

Volume 3, Issue 1

June 2017

**A publication of The Interinstitutional Center
for Indigenous Knowledge at Penn State**

ISSN: 2377-3413

IK: Other Ways of Knowing

A publication of The Interinstitutional Center for Indigenous Knowledge at The Pennsylvania State University Libraries

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A publication of Penn State Library's Open Publishing

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From the Editors

Welcome to Volume 3, Issue 1, of *IK: Other Ways of Knowing*. This issue contains three peer reviewed articles, three board reviewed pieces, two book reviews, and a list of new resources related to indigenous knowledge. Our News and Notes section includes a listing of recent ICIK seminars along with articles on recent events and conferences in the indigenous community.

Our peer reviewed section begins with *Integrating Traditional Ecological Knowledge with Western Science for Optimal Natural Resource Management* in which Serra Hoagland discusses the integration of traditional ecological knowledge (TEK) into the paradigm of western science. Using examples from Native communities in the United States and Canada, she illustrates how TEK influences natural resource management and conservation efforts on tribal lands. She proposes a dualism theory for conservation in the 21st century where TEK and western science are applied equally in natural resource management.

In our next article, *Strokes Unfolding Unexplored World: Drawings as an Instrument to Know the World of Adivasi*, Rajashri Ashok Tikhe explores the worldviews of Indian Adivasi children through art. Groups of children collaborated to produce single works of art which display different types of intelligence, including visual-spatial intelligence and collaboration. In this way, the children's drawings present a window through which Tikhe views the communal cultural life of the Adivasi. These drawings can then be used as a vehicle for education policy makers to tailor culturally sensitive and effective learning environments for the children.

Our last peer reviewed article by Ronan Hallowell, *Dancing Together: The Lakota Sun Dance and Ethical Intercultural Exchange*, draws on twenty years of involvement in the Lakota Sun Dance ceremony to explore the ethical issues that arise when a non-Native American participates in sacred ceremonies. Written in a style that interweaves scholarship, personal experience, and letters to his American Indian great-great grandmother, he discusses both the potential issues encountered in intercultural communication but also the many benefits.

Our board reviewed section contains three articles: *Field Report: Collecting Data on the Influence of Culture and Indigenous Knowledge on Breast Cancer Among Women in Nigeria*, *Prioritizing Women's Knowledge in Climate Change: Preparing for My Dissertation Research in Indonesia*, and *The Library for Food Sovereignty: A Field Report*. In the first article, Elewonibi and BeLue explore the influence that culture has on women's attitudes toward breast cancer treatment in Lagos, Nigeria. Through a series of interviews at a health clinic they find that some cultural beliefs hinder women from seeking western medical care while others encourage women to seek screening. Our next article details M.G. Whiting award winner Sarah Eissler's "scoping trip" in preparation for six months of field work on small-scale, women farmers and their local knowledge relating to climate change adaptation. Lastly, Freya Yost reports on the efforts of the non-profit A Growing Culture to develop an open access digital library that promotes the sharing of local farmer knowledge, innovation, and solutions.

The editors would like to thank Abigail Houston, the graduate assistant and associate editor, for her work with authors and reviewers, and on final production of the journal. We would also like to thank Rachel Nill, the 2016/2017 Bednar intern, for creating a new layout design for the journal as well as for all the work she did with our authors through the copyediting process. We congratulate Abby and Rachel on their graduation from Penn State and wish them well as they continue on. We would finally like to thank Teodora Hasegan, assistant editor, for her help in the News and Notes section along with copyediting and proofreading. This issue would not have been possible without the hard work of this team.

We hope you enjoy Volume 3, Issue 1 of *IK: Other Ways of Knowing*.



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Integrating Traditional Ecological Knowledge with Western Science for Optimal Natural Resource Management

Serra Jeanette Hoagland
Liaison officer, Biologist, PhD

Traditional ecological knowledge (TEK) has been recognized within indigenous communities for millennia; however, traditional ecological knowledge has received growing attention within the western science (WS) paradigm over the past twenty-five years. Federal agencies, national organizations, and university programs dedicated to natural resource management are beginning to realize the critical need to incorporate different ways of knowing into their natural resource management decisions. Furthermore, Native American tribes on a national scale are assuming greater leadership through self-determination and self-governance and continue to serve as models for sustainable forestry and resource management by incorporating components such as traditional ecological knowledge, community support for integrated resource management plans, and a holistic, dedicated, long-term vision for the environment. This paper reviews recent literature on the integration of TEK and WS and proposes a dualism theory for conservation in the twenty-first century where TEK and WS are applied equally in natural resource management.

Keywords: Traditional Ecological Knowledge; Western Science; Environment; Natural Resource Management; Native Americans

The planet is in immense ecological stress and human societies currently face unprecedented challenges such as climate change, species extinctions, pollution, and deforestation, to name a few (Travis 2003; Bellard et al. 2002; Hu 2014). Natural ecosystems are being altered beyond their capacity and the dynamic ecological patterns and processes that have been created over the last 4.6 billion years are now at risk. Green infrastructure, ecological conservation, carbon sequestration, carbon emission reduction projects, ecological restoration, and other technologies have been implemented to mitigate the global ecological crisis we face. However, there is a fundamental, missing piece that is severely underutilized and considered in our dire state. It involves a very basic concept of combining traditional ecological knowledge and indigenous worldviews with modern western science to create environmentally sustainable solutions. The wealth of knowledge about the local environment within tribal communities is vast and diverse. It has developed over thousands of years and been passed down through a multitude of generations in oral teachings (Berkes, Colding, and Folke 2000). Traditional

ecological knowledge complements western science and is increasingly being recognized by natural resource managers and scientists throughout the world (Trosper and Parrotta 2012; Menzies and Butler 2006). On the other hand, western science can be credited for numerous innovations and technological advances in fields ranging from engineering to medicine to natural resource management. Combined, these two knowledge sources may provide powerful solutions to our most dynamic and complex environmental problems.

I will focus on the indigenous peoples of Canada and the United States throughout this paper. It will critically evaluate traditional ecological knowledge and western science by comparing and contrasting the two paradigms and discuss how the different paradigms inform decision making and implementation of natural resource management actions. I will provide recommendations for integrating both knowledge systems to achieve sustainable natural resource management actions and reinvigorate the Wampum Theory. The Wampum Theory recognizes two distinct worldviews and cultures working in harmony, and comes from concepts I borrowed from Mason et al. (2012) and Ransom and Ettenger (2001). The Wampum Theory, applied in natural resource management, includes an equitable, complementary balance between two different paradigms: western science and traditional ecological knowledge.

This paper also discusses traditional ecological knowledge and tribal natural resource management simply because texts, reviews, and analysis regarding traditional ecological knowledge are less common than western science applications in the primary literature. This emphasis does not indicate superiority of one paradigm over the other. It simply provides more review and substantial evidence to support the notions of incorporating traditional ecological knowledge and western science in natural resource management fields. I acknowledge that western science is further along in its published documentation and development for incorporation into natural resource management than traditional ecological knowledge. The intent of this paper is not to review western science but rather review how western science and traditional ecological knowledge can be complementary.

Definitions of Traditional Ecological Knowledge

There are many definitions of traditional ecological knowledge, but one of the most commonly used definitions, provided by Berkes (1999), states that TEK is “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, and about the relationship of living beings (including humans) with one another and with their environment.” TEK is abstract, qualitative, inclusive, intuitive, diachronic, and is formed from communal knowledge gained over time through practice and application (Gadgil, Berkes, and Folke 1993; Mason et al. 2012). It is traditionally shared through oral accounts, is highly synonymous to adaptive management, and provides a holistic view of managing for multiple resources (Berkes, Colding, and Folke 2000). TEK remains dynamic by allowing knowledge to be updated as new information arrives (Menzies and Butler 2006), and is integrated with information that “cannot be understood in isolation” (Menzies and Butler 2006).

Another broadly accepted definition from Donogue, Thompson, and Bliss (2010) defines TEK as the “reflection of cultural norms and practices that influence how tribal members steward and coexist in natural environments.” TEK is often guided by a land-use ethic held by indigenous people that supports interactions with nature in a respectful manner and in a way that allows for all creatures to coexist (Anderson and Moratto 1996).

TEK is considered a subset of indigenous knowledge and is defined by Menzies and Butler (2006) as “cumulative and long-term, dynamic, historical, local, holistic, embedded, moral, and spiritual.” An example of a traditional ecological knowledge moral attribute is preventing any waste and avoiding greedy use of environmental resources (Menzies 2006). Nelson (1983) discusses the two distinct knowledge systems within TEK. The first, objective and ecological, identifies specific information such as technical animal biology and life histories of particular species. This information is mainly used for resource management. The second is based on the elaborate spiritual “system of supernatural concepts for explaining and manipulating the environment,” which is fundamental to Koyukon survival.

Knowledge Transmission

A simple definition of knowledge transmission is the process or act of transmitting, spreading, or distributing information. An example of indigenous knowledge transmission is described by Basso (1996). Basso humbly explains the important lessons he learned on his second day of working in the field with western Apache people studying and documenting Apache place-names and their significance. Basso mispronounces an Apache place name and, after a few attempts, disregards the importance of saying the words and states to his teacher, “I’ll work on it later.” This is taken as offensive and disrespectful by the Apache teacher, who then says in Apache to the translator:

What he’s doing isn’t right. It’s not good. He seems to be in a hurry. Why is he in a hurry? It’s disrespectful. Our ancestors made this name. They made it just as it is. They made it for a reason. They spoke it first, a long time ago! He’s repeating the speech of our ancestors. He doesn’t know that. Tell him he’s repeating the speech of our ancestors! (Basso 1996)

This highlights several lessons in knowledge transmission for traditional ecological knowledge within indigenous communities. This story emphasizes the importance of patience, respect, and care in applying acquired knowledge. Apache place names are critically important in identifying past conditions and were formed by those who came before us. It is imperative when learning any form of language or TEK to respect the knowledge as it was created and understand the belief that it can still be heard by the original creators. Nelson (1983) also describes other Natives’ complex ability to navigate and understand the landscape, specifically referring to the Koyukon. He defines this as “mental mapping,” that includes hundreds of specific place names known by Koyukon adults and elders. Geographic location information is maintained within the community and is transferred orally or through experience. Knowledge pertaining to western science is typically transmitted through formal education and reading materials created by the research experts, rather than through oral teachings and field-based experiences, such as those listed in Basso (1996) and Nelson (1983).

Tribal Natural Resource Management

Traditional ecological knowledge informs natural resource management with the Gitga’at, an indigenous community of Hartley Bay in British Columbia. This community harvests red laver seaweed for food. The harvesting methods applied by the community can represent and “provide a model for sustainable resource use based on principles of respect, reciprocity, and cooperation” (Menzies and Butler 2006). In this case, as with others, there is a strong human responsibility to care for resources. The indigenous

communities have intricate knowledge of the life cycle, ecology, behavior, and uses for numerous different foods and resources. It only seems logical to look to them for help and information in regards to caring for these resources.

Nelson (1983) provides an extensive overview of Koyukon worldview and traditional practices that influence how the indigenous community in Alaska manages their resources. Koyukon perspective encompasses an all species approach; “no species is too insignificant to be mentioned” (17). In Koyukon territory, each species is associated with a particular role, personality, and certain cultural taboos. Cultural taboos often relate to a species behavior or ecology. For instance, Koyukon people tend to stay away from eating sucker fish because they do not want to inherit certain traits, like thievery, that the animal is thought to possess. In Koyukon tradition, women are prohibited from stepping on, eating, or skinning particular animals such as the wolf. Animals are viewed as very similar to humans and thus are treated with great reverence and respect. The only difference between humans and animals to the Koyukon is that humans have an “eye flutter” (Nelson 1983). In fact, in what is known as “Distant Time” in Koyukon tradition, animals were previously human and they spoke human languages. There was a point in the past where certain animals died and became the animals that exist today. However, the transformation “left a residue of human qualities and personality traits in the north-woods creatures.” These traditions and cultural underpinnings, which define the ways humans interact with animals, are fundamental to their natural resource management practices.

Indigenous perspectives and traditions greatly influence forest management on the Menominee Indian Reservation in Wisconsin (Trospen 2007). Many acknowledge that sustainable forestry, which includes long rotations, single tree selection, and long-term monitoring, originated on the Menominee Indian Reservation (Dockry 2013; Trospen 2007; Gordon et al. 2013). Legislation over one hundred years ago allowed the tribe to self-govern their forest management practices. Some of the Menominee forest management policies that are driven by cultural mandates include the following: an appropriate harvest rate, the use of selection harvests, establishment of a diverse and ample growing stock, long-term monitoring requirements, and a maintenance of forest goals over industrial goals (Trospen 2007). Today the Menominee forest stands as internationally recognized flagship sustainable tribal forestry program and it provides employment for many tribal community members (Hoagland 2012).



Tribal forest and natural resource managers meeting on the Menominee Indian forest for the Indian Forest Management Assessment Team, III site visit, February 2012.



Menominee Tribal Enterprise proudly displays their motto on the side of a truck, “The leader in sustainable forest products for over 100 years.”



A tribal employee stands against a pine designated for single tree selection harvest. Uneven, aged silvicultural practices such as these promote forest health and sustainable harvest while providing economic opportunities for the tribe and individual tribal members.

Additionally, traditional ecological knowledge influences tribal natural resource management by the Salish and Kootenai tribes in Montana. These tribes have “burners” in their society who are tribal fire specialists. They are responsible for knowing fuel conditions and knowing when “to start a fire so that it would produce the desired results” (Mason et al. 2012). When burners stimulate low-intensity forest fires it creates uneven aged conditions and promotes healthy ecological forest conditions that are more indicative of pre-European times (Becker and Corse 1997). In addition to the Salish and Kootenai tribes, many other indigenous cultures see fire as a beneficial tool for maintaining productive, healthy ecosystems (Kimmerer and Lake 2001; Ray, Kolden, and Chapin 2012; Huffman 2013; Stan, Ireland, and Fule 2014).

Non-Tribal Natural Resource Management

Non-tribal natural resource management decisions are largely based on scientific findings and must often go through a rigorous public review process. In Yaffee's book, *The Wisdom of the Spotted Owl* (1994), he describes that the majority of environmental decision making revolved around lengthy political and bureaucratic processes that attempted to balance federal agencies' mandates for timber harvesting (and local timber-dependent economy's societal needs) with the needs to achieving owl conservation. Once the northern spotted owl was listed as a threatened species, the recommendations regarding forest and owl management were supported by scientific analyses. Non-tribal federal and state agency management decisions are also based on adaptive management principles, which create flexibility in planning so that when new information becomes available implementation plans can be updated accordingly (Grumbine 1994).

One of the failures of modern resource management has been a lack of recognition of the long-term effects on the indigenous peoples (Menzies and Butler 2006). Historically, sustainable practices are supported in non-tribal natural resource management paradigms but often it is at the cost of Native peoples. At the turn of the century, around the 1890s, the government called for selective fishing practices to help recover declining salmon fisheries. However, beginning in 1878, regulations were implemented with the expressed goal of eliminating the live-capture fishing technologies utilized by First Nations peoples. By 1894, First Nations peoples were "prohibited from taking fish by spear, trap, or pen—dip nets were allowed with permission" (Gifford 1989 in Menzies and Butler 2006). This non-tribal, natural resource management decision was a direct act of cultural assimilation when the indigenous sustainable fishing practices became illegal. Additionally, the government prohibited sustainable mushroom harvesting practices used by the First Nations (Rsimshian, Nisga'a, and Gitksan) to allow for more industrialized use of the resource. These non-tribal restrictions hurt the Native people who use these resources.

Traditional Ecological Knowledge as a Science

An interesting perspective provided by Dr. Thomas Alcoze in Cobern and Loving (2000) acknowledges that Native American traditional ecological knowledge can be considered Native science. Alcoze cites how tribes would use various plants for medicinal purposes and that today two hundred pharmaceuticals have been documented with Native American medicinal tradition origins. He continues by commenting that tribes were not publishing in scientific journals, but were in fact practicing science. Others have also noted and commented on the concept of Native science as well (Cajete 1999; Cajete 2004).

Science curricula often "portray science as located within, and exclusively derived from, a western cultural context. The implicit curriculum message is that the only science is western science..." (Hodson 1993; Alcoze 2000). Western science has foundational principles in the scientific method, which generally involves the following steps: observation, developing hypothesis, testing hypothesis, analyzing results, and defining conclusions. It is concrete, quantitative, exclusive, intellectual, reductionist, clinical ("value free"), controlling, and synchronic (short time series and broad generalizations) (Mason et al. 2012 as adapted from Berkes 1993). Knowledge is gained through data collected by researchers and

scientists, then shared through publication. Western science is documented in written format and is not as locally established, created, and defined as traditional ecological knowledge. As Menzies and Butler (2006) explain, WS is “externally formulated, and rarely site specific.” It is also systematic and compartmentalized so that one system is thoroughly researched and explained with little reference to other systems.

The Differences in Traditional Ecological Knowledge and Western Science

A table created by Mason et al. (2012) provides a thorough summary of the differences between traditional ecological knowledge and western science. One important distinction between TEK and WS is that traditional ecological knowledge is rapidly disappearing and many scholars and Native people are concerned about losing traditional ecological knowledge. There is a critical need to capture traditional ecological knowledge from indigenous communities and reinvigorate the knowledge of tribal communities to promote sustainable environmental management. Many indigenous communities have already lost significant amounts of TEK and, overtime, TEK may disappear completely (Tsuji 1996). Some have acknowledged that the loss of traditional ecological knowledge is a result of the rapid loss of Native languages (Saynes-Vásquez et al. 2013). Furthermore, not only is TEK at risk, but the health and livelihoods of indigenous people, who are the bearers of this knowledge, are also at risk due to the numerous environmental and social problems. One such example is the coastal indigenous group’s heavy reliance on seaweed as a food source. Since seaweeds absorb heavy metals and other toxic pollutants, they absorb the toxins added to our oceans everyday via pollution. Tribes that rely on this food source are often unable to harvest it due to these toxins. Thus, the cultural traditions revolving around seaweed harvest are slowly disappearing along with the ability to use the resource (Menzies and Butler 2006).

Although there are many differences between the two knowledge systems, there are similarities that should not be overlooked. Both intend to improve our understanding of the world and are based on repeated observations. Menzies and Butler (2006) recognize that traditional ecological knowledge and western science are both a “process of observation, inference, verification, and prediction that is common to both modes of apprehending the ecological systems within which human beings live.” Secondly, both TEK and WS have broad applications in natural resource management (Berkes, Colding, and Folke 2000). However, most of our current management decision making processes are guided by western science (Huntington 2000).

Traditional Ecological Knowledge and Western Science Working Together

Emery et al. (2014) provide a recent example of integrating traditional ecological knowledge with western science. A team of scientists and traditional gatherers associated with the Greater Lakes Indian Fisheries and Wildlife Commission (GLIFWC) partnered together to integrate TEK into birch inventory analysis. This cooperative effort resulted in improved field methods and protocol for monitoring birch, which is a culturally significant plant for many tribes in the Great Lakes region. Tribal gatherers shared their traditional ecological knowledge related to birch trees, which included accurate descriptions for finding, choosing, and harvesting birch bark. To fully integrate WS and TEK, Emery et al. (2014) recommended including team members with intercultural skills to “help assure success integrating the contributions of experts who rarely interact and may not have a shared vocabulary.”

Furthermore, Housty et al. (2014) used an indigenous led grizzly bear monitoring program to help conserve the species. The noninvasive approach to monitoring grizzly bears was driven by Heiltsuk values, and the research project explicitly followed *Gvi'ilas*, or Heiltsuk traditional law. Their results showed a declining bear population that was possibly being driven by the declining salmon population. Housty et al. (2014) advocated for integrated scientific research using culturally appropriate methods. A similar article (Polfus et al. 2014) compared traditional ecological knowledge and western science caribou habitat models and noted that, “TEK-based habitat models can effectively inform recovery planning for this imperiled species.” Polfus et al. (2014) emphasize the importance of incorporating local knowledge in conservation planning. These instances show that traditional ecological knowledge and western science are able to work together and create successful results.

