conference room immediately.” It turns out that a firm contracted to write the wall text for the new museum gallery exhibits had submitted their work: it was a very accurate representation of the source documents of missionary accounts of the Mashantucket Pequot, and faithfully reproduced the stereotypes of the missionaries. It was unusable. “So, our Executive Director, in her brilliance, said, ‘You know what, we’re going to write our own. This is the group right here that’s going to do this.’ And so we did” (Cheryl Metoyer, personal communication, January 20, 2009).

The privileging of Indigenous authority was repeatedly asserted by the designers throughout the interviews. It included claiming the Indigenous right to, and the responsibility of others to, use Indigenous peoples’ names for themselves and for Indigenous concepts.

The names of the people— the names that we have for ourselves are our First Nations— the names that we have for ourselves as a people, or as a community. And that, I think, is really an important identifier. (Gene Joseph, personal communication, April 20, 2009)
The designers were cautious in identifying commonalities among and between Indigenous peoples and Indigenous perspectives. Nonetheless, some commonalities did emerge; one of them was diversity.

**7.1.4.3 Indigenous Diversity**

The idea of a single Indigenous approach to knowledge organization was roundly rejected by the designers and is demonstrated by the following vignettes:

**7.1.4.3.1 The Story of the Silver Bracelet**

Gene Joseph related a story of a national Aboriginal gathering held in BC where a Plains woman admired her silver bracelet, a gift from her family.

And she really admired it. And I said, “Thank you.” And she became really angry with me and said, “Don’t you know that you’re supposed to give it to me because I admired it?” I said, “No.” And she says, “Well, this is what we do.” And I said, “Well, that’s not what we do here.” (Gene Joseph, personal communication, April 20, 2009)

**7.1.4.3.2 The Story of a Cree Visitor to Cree Territory**

Bert Morrison shared a story of a Plains Cree visitor in Muskegowk Cree territory, pointing out differences even within the ostensibly single language of Cree.

Well, he worked with us on a project in the Cultural Centre in Timmins one time, and every morning he’d come into work and he’d say “tansi.” Nobody would respond to him, you know? And then next morning he’d come in, “tansi.” Finally the third day there, he says, “What’s the matter with you people? You don’t say good morning?” “Oh, I didn’t know you were saying that.” You know? [laugh] And I said, “We say wâciye here, you know? We don’t say tansi.” (Bert Morrison, personal communication, May 25, 2009)
7.1.4.3.3  The Story of a Māori Van Ride

In North America, the Māori people are perceived as facing a much simpler situation with a single Māori culture, however Māori perspectives are heterogeneous. In Māori territory Ann Reweti observed: “The people in each centre are different, they have their own values and their own stories and each one of them needs to develop something that fits their society” (Ann Reweti, personal communication, March 8, 2009). She shared a conversation with a community-based scholar:

We were coming back in the van, he’s deeply into developing local information resources, like iwi and hapū resources on the marae, deeply into it. I said to him, “Was he considering a common-like technology database or system?” He said, “No, each marae has the right to develop their own knowledge....” And so I said, “I have a bit of difficulty turning my head from cataloguing nationwide to the particular.” And he said, “There rests my case.” And we sat in silence for the next half hour I think. (Ann Reweti, personal communication, March 8, 2009)

The ongoing tension between Indigenous diversity and Indigenous continuity is manifest in an ambivalent relationship to Pan-Indianism expressed by some of the designers.

Pan-Indianism may be seen as a threat to the cultural and intellectual sovereignty of a First Nation through overwhelming it with blended or imported tribal traditions.

And I always, myself, worried about the whole concept of Pan-Indianism, and that especially in Canada and the United States that that could be a real problem for us because we have so many people who have moved to the urban areas and have lost contact with their home communities, that they pick up on other First Nations cultural practices and forget the fact that they picked it up from somewhere else and it’s a cultural practice from somebody else. (Gene Joseph, personal communication, April 20, 2009).

I would love to try to encompass this [thesaurus] project inside of a traditional framework, but I only know my own best, and I can’t impose that on everybody’s stuff, you know. It wouldn’t be fair, or right. You know, we can’t, I don’t think, fully put an IKO in place without suppressing other IKOs.... If we’re just building tools for our own communities, singular, then we will have much more happiness. (John D. Berry, personal communication, January 14, 2009)
Within the commitment to diversity and sovereignty expressed in these accounts, there were also shared experiences of colonization, language loss and a shared sense of interrelatedness.

### 7.1.4.4 Indigenous Continuity: Revitalization and Persistence

The designers highlighted the importance of Indigenous languages in shaping distinctive Indigenous worldviews.

> I think that if you want to have a really accurate classification, then you would probably have to learn the language of the people that you classified and it was in their language. That’s the most accurate way of doing it. (Deanna Nyce, personal communication, May 25, 2009)

However, due to effects of colonialism many Indigenous languages are endangered. Consequently a high value is placed on Indigenous language retention, education, and revitalization and knowledge organization has a role to play in facilitating these activities.

> Knowledge organization tools may be seen as tools that can be used [to] revitalize and sustain Indigenous cultural memory and languages, to fight the appropriation and the eradication. So if you want to look upon IKO as a weapon in the fight against disappearance, then yeah, that’s a valid aspect of it. (John D. Berry, personal communication, January 14, 2009)

In New Zealand, the Māori Subject Headings (MSH), a bilingual thesaurus, contributes to sustaining and disseminating Te Reo Māori (Māori language) and providing access to national repositories of Te Reo Māori materials. However, there is still some frustration expressed at the limitations imposed by the institutional partners and the Library of Congress (LC) standards that are seen as reducing Māori language to elementary levels. Conformity with a national Language Commission standards body that establishes terminology was also seen as a constraint. In addition, when the design team was first formed it was limited to developing a Māori thesaurus of only 500 terms (Ann Reweti, personal communication, March 8, 2009).
In North America where there is a high level of language loss, there is an attendant concern that the value placed on Indigenous language revitalization does not marginalize any Indigenous individuals who, as a result of residential schools and colonization, do not speak an Indigenous language. John D. Berry reflected on the challenge of designing a KOS that supports language revitalization and at the same time is inclusive of non-speakers: “If we can do that [KOS] in our language, better. But if we can’t, do we then lose our members of our communities that can’t speak our language, don’t understand our language?” (John D. Berry, personal communication, January 14, 2009).

The shared experience of colonization also generates Indigenous scholarly analysis of colonization and decolonization processes, and produces collections awaiting the tools of Indigenous knowledge organization to develop vocabulary and describe the experiences represented in the materials.

Any colonized people have a lot of commonalities related to suffering. You know, land, language, and there are other common things that need to be dealt with too that people have—for the good and for the bad—the whole experience of ownership versus possession, when it comes to land, is another common experience, and the eradication of people’s languages. An imposition of a very different concept of time…and space. (Cheryl Metoyer, personal communication, January 20, 2009)

Some designers suggested that a commonality among Indigenous peoples was a shared sense of the connectedness and the relatedness of everything in the universe, and the idea that affecting one piece has an impact on the whole. For example, the four directions or four winds were suggested as another common theme in Indigenous societies. The four directions are at the heart of the medicine wheel that is often used to represent a wholistic balance between the interrelated dimensions of the mental, physical, emotional, and spiritual. However, the medicine wheel heuristic while widespread is not universal. In considering the medicine wheel as a possible basis of a knowledge classification, Gene Joseph responded:
“Well, this is for the Plains people. I would really strongly object to it on the northwest coast. Especially for a library that’s on the northwest coast” (Gene Joseph, personal communication, April 20, 2009).

At the same time, Indigenous people are often drawn together in social spaces to enjoy a mutual recognition of sharing Indigenous identities and interrelated sense of community. Cheryl Metoyer continued this thought, suggesting that it extends to urban spaces:

but I think this also extends when you have urbanization to some extent because people still seek that coming together and that bonding, so the idea of the importance of the group [and] the individual having meaning as a participant within the community, is a commonality, I feel comfortable in that. (Cheryl Metoyer, personal communication, January 20, 2009)

Indigenous design space is located within a complex socio-political space. This section has presented some tensions in balancing the interrelationships and competing discourses among Indigenous perspectives. The following section considers the relationships and the interactions between Indigenous knowledge and Western knowledge systems manifest in the dimensions of semantics and structure in KO.

7.2 Indigenous Semantics and Structure

Indigenous mediation of mainstream knowledge organization establishes Indigenous authority at the levels of terminology selection, creation of classificatory structures, and the articulation of cataloguing standards. Although Indigenous views of the world may be quite distinct from the dominant culture, as John D. Berry stated, “What we do have is respect for others, and, I believe, an understanding that we are all human beings and we should all equally value our mutual traditions and respect our differences” (John D. Berry, personal communication, January 14, 2009). Thus, in some cases, Indigenous approaches may adapt
mainstream disciplinary practice and Indigenize it through the application of the principle of Indigenous authority. For example, standard disciplinary practice in compiling terminology for a knowledge domain is to consult existing authoritative sources in the field, such as dictionaries, encyclopedias, thesauri, and the authority files of other KOS. However, from Indigenous perspectives these types of canonical sources may be far from authoritative because they replicate dominant and frequently stereotypic representations.

As an example, Cheryl Metoyer recounted that, following disciplinary “best practice,” the Indigenous thesaurus design team dutifully consulted with the Library of Congress (LC) regarding the LC Indigenous authority file. However, they found to their “shock and surprise, that LC had no Indigenous authority file.” When they enquired how Indigenous accuracy and authority were determined by LC, they were surprised again:

We got answers like, “…well, we consult the Washington Post. We consult…” [laughter] it was really fascinating. There is no authority file. And so, then [we asked] what about other terms? So they gave us [references], they use Hodge, and the Smithsonian handbook. (Cheryl Metoyer, personal communication, January 20, 2009)

Metoyer’s Indigenous design team for the *Thesaurus of American Indian Terminology* found that they needed to adapt the LC authority that problematically referenced the mainstream press and the discipline of anthropology for Indigenous terminology. However, the team was informed by, and leveraged the work of, another mainstream thesaurus, the Getty *Art and Architecture Thesaurus* (Petersen, 1994); a thesaurus that took twelve years with ten people working full time to complete. Cheryl Metoyer recalled that the staff at the Getty was very helpful to the Indigenous thesaurus team. The Getty staff also requested the Indigenous team’s input on the Native American Art section of the *Art and Architecture Thesaurus*.

Metoyer stated, “we thought they did a very good job for the terms for Native American Art. So, that’s been our [experience that] those discussions we had with the folks at the Getty,
they were wonderful” (Cheryl Metoyer, personal communication, January 20, 2009). Thus, the principle of citing authoritative sources is reframed as citing Indigenous authoritative sources.

7.2.1 Semantics: Similarities and Differences

The designers noted both similarities and differences in the meanings of English language terms to represent Indigenous knowledge and experience.

7.2.1.1 English Language Terms to Represent Indigenous Topics

In some cases English language terms are adequate to represent Indigenous thought and experience. In other cases English language terms require increased specificity or sometimes must be replaced in order to avoid stereotyping. For example, existing controlled vocabulary may adequately represent Indigenous topics if they are preceded by an Aboriginal collective term, or the name of a specific First Nation. It was suggested that this is the case for general human needs, for example:

First Nations—architecture  Haisla—architecture

First Nations—cooking  Haisla—cooking

In other areas English language terms require an increased level of specificity to function for Indigenous retrieval purposes. For example, in Canada, the term “Aboriginal fishing” requires distinctions between traditional fishing, commercial fishing, and FSC (food, societal and ceremonial) fishing. In other cases, commonly used disciplinary terms connote stereotypic meanings that may be corrected through replacement with everyday English words. For example, in the Story of the Indian Women and the Museum Cheryl Metoyer recounted how the gallery labels were corrected by replacing anthropological terms with
everyday language: “Pequot Life Ways” became “Pequot Society”: the term was normalized and Pequot society became included in the category “human society.” This change in the use of an English language term is inclusive; it emphasizes similarity.

7.2.1.2 Indigenous Semantics

Alternatively, sometimes an English language term is chosen to denote (not similarities but) differences in order to distinguish between dominant culture meanings and Indigenous meanings. The following section identifies examples of differences in meanings that range from denotative to ontological differences.

7.2.1.2.1 Indigenous Connotation

In some cases, a common English term may be replaced with one that is more appropriate to an Indigenous worldview. For example, the Indigenous women working in the Mashantucket gallery changed the term religion, with its connotation of worship, to spirituality, which was more expressive of a sense of honour: “Pequot Religion” was changed to “Pequot Spirituality.”

7.2.1.2.2 Indigenous Polysemy

In some instances English words are polysemous in that they carry both conventional English language meanings and additional meanings in Indigenous contexts. John D. Berry enacted an example stating, “I’m not, an FBI by any means—full-blooded Indian.” He continued by suggesting that polysemy is resident in many Indigenous contexts, for example in the term 49:

It is understood by definition that it is not the football team, it is not the gold rush in California in 1849, it actually is a social dance function of pan-Indian powwow culture for after-hours young people. There are terms and things that are in use and
that mean not what the dominant culture understands them to mean. (John D. Berry, personal communication, January 14, 2009)

7.2.1.2.3 Indigenous Ontological Differences

In other cases, an English term can carry different ontological meanings for Indigenous people and the dominant culture. As this type of term carries different ontological meaning it can shift the ways we decide which baskets these concepts go into; how we categorize ideas and their relationships. Cheryl Metoyer uses the term hunting as an example of this type of term:

When we [Euro-Americans] think of hunting, as in people going hunting and killing animals, we think in terms of that as a death-dealing experience, whereas from, for example, the Cherokee perspective, that’s very life-giving because these animals provide the food and the life for a population, for a people, so the negative connotation that almost always comes with hunting as a rule is not something that’s looked upon that way in the tribal communities. (Cheryl Metoyer, personal communication, January 20, 2009)

Gene Joseph suggests that the First Nations names, the Latin names, or common names for plants are equivalent and can be cross-referenced as they have a one-to-one relationship. However when the spiritual aspect of a plant is introduced then there is a shift in substantive meaning that requires a different term: an Indigenous term.

[This] may not be something that you’d even consider in Western knowledge, then that’s where you end up having to use Indigenous words. But when you get into spiritual and religious aspects and views of nature and the environment, that’s where you might have to become more specific to a culture. (Gene Joseph, personal communication, April 20, 2009)

Joseph draws a distinction between the concept of a caretaking relationship with the land and the animals, as opposed to a more Western concept of an ownership relationship to the land.

That whole idea of being a caretaker, I think, was really very important in the Delgamuukw work [court case 1997]. It was very important for the Elders when we were speaking to them, and it was a term that, and a concept that, I needed to pull into
my subject headings for the Gitxsan and Wet’suwet’en people. (Gene Joseph, personal communication, April 20, 2009)

It may be difficult to find an equivalent English word for a concept such as this or when a concept refers to specific cultural or spiritual belief or practice; in such cases, a First Nations term would be required.

### 7.2.1.2.4 Indigenous Language Terminology

In New Zealand, librarians were struggling to compile Māori terms for Māori library materials. Ann Reweti, reflecting on the motivation to develop a bilingual Māori-English thesaurus in New Zealand, recalled that librarians were working separately on the same problem:

> We were really crying out for friendly terms, a list of common terms that we could relate to each other, different libraries throughout New Zealand because the librarians were all working with our own little databases, and vertical files, in order to try to provide culturally appropriate and linguistically accurate access to Māori materials for Māori people. A Māori customer wanting to access the material, and typing in “waka,” which is our word for canoe, and finding, “Waka, see canoe.” And which was like, “But, that’s not our word,” you know? (Ann Reweti, personal communication, March 8, 2009)

Other types of differences between Indigenous and Western approaches are reflected in ways of thinking about order and structure.

### 7.2.2 Structure

The concept of order and the recognition of a meaningful order are contingent on socio-cultural context and audience.

> Once there’s information that is really educating and informing, part of that means it has to be in a context of some kind of order for it to have meaning. But the order has to be order within the community’s understanding. (Cheryl Metoyer, personal communication, January 20, 2009)
For example, Cheryl Metoyer observed that people may go to a pow-wow and not see the order enacted within the event. People may just say: “there’s no order here.” But as Metoyer noted, “There is such order in a pow-wow. There is such order” (Cheryl Metoyer, personal communication, January 20, 2009). Kelly Webster suggested that an Indigenous approach to structure could range from using different principles of division to subdivide broad subject categories to something as radical as not having linear divisions or hierarchy. At the level of practice, Gene Joseph suggested that a framework might be developed that fit with basic human needs and then built up from that basis. The designers agree that there is a need for very specific classes that adequately and accurately represent, as Metoyer stated, the complexity and sophistication of the knowledge that is being organized (Cheryl Metoyer, personal communication, January 20, 2009).

All of the designers currently use hierarchical structures in their thesauri and classifications, although at a theoretical level there was ambivalence about the use of hierarchical forms.

I would just have to be really careful and I do think that’s where you need to be very cognizant of the differences among and between the Nations and how they look at that equal status…. I just hesitate, you know, I just hesitate to make that across the board. So, I think that’s one of the areas where there has to be a lot more thought in terms of how you look at it and hook it together. (Cheryl Metoyer, personal communication, January 20, 2009)

The Māori Subject Heading design team considered the possibility of using cosmology as a starting point for structure but found that each iwi has a different perspective:

For Māori, lots starts with cosmology and the gods, then you come down and it’s genealogy, whakapapa. But the only problem we’ve found was that different regions have different gods. If there had been one common cosmology theory or something, we may have stuck to that, but it was like, “Are we going to set up one genealogical plan?” for all the different iwi to put their terms in those alternative forms, which would have been contrived because in the old social structure of Māori, the centre of
the groups were, what we call, “hapū,” the small family clusters of whānau, family. (Ann Reweti, personal communication, March 8, 2009)

An associated issue is related to a popular form of generic “Indigenous peoples” reference enquiry at an academic library reference desk. For example, “How do Indigenous peoples view medicines?” The question, in this case, is about all Canadian Indigenous peoples’ attitudes and beliefs about medicines. However, Gene Joseph was strongly averse to designing a classification intended to answer this type of question because it entails extracting pieces of Indigenous culture and classing them by topic. She stated, “But my viewpoint was that the First Nations generally wanted it to be—the information to be—categorized first by their cultural group, their First Nation” (Gene Joseph, personal communication, April 20, 2009).

Deliberations about categorizing materials by First Nation (tribal classification) led to questions regarding an appropriate source of structure for organizing First Nations in an IKOS. For example, classification could be based on cultural group, or political unit, or linguistic group. In discussing the different levels of scale among a First Nation, a band, a cultural group, and a linguistic group, the discussion again turned to government-imposed rule and its associated prevalent terminologies. In Canada, historically the state imposed a [Indian] band classification and band council governance on First Nations that effectively disrupted and continues to disrupt traditional governance structures. Joseph stated, “In my opinion, the whole business of bands is a false imposed hierarchy of people, it’s false. It comes from Indian Affairs” (Gene Joseph, personal communication, April 20, 2009). Thus, discussions of order and structure highlighted again the complex interrelationships between and among Indigenous forms of collectivities, individuals, and the state. It suggests that the ways in which and the extent to which these are disentangled in any KOS will depend on its
purpose, including its audience(s), collection(s), institutional affiliation(s), and other contextual elements.

### 7.2.3 Indigenous Cataloguing Standards

The skill of an indexer in applying a KOS was seen to be as important as the skill of the designer(s) in developing it. In New Zealand Ann Reweti suggested that in addition to someone with good Te Reo (Māori language) skills who is actually employed as a cataloguer at the National Library, a nuanced grasp of Mātauranga Māori is also required.

And I still think you need someone who’s grown with the worldview, and has a deeper sensitivity or an understanding of the underlying ideas and structure that make up that society…. They’ve got to get those people, Māori people with language skills and the knowledge in there…. But I don’t expect a serious Pākehā cataloguer who learned Te Reo to level three to have the same empathy for the material they’re dealing with, and I might be wrong. (Ann Reweti, personal communication, March 8, 2009)

In-depth description of library materials contravenes the canonical cataloguing standard of assigning a subject heading only if the topic comprises greater than twenty percent of the work: “the 20 percent rule.” However, in Indigenous contexts more in-depth indexing is required because the Indigenous content may be hidden in a larger non-Indigenous work, as described by Gene Joseph:

And it’s not because I didn’t know the subject, it was because there might be a chapter on a topic that I knew has very little information available out. And so I would make sure I covered that, whereas another librarian wouldn’t care about that chapter. (Gene Joseph, personal communication, April 20, 2009)

Similarly, Te Rōpū Whakahau, the Māori librarians, have a “real desire to be able to access you know the little bits and the books that are really, really important to us.” However, the National Library in New Zealand is quite strict about cataloguers conforming to the 20 percent rule when assigning Māori Subject Headings.
Yeah. They want twenty percent or more. So if you got a book on, “Canoe,” you can put down “waka,” and I think they will even allow variations. So if it’s a book with several sorts of “wakas,” as long as they’re quite big chunks of material, they will add different sorts of canoe [in Te Reo Māori]. (Ann Reweti, personal communication, March 8, 2009)

The strengths of online fulltext searching and the world of Google Books were recognized by the designers. These were balanced by a recognition of the strengths of controlled vocabularies, and the requirement for classificatory structural frameworks to manage large alphabetic-subject controlled vocabularies for effective search and retrieval.

