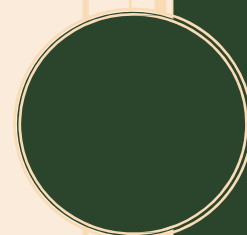# IK: Other Ways of Knowing

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

The Interinstitutional Center for Indigenous Knowledge was established as a consortium at the Pennsylvania State University in 1995 to promote communication among university faculty, staff, students, and townspeople who share an interest in the diverse local knowledge systems that enable communities to survive in a changing world.

IK: Other Ways of Knowing

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

The Interinstitutional Center for Indigenous Knowledge is affiliated with the global network of indigenous knowledge resource centers in South America, Europe, Asia, Africa and Oceania. In 2010, ICIK became the only global indigenous knowledge resource center in North America when an extensive indigenous knowledge resource collection amassed by Dr. Michael Warren at Iowa State University's Center for Indigenous Knowledge in Agriculture and Rural Development (CIKARD) was acquired by the Pennsylvania State University Libraries.

ICIK does not independently undertake indigenous knowledge research, preferring instead to build collaborative relationships that lead to interdisciplinary research addressing issues of community scholarship and resulting in a transformation of the academy to embrace reciprocal outreach to, and in-reach from, local communities.

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Welcome to the second issue of *IK: Other Ways of Knowing*. This issue not only includes peer reviewed articles, book reviews, and a new resources section but also contains several new segments.   We are introducing a category called "board reviewed" articles that includes submissions from practitioners, preliminary field work reports, and short descriptions of programs or courses related to indigenous knowledge.   This section includes articles that are less theoretical in nature, but provide a first glimpse of new research areas, programs, and initiatives related to indigenous knowledge.

The peer reviewed research articles in this issue include three from our open call for submissions. Sarah Casson's article, "Socially-Just and Scientifically-Sound: Re-Examining Co-Management of Protected Areas," scrutinizes how co-management strategies can result in unequal partnerships and disadvantage indigenous communities when traditional ecological knowledge is not valued to the same degree as Western scientific knowledge.   "Biocultural Community Protocols: Dialogues on the Space Within" by Kabir Sanjay Bavikatte, Daniel Robinson, and Maria Julia Oliva, surveys the changing landscape of international law on intellectual property rights, traditional knowledge, and genetic resources and offers suggestions for true engagement with indigenous communities that

adequately protects community property rights. In "Indigenous Farmer Networks Mitigate Risky Commercial Seed Adoption: Homophily as a Safety Net," Vincent Ricciardi examines the role non-commercialized seeds can play as a safety net in preventing the decline of agrobiodiversity.

In the first board reviewed section, we are highlighting reports from the 2013 and 2014 recipients of Penn State's competitive M. G. Whiting Student Indigenous Knowledge Research Awards.   These awards, given annually since 2013, provide funding to undergraduate or graduate students undertaking research with a significant indigenous knowledge component.   In this issue three field reports are included. Lan Xue, in "The Transformation of a Rural Village in China," focuses on the impact of tourism on traditional Chinese communities in the Chongdu Valley. A second report by Kira Hydock titled "Traditional Methods of Rwandan Goat Production and Management," contrasts the success of traditional goat herding practices with more modern stabling practices in Rwanda. The third report, "We Believe in Our Story: Using Indigenous Accounts of Migration Experience to Create Promotional Narratives for Diaspora Tourism" by Svitlana Iarmolenko, examines assimilation of Ukrainian immigrants, the use of indigenous knowledge to create culturally grounded narratives, and diaspora tourism.   We should note that the article by Vincent Ricciardi featured in the peer review section of this issue, is also, in part, the result of research conducted through a 2013 Whiting Award. We encourage other researchers, including students, who would like to present the early results of their field work to submit brief field reports to our journal.

One of the advantages of our online platform is the ability to incorporate media into our articles and we are excited to present our first multimedia enhanced content, "Other Ways of Communicating." This is the second board reviewed section of the issue. In it, six Penn State faculty and staff as well as an Egyptian ethnomusicologist share their work in the fields of vocal music, dance, instrumental music, and photography. The six articles in this special section highlight creative and contemporary artistry that is linked to indigenous peoples and their cultures.

Ann Clements's article on Maori music describes the historical and contemporary meaning of the songs of Aotearoa, while Kim Powell discusses the history of the taiko drum from its Asian beginnings to its importance in the Japan Towns of San Francisco and San Jose. Elisha Clark-Halpin illustrates how sacred places in

Ireland, the home of her ancestors, have called her to dance with their spirits, and Sarah Watts, a *haole* (foreign white person) with no previous connection to Hawaii, joined a hula school and, with the help of her *kuma hula* (hula teacher), learned to perform the complex sounds and motions of hula. In April 2014, Amy Vashaw helped to bring The Nile Project to Penn State and asked Mina Grigis to explain to our readers how he integrated Nile Basin musicians, using their traditional instruments and songs, to create a new "Nile Sound" to help heal the cultural wounds of the world's longest river. Finally, there are stunning photographs of First Nation's peoples in the Province of Alberta, Canada, and Maori youth in Christchurch, on New Zealand's South Island, taken by Lonnie Graham in his ongoing *Conversation with the World*.   We invite other scholars to submit similar pieces.