Dualism Theory: Traditional Ecological Knowledge and Western Science Used Together in Natural Resource Management

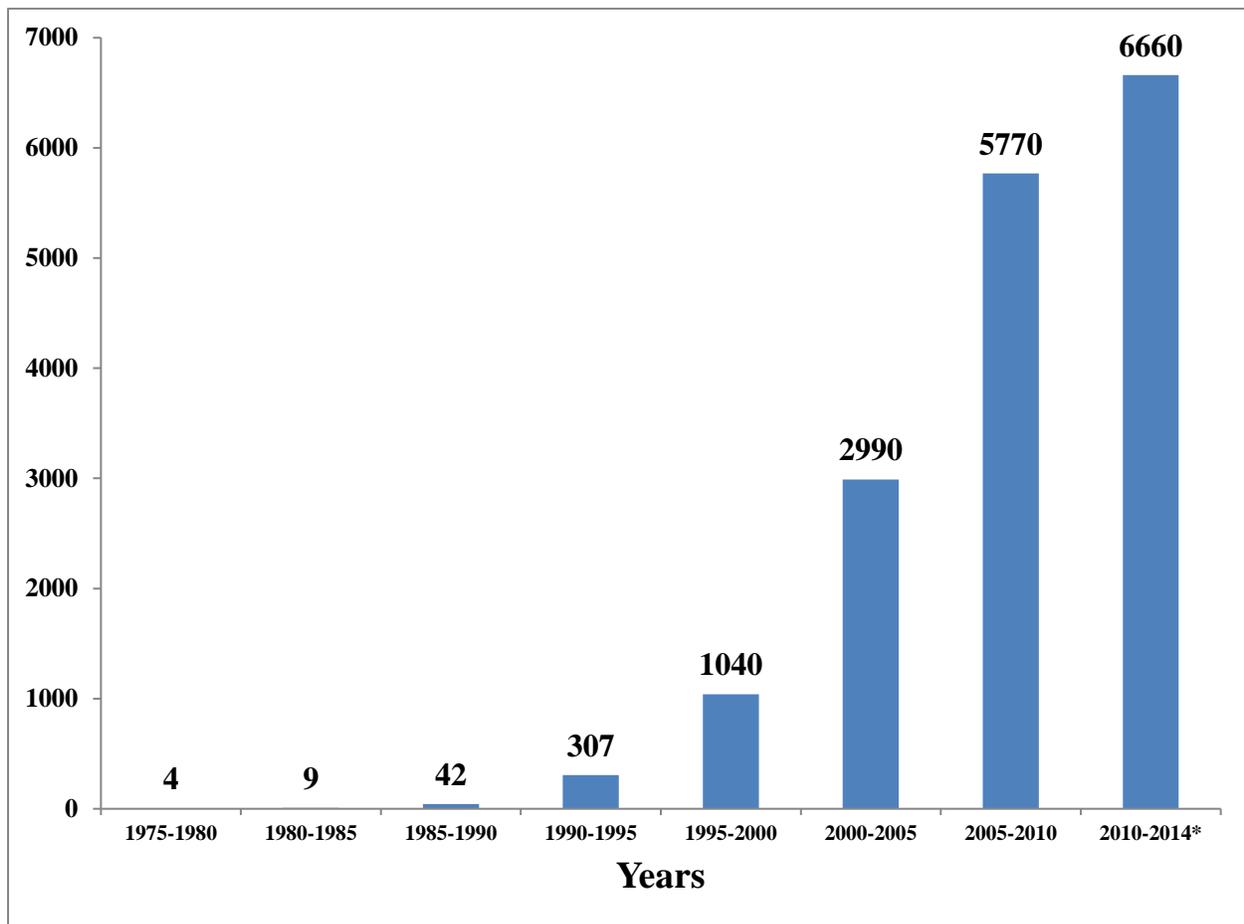
Many others have commented on and proposed similar theories about the importance of combining traditional ecological knowledge and western science (Armatas et al. 2016; Mason et al. 2012; Menzies 2006; Nelson 1983, etc.). Lertzman (2010) acknowledged that TEK and WS were simply the best of both worlds and may provide the foundational base through which we identify solutions to our most complex environmental problems. One without the other will not accomplish broad scale environmental protection, and applying only one paradigm can make the environmental situation worse. Some classic examples include wildfire suppression, tamarisk introduction, and the broad scale use of the chemical DDT, an insecticide that negatively impacted bird and other wildlife species for decades. Simply stated, science without wisdom is science without a conscious. As Larry Mason (Indian Forest Management Assessment Team author and retired University of Washington professor) said, “We have an immense amount of cumulative western scientific information and knowledge to do anything, but without wisdom it’s a crapshoot.” Similar to needing both left and right hands to manipulate something tangible or both left and right feet to move towards a goal, environmental conservation will move nowhere until we fully integrate the two paradigms.

The future of our environment will depend on our ability to create sustainable environmental solutions, and, fortunately, sustainability is at the foundation of traditional ecological knowledge. Menzies and Butler (2006) acknowledge the local indigenous communities in Canada and recognize that “having lived in these territories for millennia and having used the local resources into the present time, First Nations communities have a well-developed understanding of the local environment and their own impact on local resources.” An example of a sustainable fisheries practice involves the Sto:lo people who use dip nets and canyon nets, which allows the use of live capture techniques and minimizes the number of non-target species by catch. The emphasis in this practice is on the quick release of non-target species to help eliminate removal of other fish species from the environment (Menzies and Butler 2006). As acknowledged by Nelson (1983), the “Koyukon people and their ancestors have sustained themselves directly from their surroundings” for millennia. In fact, most of Koyukon principles revolve around avoiding waste. They only harvest what they can use and they never “kill something for fun” (Nelson 1983). Indigenous communities see and suffer the consequences of their environmental decisions, and therefore, they must be extremely diligent and careful in their planning in order to not diminish resources (Gordon 2012; Gordon et al. 2013; Nelson 1983).

Some of our best scientific methods for reconstructing past centuries are still in their primitive stages of development and often lack accuracy and verification. Place names may be another valuable way to cross-reference historical reconstructions (Basso 1996). Historical accounts that provide a long-term view of the landscape and the place names with the ecological significance of those areas can be a powerful tool for documenting change and predicting future conditions. This integration of the two systems could provide a solution for a problem western science has been struggling to solve.

Combining traditional ecological knowledge and western science can be a challenge, and there are dangers involved that require consideration. Menzies and Butler (2006) provide a cautionary note in that the “danger of TEK research is that it can simply make TEK a tool of WS, rather than a complementary approach to resource management.” Data sensitivity and proprietary rights of traditional ecological knowledge are critically important to establish. The best method is to have the indigenous community decide who is able to utilize and speak for different aspects of TEK. The need to validate traditional ecological knowledge is an act of colonization in itself because it carries an underlying assumption that TEK is intended to complement western science (Menzies and Butler 2006). Several scholars note that combining traditional ecological knowledge and western science is “incommensurable” (Nadasdy 2003) since knowledge requires experience and the fundamental experience of indigenous people is drastically different from European contexts.

We have surpassed the traditional ecological knowledge dark ages; a time when individuals like Aldo Leopold in his article, “Piute Forestry vs. Forest Fire Prevention” (1920) created poor, stereotypical images of Native Americans and traditional ecological knowledge by stating, “It is, of course, absurd to assume that the Indians fired the forests with any idea of forest conservation in mind.” Leopold was actively fighting in support of Forest Service management practices of fire suppression and discrediting the traditional light-burning practices of the California Indians. Fortunately, some perceptions have changed and we are making progress in incorporating traditional ecological knowledge and western science for natural resource management decision making. In a recent analysis for the Native American Fish and Wildlife Society Southwestern Sectional meeting in August 2014, I observed trends in traditional ecological knowledge publishing. I used the Google Scholar search engine to identify the number of scientific publications that included TEK from 1975 to current publications. I compiled information for every five-year interval during the time frame and used the search term “traditional ecological knowledge.” Articles with the exact phrase were returned and I calculated the total for each time period. The following chart displays the increase in academic interest overtime in traditional ecological knowledge applications.



Increasing number of returned articles by Google Scholar with the exact phrase, “traditional ecological knowledge” in five year intervals from 1975 to 2014.

Future Recommendations for Traditional Ecological Knowledge and Western Science

Huntington (2000) recommends incorporating traditional ecological knowledge into western science by using multidisciplinary approaches, which include methods such as semi-directive interviews, field based experiences, collaborations, and workshops to facilitate research. Others have identified indigenous research methods that focus on incorporating indigenous worldviews, developing ethical relationships with the community (with equal participation of all members), and information dissemination that directly engages the indigenous community (Lavallée 2009; Wilson 2001). Snively (2006) recommends incorporating input from indigenous communities into science curriculum development. Until this is accomplished, indigenous students will not be attracted to the sciences because they are “inaccessible and culturally irrelevant” (198). Also, the typical view of western science as controlling and manipulating the ecosystem directly conflicts with the cultural views of many indigenous people and students. It’s no wonder that only three percent of indigenous students are enrolled in science-related educational programs (Snively 2006). Kimmerer (2000) also recognizes the need to incorporate traditional ecological knowledge into biological education to provide students with a more holistic understanding of the environment with multicultural perspectives that may lead to new insights and discoveries that promote sustainability.

Many see traditional ecological knowledge as a beacon of hope and are noticing that TEK can be a “solution to a myriad of problems” (Menziés and Butler 2006). Western science experts are recognizing that TEK can provide missing answers to current research questions and help guide appropriate future ones (Menziés and Butler 2006). Dr. Mike Dockry, Citizen Potawatomi, and US Forest Service scientists stated traditional ecological knowledge can help throughout the entire western science research process from developing hypotheses to understanding complex results (Mike Dockry, pers. comm.).

There has been an influx in federal agency interest in incorporating traditional ecological knowledge into management practices. The US Department of Interior Fish and Wildlife Service (FWS) created a TEK fact sheet and identified tribal liaisons within their department. The US Department of Agriculture Forest Service (USFS) and Natural Resource Conservation Service (NRCS) have recognized the value of TEK in various agency sponsored documents. Even more encouraging is the recently established Tribal Engagement Roadmap created by the USFS Research and Development branch that explicitly states that traditional ecological knowledge can help the USFS understand and solve current and future natural resource management challenges. The Environmental Protection Agency (EPA) and Bureau of Land Management (BLM) have provided similar commitments to incorporating TEK into management decisions. Lastly, national organizations such as the Ecological Society of American (ESA) and The Wildlife Society (TWS) have developed specific working groups of committees focusing on incorporating traditional ecological knowledge. It is apparent that we are making steps in the right direction, but we still have a long journey ahead.

Conclusion: The Future is Bright

There is great potential for environmental conservation if we incorporate equitable representation of traditional ecological knowledge and western science in natural resource management. As mentioned by Menziés (2006), the knowledge held by people who use the resources in an intimate and highly dependent fashion is “worth understanding...these people do indeed have something useful for us to learn.” Additionally, as Koyukon elders advise, “There is a native way and a white man’s way, and the two can coexist comfortably” (Nelson 1983). Lastly, Turner and Spalding (2013) reference a 2003 quote by Gitga’at elder Tina Robinson who stated, “We might go back to this, the way the world is going.”

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Strokes Unfolding Unexplored World: Drawings as an Instrument to Know the World of Adivasi Children in India

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This paper is based on an analysis of the drawings of Adivasi children in Maharashtra, a state in India. It presents the otherwise neglected world of the Adivasi children, namely, the children's perspectives towards their environment and culture as expressed in the drawings. It also discusses the influence of the geographical and cultural environment on the drawing style of Adivasi children, emphasizing special features of the drawings, i.e., their collective creation. It further analyzes the intellectual attributes Adivasi children exhibit through their art work using the theory framework of multiple-intelligence. The drawings exhibit different aspects of visual-spatial intelligence and a strong emotional bond between Adivasi children and nature. The paper offers leads for understanding the visual-spatial intelligence and naturalistic intelligence among these children. It also discusses the possibility that the high ability of coordination and cooperation among Adivasi children acquired through socialization in their communities could be attributed as interpersonal intelligence. The paper comments on the design of the Indian Education System, which is characterized by an insensitive approach towards the specific cultural context and intellectual attributes of tribal children.

Keywords: World of Adivasi Children; Multiple Intelligence; Spatial Intelligence; Interpersonal Intelligence; Natural Intelligence; Cultural Capital; Indian Education System; Adivasi Education

The World of Children in India

The world of children is neglected by scholars in India. According to some scholars, reflections on childhood are included in Indian epics like the *Ramayana*, *Mahabharata*, and *Manusmriti* (Kaur 2015). Yet, these epics mainly reflect on *sanskara* (the socialization process) and illustrate the training needed in order to become an ideal king in the future. Insights into the psychology of children are few in the Indian literature.

Until the beginning of the twentieth century, which was marked by an intensification of the globalization phenomena, the western understanding of childhood continued to be central in the academic view on childhood in India (Kumar 2006; Kakkar 1981). Havovi Wadia (2011) has criticized activists and researchers for limiting the concept of Indian childhood to stereotypical notions that are mostly influenced by the normative child—male, upper-caste, middle class, and urban—as well as by international, western notions. Olga Nieuwenhuys (2009) very aptly argues that childhood in India continues to be discussed mainly in terms of issues that children face and problems that they may create. However, childhood is not just a “natural,” “biological,” or “universal” category, but also a culturally-specific, socio-historical construct that can be understood differently in various locations, contexts, and time periods (Aries 1962).

It is hardly surprising that the world of the Adivasi¹ children in India is totally overlooked. Indian Adivasi children are portrayed as shy and quiet in scholarly documents and literature in India. While working with the Adivasi children of Maharashtra as a Programme Coordinator of the Shikshan-Mitra² Program, I became curious about the world of these children. I wanted to know what their family life was like, what friendship meant to them, how they understood their community life, how they viewed their school and their environment in comparison to the modern urban world, and so on. With this goal in mind, I started the publication of a wall magazine³ to give these children an outlet for expression. The highly rigid, behavioristic framework of India’s education system influenced the creation of the wall magazines. Teachers, the dominant authority in the classroom, dictated almost entirely how the children expressed themselves. As a result, the ultimate product reflected what was perceived as appropriate from the point of view of the teachers and was mostly written in a standard language. It was only after the yearlong intensive process of deconditioning and relearning that the teachers and adult facilitators accepted the child as having, “an independent, competent personality.” The genuine drawings presented in this article are the result of providing a pressure-free space to the children. These drawings present the world as seen by the Adivasi children.

Collective Drawing, Collective Living

One special feature of the children’s drawings is that they are collective drawings, which means that groups of girls and boys drew a single drawing collectively and simultaneously on a single piece of card paper. The children chose to work in groups of four or six and selected the topic collectively. In some groups, one of the members led the process and others played a complementary role. In others, all the members contributed equally. I observed effective coordination among the members of each group while they worked on a single drawing.

The way of life of the Adivasis in India is reflected in the creations made by the children. They live collectively, and most of their activities, such as singing, dancing, and hunting, are collective activities. Individual performances in these arts and spheres of life are usually insignificant. Some of the tribes also have a tradition of collective drawing and painting, which is observed on special occasions and for special purposes. For example, *Rathawa*⁴ Adivasi practice *Pithora*⁵ painting. The purpose of performance among the Adivasi is to celebrate different occasions in life and to express their experiences rather than to achieve excellence at the individual level or gain personal fame. The absence of ambition probably helps the performers to devote themselves to the group’s common goal and to restrict individual urges and drives.

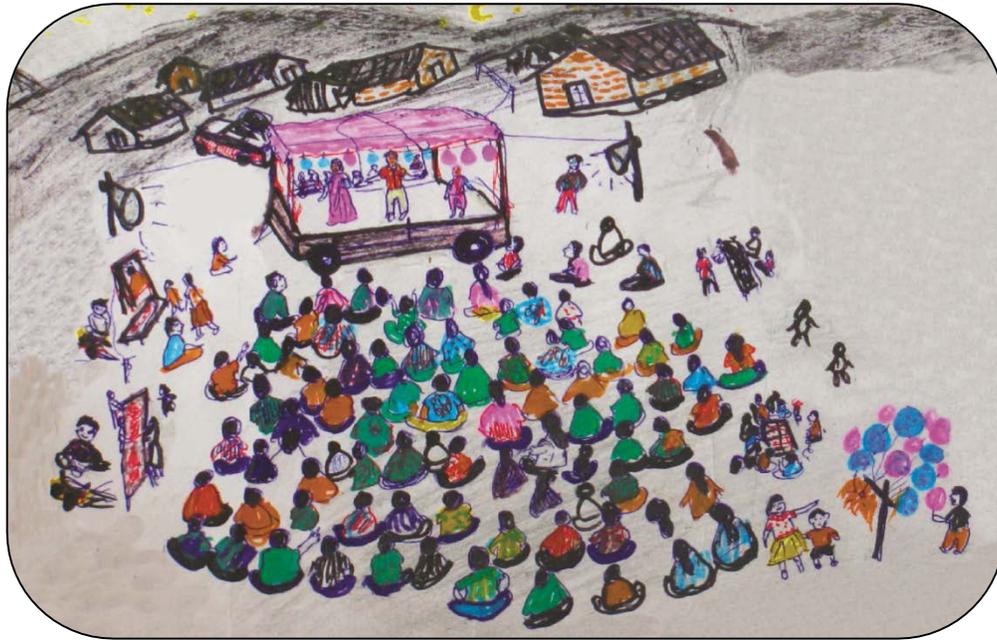
Inclusive Outlook Expressed through Minute Details



My Village

The drawings of the Adivasi children reveal minute details that say a lot about their observation skills. This particular drawing, *My Village*, depicts an Adivasi village and its surroundings. In the *Satpuda*⁶ region, habitations are usually scattered. Thus, in the drawing, one can see scattered houses on both sides of the road. The colorful school building—decorated with a wall painting of *Sarva Shiksha Abhiyan*⁷ and surrounded by neat vegetable and flower plots—is prominent in the drawing, underlining its importance in the minds of the children. The bridge over the river with cars running on it and windmills on the mountains show that the children have correctly gauged the signs of the modern world that is gradually entering their own world.

Also pictured in the drawing are common village sights, such as women fetching water from the well and the hand-pumps; farmers grazing their cattle, working in the field, and fishing in the river; villagers chatting on the *par*⁸ under a tree; and stray animals. The level of detail in this drawing is extraordinary. For example, if one looks at the tree closely, a bird can be seen with its nest on the lowest branch. The children's acute observation of details, like the fish in the river, the sign board showing the way to the bus stand, the cranes flying in the sky, and the aquatic vegetation, make the drawing very realistic. The drawing, *Gaw Diwali* pictured below, also includes intricate details.



Gaw Diwali

*Gaw Diwali*⁹ is celebrated among Adivasi communities in the *Nandurbar* district during winter. This drawing portrays *Songadya Party*, a musical drama performed during the night that is the greatest attraction of this festival. The colors used in the drawing indicate that it is a depiction of a night-time event. The background, made up of serene mountains and houses, highlights the activity on the stage. The humans are rejoicing at night, while the stray animals are asleep following their natural course, and therefore can't be spotted in the drawing. Interestingly, not a single person in the audience, which is seen from behind, resembles another. This particular aspect of the drawing says a lot about the pictorial imagination and expressiveness of these children. The performance venue is surrounded by various vendors who are busy selling their goods, even at night. Children are lingering near the vendors. Just in front of the balloon seller, there is a small group of people sitting around a rectangular board and enjoying gambling with cards. Children take in all the things happening around them, irrespective of the moral value attached to them, and these things then become a part of their world.



Village Market

This drawing, depicting a scene from the village market of Dhadgaon, provides a vivid view of everything that is found in and around the market. It shows different parallel and crossing lanes in the market, along with specific details of the products in the shops on each lane. Starting from the right-hand corner of the upper lane, one can make out a cloth shop, followed by a sweet shop, a vegetable and fruit shop, a *gutkha*¹⁰ shop, and, lastly, a toy shop. In the lower lane, one can see a jewelry shop in the right corner. Though the sale of *gutkha* is prohibited by law, it is sold illegally in the open markets in villages. This sad reality is reflected in the drawing.

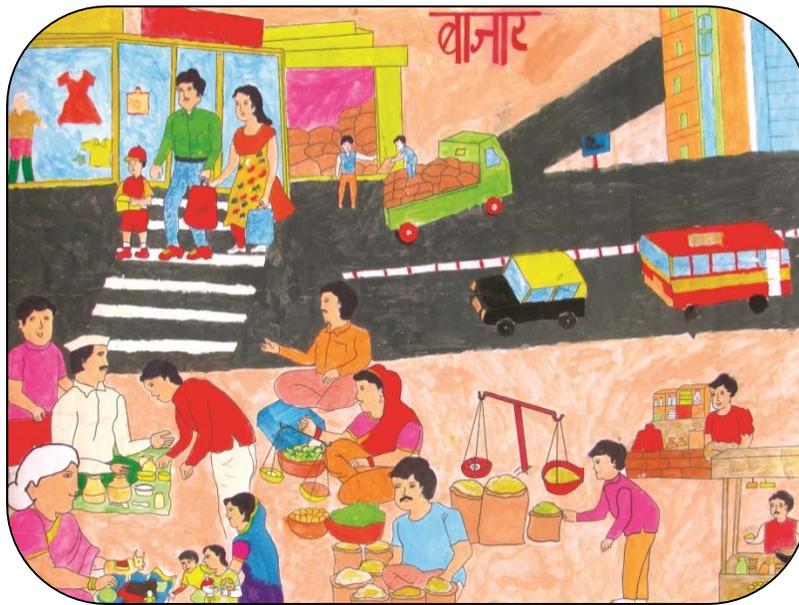
The drawing also depicts the area surrounding the market with impressive detail. People waiting at a bus stand can be seen in upper right corner. In the upper left corner, there is a temple of a village deity decorated with flowers. A great rush of different vehicles and pedestrians can be seen because it is a market day and also a *taluka*¹¹ place. Other tiny details, like girls fetching water from the hand-pump and children planting saplings alongside the river, give the backdrop of the village. The depiction of fish and snakes on the river surface may represent an effort to emphasize their presence in the river. An extraordinarily large span of the village market is covered in this drawing.

The above drawings include some special features. First, all the drawings present a bird's eye view of the depicted objects. Most of the children who created these drawings dwell in the mountain ranges of *Satpuda*. It's most likely that very often they see the world around them from an elevated position. They

presented this view from the top very effectively in their drawings. Second, the objects are seen from a long distance, a clear indicator of the span of the children's observation. The drawings also speak about a wider and more inclusive outlook on their surroundings. The mountains, river, trees, and various other non-human inhabitants are also an inevitable part of the scenes. Human life and nature coexist.

Critical Perception of the Phenomena / Environment

There are a few other drawings which go beyond just the factual depiction of the environment and provide a critical comment. These drawings reveal the higher qualities of intellect, like critical comparative observation.