Reflecting on a First Nations controlled vocabulary, Gene Joseph said,

I was thinking that perhaps they’d start to drop it [controlled vocabulary] or have less need of it because of full text access. But even with full text access, oh, that can be a terrible nightmare as well. And you still have to go back to your subject, which brings you back to your classification [laughs]. (Gene Joseph, personal communication, April 20, 2009)

Indigenous approaches to knowledge organization in libraries recognize that everything is interrelated: (uncontrolled) keywords, controlled vocabulary, and classificatory structure. However, there are distinctions about the ways in which things are interrelated, and where there may be shared categories and meanings within categories among Indigenous perspectives and between Indigenous and mainstream perspectives. Some categories operate at a political level, and others function at deeper levels of meaning related to ontology, cosmology, and epistemology. It is within this complex space among (sometimes competing) Indigenous discourses, and between Indigenous and non-Indigenous discourses that aspirations for Indigenous knowledge organization are articulated.

7.3 Discussion: Purpose and Evaluation of Indigenous Knowledge Organization

The evaluation of knowledge organization systems is based on the purpose that has been established for a particular system. A statement of purpose, expressed through
objectives, both guides the design of a KOS and establishes criteria for its assessment (Svenonius, 2000, pp. 11–12). Although the KOS design literature is driven by the instrumental purpose of search and retrieval of documents, I view the purposes of Indigenous knowledge organization as being significantly broader.

7.3.1 Purpose

The Indigenous designers explicitly identified the canonical purpose of knowledge organization: to facilitate effective search and retrieval of information in documents. This purpose was clearly expressed by the designers as it was by the graduate students (cf. Chapter 4). At the most literal and functional level of meaning the objective of utility in search and retrieval is clear. However, I suggest that the designer and graduate student participant discussions implied that there are other dimensions of purpose that operate at social, political, and pedagogical levels. Indigenous self-representation was viewed as a “point of pride” for Indigenous individuals and collectives. It carried an affective meaning, and a political meaning. Indigenous self-representation also fulfills a pedagogical purpose in the sense of serving as a corrective and a catalyst for multiple audiences, including the crucial audience of library cataloguers, as well as Indigenous audiences. Similarly, due to the ubiquitous nature of library information systems, it also influences the perceptions of educators, all learners, and the general public.

From my perspective of domain analysis @ Cultural Interface, knowledge organization functions as a discourse that constructs subject positions and social relations, and has material consequences in the world. This argument is supported by the empirical accounts of the Aboriginal graduate students regarding their experiences with KOS. I argue that both Indigenous theory and the empirical accounts of the Indigenous designers and the
Aboriginal graduate student experience support a view of knowledge organization as operating on social, political, pedagogical and ethical levels with the potential to facilitate or constrain objectives at these levels. This section presents a pluralistic interpretation of purposes for Indigenous knowledge organization. Drawing on Linda Tuhiwai Smith’s Indigenous research projects (1999, pp. 142–162) they are read as three purposes (and potentially a research program) of naming, claiming, and educating: they all serve the overarching goal of transformative social change.

7.3.1.1 Naming

One objective of Indigenous knowledge organization is to support cultural and language revitalization through description of documents based on the principle of Indigenous authority. It serves Indigenous interests in strengthening traditional knowledge bases, and in strengthening diversity it serves the human community:

I think it’s important that if we can build tools or we can make products or we can do anything that supports an understanding of our knowledge base, that supports the continuation of our language, that supports the continuation of tradition, that it’s important for not only our own communities, but it’s important for the human community. (John D. Berry, personal communication, January 14, 2009)

I have argued that one reason for the inadequacy of the dominant knowledge organization systems is that 19th-century conceptualizations, including an exclusionary 19th-century concept of the public, underlie contemporary KO theory and practice (cf. Hernon & Metoyer-Duran, 1992; Olson, 2000). Designer Brian Deer reiterated a similar observation: “Dewey Decimal classification is valued for public libraries, the general public, which is assumed to be non-Native” (personal communication, December 16, 2008). The assumption of an absent or non-existent Indigenous public is manifest in the continued eclipse of
Indigenous authority, which the designers regarded as offensive at personal and collective levels.

I think it would make a major difference in having non-First Nations recognize us. But it also is a point of pride and self-identification for our First Nations to be able to see ourselves, at least our names. You know how upset you personally could feel when your own personal name is misspelled? Well, this is when it’s across the board and for a whole people, it’s like you’re not that important, that you’re so unimportant that we can’t even be bothered to spell your name correctly. So I think that’s what the libraries can do. (Gene Joseph, personal communication, April 20, 2009)

Both Joseph and Deer observed the positive emotional and social effects of recognition, and respectful representation.

It acknowledges you as a Native person. You’re validated…. It isn’t something foreign that’s talking to you. And the fact that the classification has arranged and rearranged things to reflect a current reality that’s congruent with Native people wherever that library is, acknowledges those Native people. So, in that way, it has a positive effect. Anytime you’re acknowledged and…it’s a basic human need to be acknowledged…to be acknowledged and recognized. (Brian Deer, personal communication, December 16, 2008)

The processes of naming, claiming and educating are interrelated: Brian Deer asserts the importance of recognition afforded by Indigenous knowledge organization systems. There is also the importance of recognition of the value of Indigenous approaches, and respect for Indigenous self-representation considered as claiming.

7.3.1.2 Claiming

In political contexts, Gene Joseph described the work involved in determining an acceptable collective term for First Nations people in Canada, and for having that term accepted and used by Canadian people. In more theoretical contexts, Martin Nakata claims Indigenous diversity and heterogeneity, and various modes of participation and agency. Claiming also involves the assertion of the legitimacy of Indigenous approaches to
knowledge and as an invaluable and unique part of human knowledge, as John D. Berry stated:

We all face problems that I think our traditional knowledge sets and values can address, and if we lose those values and we lose those traditions, then we lose a part of the tool kit, basically...then not only will we lose those things, but the modern world will lose those things. (John D. Berry, personal communication, January 14, 2009)

Indigenous knowledge traditions and values offer unique ways of addressing global problems; they broaden the dominant Western Judeo-Christian perspectives and in these ways generate new knowledge.

It really forces you to think of new things that you hadn’t really considered before. I know that just from personal experience—just doing subject analysis of information for First Nations—to review how I thought of things and forced me into new knowledge. (Gene Joseph, personal communication, April 20, 2009)

The increasing public interest in learning about Indigenous knowledges and Indigenous ways of knowing indicates a broader recognition of the value of the diverse wisdom traditions of Indigenous peoples.

It’s people trying to understand the world in a very different way, coming to understand its complexity, but coming to think that just maybe the Indigenous people, with a very different vocabulary, have something very profound and have always had that, to say about how the universe works. (Cheryl Metoyer, personal communication, January 20, 2009)

7.3.1.3 Educating

Cheryl Metoyer pointed out that, “Proper thinking and organizing information truly eradicates ignorance. I find it eradicates ignorance immeasurably,” and continued with an example of an Indigenous document, painting on buckskin:

Paintings on buckskin are not just interesting pieces of art and they’re not “primitive art”...they are ways of capturing information for generations down of events that were important to the community at the time, and there is an order to it. (Cheryl Metoyer, personal communication, January 20, 2009)
Metoyer considered cataloguers as a key audience because they interpret the information carried in documents and then translate it into the controlled vocabularies (subject headings and classifications). In their role as translators, cataloguers are influential gatekeepers in this knowledge flow. The continued use of mainstream knowledge organization systems (KOS) by library cataloguers reproduces stereotypic views of Native American people frozen in the past.

What I think is that for those people [cataloguers] who are actually assigning subject headings and organizing information, that it introduces people to new ideas and new ways of looking at the world…. You know, [Indigenous people] are people who lived and celebrated and suffered and are actually three dimensional human beings—not captives of history which suggests that all the real Indians are dead or that only the remnants exist—and that they aren’t the real thing anymore. (Cheryl Metoyer, personal communication, January 20, 2009)

Cheryl Metoyer’s comments make tacit reference to the continued use of the term *primitive* in the dominant KOS, and although this term is gradually being phased out it is still present in Canadian university catalogues. Metoyer also references the now infamous statement by a Library of Congress cataloguer who characterized Native Americans as “remnants” of the past as he defended LC’s treatment of Native Americans in the scholarly literature (Frosio, 1971, p. 129).

### 7.3.1.4 Ethical Access

Some of the issues raised by the designers converge in a theme that I have interpreted as an ethical access continuum. The continuum and its elements I suggest fall under the purview of information policy that occurs within organizations, as well as institutions at local and national levels, and can have global implications, such as described in Chapter 4.2.1.3.

[^54]: Adapted from the “Access Rainbow,” a conceptual model for universal access to the information/communications infrastructure in Canada (Clements & Shade, 2000).
Some of the elements described by the Indigenous designers include cultural and intellectual property, public and private knowledge, support of rights and title claims, and the reconstruction of memory. These operate along an access continuum that ranges from physical access to technology access to intellectual access: the first dimension is basic physical access to institutions and their collections. Physical access to collections is contingent on access to educational institutions, and then on the acquisition of materials that are relevant to Indigenous interests. The latter requires the articulation of selection criteria and standards for Indigenous materials acquisitions. These may include consultation with knowledge producers, for example, regarding whether a publicly accessible library is an appropriate location for the materials. Once the materials are sourced, selected and acquired, then the development of intellectual access to collections in the form of relevant and comprehensive knowledge organization may begin. Information technologies may provide opportunities for user input into the design of KOS as part of a collaborative methodology. Responsible intellectual access recognizes Indigenous notions of ownership regarding cultural and intellectual property and their associated protocols, and the nuances of context sensitive conceptualizations of public and private knowledge.

**7.3.1.4.1 Cultural and Intellectual Property**

Māori librarian Ann Reweti considered respect for cultural and intellectual property as a contemporary form of customary law that states, “You can’t take those person’s words.”

I’m not talking about, “Old knowledge.” I think with the subject headings we’re only dealing with the end product of writing down. I guess, for me, the intellectual property side of it would have been with whoever was recording the knowledge. (Ann Reweti, personal communication, March 8, 2009)
In some cases Indigenous knowledge organization systems themselves are considered proprietary. For example, Gene Joseph noted that a number of the IKOS she has developed for First Nations are considered private and the intellectual property of the Nation. She cautioned the researcher against requesting copies of IKOS for research or comparative analysis purposes due in part to the current reality of unresolved treaties and claims in Canada and possible future litigation.

I would be worried that even if you did ask them [a First Nation], they might give it to you but I don’t think that they should give it to you, as long as they’re possibly looking at litigation. So, yeah, don’t ask them [laughs]. (Gene Joseph, personal communication, April 20, 2009)

Regarding the intellectual property of families in Nisga’a territory, Deanna Nyce suggested that families vary in their approaches to what is considered private: some will be very open to sharing family knowledge while others will be more protective. For example, some will say,

“Well, we know who we are. We’ve always known who we are, and there’s no problem writing this down so that subsequent generations of our families will have access to it forever and ever and ever…. Then you’ll have people who say, “Well, no, we’ve been abused here along the way, and by other people using our knowledge and then misinterpreting our knowledge. So, we don’t want to open it, but we still would like help to store it somewhere.” (Deanna Nyce, personal communication, May 25, 2009)

Considering the wider context of the private-public knowledge continuum, Nyce pointed out that institutional barriers to physical access still exist. For example, some Indigenous researchers have experienced difficulties in gaining access to church records as some churches resist opening their archives to Aboriginal people.

They’re very reluctant to let you in and very reluctant to help you…and it may be because of residential schools, but I think this behaviour started before the residential schools issue came to the fore. But really, the church, the records, the stuff that the church has, it’s never the church’s—it’s the peoples’…. It’s wrong. It belongs, to the people. (Deanna Nyce, personal communication, May 25, 2009)
In some cases, institutional mandates explicitly support ethical access. For example, the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) library website states that it aims to provide “the best possible access to clients in person and remotely” (AIATSIS website, n.d.).\(^{55}\) This goal is manifest through the design of its thesaurus, AIATSIS Pathways, as discussed by Alana Garwood-Houng:

I tend to think of it as a way to help Aboriginal people get the information that they need—it’s another tool…. It needs to be easy enough for anyone to use, whether they’re Indigenous or not…and that’s why we’ve done our thesaurus based on what’s in our collection, to make it easier for people to access our collection. (Alana Garwood-Houng, personal communication, January 14, 2009)

7.3.1.4.2 Reconstructing Memory

The Pathways thesaurus is designed to be widely accessible and to support AIATSIS information services, such as the Native Title Research unit and Family History unit, both of which are supported by the Library’s genealogical collections and the Aboriginal Biographical Index (ABI). The ABI is an in-depth index to personal names in the published documents within the collections.

We do have a lot of people who are contacting AIATSIS who are looking to find their family, looking to find information about their language, their language group. You know, what part of the country their language group came from, because all that was taken away. And there are some people who recently found out they have Aboriginal heritage—they never even knew. So they want to find out. Our language thesaurus is one way they can find out about their language or their mob…so they can find everything that we have on that language group, whether it’s language material or information about the people. And if people don’t know the name of the language they’re looking for, they might just know which part of the country it’s from, and then they can use the geographic terms. (Alana Garwood-Houng, personal communication, January 14, 2009)

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\(^{55}\) The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) is a government-funded research institute established in 1961 with a staff of one hundred and twenty-eight.
The development of local history including genealogical collections serves in reconnecting families and reconstructing memory. Bert Morrison raised it as a key concern, noting that it was difficult to build up First Nations/Aboriginal family histories in the Treaty 9 area (Ontario, Canada) because genealogical information only goes back a few generations. This is in part due to the loss of personal names among the people of the Nishnawbe Aski Nation (NAN) through the imposition of European names by Indian Affairs and the churches:

and the Indian Affairs people were coming around registering [the NAN people], and couldn’t pronounce or even spell the last names. So the minister that was with them gave him his last name. So their last name became MacKay. There’s a lot of examples like that. (Bert Morrison, personal communication, May 25, 2009)

Inuit personal names were also lost. Some Inuit people were given numbers for last names. If an Inuit name was hard to pronounce, rather than giving the person his own last name, the Indian Affairs agent would give the person a number.

They’d give her E-nine-six-ten or something like that. Nine-hyphen-six-ten. You know? And you had a whole bunch of Inuit people with the last name E-nine-dash and a number. And so on. So after that, there was no record of what their last name was. (Bert Morrison, personal communication, May 25, 2009)

At the time when Morrison was working with the Ojibway and Cree Resource Centre funding was not available to begin to reconstruct the traditional record of individual and family names and relationships that had been destroyed by colonial renaming practices.

So that’s one area in the library that we couldn’t work on…you’ve got a lot of libraries around, especially university and college libraries, that have genealogy departments. And so that’s what we had hoped to establish, too… It didn’t work out because we just couldn’t get all the documents and all the information. And the funding to do it. (Bert Morrison, personal communication, May 25, 2009)
7.3.1.4.3 Rights and Title Claims

Local history collections also support research for Aboriginal rights and title claims that are ongoing in all four countries. Most of the designers, with the exception of the Nisga’a people who reached a Final Agreement (2000), are members of nations involved in ongoing claims, including the Kahnawake Mohawk in Quebec, the Gitxsan and Wet’uwet’en in British Columbia, and the forty-nine communities of the NAN (Nishnawbe Aski Nation) in Ontario. When asked if there were still outstanding claims in Australia, Alana Garwood-Houng replied, “Yes, yes. And new ones all the time, as well.”

And the government makes it so hard, because you have to have maintained continuous occupation of that land, but if you’re forced by the government to go somewhere else, it’s really hard, because you can’t say that you’ve maintained constant occupation of that land.” (Alana Garwood-Houng, personal communication, January 14, 2009)

As discussed previously (see Chapter 4.2.1.2), legislation in Australia and New Zealand resulted in information policy changes that required equitable access to library and archival collections of Indigenous-related materials. The issues raised in this section on ethical access, I view as information policy issues. While the focus here has been at local institutional levels, the same types of information policy operate at different levels and have national and international implications.

The accounts of institutional mandate underline a key role of institutions in facilitating or constraining access to materials held in libraries that can support the reconstructing of memory, the revitalization of culture and language, reclaiming of lands and resources, the education of Indigenous learners, and intercultural education. As Linda Tuhiwai Smith has pointed out, research in Indigenous contexts is also concerned with the strategic goals relating to a broader political agenda (L. T. Smith, 1999, p. 143). These
multiple political, social and pedagogical purposes of Indigenous knowledge organization (IKO), I suggest generate related multiple evaluation criteria for knowledge organization systems (KOS).

7.3.2 Evaluation—Does the Axe Cut Wood?

The Indigenous designers generally agreed that utility in search and retrieval was the sine qua non of evaluation. As John D. Berry stated: “Does the axe cut wood? If it’s a good axe, it’ll cut wood” (John D. Berry, personal communication, January 14, 2009). Use was viewed as a primary indicator of user acceptance and of effective search and retrieval:

So if people use the tool and they can find what they’re interested in, it’s a success. If they use the tool and they don’t, it’s a failure. How do we determine the success or failure of a tool? Well, is it used, first of all, and are the users happy with what they’ve found by using it? How do you measure that? Do you measure it qualitatively, do you measure it quantitatively? Is it required that you do both of those things? Probably yes, it’s probably required that you do both of those things. (John D. Berry, personal communication, January 14, 2009)

The big one is to see how the users will accept it—especially the users who are from the area. It’s just like in a subject area, if you have a subject classification like, say, law, you must have had law librarians as well as lawyers and, subject experts who would have done it. It’s the same thing with First Nations. You would have First Nations or Indigenous librarians as well as subject experts. So that would be the first level of evaluation. (Gene Joseph, personal communication, April 20, 2009)

Pilot testing would be conducted with the multiple audiences for whom the KOS was designed: knowledge experts, indexers and cataloguers, and users—both Indigenous and non-Indigenous. The evaluation criteria might vary for each type of user group. Cheryl Metoyer observed, “The professionals can give you one piece, the users can give you another piece, and Indigenous users can give you another piece of that (Cheryl Metoyer, personal communication, January 20, 2009). However, before even beginning to think about design of a pilot test, it is necessary “to be very mindful again, of terminology and what it is we’re
actually asking people to do. And their ability to do it.” For example in consulting with Elders, we must consider “how you present it, is this something they’ve thought about in the way in which you need them to think about it, that’s a whole other question” (Cheryl Metoyer, personal communication, January 20, 2009). From a reference librarian’s perspective, Alana Garwood-Houng included the additional criterion of collection representation: “Does it really reflect our collection? Are there enough terms to get into all the different areas that people might need to? Are we missing any terms?” Deanna Nyce emphasized the consideration of efficacy as an evaluative criterion. Efficacy is the ability to produce a desired or intended result in an efficient manner. It suggests the efficient use of (often limited) resources to meet the objectives articulated for the IKOS. Nyce’s concept of efficacy for Indigenous knowledge organization can umbrella the designer discussions regarding funding, sustainability, and collaborative development, as well as the administrative level responsibility to ensure the project remains focused on the Indigenous principles and objectives.

In this chapter I have suggested that the purpose of Indigenous knowledge organization exceeds the functional purpose of search and retrieval: it also serves political, social, and pedagogical purposes. The purposes are informed by four Indigenous themes based on experience that I interpret in the context of design, as design principles: Indigenous authority, Indigenous diversity, Indigenous continuity, and wholism. Indigenous authority is the primary principle, and it recognizes Indigenous self-representation as a design standard within Indigenous knowledge organization, and also as a standard that is aspired to in advocating for changes of Indigenous representation within the dominant KOS. The recognition of Indigenous heterogeneity in local and global contexts establishes Indigenous
diversity as a second principle of Indigenous design. Shared experiences of colonialism in the disruption of cultures, languages, nations, and families result in shared importance given to rebuilding, revitalizing, and protecting culture, language, family and community: this is interpreted as the third principle, Indigenous continuity. The philosophical and spiritual ethos of wholism produces the fourth principle based on the premise that all things are interrelated. It underlies all aspects IKO design, and counsels that understanding requires consideration of all things within the context of their relationships.