Our final board reviewed section, "Native American Cultural Engagement Course," describes how a unique course focused on the Ojibwe of Northern Minnesota has evolved over eleven years, providing an opportunity for more than two hundred Penn State graduate and undergraduate students to learn the ways of knowing of the Ojibwe that have profoundly changed the students' lives. We would be pleased to hear about courses and programs that highlight indigenous knowledge at other institutions.

Looking forward, the Spring 2016 issue will be our second themed issue guest edited by Dr. Pasang Sherpa, Post-Doctoral Fellow for Sacred Landscapes & Sustainable Futures at the New School (New York, NY). That issue will address "Being Indigenous Today" and will explore contemporary issues facing indigenous persons and peoples.

The Fall 2016 issue will be an open issue and we invite submissions for inclusion in any section of the journal.

The Spring 2017 issue will be guest edited by Manuel Ostos, Humanities Liaison Librarian in the Pennsylvania State University Libraries. The theme for the Spring 2017 issue will be the challenges and opportunities inherent to indigenous knowledge creation, distribution, and preservation. This includes a wide range of topics, including research and methodologies applied in indigenous communities, storytelling, and preservation practices, as well as associated issues such as ownership rights, ethics, and policies.

We hope you enjoy the Fall 2015 issue and welcome your comments and suggestions.

Biocultural Community Protocols:
Dialogues on the Space Within

Sanjay Kabir Bavikatte
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Abstract: This paper starts by explaining "the space within" – the ethical grammar and code by which indigenous peoples use and steward nature. It then explains the inextricable links with nature demonstrated by a number of communities with which we have worked, and their experiences in the ABS context. It discusses the importance of processes of prior informed consent, before then discussing the possibility of "tools of conviviality" that may act as bridges between the fundamental ecological principals of indigenous peoples, and the researchers and companies that seek to utilize biodiversity and knowledge within community control. In the final sections, we explore the use of both community protocols and Ethical BioTrade, with some examples, and their potential role as tools of conviviality – opening up dialogues between actors from vastly different worldviews. While we do not see community protocols as a panacea for the rights of indigenous peoples and local communities, we have seen them act as an

important step towards the protection of indigenous knowledge and the recognition of legal pluralisms.

Setting the Stage

Thirty spokes share the wheel's hub;
It is the centre that makes it useful.
Shape clay into a vessel;
It is the space within that makes it useful.
Cut doors and windows for a room;
It is the holes that make it useful.
Therefore profit comes from what is there;
Usefulness from what is not there.

- Lao Tzu, Tao Te Ching[1]

The international legal landscape of the rights of indigenous peoples and local communities is gathering momentum around the protection of their traditional knowledge and genetic resources. This momentum is simultaneously engendering complementary trajectories in national law and policy making, with terms like "access and benefit sharing," "*sui generis,*" and "protection of traditional knowledge" becoming the new phrases of choice for speaking about community rights in the context of biodiversity.

The impetus for this emerging discourse on community rights to traditional knowledge and genetic resources can be traced to the Convention on Biological Diversity (CBD). The CBD breaks new ground in international treaty law with its 194 State Parties committing to the conservation and sustainable use of biodiversity and the fair and equitable sharing of its benefits. What is unprecedented about the CBD is its recognition of the role of indigenous peoples and local communities in conserving biodiversity and the obligation it puts on states to ensure the in-situ conservation of the knowledge, innovations, and practices of these communities. The CBD makes an explicit link between the traditional lifestyles of indigenous peoples and local communities and biodiversity

conservation.

Under the CBD, the task of articulating and operationalizing the rights of indigenous peoples and local communities has, since 1998, been undertaken by the Working Group on Article 8j and related provisions (WG8j) and by the Working Group on Access and Benefit Sharing (WGABS), which led to the Intergovernmental Committee for the Nagoya Protocol (ICNP). The tenth Meeting of the Conference of the Parties (COP) to the CBD in October 2010 in Japan led to the successful adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS). The Nagoya Protocol is the first legally binding international instrument to formally encourage states to respect the rights of indigenous peoples and local communities.

