Advancing an Indigenous Ecology within LIS Education

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Abstract

This article explores whether library and information science (LIS) education can incorporate an ethical learning environment based on indigenous worldview. Such a space is an indigenous ecology where relationships between people can be forged based on traditional knowledges. Connections between the indigenous ecology, information ethics, and social justice theory are drawn as a prelude to considering indigenous worldview. The protocols or behaviors and values within the ecological system are described. Indigenous perspectives on research methods are introduced, providing a background for considering approaches to study within the indigenous ecology. Finally, several case-specific examples are offered that illustrate features of the indigenous ecology. These features are mapped according to the concept of the medicine wheel/circle, acknowledging that various strengths and challenges are associated with the cardinal directions. The indigenous ecology provides a means for respecting diversity while reinterpreting strongly held professional values, such as those related to access to information.

Introduction

This article examines whether a curricular model built on indigenous knowledge systems is possible within LIS education.[1] This way of learning would be more than a defined course of study: it would be an ecology or educational environment built upon the perspectives of Native peoples while incorporating compatible key values of LIS, particularly those associated with diversity. An indigenous ecology model is tied to social justice through its methods, aims, and service audience.

To start, the article sets the stage for introducing an indigenous ecol-

ogy by defining the concepts of information ethics, social justice, indigenous worldview, and indigenous ecology. Included is a brief discussion of selected theoretical concepts within social justice. An understanding of indigenous worldview points the way to conceiving a space, the indigenous ecology, where indigenous thought can form the basis of praxis. This definitions section is then followed by an overview of the methods of analysis that might be used to examine the intersection between social justice values and an indigenous ecology. Next, the potential of an indigenous ecology is applied to the context of LIS education disciplinary domains.

Finally, the article concludes with strategic actions in the form of curricular products that can be used to incorporate an indigenous ecology into present-day LIS curricula. This article therefore argues that it is possible for LIS programs to create an effective learning environment that not only reflects indigenous worldview but also provides a centering point for understanding comparable LIS and social justice ethics, values, epistemology, methods, techniques, service, and practice.

In order to reach that conclusion, appropriate critical methods must be employed to develop such a model. Following Nardi & O'Day's call for readers to become involved with information ecologies through working from core values, paying attention, and asking questions (1999, p. 65), this article employs a heuristic inquiry involving the three phases of "immersion" (exploration of the question, problem, or theme), "acquisition" (the collection of data), and "realization" (or synthesis) (Douglas & Moustakas, 1985, pp. 45–46). This mode of inquiry is a reflective and interpretive process of conceptual analysis that involves the following commitments: close reading of the professional literature on social justice within LIS and indigenous pedagogy; years of conversations with, and direct observation of, indigenous and nonindigenous LIS professionals in formal and informal settings; engagement in social-action education in the areas of LIS public service and indigenous librarianship; and personal cultural affiliation through the process of understanding the impact of one's interaction with the world. These methods are qualitative and multidimensional, aligning with and building on both a formal literature review and lived experience.

The methodology described here also follows indigenous processes similar to those described by Linda Smith (2003), such as story telling, celebrating survival, indigenizing, intervening, connecting, reading, envisioning, reframing, networking, naming, creating, and sharing (pp. 144–149, 152–153, 156–158, 160). These multiple processes triangulate and, as with many other subjective methods, the results are filtered through the human-as-instrument screen (Jackson, Drummond, & Camara, 2007; Lincoln & Guba, 1985). The end result is a condensed and user-centered view of the LIS concepts of information ethics, information justice, and progressive librarianship that is based on the lifeways and beliefs of indigenous peoples. Such a view is similarly aligned with the key concepts of

equity, utilitarianism, fairness, and distributive justice within social justice theory and practice (Mehra, Rioux, & Albright, 2010, p. 4821).

Definitions

Mason (1990) reminds us that a profession is defined by four aspects, or pillars—"its special theoretical knowledge, its procedures or methods, its history, and its ethics" (p. 13). This section of the article is concerned with the fourth pillar: ethics as a belief system. The overall goal of this focus is to determine which aspects may be shared among the ethical systems of LIS education, social justice theory, information science, and an indigenous worldview. The section provides some crucial definitions for such an examination by discussing the intersection between social justice and indigenous worldviews, considering who is indigenous, and introducing the concept of an indigenous ecology. These parameters are defined below in terms of information ethics and social justice; indigenous worldview; information ecology; and indigenous ecology.

Information Ethics and Social Justice

A discussion of social justice within LIS can start with a consideration of the place of values or strongly held beliefs. When examining publications, codes approved by professional organizations, and beliefs espoused by those practicing in the information fields, Koehler (2003) found that "it is difficult, if not impossible, to express a single set of values across the information professions" (p. 109).

Perhaps the best indicator of professionally held values, therefore, is through their tangible expressions—ethics, which are "illustrations of applying values" (Koehler, 2003, p. 100). Preer (2008) simply states, "Ethics is about choices": in other words, ethics are the boundaries that help to assess and guide whether actions are correct or incorrect, right or wrong (p. 1). Ethics are "the way things are done," and these ways derive from practice (pp. 2–3).

The domain of information ethics is specifically where ethical concerns touch on some aspect of information, including its creation, organization, and use. Martha Smith (2001) sees information ethics as a branch of applied ethics. These are "actual situations that require us to make good, right, or appropriate decisions" (Horner, 2003, p. 261). According to Sturgis (2009), some of the primary topics discussed in the realm of information ethics include "intellectual property, user privacy, and serving the socially excluded" (p. 241). This last example indicates a potential link between information ethics and the area of social justice.

Defining social justice, however, is not an easy task. Because of its amorphous nature and wide applicability, social justice can be seen variably as "an activity, a philosophical stance, a value system, or a process" and can also be understood as "an analytical research lens, an objective, a call

to activism" or even "an unwanted attempt at social engineering" (Duff, Flinn, Suurtamm, & Wallace, 2013, p. 319). Although the term "social justice" may have many different—and sometimes conflicting—meanings to different people, the concept is still very important to several fields of research and practice.

As a way of thinking through these various definitions, Britz (2008) introduces several categories of "justice" that could be applied to any setting: recognition, enablement, reciprocity, participation, distribution, contribution, and retribution. Most definitions of social justice incorporate one or more of these categories and specifically address the actions of righting wrongs, restoring balance, and extending benefits to the deserving. The following definitions offer a few examples:

- "Social justice is the application of general principles of justice to the social order" (Bayley, 1981, p. 1).
- "[Social justice is] when society [can] be so structured that inequality disappears" (Irani, 1981, p. 35).
- "The term 'social justice' implies fairness and mutual obligation in society: That we are responsible for one another, and that we should ensure that all have equal chances to succeed in life. In societies wherein life chances are not distributed equally, this implies redistribution of opportunities, although the shape that such redistribution should take remains contested" (Royal Society for the Encouragement of Arts, n.d., sec. 1–2).
- "Social justice is a process and can never be fully achieved" (Duff et al., 2013, p. 325).