An Indigenous knowledge organization scheme @ Cultural Interface could be evaluated in terms of the purposes of naming, claiming, educating, efficacy, and transformation and relevant criteria for assessment developed within the context of the Indigenous design principles. Table 7.1: A Wholistic Evaluation Framework summarizes the criteria that include evaluation of the processes of creation and dissemination, as well as the product itself. The authorization of Indigenous standards for the names of Indigenous individuals and collectives, nations, and concepts is included under the rubric of naming. Naming is attributed a critical role in the recognition of collective and individual identity, creation of memory, and cultural and language revitalization, as well as in sharing Indigenous knowledges as part of world knowledge. The assertion of the Indigenous right to name and to having it recognized is considered under the rubric of claiming. Claiming includes consideration of reclaiming property, including cultural and intellectual property, and claiming the right to have Indigenous designations reflected through the institutional policies and practices. It also manifests in asserting the right to ethical access to Indigenous materials held by mainstream institutions, including libraries, and the right to the recognition of Indigenous self-representation of Indigenous experience and scholarship. The theme of
claiming recognizes the role of institutions in effecting social change through institutional mandate and policy. The objective of educating recognizes the educational potential of knowledge organization to inform multiple audiences, including library cataloguers, the general public, and all learners. Introducing new ways of looking at the world encourages diversity and new knowledge creation. These objectives may be facilitated or constrained by information policy environments at various levels. The purpose of transformation is viewed as an overarching theme that is present in all of the purposes. When viewed as a continuum it might begin at a philosophical level with epistemic pluralism and extend to multiple approaches to Indigenous design of Indigenous knowledge organization.

Table 7.1 A Wholistic Evaluation Framework

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<th>Evaluation Criteria</th>
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Indigenous knowledge organization has been interpreted as serving social, political and pedagogical purposes in addition to the functional purpose of information search and retrieval, within the overarching goal of social transformation. Through an expanded articulation of the purposes of Indigenous knowledge organization @ Cultural Interface, the chapter addresses the research sub-question 4 “What criteria could be employed to develop
Indigenous evaluation instruments for KOS?” As Indigenous knowledge organization is viewed as both a process and product, the methods as well as the products would be evaluated. An evaluation of methodology would include the methods of creation and the dissemination of the product. In academic contexts, the design, production and dissemination of Indigenous KOS is viewed as a research project that would meet the requirements of both academic and Indigenous research ethics and protocols. These more stringent criteria for evaluation and assessment at Cultural Interface may address some of the concerns regarding the ethical boundaries of Indigenous knowledge organization that were expressed by the Indigenous designers. Methodologies that strive to build trust through transparency and consultation, recognize boundaries, and are guided by the precept of Indigenous authority may address, and be perceived as addressing, some of these concerns. In these ways it lays the groundwork for collaborative efforts in the field, and may broaden understandings of the theory and practice of knowledge organization in Indigenous contexts.
Part Three: (Re)CREATING

(Re)creating is read as a generative process that is imaginative in origin and continues Indigenous traditions into the present and the future: they are created anew as they shape and inform diverse Indigenous contexts. This section is composed of Chapters 8 and 9, which together demonstrate ways in which the generative capacity of Indigenous approaches to knowledge shape theoretical, conceptual, and methodological dimensions of knowledge organization. These interpretations are based on the theory @ Cultural Interface, and the empirical findings from the interviews with the Indigenous designers and First Nations, Métis, and Aboriginal graduate students. Chapter 8 Adding to the Rafters creates a conceptual workspace and engages knowledge organization theory and Indigenous theory in dialogue. Chapter 9 Indigenous Knowledge Organization @ Cultural Interface summarizes the findings of the previous chapters and synthesizes them in a theoretical framework for Indigenous knowledge organization design, study and critique, named Indigenous knowledge organization @ Cultural Interface.
Chapter 8   Adding to the Rafters

Six Nations scholar David Newhouse invokes the Haudenasaunee tradition of “adding to the rafters” to extend a longhouse to accommodate more families in discussing extending conceptual space in the academy. The moral intention of inclusive process underlies the tradition and serves as a way of bringing human knowledges into dialogue with each other (Newhouse, 2008). I draw upon Newhouse in creating conceptual space to accommodate multiple discourses and engage Indigenous theory (Nakata, 2007b; Donald, 2009b) and knowledge organization (KO) theory in dialogue. A general definition of the concept of warrant as justification for knowledge claims and decisions is used to carry meaning across knowledge domains and levels of abstraction functioning as a boundary object. A boundary object is a concept that can reside in multiple communities of practice and meet the informational requirements of each of them (Bowker & Star, 1999, p. 297). In this chapter I conceptualize warrant as functioning on four planes of work in KO theory: (1) epistemic, (2) discursive, (3) social, and (4) technical. The chapter presents key debates in KO theory structured according to the four planes of work. Each plane includes a commentary based on Indigenous perspectives.

The Indigenous perspectives developed in this chapter are based on those expressed in the interviews with the Indigenous designers and First Nations, Aboriginal, and Métis graduate students. These are drawn together and presented through the theoretical lens @ Cultural Interface. The intent is not to provide a linear argument or to defend a particular

56 The planes of work are derived from Ranganathan’s planes of work in classification theory (1967).
position on each plane but rather to identify where the debates lie, the categories used within them, and where elements may intersect with or diverge from Indigenous categories and interests. One purpose of the chapter is to move towards interweaving theoretical threads into a framework for Indigenous knowledge organization @ Cultural Interface in the next chapter. To meet this goal, I first envision four planes of work within KO theory to make space for a theory of Indigenous knowledge organization that includes political and social dimensions (Nakata, 2007b). My assumption is that the kinds of warrant selected for knowledge organization as a discipline, a theory and a practice determine whose voices are heard and what sources are recognized as legitimate and authoritative. These judgments are shaped by values and assumptions that underlie those decisions. The chapter envisions warrant operating on four planes in order to create space to engage Indigenous theoretical perspectives in addressing research sub-question 3, “What elements of knowledge organization theory are hospitable to interpretation from Indigenous standpoints?”

8.1 The Concept of Warrant as a Boundary Object

The Oxford English Dictionary (OED) gives a broad definition of warrant as “justifying reason or ground for an action, belief, or feeling” (Olson, 2004). I suggest that when warrant is conceptualized generally in this way, as justification for knowledge claims and decisions, it can carry meaning across social worlds and thus serve as a boundary object. As discussed (see Chapter 4.1.4) boundary objects have both local and shared meaning: they are weakly structured in common use and are more strongly structured in individual use. They can be used to communicate across boundaries and meet the needs of heterogeneous communities (Bowker & Star, 1999). The concept of warrant can function to share meaning across knowledge domains serving as boundary object between Indigenous theory and
knowledge organization theory. It is plastic enough to share common meanings at an abstract level to establish common ground for dialogue, and to become more strongly structured to meet local disciplinary needs.

Within knowledge organization design, warrant is defined as the authority invoked to justify and verify decisions in developing a knowledge organization system (KOS) (Beghtol, 1986, p. 135). It determines what constitutes a valid concept, which concepts are included in the system, the terminology that is chosen to represent them, the sequence of their arrangement, including the selection of the characteristics of division and levels of classes, and various bases for class relationships (Beghtol, 1986, 2001; Mai, 2004). Clare Beghtol’s seminal article “Semantic Validity: Concepts of Warrant in Bibliographic Classification Systems” (1986) broke from the dominant modernist focus on technicalities (Mai, 2011) and established semantic warrant as a pivotal concept for the field of knowledge organization (Kwaśnik, 2010). Beghtol asserts, “Semantic warrant inevitably governs syntactic techniques and devices, just as in natural language the intended meaning of a sentence must be understood before an appropriate syntax can be chosen” (Beghtol, 1986, p. 122).

8.2 Four Planes of Warrant

Beghtol identifies four types of semantic warrant: literary warrant, scientific/philosophical warrant, educational warrant, and cultural warrant (Beghtol, 1986, p. 109). Frohmann extends the idea by arguing that questions regarding the theoretical bases of classification schemes do not have purely epistemological answers because they raise political problems. When the theoretical concepts constructed in KO theory are presented simply as competitors on an epistemic playing field that is ruled by logic, truth, and verification then the “contingencies of their social and discursive construction” are
successfully erased (Frohmann, 1994, p. 132). Wisser (2009) continues the discussion by linking warrant to Foucauldian discourse analysis and as “a lens through which we can explore the sociocultural, religious, educational, and political influences that are reflected in classification systems” (2009, p. 70). Drawing on these knowledge organization theorists, I first reframe the concept of warrant in knowledge organization at a general level as the evidence deemed as legitimate in justifying an argument, and then conceptualize it as operating on four interdependent planes: (1) epistemic, (2) discursive, (3) social, and (4) technical. Each plane comprises a field of discussion and debate relating to what serves as evidence for warrant and the ways in which warrant is constituted.

A plane of warrant is not prescriptive; it is a categorical container for a type of discourse within knowledge organization theory. The plane of epistemic warrant contains philosophical discussions related to ontology and epistemology: what exists in the world and how we come to know the world. The plane of discursive warrant takes account of theories of language and theories of meaning that often underlie epistemic debates and by definition includes consideration of power relations within discourse. The plane of social warrant is one where scholars recognize (or not) social theory and examine how KO theory, practice, and products may serve to support the status quo or foster change. The plane of technical warrant is derived from the word techne, as an art, skill, or craft; a technique, principle, or method by which something is achieved or created; also a product of this, a work of art” (OED, 2010). It is the level at which the design implications of epistemic, discursive, and social warrant are examined. The four planes described in the following sections are interpreted as being interdependent and may interact in various ways to produce the unique
character of a KOS (adopted from Beghtol, 1986, p. 111); that is, the unique character of its knowledge organization theory.

8.2.1 Epistemic Warrant

The plane of epistemic warrant includes enquiries into philosophical assumptions relating to ontology and epistemology. The debates examined in this section focus on classification as a practical tool or theoretical construct; scientific/philosophical warrant, educational warrant, and literary warrant as bases for classification; and considerations of the weight afforded consensus and expert opinion.

8.2.1.1 Theory and Practice

Richardson’s historical study of classification, Classification, Theoretical and Practical (Richardson, 1901, 1912, 1930) exemplifies the classic debate about classification as theoretical construct or practical tool. Many scholars agree that even the most pragmatic scheme is based on theoretical assumptions influenced by philosophical, ideological, religious and socio-cultural factors (Albrechtsen & Jacob, 1998; Campbell, 2003; Hjørland, 2003a). The assumptions of Western philosophy have been traced in Bacon’s adaptation of Aristotelian metaphysics through Hegel to the Dewey Decimal Classification (DDC) first published in 1876 and now in its 23rd edition (2011). Bacon’s universe of knowledge emanated from the three mental fountains (faculties) of memory, imagination, and reason, producing three categories of learning—history, poetry and philosophy—that underpin the DDC (Comaromi, 1976; Weigand, 1998). Ranganathan’s Colon Classification (CC) is shaped by an ancient Vedic system (Ranganathan, 1957, pp. 392–397). Classicist values in Chinese philosophy inform the Seven Epitomes (Qi lüe), a 1st-century BCE Chinese
bibliographic classification (H. Lee, 2008, 2010; H. Lee & Lan, 2009). Nonetheless the debate continues over whether classification is a practical tool for “organizing books” or a presentation of a view of how the world works (Wisser, 2009).

8.2.1.1 Indigenous Perspectives on Theory and Practice

The Cultural Interface (Nakata, 2007b; Donald, 2009b) construes ontology (being in the world) and epistemology (socially constructed knowing of the world) as moving closer together as the subject/object of knowledge divide is conflated. This is a movement towards the collapse of oppositional binary structures and rigid divisions between concepts. Similarly, the Aboriginal graduate students aspire to break down hierarchies of knowledge and the divides between community knowledge and academic knowledge. An Indigenous approach to Cultural Interface recognizes the legitimacy of both theoretical and practical dimensions as warrant for classification and classification design: the organization of documents and the organization of knowledge are integrally related on a theory-practice continuum (Wisser, 2009).

8.2.1.2 Scientific/Philosophical Warrant

Early views cited philosophic and scientific classifications of knowledge as theoretical bases for bibliographic classification (Miksa, 1998). Premised on a stable, unitary world of knowledge and a progressive evolutionary natural order they are characterized by a belief that the order of the sciences reflects the natural order of the world: “the closer a classification can get to the true order of the sciences and the closer it can keep to it the better the system will be and the longer it will last” (Richardson, 1901, p. 69). Contemporary scholars continue to model bibliographic classification on a unity of science thesis and the
principle of evolutionary order. This approach is evidenced in the study of integrative levels by the British Classification Research Group (CRG); research by Claudio Gnoli (2008) and the Integrative Level Classification (ILC) project in Italy (Dousa, 2009; Gnoli, 2008, 2010) on ontological levels of reality; and the adoption of the Comptean principle of gradation and integrative levels by H. E. Bliss (Feibleman, 1954; Foskett, 1961).

Counter claims argue that there is no inherent order in the world “apart from its apprehension by the human mind” (Sayers, 1955, p. viii), and that the history of science shows that there is no “natural” or “universal” classification (Lakoff, 1987). Langridge rejects what he typifies as the claim that “the order of the sciences is the order of things, and the order of things is the order of their complexity (Langridge, 1976, p. 5). Broadfield critiques the claim to objectivity (in scientific method) because it entails the fabrication of a hypothetical knower, “a General Man,” shaped “to resemble as closely as possible the ideal assenter to the dogmas of the inventors” (1949, p. 94). He argues against the scientific notion of evolutionary developmental order as a basis for bibliographic classification because it is contingent on an elusive ability to define the meaning of the term “evolving” and to identify that which evolves (Broadfield, 1946, p. 62). Similarly, he rejects the derivation of the abstract from the concrete because it rests on the false premise that there is an evolutionary relation between matter, life, and mind. For Broadfield, the conclusion is that logical division is the only basis for classification as it is “part of the framework of thought.”

The Aristotelian idea that every entity in the world has an essential characteristic that makes it the kind of thing that it is underlies much bibliographic classification discourse (Broadfield, 1946). The purpose of identifying real essences of kinds is to capture the fundamental structure of the world or to use Plato’s phrase, “carve nature at its joints”
(Ereshefsky, 2001, p. 17) in order to explain and predict the behaviour of entities in the world. Aristotelian classification of entities is based on the method of logical division by genus differentia, and on empirical analysis. It employs traditional logic where the unit of analysis is the proposition: a statement divided into the two parts of subject and predicate. Five types of predicate, “The Five Predicables,” describe a subject: genus, species, difference, property, and accident. The genus is the class to be divided and the species is the result of that division. The difference is the characteristic that determines the division of the genus into the species. A property is some quality that is common to a thing or class, and an accident is a property that is only incidental and has no necessary effect on a thing or class. A species has fewer members or is of lesser extension than its genus but it has more properties and is therefore of greater intension. Therefore the terms genus (or class) and species (or sub class) are relative terms because each species may be considered a genus for further division (Langridge, 1992).

Logical division produces hierarchical genus-species classifications composed of mutually exclusive, jointly exhaustive sets that aim to list all species in a genus (class) (Langridge, 1992; Sayers, 1955). It is critiqued because it fails to accommodate hybridity and relegates “border varieties” to mutually exclusive categories (Broadfield, 1946, p. 41). Even within the natural sciences mutually exclusive categories are difficult to establish because species more often than not overlap (Broadfield, 1946). Indeed contemporary biologists disagree about the ontological status of species, and whether the term species refers to a real category in nature (Ereshefsky, 2010) or whether it is a convenient conceptual tool. This raises the more abstract question as to whether kinds have any independent reality at all, and if so are they knowable (Broadfield, 1949, p. 90). In addition there are many types
of relation, and inclusion (genus-species) is only one type; others, for example, include part-whole, agent-process, agent-action, process-property and more. On the other hand, as Soergel states, hierarchy is not a “strait jacket”; it is a device to assist in indexing and retrieval. When it sets constraints on the purpose of the KOS, it fails and when it is helpful then it serves the objectives established for it (1972, p. 37). KO theorists call on pragmatic warrant to defend hierarchical structures due to their stability and claim them as the only acceptable model to date (Beghtol, 2000; Broadfield, 1946). Others more moderately identify genus-species relation as a still-useful structural element although one of many (Foskett, 1974, p. 117).

In the quest for stable principles of bibliographic classification the Classification Research Group (CRG) examined the principle of dichotomous logical division, logical division based on a single principle of division that produces simple enumerative tree-of-knowledge classification (1995, p. 158). The CRG concluded that a class needs to be divided in more than one way and produce several kinds of subclasses, each of which is a collateral species (sub-class). The findings were published in an article entitled “The need for a faceted classification as the basis of all methods of information retrieval” (CRG, 1955/1985).

Ranganathan’s analytico-synthetic approach based on the inductive method of facet analysis of concepts (a bottom-up approach) was chosen as the only feasible model. It analyzes each term subsidiary to a genus per genus et differentiam in relation to its parent class by different characteristics (CRG, 1955/1985, p. 158). Facet analysis partially follows the traditional rules of logical division, however it breaks free from the restriction of hierarchical genus-species relations by combining terms in compound subjects. It is flexible in introducing new
logical relations between them and so better represents the complexity of knowledge (Vickery, 1960, p. 12).

Ranganathan’s fundamental categories form the basis of structure of his analytico-synthetic (faceted) classification. The notion of category as the broadest class of phenomena is “our first principle of classification” (Ranganathan, 1967) and the genus-species relation is used within categories. Ranganathan’s five fundamental categories are meant to apply across all forms of knowledge and include personality, matter, energy, space and time (PMEST). Ranganathan is clear to note however, that these are not metaphysical categories but rather categories useful to his classificatory purpose (1967, Section RB). The CRG extended the five fundamental categories to thirteen, including substance, organ, constituent, structure, shape, property, object of action, action, operation, process, agent, space, and time. Fundamental categories continue to be modified in practice and are now applied in various ways throughout structures on the Web (La Barre, 2006).

8.2.1.2.1 Indigenous Perspectives on Scientific/Philosophical Warrant

The Cultural Interface advocates epistemic pluralism and views science as a particular and a partial way of knowing, one of many accepted as part of a wholistic approach. Nakata (2007b) critiques evolutionary theory and its epistemic premise of developmental order, citing its influences on social theory and the harm it has caused to Indigenous peoples. The Cartesian split between the subject and object, and the notion of stable, non-contingent entities knowable through essential properties is countered by Indigenous approaches, such as Cheryl Metoyer’s explanation of a traditional Cherokee perspective. Metoyer states that it would not be possible to think about or write about a peace pipe with only that idea in mind, that is, the idea that it is a simply an object, because
the object is part of a whole constellation of meaning which has multiple dimensions (see Chapter 7.1.4.1).

Much Indigenous discourse views the land and the environment as a source of knowledge (cf. Chapter 5) and, perhaps based on this, the natural world has been suggested as a basis for Indigenous bibliographic classification (D. Lee, 2011). However, I would argue with Broadfield (1946) and Ereshefsky (2010) that a classification based on natural phenomena is an inadequate basis for bibliographic classification of concepts and ideas. It may however provide a source of conceptual structure for classes related to nature-based study (e.g., ethnobotany) in Indigenous contexts. As Chester (2006) notes, for an Anishinaabe view of medicines for an Anishinaabe classification of wellbeing, plants should be proximate (positioned closely) to Anishinaabe oral traditions on a library shelf because the latter holds knowledge about the interrelationships between the human beings and plant beings. Similarly Gene Joseph points out that there may be spiritual aspects to plant relationships (see Chapter 7.3.1.2) that are important to represent in a culturally based classification. Such an approach would be consistent with Nakata’s argument for metaknowledge that serves as a principle of continuance of Indigenous traditional knowledge into the present. Although Broadfield (1946) argues against homology as a basis of classification because classification organizes concepts (not things), I suggest that in Indigenous contexts, both purpose and ontology are bases of classification and in this instance could serve Indigenous purposes at social levels of cultural revitalization and pedagogy, and, more deeply, at a level of philosophical congruence.