Specifically, Article 12 requires Parties to consider indigenous peoples and local communities' "customary laws, community protocols and procedures" with respect to traditional knowledge associated with genetic resources. Despite some criticisms that this Article is limited by the use of ambiguous language (eg. "as appropriate," "in accordance with domestic law") (Harry 2011), it nevertheless expands the corpus of internationally recognized indigenous rights and is likely to have important impacts within its jurisdiction. Importantly, the Nagoya Protocol also works to ensure that indigenous people and local communities give prior informed consent "for access to genetic resources where they have the established right to grant access to such resources" (Article 6(2)). It also requires Parties to seek prior informed consent from indigenous peoples and local communities when traditional knowledge associated with genetic resources is being accessed (Article 7).

While there are still some ambiguities in the Protocol's text and much to be left to the interpretation of the countries implementing it, there is a general agreement that indigenous peoples and local communities have rights to their knowledge, innovations, and practices.[2] Therefore, these communities have the right to give or withhold consent to the utilization of such knowledge, commercial or otherwise. They also have the right to share in any benefits that could accrue from such utilization. Some countries have expressly recognized the rights of communities over their genetic resources in their ABS legislation, thus adding to a growing chorus of voices supporting community rights that include rights to land and

resources as well as rights to traditional knowledge.. In fact, Article 6 of the Nagoya Protocol requires each Party to take measures to secure the consent of indigenous peoples and local communities in order to access genetic resources where there exists an established right over such resources. An established right could be a right established under domestic law, such as laws relating to land, property, or protected areas, or through judicial decisions.

While the treaty is not legally binding, the WG8j has nevertheless crafted a set of resolutions and guidelines that are slowly creating a discourse of community rights to their territories, biodiversity, and ways of life. The Akwe: Kon Guidelines[3] on the conduct of social, cultural, and environmental impact assessments of developments on the lands of indigenous peoples and local communities is a case in point. The Takrihwaieri Ethical Code of Conduct[4] for respecting the cultural and intellectual heritage of indigenous peoples and local communities currently being negotiated within the WG8j is another example of the emerging discourse on community rights.

For a discerning observer, what comes through is a growing corpus of customary international law being generated within the WG8j that makes strong links between the rights of indigenous peoples and local communities to their traditional knowledge and their rights to their lands, way of life, and resources.
In contexts such as ABS and Ethical BioTrade, which we will discuss in this article, there are new tools such as community protocols that can help begin the process of relationship-building between researchers, companies, and communities. While these protocols serve as a legal interface that articulates the rights of the community, they are also able to communicate the richness of the community "space within." It is this depth that makes the community protocol a pedagogical tool that accompanies external stakeholders in their journey of beginning to know a community. While we do not see community protocols as a panacea for the rights of indigenous peoples and local communities, they act as an important step towards the protection of indigenous knowledge and the recognition of legal pluralisms.

This paper starts by explaining "the space within" – the ethical grammar and code by which indigenous peoples' use and steward nature. It then explains the inextricable links between nature and individual communities, and their

experiences in the ABS context. It explains the importance of processes of prior informed consent, before discussing the possibility of "tools of conviviality" that may act as bridges between the fundamental ecological principals of indigenous peoples and the researchers and companies that seek to utilize biodiversity and knowledge within community control. In the final sections, we explain the use of both community protocols and Ethical BioTrade and their potential role as tools of conviviality – opening up dialogues between actors with vastly different worldviews.

The Reasoning

The philosophy behind the growing recognition of the rights of indigenous peoples and local communities to their ways of life, culture, and lands has its roots in the concern over the rapid loss of biodiversity and the future of "spaceship earth." Mounting evidence shows that the "fines and fences" approach of the 1970s and 1980s, which sought conservation by relocating communities living in biodiversity rich regions, failed miserably. The "fines and fences" reasoning was based on Garett Hardin's idea of the "tragedy of the commons" (Hardin 1968) Hardin argues that individuals acting as rational maximizers of self-interest, thereby ultimately destroying common property resources.

Therefore, governments began to increase state control or allow privatization of areas that had previously been managed by communities. The real "tragedy of the commons" began when areas that, had been conserved by communities for generations through a complex system of customary laws and responsibilities began to erode because they were being managed by the state or private actors who neither understood nor shared the cosmovision[5] (Ishizawa 2009) of the communities that had nurtured these lands for centuries.

The "tragedy of commons" approach began to wane and it was eclipsed by the Nobel Prize winning work of Elinor Ostrom[6] who, through solid empirical data, unequivocally proved that under certain conditions biodiversity is better conserved by communities living in and around it rather than the state or private institutions. She outlined these conditions as the eight design principles that were pre-requisite for the stable management of common-pool resources.[7]

Article 8j[8] of the CBD under "In Situ Conservation" marks the shift from the "fines and fences" attitude to conservation to an approach that recognizes the role of traditional lifestyles and knowledge of indigenous and local communities in conservation of biodiversity. Article 8j and Article 10c[9] of the CBD oblige Parties to recognize and safeguard the integral link between conservation of biodiversity and the ways of being and knowing of these communities.