In addition to these definitions, social justice can be interpreted through specific disciplines. For example, Silver (1981) offers this definition from the perspective of property rights: "The distribution of produced objects among individuals in a society is just to the extent that the control over these objects is congruent with property rights" (p. 121). Odegard & Vereen (2010) interpret social justice within the field of counseling as "a process of acknowledging systematic societal inequities and oppression while acting responsibly to eliminate the systemic oppression in the forms of racism, sexism, heterosexism, classism, and other biases in clinical practice both on individual and distribute levels" (p. 130). Social justice is similarly a core value for social workers, who "seek to resolve conflicts between clients' interests and the broader society's interests in a socially responsible manner consistent with the values, ethical principles, and ethical standards of the profession" (National Association of Social Workers, 2008, sec. 4). Finally, social justice is also a qualitative feature that can both describe the practice of LIS and serve as an approach to conducting research on and within LIS (Mehra et al., 2010, p. 4820).

LIS can put its own stamp on social justice by extending information

justice beyond attention on the individual, to attention on wherever information is found and expressed. Martha Smith (2001) describes the goal of global information justice as being "to conserve nature and to preserve humanity through the creative uses of the technologies of information, knowledge, and memory using the practices of rights, responsibilities, and caring connections" (p. 520). Attention to social justice issues is also seen within LIS in phrases such as "progressive librarianship," which Civallero (2004) defines as a "movement [that] supports and encourages the free access to information, the respect of the typical cultural structures of each community, the use of imagination in the management of resources, the denial of established and accepted models of service, and the spread of the knowledge to achieve a well-balanced and egalitarian development of human societies" (sec. 8). Thus LIS supports a unique, disciplinary-situated take on social justice.

Just as the definitions of information ethics and social justice are broad, so, too, are the research areas and associated theories within these concepts. Theories can be generally defined as "generalizations that seek to explain relationships among phenomena" (Glazier & Grover, 2002, p. 319), as "a set of variables that may explain and predict another variable" (McGrath, 2002, p. 351), or as "articulated sets of interrelated constructs, definitions, and propositions that present systematic views of phenomena" (Rioux, 2010, p. 10). According to David Smith (1994), however, theory is "an intellectual construct that enables us to make sense of the world or part of it: The way it is, or ought to be" (p. 21).

Based on this definition, Smith organizes key theories of social justice into two categories: mainstream theories (egalitarianism, utilitarianism, libertarianism, and contractarianism) and theories that are in reaction to those mainstream theories (Marxism, communitarianism, and feminism) (D. Smith, 1994, pp. vii, 52, 86). Tyler, Boeckmann, Smith, & Huo (1997) additionally define the four "eras" of justice research:

- Relative deprivation, which is concerned with examining concepts such as expectations and comparisons with others
- Distributive justice, which examines issues like equity and interdependence
- Procedural justice, in which research centers on considerations such as fairness and satisfaction
- Retributive justice, which is concerned with aspects such as moral reasoning and blame attribution (pp. 11–12)

These four eras define the key areas of investigation within social justice and provide a point of comparison with theories within LIS.

In comparison with the social justice research typology, theories within LIS are extremely broad. In their content analysis of over one thousand articles published in six LIS journals, Pettigrew & McKechnie (2001) iden-

tified over one hundred theories arising from the field of information studies. While LIS theories of social justice are still underdeveloped, Rioux (2010) suggests some initial assumptions that can assist in considering related theory—such as social justice theory—within LIS. His second assumption, that "people perceive reality and information in different ways, often within cultural or life role contexts," provides a clear bridge between considering social justice within LIS and in indigenous worldview, the topic of the next section (Rioux, 2010, p. 13). And, as Williamson (2006) advises, "there is no reason why researchers cannot draw on more than one body of research theory to underpin their own research" (p. 86). Thus, even though investigations within LIS are explained by many theories, there is still room for such research to be informed by social justice theories as well.

Grover & Glazier (1986) present a model for how theories are built by moving from phenomena to their symbols, definitions, concepts, and propositions, then to hypotheses or research questions, then to three levels of theories (substantive, formal, and grand) and to paradigm. Finally, the last step of this model is the move from paradigm to "worldview" (Grover & Glazier, 1986, p. 321). Librarianship has a professional worldview. Speaking of the development of the field from its nineteenth-century beginnings, Preer (2008) describes this specific belief system of librarians: "Animated by spirit of service, professionals share a worldview shaped by their common professional training and experience" (p. 3).

Notably, using this model of understanding "theory" allows the concept of "worldview" itself to be considered as a type of theory. Although there are many different types and examples of worldviews being used analogously to theory, the next section will focus specifically on a single worldview and its relation to social justice and LIS education: that is, indigenous worldview.

Indigenous Worldview
In considering the intersection of social justice with indigenous worldview, it is useful to pause in order to consider the meanings and traits of "indigenous" that serve as this article's foundation. Most writings about indigenous peoples begin with an explanation of who they are and what names are used to refer to them. The question of "Who is indigenous?" can also be discussed in opposition to common questions such as "Are there any indigenous people?" and "Isn't everyone indigenous?" while offering this explanation for Native identity: "indigenous communities know who their people are" (Roy, 2013, p. 10). In this article, "indigenous" is used to refer to the original inhabitants of the land and their descendants, who might also be referred to as: Native, First Nations or First Peoples; aboriginal; Indian or American Indian in the continental United States; or by specific tribal names (Peters, 2011, pp. 24–25, 27). This indigenous orientation is

not only an affiliation with a specific constituency but is also a reflective process of seeing the world. Philosophies, behaviors, customs, traditions, and even identity are the basis of any worldview, including an indigenous worldview. Grover & Glazier (1986) further define worldview as "an individual's accepted knowledge, including values and assumptions, which provide a 'filter' for perception of all phenomena" (p. 235). Similarly, Peters (2011) refers to worldviews as "value systems" (p. 56), while Mihesuah (1999) extends this definition to state that worldview is "a person's value system and how one interprets events and history" (p. 32). Cobern (1998) writes of "seven universal categories" within worldview: "Self, Nonself, Classification, Relationship, Causality, Time, and Space" (p. 584).

In other words, worldview is what you see when you open your eyes. Worldview explains how a person sees herself or himself; it is tied to genealogy and the physical links that humans are born to and born from, and it is expressed and shared communally in terms of notions of time and the connections between the present, past, and future. Worldview also speaks to spirituality—a belief in an unseen guardianship and in the place of humility in the face of the world's gifts. Indigenous peoples may be very distinct in their histories, languages, traditions, and even physical appearance, and, as Mihesuah (1999) states, "there is, of course, no one Indian world view" (p. 32). Steinhauer (2002) does emphasize that these peoples share some commonalities: "Although there are Indigenous groups all over the world, and although we are different in so many ways, the one thing that seems to bind us together is the common understanding of interconnectedness and that all things are dependent on each other" (p. 77). Other writers also recognize that the foundation of indigenous worldview is "characterized by an emphasis on connectedness, the idea that all of existence is connected and that the connectivity encompasses, infuses, and constitutes everything" (DiNova, 2005, p. 6).