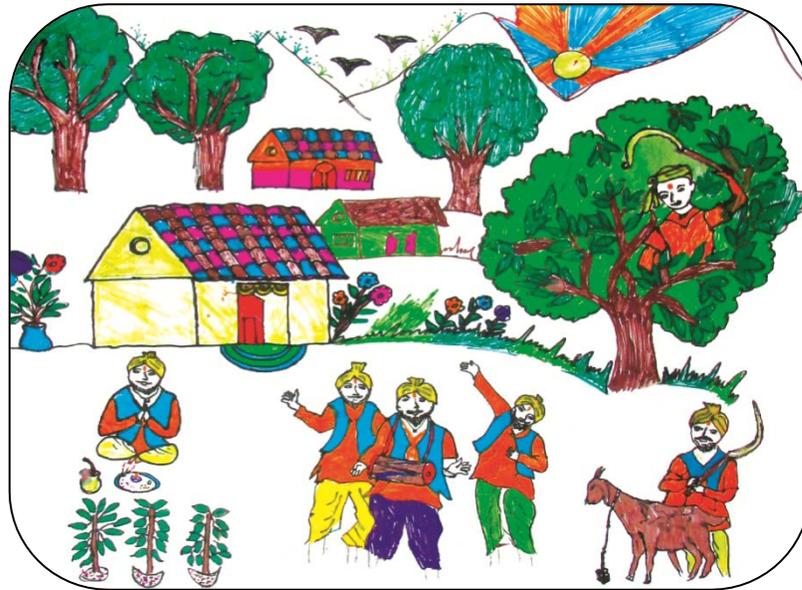


Market in City and Village

This drawing pictured above presents a comparative picture of market places in the city and the village. The asphalt road with zebra crossing, the mall exhibiting fashionable clothes behind the glass wall, the big storage room, the high-rise buildings, and the family dressed in the latest attire are all typical features of a city. Against this background, the people sitting on the mud floor selling their goods, mostly grocery items of daily use in cane baskets, indicate a simple market place in a village. All the goods in village markets are necessary for daily life and are not sold in excessive quantity. The dress patterns of the villagers, which are different than those of city people, further emphasize the differences between the cultures of both places. Just a few strokes of lines explain something that is quite extensive and wide-ranging. The children might not have consciously critiqued this cultural difference, but it is interesting to note that their apt observations have captured it, either knowingly or unknowingly.

Value of Cultural Archives

The drawings of the children proved to be an effective means of sharing unique features of the Adivasi culture. The following drawing presents a performance of a ritual called *Indal*, which is practiced among the *Pawara* Adivasi in northern Maharashtra. It is performed to express gratitude after a wish uttered in front of God is fulfilled (*Manata*). The drawing explains the three main rituals of *Indal*.



Indal

One can see a boy cutting a branch of a tree in the background. This task is supposed to be performed by a young boy and not an adult. The figure of the boy is drawn on an unusually large scale. The tree being cut is called *kamba* or *kumban*. The branches are being worshiped ritualistically by the person sitting on the ground. Three other men are playing musical instruments and singing. People dance and sing all through the night and the branches of the *kumban* are released into the river in the morning. A man standing behind a goat with a long sickle in his hand indicates another part of *Indal*, the sacrifice of a goat.

All the men in the drawing have beards. This fact explains a custom related to this ritual. The men performing *Indal Pooja*¹², who are called *valava*, *balava*, and *fivanya*, have to observe a code of conduct for a week before performing Pooja. They are not allowed to sleep on a bed, eat food (including non-vegetarian food) cooked at home, consume liquor, use footwear, or shave. Another drawing documents a marriage ritual that is typically observed among the Adivasi communities titled *Ritual of Adivasi Marriage*.

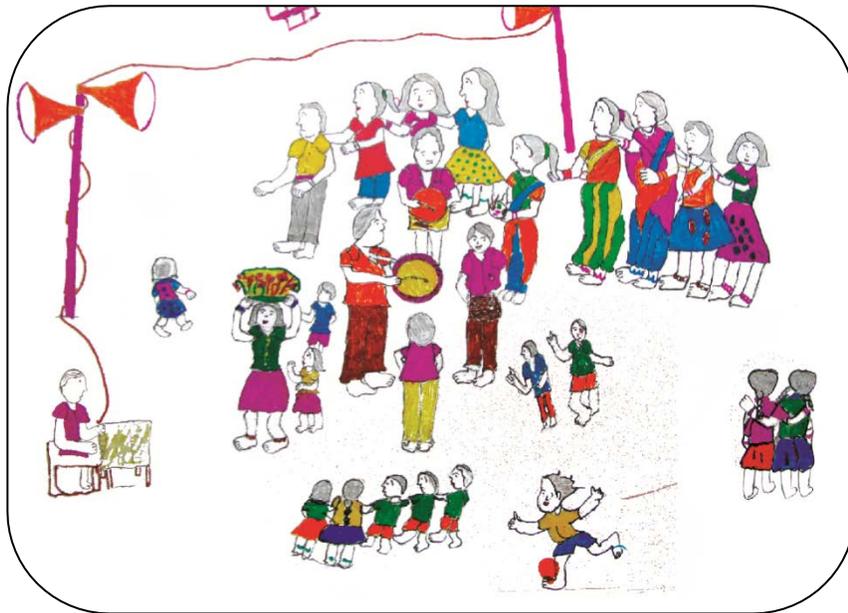


Ritual of Adivasi Marriage

The older couple in the left catches one's eye when seen in comparison with the young couple in the center. The newly married couple on the left is actually supposed to appear aged. Among the Adivasi, if a boy and girl abscond, start living together, and bear children without marrying, they must marry a day before the marriage of their children. Only then will the marriage of their children be accepted socially. The *Indal* and *Adivasi Wedding* drawings have great cultural value and can definitely prove to be an important source for researchers interested in understanding the ways of life of the Adivasi communities.

The Influence of the Modern World

The Adivasi communities and their culture, which is in harmony with nature, are being influenced by urban trends which have resulted in an intermingling of both cultures. Singing and dancing on different occasions are an integral part of the tribal culture. However, the use of modern, urban technology—like loudspeakers and the electric banjo¹³—is the influence of non-tribal culture, which is now accommodated in traditional ways of celebration.



Adivasi Wedding Dance, Modern Influence

The drawing depicts young girls and boys in modern attire and with modern hairstyles dancing in a traditional way on the occasion of a marriage. The girl wearing a skirt-blouse is carrying on her head a traditional *shibli*, a decorated cane basket that has cultural importance during the marriage ceremony. Music is being played on the electric banjo along with the traditional *tasha*¹⁴. The loud speakers spreading the sounds of music have become indispensable in the celebration of the Adivasis.



Influence of Modern Technology

The prominent loud speakers in the drawing *Influence of Modern Technology* show the increasing space occupied by this modern, notorious technology—even in the life of rural-tribal people—and the replacement of the variety of traditional musical instruments with single modern instruments, thus extinguishing diversity. These drawings have also proved to be a means of visual documentation of the tribal culture, which is facing the threat of extinction due to the pressures of urbanization and so-called modernization.

Means to Understanding Intellectual Qualities

Apart from depicting the world of the Adivasi children, these drawings also have the potential to serve as the means to understand the intellectual qualities of these children. The script of any particular language is a symbolic expression which carries the defined meaning for each symbol commonly understood and shared by a particular cultural group. Drawings are also a basic form of symbolic expression of perceptions, feelings, and thoughts. It has been observed that Adivasi children feel more comfortable expressing their feelings and thoughts through artistic forms as compared to non-tribal societies, which are more text oriented. Howard Gardner (1983) articulated eight criteria for a behavior to be considered an intelligence, one of which is spatial intelligence. Spatial intelligence refers to the ability to interpret and create visual images, pictorial imagination and expression, understanding relationships between images and meanings, and understanding relationships between space and effect. All the drawings exhibit different aspects of visual-spatial intelligence, such as spatial judgement and the ability to visualize. The drawings open avenues to study whether this indicates visual-spatial intelligence among the children who participated in the project.

Interpersonal intelligence is another quality articulated by Howard Gardner. Often interpersonal intelligence is mistaken for extroversion. In a true sense, interpersonal intelligence means the ability to cooperate in order to work as part of a group. These drawings are unique because they are the result of a collective effort. Given the opportunity, children choose to work in a group and are able to work in harmony without any external control or monitoring. Harmonious group work was observed in other activities as well. For example, children worked efficiently in different committees to execute agriculture and health projects. This is also expressed as a collective intelligence, which is defined as shared or group intelligence that emerges from the collaboration and collective efforts of many individuals and appears in consensus decision-making. Less complex societies, like that of the Adivasis, have a greater shared understanding of the world as compared to more complex societies, which is reflected in their ability to work collectively and effectively as a group. It would be interesting to study the quality of interpersonal intelligence among the Adivasi children and whether or not they are more likely to acquire this ability through their socialization process, which emphasizes living as part of a community.

Finally, nature is an integral part of their lives, which can be seen depicted in the drawings. The children are keenly aware of their surroundings and the changes in their environment, even if these shifts are minute. Further analysis of the drawings may throw light on how the children perceive and interpret the existence of natural phenomena in human life. Such a study would offer some leads for understanding naturalistic intelligence among these children.

Pedagogy Design and Cultural Capital of the Adivasi Children

Children enter school with a specific cultural capital, which consists of their language, patterns of communication or behavior, likes and dislikes, food habits, literature in oral or written form, skill sets, traditional knowledge systems, and perspective. However, the schools apply preferential treatment to the cultural capital of children based on the social strata they belong to. In the case of children from the higher strata of society, a continuity or similarity is observed between the culture of their family and the culture at school (Bourdieu 1986).

The schools that are meant for the Adivasi children are influenced by the norms of higher strata of society in their architecture, design, operation, content, pedagogy, and medium of instruction. The distinct skill set of the Adivasi children becomes redundant in this hierarchical, rote-based model of learning (Darak, 2016).

Vygotsky (1934) has acknowledged the role of culture in the intellectual development of a child. By denying the socio-cultural context of the Adivasi children, the schools deny them the opportunity to participate in the education process as constructors of knowledge. This makes the children feel alienated from the school environment and the educational process. Furthermore, it leads to low achievement levels as well as high dropout rates¹⁵ (Census of India, 2011). This, in turn, re-affirms the biased opinion of teachers and the non-tribal community that tribal children are slow learners with low intellectual capabilities and a lack of interest in learning. Educational failure then leads to economic failure. Thus, in a society based on inequality, education reproduces inequality.

Apathy and the neglect of the specific context of the Adivasis are reflected in the policy at the national and state level, too. Though some important laws¹⁶ acknowledging the distinct culture and lifestyle of Adivasi communities have been passed, they are only recent. While these laws recognize the Adivasi communities' rights over natural resources, Adivasi education occupies a very insignificant position in the policy on education and there is also a lack of integrated approaches. In fact, the main objective of the Tribal Ashram schools is to offer the Adivasi children a way out of their family background characterized by poverty, ignorance, superstitions, and addiction, and to create an environment of education, discipline, personal health, and hygiene (Tribal Development Department, 2006). This indicates that policy makers and planners are totally unaware of the positive aspects of the Adivasi culture.

Conclusion

Considering the total detachment of the education system from the distinct cultural context of the Adivasis, the drawings of the Adivasi children have the potential to provide input at the policy level. These drawings should be perceived as an important source for understanding the cultural capital these children bring to their schools, which is the basis on which they construct their own schemas of knowledge. Documents like these drawings should be treated as an insight into the intellectual abilities of the students, which could help the teachers and educators design a pedagogy that better suits the needs of these children. This would provide an opportunity to the Adivasi children to build on their own strengths and explore their niche in this changing world while keeping their cultural identity intact.

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Illustration Credits

Fig. 1. *My Village* by Devsing, Vishal, Mahesh, Ranjit, Mahendra, and Sanjay (Primary & Secondary Ashram School, Joganipada, Nandurbar)

Fig. 2. *Gaw Diwali* by Anudanit Ashram School, Chikhali, Block: Shahada, District: Nandurbar

Fig. 3. *Dhadgaon Market* by Vasanti, Shital, and Kavita (7th std.) (Government Secondary Ashram School, Chulwad, Block: Dhadgaon, District: Nandurbar)

Fig. 4. *City and Village Market* by Bijlal, Sunil, Mahendra, Samuwel, Vijay, and Nitin (Primary & Secondary Ashram School, Joganipada, Nandurbar)

Fig. 5. *Indal* by Dinesh, Dashrath, Indra, Lata, Mamata, Meena, Prakash, Ranjana, and Salim (Government Secondary Ashram School, Chulwad, Block – Dhadgaon, District – Nandurbar)

Fig. 6. *Ritual of Adivasi Marriage* by Government Ashram School, Moramba, Block: Akkalkua, District: Nandurbar

Fig. 7. *Adivasi Dance at Wedding* by Archana, Hina, Sharmila, Shubhangi, and Yotita (Government Secondary Ashram School, Kochara, Block: Shahada, District: Nandurbar)

Fig. 8. *Influence of Technology* by Bharat, Kesarsing, Vasant, Chatulal, Aapsing, Vinod, Ramesh, Ashok, and Jagdish (Private Aided Ashram School, Chikhali, Block: Shahada, District: Nandurbar)

Endnotes

¹ The Adivasis people are tribal groups named “original inhabitants” in South Asia; in English, they would be called “indigenous people.” *Adivāsi* carries the specific meaning of being the original and autochthonous inhabitants of a given region. It was specifically coined for that purpose in the 1930s. Over time, unlike the terms “aborigines” or “tribes,” the word “Adivasi” has developed a connotation of past autonomy disrupted during the British colonial period in India and not yet having been restored. Adivasi make up 8.6 percent of India's population or 104 million, according to the 2011 census. Adivasis are found throughout India, but are primarily based in the mountain and hill areas, away from the fertile plains. The greatest concentration is in the central states of India, notably Madhya Pradesh, Orissa, southern Bihar, the western *ghats* (hills) of Gujarat and Maharashtra and northern Andhra Pradesh; where over 85 percent of the Tribal population is to be found. Officially they are termed “Scheduled Tribes” and a total of 645 tribes are recognized by the Constitution of the Indian Republic. While in Maharashtra there are 47 scheduled tribes (the Scheduled Castes and Scheduled Tribes Order [Amendment] Act, 1976).

² A literary phrase, which means “friend in education.” The first phase of the project, called Shikshan-Mitra, was implemented by BAIF Development Research Foundation in forty-eight Tribal Residential Schools in Nandurbar, a northern district of Maharashtra, a state in western India. The project aimed to make the education system more relevant to the life of Adivasi students by incorporating the relevant knowledge and skills of the Adivasi communities and interlinking the state syllabus with the life relevant program content. Textbook content was integrated with regular activities of the children such as agricultural, health science, and civics activities.

³ A piece of card paper that includes drawings and different genres of writing on a chosen theme and which is displayed on a wall for reading.

⁴ Adivasi community in the southwest area of the Gujarat State in India.

⁵ A particular type of drawing that is drawn collectively by men from Rathwa community on special occasions.

⁶ A range of mountains on the northern border of Maharashtra. The literal meaning of Satpuda is “seven ranges of mountain.”

⁷ A government program; its name means “education for all.”

⁸ A round platform around a tree. It is commonly used in villages in Maharashtra for meeting and chatting.

⁹ A festival that is celebrated collectively by the entire village.

¹⁰ A sweet or savory preparation which is consumed by chewing or sucking and which normally causes mild intoxication

¹¹ A block is a geographical unit under a district

¹² A ritual of worship

¹³ A musical instrument

¹⁴ A traditional percussion instrument used for producing a rhythmic sound.

¹⁵ The dropout rate at the primary level is 35.6 percent for tribal students and 27 percent overall. The upper primary dropout rate is 55 percent for tribal students and 40.6 percent overall. At the secondary level the dropout rate is 71 percent for tribal students and 49 percent overall (Census of India 2011).

¹⁶ Specifically, the *Panchayat* Extension to Scheduled Area (PESA) Act (1996) and the Forest Rights Act (2006)



Volume: 3
Issue: 1
Pg 30-52

Dancing Together: The Lakota Sun Dance and Ethical Intercultural Exchange

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Reflecting upon my twenty years of participation in several Lakota Sun Dance ceremony communities, this article explores ethical questions that arise from non-Native people practicing traditional Native American ceremonies, especially the Lakota Sun Dance. Through personal stories of lessons learned attending twenty Lakota Sun Dances, being taught for many years to sing ceremonial songs by a fluent Lakota singer/elder, and a historical overview of the Sun Dance, I discuss paths toward mutually enhancing intercultural communication based on respect, shared sacrifice, generosity, integrity, and the cultivation of long-term thinking for the well-being of people and the planet, now, and for generations to come.

Keywords: Native American Sun Dance; Lakota Traditions; Intercultural Communication; Ceremony; Ethics

In the book *Research Is Ceremony* (2008), Cree scholar Shawn Wilson grapples with the challenges of conducting and articulating scholarly work that employs indigenous research methods in ways that are guided by, and in service to, the concerns of particular indigenous communities that have experienced Western scientific research as invasive, colonial, and lacking respect or understanding of indigenous ways of knowing. Wilson also discusses the struggles indigenous scholars face in regards to having their work taken seriously in the academy. His work primarily focuses on indigenous scholars in Canada and Australia, but many of his insights are relevant to other indigenous scholars and non-indigenous scholars interested in these conversations. Additionally, he discusses how Western scientific approaches clash with indigenous ones, stating:

There are several problems with the dominant scientific approach to Indigenous research. One of the most obvious is that researchers, no matter how objective they claim their methods and themselves to be, do bring with them their own set of biases. At the very least the choice of research topic and methodology...In addition, this approach focuses on problems, and often imposes outside solutions, rather than appreciating and expanding upon the resources available within Indigenous communities. (Wilson 2008)

Wilson adopts a novel writing style to address these issues in a way that maintains the integrity of indigenous research methods while also framing his work using elements of the Western scientific research paradigm to both discuss issues of concern to indigenous researchers and to engage in scholarly dialogue with others in the academy. He uses two different fonts to indicate two voices. One voice, in which the author addresses his three sons, builds a relationship with the reader by sharing personal background and motivations for his current work in an effort to create the appropriate, relational context for his subsequent discussion of indigenous research methods. He discusses his personal voice directed toward his children, saying:

Addressing parts of the book to Julius, Max and Falco became a device for me to try to provide both context and definition. Instead of writing directly to readers, which is difficult without knowing their culture and context, I chose to write to my children. I further develop the relationships I have with the ideas through my relationship with my sons. I hope this literary tool allows you to develop your own relationships both with me and with the [ideas] in this book. (Wilson 2008)

Wilson's other voice is more academic and addresses how researchers can develop paradigms, agendas, methodologies, and methods that serve indigenous communities and shed the negative consequences of dominant research paradigms.

Although my particular positionality and interests are not identical to Wilson's, I respectfully borrow from his style of writing in *Research Is Ceremony* to tell a story about and reflect upon my twenty years of attending Lakota Sun Dances. Additionally, I discuss some experiences from a decade I spent learning Lakota singing from a Sicangu Lakota elder as well as a vision quest ceremony (*hanbleceya*) I undertook in a traditional manner with the direction of a Lakota medicine man. For a large portion of the past twenty years my involvement with three Lakota Sun Dance communities in California and the Pacific Northwest has been as a participant, not specifically as a researcher. My research began first when I was an MA student studying philosophy and religion, then continued as a doctoral student in education. In these roles, I have wanted to understand how non-Native people can come to respectfully learn from and dialogue with Native traditions, and, more specifically, the Lakota Sun Dance. Wilson's approach informs my writing style in this article. Following his example, and the feedback from two anonymous reviewers, I have included a more personal style in the form of a letter to my Native American great-great grandmother from Iowa interspersed with an academic approach. My use of two different font styles (following Wilson) indicates two different voices, each trying to find an appropriate mode for intercultural reflection. My intention is to help you, the reader, understand my motivations and positionality as a gay-male, half-Irish, North American native to California who has been deeply impacted by Lakota traditions.

I do not claim that I am speaking from a Native American perspective or speaking for Native people by discussing my personal and scholarly interests in the Lakota Sun Dance and how I came to learn that my great-great grandmother was Native American. I try to be upfront about my interests, who I am, and what I have learned so far. My writing is an attempt to respectfully incorporate key insights from Wilson's work, such as establishing and nurturing appropriate relationships that create context for shared work and research. Despite reservations about commenting on the Lakota Sun Dance, I believe the teachings Lakota and other American Indian people have shared with me are important to share with others. I am grateful for the generosity of Lakota and other Native American people that have allowed me to participate in their

ceremonies. Although I am aware of, and am not completely immune to, the pitfalls of a non-indigenous researcher discussing indigenous ways, I have genuinely attempted to find appropriate modes of relationship and communication. My goal is to share with non-Native people some thoughts about what I have learned from the Lakota tradition so that they might have a better sense of how to approach intercultural communication in a good way. I also hope that indigenous people and scholars can find something worth discussing or engaging in after reading this article. It is not my intention to tell Lakota or other American Indian people how to interpret their traditions or recommend anything for their communities. I do seek to become a better ally to my American Indian relatives, friends, and teachers. I hope my deep respect for Lakota and Native traditions will be recognized, along with my concern for our world today and for the future generations that will inherit our common home. I offer this reflection in that spirit.

Generations

Dear Grandmother,

This is your great-great grandson, David Ronan Hallowell. Your grandson, Cecil Robert Hallowell Sr., was my grandfather. Your great-grandson, Cecil Robert Hallowell Jr., is my father. I didn't find out about you until my dad died and your great-granddaughter Ann (my aunt) showed me a picture of you with the family in Iowa from the late 1800s. I asked her who the dark-skinned, Native American woman was amongst all of those white people. She told me that was you, but she didn't know your name. I wonder what your name is and what tribe you are from? What language did your tribe speak? How did you end up with the McChesney's and Hallowell's? Are we really related by blood, or is there another story? Was your husband (my great-great grandfather) a good man? Were you forced to marry? What was life like for you?