The aforementioned negotiations within the WG8j, the WGABS (pre-Nagoya), and ICNP (post-Nagoya) seek, among other things, to safeguard this integral link between the ways of life of indigenous peoples and local communities and conservation of biodiversity. The Nagoya Protocol on ABS seeks to do this through a system of rights and incentives. The Protocol recognizes the rights of communities over their traditional knowledge by requiring Parties to take measures to ensure their prior informed consent is sought before any access and utilization of such knowledge, albeit "in accordance with domestic law." It also seeks to incentivize communities to carry on their ecologically sustainable ways of life by requiring business and research interests that utilize traditional knowledge to share the benefits of such utilization with the communities providing the knowledge.

While much has been made of the "benefit sharing" aspects of the Nagoya Protocol, the fact remains that for many communities the ecosystem is the greatest and most reliable service provider, ensuring food, shelter, and health care in situations where it is not possible for governments to provide them. The loss of biodiversity and associated traditional knowledge results in the loss of livelihoods and the erosion of cultures and communities that are intertwined with these ecosystems.[10] In many situations, the destruction of ecosystems has less to do with communities not "profiting" from their knowledge and more to do with the non-recognition of their rights by states[11] .

This brings us back to the poem from the Tao Te Ching, which nearly twenty four hundred years ago wisely stated: "shape clay into a vessel/ It is the space within that makes it useful." All the emphasis on ABS and fair and equitable benefit sharing tends to miss the important truth that Ostrom unequivocally established – common-pool resources are conserved not because individuals in communities act as rational maximizers of self-interest seeking to profit from biodiversity, but because of certain kinds of customary systems of governance. Indeed, some of the

Western misunderstandings about "biopiracy" concerns focus on a perception that indigenous people are seeking economic gain as a primary outcome of their complaints. In fact, many have taken issue at the cultural offense caused by a breach of customary laws or norms, including the internalization of physical/tortious injury (Robinson et al. 2014). While Ostrom's approach is distinctly economistic, in the spirit of the Tao, we ask about the "space within." The real lessons from the community "space within" lie in understanding the ethical grammar of the relationships communities have with their ecosystems – a grammar that is coded in culture, values, practices, and customary laws.

The next section will explore the nature of the "space within." The success or failure of even the most enlightened laws and policies seeking to protect community rights to their cultural and material resources and territories hinges on this understanding.

Thinking about "Thinking about Nature"

Lack of experience diminishes our power of taking a comprehensive view of the admitted facts. Hence those who dwell in intimate association with nature and its phenomena are more able to lay down principles such as to admit of a wide and coherent development; while those whom devotion to abstract discussions has rendered unobservant of facts are too ready to dogmatize on the basis of a few observations.

- Aristotle[12]

The word "idiot" comes from the Greek word *idios*, which means "private," and an *idiotes* means a private or self-enclosed person, as opposed to a person in his/her public role. The public role as opposed to the private or self-enclosed role requires an engagement with the world and an active concern for others. The antidote to "idiocy" or "self-enclosure" is what psychologists refer to as "metacognition," which is to step outside one's own thoughts and think about one's "way of thinking". Metacognition is the process of interrogating whether the manner in which one has conceptualized a problem itself is true or whether one could be mistaken. Metacognition requires what Iris Murdoch calls an "unselfing" – or selflessness, which is to think outside the narrow confines of one's own interests and anxieties (Crawford 2009).

Returning to Aristotle's idea of "dwelling in intimate association with nature and its phenomena," the reason that some indigenous peoples and local communities have been able to ensure the conservation of ecosystems within which they live is because of an intimacy with it – an intimacy that is only possible through un-selfing, or engaging with nature on its own terms. The philosopher Albert Borgmann makes a distinction between a "commanding reality" and a "disposable reality." Nature becomes a "commanding reality" when one relates to it by respecting its own inherent qualities. Nature, on the other hand, becomes a disposable reality when one engages with it as an *idiotes*, when one's own interests dominate and nature is viewed as a resource to be effectively managed and consumed by humans.

The Navajo form of naturalism is an example of nature as a "commanding reality." The Navajos use what nature provides while recognizing that humans cannot and should not seek to "master" it. This idea contradicts the dominant approach to nature, which has its roots in the theories of Francis Bacon. Bacon argues that nature is unruly and dangerous and needs to be contained and harnessed for the benefit of humans. The Navajo relationship with nature is based on the principle of *hozho*, which is roughly translated as harmony with nature. Hozho is the kind of harmony that is based on an intimate and unselfish relationship that embraces the inherent value of all creation, as opposed to a perspective that is purely based on "use value" (Phillips 2004, 25).