Cajete (1994) additionally describes how an indigenous regard for education is a component of indigenous worldview, wherein "the goals of wholeness, self-knowledge, and wisdom are held in common by all the traditional educational philosophies around the world" (p. 208). Peters (2011) similarly defines indigenous worldview in terms of education, as a "philosophy of knowing that learns, understands, and conceptualizes by applying the patterns present in nature" (p. 18). In the indigenous worldview, this idea that "land and story are alive" is built on the concepts of sovereignty and self-determination (DiNova, 2005, p. 179). These two core concepts assert that tribal nations can govern themselves and determine their own futures. Worldview, then, not only is reflected in traditional education models but also can form the backbone of indigenous education models today.

Barnhardt & Kawagley (2005) therefore provide this advice for nonindigenous educators: "Non-Native people, too, need to recognize the co-

existence of multiple worldviews and knowledge systems, and find ways to understand and relate to the world in its multiple dimensions and varied perspectives" (p. 9). Maori researcher Charles Royal (2002) introduces the potential conflicts between worldviews during such a process: "Finally, a worldview is something [that] lies deep within a culture and the individuals of that culture. In many instances, a worldview is often a 'given', an implicit set of impressions about the world that are often left unchallenged and [un]discussed. Worldviews are invisible sets of ideas about the world that lie deep within a culture, so deep that many if not the majority of a culture will have difficulty describing them. Worldviews typically emerge and are challenged when cultures encounter and sometimes conflict with one another" (p. 19). Royal's explanation of indigenous worldview describes how difficult it is for outsiders to understand, especially when even those living within the culture may not be able to describe how they see the world.

For Nakata (2002), the two worldviews—indigenous and nonindigenous—meet at the cultural interface, "the intersection of the Western and Indigenous domains" (p. 285). Within this interface, one domain does not overwhelm the other, just as an indigenous person does not relinquish indigenous thought even if she or he operates in a nonindigenous scenario. This process is therefore "not strictly about the replacement of one with the other, nor the undermining of one by the other. It is about maintaining the continuity of one when having to harness another and working the interaction in ways that serve Indigenous interests, in ways that can uphold distinctiveness and special status as First Peoples" (Nakata, 2002, p. 286). Similarly, for Ermine (2007), the two worldviews intersect in an "ethical space": "With the calculated disconnection through the contrasting of their identities, and the subsequent creation of two solitudes with each claiming their own distinct and autonomous view of the world, a theoretical space between them is opened. The positioning of these two entities, the autochthonous and the West, divided by the void and flux of their cultural distance, and in a manner that they are posed to encounter each other, produces a significant and interesting notion that has relevance" (p. 194). Barnhardt & Kawagley (2005) likewise refer to the intersection between indigenous and Western worldviews as the Common Ground.

Perhaps the greatest difference between indigenous and nonindigenous worldview is found in the focus on self, compared with the focus on community. To the indigenous person, worldview is communally shared. To the nonindigenous, "the individuality of the self is the key aspect to understanding the processes of research and theorizing" (Glazier & Grover, 2002, p. 324). Barnhardt & Kawagley (2005) further describe these differences, arguing that "the complexities that come into play when two fundamentally different worldviews converge present a formidable challenge" (p. 13). They additionally specify that "the specialization, standardization,

compartmentalization, and systematization that are inherent features of most Western bureaucratic forms of organization often are in direct conflict with social structures and practices in Indigenous societies, which tend toward collective decision-making, extended kinship structures, ascribed authority vested in elders, flexible notions of time, and traditions of informality in everyday affairs" (p. 13).

Unsurprisingly, these two differing worldviews—the Western and the indigenous—may also conflict in LIS settings. This conflict will be explored later in this article, specifically within a discussion of equity of access as it relates to ownership of expressions of indigenous intellectual property (Franklin, 2008). Still, despite this possibility of conflict between worldviews, "there are ways to break out of the mindset in which we are oftentimes stuck, [and] although it takes some effort, there are ways to develop linkages that connect different worldviews" (Barnhardt & Kawagley, 2005, p. 17). The potential of addressing indigenous worldview in LIS education is therefore highly beneficial. In fact, such an attempt is an expression of Koehler's (2003) recommendation that "we should perhaps not seek to inculcate a specific, rigid code of ethics, but rather to expose our students to the range of thinking in the field. To that end, we can expose our students to important writings in the field and to the various codes of ethics of professional organizations" (p. 110).

The presentation of definitions and indigenous worldview has created the roadmap for an indigenous landscape of social justice in LIS education. This landscape is an ecology, an environment that supports exploration of subjects and themes through a cultural lens. Other significant properties of such ecologies include a complex reliance on interrelationships, a support of diversity among those who live within the environment, a continual need for individuals to coevolve or enact change together, and the strong affiliation with a locality (Nardi & O'Day, 1999). Each of these properties is supported or needed by those who work in information settings.

Information Ecology and Indigenous Ecology
Before considering an indigenous ecology, it is useful to reflect on the place of the information ecology. Nardi & O'Day (1999) define an information ecology as "a system of people, practices, values, and technologies in a particular local environment" (p. 49). Important features of the information ecology include its use as a social space and its incorporation of technologies: "information ecologies are places where people use tools and help each other in information activities through social relationships" (Steinerová, 2010, p. 1). The interdependence of members within the ecology is also seen in the presence of keystone species, essential partners whose presences are needed for the ecology's survival (Freedman, 2011).

Steinerová (2010) has created a model of the ecology of one public service area within information studies: information literacy. She places

the individual (referred to as the social actor), who brings his or her social/cultural connections as well as physicality (sensomotoric/cognitive/affective), in the center of the model. According Steinerová's model, "the emphasis is put not on information skills, but on interconnections of people and information and on ways of integrating information use into the natural human information environment" (p. 1). The individual displays information literacy in traversing the everyday information environment domain. He or she conducts the learned information literacy actions within the context of accepted values, with tools appropriate for the task, and with the support or awareness of his or her community. The information literacy activities come about through the linkage of internal processes (optimalization; analysis/interpretation; orientation/navigation; communication; cognition/critical thinking) and knowledge (information technologies; representations; relevance; sensemaking/learning styles; information sources) (Steinerová, 2010).

Capurro (1990) describes the challenges of developing such an information ecology: "The ecological challenge in our field is to find the right balance between overcoming and preserving or, in other words, between the blessings of universality and the need for preserving plurality (of cultures, languages, etc.) not only for its own sake (variety is beautiful!) but also because human problems and solutions always arise within specific situations and need specific deliberation" (p. 1). His call for locating the balance within the ecology connects with the concept of the indigenous ecology, a space created for and by indigenous peoples but also the place of Nakata's (2002) cultural interface.