Grandmother, I know you cannot answer these questions for me right now. Would it be okay if I told you about my life and how I came to remember you? Let me tell you about our relatives and my parents. Their encouragement helped me find you.

Your grandson, Cecil Sr., died before I was born. I didn't know much about him except that he worked for the railroad and travelled a lot. Your great-grandson, Cecil Jr., was born in 1919 in Omaha, Nebraska. He was ten years old when the Great Depression began and his family home had just burned to the ground due to an electrical accident. This made an already difficult situation even harder. Dad was a diligent student and received a scholarship to go to college at the University of Nebraska. Shortly after starting in 1938, he was diagnosed with type-1 diabetes at the age of nineteen. Insulin had only become widely available in 1923; before then, diabetes was a death sentence. Fortunately, he had access to insulin but the disease still brought many challenges, especially insulin reactions that made him disoriented and sometimes lose consciousness. The onset of his diabetes was the beginning of a lifetime of managing the illness and had a profound impact on his life.

After graduating from college in 1941, Dad moved to Santa Monica, California and worked at Douglass Aircraft as part of the war effort, since he was ineligible for military service. A little over a year after moving to Santa Monica, he contracted tuberculosis from a roommate. He spent the next three years in a sanitarium in the San Fernando Valley. Diabetes, tuberculosis, and isolation were a deep blow to a bright young man in his twenties. Dad rarely ever spoke of this time. If our mother hadn't told us, my sister,

brother, and I may not have ever known. Only in the last year of his life (in his mid-80s) did he share with me how hard it had been to see many of his friends at the sanitarium die. After overcoming tuberculosis toward the end of World War II, Dad struggled to get his life back together. He found it hard to secure employment and manage his diabetes. Eventually, he joined a start-up engineering firm. The company never really got off the ground despite its successes, like developing one of the first heart-lung machines. Eventually he found another career as an accountant after marrying Mom in 1962. My mother, Monica Lawless Kearns Hallowell, was attracted to Dad because of their shared spirituality. He was a humble man with a good-hearted soul. You would have been proud of him, Grandmother.

Mom was fourteen years younger than Dad and had grown up in Ireland until the 1950s. She was one of seven children and her father had fought in the Irish War of Independence to end centuries of British colonization and oppression. Her dad died when she was a young adult so she stayed at home to help her mother until she was twenty-eight, when she decided to immigrate to the United States. Although she was very close with her family, she felt that there wasn't much opportunity for her in Ireland. She was the only one from her family to ever move to the United States. When she arrived in California, she connected with an Irish immigrant community. We stayed connected with this community over the years, especially because of my sister's Irish dancing. I'm grateful to have had a connection with my Irish roots in Southern California and to have been able to build relationships with my Irish relatives during numerous trips to Ireland and England.

Dad always said that Mom's love was his greatest spiritual teacher. She gave him the strength to take better care of his health and become a father at the age of forty-six. Mom grew up Roman Catholic and practiced that throughout her life. Overall she was not dogmatic and was interested in other religions and spirituality more broadly. Mom was a very loving person. Her love came from a deep spiritual place and she shared that with us. Mom lost her first baby and had complications with both my sister and me. Despite some trauma from these experiences, she loved being a mother and life was pretty good until depression and a back surgery disabled her during my teenage years. The next fifteen years of her life, until she died at age seventy, were difficult. After the long recovery from back surgery, she was diagnosed with a kidney disease that eventually led to dialysis and, ultimately, her death.

Mom and Dad were simple people in many ways and as white, Euro-Americans they did not have to deal with racial discrimination. They both had experienced economic hardships when they were young, which impacted them throughout their lives. However, with hard work, some luck, and the advantages of being white, our family enjoyed many of the benefits of middle class life. Despite these blessings, my parents' illnesses that stretched for over fifteen years brought much heartache to our family. This period coincided with my teen and young adult years when I was trying to understand myself as a gay person with a deep sense of spirituality that seemed at odds with the dominant culture. My parents provided a solid foundation for my interest in spirituality through their unconditional love, their effort to live by the Golden Rule, and their non-dogmatic approach to religion. As my spiritual life intensified in my twenties, I sought to understand how different cultures and religions viewed the meaning of life. At the same time, I grappled with what I perceived to be serious social problems in the United States. These interests, and my university studies, led me to study Native American history and eventually to learn about the Lakota Sun Dance through attending multiple ceremonies.

Early on in this journey, several teachers emphasized that I should learn deeply about my own family and cultural traditions in addition to learning about the Lakota Sun Dance ways. I continually work to expand self-knowledge and be authentic. I want to be the best ally I can with the Native people I know, and will come to know. Grandmother, I would not have learned of you if I had not pursued these studies. We come from different times and cultures, but I wonder what it would be like if we could talk around the fire at a Sun Dance? We could sing songs together and pray in the arbor. You could tell me what life was like on the plains when you were a child, and when your ancestors lived there before the white people came. Have you ever heard a song I sang when I thought of you? I've prayed for your guidance before, and for the guidance of all of the grandmothers and Grandmother Earth. I pray again for that guidance, great-great-Grandmother.

Lenses, Legitimacy, and Methodology

When I began to study and participate in Lakota ceremonial traditions two decades ago I was a student pursuing an MA in philosophy and religion. My interest in Native American ways was both scholarly and personal. As I immersed myself in learning about Native cultures during a year of thesis research, I wrestled with the difficult history of colonialism, genocide, and hegemony that has proven so deadly and damaging to the Native people. I confronted ethical questions about the appropriate methods with which to conduct my study. Traditional ethnography and other anthropological approaches had significant baggage and associations with colonial forms of scholarship that often studied Native people as “others,” with little effort by scholars to come to understand Native people on their own terms and not predominantly through the lenses of Western, academic paradigms (Battiste 2008; M. Gergen and K. Gergen 2000). Tewa professor, Gregory Cajete (2000) addressed this issue, stating:

In the past five hundred years of contact with Western culture, Native traditions have been viewed and expressed largely through the lens of Western thought, language, and perception. The Western lens reflects all other cultural traditions through filters of the modern view of the world. Yet, in order to understand Native cultures one must be able to see through their lenses and hear their stories in their voice and through their experience. (4)

My methodological approach in writing my thesis and this article was more informal and is based on extensive observation and participation, not on extensive note taking, in an attempt to participate in the Sun Dance on its own terms and through the lens of an indigenous worldview, to the extent that I am able. Later, after much contemplation, I would write about the experience. Elders dissuaded me from reading, recording, or taking notes during a Sun Dance so as to remain supremely present to the sacred ceremony at hand. I have written about my experience in a Western, academic format while reflecting on the ethical issues involved in this process in an attempt to find a bridge between Native and non-Native cultures. At each Sun Dance I worked in some capacity by tending fires, singing, providing security, or washing dishes. Staying present, contributing to the community, and closely observing elders and the activities of the ceremony, while trying to bracket my Western analytical frames, even if imperfectly, was my attempt to respectfully interact with the Lakota tradition.

After the first Sun Dance I attended in 1996, I spoke with the Lakota medicine man and his wife who led the dance to ask their permission to continue my studies in their community. Before submitting my thesis to my committee, I asked them to read and critique the draft. Today, I continue to receive counsel from the medicine man's wife, even after his death. I also consulted another highly respected Native elder and

his wife from this community for guidance throughout the process. Building authentic relationships and becoming part of a community was an important aspect of respectfully learning about Lakota ways. Fortunately, in addition to my core Sun Dance community in the Pacific Northwest, I was able to join a small circle in the Bay Area led by a native speaking Lakota elder singer and his wife. I sought their advice throughout my original research process and continued to learn Lakota ways and singing by attending a circle once a week for five years and then less frequently for another five years.

For approximately ten years after my initial thesis research I continued as a participant in the Sun Dance ways but did not write about or approach the Sun Dance from an academic perspective. I did occasionally share Lakota songs with my high school students in the ways that my elders had taught me. After my hiatus from thinking about the Sun Dance in academic terms, a colleague asked if I would write about my experiences and recent thoughts on intercultural challenges and opportunities that have emerged with the on-going expansion of the Sun Dance in the twenty-first century (Hallowell 2010).

Sacred Journey

Dear Grandmother,

For a long time I was not quite sure why I had taken such an interest in Lakota ways. I knew that Dad had been deeply affected by the landscape of Nebraska, and that the Lakota had inhabited these plains. It wasn't until graduate school, at the age of twenty-three, that I began to seek knowledge about American Indian traditions. Several sweat lodges had originally introduced me to American Indian ceremony. A very old Arapaho elder conducted one of the first sweat lodges I attended. His ceremony was one of the most powerful I have experienced. This glimpse into Native wisdom, and my subsequent introduction to the Sun Dance in 1996, set off a two-decade journey of transcultural exploration and an attempt at holistic self-understanding.

In the winter and spring of 1997 I prepared for my second summer of Lakota Sun Dances as part of my master's thesis research. During the previous nine months, I had the opportunity to sit with a small circle led by an elder Lakota singer and his wife. I learned many songs and observed the relational dynamics embedded in the Lakota ways. That summer, I spent six weeks on the road, attending Sun Dances in Washington, Oregon, and South Dakota. I was particularly looking forward to the Dance in South Dakota, since it took place on the Rosebud Sicangu Lakota reservation where my singing teacher grew up.

The drive from Oakland to South Dakota took me through a range of landscapes and feelings. After traveling alone for days through deserts, basins, mountains, badlands, and prairies, I felt great anticipation as I approached my destination. Located in southwestern South Dakota, Rosebud borders the Pine Ridge Oglala Lakota reservation. Shortly after arriving at the Sun Dance, I entered a sweat lodge ceremony where I was the only non-Indian person. I felt honored to attend this ceremony and sweat with Native people. In fact, it was when I expressed this gratitude that I had one of my most humbling experiences thus far at a ceremony. During the sweat, men in the circle offered brief reflections. After I said a few words, a Lakota man spoke railing on whites that come to ceremonies and steal Native ways for their own self-interest. He did not speak to me directly, but it felt like his words were aimed my way. This man spoke of the atrocities his people have suffered at the hands of the United States government and a racist mainstream society. I heard the pain, bitterness, and resentment in his voice. For a moment, I

felt guilt and shame knowing that, indeed, my culture, and quite likely some of my own ancestors, had oppressed these Native people whose ceremonies and cultures I admire. Though I felt confronted, ultimately I was grateful to learn more about the culture and history of the Lakota since so many Lakota people have shared such deep teachings with me. The rest of the Sun Dance was an incredible experience. I was friendly, respectful, and helpful and, in return, many Lakota were kind to me.

Grandmother, I learned at ceremony that I love to sing. The Lakota songs are beautiful and sacred. When we sit around the drum and sing we try to be of one mind and heart. Whether we're in a sweat or at a dance, we sing and drum to support each other's prayers and visions. I'm so grateful to be part of the Circle, they really support me and we all love the songs (olowan). Once a month we would sweat together and every summer we attended a Sun Dance. The singing and drumming opened me up in such profound ways. After two years of attending the Sun Dances, I went on the hill "to cry for a vision" (hanbleceya). In English it's called a vision quest.

I went on the hill in Oregon about an hour from Uncle Bill and Aunt Donna's ranch. Uncle John taught me hanbleceya songs and also provided encouragement. I learned so much on the hill, Grandmother. For three days and three nights, with no food or water, wrapped only in a blanket, I prayed in my altar with the Sacred Pipe (chanunpa). At dawn I sang four directions songs and prayed for confidence, respect, encouragement, and patience. I cried for Mom and the pain she had suffered from being ill. I prayed for her healing. She spoke to me in my vision, smiling and healthy, and told me to take heart. "You're a good son, David," she said, "try not to take yourself so seriously, you're okay." When I prayed to my grandmothers on the hill I did not know that you were one of them, great-great Grandmother. Maybe you heard me?

Lakota Sun Dance: Background and History

The Lakota Sun Dance is part of the Lakota Sacred Pipe (*chanunpa*) tradition that includes the vision quest along with other ceremonies. The Lakota are part of a larger nation often referred to as the Sioux (consisting of two other linguistic groups, the Dakota and Nakota). Sioux is a name given to them by their rival neighbors, the Ojibwe. Seven Fireplaces (*Oceti Sakowin*) is the name more commonly used by the Lakota, Dakota, and Nakota to describe themselves collectively. From the mid-eighteenth to the mid-nineteenth centuries, the Sioux were a dominant force in the middle part of North America with territory ranging from the woodlands of Minnesota to the Big Horn Mountains of Wyoming (Lycett 2014). The conquest and settling of the Sioux on reservations in the late 1800s, and the U.S. government's subsequent attempts to stamp out Indian culture, threatened the survival of the Sacred Pipe tradition and the Sun Dance. Despite colonization and extreme hardship, Sioux traditions persisted through the tenacity of small, isolated, extended families. During the second half of the twentieth century to the present, the Sacred Pipe tradition has seen a remarkable renaissance in spite of on-going difficulties facing Sioux culture. Although the Lakota, Nakota, and Dakota (collectively the Sioux) share many of the same traditions, the Lakota (who currently have reservations in North and South Dakota) have been the most prominent group in the renaissance and spread of the Sacred Pipe and Sun Dance.

From my understanding, in Lakota culture the *chanunpa* is a cosmic and holographic embodiment of the sacred teachings given by the legendary White Buffalo Calf Woman (*Tatanka Cicala Skan Wakan Wiyon* or also referred to as *Pte San Wi*). The version *Tatanka Cicala Skan Wakan Wiyon* was used by my Rosebud Lakota elder who taught me to sing in Lakota. These teachings were given to the Lakota people

in ancient times so that they could learn to live in a sacred manner. Joining the bowl and stem of the *chanunpa* in ceremony indicates the merging and harmonizing of male and female energies and spiritual forces of nature. The Sacred Pipe tradition emphasizes the deep interconnectedness of humans with the “more-than-human” (Abram 1996) world, while also providing instructions on how to create healthy relationships with one’s family, tribe, and surrounding environment (Black Elk and Epes-Brown 2003; White Hat and Cunningham 2012). Although the Sun Dance is the most dramatic and comprehensive ceremony of the Lakota, its performance is only part of the larger Sacred Pipe tradition. Lakota holy men and women over the generations have elaborated on the original instructions that came with the *chanunpa* through the practice of traditional life and ceremonies. Core spiritual teachings from the tradition remain intact across the generations, while elders and lineage holders of the tradition adapt certain aspects to accommodate shifting historical and cultural circumstances (Hallowell 2010; Neale 2011).

The “Classic” Sun Dance

During the 1700s the Sun Dance emerged as the major religious ceremony not only for the Lakota, but for approximately twenty other plains tribes including the following: Cheyenne, Arapaho, Gros Ventre, Blackfeet, Crow, Shoshoni, Ponca, Sarsi, Arikara, Hidatsa, Assiniboine, Plains Cree, Plains Ojibwe, Blood, Piegan, Ute, Kutenai, and Kiowa. Other tribes such as the Mandan, Omaha, and Osage performed ceremonies that resembled the Sun Dance (Spier 1917, 459). Scholars often call this early, pre-conquest period the Classic Lakota Sun Dance (Walker, DeMallie, Jahner 1980; Walker 1917)

The Sun Dance was held for various reasons, like to achieve success in hunting and war, and to fulfill vows made in a time of distress. Preparations for the dance were initiated by a medicine man or, in some cases, a man or a woman who had been instructed through a dream or other circumstances to do so. Sun Dances usually took place around the time of the full moon in June or July and often coincided with a buffalo hunt. Tribe members who had been dispersed during winter and spring seasons came from tribal territories to visit with friends and relatives and to participate in the important religious activities of the tribe. The camp was assembled for close to two weeks, during which time the Sun Dance grounds were prepared by building a circular ceremonial lodge (arbor) where the dancing took place around a sacred cottonwood tree that had been selected by the Sun Dance intercessor (i.e., the medicine man or chief who served as the spiritual director for the ceremony). The time leading up to the dance included extensive socializing and preparatory ceremonies, such as sweat lodges.

The Classic Sun Dance itself lasted three to four days. Ceremonial singers and drummers provided the traditional songs for the rounds of dancing that took place from sunrise to sunset. During this time, dancers refrained from food or water while dancing in place, in a circle, around the cottonwood tree. Other austerities, such as piercing the flesh, served a sacrificial purpose with the hopes that diligent performance of the ceremony would renew their communities and ways of life. Enemy tribes commonly adhered to a truce during the Sun Dance and were even known to be occasional observers and participants at the dance of an enemy (E. Deloria 1988).

The Contemporary Sun Dance

The U.S. government banned Sun Dances in 1881 but they never completely died out, even though traditional culture was rapidly deteriorating under the pressure of reservation poverty, despair, and missionization. The Sun Dance continued underground, led by a small group of people who would not

relinquish their traditions even in the face of oppression. During this time, many Native children were forcibly sent to boarding schools where they were often beaten if they spoke their own language or practiced their own religion; this lasted well into the 1960s. A Sun Dance elder who was married to the leader of a Lakota Sun Dance in the Pacific Northwest explained the impact of boarding schools in an email message to the author on October 26, 2011, expressing that:

Forced attendance of ... Indian children [at] those ‘civilized’ schools—determined to de-Indianize them—caused devastating harm: almost an entire generation missed out on family/parenting experience and training. A literal erosion of the family unit and values. This was a major cause of alcohol, drug and child abuse on the reservations. (Anonymous)

The U.S. government’s intent to conquer and assimilate American Indians included outlawing or seriously restricting religious and ceremonial practices. Progress was not made legally until the 1978 American Indian Religious Freedom Act and its subsequent update in 1994 that addressed issues surrounding peyote-using traditions.

Beginning in the 1950s, the Lakota Sun Dance started to re-emerge more visibly, though still underground for the most part. Several Lakota medicine men continued to practice their shamanic traditions and made critical contributions to the preservation of traditional ways. The most well-known spiritual leader, Frank Fools Crow, is acknowledged as a crucial figure in the resurgence of the Sun Dance, and many dances today claim some connection to him (Mails 1975; Fools Crow and Mails 1990). He is thought to have been born around 1890 and died in 1989. Along with men close to his age, such as Bill Eagle Feathers, Frank Arrowsight, Robert Stead, Pete Catches, John Fire Lame Deer, and others, he began to regularly perform the traditional Sun Dance in the 1960s. Following this time, a younger generation of Lakota medicine men, such as Leonard Crow Dog and Godfrey Chips, began Sun Dances in the 1970s. In the late 1970s, Brave Buffalo, Martin High Bear, and Wallace Black Elk brought the Sun Dance off the reservation to various locations in Oregon and Washington. During the 1980s and 1990s, the number of Dances on and off the reservation exploded. This trend continues today, and Sun Dances of other tribal nations have also been renewed.

As in pre-conquest times, dancers (also called pledgers because they “pledged” to undertake the ceremony) who perform the actual dance abstain from food and water, with some rare exceptions, and many undergo various types of piercings and flesh offerings. Today, dances last four days with four days of “purification” that precede the ceremony. During this time, dancers prepare the Sun Dance grounds, participate in sweat lodges, and conduct other ceremonial preparations. One such preparation involves making tobacco tie prayer offerings that are placed on the ceremonial tree on the fourth day of purification when the sacred cottonwood is felled and planted in the center of the ceremonial arbor. On the day that the cottonwood is brought into the arbor (“tree day”), the ceremonial fire, located in the west directly behind the arbor and the ceremonial altar, is lit and subsequently stoked twenty-four hours a day by a team of fire tenders who also assist the intercessor, head dancers, and other helpers who lead the pledgers through the ceremony. In all of the contemporary Lakota Sun Dances I am familiar with, pledgers commit to perform the dance for four years. This was not necessarily a requirement during the Classic Sun Dance according to James Walker (1917), who served as a physician and amateur anthropologist on the Pine Ridge Lakota reservation from 1896 to 1914. Additionally, pledgers make a number of commitments to various self-disciplines throughout the year so that they will be prepared for each year’s dance. During the Dance the pledgers pray for “the people,” their families, and for the on-

going renewal of life and tradition through various acts. These acts include dancing in place, undergoing piercings, waving eagle feather fans, blowing on eagle bone whistles (for the men), laying hands on the cottonwood tree when instructed to do so by a dance helper, and by processing in and out of the central dance area (*hocoka*) at sunrise, in-between rounds of dancing, and at the end of the day's final round. Once a dancer has fulfilled his or her four-year commitment they may choose to dance in subsequent dances for as many days as they wish.

Non-Native Participation in the Contemporary Lakota Sun Dance

In the early days of the contemporary Sun Dance's revival, members of the political American Indian Movement (AIM) were heavily involved and many resented any attempt by whites to observe the ceremony or actually dance. In 1971, Fools Crow invited the Jesuit priest Paul Steinmetz to participate in a Sun Dance on the Pine Ridge reservation to the consternation of many AIM members (Steinmetz 1990).

When the Sun Dance started to make a real comeback in the late 1960s and the 1970s, it became an avenue for many different Indians to find a way back to their traditional identity that had been shattered by their subjugation and colonization. It is hard to overstate the devastation experienced by Native people since their contact with Europeans (V. Deloria 1969; Stannard 1993; Jennings 1976). Genocide, cultural destruction, poverty, and loss of ancient identity structures that their traditional cultures had provided, have, understandably, led to instances of despair and, at times, bitterness.

The Counter Culture of the 1960s brought with it an interest in Native spirituality among some young whites (at times called hippies). This interest continued in the 1970s, and in the 1980s the burgeoning of New Age ideas brought more non-Native people who wanted to experience Native ceremonies. In the 1990s, the Sun Dance expanded dramatically, with many non-Native people performing the ceremony as dancers, not just attending as observers. Some Native people saw this as the last step of colonization and as a way to assuage white guilt about what white culture had done to Native Americans without any real socio-political sacrifice (P. Deloria 1998). Also, as some whites became exposed to traditional Native shamanic practices, they took bits and pieces and began to promulgate various forms of neo-shamanism and personal development workshops, some of which lacked integrity.