To approach Nature as a disposable reality is to understand it as a device, something to be consumed or purely as a means to the satisfaction of human wants. Borgmann gives an example of how a disposable reality has eclipsed a commanding reality by explaining that people these days are less inclined to learn a musical instrument, which requires hard practice and an understanding of the instrument on its own terms. Instead, people would rather buy an iPod, which grants them the ultimate power of being able to consume virtually any kind of music with no effort on their part. With a musical instrument, an effort must be made to build a relationship, to step outside of one's self-enclosure. With an iPod, on the other hand, no such relationship need be built because the iPod is designed to be consumed according to the whims of the user (Borgmann 2003, 31).

The link that the CBD makes between the "traditional lifestyles" of indigenous peoples and local communities and the conservation and sustainable use of

biodiversity is precisely one of an un-selfish relationship, or intimacy, with nature as a commanding reality. The un-selfing that Murdoch speaks about means that the self is not *idios*, or self-enclosed, but rather is relational. For pastoralists like the Maldharis of the Rann of Kutch or the Raika of Rajasthan[13], their relationship with nature is not based on abstract knowledge but a knowledge that is embodied – a knowledge that is not cerebral but knowledge of the hands, feet, sight, sound, and smells. In fact, their perception itself is a dialogue between their bodies and the world. What they perceive is neither an empirical fact, nor a judgment, but a learnt competence or embodied knowledge (Merleau-Ponty 1962, 153). [14]

The indigenous peoples and local communities that the CBD refers to have an embodied competence about Nature; they do not think about nature as an economist or businessman would, but rather they think through nature, or as nature itself. This embodied competence is evident in both physical activity and social interactions. Customary laws, cultural norms, language, and rituals practiced by these communities are social manifestations of an intimate relationship with nature where the self and nature are not separate but intertwined. The Gunis are traditional healers in Central and Western India; the word '*guna*' means both healing and virtue, and the Gunis stress that the efficacy of their healing practice is integrally linked to a compassionate and virtuous relationship with the plants and nature as a whole. They argue that a person who does not have such a relationship with nature could use the same plant in the same manner that the Gunis use it, but would be unable to heal their ailment.[15] In similar interviews, healers in Karen communities in Chiang Mai Province in northern Thailand have expressed near identical beliefs. Indeed, some of the Karen and Hmong healers say that they would get sick and internalize/embody injury if certain plants were misused (Robinson 2013).

The use of nature is highlighted in the difference between a "relationship of intimacy" and a "relationship of use". Environmental educationist Chet Bowers notes that the relationship we have with Nature informs our "root metaphors" and vice versa. Root metaphors constitute our cosmovisions and, while the central root metaphor of the indigenous cosmovision is that of a "web of life," the root metaphor of the modern cosmovision is one of a mechanism in which the world is understood as a machine. Other iconic metaphors, such as the "brain is like a computer," are based on the root metaphor, which gives rise to a mechanistic way

of thinking in which nature is seen as a resource that must be measured and used efficiently (Bowers 1997, 204-6).

Acknowledging the "Space Within" in the Utilization of Biodiversity

In the context of ABS and other frameworks dealing with access to and use of biodiversity, the "space within" approach emphasizes the need for critical doubt. It asks for the momentary lapse of a purely economics based "incentives approach" in order to engage with communities in the use of their biological or genetic resources and associated traditional knowledge. Instead, it demands reconciling equity – the ethical dimension of ABS or similar frameworks – with the ethics of conservation of indigenous peoples and local communities. How can the sourcing of biological resources, the utilization of genetic resources, and associated traditional knowledge, protect the "space within" of these communities?
The challenge emerges in laws and regulations dealing with ABS. These rules attempt to identify rights-holders and other stakeholders, define procedures for engagement, and outline parameters for what is balanced, fair, and equitable in engagement with communities. These rules are also central in the growing body of voluntary norms addressing ABS, which establish good practices for specific types of organizations utilizing biodiversity, from research institutions to biotechnology enterprises.[16]

Such experiences also show how legal and ethical requirements linked to the use of biodiversity can, and should, be reconciled with the role and relationship of communities in respect to their lands, resources, and knowledge. In particular, Ethical BioTrade, which outlines a set of best practices for the ethical sourcing of natural ingredients derived from biodiversity, creates an interesting context for analyzing how commercial ventures are able to go beyond use value and incentives and focus on relationships. Ethical BioTrade has also provided a useful testing ground for some of the tools seeking to address some of the tensions and synergies between approaching biodiversity as a resource and approaching biodiversity as part of a community's culture and heritage, as is discussed later in this article.
As context for the discussion relating to Ethical BioTrade, it is useful to consider its rationale and main features. Cosmetics, food, and pharmaceutical companies source biological resources extensively, relying on biodiversity to create new, innovative ingredients for their products. Thus, how companies manage their

sourcing practices greatly affects not only the long-term quantity and quality of their ingredients, but also the ecosystems and communities involved in or adjacent to these activities. The notion of Ethical BioTrade thus emerged to promote and characterize the ethical sourcing of biodiversity. Ethical BioTrade sets criteria for environmental, social, and economic sustainability of activities of collection, cultivation, research, development, and commercialization of natural ingredients and the species from which they are derived (UEBT 2014a).