In comparison with these descriptions of the information ecology, in the indigenous ecology—while it is also a social place—there is less emphasis on tools than on the relationships between people and their connections to traditional knowledge. For example, an indigenous ecology that supports Native-language-learning may consist of three strands or braids: critical literacy, local knowledges, and living relationships (Fettes, 1997). The following explanation of indigenous knowledge, provided by the Living Knowledge Project, illustrates how this concept of knowledge is interwoven into the concept of place: "Indigenous Knowledge has become the accepted term to include the beliefs and understandings of non-western people acquired through long-term association with a place. It is knowledge based on the social, physical and spiritual understandings which have informed the people's survival and contributed to their sense of being in the world. Indigenous Knowledge goes by many different names, such as Traditional Ecological Knowledge (TEK), Indigenous People's Knowledge (IPK), and even 'folk knowledge.' While Indigenous Knowledge sometimes contrasts with scientific knowledge, it can also be complementary and provide supplementary information about the world" (Living Knowledge Project, 2008, § 1). Kallard (2000) refers to indigenous

ecology as traditional ecological knowledge (TEK), a matrix of three inter-connected ways of knowing that are both contextual and process-oriented. These three knowledge systems encompass knowledge of practice, knowledge of interpreting observations of practice, and knowledge based on understanding the institutions in which learning takes place (Kallard, 2000).

Thus an indigenous ecology can be understood as both a space and a system that confirms a connection to land through the process of story. Story is the life of the individual set within the history and traditions of the community. Story documents the past while adding new actions to the record. Thus "these new stories contribute to a collective story in which every indigenous person has a place" (L. Smith, 2003, p. 144). Specifically, the indigenous ecology is the place where learning takes place. Within this indigenous ecology, the "ideal" process of this learning is "a dialogue and political negotiation (consistent with the notion of diplomacy) of diverse perspectives and interests, rather than the idea of intervention in a mechanical system of feedback loops" (Morrow, 2009, p. 29). The concept of the indigenous ecology as learning space in LIS is illustrated later through several cases of potential curricular activities.

Consideration of an indigenous ecology is beneficial even in locations far removed from tribal homelands. Thus the indigenous ecology as learning space can be effective even if the learners are living far from Native communities. An indigenous ecology that is pervasive and geographically flexible mirrors the locations of Native peoples within the United States; while the general perception of tribal homelands is that they are rural and remote, 78 percent of American Indian or Alaska Native peoples live outside of areas that would be considered Native home areas (U.S. Department of Commerce, 2012, p. 20). According to Fettes (1999), "Indigenous community-based education can usefully learn from attempts to define and implement 'community education,' even in settings far removed from the indigenous context" (p. 20).

Therefore, in the interest of best serving these peoples, all educators—including LIS educators—should consider how they may best implement an indigenous ecology approach within their own teaching practices. Such a conscious attempt to integrate indigenous and Western worldviews within an educational ecology is aligned with the values and goals of social justice theory. For LIS educators in particular, many elements of an indigenous ecology can also overlap with the elements and values of the information ecology.

METHODS OF ANALYSIS FOR RESEARCH IN THE INDIGENOUS ECOLOGY

This is a useful place to consider approaches that might be appropriate in developing a concept of indigenous ecology and in evaluating what a future indigenous ecology would look like in terms of the field of LIS.

Until the 1980s, students and scholars of only a few academic fields demonstrated an awareness or interest in indigenous ways of knowing. These fields were primarily within the social sciences concerned with the study of groups, such as sociology, anthropology, and geography (Warren, von Liebenstein, & Slikkerveer, 1993). By the 1990s, interest in indigenous ways of knowing and representations of indigenous knowledge was seen in a broad swath of disciplinary areas, including "ecology, soil science, veterinary medicine, forestry, human health, aquatic resource management, botany, zoology, agronomy, agricultural economics, rural sociology, mathematics, management science, agricultural education and extension, fisheries, range management, information science, wildlife management, and water resource management" (Warren et al., 1993, p. 2).

Since the 1990s there has been great interest in acknowledging and advancing indigenous research approaches (Denzin, Lincoln, & Smith, 2008; Evans, Hole, Berg, Hutchinson, & Sookraj, 2009; Kurtz, 2013; Martin, 2003; L. Smith, 2003). In her groundbreaking text, *Decolonizing Methodologies: Research and Indigenous Peoples*, Linda Tuhiwai Smith describes the need for methods that are more reflective of indigenous worldview and for more research conducted by indigenous researchers. She states that "the term 'research' is inextricably linked to European imperialism and colonialism," and argues that "the word itself, 'research,' is probably one of the dirtiest words in the indigenous world's vocabulary" (2003, p. 1). This "dirty" word also denotes the sometimes painful decision that Native scholars have to make when choosing between following Western models of science and serving tribal communities (Swisher, 1998). Peters (2011) explains why indigenous researchers need to pursue approaches that reflect their worldviews: "For an indigenous person, research is not simply about validity, reliability, or getting information from others. It is often described as following the circular way of the indigenous paradigm, and thus it may also be about sharing the sum of what we each come to know through our own life experience and relationships with one another" (p. 67). Thus an indigenous ecology within LIS would also acknowledge and employ methods that respect indigenous worldviews.

The interest in indigenous knowing also coincides with the expansion of interest in qualitative research methods in LIS (Horn, 1998). Duff et al. (2013) describe the attributes of qualitative approaches within current LIS research, concluding that "indeed, there may be a place for case studies, anecdotal evidence, and ethnographic approaches in studies of impact" (p. 337). These approaches are in line with the advancement and advocacy of critical qualitative research in indigenous studies (Denzin et al., 2008).

Kawagley (2006), a Yupiaq educator and researcher, clearly describes the critical differences between Western and indigenous views of research: "In Western thought, the objective way of knowing has the greatest value" (p. 134). Truth is assigned to what is visible, explored scientifically, and

tested against research questions presented as hypotheses. Kawagley continues: "Subjective knowledge is considered less reliable because it is not verifiable through the senses. The Yupiaq word *tangruarluku*, which means 'to see with the mind's eye,' transcends that which we can perceive with our endosomatic sense makers and illustrates how a Native perspective may provide a way of bridging the so-called mythical subjective world and the objective scientific world" (p. 134). Here Kawagley explains how indigenous worldview or beliefs inform not only day-to-day life and interactions but also study and interpretation. "To give credence to the range of phenomena that will need to be addressed from both the Yupiaq and Western perspectives, it is necessary, therefore, that both modes of inquiry and sense making be incorporated" (p. 134). Thus Kawagley proposes a triangulation of more than one method of study.

Wilson (2008) further explains the factors indigenous researchers consider in conducting their studies. He argues that "research must use relational accountability, that is, must be connected to or a part of a community (set of relationships), if it is to be counted as Indigenous" (p. 42). An indigenous research model would therefore involve "patient observation through participation over a long period of time, reflection on things [one] saw and heard, and, unobtrusively, informally checking out . . . tentative conclusions with [community members]" (Kawagley, 2006, p. 144). Additionally, ties to the tribal communities are strong in indigenous research, as evidenced through Weber-Pillwax's (2001) assertion that "if my work as an Indigenous scholar cannot or does not lead to action, it is useless to me or anyone else" (p. 169).