A 2009 tragedy in Sedona, Arizona, involving several deaths and serious injuries at a "sweat lodge" run by the now disgraced workshop leader James Arthur Ray, serves as an extreme example of how the allure of Native ceremonies can be exploited in very harmful ways. Ray led "Spiritual Warrior" retreats with a \$10,000 per person price tag that offered people a route to boundless personal development and wealth if they had the meddle to endure a series of extreme experiences over several days that included fasting in the desert, a seven hour "Samurai" game, and a sweat lodge that served as a capstone event at the end of the retreat. Although Ray was not claiming to be doing a specifically Native American sweat lodge, he had claimed to have studied with various Native people and had obviously based his sweat lodge on the Native American practice. Ray's *mélange* of activities, pilfered from other cultures, illustrates Brunk and Young's (2009) definition of appropriation, "[A]ppropriation... occurs when outsiders from one culture ... adopt religious beliefs, rituals or ceremonial practices from an Indigenous culture, often, but not always, over the protests of the insiders, in this case members of an Indigenous culture."

Ray's blatant appropriation and exploitation took bits and pieces from different cultural practices that were useful for him to accrue financial gain. He showed no understanding of any Native tradition. Ray's sweat lodges were conducted with arrogance and little regard for the safety of his participants. He used coercive tactics to pressure people to stay in his inordinately hot and long lodges (Ortega 2011), a practice generally frowned upon in traditional sweat lodges. His hubris eventually led to the death of three people, and Ray was convicted of negligent homicide. Some Native people argue that cases like this, and ones that are less extreme, but still egregious, warrant total exclusion of non-Native people from all Native ceremonies. Despite these unfortunate examples, not all non-Native participation in Native or Native-influenced ceremonies can be lumped together with people like Ray.

The Circle: Sitting, Singing, Praying

Grandmother,

Before going to a ceremony, I never knew a Native American person. Ceremonies gave me a place to meet people from many tribes and the opportunity for me to be myself. I'm grateful for the Circle we had in the Bay Area because we got to know each other deeply over many years. Every week we learned Lakota songs, listened to our elders' teachings, and prayed in a way that was authentic for each of us. I remember once when I felt really bad and everyone sang for me for a long time to help me feel better. The Circle supported me through the difficult period when my parents were really sick. When the time came to help Mom and Dad crossover, my relatives were there to tell me how to care for someone as they are dying. Life scattered us to the directions but we do our best to stay connected. The wholesome family values I learned from Mom and Dad helped me appreciate Lakota perspectives on what it means to be a relative. Grandmother, I know some non-Indian people who get involved in Lakota ways can be selfish and disrespectful. I want you to know that I have always tried to learn in a good and respectful way.

A Native American Critique of Intercultural Sharing

Interest in Native ways by non-Native people has caused severe criticism in many traditional Native circles, with non-Natives and Native leaders who share practices with non-Natives being accused of appropriating and debasing traditional ceremonial ways and threatening the viability of Native cultures (P. Deloria 1998; Garrouette 2003; Stover 2001; Townsend 2003). Specious appropriation by Ray and others is deplorable (Castaneda 1968; De Mille 1976). However sincere, intercultural sharing that does not succumb to harmful appropriation can take place. Deep and critical consideration of ethical issues and standards of behavior need to be constantly revisited by both non-Native and Native participants in traditional, cross-cultural, and neo-shamanic ceremonial practices.

Many perspectives exist on what is and is not appropriation. This can cause confusion for someone trying to ethically participate in a Native tradition. For example, let us suppose that a Native leader from one extended ceremonial family believes that, under certain circumstances and with proper preparation, it is permissible to let non-Native people be pledgers at a Sun Dance. However, this leader strongly believes that even when a non-Native person has completed their four-year commitment to dance, they should not be allowed to lead sweat lodge ceremonies for others under any circumstances. Now, on the other hand, there is a Native leader from another extended family who believes that, if a person has finished their Sun Dance commitment and they have apprenticed with a sweat lodge leader who has received an altar (meaning they trained with someone with the authority to teach the tradition), then it is okay for the Sun

Dancer to lead sweat lodges for others. From the perspective of the first Native leader, if the Sun Dancer conducts sweat lodge ceremonies, that could be considered a form of appropriation, whereas the second Native leader thinks that it is perfectly legitimate for the Sun Dancer to lead sweats as long as they maintain high ethical standards and follow the instructions of their elders. From my understanding, in the decentralized way that Lakota tradition exists, there is no way to come to an ultimate determination about which perspective is correct. Even though there are recognized leaders in the Lakota tradition, such as Arvol Lookinghorse (the Keeper of the Sacred Pipe), no one person holds the authority to impose doctrinal uniformity on the wide range of extended families and communities that practice Lakota traditions (White Hat and Cunningham 2012). Linda Neale discusses these differences in *The Power of Ceremony: Restoring the Sacred in Our Selves, Our Families, Our Communities*, by quoting Laverdure:

Each medicine man has a variation in the Sun Dance. Some things are universal: the four directions, the tree, and the four days, and prayer with a universal pipe. But there's different things, like the rounds and the songs and the altar. They're all according to that medicine man's vision. That's the way it always was...it doesn't mean the other person's wrong. (Neale 2011)

Although guidance should be sought from a variety of sources, especially elders, at some point, after a thorough examination of one's intentions and behavior, one must trust one's own conscience and be willing to continually work to avoid negative types of appropriation. Learning about the history of cross-cultural interaction can serve as a foundation for understanding the complex nature of appropriation.

New Age Appropriation of Native Traditions

The New Age movement is an important, historical instance of cross-cultural interaction that has been criticized by many Native leaders because of its tendency to appropriate Native cultures in harmful ways. The New Age movement is a decentralized set of widely varying ideas and practices generally acknowledged to have emerged in the 1960s, with antecedents before then. The New Age movement ranges from generally benign ideas about the oneness of humanity, human potential, and spirituality in general, to a variety of fringe ideas such as UFOs, channeling, and a hodge-podge of flaky and commercialized metaphysical ideas (Aldred 2000). Certain sectors of the New Age movement have appropriated various Native traditions to the chagrin of many Native people who claim they are bastardizing and stealing their culture while only adding to the history of colonization. Some of these syncretic attempts do take Native traditions and appropriate them for unethical, financial gain and personal aggrandizement.

Although it is difficult to speak of the New Age movement as one phenomenon, it is important to critically identify problems with New Age appropriations of Native American traditions. One particularly harsh critic, Philip Deloria, is the son of the famous Lakota scholar Vine Deloria Jr.¹ In his book, *Playing Indian* (1998), he addresses the complexities of Indian and white identity construction and the colonial power dynamics that have tainted Indian/white relations since first contact. He uses the New Age movement as an example of the ironic appropriation of "Indianness" by whites, and how it serves various functions for white identity conflicts and the paradoxical history of whites' relationship with Native

Americans. This history has included romanticizing Indian “aboriginality,” while at the same time demonizing, conquering, and attempting to exterminate Indians. He goes on to criticize the New Age movement for its individually oriented pursuit of “spiritual enlightenment” that tends to ignore social and political power struggles, stating:

The tendency of New Age devotees to find in Indianness personal solutions to the question of living the good life meant that Indian Others were imagined in almost exclusively positive terms—communitarian, environmentally wise, spiritually insightful. This happy multiculturalism blunted the edge of earlier calls for social change by focusing on pleasant cultural exchanges that erased the complex histories of Indians and others. (P. Deloria 1998)

Deloria makes an important point. Non-Native people need to seriously consider such criticism when interacting with Native traditions. I have seen instances that Deloria describes, but I have also witnessed and participated in on-going ceremonial relationship with Natives and non-Natives where truly meaningful community has developed and thorny, political issues have been considered and tentatively worked through. The political and cultural conflicts have not always been completely resolved, but they have been reconciled to a degree that allows for the continuation of the ceremonial community. I believe, on the whole, this supports the preservation of Native ways.

Philip Deloria’s critique often holds true, but there are also examples of intercultural sharing that do not quite fit into the scenarios Deloria describes. In *Playing Indian*, Deloria claims that all of the rejoinders of “multicultural” sharing and positive Indian/white relations are empty, ironic, and essentially harmful to Native people. “The presence of multicultural images and statements . . . let Indian players claim a sincere, but ultimately fruitless, political sympathy with native people. Indeed, the New Age’s greatest intellectual temptation lies in the wistful fallacy that one can engage in social struggle by working on oneself” (ibid.).

Despite the accuracy of Philip Deloria’s critique in many instances, not all people or communities who interact with and participate in Indian ceremonies and communities can fairly be characterized as “New Agers.” Although the flakiest and appropriating sector of the New Age movement that falls prey to apolitical narcissism deserves to be denounced, we still need to find more nuanced ways to understand the wide range of people who come to interact with Native ways. Deloria’s condemnation of “working on oneself” as a way to engage in social struggle, though sometimes valid, may not necessarily be true in all circumstances. There is a danger in simply using one’s experience of Native ways as a means to serve only personal goals and to evade the social and political implications of one’s actions. However, to say that “working on oneself” is always useless fancy risks throwing the baby out with the bathwater. Spiritual and social transformation takes place in the complex interface between individuals and groups. Individuals that genuinely seek to develop their best human qualities through participation in Native ways can make real contributions to the groups to which they belong. Over years of attending Sun Dances, I have seen people who were able to work on themselves to overcome addictions, traumas, and other problems. In many cases this work was a necessary precursor to being a better contributor to one’s community. The awareness gained through working on oneself and becoming a better human being, in many instances, has also led people I have known, and others, to become more politically engaged with their local Indian communities (Stover 2001; Gustafson 1997).

Identity and “Indianness”

In addition to Philip Deloria’s New Age critique, he further warns of problems that can arise when non-Native people start to see themselves as “Indian.” He goes on to say:

Non-Indians began taking up permanent native identities in order to lay claim to the cultural power of Indianness in the white imagination. Likewise, many native people found empowerment in a white-focused, spiritual mediator’s role, and they acted accordingly. It became difficult to sort out who was whom along the continuum, and the questions of mediators’ Indian identity has been fiercely and frequently contested ever since. (P. Deloria 1998)

Our postmodern diaspora makes the issue of identity particularly vexing and complex. The accelerated blending of cultures worldwide, beginning with the Age of Discovery and followed by modernity, has challenged the ways in which we think about who we are. Clearly there are dangers when non-Native people try to assume an inauthentic Indian identity by trying to be someone they are not and appropriating Native culture in self-serving ways. However, there can be a difference between identifying with certain ideals and practices of a Native culture and trying to claim an Indian identity in a culturally colonizing way. Native people themselves have widely varying views on who exactly is “Indian.”

The situation of people with mixed blood is particularly salient when examining these thorny identity issues because they inhabit a hybrid and liminal position between cultures. Philip Deloria presents a very insightful and personal consideration of these issues in his 2002 article, “Thinking About Self in a Family Way.” He has had a unique journey as a mixed blood scholar from a famous family. Deloria has experienced the irony that can emerge from the confusing landscape of identity politics and cross-cultural interaction. He tells a story about race relations and tensions between Indians and whites that he experienced on a rural school bus when he was a child. His father, Vine Deloria Jr., was a professor at Western Washington University and had recently published the bestseller *Custer Died for Your Sins: An Indian Manifesto* (1969). Deloria writes:

Everything in that world was fine until I got on the bus to middle school. The bus had already picked up the Lummi kids, some of whom rode to the nearby high school. They were tough, well prepared for the conflicts that can take place on a school bus. Indeed, on that particular bus, the racial calculus shifted with each addition and as the bus got nearer to town and school, it turned increasingly white, and the Lummi kids lapsed into silence in the back. On the homeward journey, however, the situation was reversed. Each afternoon, pale students who lived in the reservation borderlands sank into their own studied silence. The Lummis had been radicalized, and when they decided to pick on non-Indian kids, their taunts had recognizable political content. So I suppose I should not have been surprised when Jimmy, the biggest and toughest, pushed my face hard up against the window of the bus one day and screamed, “Custer died for your sins, man!” Jimmy did not know it, but he was forcing a question of identity of which I was only dimly aware. What was a scrawny sixth grader, the near image of his other grandfather—the Swedish one—to do? Should I yell back, “Hey! I know a bunch of stories, my great-uncle went to Haskell Indian School, and my dad made

up your slogan?” Those were the tokens of Indianness I had to offer. They would never serve as adequate currency for Jimmy—and why should they? I knew I would do best to enjoy the scrunched-up view and content myself with the knowledge that I had acquired a particularly rich understanding of irony at an early age. (P. Deloria 2002)

In her book, *Real Indians: Identity and the Survival of Native Americans* (2003), mixed blood Cherokee sociologist Eva Marie Garroutte articulates the challenging position that people of mixed blood have inhabited. “For centuries mixed bloods have bridged the chasm between cultures—bridged it with their bodies, bridged it with their spirits, bridged it with their consciousness, bridged it often whether they were willing or unwilling” (Garroutte 2003). A mixed blood identity brings with it many conflicting demands to negotiate between cultures. Sadly, people of mixed blood may never be fully embraced by either culture.

Garroutte notes that, “Indians have the highest rate of intermarriage of any ethnic group with slightly more than half of all Indian men and women marrying non-Indians” (ibid.). This mixing of Indian blood has deeply affected Indian cultures and continues to be a heavily contested site of identity and tribal politics. The U.S. government and tribes themselves have a variety of ways to determine blood quantum requirements for eligibility as an enrolled tribal member. Garroutte gives an in-depth account of this process in her book. She also considers complex issues of identity and inclusion, or exclusion, based on real and/or perceived degree of Indian blood quantum, and less clearly defined ideas of being culturally Indian. Indian views on who is a “real Indian” vary greatly, with one extreme wanting to, as strictly as possible, reserve Indian identity for people who can provide both genealogical and cultural bona fides. On the other end of the spectrum, there are Indian people who believe that mixed bloods and even non-Indian people can legitimately claim a cultural Indian identity if they conform to certain standards of behavior and if they have developed legitimate personal ties with Indian people.

Garroutte shares several stories from her anonymous Indian informants that support the view that non-Indians can develop authentic ties with Indian people by embodying particular aspects of an Indian worldview. An Osage educator, quoted by Garroutte, believes that, “In general, when I say someone is an Indian...I [mean] they’re like me. Not necessarily in appearance but in spirit. They have an ‘Indian Heart.’ Somebody is like me because somebody has taught them like my teachers have taught me on how to live and how to look at other people” (ibid.). Another informant in Garroutte’s book named Joyce J. agrees, saying:

It doesn’t matter how much blood they are or how much this or that, but if they are of the old, of the spiritual way, if their heart is Indian...their *minds* and their thoughts are Indian, then they’re...going to be enveloped in some family, in an Indian family that will *take* them and teach them even more. So I think what...makes an Indian has nothing to do with amount of blood...I think it’s their thinking, their mind, their soul, and their heart. (ibid.)

A Sun Dance elder in an email to myself on October 26, 2011 affirmed this sentiment when she stated, “I was taught [that] this [perspective] is ‘traditional’ thinking” (Anonymous). The quotes from Garroutte’s informants are not meant to serve as a simplistic rationalization for how non-Natives can assume a Native identity. However, they do serve as an example of the complexity of views on Indian identity and how people of mixed blood and non-Native people can come to incorporate aspects of “Indianness” into their identities. Questions of appropriation and interpretations of what a truly authentic Indian or “Indian-

informed” identity is will likely continue to be subjects of contention and debate. Construction of an identity is always dynamic and embedded in historical and cultural circumstances. Since attending Sun Dances and other ceremonies, I have witnessed firsthand how people attempt to come to terms with issues of identity and authenticity. There is a continuum ranging from inappropriate incorporation of “Indianness,” to genuine integration of personal identity with ceremonial and cultural traditions. Elders have taught me that the most important indicator of whether people are appropriately participating in a Native ceremonial or cultural tradition is how they live their life and treat other people. If they are ethical, sincere, and contribute to the healthy functioning of their family and surrounding community, that will be the evidence that they have dealt with issues of cross-cultural sharing and identity construction in a good way. Fools Crow said, “These ceremonies do not belong to Indians alone. They can be done by all who have the right attitude, and who are honest and sincere about their belief in Grandfather and in following his rules... We are keepers of certain areas of knowledge, which we are to share for the good of mankind” (Fools Crow and Mails 1990). He goes on to say in another book, “The survival of the world depends upon our sharing what we have and working together. If we don’t, the whole world will die. First the planet, and next the people. The ones who complain and talk the most about giving away medicine secrets are always those who know least” (Fools Crow and Mails 1991).

Dancing Together

Dear Grandmother,

I want to tell you more about my elders that shared the Sun Dance with me. Uncle Rod is A'kimel O'odham from Arizona. I met him through his wife Linda, whom I met at the first Sun Dance I went to in Washington. Rod was about sixty-five then, now he's in his late eighties. Uncle is pretty quiet, but when he has something to say it's heart-felt and deep. Rod and Linda always welcomed me in their home to sweat and advised me on my thesis. A couple of years ago, Rod and Linda helped me out with an event for a NASA education grant I co-directed. They came to sing and speak with a group of Native students from Chemawa Indian School. Rod had just recently been really sick, but he made the effort to come teach American Indian high school students. He met students from his nation and from neighboring tribes in Arizona and across the West. We had a really great group of Native and non-Native teachers for that retreat. The kids loved singing and drumming, talking about diverse tribal ways, and learning about NASA Earth science. I wish we could have had more than two days. Rod told the students to always keep learning and to cultivate the ability to go beyond currently perceived limitations.

*Rod started Sun Dancing in Oregon in the 1980s. When I met him in the late 1990s, he frequently ran sweat lodge ceremonies for Native and non-Native people. Rod was the first elder I sweat with at the Sun Dance in 1996. On the day before "tree day," the official start of the next phase of the ceremony, many people arrived in camp. At about ten o'clock at night, thirty-five men got into the sweat with Rod for the next three hours. He was quite different in the sweat lodge. His teaching and prayers bore witness to the great suffering he had experienced in his life. He is one of a small number of tribal members fluent in the O'odham language. Although he retained his language, and much of the worldview encapsulated in it, he grew up in a time when the old ways of his people became less and less viable. After a long struggle with alcoholism, he moved to Portland where he became part of the emerging Pacific Northwest Sun Dance phenomenon. In a book Linda wrote called *The Power of Ceremony*, she asked Rod why he invited non-Native people to the sweat lodge. Rod answered:*

I don't invite them, they just come.

Linda: But why don't you turn them away, then?

Rod: Why should I?

Linda: Well, some people would say you shouldn't be teaching white people especially.

Rod: But this isn't mine. I'm just sharing.

Linda: So some people think they own a particular ceremony?

Rod: No one owns anything. Many of the people who promote that concept of ownership of the ceremonies don't use their own language. If they're really into that ownership thing, why do they have to use English? My understanding is that if you really have something that you claim is yours, you won't want to keep it really, out of respect for where it's coming from. So you offer it to the people at large—you offer it to them, what you consider yours. So what happens is they use it to their own level of understanding. Because once you share something it's not yours anymore, whether it's a song, a prayer, a ceremony. My understanding is that we're just all carriers of the teachings and messages. We're only the messengers, not the message. (Neale 2011)

Grandmother, I'm grateful that Uncle Rod offered me the opportunity to sweat at his home and pray at the Sun Dance together. Even though he is an eloquent speaker, he teaches more by example than with words. I really respect that. That's also how Uncle Buck taught.

My friend Matt introduced me to Uncle. They had taught together at the same school in the late 1980s. Uncle was from Rosebud and went to Sun Dances as a kid. His wife told me that his grandparents taught him Lakota ways. He observed, asked questions, and danced in the ceremonies. At ten or eleven years old his grandfathers sponsored his hanbleceya (literally, crying for a vision or crying through the night) (White Hat and Around Him 1983, 27). Aunty told me about his hanbleceya in an email a few years ago, saying:

This is where he had the BIG Vision. The Vision was him sitting on a hill in front of a whole bunch of non-Indians, teaching the Lakota way. The Vision both scared and confused him. About twenty-five years later, after his near-death experience, sobering up and then doing road trips with [a Lakota medicine man and his wife] for a few years, his elders...sent [him] out to finally begin fulfilling this Vision and teaching non-Indians. They felt that if the non-Indian understood more about the Lakota history and spirituality, the non-Indian [might] not be such a pain-in-the-arse AND could possibly become a valuable ally. ("Aunty" Anonymous. October 26, 2011)

I knew Uncle Buck for a little over ten years before he crossed over. I heard him say that when he first began to walk his vision he was dismayed to have to work with non-Indian people and share ceremonies with people whose ancestors had tried to stamp out Native people and cultures. Nonetheless, the vision was so strong that he was compelled to follow it, regardless of his personal feelings. Once he began to teach and share his vision, he returned to "the hill" for hanbleceya many times over the course of fifteen years. During these ceremonies, he received further instructions and medicines related to his original vision.

Uncle faced a lot of criticism from some for sharing with non-Indians, but he kept strong ties with local Indian grandmothers in Washington, several of his Lakota relatives, and with people from many tribes who found a home at the Sun Dance. Uncle was a real character. He had been a Marine sergeant and fought in the Vietnam War. I could tell that he had seen a lot in his life. He could be sort of intimidating and barked at you if you did something wrong. Sometimes he was just teasing, which was his way of saying that he welcomed you to the family. It took me a little while to get that. I really appreciated that Uncle and his family respected gay people. I felt more accepted as a gay person at ceremony than I do in the dominant culture I come from. Being gay, feeling like an outsider, and experiencing discrimination has made it a little bit easier for me to identify with others that have, or currently do, experience marginalization. Uncle brought people together to heal racial and ecological oppression through ceremony, sacrifice, prayer, and working together. That isn't something that happens all at once, but Uncle helped us enter into the process. Just like anyone, he wasn't perfect, but he cared deeply. I miss him.