The criteria for ethical sourcing practices are established in the Ethical BioTrade Standard of the Union for Ethical BioTrade (UEBT 2012a). In line with the CBD and other international agreements, the Ethical BioTrade Standard includes requirements for the conservation and sustainable use of biodiversity, as well as for fair and equitable benefit sharing, respect for the rights of all actors, compliance with international and national rules, and clarity on land tenure and rights over natural resources. For example, Principle 3 of the Ethical BioTrade Standard requires that negotiations on the sourcing of ingredients are balanced, informed, and transparent. Even in cases in which there are no applicable legal requirements for ABS, Ethical BioTrade also requires that companies obtain prior, informed consent and arrange mutually agreed upon terms to be respected in any biodiversity-based research and development activities.

It is relevant to note that companies must implement these requirements along all supply chains dealing with natural ingredients. By joining the Union for Ethical BioTrade (UEBT), which manages the Ethical BioTrade Standard, companies commit to the gradual implementation of these requirements to their entire portfolio of natural ingredients. UEBT members thus establish targets for their ethical sourcing practices, prepare work plans, and report annually on progress. Their implementation of Ethical BioTrade is also checked through periodic and independent audits.

In this manner, the development and implementation of the Ethical BioTrade Standard, as well as supportive documents such as a set of guidelines for company engagement with communities, are examples of approaches aiming to explore how "ethical" sourcing practices relate to the "ethics" of indigenous peoples and local communities. This brings us back to the issue at hand, which is one of engendering a true dialogue between the utilization of biodiversity and indigenous peoples and

local communities. For such a dialogue to be genuine, it must both acknowledge and go beyond incentives or benefit-sharing. It must also emphasize engagement with the different epistemology or cosmovision of these communities, thereby entering into a relationship that protects and nurtures "the space within."

Locking Technologies and the Challenges of Free and Prior Informed Consent

It is said that there are two cardinal rules of dialogue: the first rule is to listen and the second rule is to listen some more. If we are speaking about moving beyond a purely "incentives and benefit-sharing" approach and engendering a dialogue between different epistemologies, we are essentially speaking of the "art of listening."

The debate between universalism and cultural relativism is a tired one. On one hand, claims of universal values have disastrous consequences; universalist claims that all human beings are "rational maximizers of self-interest" have led to the state control or privatization of the commons, causing untold misery and loss of biodiversity. On the other hand, cultural relativist claims have led to a non-reflexive form of radical individualism where anything goes, including lifestyles that are increasingly devoid of any respect for Nature.

Communitarian theorists such as Michael Walzer, Alisdair MacIntyre, and Michael Sandel have stepped outside the false debate of universalism versus cultural relativism by carefully arguing that communities are neither insular nor homogenous. On the contrary, history has shown that communities are porous and heterogeneous. The debate of universalism versus cultural relativism makes the false assumption that communities are insular and unchanging. The reality is that most communities are dynamic and constantly dealing with both internal and external pushes and pulls. The very survival of communities depends on their ability to adequately engage with processes of change within and without.[17]

The real issue at hand is one of "good process." Good process asks the questions: how can two different epistemologies or cosmovisions engage and dialogue as equals? If the objective of the interaction between communities and other actors is to learn from and benefit each other, how can we do so without running the risk of

imposing the values of the dominant group on the weaker group? We need to be pragmatic enough to acknowledge that the engagement between communities and other actors takes place in the context of the "real world" where the playing field is not level. Therefore, there is the added "duty of care" or "burden of good faith" on persons or organizations involved in the utilization of biodiversity to listen and then listen some more.

Moving to the realm of practice, there is a significant challenge that lawmakers/ regulators and businesses face amidst the changing legal landscape, which has begun to acknowledge community rights to their biodiversity and knowledge. This is a challenge of getting free and prior informed consent of communities before the utilization of their biodiversity or knowledge. The challenge is a layered one with questions ranging from who gives consent for something that is communally owned to what does "free" and "informed" mean in the context of free and prior informed consent. The answers to many of these questions can only arise in context and there are no universal answers to them. However, what is imperative is good process and the foundation of good process is a genuine dialogue amongst equals.

The limits of the emerging law on prior informed consent of communities are the limits of state law itself. The French post-development thinker Andre Gorz makes a distinction between "locking" and "open" technologies. Open technologies facilitate communication and sharing and rely on the personal and creative energies of their recipients, making them both users and creators (Gorz 2010). Locking technologies, on the other hand, are those that come pre-set and work on a principle of command and control; their development and deployment is centralized and they provide their recipients little or no freedom to adapt it to their local needs and context. While Gorz attempts to understand how technology shapes society, it would be useful to apply these ideas to law and understand legal systems as a kind of technology that could either be an open technology or a locking one.