Such indigenous research approaches are felt by indigenous researchers to have benefits for tribal communities. For example, Burns, Doyle, Joseph, & Krebs (2010) argue that "Indigenous research methodology offers expanded systems of knowledge and ways of knowing that hold potential for sustainable research practices with global applicability in the twenty-first century" (p. 2341). Similarly, in writing about social work research with Maori people, Eketone & Walker (2013) summarize the role of the researcher as being properly reflected in "the researcher's conduct and the way he implements the research that enhances the prestige—mana—of the participants" (p. 268). Indigenous methodologies can, therefore, ultimately be defined as "research by and for indigenous peoples, using techniques and methods drawn from the traditions of those peoples" (Evans et al., 2009, p. 894).

Blended or negotiated understandings of research methodologies are possible, rather than assuming a dichotomous us-versus-them take on the possibility of a science within indigenous worldview. To this end, Steinhauer (2002) summarizes the agreement that "most Western research methods are appropriate for use by Indigenous researchers, as long as they honor, respect, manifest, and articulate an Indigenous world view" (p. 79).

Native peoples have evolved indigenous science structures that hyperextend science to embrace everyday life and the mixing of multimodal and multidisciplinary learning. Recent writings therefore point to the need to recognize indigenous ways of study and to embrace the benefits of employing a "fusion" of methods—including participatory research, indigenous methods, and those based on Western or "White" studies (Denzin et al., 2008; Evans et al., 2009).

VALUES AND PROTOCOLS WITHIN THE INFORMATION ECOLOGY AND THE INDIGENOUS ECOLOGY

An examination of the values of LIS opens this section, wherein these values are presented as being similar to the values connected to the information ecology. This discussion is then followed by background on indigenous core values and protocols that guide behavior within the indigenous ecology. Finally, two Key Action Areas within the information ecology—diversity and access—are examined in depth in order to illustrate the differences between their Western orientation and the perspective of indigenous thought.

Values within the Information Ecology

Education for the LIS professions is interpreted locally and reviewed nationally. It is also reflected in the research and service of the faculty and in the careers of graduates from LIS programs. The mission statements of selected LIS programs therefore demonstrate the broad aspirations and multidisciplinary interpretations of the field.

LIS programs are involved in understanding, conducting research on, and educating students on "shaping the way information is produced, analyzed, and preserved" (University of Illinois, n.d., sec. 4) and with "planning, implementing, and promoting the preservation, organization and effective use of society's recorded information and ideas" (University of British Columbia, n.d., sec. 1). They also believe that "the collection, organization, retrieval, preservation, management, and dissemination of information resources enrich cultures within society and promote equity, diversity, accountability, and intellectual development" (University at Albany, n.d., sec. 1).

In pursuit of these beliefs, these programs therefore follow "a multidisciplinary focus on issues of information access and equity" (University of Alberta, 2002–2014, sec. 3). Their aims are broad and extensive, focusing on "explor(ing) the nature of information and its use, the conceptual foundations of information organization, the information needs of diverse people in a range of contexts, sources of information to meet these requirements, and the cutting edge technology to store and retrieve information, all in the context of the traditional values of librarianship, including intellectual freedom and equity of information access" (University

at Buffalo, n.d., sec. 3). All of these LIS programs express their support of professional values such as diversity, access, and equity within the realm of understanding information and its use.

Underlying the local development of curriculum and a profession-wide research orientation are affirmations of key values and codes of ethical behavior. In librarianship in particular, the core values are generally "service, access, protection of confidentiality, and avoidance of conflicts of interest" (Preer, 2008, pp. 23–24, 27). The oldest and largest professional library organization, the American Library Association (ALA), has three main documents that express its foundational beliefs: the Core Values of Librarianship, the Code of Professional Ethics for Librarians, and the Core Competences of Librarianship (ALA, 2004, 2008, 2009).

The Core Values of the ALA summarize eleven primary beliefs, including the public good and social responsibility (ALA, 2004). The ALA has had a code of ethics since the late 1930s; the latest version is primarily a list of recommended behaviors for library workers (Koehler, 2003; ALA, 2008). Additionally, the Core Competences, which were approved by the ALA Council at its 2009 Midwinter Meeting, identify eight areas in which students from ALA-accredited master's programs should demonstrate knowledge and mastery (ALA, 2009). In addition, ALA has delineated eight Key Action Areas or priority topics, some of which match the eleven Core Values. The Key Action Areas are advocacy for libraries and the profession; diversity; equitable access to information and library services; education and lifelong learning; intellectual freedom; literacy; organizational excellence; and transforming libraries (ALA, 1996–2014c).

Later in this section, two of ALA's Key Action Areas, diversity and equitable access to information and library services, are used to present the parallels between the LIS professional worldview and an indigenous worldview. As described above in the definitions section, "diversity" and "equitable access" are also values shared by social justice theory. Therefore, a potential social justice approach to integrating these worldviews within LIS education and practice can be understood through these two Key Action Areas.

Indigenous Core Values and Protocol
While LIS values are tied to a professional identity, indigenous values are tied to a cultural one. Gaywish (2000) clearly explains this concept of a shared indigenous cultural identity: "Despite the vast diversity in geographic location, language, culture, and social structure, Aboriginal Peoples share many of the same values, which, although contained in the cultures of other peoples, are philosophically distinct to Aboriginal cultures" (p. 119). Native cultural identity is seen in such details as a shared sense of humor, respect for elders and for the achievements of tribal members, desire to meet and learn from other tribal members, and interest in

furthering knowledge of one's cultural expressions such as the indigenous language and history.

Like ethics, the indigenous worldview is also guided by the parameters of behavior. For indigenous peoples, these guidelines are referred to as protocol. Protocol is the code of behavior within the indigenous ecology that allows a space where ethics, rights, and values can infuse disciplinary thought. In native circles, protocol is also equal to etiquette or custom. According to Jacob (2010), "protocol in the Indigenous sense is ingrained and largely unspoken," and "protocols are cultural guidelines and safety-nets unique to each society" (pp. 18–19).

Still, indigenous protocol is not entirely synonymous with library ethics. In writing about the latter, Preer (2008) notes that "the ethical requirements of service are constantly in motion as our practice and our understanding change" (p. 27). She further argues that "we have noted that our understanding of ethics is constantly deepening" and, therefore, "any code merely captures the ethical obligations of the moment and represents an incomplete definition of 'service'" (p. 27). These views of ethics are in contrast with those of indigenous protocol. Indigenous protocol guidelines, for example, have historical and traditional founding; they may explain behaviors that have taken place for centuries. Generally, discussion of protocols is not based on the desire to make changes, but instead focuses on their interpretation.