Future Research

The Sun Dance taught me important lessons about transcultural and intergenerational communication that would be worth exploring further at some point. In future research, I would like to explore how to create new modes of teaching and learning that draw on the wisdom contained in ceremonies like the Lakota Sun Dance. As a graduate student in my twenties, learning about American Indian history, traditions, and cultures eventually led me to teaching. Observing how elders mentored and instructed youths, along with working side-by-side with young people on a variety of tasks to support the ceremony, showed me how to relate to teenagers in ways that continue to guide me in the classroom today. Building respectful, genuine relationships and facilitating wholesome experiences for students is crucial for motivating them to exert the effort needed to learn and find ways to contribute to their communities and world.

Teachers need ongoing opportunities for growth that empower them to meet students where they are. A teacher education program that includes participation in Sun Dances for teacher candidates who plan to work in Native American schools would be one area of future research that could be pursued in partnership with institutions such as Sinte Gleska University and Oglala Lakota College. Both of these schools have Lakota studies, teacher education programs, and educators who bring together Lakota traditions for educational purposes. Future research would support the ongoing work of these institutions and the priorities that Native educators have established for themselves to serve their people. This work could be pursued in a more intertribal context at institutions such as the Haskell Indian Nations University and Northwest Indian College.

Another area of future research would be to explore how western Earth scientists and Native Earth scientists, elders, and educators can learn from each other about how to cultivate sustainable relationships with Earth's life systems. This research would expand on the *Native Earth Ways* program that I directed from 2011 to 2015 as co-investigator of a NASA Earth science education grant titled, "Beautiful Earth: Experiencing and Learning Science in a New Way." The project collaborated with five science centers around the United States to produce an informal education experience for K-16 students that included teachings from Native elders, Native teachers, science center educators, a planetarium show with live music, and hands-on Earth science education workshops led by NASA Earth scientists. *Bella Gaia*, the planetarium show by artist Kenji Williams, took the audience on a tour of the Earth from the perspective

of an astronaut to simulate the “overview effect,” an experience reported by many astronauts when they comprehend the profound interconnectedness and fragility of the Earth while seeing it from space (White 1987). For future research, augmented reality (e.g., Meta or MS Hololens) could be used to create immersive visualizations and holistic learning environments to help facilitate a new kind of transcultural communication aimed at bridging understanding gaps between people of different cultures, worldviews, and mindsets.

At several of the NASA grant events, Native elders and educators shared traditional teachings about healthy human, non-human, and Earth relationships. Future research might explore new ways to provide people opportunities to experience these kinds of healthy and multidimensional relationships. Tewa professor Gregory Cajete (2000) believes that renewing indigenous ways of knowing and Native science can help Native people reconnect with the wisdom of their ancestors, explaining:

[I]f we learn once again to feel, see, hear, smell, and taste the world as our ancestors did, we may remember something truly wonderful about nature in humans. . . This does not mean that we should or even can return to the pre-modern, hunter-gatherer existence of our ancestors, but only that we must carry their perceptual wisdom and way of participation into the twenty-first century, where the environmental challenges we face will require a totally different way of living in nature. (23)

Although it may not be possible for non-Native people to fully encounter this kind of ancestral experience, all people in some sense have an indigenous lineage even if that lineage is fragmented and remote. Developing effective ways for Native and non-Native researchers to enter into each other's world to seek common ground could provide new wisdom to address the profound social and ecological challenges we all now face.

Conclusion

Hau Unci (Dear Grandmother),

I wish I knew your name and how exactly we're related. I know from the picture that we are related as family. Dad was interested in family history but apparently had not seen the photograph of you. I'm grateful Dad sparked my interest in ancestors. Often, at ceremonies, I have pondered my roots and my connection to the land. I guess this led me to you. The Earth and sky speak to me at ceremony and evoke great beauty. As I spent time in rural areas where Sun Dances were held, I realized how much I had missed growing up in a suburban environment without regular access to wilderness. I have always loved landscape, but have mostly been ignorant of its natural rhythms. Unfortunately, the dominant culture I grew up in has caused much damage to American Indian people and the land of North America. I wish more Americans could understand Native Americans' concerns and make an effort to learn about the issues. I think several of the key tensions in United States history need to be continually revisited and grappled with so that we are not naive about pathological elements of our past that persist today.

Grandmother, if you were alive today, what advice would you give the children and their parents? How did you endure hardships? What made you joyful? I'm grateful to Dr. Wilson for giving me the idea to write to you like this. I hope I have honored his work by emulating it. I couldn't address everything he talked about, but I have taken his teachings to heart. Great-great Grandmother, I hope to learn more about you some day. Hetchetu, so it is. Mitakuye o'yasin, all my relations.

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Endnote

¹ My presentation of Deloria's argument in *Playing Indian* does not claim to represent a comprehensive reading of Deloria's perspective. However, the quoted text serves as a starting point for reflections on the problems of intercultural sharing. Considering that the book was published in 1998, I imagine Professor Deloria could have a different way of looking at things now. I hope, someday, to have the opportunity to speak with him in person to discuss his latest thinking since I highly regard his work.



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Field Report: Collecting Data on the Influence of Culture and Indigenous Knowledge on Breast Cancer Among Women in Nigeria

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Culture has been shown to influence health beliefs and health-related behaviors because it influences the type of information women have been exposed to, as well as their resources for interpreting such information. This field report summarizes my approach to understanding how culture influences breast cancer screening behaviors among women seeking care at a local non-profit clinic in Lagos, Nigeria.

Keywords: *Culture; Breast Cancer Screening; Nigeria; Survey Design*

Background

Breast cancer is the most common cancer among African women (Busolo and Woodgate 2014) and is mostly prevalent in young, premenopausal women in Nigeria (Anyanwu 2000; Adesunkanmi et al. 2006; Ihekwa 1992). The biggest cause of breast cancer mortality in this country has been cited as low screening levels, which lead to late-stage diagnosis (Busolo and Woodgate 2014; Anyanwu 2000; Holcombe, Weedon, and Llin 1999). One study found that 80.6 percent of breast cancer patients had been diagnosed in late stages (Adesunkanmi et al. 2006). Over the past fifteen years, knowledge and awareness of breast cancer risk factors, screening methods, and treatments have been studied among different populations in Nigeria. Low levels of breast cancer knowledge have been found in both healthcare workers and the general population. This leads to a decreased likelihood that women will undergo screening, which means that in many cases, symptoms are ignored until late stages.

Culture has been shown to influence health beliefs and health-related behaviors because it impacts the type of information women have been exposed to, as well as their ability to interpret such information (Spector 2002). Very little data exists that describes how culture influences beliefs and attitudes toward breast cancer and breast cancer screening in Nigeria. Cultural influences, however, likely correlate to screening behaviors for breast cancer. This field report summarizes my approach to understanding how culture influences breast cancer screening behaviors among women seeking care at a local, non-profit clinic in Lagos, Nigeria.

Health and Healthcare in Nigeria

According to the World Health Organization, the current life expectancy at birth in Nigeria is fifty-three years for men and fifty-six years for women. The health status of a country is commonly measured by its child and maternal mortality rates. The 2015 maternal mortality rate per 100,000 births in Nigeria was 814, compared to fourteen in the United States, and the neonatal mortality rate per 1,000 live births was 34.3 in Nigeria and 3.6 in the US (World Health Organizations and United Nations 2015). Infectious diseases are the most common cause of death in Nigeria (World Health Organizations and United Nations 2015) with lower respiratory infections leading in 2012, accounting for 13.9 percent of deaths, followed by HIV and malaria. As of 2012, deaths due to HIV were 128.7 per 100,000 population (2.5 in the US) and deaths due to malaria were 106.9 per 100,000 population (World Health Organizations and United Nations 2015). In 2014, non-communicable diseases such as cardiovascular disease, cancer, and diabetes were estimated to account for twenty-four percent of total deaths (World Health Organization 2014). Nigeria does not have a national population based cancer registry or national cancer screening guidelines (World Health Organization 2014).

The provision of health care in Nigeria is run by the three tiers of government: the federal, state, and local governments (Omoruan et al. 2009). The local government areas (LGAs), similar to those in US counties, manage the primary health care system with support from their state ministries of health and private practitioners. The state ministry of health manages the secondary health care system (Omoruan et al. 2009). Patients are referred to this level from primary health care providers. Specialty services are available at different divisions of the state, such as diagnostic and rehabilitation services. The state government is also responsible for running general hospitals. The federal government manages the tertiary health care system by coordinating federal medical centers, university teaching hospitals, and specialist hospitals (Omoruan et al. 2009). The federal government also works with nonprofits and private practitioners to provide these services. There are 33,303 general hospitals, 20,278 primary health centers and posts, and fifty-nine teaching hospital and federal medical centers in Nigeria. However, it is important to note that 70 percent of the health care is provided by private vendors and only 30 percent by the government (Omoruan et al. 2009).

The Nigerian government spends comparatively less on health than other African countries. In 2014, the total expenditure on health was 3.7 percent of the nation's gross domestic product (Bhardwaj 2016) and of that, only 0.9 percent was publicly funded while most of Nigeria's health spending was in the private sector (Bhardwaj 2016). In addition to inadequate funding, health access is only 43.3 percent (Onwujekwe et al. 2010). This could be attributed to the fact that 55 percent of the population lives in rural areas (Omoruan et al. 2009), yet the bulk of the health workforce is concentrated in urban, tertiary health care facilities.

Research Setting

The study took place at the Optimum Cancer Care Foundation (OCCF), a non-profit founded to address the issue of low breast cancer screening and awareness in Lagos, Nigeria. OCCF provides subsidized breast cancer screening without long waiting periods or crowds associated with public hospitals. In addition, OCCF also conducts weekly seminars on risk factors, signs, and symptoms associated with breast cancer.

I interviewed women attending the clinic for breast and/or cervical screening or treatment. Women were eligible to participate if they were eighteen years or older and able to speak English or Nigerian Pidgin. Pregnant women and those unable to give verbal consent were excluded. Women who met the age and language criteria were identified as potential participants based on their clinic registration form. Potential participants were then invited to participate in the study via a verbal recruitment script. The clinic registration fee (approximately three US dollars) was covered as compensation for participating in interviews. Women who did not have to pay the registration fee were given goods worth three US dollars as an incentive for participation.

I asked the women for the following demographic information before the start of each interview: age, marital status, employment status, highest level of education, religion, and state of origin. Program participants were asked to identify any barriers that may have hindered them from being screened or understanding the seminars, and to understand the role of culture and indigenous knowledge. Previous studies on the Nigerian population have used surveys that asked simple yes or no questions. This was deemed appropriate for simplicity for the sake of participants in other studies. However, for this study, open-ended questions were used for a broader understanding of the influence of culture on health seeking behavior. Questions were designed to ascertain participants' knowledge in three areas: risk factors for breast cancer and common symptoms, methods of early detection and diagnosis, and attitudes and practices toward breast cancer. Questions included the following: How did you hear about OCCF?; Why did you come in for screening?; Have you ever been screened before?; What do you believe causes breast cancer?; Do you know anyone who has had breast cancer?; How do local foods, beliefs about medicine, and behaviors contribute to breast cancer risk?; and, What do you think would prevent you from coming back to OCCF?

The chosen research setting was a convenient recruitment site for women who fit the eligibility criteria. The setting was also opportune to conduct interviews, as private offices were available. Some issues with the research setting occurred when the interview room needed to be used. In that case, the interview was conducted outside of the building but within the clinic compound. The interview was still in a private setting; however, noise from traffic would sometimes be a distraction. I interviewed ninety-four women during my time in Lagos.

Development of Interview Questions

My knowledge of the local culture, a combination of questions used in other similar studies (Phillips, Cohen, and Moses 1999; Nwankwo et al. 2011), and an African centered cultural model (Airhihenbuwa 1990) were used to create the semi-structured interviews. I used two rounds of pilot testing. This was done to ensure that the questions were easily understood and made sense to women of different backgrounds, to identify problems with the survey that may lead to biased answers, and to make sure all women interpreted the questions in the same way. In the first round, a random sample of five women were asked the survey questions. The order of questions was adjusted and some questions were simplified. In the second round of pilot testing, women in a different branch of the breast cancer screening clinic were interviewed. These women fully represented the target population of the study and probes were developed and used in subsequent interviews.

Training Interviewers

I trained two interviewers to assist with the study. One interviewer was not able to start the study after the training, which resulted in my conducting the study with only one other individual. Interviewers needed to avoid using words, gestures, and facial expression that may limit or bias answers from participants. Interviewers were trained to be as neutral as possible with tone and expressions, especially since respondents needed to choose their own words or terms. Interviewers also needed to be able to ask follow-up or probe questions that did not make the respondent feel defensive. Finally, interviewers needed to refrain from asking too many questions at once so as to not confuse the participants. Interviews were conducted by Bilikisu Elewonibi and a local volunteer at the clinic, both of whom were familiar with local language, customs, and traditions.

Conducting Interviews

The length of interview times ranged from twenty to forty minutes and each interview was dictated on a tape recorder. Each respondent was given an ID number and no personal identification information was collected. During the interview, notes were taken to record certain occurrences, such as if a respondent started to cry or looked angry. A few respondents unconsciously switched from English to speaking Yoruba (one of Nigeria's national languages). At the discretion of the interviewer, the participant was asked to either repeat what she had said in English or the interviewer simply translated what the participant said. In a few other cases, some respondents could not express themselves in English or did not know the English term for a feeling or expression. In these cases, the interviewer translated what the participant was attempting to say. A convenient sample of women were interviewed until theoretical saturation has been reached, or the point at which no new information was identified (Creswell 2013). After each day of interviews, all recordings were uploaded to a password protected laptop, as well as a cloud folder. Bilikisu Elewonibi listened to all interviews at the end of the day or the following day. On the basis of these observations, the questions were revised, the order of questions was switched, or the interview strategy as a whole was changed.

Results

From these interviews, I found that culture both encourages and inhibits breast cancer screening among women in Lagos. Illnesses were often thought to occur as a result of superstitious beliefs and these beliefs in turn drove health decisions and treatment choices. Many women believed there was a spiritual cause for breast cancer and hence there could only be a spiritual solution. One woman discussed how she had been told that an acquaintance died from breast cancer because someone had shot a spiritual arrow from her village into her breast. A few women mentioned prayer as the most important "cure" for any illness. Other women said that as long as they prayed and had faith, they would be protected from getting breast cancer. The women who felt that breast cancer was caused by supernatural forces did not see breast cancer screening as relevant and would not encourage other women to receive screenings. Finally, many women discussed how they did not visit a physician or hospital when they were sick but instead chose to self-medicate. It appeared that the idea of being ill was seen as weakness and there was a lack of preventive medicine culture among these women.

Even with these inhibitions, there were many positive aspects of culture that encouraged breast cancer screening. Some women had received warnings from friends or family that getting screened would “invite cancer” into them. Many of these women acknowledged that while some in the community would frown on their choice, they had faith in god and would not be diagnosed with cancer even after being screened. In addition, they felt that due to this faith they would easily be healed by a physician if breast cancer was found. They acknowledged the importance of seeking out medical services, such as screening, but had their faith and religion to help cope with whatever the results of testing showed. In fact, many women had stated that they were encouraged to come to the screening center by their pastors or other religious leaders who had spoken about the importance of screening.

Reflection

I had two very different types of experiences with women during the interview process. Some women were very open and willing to discuss their experiences with the health care system and their perceptions about breast cancer. They were willing to talk about how their friends, family, and community would react if they knew they had come to a breast cancer clinic. These women were not afraid to talk about the negative or positive reactions they had received from the people they worked with, spouses, or friends. On the other hand, some women were very shy and reluctant to talk about these issues. They had to be prompted and probed to elaborate on their responses and they seemed to be uncomfortable throughout the whole interview. Another observation was that when given the opportunity, many women continued to talk well after the interview was over. Many asked me questions about other health issues they or another family member had. One woman asked me about breast cancer perceptions in the United States and how was it different from what I had heard so far in Nigeria.

From my experiences in Nigeria, culture can be a very powerful influence in the realm of health, particularly breast health. Breasts are not necessarily seen as sexual organs in this culture, but the idea of going to the hospital for preventive breast health was negatively perceived by some. The role of the community and organized religious institutions can be leveraged in changing these perceptions. If these places encouraged more women to seek screening, awareness and service utilization would increase. In addition, the strong social support mentioned by numerous women should continue to be encouraged as it can be used to help spread awareness of the benefits of breast cancer screening and dispel some of the false rumors surrounding treatment. Furthermore, women and mothers are respected in Nigerian culture, and many are in control of their health care decisions. More emphasis needs to be placed on the importance of women’s health and health interventions should focus on direct appeals to women—highlighting the importance of screening and early detection as the most effective method of treating breast cancer.

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Prioritizing Women’s Knowledge in Climate Change: Preparing for My Dissertation Research in Indonesia

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The implications of climate change are serious for small-scale farmers, particularly those dependent on high value commodity crops, like cacao, to sustain their livelihoods. Of these small-scale farmers, women are disproportionately impacted by the risks and variability attributed to global climate change, yet they are often overlooked in strategy and policy developments for adaptation or mitigation. Local and indigenous women’s voices and knowledges especially are missing from global conversations regarding climate change. Sarah Eissler, a PhD Candidate in Rural Sociology, will spend half of 2017 in Sulawesi, Indonesia, investigating and collecting women’s voices, knowledge, and experiences, along with opinions in regards to climate change for small-scale cacao producers. This article discusses the preparation involved in conducting a six-month field stay in Indonesia as well as background literature and influences pertaining to a research project that prioritizes women’s and indigenous knowledge.

Keywords: Women’s Knowledge; Climate Change; Cacao; Indonesia; Small-scale Farmers

Sarah traveled to Indonesia and completed her research in March of 2017.

In August of 2016, I visited Indonesia for the first time, hopping around islands from Jakarta to Makassar and Bali in order to lay the groundwork for my data collection field stay starting in March of 2017. As a PhD candidate in Rural Sociology at Penn State University, I am interested in the complex challenges facing individuals in rural areas across the world—particularly those challenges impacting small-scale farmers. My dissertation research focuses on the gender dynamics of these farmers in response to climate change in Sulawesi, Indonesia. From previous research experiences, I have become interested in understanding climate change from the perspective of small-scale farmers. This focus on farmers is important because, surprisingly, farmers are often overlooked in global conversations regarding solutions and strategies for combatting climate change. I also believe that women’s perspectives are absent, particularly those of small-scale farmers in rural areas. These women have a unique knowledge of and ties to natural resources that are often overlooked.

doi 10.18113/P8ik360154



This article will chronicle my experiences and process of preparing to conduct a dissertation project in Sulawesi, Indonesia, with the International Center for Tropical Agriculture (CIAT) over the course of six-months. My master's research experience had a major influence over my decision to pursue a Borlaug Fellowship and helped to guide my decision-making during the preparation period. In the following sections, I discuss these influences, the background for my dissertation project, and how I've prepared to conduct this research in Indonesia.

Decision-Making and Coffee: How I Arrived at My Dissertation Topic

I received my MS in Rural Sociology and International Agriculture and Development (INTAD) from Penn State University. My thesis project focused on understanding what influences small-scale coffee farmers' decision-making in regards to their farming techniques. I traveled independently to Turrialba, Costa Rica, where I worked with scientists at the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), a member of the Consultative Group for International Agricultural Research (CGIAR). CGIAR is a global consortium that unites organizations engaged in research for food security. As a young researcher, this experience was invaluable because I gained an understanding of the process of conducting international research and learned that its results spark more questions than answers.

My master's thesis research emphasized an understanding of the ways in which small-scale coffee farmers in Turrialba, Costa Rica, made decisions about changing a technique, tool, or other aspect of their farm or farming practice. Drawing from Roger's (2003) theory of the diffusion of innovations, I assumed that small-scale coffee farmers would be slow and hesitant to adopt an innovation (defined as any new change—whether technique, tool, or idea) on their farm. My entire sample population consisted of family farmers whose coffee farming practices were rooted in tradition and familial history, despite recommendations from the Costa Rican agricultural extension agents (government representatives who provide farmers education, training, and technical support) with whom I had discussed. Climate change and gender relations were in the back of my mind while conducting the research, as I knew they are incredibly powerful and influential dynamics shaping the context of rural life. At the time, however, they were not integral concepts to my research study. After completing all interviews and leaving Costa Rica, I was struck by how often climate change and its impacts had come up in conversation, particularly as it changed the way farmers talked about their thought-process when adopting an innovation. Many farmers, in response to changing rain patterns or increased incidence of coffee diseases (for example, *la roya* is a coffee leaf rust that decimates farms) were quick to adopt an agricultural extension agent's or community member's suggestion for change. These events were more frequently reported than any other variables for why a farmer adopted a specific innovation. Additionally, I couldn't quite understand it at the time, but there were major differences between the ways head female farmers and head male farmers talked about their expertise or knowledge of the farm. After concluding this study, I aimed to convert my attention to investigating the intersection of these dynamics and understanding the gender differences in response to climate change for small-scale, high value commodity producers. This led to my dissertation topic, which seeks to investigate the different ways male and female small-scale cacao farmers are able to build adaptive capacity, vulnerability, and perception to the impacts and risks from climate change.