How we approach the problem of free and prior informed consent is significantly informed by how we understand the technology of law itself. While a state could pass a law requiring businesses to get the consent of communities before accessing their plants or knowledge, how the lawmaker or regulator verifies whether the

consent is free and informed and how the business goes about getting this consent makes all the difference. The key question here is one of good process – does the process ensure a genuine engagement with the cosmovision of the community in question, thereby protecting the "space within," or does the process impose a set of external values on the community that erodes the "space within" or the cosmovision of the community, which has nurtured the ecosystem in the first place.

Accompaniment and the Making of Convivial Law

The word "process" is an open ended one. It signifies something that is ongoing; it signifies a relationship. We need to make a paradigm shift from perceiving interactions between communities and actors engaged in the utilization of biodiversity as a series of disparate, solitary one-off events to understanding these interactions as the building blocks of a long-term relationship. While consent, in law, is a one-off event, there is growing recognition in realms such as ABS and Ethical BioTrade that consent, in fact, is an ongoing process. The success or failure of an interface between communities and other actors is based on building sustainable relationships, which, in turn, hinges on a process of "accompaniment."

In the context of accompaniment it is necessary to consider how communities and other actors can accompany each other in order to learn about the "space within," how the requirements and procedures of ABS and Ethical BioTrade open themselves to this kind of learning, and if developing technologies of engagement allow for this kind of accompaniment and learning or if they are all about efficiency and profit.

Can the process and the form undertaken by communities to provide consent facilitate the process of dialogue and accompaniment? Can this process mark a break from the locking technologies of state law and create an open technology of community law making? Answers to questions such as these can be found by exploring the impediments to dialogue and accompaniment.

The impediments to a process of dialogue or accompaniment lie in conflating our understanding of corporate persons with our understanding of communities. Corporate persons or companies, like communities, are aggregates of individuals

that own assets and manage them according to certain, agreed upon rules. However, this is where the similarity ends. The values, the internal dynamics, and the decision-making processes between corporations and communities are, for the most part, radically different. However, as far as state law is concerned, communities and companies are considered to be the same for the purposes of providing consent. For example, if a business wants to access the traditional knowledge of a community, then prior informed consent must be obtained (see Hayden 2007).[18] However, a legal contract signed by the chief of the community in exchange for certain benefits might be accepted as good evidence of consent, even if there might be issues of representational politics (Greene 2004).[19]

That is why voluntary norms, such as the Ethical BioTrade Standard, have sought to complement legal requirements through putting process at the core of ethical practices and prior informed consent. For example, in Principle 3 of the Ethical BioTrade Standard, which deals with equitable benefit sharing, a requirement outlines the process of negotiating issues related to prices and other conditions of the sourcing of natural ingredients, as well as access to genetic resources or associated traditional knowledge for the purpose of research and development. The aim is to ensure that producers and communities have the opportunity and necessary information to make free and informed decisions about their engagement in sourcing, research, and development activities. To this end, negotiations must take into account customary law and practices, provide spaces and mechanisms for the active contribution of all actors, and be based on information that is clear, relevant, and complete.

Thus, companies working towards Ethical BioTrade need to recognize the particular nature of communities and their relationship with their ecosystems, along with their inherent rights, interests, and concerns. This requires measures to address information asymmetries and participatory processes that involve the broader community as well as producers. It also demands a relationship based on rules of engagement that recognizes inherently distinct discussion and decision-making procedures between companies and communities.

These rules of engagement, not only in the Ethical BioTrade context but also much more broadly, are increasingly defined by the communities themselves. The obligation of defining adequate processes for dialogue and engagement, in many

ways, falls on the community. Many communities now have begun to use this "right to consent" to begin to develop a language of interface that can communicate their epistemology. They have begun to develop what Ivan Illich (1973) called "convivial tools." Illich used the term "conviviality tools" to describe tools that give each user the greatest opportunity to enrich the environment with the fruits of his or her vision. Industrial tools, according to Illich, deny this possibility to those who use them and allow their designers to determine the meaning and expectations of others (Illich 1973).

Situations where the idea that a community can give consent with a signature on a contract ignores the fact that consent requires a relationship of respect and learning. However, if actors invest time and energy, a relationship could be far more sustainable in the long run than a signature on a piece of paper.

Legal technologies tend to disguise and reinforce existing relationships of inequality. For example, one could well argue that if the chief of the community signs a contract that permits a business to utilize the traditional knowledge of a community, the community has given prior and informed consent. However, this model does not ensure that consent was an outcome of customary processes within the community, the values of the community, and an understanding of the implications of consent.