Some scholars suggest that genus-species (hierarchical) relationships are alien to Indigenous perspectives (cf. Chester, 2006; Fixico, 2003; L. Little Bear, 2000). However, I
suggest that generic (classed hierarchical) relations are not alien forms to Indigenous peoples citing, for example, the hierarchically structured social relations of some northwest coast First Nations in Canada (Nyce, 2012), and Indigenous views of hierarchy in nature.

Nlaka’pamux Elder, Annie York, explains that “all berries have relations,” and that “the boss” of “the blueberries and huckleberries is the black huckleberry” (Annie York quoted in Turner, 1989, p. 85). An Nlaka’pamux view of plant relations also recognizes plants that “stand between” relatives and link two families (taxa) (Annie York, quoted in Turner, 1989). Wittgenstein (1953) would call this a view of serial resemblance: for example, B is related to A and C but A and C are not related except through B. Perhaps Annie York and Wittgenstein would have no problem understanding each other about the relationship of relatives.

However, there is at least a two-fold problem associated with hierarchical structures based on an ideal of logical division for Indigenous knowledge organization. Firstly the premise of essentialism, mono-hierarchical relations, and mutually exclusive categories, are inadequate representation of Indigenous knowledge as based on more contextual categories and a view of the world in continuous change. The second problem is the strong association between essentialist premises and discriminatory (exclusionary) social relations that have caused harm. Nonetheless, Indigenous research methodologies are pragmatic in using or adapting methods that might serve Indigenous interests (Rigney, 1999; L. T. Smith, 1999). I suggest that they are in agreement with Soergel (1972) that hierarchical structure does not need to be a straitjacket; as a technical device it can be applied to the extent that it is useful for a purpose of an IKO. That is, not as a basis of classification but as a tool for classification.
8.2.1.3 Educational Warrant and Consensus

Another basis for classification is educational warrant, defined as educational and scientific consensus based upon and carried through expert opinion (Bliss, 1929, 1939; Ranganathan, 1967). Its force is the promise of stability because, it is argued, scientific knowledge has developed incrementally over time. It also shapes the way that established educational institutions organize themselves in order to transmit recorded knowledge. Library classifications have followed the structure of educational curricula for centuries (Wisser, 2009, p. 65), and have become an aspect of educational mission because they were seen to reflect the basic structure of knowledge (Nelson, 1997, p. 30).

However, a counter argument is that contrary to the idea of unanimity, the sciences exhibit a broad range of conflicting schools of thought, for example the diverse gestalt, behaviourist, and psychoanalytic schools within psychology. Secondly, these various schools presuppose differing classifications of the intellectual work involved. The problem therefore is to ascertain what classifications (that is, what underlying philosophic assumptions) are already at work within the conflicting schools, not to view the manifestations of these assumptions as evidence upon which to base classification (Broadfield, 1946, pp. 72–73). Moreover, the most salient characteristic of scientific research is to seek to new knowledge and to compete in the work of discovery (Broadfield, 1946, p. 78). Finally, warrant based on scientific consensus is rejected because the plurality of metaphysical positions proves that there is no possibility of any consensus on an objective reality (Langridge, 1976, p. 5).
8.2.1.3.1 Indigenous Perspectives on Educational Warrant and Consensus

Knowledge organization @ Cultural Interface rejects a realist adherence to an objective reality, that is the justification of science. Based on Indigenous experience with Western education, and the analysis of hidden curriculum and educational infrastructure, it also rejects mainstream educational warrant (Hampton, 1995; Lomawaima 1999). However, a conceptualization of Indigenous educational warrant may have applications within Indigenous knowledge organization (as discussed further in this chapter 8.2.4). Additionally, within Indigenous contexts the label of “expert” is contentious due to the discursive construction of Indigenous subjects and knowledges by experts (Nakata 2007b), and because purported experts have extracted and controlled Indigenous intellectual and material resources, profited by them, and returned little to Indigenous communities (Kovach, 2005; Nakata, 2007b; L. T. Smith 1999). The proliferation of Indigenous paradigms and nations and languages suggests that the warrant of consensus be viewed cautiously. The Indigenous designers warned strenuously against any “across the board” Indigenous approach to classification. An Indigenous perspective on a basis for classification for a particular project may be negotiated agreement, as suggested by the approaches of Urion (1991) and Newhouse (2008), in diplomacy and consensual decision-making. This is as a form of engaged interaction and negotiation, not an imposition of expert opinion or received wisdom.

8.2.1.4 Literary Warrant

Counterbalancing the emphasis on logical division and science as bases for bibliographic classification, KO theorists sought more inductive methods based on documents and the terms in documents that gave rise to the concept of literary warrant. Hulme’s original concept based classification on the “literature in book form” (Hulme,
1911/1985) wherein a class is warranted only by the pre-existence of books on the subject, and the test of validity of the class heading is the accuracy with which it describes the subject matter of the class (represented in books). Classification then is “described as the plotting of areas pre-existing in the literature” and a quantitative value assigned to it (Hulme, 1911/1985, p. 447). However, in order to describe a literature its boundaries must first be defined and for Hulme this was equivalent to the collection of books held in a particular library (Beghtol, 1986). An alternative discipline-specific approach defines “the literature” as the canonical texts or the core set of documents in a discipline as determined by citation frequency (Svenonius, 2000, p. 135).

The study of the literature (in whatever form), it is argued, will assist in defining the field as well as “revealing the detailed structure of the subject” and its terminology (Vickery, 1960). All classification schemes use some form of literary warrant as a practical check that references the literature in a field and complements a pure knowledge classification (Langridge, 1992, p. 43). Members of the CRG (D. J. Foskett, 1974; Langridge, 1976; Vickery, 1966), perhaps inspired by Ranganathan’s (1967) insistence on micro-level analysis, came to focus on documents rather than the “whole book.” Beghtol views this level as “terminological warrant” (1986, p. 113), however both macro/micro approaches to literary warrant base classification on pre-existing documents or books.

Literary warrant is criticized because of its tendency to reproduce canonical positions through privileging the existing literature (Beghtol, 2001). It tends to reproduce cultural bias and entrench existing exclusions and power inequities in production of and access to knowledge (Olson, 1999). Mooers argues that employing an exclusively inductive method (terminological warrant) is inadequate because the conceptual analysis arrives too late in the
process of classification. “There are confusions inherent in basing your work at the
terminological level rather than trying to go to the conceptual level” (Calvin Mooers, as cited
in Vickery, 1966, p. 37). The standard instruction to derive terminology from authoritative
lists and other tertiary sources of vocabulary is inadequate because these sources are
retrospective in conception and offer no assistance in developing emerging subjects (Coates,
1988, p. 174). It is on the plane of discursive warrant that some of the types of inequities that
Olson raises are considered, that is exclusions and power inequities produced through a

8.2.1.4.1 Indigenous Perspectives on Literary Warrant

The claim that all classification schemes use some form of literary warrant
(Langridge, 1992) is consistent with the approach of domain analysis @ Cultural Interface,
which views classification based on discourse communities comprised of interactions
between documents, concepts, and users. However, based on the principle of Indigenous
authority, Indigenous literary warrant privileges Indigenous-authored “documents” as
warrant for the design of IKOS. An Indigenous approach to literary warrant is based on the
interrelationships of the document and the domain, the concepts, and boundaries. As Cheryl
Metoyer suggests (see Chapter 7.1.3) an Indigenous approach could reframe disciplinary
concepts. For example, concepts such as “literature” and “document” could be reframed in
order to be congruent with an Indigenous knowledge domain. The definition of literature
could be expanded to include oral literature; the concept of document could include
“paintings on buckskin” as suggested by Metoyer (Chapter 6) or, by analogy, a house post or
canoe paddle or, by extension, embodied forms such as dance and ceremony.
Indigenous knowledge organization @ Cultural Interface rejects Hulme’s idea that the boundaries of a given “literature” would be equivalent to an existing collection (Hulme, 1911/1985) because, based on the Indigenous principle of wholism, the design of a collection is considered to be an integral part of the design of a knowledge organization system (cf. Feinberg, 2007a; Manoff, 1992). Therefore the principles defining the boundaries precede their embodiment in a collection. The alternative view of a discipline-based literature known through citation analysis and quantitative value is also rejected. Firstly, the nature of Indigenous literature may preclude citation analysis because Indigenous literature may not be indexed in the academic databases. Secondly, quantitative value is not the only or perhaps the primary metric, as the impact of the work and its influence on the discourse within the field (IK domain) is considered to be of significant value. Thirdly, classification design based on citation analyses of indexed Indigenous scholarship is expected to be vulnerable to the standard critique of literary warrant (Beghtol, 2001; Olson, 1999): the reproduction of (Indigenous) canonical positions and power inequities. A challenge for IKO is to define criteria for the identification of Indigenous authoritative sources within particular Indigenous contexts, and to avoid entrenching these as canonical. An additional challenge is to distinguish between the multiple and competing discourses that arise within the context of Indigenous/non-Indigenous domains that treat the “same” subject, Indigenous knowledge, but are viewed from Indigenous perspectives as exogenous (Thornton, 1977).

8.2.2 Discursive Warrant

The plane of discursive warrant is an area of enquiry concerned with the philosophy of language and theory of meaning: the relationship between the word and the world. In knowledge organization it is marked by a theoretical shift in focus from categories of being.
(ontological categories) to categories of meaning, and to the construction of meaning through discourse. For example, Broadfield argues that there is an antithesis between phenomena studied by a scientist and the concepts that a scientist invents in order to study them (1946). This entails two claims: the first is a difference between classification of phenomena and the classification of the terms used to represent phenomena (Broadfield, 1946, p.16, p.100; Palmer, 1971, pp.12–33); the second is that scientists (people) invent concepts in order to study things, that is Broadfield views categories (concepts) as socially constructed. He is rejecting a referential theory of meaning that attaches the meaning of a word to a thing that it stands for in the world, and the idea that language mirrors the metaphysical form of the world.

In his views on language Broadfield aligns with Wittgenstein’s later work (1953) that conceptualizes meaning defined through use, social context and interaction (Andersen & Christensen, 1999). Wittgenstein demonstrates that the meaning of language shifts according to the context in which it is used. For example, there are different uses of the word “Water!” as an exclamation: an order, a request, or an answer to a question. The meaning depends on its use within a language game and concepts are not united through shared essence but through a family of resemblances. Family resemblances may include both direct and serial resemblances. For example, if there are three games and the first is composed of traits A, B, and C; the second is composed of traits A, B, D, and F; and the third of D, F, and G, then the first and second sets resemble each other directly and the first and third sets resemble each other indirectly or serially (Ereshefsky, 2001).

This type of disjunctive approach to the philosophy of language produces classifications that admit differing ranges of criteria for class membership and contextually
defined categories defined by use and social interaction (Andersen & Christensen, 1999). The rules change according to context, the structures may exist but they are temporary and contingent and the meanings of words shift in relation to each other. Classification designers then view a document as part of a linguistic practice or language game (Andersen & Christensen 1999, p. 13). The language game becomes the warrant of the theory that underpins the KOS. The representation of the document must therefore conceptually reflect the language game from which it originates. The parent language game of the author and the document constitute the warrant for the system with the proviso that they both originate from the same game (Andersen & Christensen, 1999, p. 16). This proviso is important in Indigenous contexts because so often the language game of the Indigenous author is patently not the language game of the KOS.

Mai (2010) in arguing for pluralism as a basis for classification suggests that because likeness, empirical fit, and pedagogical and developmental orders are insufficient, classification should be based on the role that a document plays in discourse. Evaluation then would be based on an explanation of how the classes and their relationships were established. Thus for Mai (2010) classificatory warrant becomes explanation-based according to the concepts of cognitive authority and trustworthiness. A trusted classification is congruent with the system’s philosophical basis and the system’s structure (Mai, 2010, pp. 632–634). The designer is transparent about the bases upon which s/he designed the system. The explanation would include the philosophy, principles and decisions taken within the system design, as well as information about the people and the organization(s) responsible for producing the system. Only those with cognitive authority whom users trust can be relied upon to make “decisions about what categories mean, their structure, their relationships and
what goes into various categories” (Mai, 2010, p. 636). Those with cognitive authority are recognized as knowledgeable and trustworthy. They may be experts within a given field: those we turn to “for knowledge, insight, and advice on particular matters, and good judgment” (Mai, 2010, p. 636).

Frohmann also weighs the various types of warrant including: (1) a pragmatic order deriving from social practice grounded in the disciplines; (2) the force of logical division (premised on the idea of the universality of mental structures); and (3) the warrant of scientific realism based on the structures of the world as known to science (1994, p. 132). However he observes that KO theory presents these concepts (disciplines, logical categories, and structures in the real world) as natural and objective, and sets aside recognition that theory construction itself is a social process of intellectual labour, and is as implicated as any other labour process in contests for power and institutional power relations (Frohmann, 1994, p. 124). KO theory functions in the discursive construction of users’ identities and the ways in which they are positioned as subjects, thus Frohmann counsels that we ask “From whose perspective, and in light of what and whose interests, are their capabilities and their possibilities for action viewed?” (1994, p. 133). Discourse theory holds that analysis at the level of social practice requires the resources of social theory because discourse analysis alone is inadequate here (Jørgensen & Phillips, 2002, pp. 64–68).

### 8.2.2.1.1 Indigenous Perspectives on Discursive Warrant

The Cultural Interface theory aligns with an approach within the philosophy of language that interprets meaning as constituted through use, social context and interaction wherein a document is part of a language game (Andersen & Christensen, 1999; Wittgenstein, 1953). The idea that the classification must be congruent with the parent
language game of the author/document and that the author and the document must originate from the same language game is important in Indigenous contexts. Firstly, a key failure of mainstream KOS is that they frequently do not represent the Indigenous “language game” of contemporary Indigenous scholars. That is, the KOS is not congruent with the language game of the author or the document. Instead mainstream KOS often impose, for example, the language game of anthropology or other traditional academic disciplines on Indigenous-authored documents with consequent constructions of Aboriginal identities and positioning as subjects, and knowledge producers. This also occurs when KOS represent historic accounts or intellectual and cultural traditions of Indigenous people in a language that is not recognizable to (or is considered offensive by) Indigenous audiences. This type of anomaly does not appear to be directly addressed by language game theory but it is key for Indigenous knowledge organization (IKO). Thirdly, the parent language game of an author and the language game of an Indigenous contributor to the creation of a document may not originate from the same language game. This is an ethical and representational issue encountered in Indigenous contexts including research practice as well as KO practice. These (unresolved) challenges notwithstanding, an approach that counsels that the KOS is congruent with the language game of the author and document holds promise for IKO.

However, a central concern for IKO is the ways in which knowledge is made powerful. Knowledge organization functions in the discursive construction of Indigenous identities, subjects, and social relations. It creates “the resources by which the self is understood” (Frohmann, 1994, p. 134) and a vehicle for the knowledge of experts to shape Indigenous and others’ understandings (Nakata, 1995, p. 56). For these reasons, Indigenous
knowledge organization requires analysis of the force and effects of discourse, as well as its larger contexts of social practices and structures.

### 8.2.3 Social and Ethical Warrant

Increasingly knowledge organization theorists are engaging with social theory in the spheres of study, critique, and design (cf. Bowker & Star, 1999; Hjørland, 2011a; Olson, 2002, 2009; Samuelsson, 2010; Talja, Tuominen, & Savolainen, 2005; Trosow, 2001). The plane of social warrant considers the ways in which knowledge organization is socially consequential. Trosow critically analyzes the relationship between knowledge organization theory and social theory, based on Burrell and Morgan’s (1979) two-part model of social theory composed of social science as the study of the nature of social knowledge and sociology as the study of the nature of society. These parts form two intersecting axes that produce four social theory paradigms: interpretivist, functionalist, regulatory and transformative (Burrell & Morgan, 1979).

Social science aligns along a subjectivist/objectivist axis, and sociology aligns along social regulation/radical change axis. Viewed from a social science objectivist position, knowledge is external to the individual and reality is really real. It produces the functionalist paradigm that dominates Western science and construes knowledge as measurable and composed of structures, concrete, objective and capable of transmission across time and space in tangible form. At the opposite end of the social science axis, a subjectivist (interpretivist) position views knowledge as being produced through human cognition and individuals as creating and naming social and phenomenal worlds in order to negotiate and make sense of a socially constructed world. It rejects the notion of the neutral observer
standpoint and the possibility of laws or underlying regularities for subjective understanding (Trosow, 2001).

These familiar tensions between objectivist and subjectivist approaches to being and knowledge produce a range of positions in knowledge organization theory. However, most of them share a similar disregard of the relationship between power and knowledge. It is the discipline of sociology that takes power as an object of study, and examines the role of power in the tension between social continuity (regulation) and change (conflict and transformation) (Burrell & Morgan, 1979). Even as knowledge organization theory shifts towards intersubjectivity (Peters, 2009/1977, p. 4177), it fails to account for power/knowledge relationships because users are conceptualized within a political economy of production and exchange (Trosow, 2001). The shift of theoretical focus has the potential to offer insight into the ways in which specific identities are formed. However, if noncritical discourses and methodologies are used (those that do not theorize power) it is likely that the constructions of subjects and identities will continue to be described with the characteristics of dominant systems and not disclose any new insights (Frohmann, 1994, pp. 133–134).

KO theorists enquiring into the social and ethical dimensions of knowledge organization and its attendant responsibilities in local and global contexts generate notions of cultural and ethical warrant (Beghtol, 1986, 2002a, 2002b, 2005; López-Huertas, 2008). For example, in global systems design, López-Huertas attributes ethical responsibility to KO researchers and professionals to “watch over information needs of non dominant groups” through meaningful representation in global information systems that are dominated by hegemonic models. She asserts, “users have the right to access to information in a way understandable for them and to be aware of it and to respond by creating the media to allow
such communication” (2008, p. 121). In order to ensure socio-culture and linguistic diversity in heterogeneous knowledge spaces she conceptualizes “quality” as a principle that requires that cultures are handled in ways that are recognizable for the culture, and are also understandable in other cultural environments within a universal KOS (López-Huertas, 2008, pp. 118–120).

Begotol’s original analysis of cultural warrant (1986) construed it as an umbrella warrant that recognizes that any classification necessarily will be shaped by the culture that produces it. As classifications carry the historical imprint of the intellectual climate at the time of their creation, they could be used to document historical trends in a field of knowledge, culture, or epoch. In later work (2002) she distinguishes two levels of meaning of culture: a broad level includes national, religious or ethnic cultures while a narrower level includes stakeholders, such as academic, artistic, political or institutional cultures (2002).

Culture implies the “existence of a group of people who have a stake in the continuation of their various shared common values, beliefs, histories and activities” (Moody-Adams, 1994, pp. 292–293 as cited in Beghtol, 2005, p. 94). Ethical and cultural warrant intended to protect cultural and information diversity provides the rationale and authority for the establishment of appropriate “fields, terms, categories and classes” for a particular system and particular group of users and subjects (Beghtol, 2005). Beghtol includes stakeholders within her definition of culture; however, López-Huertas is more restrictive in her emphasis on socio-cultural and linguistic diversity, which I take to be congruent with Indigenous perspectives.

57 Indeed as Indigenous and critical scholars point out, this is part of the problem with the contemporary dominant classifications that continue to be based on 19th-century principles (Hernon & Metoyer-Duran, 1992; Olson, 2000).
8.2.3.1.1 Indigenous Perspectives on Social Warrant

KO theorists who interrogate the ways in which subjects are constructed through the dominant disciplinary discourses are relevant for IKO (cf. Frohmann, 1994; Olsson, 2005; Talja, 1997; Trosow, 2001). For example, Olsson (2005) advocates theoretical frameworks that focus on the social relationships and processes that underpin people’s information practices. He critiques the construction of information users as subjects who are defined by their areas of ignorance rather than their areas of knowledge (2005, p. 1), and rejects the dominant disciplinary constructions of users as “needy” individuals to be “helped.” Instead he conceptualizes subjects as social beings who are “experts in their own life-worlds” (Olsson, 2005, p. 1). This type of theoretical framework advocates for research approaches that recognize the fundamentally social nature of knowing (Talja, 1997) and reject constructions of users in ways that focus on “their ignorance…rather than their knowledge” (Frohmann, 1992, p. 379). It is useful in thinking about ways in which Indigenous subjects are constructed through the dominant KOS. The conceptualization of “knowing subjects in the practical-discursive context of everyday life” (Talja 1997) mobilizes Martin Nakata’s emphasis on embodied Indigenous lived experience at the Cultural Interface.