Description of Dissertation Research

Climate change has serious implications for the current and future state of agricultural production, particularly for high value commodity crops that are especially dependent on specific climatic conditions for optimal growth, such as cacao (IPCC 2014; Läderach et al. 2013; Schmidhuber and Tubiello 2007). More importantly, climate change has serious implications for the farmers that rely on cacao's production to sustain their families' livelihoods (Kelly and Adger 2000; McCarthy, Lipper, and Branca 2011; Morton 2007; Nelson, Adger, and Brown 2007).

These farmers generally rely on agriculture to meet their basic needs and will most likely experience the most severe impacts from climate change since they often lack the resources and capacity to adapt (Kelly and Adger 2000; McCarthy, Lipper, and Branca 2011; Morton 2007). Women, in particular, are the most marginalized and vulnerable groups, often limited in their ability to build adaptive capacity, gain access to necessary resources or opportunities, and are the least empowered (Agarwal 2001). Climate change amplifies the economic, cultural, and social constraints regarding their access to paid employment, asset distribution, opportunities, and resources, often limiting them to unpaid care tasks that depend on climatic factors, such as subsistence agriculture or water collection (Agarwal 2001; Jost et al. 2015; Skinner 2011). Women in general are viewed as vulnerable beneficiaries rather than capable change agents with skills, knowledge, and experience to contribute to solutions (Jost et al. 2015; Skinner 2011).

According to Bennett (2005), "Climate change has pervasive and far-reaching social, economic, political, and environmental consequences. The challenge cannot be met without the collective power and knowledge of women and men." Social factors, like cultural attitudes, religious practices, and the legal system, influence gender roles, responsibilities, and decision-making authority (Cornwall 2001). However, the nature of how social relationships and contexts shape climate change adaptation is less explored in the literature (Onta and Resurreccion 2011). It is essential to capture the voices and knowledge of local and indigenous peoples in order to truly understand the social impacts of climate change (Gbetibouo 2009).

As global demand for cacao continues to increase, and given smallholders, particularly women, are among the most vulnerable and impacted groups of people by climate change, there is a current and urgent need to address these issues at large (IPCC 2014; Skinner 2011; Wheeler and von Braun 2009). The future of climate change's impact on rural livelihoods requires more research, particularly on best mitigation and adaptation practices for smallholder farmers, understanding the human dimensions of climate change—particularly the local and indigenous ways of knowing—and integrating it with development planning along with regional-specific climate change knowledge (IPCC 2014; Wheeler and von Braun 2009).

The overall research question to be studied is as follows: how are men and women involved in smallholder cacao production in South Sulawesi, Indonesia, impacted by, able to respond to, and perceive the risks of climate change differently? To appropriately investigate this research question, it is essential to integrate the perceptions, knowledge, and participation from cacao farmers, local community members, and government extension agents in South Sulawesi. To conduct this research project abroad, many months of preparation and logistical coordination needed to be done.

Research Plan

The data will be collected during a fieldwork experience lasting six months in Indonesia in collaboration with the International Center for Tropical Agriculture (CIAT), a member of the CGIAR Consortium, and Swisscontact, a non-governmental organization (NGO) based in Indonesia. This six-month research fieldwork experience is funded under the Borlaug Fellows in Global Food Security Graduate Research Grant, a program under the Feed the Future (FtF) initiative that prioritizes FtF areas and research themes. My project fits within these parameters by focusing on small-scale producers in response to climate change, particularly for women in rural areas. This fellowship is unique in that it requires each applicant to partner with a member of the CGIAR Consortium to do the research. I emailed Peter Läderach of CIAT about my project idea and we continued discussions of our overlapping research interests and plans to collaborate in the future. Once I had received the Fellowship, Dr. Läderach facilitated introductions to the gender and environmental specialists at Swisscontact, a Swiss NGO that operates across Indonesia through the Sustainable Cocoa Production Program (SCPP). During the first half of 2016, I communicated with these partners via email and Skype, and coordinated a scoping trip to Indonesia to meet everyone and discuss plans in person.

With the help of the Marjorie Whiting Student Indigenous Knowledge Research Award, I traveled to three islands of Indonesia during August 2016 to lay the groundwork for my project and to meet with local partners. I knew it was essential to visit Indonesia before finalizing my research proposal. I spent a few days in the capital, Jakarta, meeting with staff and leadership of Swisscontact. I learned about their operations, philosophical approaches to their work in Indonesia, and how they interact with government, corporations, and the local farmers. I then traveled to Makassar, located in Sulawesi, to meet with gender and environmental experts at Swisscontact who work directly with farmers across Indonesia. Due to major logistical constraints, I wasn't able to visit a farm in Sulawesi, but I was able to connect with farmers who had come to the city for training. We chatted as best we could through our language barriers. I lament that I wasn't able to get to a community outside the city, however, when conducting international work, unforeseen challenges arise and it is imperative to adapt and be flexible.

The final weeks of my scoping trip were spent in an intensive Bahasa Indonesia language course, working one-on-one with a teacher, Sidhi, each day for five hours. I have experience and skills in French, Spanish, and Portuguese and felt confident in my ability to at least get a handle in Bahasa Indonesia. Several words sound similar to English or a Romance language, but the language structure is completely different. By the end of my lessons with Sidhi, I was able to communicate basic phrases and explain my research with confidence, and I continue to practice each day in order to eliminate the language barrier. I took this language course because I feel it is essential to have communication skills with those I intend to work with for this project. The scoping trip, despite its challenges and setbacks, proved to be extremely important and beneficial for this project and my ability to be able to conduct my research in March of 2017.

Conclusion

Preparing for a six-month field experience is a long and intensive process, and one that I believe is an essential learning process for anyone planning on conducting international research in terms of securing grants, building partnerships and essential skills (i.e, language), and fostering relationships. I learned from preparing my master's research and focused my dissertation topic around the major residual questions I had since leaving Costa Rica. I look forward to collecting this data and more importantly, contributing to the preservation of local and indigenous women's knowledge in relation to adaptation strategies to climate change, a topic I find timely and about which I am extremely passionate.

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Pg 67-73

The Library for Food Sovereignty: A Field Report

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A Growing Culture (AGC), a US-based organization focused on advancing a culture of farmer autonomy and agro-ecological innovation, is managing the development of a community-led initiative to centralize local farming knowledge and innovations from around the world. Growing out of East Africa, the Library for Food Sovereignty (LFS) is being driven by a diverse group of local knowledge stewards, farmer-led organizations, and regional networks. The participatory, informal, and celebratory nature of the initiative sets it apart from other platforms. Organized directly around the communities themselves, the platform supports open frameworks for sharing, scaling out, and improving innovations across geographies. Farmer innovations are increasingly valued as site-specific and locally sourced solutions that contribute to community and environmental resilience. LFS promotes and celebrates the dynamics of local knowledge, bringing awareness of its potential to address some of the world's biggest challenges.

Keywords: *Food Sovereignty; Farmers*

The Library for Food Sovereignty and the Dynamics of Local Knowledge

In 2015, after nearly five years of facilitating knowledge exchange between food producers (smallholder family farmers, peasants, landless, forest keepers, women farmers, indigenous people, fisherfolk, pastoralists, migrants, and other agrarians hereafter referred to as farmers), AGC founded an initiative to centralize local knowledge in a platform using a combination of appropriate and advanced technologies. The purpose of this platform is to allow farmers to build off of each other's innovations so that they can be improved, locally adapted, and shared freely and openly across geographies. Ultimately, some innovations can be integrated with modern science as researchers begin to see their value and role in strengthening knowledge systems. Many communities have started to contribute knowledge and are proud to share their wisdom. Some farmers, however, choose not to share online for a variety of reasons. AGC is acutely sensitive to these motives and continues to work with these communities on the ground in ways that are appropriate to them. To summarize, the Library for Food Sovereignty is both an online and offline community of people who believe in the potential of local knowledge. This field report outlines some of the digital efforts to bring together and leverage local knowledge and stories.

doi 10.18113/P8ik360155



AGC is an organization working to advance a culture of farmer autonomy and agro-ecological innovation. The primary way we forward this mission is by facilitating knowledge exchange between farmers. This work is increasingly challenging as industrial agribusinesses stronghold farmers all the world over are passing down transfer technologies, information, and proprietary (often toxic) products that perpetuate systems of interdependence and social stratification. Furthermore, international development is majoritively top down and charity is the prevailing solution to poverty. Communities are routinely treated as passive beneficiaries—not active participants that have a role in building their own future. Industrial agriculture production is one of the largest contributors to climate change, now generating around one-third of all greenhouse gas emissions (CGIAR 2012). Hunger prevails despite the fact that the world produces one and a half times enough food to feed the planet’s population as a result of waste management, systemic distribution flaws, and the fact that the bulk of industrially produced crops are used for biofuel and in animal feedlots rather than for human consumption (Shattuck et al. 2012). It is within this context that AGC works to support the capacities of farmers to shape their own food and agricultural systems—work the movement now calls “food sovereignty.” Self-reliant farming is essential to a farmer’s ability to bounce back in the face of environmental or economic change and is something that is now a constant. Local knowledge plays an integral part in food sovereignty in that it is locally sourced (autonomous) and can ignite an entrepreneurial spirit in farmers. Its dynamics have also been shown to provide system-oriented solutions to complex problems. While the history of agriculture is one of exploitation, farming has the potential to regenerate both communities and the land.

The truth is that smallholder farmers—forty-three percent of whom are women—feed the world on less than three hectares of land (FAO 2012). These peasant farmers are also members of some of the poorest communities on earth and, because of market pressures, often face great food insecurity despite their efforts in food production. It is from these communities that some of the most ingenious and resilient innovations are born. Innovations—that is, locally initiated new or improved ways of doing things (often inspired or reshaped from indigenous knowledge)—have been at work since time immemorial as farmers informally experiment and improve the natural environment around them. Innovators tend to be creative leaders that are willing to take risks and test their ideas over time, and sometimes even generations. In fact, innovations have been seen time and again to be more resilient than transfer technologies or other externally derived methods because they are developed with a deep rooted understanding of a place and are woven into its cultural fabric (Wettasinha et al. 2008).

Smallholder farmers feed the world, against great odds, and mainly using traditional methods passed down openly over generations. Traditional agriculture is the foundation of agroecology, now considered to be one of the best alternatives to industrial production because it melds the gravity of social and cultural impacts within a productive model of environmental sustainability. Agro-ecological methods are being increasingly measured and have shown to increase yields, regenerate biodiversity, reduce rural poverty, and be resilient to changing environmental conditions (Roark 2016). In contrast to industrial, one-size-fits-all methods, agroecology is knowledge diversified and rooted in local innovation. It does not champion any one method of farming. Local innovation development relies greatly on the ability of smallholders to pass information between farmer-to-farmer networks and scale out ideas to fit local conditions. Knowledge exchange is the heartbeat of innovation.

The bedrock of LFS is a community of farmers and other allies that are passionate about harnessing the knowledge of the grassroots movement and creating a participatory space for sharing and celebrating its diversity. More than an information platform, this effort focuses on the dynamics of agriculture including the socio-cultural dimensions of natural resource management and what it means to be a farmer. The ultimate vision is not only to inform and accelerate innovation and knowledge exchange, but to inspire it and bring farmers together around common experiences and stories.

The platform is being developed alongside the on-the-ground movements, not as an alternative. While sharing local knowledge across geographies remains central, it is ultimately the farmers themselves that decide what to share and how. A Growing Culture is focused on facilitating knowledge exchange via a variety of analog and digital approaches and technologies. On the ground, knowledge facilitation includes gatherings, innovation fairs, farmer-led workshops, and community-led documentation (participatory video, radio, and documentation). The design of the online platform has also been a participatory process at every step. Stakeholders have been part of in-field design prototyping and mapping out information pathways; they also attended live feedback sessions while AGC developed the prototype.

Development researchers have long noted that incorporating farmers in the research process leads to more sustainable outcomes and grounds scientific progress in real-world conditions (Mendez, Bacon, and Cohen 2013). As the platform develops, there is an incredible potential to blend local knowledge and scientific research in order to reinforce information systems. As noted before, open access, a cornerstone of this initiative, is not experienced as positive across all communities. A Growing Culture is receptive to these critical perspectives and therefore prioritizes the community-led identity of the commons. Not all communities will share their knowledge online, but those that do are brought into the decision making process and play a part in setting boundaries.

Innovations naturally lend themselves to being built off of and shared openly. These innovators often find that another farmer in a neighboring county or region has developed a similar technique or is experimenting with the same resources. Innovation development therefore greatly relies on the ability of farmers to pass information freely through networks so that techniques can be scaled up and improved to meet local conditions. Centralizing this knowledge potentially nurtures the conditions for disruptive innovations, innovations that disrupt an existing market or value network. In this scenario local innovations could even displace industrial products and practices all the while being safeguarded in the library under the watch of the community. The possibilities of working together to strengthen local knowledge are many. The Library for Food Sovereignty sets up a framework for those exchanges to happen in ways that allow communities to be in control.

The Stakeholder Gathering

In September of 2016, forty-five delegates from seven countries convened in a rural farming village in Kasejjere, Uganda to discuss how we might build a community-led resource for sharing farmer innovations and local knowledge. More than twenty smallholders attended, including indigenous farmers from Uganda, Kenya, and Burundi. The stakeholders discussed how to best create a resource that supports the socio-environmental realities of farming communities in East Africa and around the world. The meeting took place on a hillside surrounded by communities actively experimenting and taking charge of their own future. What emerged was an enthusiasm for leveraging grassroots knowledge and a willingness to work together to build the Library for Food Sovereignty.

A fully participatory process was designed with input from key stakeholders. While AGC facilitated the meeting, three other facilitators from among the attendees were relied upon to advance several important sections of the agenda. Clarification on the key practices, approaches, and challenges to documenting, sharing, and accessing farmer knowledge were of the utmost importance. At that juncture, one of AGC's technology partners, CauseLabs, created a pivotal interaction by bringing all participants together to further refine the granularity of the information pathways involved in making the library a locally accessible, culturally relevant, and community-led tool to both stimulate and leverage local knowledge. As the participants saw their own collective intent being absorbed and taking preliminary shape, a final step involved careful consideration of how each participant could conceivably play a role in piloting the first prototype of the library.

AGC outlined some key takeaways from the gathering in a report detailing the event. These included that hosting an international event in a farming village was deemed quite powerful by all who attended. Having a forum to share their stories, concerns, and ideas with such a cross-cultural audience was an eye-opening experience for many. Even before they began to work on framing the parameters of the library, everyone recognized the need to scale up farmer-to-farmer knowledge sharing and the great potential of a community-led "living" resource for collecting and making accessible innovations for current and future generations in the fight for food sovereignty. What emerged was a demonstrated willingness to collaborate with each other and with AGC in supporting an initial pilot of the platform offering their ideas, strengths, efforts, and resources as they deemed appropriate. Participants engaged and role played in direct conversation concerning the crucial role that farmer-led organizations and other support systems play in assisting farmers both in accessing and contributing to the library. They understood the need to continually refine the pathways of information sharing into and out of the library and recognized that the pilot was designed to help test and improve the human interaction dimensions of the concept. They also recognized that the skills required to oversee the complexities of an agro-ecological and farmer-driven commons include, but are not at all limited to, those possessed by farmers alone. The strengths of select academics, technologists, and other professionals will also be needed. It was also agreed that in order for the library to be successful it must add value to farmers' lives. Beyond the inestimable value of having a resource such as the library for innovations, the participants felt strongly that it was important to capture and maintain the wealth of innovation-related knowledge and experience that remains within the minds of older members of their farming communities before it is lost. Cultural and economic barriers are the biggest obstacles farmer organizations foresee hindering farmer openness, and farmers agreed that support should be provided in safeguarding intellectual property rights. The actual name of the digital platform remained "The Library for Food Sovereignty" for discussion purposes, but no consensus on a name was sought or reached. As the library advances through the next phases of development, AGC will send updates to keep stakeholders informed on its progress. There will be many opportunities for feedback sessions, open conference calls, and policy design making that farmers will take part in. The collaborative development of the initiative will remain a centralizing priority.

Participants at the gathering included twenty farmers and twenty-five delegates from farmer organizations in Uganda, Kenya, Ethiopia, Burundi, Italy, the UK, and the United States. Participating organizations included Pelum Africa, Prolinnova, The Alliance for Food Sovereignty in Africa, Insight Share, The Rules, Arid Land Information Network, Environmental Alert, and Teens Uganda, among others.

The stakeholder gathering set the groundwork for developing the blueprint, roadmap, and clickable prototype of the library. Most importantly it was fundamental in bringing together a community of farmers and other allies committed to playing a part in its development, design, and governance of the initiative. For the full report on the gathering please visit the [A Growing Culture](#) website (A Growing Culture 2016).

The Blueprint and Prototype

A Growing Culture began to solicit feedback on the library concept before the stakeholder gathering by reaching out to stakeholders via Skype, conducting interviews and participating in dialogues. These conversations helped AGC design a participatory agenda for the stakeholder gathering and incorporate community priorities before the group convened.

During the gathering, information was recorded using video, flip charts, meticulous note taking, audio interviews, and photography. All of this went into designing the prototype and blueprint, and is reflected in the current plans. Stakeholders remained central to the design process by participating in feedback stages via a variety of communication approaches. During this process A Growing Culture set up several live feedback sessions where participants weighed in on design decisions and other strategies. Gathering attendees continue to stay connected via email, Skype, Zoom conference calls, and private phone conversations. AGC set up a Google Group where participants share resources and send updates to each other.

The blueprint, roadmap, and prototype were developed with A Growing Culture's US-based technology partner, CauseLabs. The design principles that guide the development of the library (and specifically the library prototype) are that it must be open access, farmer driven, and built with appropriate and participatory technologies and approaches. These principles continue to propel the initiative forward. In its current form, the blueprint is an extensive slide deck that outlines the scope and features, architecture, formats and content, library front-end designs, administration, analytics, reporting, and project roadmap of the library. There is also a section on what we are interested in exploring further. The blueprint summarizes the in-field research and prototyping that went on during the stakeholder gathering and brings it to life in a digital representation. The blueprint asks the following questions: How will access to the library help farmers?; How will it help farmer organizations and other allies help farmers?; How will they contribute to it?; How will its design support the complex dynamics of local knowledge?; How, ultimately, can the content be organized to support its interoperability with other digital knowledge systems? (A Growing Culture 2016).

The blueprint outlines areas for further exploration. These include investigating motives and incentives that farmers and other groups might have for using the platform, branding and marketing, non-technical components (such as peer-review and curation of content), group-organizing and social features, back-end metadata integration, gamification, donations, functionality features, and "institutionalizing" farmer knowledge by bringing it into other knowledge systems via interoperability. The roadmap outlines the goals of the pilot, which orbit around content creation, content access, and content interaction. Scope and cost recommendations are also included in this five-year growth strategy, pilot design, and development timeline (A Growing Culture 2016).

The pilot of the platform is set to launch at the end of the summer of 2017. It will be built and piloted with a focus on innovations and local knowledge in East Africa and North America before expanding globally—although participation from all regions is welcome. If readers are interested in participating in this initiative or viewing the complete blueprint, roadmap, or prototype, they can contact [A Growing Culture](#) to see the plans.

The Importance of Farmer Stories

Over the past several years, AGC began to see the relevance of the socio-cultural dynamics of farming, often expressed in storytelling, that are central to farmers' lives. In fact, one of the most compelling dimensions of local innovations is that they often include a solution that addresses the human element of farming. For example, innovations recurrently diversify natural resource management, creating new opportunities for women farmers who are marginalized in many communities around the world.

There is research that shows the importance of time in a community's ability to be resilient—that is, bounce back or recover quickly from some environmental, economic, or socio-cultural disruption or upheaval. Innovations, often derived from or inspired by local knowledge and collectively shaped over generations, have the birthmark of time. They are also beset with an inveterate ability to take into account the often overlooked depths of a place with the dimensions and nuance that only come with experiencing a land over time (Davies and Moore 2016).

Stories are an entry point into those dimensions of agriculture and should grow alongside the technical or environmental achievements of farmers. A Growing Culture is developing open frameworks for supporting innovations and storytelling to animate this socio-environmental melding and path it provides towards continued resilience.

Closing

AGC would like to thank the hundreds of farmers who have mobilized around the Library for Food Sovereignty initiative. We would also like to express our gratitude for the guidance of key members from the Prolinnova network, Pelum Kenya, Pelum Uganda, Carbon Underground, Farmer-led Innovators Association of Kenya, Insight Share, Teens Uganda, Arid Lands Information Network, Kikandwa Environmental Association, and The Rules. The ingenuity of farmers and the work of these groups inspired this project and continues to drive it forward.

You can follow the development of the commons on A Growing Culture's website at www.agrowingculture.org.

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A Review of *The Navajo and the Animal People: Native American Traditional Ecological Knowledge and Ethnozoology*

Book Review by Herman A. Peterson
Librarian, Diné College

The Navajo and the Animal People: Native American Traditional Ecological Knowledge and Ethnozoology by Pavlik, Steve. 2014. Golden, CO: Fulcrum Publishing. 264 pp.
Paperback \$26.95. ISBN 9781938486647

doi 10.18113/P8ik359819



I have lived and worked among the Diné (the autonym for the Navajo) for four years. Early on I remember remarking to a colleague that all the Diné seem to have dogs outside their homes. He replied that some of the dogs were for herding sheep, others for guarding, but mostly the dogs protect the homes from any external negativity. The Diné people believe dogs can absorb that kind of energy without any harm to themselves and they protect the family in that way.

Somewhat like my experience with the Diné and their dogs, *The Navajo and the Animal People* is a book about the Diné and their relationship to animals, predatory carnivores in particular. The author weaves together his own experiences, traditional stories, and natural history to create an intricate Navajo rug pattern that illustrates the system of knowledge that the Diné have about animals. Steve Pavlik was most recently an instructor at Northwest Indian College in Bellingham, Washington, where he taught Native American Studies and Native Environmental Science. He lived and worked with the Diné for many years, forming lasting relationships that find their way into the pages of this book. Sadly, he died the same year that his book was published.