Furthermore, among indigenous peoples, values such as reciprocity, responsibility, relationship, and respect are described as both personal attributes and goals for interpersonal contacts (Hoffman, 2013). Other examples of such personal and interpersonal values within indigenous protocol include the following:

- "Vision/wholeness, spirit centered; respect/harmony; kindness; honesty/integrity; sharing; strength; bravery/courage; wisdom; respect/humility" (Gaywish, 2000, p. 120)
- "Personal differences/respect; quietness; patience; open work ethic; mutualism; non-verbal orientation; seeing and listening; time orientation; practicality; holistic orientation; spirituality; caution; classroom discipline; and field sensitive orientation" (Cajete, 1999, pp. 99–95)

Native Hawai'ian protocols, for example, specifically include *lokahi* (unity); *na'auao* (learned, intelligent), *aloha* (love, compassion), and *malama kou piko* (take care of/protect your center of being [*piko* literally translates as "navel"]) (Sing, 2008, pp. 153–154). Alternatively, the Maori recognize *manaakitanga* or "expected standard of behavior" (Mead, 2003, p. 28), which includes the following principles:

- *aroha ki te tangata* (a respect for people)
- *kanohi kitea* (the seen face; that is, present yourself to people face to face)

- *titiro, whakarongo . . . korero* (look, listen . . . speak)
- *manaaki ki te tangata* (share and host people, be generous)
- *kia tupato* (be cautious)
- *kaua e takahia te mana o te tangata* (do not trample over the *mana* [prestige; Mead, 2003, p. 362]) of people
- *kaua e mahaki* (don't flaunt your knowledge) (L. Smith, 2003, p. 120)

The above examples of indigenous protocol illustrate the personal nature of these behaviors. Other protocol(s) may relate to direct contact with tribal members or contact with material objects and thus may clearly impact upon research studies—including those areas within LIS research. For example, Jojola (1998) describes accepted behavior by outsiders at tribal cultural events: "American Indian communities have been hospitable to non-Indians during public ceremonies, but only on the condition that visitors leave only 'footprints.' Tribal members are prohibited from divulging information about tribal customs and religion to outsiders, especially anthropologists. In some communities, photography is prohibited. In others, some sites are restricted from public access and view" (pp. 175–176). In short, following the correct indigenous protocol "indicates respect for the local people" (Tauroa & Tauroa, 1986, p. 147).

If LIS programs and researchers truly wish to conform to the ALA Core Belief of social responsibility and to the Key Action Areas of diversity and equity of access regarding indigenous peoples, then LIS curricula must incorporate an awareness of indigenous protocol and its role in the indigenous ecology. The following sections therefore describe how such an understanding between LIS and the indigenous ecology might be developed specifically through these two Key Action Areas.

Diversity as a Key Action Area in LIS and Its Interpretation in the Indigenous Ecology

Bonnici, Maatta, Wells, Brodsky, and Meadows (2012) note that diversity topics within LIS curricula only began to be discussed in the early 1990s. They further observe that "more often than not, the curricula reflect that these diversity topics are dealt with as mutually exclusive topics with each having a course dedicated to their specific issues" (p. 125). While these comments provide one background on the perception of diversity within LIS programs, it is also important to consider the perspective of the prominent library professional organization within the field, ALA.

ALA has a visible commitment to diversity through its formal structure. Specifically, a Committee on Diversity reports to the ALA Council, which is the organization's policy-setting body (ALA, 2014c). ALA also has formal affiliations with national library associations that focus on library services to people of color, including the American Indian Library Association (AILA), the Asian/Pacific American Library Association (APALA), the Black Caucus of ALA, the Chinese American Library Association (CALA),

and REFORMA: The National Association to Promote Library Services to Latinos and the Spanish Speaking (ALA, 1996–2014a).

ALA's respect for diversity is also reflected in policy statements, including those explaining the organization's role in "combating prejudice, stereotyping, and discrimination" and its goals "for inclusive and culturally competent library and information services" (ALA, 2014b). Resources on http://www.ala.org include information on developing diversity plans and on facing discrimination in the workplace (ALA, 2014d). ALA's most visible commitment to diversity is its Spectrum Scholarship Program, which has provided scholarships and leadership training to over eight hundred students from underrepresented groups (ALA, 2014f).

ALA also monitors the nature of its membership through an analysis of demographic data. Since 2005, ALA has invited its members to complete a demographic survey in order to provide a snapshot of membership demographics over time. The *Diversity Counts* study described the face of the profession in 2007 as that of a white woman in her mid-fifties (Davis & Hall, 2007). Three fourths of ALA members completed the 2014 survey, which found that membership demographics are largely stable: in terms of gender and ethnicity, ALA members are majority female (81 percent) and white (87 percent) (American Library Association Office for Research & Statistics, 2014). The importance of these data to a discussion of an indigenous ecology within LIS is that the demography of the librarian workforce is greatly different from that of tribal communities.

For tribal communities, support for diversity is both an acknowledgment of specific tribal identity and a commemoration of shared experiences with other tribes that have arisen from traditional alliances and competitions. As Cajete (1994) describes, "whether one views traditional Iroquois, Sioux, Pueblo, Navajo, or Huichol ways of knowing and learning, the pattern is the same: unity through diversity. Indian people are all related. Tribal ways reflect a natural diversity of expression of basic principles and foundations" (p. 35). While tribal members may share beliefs in an indigenous worldview, "Indian tribes differ widely in tradition, custom, commitment, and interests" (Mattern, 1999, p. 130). One rationale for individual tribal identity is the desire for official recognition as a tribe. The U.S. federal government legally acknowledges tribal differences through "federal recognition—or *acknowledgment*—[that] means that the federal government recognizes a tribe as having certain rights and powers of self-government as well as rights to services that have been granted as a result of the tribe's special relationship to the United States" (National Museum of the American Indian, 2007, p. 121; italics in original).

In summary, diversity is valued within LIS as well as within tribal communities. While membership within the LIS field is fairly uniform, the leading professional organization supports shifts in membership demographics and is an expression of belief in social justice. Native populations

vary greatly but recognize each other as also sharing commonalities. Next, equity of access will be discussed as another point of difference and commonality between the two worldviews.

Equity of Access as a Key Action Area in LIS and Its Interpretation in the Indigenous Ecology

A second strongly supported Key Action Area among LIS professionals is equity of access. According to Preer (2008), "access to information is what library service is all about" (p. 12), and "providing access to information has become the central ethical value of librarianship and the one that is unique to the library profession" (p. 24). The American Library Association defines "equity of access" as the goal that "all people have the information they need—regardless of age, education, ethnicity, language, income, physical limitations or geographic barriers." Equity of access also means that all people are "able to obtain information in a variety of formats—electronic, as well as print" and that they are "free to exercise their right to know without fear of censorship or reprisal" (ALA, 2014e). This belief in equity of access is also in agreement with Article 19 of the UN Universal Declaration of Human Rights (UDHR): "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers" (United Nations, 1948).