Social theory is a necessary component for understanding the operation of power in knowledge organization processes and products @ Cultural Interface. Conceptualizations of ethical and cultural warrants (cf. Beghtol, 2005; López-Huertas, 2008) have the potential to serve Indigenous interests at local and global levels, in particular in terms of global systems design for shared Indigenous interests at international levels. The assertion that knowledge organization researchers and professionals have an ethical responsibility to meaningful representation for non-dominant groups is congruent with an Indigenous approach that
attributes responsibility to designers for design methodologies and products. The work of both López-Huertas (2008) and Beghtol (2005) might serve as rationale in advocacy with large standards bodies to modify dominant policy and practice in this area. Also Mai’s work (2010) on trustworthiness could be applied (with modifications) in Indigenous contexts. For example, the criteria for designer trustworthiness, identified by Mai as academic credentials, publishing record and reputation, may not be considered the strongest credentials within Indigenous contexts. It may be an equal or stronger credential to be a “known-face,” having a public record of community service, and recognized as a member of an Indigenous epistemic community.

8.2.4 Technical Warrant

The plane of technical warrant examines the implications that epistemic, discursive, and social forms of warrant generate for the techniques of design, that is, map-making. In terms of structure, the first question is how to identify what constitutes the extent of the object of study: the domain. The answer will be contingent on the theory of meaning used by the designer and the mode of reasoning applied. It may produce either an a priori (deductive) or an a posteriori (inductive) approach (Frohmann, 1983). Universal classifications, such as DDC and Library of Congress Classification (LCC), typically use the disciplines as the first order of structure citing educational and scientific warrant with their associated stability as rationale. However discipline-based classification is widely critiqued as inadequate in an interdisciplinary world (Williamson, 1998).

Discipline-based classification is critiqued for a number of reasons: the fundamental fallacy that some sort of known “totality of knowledge” exists, and can be expressed through division into main classes; a rigid and exclusive design structure that accounts neither for

Langridge (1992) approaches the problem by distinguishing between fields of knowledge, forms of knowledge, and applied disciplines. A field of knowledge focuses on a particular area of thought or action, for example women's studies focuses on everything relating to women whether from art, history, science or philosophy (Langridge, 1992, p. 21). The applied disciplines, such as medicine, engineering or education, are aimed at practice and characterized by their own structures, concepts, and validation, as well as those of related disciplines (Langridge, 1976, p. 7). Forms of knowledge are identified by the possession of (1) unique concepts, (2) a particular logical structure for discussions, (3) methodology for investigations, and (4) method for testing findings (1992 p. 21). In Western thought, these criteria give rise to eight forms of knowledge: (1) mathematics, (2) physical science, (3) human science, (4) history, (5) moral knowledge, (6) art, (7) religion, and (8) philosophy. However, these forms may not fit those of other cultures and other epochs due to different
ways of patterning knowledge (Langridge, 1992, p. 22). Forms of knowledge study phenomena, those things or occurrences that we perceive in the world, and the forms of knowledge are ways in which we perceive and study them. A phenomenon, such as a rock, tree, bird, or abstract concept, may be studied or expressed through science, art, philosophy, or history; however, the kind of knowledge gained through each form is quite different (Langridge, 1995, p. 11; 1989, p. 31).

Ranganathan’s classification theory also begins with the notion of high-level basic subjects, such as disciplines, as the starting point for subsequent classification. After these are established subjects can be analyzed (using facet analysis), and then synthesized according to the fundamental category formula. A subject may consist of a single concept or any number concepts and relationships; the latter are known as “compound subjects.” Each component of a compound subject is called a facet (Ranganathan, 1967, Section CR7). For example, within an agriculture class one facet is “Crop.” Within a book on “Cranberry growing in British Columbia,” the term “cranberry” represents the crop facet. This example contains three facets represented by the terms “cranberry,” “growing,” and “British Columbia.” A topic containing two or more facets it is called a compound subject. A complex subject is a type of compound subject that is based on a relationship that is external to the class (Ranganathan, 1967). For example, “Iroquois confederacy on U.S. constitution” meaning the influence of the Iroquois confederacy on the US constitution, is a complex subject showing a phase relation. The ability to show phase relations is relevant to Indigenous knowledge organization, particularly for the Indigenous discourses devoted to surfacing Indigenous influences in a wide range of fields.
Ranganathan locates the activity of classification on three planes. The idea plane is a space for conceptual work; the notational plane establishes a coding language to express the structure of the system once it is designed; and the verbal plane establishes a set of terms to denote the names of classes. Work on the verbal plane addresses the control of homonyms which “grow like weeds” (Ranganathan, 1967, Section CM), where the same word is used to denote more than one idea or is used in different senses in different disciplines, and synonyms, where there may be multiple words for the same concept, or polysemy, multiple words for almost the same concept.

8.2.4.1.1 Indigenous Perspectives on Technical Warrant

As the Indigenous designers indicated, this type of work on disambiguation is important in dealing with Indigenous connotations and polysemy (see Chapter 7.2.1.2). The control of homonyms and synonyms addresses some of the issues raised by the Indigenous designers: it is the level at which multi-referential words may be disambiguated using parenthetical qualifiers, such as Forty-Nine (social dance), Medicine Wheel (stone circle), Medicine Wheel (concept of). Qualifiers usually modify names of disciplines or categories or types of objects. They can also be expressed by syntactic means using a subject language construction, for example, Loon Lake -- Ontario; Loon Lake -- Saskatchewan; or Loon Lake -- British Columbia (cf. Svenonius, 2000, pp. 149–150). While Ranganathan held an untroubled view of the correspondence between term-concept-reality, he was in other ways sensitive to the possibilities of bias on the verbal plane, for example his rejection of the use of the term “minor authors” in DDC based on its contravening his Canon of Reticence (use of neutral language). Ranganathan’s theory and method in the analysis of compound subjects
can serve IKO on the technical level of the verbal plane once the purposes, principles, and high-level structure have been determined.

Ranganathan’s principles of user acceptance, mnemonics, and hospitality on the notational plane serve IKO, and the latter is particularly useful for emergent fields of scholarship, such as Indigenous scholarship, because it is intended to accommodate new subjects at the end of an array, or between existing numbers in an array or a chain (Ranganathan, 1967, Sections LB, LE). His interest in expressive notation that is meaningful and shows the relationships with the larger scheme is balanced by his recognition that a long complex notation is counterproductive for small collections. He makes provision for collections where the universe “is likely to contain no more than a million entities” (Section JG) to use a non-faceted notational system which is an important consideration for small, under-staffed libraries. For consistency and ease of use mnemonics in notation ensure that a digit-group is always used to represent the same concept. For example, in an Indigenous collection, the same digit-group could be used to represent each First Nation in Canada to ensure a consistent and recognizable representational notation.

The structural basis of an Indigenous knowledge organization system will be a product of a particular Indigenous knowledge domain. Once the domain has been defined it will be shaped by epistemology, the purpose(s) defined for the system, the interests of the audience(s), and the institutional location. The main classes are informed by and transmit this perspective in the structural elements of their number, scope, and order (Frohmann, 1983). In this section, I consider three alternative (of many possible) bases for determining main classes for an Indigenous classification @ Cultural Interface for an Aboriginal post-secondary academic library.
8.2.4.1.2 Indigenous Educational Warrant

Although a disciplinary structure is roundly criticized, perhaps an Indigenous disciplinary structure would offer improvements? There may be some advantage to engaging the idea of Indigenous educational warrant based on Indigenous academic programs. At a post-secondary institution such a classification could parallel, for example, the areas of Indigenous studies (broadly defined) within higher education. The advantages could be improved access to curricular-related materials for students within the Indigenous studies disciplines because the classification structure would mirror the curriculum. It might also strengthen and raise the profile of the various fields within Indigenous studies through the representation of their structures, concepts, theories, methods, and criteria of evaluation in the library KOS.

An Indigenous discipline-based classification has the potential to contribute to the body of published literature within Indigenous studies disciplines through surfacing it. If practitioners of Indigenous studies librarianship claim it as a field of scholarship in its own right, similar to African studies librarianship, Chicano studies librarianship or feminist studies librarianship, they could generate a disciplinary literature that would strengthen the broader Indigenous studies scholarship. This might support aspirations for disciplinary validity, for example in Indigenous education and Indigenous studies through identifying Indigenous scholars, and Indigenous concepts, theories and methodologies and their interrelationships with each other, and also potentially with the wider disciplines. The disadvantages are in some ways similar to those of all discipline-based classifications: inadequacy in an interdisciplinary world, rigidity, and inability to accommodate the exponential growth of knowledge. In addition, if larger social and political goals of creating
Indigenous studies as an endogenous study (Thornton, 1977) are endorsed, they may be undermined by an academic-based classification focused on externally based (academic) approaches rather than internal (tribal/nation) perspectives.

8.2.4.1.3 The Warrant of Indigenous Sovereignty

An alternative strategy is to take sovereignty as the organizing principle, and the main class structure would then be more exclusively by nation or tribe, as Gene Joseph suggests (see Chapter 7.2.2). In this case, I suggest that each nation could then be viewed structurally as a form of knowledge (Langridge, 1989) based on a specific culture’s ontology and epistemology; or language as suggested by Deanna Nyce (see Chapter 7.1.4.4.). The advantages are that it would build a view of the collection that is specific to each nation and collocate knowledge that is tribally focused. It raises the visibility and diversity of each Nation within the collection and then has the potential to serve Indigenous continuity in cultural revitalization and renewal efforts, and political and pedagogical interests through raising Indigenous profile. It may better serve Aboriginal learners studying their own communities, histories, identities, and activities. It could also serve an intercultural audience, and as a cultural introduction for those who may be employed by a Nation (or community) to provide professional services: teachers, health professionals, architects, and lawyers come to mind from my experience. It could also serve an audience of knowledge-workers in communities and KO scholars in modelling one way of approaching the organization of a Nation’s materials for use in a cultural centre, archive, or library.

However, as noted previously, a social and ethical danger in this strategy is the imposition of a perhaps well-intentioned but still unavoidably “exogenous” classification of documents related to a particular Nation. Although this concern might be offset by
developing participatory methodologies for developing the classifications, there are other
issues related to cultural classification as discussed in the following section. A challenge for
users on the ground at a collections level is that this strategy would disperse topics across
potentially hundreds of First Nations in Canada. For example, Haida – education; Heiltsuk –
education, Tsimshian – education, Nisga’a – education, and so on.

An intermediary approach is to apply Langridge’s model of fields of knowledge,
forms of knowledge, and applied disciplines to the Indigenous knowledge domain. While
forms are often characterized as having unique concepts, logical structures, methodology and
testing procedures, Thornton argues that the lines of demarcation are not clear. Sociology
and political science, for example, share concepts and methodologies but exist as separate
disciplines because they have unique intellectual pursuits (1977, p.14). Similarly he argues
that Indigenous studies must develop an internally focused research agenda and develop its
own unique intellectual pursuits separate from the myriad of other disciplines that study
Indigenous peoples, thought and expression. From the perspective of an Aboriginal post-
secondary academic library the challenge is that its collections represent a full range of
Indigenous disciplinary materials. It is possible that a tri-partite approach composed of
tribal/First Nation form of knowledge, Indigenous fields of knowledge, and Indigenous
applied disciplines within a post-secondary education collection is viable.

I have identified multiple purposes for Indigenous knowledge organization @
Cultural Interface, however for an academic library I privilege education, the processes of
teaching and learning, for Indigenous students and scholars. In this case, I would draw on
Indigenous disciplinary classification based on educational warrant, and balance it with
classificatory structures privileging sovereignty in aiming to design a classification that
meets both of these bases for structure at the Cultural Interface, that is at the intersection of Indigenous and Western knowledge spaces. I think part of educational warrant includes design for “self recognition” by Indigenous users. That is, Indigenous users are the defining clientele—although not the largest. The goal is for students to recognize themselves (individually and collectively) in the design, and if this integrity is achieved it would also serve the education of much wider and multiple intercultural audiences.

8.2.4.1.4 Two Territories of Indigenous Classification

A summary description of the Indigenous knowledge domain in post-secondary education is a knowledge domain supporting the revitalization of Indigenous knowledge and practice based on the goal of Indigenous self-determination (broadly defined) and a commitment to decolonization as activated within any post-secondary sector or discipline. It necessarily includes the recognition of contemporary social and economic conditions and their causes (based on Grande, 2004). The Indigenous discourses within the domain are characterized by some predominant tensions. These include the interrelated dimensions of sovereignty and decolonization that are discussed within the literature (Grande 2004, 2008; Nakata, 2007; Turner, 2006) with some Indigenous scholars rejecting decolonization studies as detracting and distracting from Indigenous interests and purposes (cf. Champagne, 2007; P. Steinhauer, 2001; Thornton, 1977). There are also debates about generic or pan-Indian approaches and Nation-specific approaches (cf. Lomawaima, 2004; Newhouse, 2008), also raised in the graduate student discussions (see section 4.3.1) and by Gene Joseph (see section 7.1). Somewhat similarly, the graduate students expressed tensions between different Indigenous collectives, for example, between land-based and urban peoples, and between academic and community knowledge (see Chapter 5.2.1).
These types of tensions are also manifest within the field of Indigenous knowledge organization. For example, the Indigenous designers were uneasy about outsiders working in the field, and expressed ambivalence about an Aboriginal academic library as a research site for the development of an IKOS, although ultimately they agreed that development was needed and could be useful or informative within community contexts. I believe the ambivalence is due, at least in part, to histories of appropriation and colonialism, and think it is exacerbated by the lack of terminology to describe Indigenous knowledge organization as a practice (and as emergent theory and method). The development of a disciplinary terminology might contribute to clarifying the discussions and distinguishing between different types of practices, such as the different types of design strategy identified in the typology of practice and jurisdiction (see Table 6.1). The designers indicated that even in ostensibly public knowledge spaces Indigenous knowledge organization is perceived as carrying a potential threat of appropriation and intrusion. This leads me to draw a distinction between two territories of Indigenous classification, provisionally named cultural classification and academic classification, the two being interrelated but differentiated by context and by content.

It requires further enquiry to articulate where the limits of academic classification are located and where they may infringe on a cultural classification. For example, as Gene Joseph explained, the spiritual aspect of the nature of a plant would likely require representation within a specific cultural worldview (see Chapter 7.2.1.2). A question is, would this level be considered within or outside the scope of an academic classification? This type of question leads me to suggest that Indigenous knowledge organization include the development of Indigenous knowledge protocols in public institutions as integral to the
field of scholarship of design. Cheryl Metoyer explained that a Cherokee approach to the concept of *system* would necessarily entail a wholistic interpretation from a Cherokee perspective. A conceptual task at the level of design is to develop an Indigenous design language appropriate to the specific Indigenous knowledge domain and the design strategy. Unlike other fields, Indigenous design language(s) are expected to be multiple because they may be culture-specific, for example, as the designers explained a culture-based vocabulary may be required for a cultural classification (see Chapter 7.2).

Jo-ann Archibald’s distinction between authority and expertise (2008, p. 151) in Indigenous storywork is relevant in this context. Archibald states that one may become knowledgeable about an Indigenous story by studying (about) it, and one may acquire some expertise in this way. However, this does not constitute authority. Authority is a quality attributed to individuals who understand the cultural principles embedded in the practice and who know how to engage it and with it. The articulation of where these boundaries may lie invites and probably requires the collaborative development of participative design methodologies that engage a range of Aboriginal stakeholders. This could also include, for example, aspirations for public collections and public knowledge relevant to their nations, care and handling of materials, organization and description, and privacy/property guidelines or decisions for designers.

**8.3 Discussion: Wholism and Integration**

In this chapter the concept of warrant (Beghtol, 1986; Olson, 2004, Wisser, 2009) was defined at a general level as the justification for knowledge claims or decisions in order to serve as a boundary object (Bowker & Star, 1999) between KO theory and Indigenous theory. This created conceptual space for Indigenous theory to engage knowledge
organization theory for both critical and constructive purposes on four planes of work (Ranganathan, 1967) in KO theory: (1) epistemic, (2) discursive, (3) social, and (4) technical. Each plane of warrant addresses particular types of problems, with potentially different methods, concepts, and types of evidence. It draws on the discourse of KO theory to engage with its concepts such as warrant (Beghtol, 1986; Wisser, 2009), and boundary objects (Bowker & Star, 1999), and with a range of KO theorists, from Ranganathan (1967) and Broadfield (1946) to Frohmann (1994), Mai (2010), and Trosow (2001). It has mapped broad areas of theoretical discourse, and offers them to future IKO scholars to develop or redefine. The chapter has engaged KO theory and Indigenous theory on all of the planes of work thereby addressing, from theoretical perspectives, research sub-question 3, “What elements of knowledge organization theory are hospitable to interpretation from Indigenous standpoints?”

In “adding to add to the rafters” (Newhouse, 2008), based on the Indigenous principle of wholism, I adopt an integrative approach. As Thornton notes, “while it may be important to separate out components of the world to study them, it appears necessary to bring them together to understand them” (Thornton, 1978, p.13). An integrative approach accepts that there are multiple ways of knowing and multiple sources of knowledge, and therefore multiple types of warrant. My enquiry within the chapter has been premised on the idea that a theory of Indigenous knowledge organization @ Cultural Interface requires an explicit and transparent account of the type(s) of warrant that the designer has utilized or constructed on each of the four planes. This approach generates a methodological pluralism contingent on (Indigenous) context and purpose. The theme of integration and synthesis is the focus of the next chapter, Chapter 9: Indigenous Knowledge Organization @ Cultural Interface, which
synthesizes the findings of the previous eight chapters through a theoretical framework for Indigenous knowledge organization, Indigenous knowledge organization @ Cultural Interface.
Chapter 9 Indigenous Knowledge Organization @ Cultural Interface

The prologue to the dissertation describes a gap in the literature (see Chapter 3.1). The technical procedures for designing a knowledge organization system (KOS) are well developed and described, however there appears to be a gap at the critical first step, the conceptual level of design that establishes a philosophical position that in turn will shape how related issues and decision-making processes are addressed. In a theoretical sense, it determines what exists in the world, how we come to know, and who may be a knower. It therefore also informs the methodological approach, and shapes notions of authority and warrant (Feinberg, 2008; Mai, 2006, 2008).

The preceding chapters have examined aspects of the conceptual dimensions of knowledge organization. This chapter summarizes the findings, and synthesizes them in a theoretical framework for Indigenous knowledge organization, Indigenous knowledge organization @ Cultural Interface. It includes (for consideration) an Indigenous ontology and epistemology, an Indigenous ethics, and an integrated methodology. It then demonstrates an application of the theoretical framework, at a particular type of institutional site, an Aboriginal academic library in Canada. In doing so it contributes to filling the gap at the first step of the design of an Indigenous knowledge organization system, and offers it to future designers to adapt or adopt in completing the subsequent steps in the construction of a system.

9.1 Towards Integration: Developing a Theoretical Framework

In this section I summarize the enquiry process that produced the theoretical framework, Indigenous knowledge organization @ Cultural Interface. I then demonstrate an
application of the theoretical framework at an Aboriginal academic library that generates seven principles of design. Although the process was more like a web of enquiry, it is presented sequentially here for clarity: I began standing on Musqueam territory, in an Aboriginal academic library, with a metaphor as a way of thinking about mapping knowledge spaces. I used it to consider the differences between mapping and map-making, theory and practice, interpretation and design. I then began to assemble a theoretical location to match my physical location: place, people, purpose, and mapmaker. It is composed of ontology, epistemology and ethics: an Indigenous compass for charting the theoretical terrain describing what exists in the world, how we come to know it, who may be a knower, and what is worth doing. This led to developing an integrated methodology for use in studying Indigenous approaches to knowledge. The methodology produced empirical and theoretical findings about the effects of knowledge organization for Indigenous learners and all learners, as well as three working constructs for use in Indigenous contexts: a domain, a field of study, and a design workspace. Specifically, they included the domain of Indigenous knowledge in post-secondary education; an articulation of Indigenous knowledge organization as a field of study; and “Adding to the Rafters” a space for enquiry and design. Indigenous knowledge organization (adapted from Tennis, 2008) is defined as a three-part scholarship composed of critique, study, and design of the processes of representing and organizing documents in Indigenous knowledge domains. A document is understood as any form of media from print, to musical, visual, or three-dimensional objects: abstract or concrete.