Each chapter was originally a conference presentation, most of them at the American Indian Studies section of the Western Social Science Association's annual conference. This gathering was frequented by Vine Deloria, Jr., Daniel Wildcat, and others associated. A few of these presentations have been previously published and the work includes copious references to animal stories and correlative ceremonies published in the anthropological record.

Pavlik describes in his book that central to Dine knowledge concerning animals is the concept of *hozho*, which can be translated as balance, harmony, or beauty. Sickness is seen as a loss of balance and disrespect to an animal can be the cause of this imbalance. A ceremony to the animal can restore this balance and health. Many Diné behaviors toward animals are meant to show respect, or conversely, out of fear of losing balance. Each of Pavlik's chapters on specific animals addresses this dynamic between the Diné and animals.

Animals are not classified as good or evil in themselves, but all animals are capable of moral decisions that can be interpreted as bad or good just like humans. Animals are capable of both harm and healing. In order not to offend an animal, each one is referred to by a euphemism and the real name being used only for ceremonial purposes. Bears, for instance, are referred to as the “mountain people.” Sickness related to bears is cured by the Mountainway Ceremony, which lasts for nine days. It can only be held in the period after the first frost of autumn and before the first thunder in spring. The bear is seen as very powerful, both physically and spiritually, and bear meat is almost never eaten. There are still bears on the Navajo Nation land, especially in the Chuska and Lukachukai mountains.

By contrast, the last wolves on the Navajo Nation were killed off by 1950 because they were seen to be a threat to livestock. The wolf is referred to as “large coyote” in common speech and as “big trotter” ceremonially. The Diné language also uses the same word “hunter” for both the wolf and the act of hunting itself. The wolf howl was also used by human hunters to communicate with each other, and the Beadway and Coyoteway ceremonies are associated with wolves.

The coyote is the trickster figure in the Diné tradition. He is the most enigmatic and paradoxical of the animals and is very powerful spiritually. The coyote is a major figure in the creation stories and plays the role of scattering the stars and bringing fire to the people. A host of stories revolving around the coyote are used to show proper behavior by telling warning individuals about what happens when a person behaves improperly. These stories are only allowed to be told in winter. In the oral tradition it is said that the Diné performed a coyote ceremony at Bosque Rodondo where they had been forced to live after the Long Walk. This area is chosen due to the belief that the negotiators would have spiritual power, and these negotiations ultimately ended with the Diné being returned to their homeland rather than settled in Indian Territory.

The mountain lion (sometimes called the cougar) is called euphemistically “the one who walks silently.” In the Chuska and Lukachukai mountains of the Diné homeland there still live a few mountain lions. It was a common petroglyph of the Anasazi, the ancestors of many of the Southwestern tribes. The mountain lion is portrayed as a protector in many traditional stories and sometimes appears with his friend the wolf. Diné hunters emulated the mountain lion while hunting deer, sang mountain lion songs, and the most prized quiver was made of mountain lion skin.

Jaguars, on the other hand, are extinct in Diné lands. They are known as “spotted lions” and are mentioned briefly in a few traditional stories, seen in a few Anasazi petroglyphs, and make an appearance in a few sand paintings. One hears rumors of jaguars in the Southwest, but the Diné feel that they are best left alone and not harassed by scientists. It is in this context that Pavlik gives us the heart of the matter:

Native people accept the unknown and unexplained with reverence. They know that some things cannot, and should not, be explained. In the tribal world, some things are better left a mystery. It is those mysteries that keep Native people—including the Navajos—humble and respectful toward powers greater than themselves. This is the foundation of Native traditional ecological knowledge (197-198).

Both bald and golden eagles are found on the Navajo Nation, though bald eagles are much more common in the winter with the golden eagle being the more revered. A story is told of a pair of monster birds who lived on Shiprock (a rock formation near Shiprock, New Mexico). Eagles and owls are said to be their children, and hunting eagles was previously highly ritualized, but it is not done anymore. Eagle feathers

hold great power, especially if they came from a living bird, i.e. naturally molted. The feathers are used by medicine men for a number of ceremonies as are the claws. A whistle made from the hollow wing bone of an eagle is especially prized.

Pavlik also writes about the other birds of prey, bobcats and lynx, foxes, otters, badgers, and raccoons – none of which play a prominent role in traditional stories. He devotes a whole chapter to snakes, Big Snake being a recurring character in some of the creation stories. Today the Diné people are especially afraid of snakes. Some will flee when they see one and others will kill them on sight. Pavlik attributes this reaction to the influence of the Judeo-Christian tradition of the serpent in the Garden of Eden.

In his Preface (15-17), Pavlik gives a succinct synopsis of Traditional Ecological Knowledge, of which his work in ethnozoology is a subfield. The Diné people, like most other indigenous peoples, aspire to have a relationship with their environment that is based on respect, cooperation, and mutual exchange. “How we choose to treat the natural world is how we choose to treat ourselves” (24).

The traditional knowledge that the Diné derive from their relationships to animals yields a corpus that is unique to this book. Pavlik has been studying this topic for many years, as the dates of his conference presentations show. His reliance on Diné traditionalists as a counterbalance to the published record demonstrates the kind of critical thinking that makes this book a solid work of scholarship. While an index would have added greatly to the usefulness of this book, it is both an excellent reference and a good read. Not only is this a book about the Diné relationships with animals, but it also provides a good example for how work with other tribes might proceed.

An older Diné man of my acquaintance told me that the reason dogs were first kept for spiritual protection is that they eat everything, including fecal matter, without any noticeable detrimental effect. The association between physical matter and things of the spirit is so strong in the Diné culture that the ability to absorb foul physical things is immediately inferred to also be the ability to absorb all other negativity. Now I look at the dogs outside Diné homes in a whole new light.

A Review of *Ubuntu Peacemaking: An Afro-Christian Perspective*

Book Review by Polly Walker

Professor of Peace Studies and Director, Baker Institute for Peace and Conflict Studies

Ubuntu Peacemaking: An Afro-Christian Perspective by Lumeya, Fidele. 2014. Self-Published.

Translated by Krista Rigalo.

doi 10.18113/P8ik360149



Lumeya, originally from the Democratic Republic of Congo, has extensive peacebuilding experience in Africa. In his short book, he integrates Christian and traditional African values related to peacemaking.

Lumeya describes traditional African values related to conflict as based in the concept of togetherness, and goes on to explain traditional African processes of dealing with conflict including protectorates, ceremonies, and intermarriage. He also shares a specific example from Eastern Congo of relation-based peacebuilding: the peace child. When a warrior was killed in battle, the war was called to a halt. The family of the warrior who struck the fatal blow gave a child (or other family member if a suitable child was not found) to the family of the fallen warrior as a form of restorative justice. This process also was designed to return the warring parties to a relationship of mutuality.

The author maintains that both traditional and contemporary African worldviews prioritize the spoken word over written agreements. In addition to a common locus of the word, Lumeya draws further parallels between Christian and African principles of peacebuilding: the ceremony of drinking blood, gravity of the spoken word, and an emphasis on holistic frameworks of peace.

Lumeya articulates a peacemaking framework derived from Christian concepts of peace in which departures from God's law are considered to have created ecological, biological, and human identity crises. He maintains that Christianity has revitalized traditional African concepts of relatedness that have been lost in contemporary conflicts.

The author provides a syncretic approach to three dimensions of peace: peace within oneself, with others, and among humankind. He relates the Christian church to the traditional African *tree of palaver*, a space for peacemaking where elders held power in part through open dialogues, which were followed by ceremonies of reconciliation.

Lumeya ends with a call for African communities to create spaces of dialogue for their youth to revitalize the values of their ancestors and to enhance peace.

This is not a text that engages explicitly with the work of other indigenous scholars. However, as a primary source document, it provides a unique viewpoint into contemporary peacebuilding based in an Afro-Christian worldview.

New Resources on Indigenous Knowledge

This section lists recent publications related to indigenous knowledge. It is not intended to be comprehensive but covers a wide range of disciplines and provides a snapshot of the depth and breadth of research on indigenous issues.

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Cornell University's Kassam Research Group Collaborates with Indigenous People to Create Ecological Calendars

The Kassam Research Group at Cornell University is leading two participatory action research projects focused on ecological calendars in North America and the Pamir Mountains of Central Asia. The overarching aim of these projects is to revitalize, recalibrate, and develop new ecological calendars by integrating indigenous, place-based knowledge with science. These projects aim to establish a proof-of-concept for ecological calendars in collaboration with diverse indigenous and rural communities across the globe.

With support from the Belmont Forum, the National Science Foundation (US), the National Science Foundation (China), Consiglio Nazionale delle Ricerche (Italy), and Deutsche Forschungsgemeinschaft (Germany), the Kassam Research Group will be partnering with communities in the Shugnan Valley of Badakhshan, Afghanistan; Alai Valley of Osh Province, Kyrgyzstan; Tashkurgan Valley of Xinjiang, China; and Bartang Valley of Gorno-Badakhshan, Tajikistan. In addition to preliminary research, climate stations have been established in the high altitude mountainous communities.

The project's website states, "In 2017, the Kassam Research Group will be returning to these communities to continue participatory human ecological mapping. In addition, we will be establishing the project in the Bartang Valley in Gorno-Badakhshan, Tajikistan, and Shugnan Valley in Badakhshan, Afghanistan. We will integrate bioclimatic data with human ecological mapping to generate hybrid maps for these regions. Between 2017-2019 we will be working with international partners and communities to develop:

- (1) Workable ecological calendars integrating place-based ecological knowledge with scientific data
- (2) Proof-of-concept for application of ecological calendars internationally
- (3) Transfer of knowledge between communities in different bioclimatic zones
- (4) Curricula for inter-generational transfer and continued adaptation of calendars
- (5) High-profile international conferences on ecological calendars for food and livelihood security."

More information on the project is available on the Cornell University project website.

CINE Publishes Encyclopedia Detailing the Diets of Indigenous Groups in Canada, Alaska, Greenland, and Northern US

The Centre for Indigenous Peoples' Nutrition and Environment (CINE) published *Traditional Animal Foods of Indigenous Peoples of North America: The Contributions of Wildlife Diversity to the Subsistence and Nutrition of Indigenous Cultures*, an encyclopedia of more than 500 animal species that form the traditional diet of First Nations. It is a free, open access online encyclopedia that is catalogued in the McGill Library and available to thousands of libraries worldwide.

The new web encyclopedia focuses on Canada, Alaska, Greenland, and the northern US, but many of the animal species presented are also found in the northern latitudes of Europe and Asia. Close to 500 ethnographic sources in 100 languages are cited—some going back about a century. The information can be searched through three main tabs: animals, cultures, and nutrients.

As it is stated in the presentation of the encyclopedia, “Recent local, national, and international efforts are bringing forward the vast knowledge of Indigenous Peoples to better document food biodiversity and its cultural and nutritional contributions to human well-being. Our intent is for this publication to recognize the contributions of Indigenous Peoples in North America to our global heritage of food knowledge.”

This encyclopedia follows an earlier ‘sister’ publication on *Traditional Plant Foods of Canadian Indigenous Peoples* that is also available through the McGill library and free online through the Food and Agriculture Organization of the United Nations, who digitized the volume of over 600 pages.

The goal of the publication is stated on the website: “This is a reference guide that we hope will be useful to a variety of users: public health professionals, wildlife resource managers, Indigenous Peoples, and the education of their youth, nutritionists, ethnographers, wildlife enthusiasts, the variety of organizations serving Indigenous Peoples, and academics working in several disciplines. The presentation is in academic style that is as user-friendly as practical for this large amount of information.”

Global Meeting of the Indigenous Peoples' Forum Highlighted IFAD's Engagement

The third global meeting of the Indigenous Peoples' Forum at the International Fund for Agricultural Development (IFAD) took place in Rome (Italy) between February 10 and 13, 2017 and focused on economic empowerment of indigenous peoples, particularly women and youth. The Global Meeting of the Indigenous Peoples' Forum convenes every other year in conjunction with IFAD's Governing Council. A unique process within the United Nations system, the Forum institutionalizes IFAD's consultation and dialogue with indigenous peoples' representatives at the national, regional, and international levels.

The Forum provides an opportunity for indigenous peoples and IFAD staff to analyze and learn from previous experiences, and further strengthen their collaboration for rural transformation. The 2017 Forum coincides with the 10th anniversary of the adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

The Forum highlighted IFAD's engagement with indigenous peoples during the past decade, and brainstormed future opportunities to improve this work within the 2030 Development Agenda.

More information on the Agenda of this event is available on the IFAD website.

The First San Code of Research Ethics Developed for Protecting San Indigenous Knowledge

On March 2, 2017, as part of an EU-funded TRUST project, which promotes global research ethics, three South African San groups—the !Khomani, the !Xun and the Khwe—have developed their own Code of Research Ethics with the assistance of the South African San Institute. This code reflects the San people’s own values and aims to put an end to more than a century of invasive and exploitative research. The San Code of Research Ethics is the first code of conduct for research to be developed by a vulnerable indigenous group in Africa. The San hope that it will empower other groups and communities who are also at risk of exploitation.

The San peoples of southern Africa are known to have the oldest human DNA on earth, so they have been subjects in population-wide genomic research aimed at understanding various aspects of human evolution. The Code also describes how many companies in South Africa and around the world are benefiting from San traditional knowledge in the sale of indigenous plant varieties without any of the benefits being shared with the indigenous people. As Lydia Kruiper, a Khomami San community member, said in a TRUST Project interview (2016), “We just give of our vision and our talents to them, and we would also like to give something back to our people, but out of this deal we get nothing.” Mario Mahongo, a !Xun Traditional leader, said, “As community members we want to be part of research, which should be for the benefit of the community, not only for researchers.”

There are global codes for research ethics such as the Declaration of Helsinki, but these locally developed codes can help ensure a more equitable relationship between researchers and participants at a local level. “The local code of ethics will ensure that researchers who come to the Kalahari will be aware of local context and cultural sensitivities,” said Professor Doris Schroder, a TRUST coordinator.

The San Code of Research Ethics is available on the TRUST project website.

Watch the TRUST Project Global Research Ethics interview from September 2016 “Protecting San Indigenous Knowledge From a Research Contract to a San Code of Ethics.”

Recent ICIK Seminars

The Interinstitutional Center for Indigenous Knowledge sponsors several seminars throughout the year that are focused on indigenous topics ranging from health to societal issues. These are the seminars put on by ICIK during the 2016/2017 academic year.

Eat Healthy: Ancient Knowledge and Modern Technology Fight Cancer Together

Dr. Jairam K. P. Vanamala
September 7, 2016

Dr. Jairam K. P. Vanamala is an Associate Professor and Director of the *Food for Gut Health Laboratory* in the PSU Food Science Department in addition to being a faculty member at the *Center for Molecular Immunology and Infectious Diseases* at the Penn State Hersey Cancer Center. He studies anti-inflammatory and anti-cancer properties of whole foods using pig and rodent models. Dr. Vanamala's goal is to develop safe, effective, and affordable strategies based on whole foods to counter the growing, world-wide epidemic of cancer and other chronic diseases.

Native Myths in American Society

Dr. Bruce D. Martin and Danna Jayne Seballos
October 10, 2016

Speakers Dr. Bruce D. Martin and Danna Jayne Seballos explored the myths that have been exposed about Native peoples and their cultures in American society, and discussed events such as the Longest Walk 5 and the Dakota Access Pipeline Protest. Penn State students and staff described and reflected on experiences during Community, Environment, and Development (CED) Programs at Penn State, and gave a basic description of what each program entails.

“Why didn't I learn about Native American history in school?”

Dr. Sarah B. Shear and Madison Miller
November 16, 2016

This seminar highlighted the research of Dr. Shear, a faculty member at Penn State Altoona, and the honors thesis undertaken by Madison Miller, a Schreyer Honors College student who graduated in December. Sarah discussed how social studies curricula and teacher practices determine how students from Pre-K through Grade 12 learn about Native Americans. Madison shared the findings of her interviews with Penn State students and faculty as well as community members to understand how they learn and teach about indigenous peoples of North America.

A Promise Unmet: The State of Higher Education for American Indian Youth

Dr. Victoria E. Sanchez and Rasa Drane
November 18, 2016

Recent articles in the *Chronicle of Higher Education* outline America's broken promise of higher education for American Indians. Victoria Sanchez and Rasa Drane provided an overview and commentary on issues affecting Native access to higher education at Penn State and new initiatives that seek to address this unmet promise.

How Women Cocoa Farmers Respond to Climate Change

Sarah Eissler, M.G. Whiting Student Indigenous Knowledge Research Award Winner 2016
November 30, 2016

Sarah is studying gender dynamics related to climate change among small-scale cocoa farmers in South Sulawesi, Indonesia. A mixed-methodological approach is employed to incorporate women into the climate change narrative. Similar to the findings of other researchers, her preliminary observations suggest that women cocoa farmers, in particular, are capable of change with unique perspectives, skills, and experiences.

Ecotourism in the Ecuadorian Amazon: Indigenous, Local, and Outsider Influence

Annie Marcinek, Whiting Student Indigenous Knowledge Research Award Winner 2016
January 25, 2017

Resource use patterns in and around Misahuallí, Ecuador have shifted over time from traditional indigenous practices to market-based tourism activities. Ethnographic field research collected by MS candidate Annie Marcinek in the summer of 2016 explores divergence among current stakeholders in their values and resources in this Amazonian community. Varying perspectives about tourism among a diversified population lead to discordant ideas about how to ensure sustained environmental, social, and economic benefits for the community. This inquiry reveals an interplay of indigenous, local, and outsider knowledge that influences present practice and potential future solutions for the tourism industry in Misahuallí.

The Politics of Struggle: The National Council of Indigenous Peoples (1970-1987)

María Muñoz
January 25, 2017

STAND UP AND FIGHT! was the slogan of the National Council of Indigenous Peoples (CNPI), a national organization formed during the populist presidencies of the 1970s and 1980s in

Mexico. The CNPI was born within a movement inside a government agency; its leaders envisioned a national organization that represented indigenous peoples. In the process of fulfilling that vision, they encountered a number of challenges, including opposition from the leadership of the National Campesino Confederation, charges of ethnic inauthenticity, distrust on the part of other indigenous organizations, and government espionage. Leaders of the National Council of Indigenous Peoples struggled to bring to fruition a national organization, at least for a brief period of time, that would safeguard the interests of a very diverse national indigenous population.

The Galapagos Challenge: Stewardship in an Evolving Socio-ecological System

Bill Durham
February 10, 2017

People like to think of Galapagos as uninhabited. But human settlement began three years before Darwin's visit in 1835. Today the resident population has grown to over 30,000, including almost 3,000 Serranos (Native Americans) from the Ecuadorian highlands.

People like to think of Galapagos as isolated. But the archipelago is well-integrated today with globalizing flows of people, commerce, capital, and information. At the same time, Galapagos has internally become a "socio-ecological system" with continuous tight linkages between its biophysical and social components—a uniquely symbolic microcosm of planet earth.

Nowhere are these anthropogenic changes better illustrated than in Galapagos fisheries, especially the sea cucumber and lobster fisheries. Durham's talk focused on the evolution of a novel co-management system for these Galapagos fisheries, which, while "linky and leaky," show early signs of becoming a stewardship example for the archipelago... and maybe even the world.

People like to think of Galapagos as teaching key lessons of organismal evolution. But its future significance may well be what it teaches us about the social and cultural changes necessary for humanity to coexist with the natural resources of the planet.

Studying African Indigenous Knowledge for Improved Health and Biodiversity

Abderrahim Ouarghidi and Bronwen Powell
February 15, 2017

Indigenous knowledge has been passed down from generation to generation for centuries but cannot be classified as either static or archaic. Although often overlooked by development programmers and researchers, indigenous knowledge can help communities across Africa adapt to modern day challenges. This seminar examined multiple case studies of how indigenous and local knowledge can be employed to improve health and biodiversity conservation. Abderrahim and Bronwen examined how traditional knowledge of natural resource management is helping to improve the management of economically important wild medicinal plants in Morocco as well as how local people are adapting traditional water management practices not only in Morocco but in other areas of the world. It was also examined how working with local communities can help to better understand the local constraints of healthy food options and agricultural systems in

Tanzania, and how understanding indigenous knowledge in regards to nutrition might help to improve nutrition education in Tanzania, Ethiopia, and Burkina Faso.

One Day Workshop on Indigenous Knowledge

February 25, 2017

Abderrahim Ouarghidi and Bronwen Powell

This one day workshop intended to give students, both undergraduate and graduate, a basic foundation on indigenous knowledge, knowledge structure, theories of indigenous knowledge transmission, and methods used to study indigenous and local knowledge. The goal was for students to be able to contribute to incorporate the study of indigenous knowledge in their future work. The content of this workshop applied and appealed to a wide variety of interests and majors such as natural resource management, agriculture, nutrition, health, international development, geography, and social sciences.

Join the L-ICIK Listserv

Readers of *IK: Other Ways of Knowing* are invited to join the free listserv managed by the Interinstitutional Center for Indigenous Knowledge, which is open to anyone interested in indigenous knowledge.

The nearly one thousand subscribers to ICIK's listserv receive postings that include informative articles from reliable sources.

The listserv will provide you with advance notice of ICIK seminars that can be viewed in real time via Mediasite or viewed at your leisure as an archived video on the ICIK website. The listserv will also inform you of upcoming conferences and current articles about indigenous peoples and their cultures as well as calls for submission of proposals issued by government and non-governmental programs.

To join the ICIK listserv, go to the ICIK website, then click "Join the ICIK Listserv" on the home page and provide your name and e-mail address.