While on its surface ALA's statement appears to be supportive of social justice, this concept is also the Key Action Area that is potentially most at odds with indigenous views. Martha Smith (2001) writes of the inevitable tensions that arise in the conflicts between ALA key values, notably around access, ownership, and privacy. She acknowledges, specifically, the potential danger of advocating for open access if it results in "eliminating native cultures, languages, and identities in the rush to conform to a global standard" (p. 527). This tension can be understood in terms of the lack of familiarity within LIS with the way in which the indigenous ecology perceives access.

In indigenous knowledge systems, access to information may be governed by tradition and indigenous protocol. For example, some knowledge may be constructed through concepts such as women's work, men's work. Some knowledge is shared only at different times of the year. Other content is not available to tribal members of certain ages, or available only to members of certain subgroups (Christen, 2011; Loew, 2008). Access may also be defined situationally; for example, images of deceased individuals may not be exhibited or otherwise available during times of mourning (Anderson, 2005, p. 27). Nakata, Byrne, Nakata, and Gardiner (2005) explain this approach to access: "Traditional access rights are located within customary law and kinship systems which authorized Indigenous knowledge custodians understand and regulate in local contexts.

These can place age, gender, initiate status, role, and specialization re-strictions on access to certain knowledge" (pp. 12–13). The indigenous ecology therefore contains a complex view of access that does not entirely or necessarily match up with the common LIS view of access.

When faced with this alternative view of access, Nakata et al. (2005) argue that "despite the good will in the . . . LIS sector and the profession's desire to do the right thing with respect to Indigenous knowledge and peoples, there is still in some places a perceptible undercurrent of ap-prehension that Indigenous concepts of knowledge management and in-tellectual property protection are restrictive in a way that is sometimes contradictory to or incompatible with liberal and democratic notions of free and universal access to information and knowledge" (p. 15). A better understanding within LIS of tribal protocol can be used to provide one additional framework to access that may be perceived as less limiting, and at the same time more respectful of tradition and cultural balance. While there is little formal professional agreement on how libraries/archives/museums should interact with traditional knowledge, there are a number of relevant documents that have been created within professional com-munities (First International Conference, 1993; Aboriginal and Torres Strait Islander Library and Information Resource Network, 1995; Assem-bly of Alaska Native Educators, 2000; First Archivists Circle, 2006). The International Federation of Library Associations and Institutions (IFLA) recommends that libraries "encourage the recognition of principles of in-tellectual property to ensure the proper protection and use of indigenous traditional knowledge and products derived from it" (IFLA, 2002). While the advice given within these statements is publicly available, the extent of awareness of it among LIS educators and practitioners, much less its ap-plication, is unknown.

The Key Action Areas of diversity and equity of access define and ex-press LIS professional values and social justice. LIS professional views of diversity reflect a need to prepare a workforce that reflects the communi-ties that libraries serve. Equity of access speaks to the profession's desire for distributive and procedural justice. Belief in social justice and diversity supports the potential for an indigenous ecology as an educational labora-tory, a concept explored in the next section.

EDUCATION FOR THE INDIGENOUS ECOLOGY

In *Look to the Mountain* (1994), Gregory Cajete's "ecology of indigenous education" considers these sources of knowing among indigenous peo-ples:

• Learning from the environment
• Learning from myth or story
• Learning from visions/expressions of art
• Learning from everyday tribal community life

This view of learning indicates an orientation to manifestations of the world that are physical, communal, spiritual, and historical. In the indigenous worldview, education is the lifelong seeking of fulfillment. Cajete describes this personal journey as a process of "finding face (true character), finding heart (true desire), and finding foundation (true vocation) . . . all in the context of proper relationship to self, community and the natural world" (1994, p. 23). With their attention to user communities and their needs, the LIS professions offer practitioners careers that provide a balance between self-fulfillment and social justice.

These sources of indigenous knowing have several parallels within LIS. While indigenous knowing evolved from centuries of traditions and understanding with strong attachments to geography, LIS also has historical groundings and connections to place. First, LIS disciplines are location or setting based. Regardless of whether or not the word "library" appears in the name of a LIS program, that program's studies, research, and practice still consider the location—the environment—where library services take place. Second, the history, myth, or story of LIS includes biography, incidents, lessons learned, progress achieved, and values. LIS traditions, which have evolved from the culture of print, now include the changing digital world. LIS myths and histories are also tied to Progressive Era reform and the role of gender in the workplace (de la Peña McCook, 2011, pp. 39–40).

Significantly, the LIS professional organizations note the contributions of individuals and continue to recognize individual achievement (ALA, 1996–2014b). Information professionals additionally tie their learning to innovative expressions—from the art of reference and cataloging/organization, to the design of electronic resources, as well as to the vision of dynamic leadership. As a social field, librarians learn from their LIS professional community with their communities of users. Thus the LIS cultural model of learning can be described as follows:

- Learning within an environment
- Learning from tradition with respect for history
- Learning from artistic expressions of service
- Learning from a community of LIS professionals and patrons

The LIS learning model is reflective of LIS theory and practice. Like indigenous sources of knowing, LIS learns from what happens within its spaces as it promotes, stimulates, and witnesses the levels of learning that occur among members of its service communities. LIS actions, beliefs, and activities evolve from professional values.

The final section of this article presents suggestions for curricular products that might serve to bridge the LIS and indigenous cultural models of learning.

CURRICULAR PRODUCTS IN THE LIS INDIGENOUS ECOLOGY

The indigenous ecology is an "ethical space," and, as the intersection between indigenous and Western worldviews, it provides the ecology or area of study; it also serves to "enable people to develop means to transform how people produce, interrogate, value, apply and disseminate different forms of information" (Hammersmith, 2007, p. 220). It is in this space that productive learning can take place within LIS curricula. Such learning supports expressions and practices of social justice along with cultural responsivity.

Various curricular models based on indigenous perspectives have been developed. For selected examples, see Barnhardt & Kawagley, 2005; Cajete, 1994, p. 203, and 1999, 193–221; Hammersmith, 2007, p. 179; Merculieff & Roderick, 2013; Mihesuah, 1996, pp. 131–145; Snively & Corsiglia, 2001, p. 27; and Stephens, 2000. In particular, the Assembly of Alaska Native Educators (1998, pp. 13–16) offers twenty "Cultural Standards for Curriculum," which are grouped under five topics:

- A culturally responsive curriculum reinforces the integrity of the cultural knowledge that students bring with them.
- A culturally responsive curriculum recognizes cultural knowledge as part of a living and constantly adapting system that is grounded in the past, but continues to grow through the present and into the future.
- A culturally responsive curriculum uses the local language and cultural knowledge as a foundation for the rest of the curriculum.
- A culturally responsive curriculum fosters a complementary relationship across knowledge derived from diverse knowledge systems.
- A culturally responsive curriculum situates local knowledge and actions in a global context.

Similarly, Hampton (1995) writes of the standards of Indian education as resting on a dozen attributes: spirituality, service, diversity, culture, tradition, respect, history, relentlessness, vitality, conflict, place, and transformation (pp. 19, 21, 24, 28, 29, 31, 32, 35, 40, 41).