The process of mapping Indigenous knowledge spaces is summarized and synthesized in this chapter through a theoretical framework, Indigenous knowledge organization @ Cultural Interface, illustrated in Figure 9.1. Each element is discrete and can be utilized for
different purposes in different contexts, but they are synthesized here in a theoretical framework composed of the ontology-epistemology of the Cultural Interface; the ethics of Indigenous Métissage; the methodology of domain analysis @ Cultural Interface; located within a field of study named Indigenous knowledge organization.

Figure 9.1 Indigenous Knowledge Organization @ Cultural Interface

9.2 Revisiting the Musqueam Map

The metaphor of the Musqueam map compared geographic space with discursive and intellectual space. It presented the mapping out (eclipse) of Musqueam presence on the university campus map as analogous with the eclipse of Musqueam presence on the university library map. The Musqueam map teaches that maps are not neutral or objective representations; mapping can be used for purposes of assimilation and equally for purposes
of resistance and reclaiming of territory, as well as for engendering new approaches through ordering knowledge differently to create new connections and enable the unanticipated. Over the course of the study, I have come to the understanding that the process of mapping a knowledge domain is a cycle of interpretation: one that gradually forms a theoretical approach that in turn becomes its own kind of map. The process considers not only the specific domain but also the nature of the concept of domain, including the processes of creating and naming boundaries. A knowledge domain is always changing, as is the cartographer who over the course of the journey may become a narrator, one who narrates not only the map but also the processes of mapping. Through creating boundaries and claiming territories, (constructing the object of the map), the mapmaker is also making manifest ideas about the nature of domains and of boundaries: classification reified. I came to understand that the conceptualization of Indigenous knowledge and Indigenous knowledge organization are mutually constitutive. That is, the way in which the domain of Indigenous knowledge is conceptualized is shaped by the approach (or theoretical lens) used to view it. The theoretical lens shapes the object of study, and as the shape of the object changes, it refocuses the lens.

9.3 A Theoretical Lens

The theoretical lens assembled for the study is composed of the ontology-epistemology of the Cultural Interface (Nakata, 2007b) and the ethics of Indigenous Métissage (Donald, 2009b). The Cultural Interface is characterized as a dynamic space of intersections between Indigenous and Western knowledges, histories and practices (Nakata, 2007b). It centres Indigenous lived experience, and includes ethical, social and political dimensions as components of a theory of knowledge. As a social ontology it theorizes
multisubjectivities and contingent historical contexts. It aims (1) to give voice to Indigenous positions overwritten by Western discourse; (2) to support Indigenous goals of equality with others; and (3) to contribute to the maintenance of cultural distinctiveness and interests as determined by Indigenous people. Typically postmodern in its sensibility, it views knowledge as socially constructed, partial, and dynamic, and deconstructs dualisms. This discourse theoretic approach (Talja, 1997) is centrally concerned with the ways in which discourse functions to produce material and social effects—both negative and positive—for Indigenous people. As ethical and political considerations become epistemically significant at a philosophical level, at the level of knowledge organization (KO) they become integral to design and evaluation of systems.

The ethic of Indigenous Métissage grounds the primary commitment to centring Aboriginal accounts and perspectives within Canadian narrative and historical experience with an overarching purpose of creating connections. It contests the idea that the historical perspectives “of Aboriginal peoples in Canada are their own, and are separate from the rest of the people in Canada” (Donald, 2009b, p. 6). It does so through two moves. The first is to surface Indigenous accounts of presence, participation, agency, and resistance. The second is to highlight the interactions between Indigenous peoples and all Canadians that grow out of histories of living together in a place for a long time. Place is a key aspect of Indigenous Métissage as a site for repairing the dominant colonial narrative of separation. This Indigenous ethic is concerned with relationality and surfacing Indigenous accounts, both of which are integral to the theoretical framework of Indigenous knowledge organization @ Cultural Interface.
9.4 Methodology for Studying an Indigenous Knowledge Domain

The Cultural Interface, with its key concerns with the discursive constructions of Indigenous identities, was integrated with the method of domain analysis in information science to produce the methodology, domain analysis @ Cultural Interface. It views a domain as not only being composed of a discourse community (Hjørland & Albrechtsen, 1995) but also as part of a discourse community that sits in relation to a larger social practice and has the power to either reproduce or to transform knowledge, identities and social relations (Phillips & Jørgensen, 2002, p. 65). A domain is understood as the interaction of subjects (actors), concepts, documents and institutions. The methodology was used to conduct four analyses of the domain of Indigenous knowledge in post-secondary education: (1) a critical study of knowledge organization and its consequences for Indigenous learners; (2) an analysis of Indigenous knowledge as a knowledge domain; (3) a study of knowledge organization in Indigenous contexts based on expert interviews with nine Indigenous designers of knowledge organization systems; and (4) a user study with nine First Nations, Aboriginal and Métis graduate students who use academic libraries.

9.5 Four Findings

The domain analyses @ Cultural Interface produced four main findings, which are synthesized in a theoretical framework: (1) knowledge organization is integral to educational infrastructure and is consequential for Indigenous learners and Indigenous education; (2) a conceptualization of Indigenous knowledge as a domain, and a definition of the domain of Indigenous knowledge in post-secondary education, including its boundaries, and the
boundary marker of *Indigeneity*; (3) an articulation of the field of study of Indigenous knowledge organization including a (partial) history, a typology of practice, purposes and evaluation framework; and (4) a design workspace for theoretical enquiry within IKO,

Adding to the Rafters. An integration of the first four findings produced a theoretical framework for Indigenous knowledge organization, Indigenous knowledge organization @ Cultural Interface, which is applied as a model at a particular type of site, an Aboriginal academic library at a university in Canada producing seven principles of design and examples of their application. These findings are summarized in the following sections.

### 9.5.1 Consequences of Mainstream Knowledge Organization

The notion of classification as infrastructure (Bowker & Star, 1999) was applied to the field of Indigenous education in order to demonstrate that knowledge organization is integral to educational infrastructure and the ways in which it disadvantages Indigenous learners and Indigenous education. The dominant knowledge organization systems (KOS) function as hidden curriculum in shaping beliefs and attitudes, and as textbooks in conveying canonical accounts that diminish the place of Aboriginal people in Canada. Research shows that stereotypic representation can damage the self-esteem, identity formation, and emotional well being of learners (Steele, 2004). The dominant KOS not only transmit stereotypes of Indigenous people, they also impede access to Indigenous cultural heritage materials and contemporary scholarship through historic and colonial modes of representation. The consequent lack of access to more balanced accounts of historic and contemporary interactions between Aboriginal people and all Canadians further entrenches the dominant culture’s myth of separation. The consequences of mainstream KO for Indigenous learners are summarized as silencing of Indigenous voice, theft of Indigenous intellectual and cultural
heritage, impeding diverse accounts, contributing to an alien climate through reproducing stereotypes, and intergenerational impacts of all of these effects for Indigenous learners and all learners. The identification of negative consequences of mainstream KOS provided markers for imagining positive possibilities for KOS designed to serve Indigenous interests, such as respect for Indigenous self-representation, reframing the boundaries of academic knowledge, developing more diverse ways of representation, and more stringent standards for institutional responsibility for access.

### 9.5.2 The Domain of Indigenous Knowledge in Post-Secondary Education

An Indigenous knowledge domain is composed of interactions between subjects (actors), documents, concepts, and institutions. Within post-secondary education it is a composed of multiple and competing discourses characterized by tensions and mediations between, for example, Indigenous/Western knowledge, academic/community knowledge, pan-Indian/culture specific approaches, and various epistemologies, research methodologies and paradigms. From my domain analytic perspective, these diverse approaches comprise different Indigenous discourses, all of which are conceptualized as part of the domain of Indigenous knowledge due to their commitments to Indigeneity: a social and political commitment to privilege Indigenous interests. I use the concept of Indigeneity as a marker of Indigenous discourse for the purposes of articulating domain boundaries and characteristics within the study. I take this marker to be present in the fields identified as Indigenous knowledges in action (Archibald, 2008) in the academy, and for the purposes of discussion I name them *Indigenous disciplines*; they include, for example, Indigenous education and Indigenous studies. Additional Indigenous disciplines potentially could include any traditional or applied discipline engaged by Indigenous thought or new Indigenous emergent fields.
This is a more relaxed definition than those proposed by theorists dedicated to Indigenous studies as an endogenous study (originating from within specific Indigenous cultures) and relies more on the approach of the Cultural Interface that recognizes new forms and blended traditions as potentially generative for and relevant to Indigenous interests. I think this approach is suitable for a field (Indigenous knowledge organization) that strives to represent and organize a wide range of Indigenous documents. Indigenous discourses push the boundaries of the traditional academic disciplines and open up new conceptual and interdisciplinary terrains that create a concomitant demand on IKO to give voice to them. There are multiple and competing Indigenous discourses in post-secondary education as Indigenous scholars reframe and recreate disciplinary theories and concepts as part of the creative and the practical arts of scholarship, thereby “Indigenizing” existing concepts or creating new concepts (and new terminology). An Indigenous theoretical framework for IKO design, I suggest, must be capable of representing and mapping them at the same time as remaining part of the discourse.

9.5.3 Indigenous Knowledge Organization as a Field of Study

Interviews with nine Indigenous designers including First Nations designers Brian Deer, Bert Morrison, and Gene Joseph, and Nisga’a educator Deanna Nyce, Indigenous designers John D. Berry, Cheryl Metoyer, and Kelly Webster in the United States, Alana Garwood-Houng in Australia, and Ann Reweti in New Zealand produced a range of articulations of purpose, design principles, and criteria for the evaluation of Indigenous knowledge organization systems. The designers’ accounts demonstrated a diverse historic and contemporary practice of Indigenous knowledge organization nationally and internationally. I therefore conceptualized Indigenous knowledge organization as a field of
study, including a range of diverse practices unified by a shared commitment to the service of Indigenous interests as identified by Indigenous people at local and global levels. This led to a typology of Indigenous knowledge organization design practices distinguished by jurisdiction, institutional site, and domain scope and focus. The typology may serve as a framework for comparative analysis across sites and for ongoing enquiry. The definition of purposes of naming, claiming, and recreating, and their manifestations in various contexts, produced a pluralistic evaluation framework for Indigenous knowledge organization processes and products for this scholarship that takes Indigenous knowledge as its universe of study.

9.5.4 Adding to the Rafters: Design Workspace

“Adding to the rafters” incorporates the intention of this Haudenosaunee protocol for adaptive and inclusive processes within a design workspace for Indigenous knowledge organization. It was constructed to enable a dialogue between Indigenous theory and knowledge organization theory. The Indigenous theoretical perspectives are derived from the interviews with the Indigenous designers and the First Nations, Aboriginal, and Métis graduate students, in conjunction with the theory of the Cultural Interface. The KO theory is based on the literature of selected key KO theorists (Beghtol, 1986; Broadfield, 1946; Langridge, 1976; Frohmann, 1983; Mai, 2010; Olson, 2002; Ranganathan, 1967; Trosow, 2001; et al.). The dialogue was staged within a conceptual scaffolding composed of planes of work intended for the development of theory within Indigenous knowledge organization. The scaffold, underpinned by the commitments of the Cultural Interface, required recognition of multiple dimensions of knowledge organization that I defined as epistemic, discursive, social, and technical. This led to framing a general definition of warrant as a boundary object
that could traverse different knowledge domains and realms of theoretical discourse, including the four planes of work of IKO theory. The epistemic plane explores different approaches to ways of knowing and what exists in the world. The discursive plane explores discussions relating to the theory of language, rhetoric, and the power of discourse. The social plane considers social realities and relationships, and the opposing forces of social regulation and transformation. The technical plane examines the practical arts of design and product construction. The scaffolding was then used in this instance to develop a particular theoretical framework intended for use in an Aboriginal academic library at a post-secondary institution. Future designers will be the arbiters of the utility of the scaffolding and the provisional theoretical framework produced from it, Indigenous knowledge organization @ Cultural Interface.

9.6 A Theoretical Framework

Indigenous Knowledge Organization @ Cultural Interface is a provisional theoretical framework and methodology for Indigenous knowledge organization. It is applied at an Aboriginal academic library at a university in Canada for the design of a hybrid system (see Table 6.1), under university jurisdiction, with a domain focus of Indigenous knowledge in post-secondary education, and domain scope that includes formal and informal scholarly publishing of Indigenous academic and community scholars. The framework is comprised of an Indigenous social ontology, a relational Indigenous ethics, and humanist commitment to more equitable outcomes for Indigenous learners. It envisions the purposes of Indigenous knowledge organization @ Cultural Interface as spanning social, political and pedagogical dimensions in addition to the technical purpose of search and retrieval. Purpose, expressed through objectives, states what a KOS is to accomplish, and design principles are the
precepts that guide design decisions used to create the system (Svenonius 2000, p. 11–12). The specific objectives of naming, claiming, and (re)creating flowed from these high level purposes of the framework. When applied at a particular site, the three objectives combined with the experiential themes from the Indigenous designers’ interviews produced seven principles of design: Indigenous authority, Indigenous diversity, wholism and interrelatedness, Indigenous continuity, Aboriginal user warrant, designer responsibility, and institutional responsibility.

9.6.1 Purposes

Because the negative consequences of dominant knowledge organization systems are multidimensional for Indigenous learners, the positive possibilities of Indigenous knowledge organization @ Cultural Interface are envisioned as being equally multidimensional, operating on social, political, and pedagogical levels. Naming, claiming, and (re)creating are envisioned as three realms of positive possibility for Indigenous knowledge organization @ Cultural Interface that operate within an overarching commitment to social change characterized by transformation. When they are applied to the study and practice of design they may be interpreted in the following way: Naming is attributed a critical role in the recognition of collective and individual identity, (re)construction of memory, and cultural and language revitalization, as well as in sharing Indigenous knowledges as part of world knowledge. Respect for Indigenous self-representation is central to the rubric of naming.

58 This interpretation of purpose is based on the history of development of IKO practice in Canada (Chapter 6.1), the literature of Indigenous practitioners (Chapter 4.2.1), interviews with Indigenous designers (Chapter 6 and 7) and with First Nations, Aboriginal, and Métis graduate students (Chapter 4.3 and Chapter 5.2).
The assertion and public recognition of the Indigenous self-representation is considered under the rubric of *claiming*. It also manifests in asserting the right to ethical access to (and perhaps control of) Indigenous materials held by public institutions, including libraries. This theme attributes institutional responsibility to support Indigenous assertions of rights to access, and to the recognition of Indigenous self-representation. *(Re)creating* acknowledges the educational potential of knowledge organization to inform multiple audiences in addition to Indigenous audiences, including library cataloguers, the general public, and all learners. It considers creativity as a high level goal of education, one that aspires to generative thought and new possibilities.

### 9.6.2 Design Principles

The following section defines and applies the seven principles of design for use in an Aboriginal academic library: Indigenous authority, Indigenous diversity, wholism and interrelatedness, Indigenous continuity, Aboriginal user warrant, designer responsibility, and institutional responsibility.

#### 9.6.2.1 Indigenous Authority

Indigenous authority is defined as the primacy afforded Indigenous accounts of Indigenous experience, and the centring of Indigenous self-representation. Indigenous authority is the arbiter for design decision-making. This may range from the executive levels of determining purpose of a project through to the concrete level of determining what constitutes a valid concept, which concepts are included, the terminology selected to represent them, the sequence of their arrangement, and the characteristics of division. At this level it determines what constitutes an authoritative source (text or talk) for selecting
concepts and terminology for a particular subject discipline within an IKOS. Canonical
disciplinary sources, such as encyclopedias, dictionaries, and various kinds of KOS, such as
thesauri, glossaries, and classifications, are generally considered to be authoritative; however,
they are often problematic from Indigenous perspectives. Nonetheless, they may be used in
Indigenous contexts if they are authored by Indigenous authors or recognize the principle of
Indigenous authority. If non-Indigenous sources are considered, they will be critically
examined and require careful interpretation and translation. In Indigenous contexts, the word
“expert” is often contentious due to the histories of appropriation and colonization, and
because Enlightenment concepts of reason and objectivity produce exclusive criteria of who
may be a knower and of legitimate knowledge. An ambivalent relationship to the notion of
expert knowledge raises design challenges related to Aboriginal expert opinion and
Indigenous educational consensus as bases for classification. Archibald’s (2008) distinction
between expertise and authority offers criteria that can be applied in mediating this tension.

At a conceptual level the principle of Indigenous authority may be invoked to reframe
disciplinary concepts. For example, concepts such as document may be expanded or
reframed to suit Indigenous contexts, and documentary theory shaped to include study of
Indigenous documentary forms, such as winter counts, oral narrative, or creative expression.
It seeks opportunities to continue Indigenous epistemic traditions, such as the value placed on
names and relationships into an IKOS. Names can serve as a form of authority through
recognition and lend credibility to a document or collection. When Indigenous scholars self-
identify in a document as a member of a nation or community, it is considered meaningful
and is carried (and retrievable) in the representation of an IKOS. As the graduate students
suggested, it might adapt oral tradition as an organizational structure for knowledge
organization. The Indigenous rhetorical tradition of dialogic stance used by Urion (1991, 1995) and Newhouse (2008) is a principle that lends itself to IKO and to the design of pathways between different knowledge domains.

### 9.6.2.2 Indigenous Diversity

The principle of Indigenous diversity recognizes diversity of Indigenous individuals, and collectives, including but not limited to, race, class, gender, sexual identity, education, language, as well as professional, social, academic, cultural identities and responsibilities, et al. Within IKO design it entails a commitment to representing as full a range of Indigenous identities as possible, and an attempt to avoid imposing what may be a (Indigenous) canon, whether it is in political, philosophical or other forms. It also recognizes (and represents) heterogeneous knowledge systems that flow from diverse languages, cultures and experiences. The generative aspect of design is concerned with creating multiple pathways to knowledge to serve connections and interconnections, and developing an expanded Indigenous bibliographic universe. It recognizes the participatory nature of knowledge, and the opportunities that a wide range of knowers and representational (KOS) languages provide. The development of multiple vocabularies may counterbalance the ways in which more controlled approaches exclude diverse representation. Balancing the principle of diversity is the principle of wholism and interrelatedness, which recognizes and expresses the relationality that is inherent in knowledge domains as complex discursive environments of relationships between subjects (actors), concepts, documents, and institutions.
9.6.2.3  **Wholism and Interrelatedness**

Wholism is an epistemic-ontological principle based on the belief that all things are interconnected. As a graduate student participant pointed out, “it is important to shift knowledge to include things that aren’t included right now … to an understanding that all things that are interconnected” (1: Frances). It emerged strongly through the theme of interconnectedness in the graduate student discussions concerned with strengthening Aboriginal communities and community interconnections, and with building personal, professional and research-related interconnections among both the Indigenous academic and wider Indigenous community and their wider publics. Facilitating interconnections between Aboriginal students and Aboriginal scholars, promoting Aboriginal scholars, building networks of Aboriginal collecting institutions and sharing cataloguing data with Aboriginal collecting institutions were seen as key. This led to expanded conceptualizations of knowledge and inclusive practices. As one participant suggested, knowledge produced at the university is only partial: “Knowledge cannot just come from the top. The community has to, at some point, be part of that knowledge pool, and I think that’s where we’ll get beyond just what we have here at the university” (2: Aden). This in turn led to expanded views of the scope of collections and modes for knowledge dissemination.

The principle of wholism may be applied in any IKO dimension of study, critique or design. IKO design can raise the profile and the impact of Indigenous scholarship through making it visible and accessible. Visibility can be raised through development of controlled vocabularies for representing subject/topics, authors/producers and their relationships. This entails the development of vocabularies to represent (types of) affiliations and their associates such as nations, communities, places, or languages. Visibility can mobilize the
impact and application of Indigenous scholarship, foster relations serving the education of all learners, and increase Aboriginal awareness among the wider public. There are different educational audiences and providing pathways to knowledge is important for Indigenous audiences, as well as non-Indigenous audiences.

Nakata’s concept of *locatedness* (2006) is a contemporary form of a traditional way of knowing that attends to all of the elements in a surrounding environment. It anchors the principle of a dialogic stance that takes into consideration multiple audiences and types of audiences that use library knowledge organization systems. Locatedness suggests that IKO design creates possibilities for dialogue among and between Indigenous academics and Indigenous communities; and between Indigenous and non-Indigenous learners creating bridges across communities and knowledge domains.

The principle of dialogic stance poses a question for an IKO theory. A premise of IKO theory is a commitment to respect Indigenous self-representation. However, if a non-Indigenous discourse is described using Indigenous terminology, how are we to recognize it? Does this require a higher-level description that can serve as a crosswalk between different but related knowledge domains? For example, the historic colonial discourses of missionaries, travellers, and anthropologists may be related to but distinct from contemporary Indigenous discourses. The historic anthropological term still used by many Canadian libraries is Kwakiutl Indians; contemporary Indigenous use and self-representation is Kwakwak’wakw. Based on the requirement for Indigenous learners to become knowledgeable about both an Indigenous worldview and a Western discipline (Nakata 2007b, Turner 2006), it may be important to retain a historic Western knowledge map, and an
Indigenous knowledge map to the same or similar concepts (such as Kwakwa’wakw and Kwakiutl), as well as, to Indigenous concepts, and “cultural referents” (Grande, 2004).

9.6.2.4 Continuity

The principle of continuity begins with Indigenous interests in the continuance of Indigenous cultures, languages, and knowledge traditions into the future to contribute to sustaining Indigenous communities and ultimately all communities. IKO design can serve the principle of continuity in the support of Indigenous cultural and language revitalization and maintenance through representing and organizing documents relating to Indigenous cultures, languages, and traditions. The graduate student who observed that their First Nation did not have information on the academic research relating to the Nation: “we don’t even know what theses and dissertations are on my nation” (1: Frances) speaks to the value of IKO design in serving this principle, which can be applied to all documents relevant to continuity not only theses and dissertations.

Within IKO design a commitment to continuity leads to considerations of sustainability and efficacy. The graduate student who observed that some problems would take more than one generation to solve underlines the importance of knowledge continuity for transmission to future generations, and to be available for solving problems in new contexts. The prerequisite is the existence, that is the development, of relevant collections. The development of collections is included under the principle of continuity because this theoretical framework recognizes that relevant collections have two dimensions: one as product and another as a relationship or interaction. First, relevant collections aim to ensure that documents relevant to the domain, including the small community publications and
informal publications, for example talks by Elders in public or academic fora, in addition to contemporary Indigenous academic scholarship are represented within the collections.

Secondly, it recognizes that the relationships developed in identifying, sourcing, and acquiring collections are important, and serve in contextualization and interpretation. There is a network of relationships between the documents, their audiences and their creators (Fear & Donaldson, 2012) which sit in relationship to larger Indigenous academic, social and political discourses. These all influence use, interaction, and IKOS design. The credibility and the trustworthiness of collections (and their developers) constitute elements within a field of Indigenous KO design. Relationships between, for example, collection developers, designers and knowledge producers are often an integral part of an Indigenous knowledge domain, reflecting continuity of production, transmission and use, as well as, informing understandings of content and audiences, and the ways in which Indigenous collections participate in the production of Indigenous knowledge.

Sustainability is a related dimension concerned with the design of IKO systems that can be ported, shared, and efficiently maintained both now and in the future. As an IKOS becomes integrated into a university library infrastructure, it is preserved according to institutional guidelines including the regular migration to new hardware platforms, software upgrades, and updates to bibliographic and communications standards. Because a local university library catalogue is linked to international academic bibliographic networks, the local development of Indigenous classificatory and alphabetic subject languages can travel through these types of digital spaces carrying Indigenous concepts and conceptual

59 The more popular digital world of Indigenous social media, websites, and portals is outside the scope of this study.
structures. The benefits of standardized metadata and bibliographic records must be weighed in the balance with the autonomy of individual nations and projects that depend on the context and local purpose. Within an Aboriginal post-secondary academic library with an educational mandate, the use of bibliographic and metadata standards, including syndetic structures to link concepts and structured data, supports the goals of sharing both the knowledge content and its infrastructure (the IKOS) widely for multiple types of users: community, academic, and professional. In sharing the IKOS it addresses the graduate student concern that some organizations just need ways of organizing their collections “in a more conventional way that works” (2: Kyle) as it may contribute a working model for community users in wider range of environments to adopt or adapt.

Design for continuity at a technical level could facilitate information sharing across different types of domains, thereby promoting intellectual sharing, collaborative design and development, and furthering the impact and application of Indigenous scholarship. It is an effective use of resources because a concept or connection is built once and used many times. It is sustainable because it is integrated into the institutional infrastructure so that it becomes embedded in every (sub)system with which it interconnects. It provides pathways that can be used and reused and reconnected to other pathways to proliferate connections. It becomes open to intended audiences and disciplines, as well as those that are completely unanticipated. In this way it meets Deanna Nyce’s standard of efficacy, as it is both effective and sustainable. As Nyce pointed out, the economic side is the rudder: “it determines what you can and what you cannot do” (Deanna Nyce, personal communication, May 25, 2009).

60 This interconnection depends in part on the university library regularly sharing its bibliographic records with its national institutions and international bibliographic utilities (shared databases).
The realities of limited funding necessitate effective use of resources, and motivate collaborative efforts and the explanation of what may be perceived as a technical project in a language that speaks to wider audiences.

9.6.2.5 Aboriginal User Warrant

Within this theoretical framework, the principle of Aboriginal user warrant establishes Aboriginal people as the primary audience for design. Although the public of a particular Aboriginal academic library is a wide-ranging public that extends from a heterogeneous Aboriginal audience to the much larger public of the university community and the general public, it is assumed that the primary audience is an Aboriginal academic audience. Aboriginal learners are the primary clientele and Aboriginal user convenience is a design principle that flows from it based on the known and anticipated requirements of Aboriginal students, faculty and staff, in addition to a commitment to supporting Indigenous community access. The representation (terminology and concepts) and structure therefore are intended to tell an Aboriginal story for Indigenous learners. It aims to use language in a way that an Aboriginal learner might recognize her/himself both individually and collectively—in whatever way that collectivity is envisioned and as these may shift over time and in different contexts.

The principle of Aboriginal user warrant also serves continuity and access. The graduate student’s observation that their First Nation did not have information on the academic research relating to the Nation: “we don’t even know what theses and dissertations are on my nation” (1: Frances) is also echoed in the literature (Lee, 2001; Patterson, 1995). This is viewed as an element of institutional responsibility, and discussed further under that section (see section 9.6.2.7). The development of ethical access (see Chapter 7.3.1.4), in
addition to a fundamental imperative to provide physical and intellectual access to existing collections, also incorporates consideration of cultural and intellectual property protocols, and the contingent continuum of public–private knowledge. Aboriginal user warrant is balanced by the ethic of dialogic stance and its use of KO techniques (such as cross references and scope notes) to bridge to other users through the commitment to intercultural and interdisciplinary education.

9.6.2.6 Designer Responsibility

Designer responsibility is conceptualized as operating at both individual and collective levels. An Indigenous knowledge organization system (IKOS) is viewed as a form of discourse that has consequences just as any other discourse. The designer therefore attends to the ways in which it may construct individual and collective subject identities, and “objects” of research. Guidelines include criteria of credibility and trustworthiness predicated on the idea that valid knowledge arises in part through relationships between members of an epistemic community. This requires transparency and demonstrations of plausibility, utility and relevance to Aboriginal interests, and reciprocity in design, testing, and evaluation. There is a responsibility to the wider Aboriginal community to share the knowledge generated in ways that are relevant and accessible, which can include publishing in a range of popular and disciplinary publications, or through social media. A commitment to Indigenous education has dimensions of bridging from the academy to educational systems within Indigenous jurisdiction.

For example, designers at an Aboriginal academic library may have opportunities to participate in curriculum development at both academic and community levels. The design and delivery of community-based training or community presentations in collaboration
with Aboriginal organizations or other Aboriginal libraries may be possible given the institutional infrastructure available at a university. In addition, an academic library implementing an IKOS produces a model that may serve diverse audiences including a professional audience of those interested in the design and development of IKOS for their own organizations; indexers or knowledge workers interested applying the IKOS for organizing and representing documents in a local database, digital collection or traditional library; and scholars generally interested in KO design, critique, and study. There is an institutional responsibility to acknowledge this range of potential audiences and interests and to support them as time and resources permit.

9.6.2.7 Institutional Responsibility: Ethical Access

Ethical access is viewed as an institutional responsibility of institutions with a mandate to serve Indigenous education: it comprises a continuum of access ranging from physical access, to social access, to intellectual access, to governance (see chapter 7.3.1.4) Information technologies provide opportunities for both dissemination and access, and also for user input into the design of IKOS as part of collaborative methodologies; however IT access is also contingent on a range of physical, technical, social, and policy factors that have different impacts on different end-users, and on different units within institutions.

The recognition of different Indigenous understandings of ownership, copyright, cultural and intellectual property, public and private knowledge and their associated protocols (Janke, 2005) is a component of ethical access. The development of Indigenous protocols for public collections of Indigenous library and archival materials is an area for future policy research. The level of social access considers ways of supporting Indigenous-receptive physical and virtual spaces that might be facilitated through fostering university
library staff awareness of Aboriginal histories and aspirations and possibly an overview of the Aboriginal collections within the library system. Possible forms of outreach could include reciprocity in collections development and the promotion and mobilization (wide-based use) of existing collections. The level of governance includes information policy decisions and their implementation in support of ethical access. There is a role for institutions in effecting social change through institutional mandate and policy at local and national levels.

9.6.3 Evaluation

In addition to the evaluation of functionality in search and retrieval, this theoretical framework also considers the social effects of an IKOS particularly in light of its potentially wide dissemination through the bibliographic and Internet networks. As evaluation includes assessment of both product and process, the articulation of methodology for the creation and dissemination of an IKOS, communication of methodology and the evaluation results is a central component of the framework. Evaluation is based on a range of criteria deriving from the purposes of naming, claiming, and (re)creating. The development of Indigenous authorities (sources of controlled vocabularies) and the public sharing of these technical tool kits is included under the rubric of naming. The recognition of Indigenous self-representation is considered under the rubric of claiming, and one test is having its audience claim the IKOS through use and acceptance. For example, one student participant stated that s/he would not bother to use a library or consult a librarian—except at a Native library. Why? A Native library is, I suggest, recognized as being credible due in part to its web of relationships and interactions with creators, distributors, and users, which are evidenced in its collections, services, and KOS. The users’ credibility assessment (Fear & Donaldson, 2012) is one
indicator of success in this area. The objective of (re)creating recognizes the educational potential of knowledge organization to educate multiple audiences, including library cataloguers, the general public, and all learners. The functional assessment would be as the Indigenous designers recommended, conducted with the multiple audiences including knowledge experts, indexers and cataloguers, and users: both Indigenous and non-Indigenous. The assessment criteria would vary with each type of user group. The purpose of transformation is viewed as an overarching ethic that is present in all of the purposes. When viewed as a continuum of change within KO theory and practice, it is viewed as change that mobilizes Indigenous interests and purposes, and ultimately serves all Canadians.

Developing more stringent criteria for evaluation and assessment @ Cultural Interface may address some of the concerns expressed by the Indigenous designers regarding the ethical and epistemic boundaries of Indigenous knowledge organization. Participative methodologies that strive to build trust through transparency, recognize boundaries, and are guided by the precept of Indigenous authority may address, and be perceived as addressing, some of the concerns. It may lay the groundwork for supporting collaborative efforts within the field. In these ways the framework aims to serve Indigenous interests, as well as a larger public, and broaden understandings of the theory and practice of knowledge organization.

9.6.4 Summary

The development of the theoretical framework, Indigenous knowledge organization @ Cultural Interface, is one of the products of the dissertation. It is a particular synthesis of the findings and interpretations developed within the study, and it is applied at a particular type of site, an Aboriginal academic library at a university in Canada. It may be used as “the critical first step” in the development of Indigenous knowledge organization systems (IKOS)
in academic contexts, such as a classification scheme, thesaurus, subject headings, metadata, or Aboriginal bibliographic record standards. It may also have application as model for adaptation in other contexts through providing a template of components, and a way of analyzing knowledge domains for the purposes of Indigenous knowledge organization. Finally, it may be applied in the study and critique of extant systems and processes for representing and organizing documents in Indigenous knowledge domains.

9.7 Discussion: What’s Indigenous About Indigenous Knowledge Organization?

The question, “So, what’s Indigenous about that?” has been posed to me in various ways over the course of the study. There are expectations that an Indigenous approach must be perceived as reflecting traditional knowledge. Some argue that there is no Indigenous knowledge present in the university at all because Indigenous knowledge is held by traditional knowledge holders. From another perspective, it is argued that the field of knowledge organization itself is a Western discipline, just another colonial paradigm, and it is not appropriate to present it as Indigenous. Others will point out that in fact Aboriginal people did not have libraries, and that the study is written in the English language, both of which preclude it from being described as Indigenous. Another perspective asks, “What is the difference between this “Indigenous” critical poststructural approach and any other poststructural or critical approach?” I have previously argued against the fundamental premise embedded in some of these questions, viz. that Indigenous people and Indigenous knowledge are static entities freeze-framed in the past. In addition, I suggest that meaning is contingent and is shaped by context, use and purpose.

I suggest that what is Indigenous about this conceptualization of Indigenous knowledge organization is a political, social and ethical commitment to centre Indigenous
experience and thought, as well as its formative underlying relational ethic (Donald, 2009b; Newhouse, 1998; Urion, 1991, 1995). Any statement of commitment of this type is open to the charge that it is simply advocacy, however I argue that it is research. It is research in seeking to learn things that we do not already know (Kidwell, 2009), and it is research into the ways in which Indigenous scholarship contributes to knowledge, and to producing new knowledge. As Nakata states, the objective is to create space for learners to express Indigenous perspectives and not be defined by those perspectives (Nakata, cited in Trounson, 2011). Within the Cultural Interface the encounter itself is viewed as a possible source of new meanings and new interpretations which may or may not look Indigenous, but which might serve Indigenous interests by continuing older traditions in new contexts (Nakata, 2006).

Indigenous knowledge organization @ Cultural Interface is presented neither as a cultural classification nor an anthropological study. It is presented as a scholarship that is intended to investigate the application of theoretical, conceptual, and methodological approaches expressed by Indigenous scholars to address problems identified by Indigenous people. It differs from mainstream disciplinary approaches in that its purpose is situated within a larger Indigenous research agenda, and in its theoretical commitment to both harness and shape the dominant discourses to serve Indigenous interests. Indigenous knowledge organization @ Cultural Interface is concerned with the study of the domain of Indigenous knowledge domain in post-secondary education, as well as being part of that domain. It is informed by Indigenous scholarship regarding the problems to be solved, what is worth doing, the concepts required, appropriate methods and methodologies for research, and the types of relations and relationships that are important. All of these are understood to be
multiple, and to generate heterogeneous approaches to Indigenous knowledge organization: the scholarship concerned with the processes of representing and organizing documents in Indigenous knowledge domains.
Chapter 10 Conclusion: Reflecting on Relations

In exploring the research question “How can Indigenous approaches to knowledge inform principles of design of knowledge organization systems to serve Indigenous purposes?” the dissertation has demonstrated how Indigenous theoretical, conceptual, and methodological approaches to knowledge coalesced in the field of Indigenous knowledge organization (IKO), and continue to shape its constructs, purposes and methods. In the previous chapter, I presented a synthesis of the central findings of the study that produced a theoretical framework, Indigenous knowledge organization @ Cultural Interface. An application of the framework was modelled through an articulation of design objectives and design principles for an Indigenous knowledge organization system (IKOS) at an Aboriginal academic library at a university in Canada.

The framework is one product of the study, which adapted Indigenous critical discourse theory (Nakata, 2007b; Donald, 2009b), named it @ Cultural Interface, and applied it to the field of knowledge organization, creating a methodology for the study of Indigenous knowledge domains within post-secondary education. An empirical and conceptual analysis of diverse Indigenous practices resulted in the claiming of an Indigenous field of study: Indigenous knowledge organization (IKO). IKO is a unique field with a particular history of development, distinctive disciplinary commitments, and characteristic objectives that exceed the canonical objective of search and retrieval. It conceptualizes Indigenous knowledge in post-secondary education as a dynamic domain understood as interactions between subjects (actors), concepts, documents and institutions, not as a static entity or concept.
IKO is concerned with the processes of representing and organizing documents (Tennis, 2008) within Indigenous knowledge domains in local and global contexts; its design practices were mapped through a typology of Indigenous strategies for change through design. Thus, the study demonstrated how Indigenous approaches to knowledge can produce an Indigenous framework for critique, study, and design; a theoretical lens; and a field of Indigenous scholarship. These interconnected spheres of research are represented (roughly) within the dissertation as: Indigenous critique (Chapter 4) based on the theoretical literature and group discussions with First Nations, Aboriginal, and Métis graduate students; a study of Indigenous knowledge organization (Chapters 5-7) based on the expert interviews with nine Indigenous designers from four countries; and an examination of epistemic, social, discursive and technical dimensions of design processes for Indigenous knowledge organization (Chapters 8 and 9). In this concluding chapter I review the title of the dissertation, describe the implications of the study, possibilities for future research, limitations, and contributions, and offer a final reflection on the process. It is noted that this study and its theoretical framework have been constructed incrementally based on selected theorists, particular participants, experiences, and literatures, and offer only one of many possible interpretations.

10.1 Naming, Claiming and (Re)Creating

The short title of the dissertation, Naming, Claiming and (Re)Creating, is intended to evoke the active dimensions of Indigenous self-determination and the generative capacity of Indigenous thought and tradition. The dimensions are interdependent and act in synergy with each other to produce transformation. The title is assonant in its sound and rhythm, and also is repeated within the dissertation serving as a structural device and thematic thread. The meanings are open to multiple interpretations, including those of the readers, however some
key resonances for the purposes of the study defined as Indigenous knowledge organization are summarized here. *Naming* at its most general level is interpreted as Indigenous self-representation: it may range in manifestations from very concrete meaning, such as names of people, places, and things; to the ongoing endeavour of Indigenous people to decolonize the expression of Indigenous thought and experience; to academic realms where Indigenous scholars name theoretical, conceptual and methodological innovation through traditional disciplines or emergent scholarships (see Chapter 5.3.4.1).

*Claiming* extends the act of naming to carry it into public spheres: it is intersubjective in this sense and calls for recognition. Within the context of knowledge organization, claiming asserts Indigenous self-representation (naming) through media such as library catalogues, databases, archival finding aids, or academic portals. It includes advocacy for recognition of Indigenous self-representation by the international standards bodies, and has related implications for information policy reform at local and national levels. Knowledge organization systems (KOS) shape identities and research objects, influencing learners and scholars through their interactions with these media in teaching, learning, and research in both current and future contexts.

*(Re)Creating* is interpreted as a generative process that is imaginative in origin and continues Indigenous traditions into new contexts. It may create new connections and ways of thinking through bringing Indigenous approaches to shape understandings of how the world works and our responsibilities within it. In the contexts of Indigenous knowledge organization it is evident in the application of Indigenous epistemological, ontological and axiological perspectives to the problems posed within the information disciplines and the wider world. This trilogy of naming, claiming, and (re)creating has shaped the analyses and
interpretations within the study. It is also interpreted as the purpose of Indigenous knowledge organization @ Cultural Interface within the study, and it influences the considerations of the implications of the study.

10.2 Implications for Scholarship

In claiming Indigenous knowledge organization as an area of scholarship, and understanding it as a complex and sometimes contentious field, I suggest that it would benefit from location within a larger disciplinary home with a strong repertoire of Indigenous theory, social theory, and critical theory, in addition to the information disciplines, broadly defined as spanning, for example, archival science, library and information science, museum studies, records management, and social studies of information, et al. (Bates, 2010). I view Indigenous knowledge organization, as it has been articulated within this study, as a scholarship that is located at the interstices of Indigenous studies and information studies.

10.2.1 Indigenous Information Studies?

The larger area of study of Indigenous knowledge domains and Indigenous disciplines within the academy is also an underdeveloped area of scholarship. I suggest that it not only constitutes an area of research within this study but also is potentially an area of specialization within library and information studies or Indigenous studies. A role for Indigenous studies librarians within post-secondary education could be to lead educational initiatives about information resources for, and scholarly communication about, teaching and


62 This might be named Indigenous information studies or Indigenous studies librarianship, similar to Chicano or African or women and gender studies librarianship.
research in the domains of Indigenous knowledge within the academy including the various Indigenous disciplinary discourses and genres and their interrelationships with the broader disciplines, and Indigenous community knowledge. It might include examination of the forms of creative expression, academic scholarship and Indigenous community scholarship and their various modes of knowledge production, dissemination, and use.