Indigenous teaching and learning, therefore, "strongly emphasizes modeling and guided practice" and acknowledges that "cooperative learning, peer tutoring, and hands-on learning are essential strategies" (Kawagley, D. Norris-Tull, & R. A. Norris-Tull, 1998, p. 137). In Merculieff and Roderick's writing (2013, p. 17) of an ecological approach to reviving indigenous languages, for example, the learning processes are expressed through indigenous ways of teaching and learning to include the following:

- Earth-based pace
- Attending to relationship
- Place-based knowledge/learning from the earth

- Learning/thinking/working as a group
- Learning from elders
- Close observation and emulation
- Indirect teaching
- Silence, pausing and reflection
- All senses experiential learning
- Visual/non-verbal learning
- Storytelling
- Dance and games
- Good instructions
- Humor

Cajete proposes an indigenous science curriculum that is modeled along seven directions: center, below, above, and the four cardinal directions (1994 pp. 197–203). The four directions are also associated with the four winds, the four seasons, doors or openings, and phases of the day (dawn or daybreak, noon or midday, sunset, and evening or night) (Hampton, 1995, p. 18). They have also been associated with the four elements and the four races (Regnier, 1995, p. 316). According to Hampton (1995), each direction "is a complex set of meanings, feelings, relationships, and movements" (p. 16). This concept of the Sacred Circle represents knowledge of many types (Barman & Battiste, 1995, pp. xv–xviii).

Also called the medicine wheel, this model is illustrated in the following way: "Drawing simply begins by making a circle. The circle symbolizes the continuity and connectedness of events with the added dynamism of movement. Superimposed on the circle are four equidistant points. The points symbolically identify the power/medicine of the four directions: east, south, west, north" (Calliou, 1995, p. 51). Calliou (1995) further describes the types of learning associated with each direction in the model, specifying that each of the four "corresponds to an aspect of humanness: north with the mental realm (cognitive, intellectual), east with the spiritual, south with the emotional (psychological), and west with the physical" (p. 53). This educational model is a concrete approach to recognizing indigenous worldview employing the diversity of learning styles and content areas found within LIS education.

What follows are four specific activities or approaches that can be brought into the LIS curriculum as steps toward creating the indigenous ecology. Each example illustrates an energy, orientation, or construct stemming from one of the cardinal directions, also referred to as doors.

From the East or Eastern Door: Observing Protocol by Introductions
The east represents spring, beginning, identity, culture, and diversity (Hampton, 1995, pp. 16–17). When students answer the question "Who are your people?" they illustrate that "through knowledge of self, individuals become aware of underlying cultural assumptions in their background

that may not have previously been examined" (Overall, 2009, p. 192). By having "the option to present himself or herself culturally, and by learning style and cardinal direction, specific content contributed, and/or technological applications utilized," each student invites communication and provides the context of a future relationship (Roy & Larsen, 2002, p. 3).

From the West or Western Door: Social Connections and the Difficulties of Life
The west is fall, change, history, education, service, and relentlessness (Hampton, 1995, p. 17). LIS students might remember the wisdom needed from the direction of the west when they are asked to complete coursework through collaborative learning. Cajete (1994) also recognizes that creative roles are associated with each of the four cardinal directions. Like learning styles, these roles may help students to understand their contributions to group efforts as they perform as artist/poet (east), warrior/hunter (north), shaman/priest (west), and/or philosopher/teacher (south).

From the South or Southern Door: Healing, Emotions, and Language
The south is the summer, the place of affirmation (Hampton, 1995, p. 17). Talking or sharing circles are safe places where individuals can share their thoughts and feelings. Sharing circles are led by facilitators, who help set the tone for the conversation and provide supportive responses. Individual speakers often are recognized by holding an object such as a feather or a stone (Hart, 2002, pp. 61–103). The sharing circle approach enables work groups to coalesce as they come to acknowledge their shifting roles in their joint work and with each other. Within LIS research, the healing circle is similar to Kuhlthau's "zones of intervention" that call on librarians to respond to patron needs according to various levels of mediation, depending on where the student is in her or his search process (Kuhlthau, 1994).

From the North or Northern Door: Endurance and Survival
The north or northern door is the winter, the place of struggle and survival (Hampton, 1995, p.17). Coursework can bring together the energies of all four directions in the struggle for—and achievement of—service engagement (Roy, Jensen, & Meyers, 2009). This is where LIS students can work directly for and with indigenous peoples through the ethical space based on protocol, learning styles, and using sharing circles as a touchstone. Service learning options might be embedded in courses or available as options for assignments, individual studies, practica or internships, capstones, or in organized volunteer efforts. In engaging in collaborative work with members of tribal nations, LIS faculty and students need to follow protocol and should also challenge their motivations for such work (Roy, 2011).

Summary

LIS education—with its necessary balance of theory and practice; its focus on evaluation, assessment, and accountability; and its institution-based perspective—would benefit from exploring a connection with an indigenous ecology framework. LIS and indigenous worldviews share the characteristics of change, a responsiveness to social and technical environments, a regard for historical traditions, and an ability to adapt while retaining a cultural branding. LIS professionals and tribal communities respect and even celebrate diversity. Though they differ in their interpretation of equity of access, this is an essential concept in both LIS and indigenous thought.

If a true indigenous ecology can emerge and/or exist within LIS, then care must be taken to ensure that its emergence does not repeat colonial models of information gathering, organizing, and sharing. Nakata (2002) warns, for example, that "the documentation of such [indigenous] knowledge by scientists, the storage of information in databases in academic institutions, whether they be gene banks or electronic networks, all looks remarkably similar to former colonial enterprises which co-opted land, resources, and labour in the interest of their own prosperity through trade and value-adding" (p. 282). Such a co-option would not be true to the belief systems of LIS, indigenous worldview, or social justice work.

To prevent this outcome, an indigenous LIS curriculum should connect culture and learning, support the contributions of the individual to the learning process while retaining a community center, and be responsive to the environment. Linda Smith (2003) describes the possibility of such an indigenous ecology: "In various places around the world there are small initiatives which are providing indigenous peoples with space to create and be indigenous" (p. 199). This indigenous ecological space within the field of LIS would permit the development of curriculum, writings, and discussion. What is needed at the professional level is a process that evolves from setting boundaries through identifying, drafting, and promulgating definitions and differences into one that includes training examples based on input from tribal communities.

Note

1. On March 23, 2007, I delivered a talk at the University of Arizona, Tucson, on "Indigenous Cultural Expressions and the Development of an Ethnology of Information Studies: An Exploration of Issues" for an Information Ethics Roundtable event titled "Indigenous Knowledge and Cultural Property: The Ethics of Cultural and Environmental Sovereignty and Stewardship." This is where I first referred to an indigenous ecology within library and information science, a topic that interested Allison (Ally) Krebs and about which she and I had subsequent conversations. Ally went on to enter doctoral studies at the University of Washington and pursued this topic through her presentations and writing. In this article I have returned to Ally's original presentation in 2007 and dedicate this work to her. She is remembered for her vibrancy and good will.

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