It would also include scholarship regarding social dimensions of Indigenous knowledge domains in public institutions, including conceptualizations of knowledge protocols, of intellectual sovereignty, and of ownership of cultural and intellectual property, and articulations of private/public knowledge. Indigenous studies librarians might conduct research on issues identified within the information fields about Indigenous scholarship or create research agendas for study within Indigenous disciplines. A significant challenge for any conceptualization of a field of Indigenous information studies is the lack of adequate representation and organization of Indigenous academic and community scholarship. This restricts the dissemination and use of Indigenous scholarship, and thereby the production of new knowledge and new approaches. Indigenous knowledge organization could play a pivotal role in beginning to deal with this restriction. This provisional sketch presents both Indigenous knowledge organization and Indigenous information studies (Indigenous studies librarianship) as critical and constructive scholarships...in search of a disciplinary home.

10.3 Implications for Policy

When knowledge organization systems are viewed as not only reflective of but constitutive of an exclusionary educational infrastructure there are information policy

63 The struggle to find suitable terminology for (to name) Indigenous activities is a hallmark of the domain.
implications at institutional levels and national levels, to the extent that KOS function as barriers to Indigenous learners and Indigenous education, and to full representation of national histories and recorded memory. This research study recommends developing processes for change of the bibliographic descriptive standards, such as the Library of Congress Subject Headings, and Canadian Subject Headings to recognize Indigenous self-representation as the authority for describing and ordering documents within Indigenous contexts (knowledge domains). This recommendation is advocated explicitly (see Chapter 6.2.4), or implicitly through professional practice, by all of the Indigenous designers interviewed for the study.

The recognition of Indigenous self-representation in the public educational infrastructure could contribute to the repair of the historical and contemporary record of Canada and serve to educate all learners and all Canadians about Aboriginal presence, agency, and participation. Rebalancing of the record could contribute to the Truth and Reconciliation efforts between Canada and Aboriginal people through representation of Aboriginal accounts—historic and contemporary—within the memory and collecting institutions of the country. Intellectual access to these materials, I suggest, then has the potential to activate the documents and generate interactions with researchers, scholars, Indigenous communities, and others. It has direct applications to purposes of reconstructing memory of family connections (genealogy) and historic events, as well as in any range of rights and title claims; relationships with people, lands, and resources; and activating the intellectual heritage recorded in documents by connecting it with its originating communities and other actors. Aboriginal self-representation in KOS has the potential to foster dialogue and understanding, and to surface shared histories (Donald, 2009b). Within the contexts of
contemporary scholarship, it can mobilize the new knowledge production of Indigenous scholars contributing both to Indigenous interests, and world knowledge. Adequate representation in national databases could serve capacity building and development within Indigenous communities, and also for developing KOS for Indigenous purposes within Indigenous communities.

10.4 Implications For Future Research

The IKO purposes of naming, claiming and (re)creating are framed below as research program for future research as an example of the potential scope of the field. Viewing Indigenous knowledge organization scholarship as composed of three interrelated research spheres of critique, study and design activates an associated research agenda within each dimension. A sample outline of a possible agenda is illustrated in Table 10.1 A Sample Research Agenda.

Table 10.1 A Sample Research Agenda

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<th>Naming</th>
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The following discussion provides examples of possible research projects within this research agenda for Indigenous knowledge organization.
10.4.1 Naming

The effects of KOS for Indigenous learners and all learners are viewed not only as elements in the critique, study, and design of existing and new KOS but as an area of future research regarding the experiences of users, and the social and material effects of KOS on people’s lives. In support of institutional and policy change, future research could include ongoing empirical research regarding the effects of the representation of Aboriginal people and Indigenous knowledge domains through the dominant library information systems for Indigenous learners, and the wider publics. It could also enquire into possible impacts on Aboriginal student recruitment, retention, and scholarship. By extension it could include examination of impacts on teaching, research and community service of faculty members of both the dominant KOS and of Indigenous KOS.

The purpose of the critique is to better understand the dynamics of power and underlying assumptions in the language and logic of classification, and to contribute to the design of new possibilities for transformative information systems. For example, empirical user studies on vocabulary use and preferences and approaches to classification of concepts by faculty and students in Indigenous studies (broadly defined) could support improved design. Enquiry into the types of subjects, research methodologies, and enhanced metadata regarding various types of Indigenous self-identification could contextualize and enhance access. Indigenous scholars identify the importance of personal names (Exner Little Bear, 2005; Mahsetky Poolaw, 2000) and the importance of Indigenous metadata to identify Nation, and familial relationship et al. The definition and use of contextual information for personal names of Indigenous authors/knowledge producers has the potential to support the reconstruction of memory and strengthen communities; map Indigenous scholarly relations
with fields, genres, and other scholars; and develop a web of relationships between Indigenous collections in various collecting institutions across the country.

From a theoretical perspective, I suggest that Indigenous discourse theory, such as Martin Nakata’s, is directly relevant to research in Indigenous information studies and Indigenous knowledge organization. From a conceptual perspective, analysis of the meaning and the use of the term bias in the KO research literature, and what that means for Indigenous knowledge organization would be useful. The use of the term bias in the literature appears to be vague and polysemous. It is presented unproblematically in some of the literature as something that is unavoidable. The question is: what is bias? What is the difference between bias and other forms of misrepresentation ranging from stereotypes to discrimination? Is it good enough to accept that the national information infrastructure in libraries, for example, excludes founding nations of the country, and claims that this is unavoidable bias due to the nature of the theoretical and institutional practices of libraries?

From the perspective of historical enquiry, the representation of historical discourses raises questions about the temporal aspects of representation and, for example, concepts such as periodization, tradition, genealogy, memory, and reconciliation. It raises questions regarding how to retain representational integrity of (historic) knowledge and discourse through time and space. The reconstruction of collective and individual memory within traumatic experience is a subtext within the designer interviews. It suggests enquiry into the ways in which that traumatic experience may shape language, agency and narrative (Cazdyn & Comay, 2011), particularly in light of the development collecting institutions dedicated to traumatic histories and events, such as the Indian residential school archives in Canada.
10.4.2 Claiming

Research that surfaces the contributions of Indigenous peoples and Indigenous thought and the histories of interaction between Indigenous and non-Indigenous people could include histories of Indigenous libraries (and other collecting institutions) in Canada building on the work of Hills (1997), and expanding the introductory material within this study. More complete biographies of Indigenous people, including designers, working in the field is another area for future research, as is a history of Indigenous knowledge organization in Canada and in other countries. Gene Joseph recalls that Roberta Miskokomon at the Woodland Cultural Centre designed a knowledge organization scheme (Gene Joseph, personal communication, May 2009). The history and development of Aboriginal and Indigenous professional associations such as the Original Peoples’ Library Association might be initiated from the extant archival holdings of the organization and literature searches contributing to the historical record. At an international level, policy studies might be undertaken to examine the ways in which the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) could be harnessed to advocate for change of the dominant knowledge organization infrastructure and leverage its power to begin to support Indigenous interests as they are articulated within the UNDRIP.

10.4.3 (Re)Creating

The mapping of the production, distribution and use of Indigenous scholarly communications would contribute to the visibility, the impact, and the application of Indigenous scholarship, and to a fuller understanding of its histories and contributions. Hjørland’s research agenda (2002) for knowledge domains applies equally, for example, to the domain of Indigenous knowledge in post secondary education and asks, “Who are the
producers? How much do they publish and communicate, and how is this communication distributed in different channels? How is the communication filtered and influenced by different media? What is the coverage both quantitatively and qualitatively in different libraries and databases? What kind of epistemic norms guide the selection process? How interdisciplinary are the different agents and institutions, and what kinds of bias can be involved in disciplinary influences? What kind of national or geographic traditions, cultural norms and economic influences are at play? “ (Hjørland, 2002, p. 448).

An Indigenous analysis of KO theory is an area for future research. For example, a study of document theory might include traditional Indigenous record keeping, such as winter counts, house posts, monumental sculpture and architecture, storytelling, narrative, or song. Research into the development of methodologies for participatory design of Indigenous knowledge organization systems, for example in post-secondary environments that acknowledge social and political factors in design, and the responsibilities of design/researchers in Indigenous contexts are key research areas. Ideally Indigenous knowledge organization design involves ongoing collaborative thought on multiple levels, including not only study, design, and critique but also related standards and protocols, as well as collections development. Collaborative design and development of specific areas of an Indigenous knowledge domain with a range of Indigenous stakeholders could serve the community, the academy, and wider general, academic and professional publics. This type of broad-based research project has to the potential to foster collaborative work at local, regional and national levels. For example, the local development of controlled vocabularies for Aboriginal collections using a shared platform might in later phases be networked across the regions facilitating both local development and national information infrastructure. The
former supports the development of Aboriginal knowledge networks as collaborative efforts between communities and organizations working with Indigenous knowledge domains that could serve the First Nations, Aboriginal, and Métis graduate students’ commitments to building stronger communities, and strengthening community connections.

10.5 Limitations

There may be strong disagreement with the idea of characterizing all forms of knowledge organization in Indigenous contexts as “Indigenous knowledge organization.” It may be argued that only tribal classification or a culturally based classification is legitimate Indigenous knowledge organization. The typology of Indigenous knowledge organization developed within the study, and used to locate the activities of an Aboriginal academic library, is constrained by its location within academic scholarship at a post-secondary research institution, and it is highly interpretive. It offers only one, and only a partial and provisional interpretation, and although it may be comprehensive in some aspects, it is only one comprehension. The study is also limited in that the group discussions included only nine First Nations, Aboriginal, and Métis graduate students, and the expert interviews only nine Indigenous designers.

The study is vulnerable to challenge by scholars who hold that Indigenous research agendas must be initiated only by Indigenous people (Rigney 1999, 2001; E. Steinhaurer, 2002; S. Wilson, 2003). However, Indigenous research is also conceptualized as a transformative project that seeks institutional and social change, centres Indigenous knowledge, and holds a critical view of power relations but is not necessarily linked to the ethnicity of the researchers (Bishop, 1998; G. H. Smith, 1997; L. T. Smith, 1999, 2005). I situate this research study within this latter paradigm.
My understandings shifted as I read and reread the theorists chosen for this study. The struggle with language evident within the dissertation results from my slow acquisition of theoretical vocabularies. I consider this an unavoidable limitation of the study, which is to say it is inherent in the nature of mapping: a process of interpretation wherein “our perception of the world is constantly being moderated by our experiences of mapping, map-making and map use (Dorling & Fairbairn, 1997, p. 4). Finally, interdisciplinary study has both strengths and limitations. It cannot provide an in-depth level of analysis of each of its disciplinary locations. It does not have the capacity to harness the full range of information studies scholarship as it may apply to Indigenous interests nor does it have a depth of understanding of Indigenous critical and endogenous study within the range of Indigenous disciplines. It is a characteristic of this type of study that it is limited to a broader level view that begins to map issues, and intersections between (perhaps) disparate perspectives. At the same time, it is also a strength of this type of study in that it seeks synergies between knowledge domains in order to solve a real-world problem. The process of moving toward integration is considered valuable in itself (Repko, 2008).

10.6 Contributions of the Study

The study demonstrated the capacity of Indigenous approaches to knowledge to shape the disciplines and to create new knowledge. As an empirical study, it provided accounts of the experiences, expert knowledge, and aspirations of nine international Indigenous designers who are widely recognized in the field. The accounts provide a unique contribution to Indigenous scholarship, and to the record of Indigenous innovation and leadership, and a seed for international comparative study. The oral histories with the Canadian designers provided a (partial) record of the development of Indigenous knowledge organization in
Canada and its impacts across the country. Through pointing out a unique past of IKO in Canada and its potential for future contributions further interest may be garnered and so promote future research in the field.

As an interdisciplinary study, it demonstrated ways in which Indigenous theory and scholarship may be integrated with other disciplinary approaches. For example, it demonstrated the application of the critical Indigenous theory of Martin Nakata (2002, 2007b) to a wide range of knowledge organization discourses and to integration with the theory of Dwayne Donald (2009b), enabling an analysis grounded in local (national) Indigenous contexts and producing new interpretations and conceptual frameworks. It also identified the ways in which the emergent fields of Indigenous knowledge organization and Indigenous information studies could raise the profile and the impact of Indigenous scholarship within diverse Indigenous disciplines.

The group interviews with nine First Nations, Aboriginal, and Métis graduate students gave an account of their experiences with the use of knowledge organization systems at a university library as learners and as researchers. The interviews contributed to the sparse body of empirical studies on the impact of classifications (Bowker & Star, 1999), including the effects of classification on identity and access. Through surfacing potential effects of KOS the graduate student discussions raise information policy issues for educational institutions and libraries. The group interviews also highlighted the student participants’ aspirations for future knowledge and thereby contributed to charting new directions for IKO design.

The study contributed a critical form of analysis to the Indigenous knowledge organization literature (Chester, 2006; Exner Little Bear, 2005; D. Lee, 2001, 2011;
Mahsetky Poolaw, 2000; Moorcroft, 1992, 1993; S. Simpson, 2005). It offered theoretical contributions to the emergent field of Indigenous knowledge organization, including a conceptualization of the field, its boundaries and characteristics; its history; a typology of practice and evaluation framework; a theoretical framework, including an epistemology, ethics, and methodology for the study of Indigenous knowledge domains; and it provided an example of the application of the framework at an Aboriginal academic library that produced specific design objectives and principles for (future) KOS construction. Thus it proposed a definition of what is unique about Indigenous knowledge organization (IKO), its disciplinary objectives, its universe of study, and a theoretical framework for critique, study, and design. It identified a possible research agenda for IKO that may invite more researchers from the information disciplines or the Indigenous disciplines to reframe it or redefine it thereby promoting diverse scholarship. My hope is that the study serves further discussion and research in the area.

10.7 Reflecting on Relations

As a traveller through the different territories of the study, and in my roles as seeker, mapmaker, and narrator, my thinking as a librarian has changed. I continue to be grateful for the generosity of the First Nations, Aboriginal, and Métis students, my colleagues, and the designers who participated in the making of this map. However, as a practitioner, I am more acutely aware of the ways in which libraries and librarians and our knowledge organization systems represent Indigenous materials in libraries, and through that practice to discursively construct Indigenous identities, Indigenous knowledge, and social (power) relations. These constructions are carried in the information infrastructure (catalogues and databases) and also
through the services and the programs that infrastructure supports including, for example, reference services and classroom instruction.

Also, although the hiddenness of Indigenous collections results from a complex of factors, I believe that KOS are a particularly stubborn part of the problem and it is difficult to convey their impacts (or their potential) to wider audiences because they are so taken for granted in our leisure, professional, and academic lives. As with other Indigenous disciplines struggling to define themselves, Aboriginal academic libraries are particularly vulnerable to impositions of dominant standards and assessment frameworks that would shape them according to these criteria rather than by what they are positioned to become: unique and powerfully transformative.

Why do I say that an Aboriginal library is like an Indigenous discipline? It is because I am thinking of an Aboriginal academic library not only as a home for (collections of) Indigenous scholarship but also as an active site of Indigenous scholarship: possibly, as a site of Indigenous information studies practice, including Indigenous knowledge organization. I imagine Indigenous information studies as having social, political, and pedagogical goals and commitments tied to Indigenous studies, and professional and scholarly goals tied to information studies (broadly defined).

Thinking about an Aboriginal academic library in this way situates it in a dynamic relationship where it shapes and is shaped by scholarly fields, and is always open to redefining itself—transformative redefinition—within the context of new knowledge. It becomes both an applied site for, and integral to the (now still developing) scholarship of Indigenous information studies. It shifts the rationale for the library from operations (always vulnerable) to new knowledge production, curriculum development, and applied (or possibly
theoretical) research. Librarians working in Indigenous libraries are called on to (continue to) articulate their unique areas of knowledge, develop graduate level curricula for practitioners grounded in real-world practice, as well as scholarly and research agendas to serve Indigenous information studies and their constituencies, including the Indigenous disciplines (such as First Nations studies, Indigenous education et al.), as well as the overarching constituency of Indigenous communities and Indigenous interests more broadly. The development of curriculum content for Indigenous information studies, and Indigenous knowledge organization could serve the information disciplines, and the Indigenous disciplines, as well as begin to address some of the areas of enquiry raised in this study.
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Appendices

Appendix A  Interview Participants, Dates and Places

Expert Interviews with Indigenous Designers

<table>
<thead>
<tr>
<th>Designer</th>
<th>Type of Interview</th>
<th>Date</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  John D. Berry</td>
<td>in person</td>
<td>2009Jan14</td>
<td>University of Wisconsin-Milwaukee, Milwaukee WI, USA</td>
</tr>
<tr>
<td>2  Brian Deer</td>
<td>in person</td>
<td>2008Dec16</td>
<td>Kahnawake, Quebec, Canada</td>
</tr>
<tr>
<td>3  Alana Garwood-Houng</td>
<td>in person</td>
<td>2009Jan14</td>
<td>University of Wisconsin-Milwaukee, Milwaukee WI, USA</td>
</tr>
<tr>
<td>4  Gene Joseph</td>
<td>in person</td>
<td>2009Apr20</td>
<td>Langley, British Columbia, Canada</td>
</tr>
<tr>
<td>5  Cheryl Metoyer</td>
<td>in person</td>
<td>2009Jan20</td>
<td>University of Washington, Seattle Washington, USA</td>
</tr>
<tr>
<td>6  Bert Morrison</td>
<td>teleconference</td>
<td>2009May25</td>
<td>Moosonee, Ontario, Canada</td>
</tr>
<tr>
<td>7  Deanna Nyce</td>
<td>teleconference</td>
<td>2009May25</td>
<td>Gitwinkshihlkw, British Columbia, Canada</td>
</tr>
<tr>
<td>8  Ann Reweti</td>
<td>teleconference</td>
<td>2009Mar8</td>
<td>Wellington, New Zealand</td>
</tr>
<tr>
<td>9  Kelly Webster</td>
<td>email</td>
<td>2009Apr21</td>
<td>Boston College, Maine, USA</td>
</tr>
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</table>

Group Interviews with Aboriginal Graduate Students

<table>
<thead>
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<th>Group Interview</th>
<th>Number of Participants</th>
<th>Date</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview 1</td>
<td>5</td>
<td>2009 Oct 5 12pm–1pm</td>
<td>University of British Columbia, First Nations House of Learning, Longhouse</td>
</tr>
<tr>
<td>Interview 2</td>
<td>4</td>
<td>2009 Oct 8 12pm–1pm</td>
<td>University of British Columbia, First Nations House of Learning, Longhouse</td>
</tr>
</tbody>
</table>
Appendix B  Guiding Interview Questions for Indigenous Designers

(Q1) Background information: professional roles and interests, any community affiliation(s) or role(s) you would like to mention?

(Q2) What motivated you to design/modify your KOS? (Prompt for information about the primary audience and purpose(s) of the KOS)?

(Q3) How have Indigenous approaches to knowledge shaped the ways you think about classification and knowledge organization?

(Q4) How might Indigenous approaches influence the methods used to design knowledge organization systems?

(Q5) What types of effects do you think culturally appropriate knowledge organization (KO) systems might have for Aboriginal people or for the general population?

(Q6) What do you see as potential advantages or disadvantages of using an academic Indigenous library as a testing ground for developing methodologies for Indigenous knowledge organization?

(Q7) What types of criteria and/or processes would you use to evaluate knowledge organization systems designed for Indigenous purposes?
(Q8) What do you see as the current challenges or opportunities for Indigenous KOS in the 21st century?

(Q9) What would be useful ways of sharing the results of this type of research project?

(Q10) Is there anything you would like to add or request?
Appendix C  Guiding Questions for Group Interviews

Round table
Ask for a roundtable of student introductions, including area of study.

Academic work
1. In what ways do you think that your life experiences have influenced your academic work?

Use of library catalogues and databases
2. Could you reflect on times when you used the library catalogue and databases to search for Aboriginal materials? What was that experience like? What types of successes or challenges did you experience?

Purposes and effects of KOS
3. A primary purpose of library systems is to provide good information retrieval (i.e. to find material on a given subject, or by a specific author or publisher). Do you think that the representation of Aboriginal people and topics in library catalogues may have aspects other than this primary purpose?

Changes to library systems
4. If you were going to make changes in the library systems for accessing Aboriginal materials, what would your priorities be?
**Indigenous approaches to organization and representation**

5. Do you think that there are ways in which Aboriginal approaches to knowledge could be reflected in library knowledge organization systems? What would that look like?

6. Of everything that we have discussed about your information needs as a scholar and the design of knowledge organization systems for Aboriginal purposes which is the most important to you?

**Backup Questions**

* The Xwi7xwa Library uses a classification system and subject headings initiated by Aboriginal librarians. They are different than the other UBC libraries and they are resource intensive. Are there reasons that it would be important to retain and develop these Aboriginal systems for Xwi7xwa or should mainstream systems be considered because they are more cost effective?