Community Protocols as Tools of Conviviality

If the first part of the "art of a dialogue" is the "art of listening," communities have begun to develop tools that exemplify the second part of good dialogue, which is the "art of speaking." The art of speaking is a delicate balancing act of speaking with one's own voice and articulating one's deepest concerns and desires while, at the same time, communicating in a manner that the listener can understand. The art of speaking puts the burden of simultaneously doing justice to oneself and the listener on the speaker.

Current legal technologies that have been developed to secure the free and prior informed consent are not convivial. They are pre-fabricated, giving little space to community ways of speaking. To make matters worse, the state decides whether an issue has been adequately communicated and comprehended. For example, in

places such as Australia, Vanuatu, South Africa, AND India, emerging ABS legislation increasingly gives the authority to the local regulator to determine whether or not a community has given consent for the use of its traditional knowledge. The problem with such authority is that it is unfettered and undefined; there is no way for the regulator in question to know whether the consent was informed and resulted from a consultative, value-based process within the community. The plight of the regulator is also the plight of the organization seeking access to genetic resources or traditional knowledge. This organization requires consent, and consent must be given in a form that is sufficient for regulatory approval. Whether this consent has the backing of the community and whether the person who consented is the chosen representative of the community are questions that remains unanswered.

This sort of circumstance is well illustrated by a recent case in Australia relating to the Kakadu plum, which emerged in 2009. On March 10, 2009, Senator Rachel Siewert of Western Australia raised concern about a patent application in the Australian Senate (Question 1172). She was concerned that current development plans for commercial activities utilizing the plant might be stopped by the patent, particularly in relation to cosmetic or skin care products. The patent in questions was WO/2007/084998 on "compositions comprising Kakadu plum extract or açaí berry extract," which was filed by representatives of Mary Kay Inc., a cosmetics company, on January 19, 2007. This international patent application had subsequent national examinations, including in Australia (Australian patent application number 2007205838). In 2010, further publicity was raised surrounding the attempted patent, its validity in the light of prior art and traditional uses, and the issues it might cause in developing industries (Robinson 2010). Several indigenous organizations and Aboriginal corporations were contacted to jointly submit letters to the company to seek withdrawal of the patent applications both in Australia and abroad. In addition, a pre-grant opposition was filed by one of this paper's authors under Section 27 of the Australian Patents Act, regarding aspects of novelty and obviousness.

Aside from questions surrounding the validity of the claims in the patent application, this was an important test case relating to the Australian ABS system, as well as the potential for ethical sourcing of the plum. Given the attempt to obtain a patent, the company is making a de facto claim to have undertaken

innovation through research and development – the trigger for ABS. To contextualize, the Kakadu plum is endemic to northern Australia, found mainly in the Northern Territory, the far north of Western Australia, and also, to a limited extent, in the far north of Queensland. This means that these regions have the potential to capitalize on their endemic "natural capital" in useful products. Given that the Kakadu plum has been used by several Aboriginal communities as a high energy food, it has since been investigated by researchers and industry and found to be one of the world's highest sources of ascorbic acid (Vitamin C) (Gorman and Whitehead 2006). Because of its potential anti-oxidant effect of the ascorbic acid, it has been used in a number of food, skin care, cosmetic, and hair care products.

These states and territories have ABS laws and regulations in place. In the Northern Territory, where the Kakadu plum is found and harvested, the Northern Territory Biological Resources Act (2006) requires prior informed consent from local providers of a biological resource used for bioprospecting as well as traditional-knowledge holders. Also of potential relevance are the ABS requirements under Part 8A of the EPBC Regulations (2000), which requires permits for access with the intent to conduct research and development on biological resources in Commonwealth Areas, such as Kakadu National Park, where the plum is found; informed consent if the biological resources are on indigenous owned land or native title held land; (EPBC Regs. 2000, 8A.10(1)); and consultations with indigenous land councils. Several relevant companies and Aboriginal corporations were contacted by one of the authors (Robinson, pers. Comms., 2010-2015), and these corporations denied supplying Kakadu plums to Mary Kay and providing consent to the cosmetics company. Also, based on several interviews and communications, there is no evidence that Mary Kay obtained permits from the Northern Territory, Queensland, or Commonwealth governments either (Robinson 2010).

In an interview with SBS World News Radio in 2011, Crayton Webb of Mary Kay claimed that they had ethically obtained Kakadu plums from a supplier in the Northern Territory, under a license issued by the Australian Government (Atkinson 2011). However, there does not appear to be any such license listed on the Australian Department of the Environment's website, suggesting that access for trade and commercialization is being conflated with access for research and development. The supplier has not yet been publicly named, so it is not possible to

determine if indigenous people are involved in supply of the plum, or if there are substantial employment and income benefits. Without an ABS agreement, it seems there are no other benefits likely.

The Gundjeihmi Aboriginal Corporation, which represents the Mirarr, said people in the area had used the plum for longer than anyone could remember: "The Kakadu plum has been an important source of food and medicine for the Mirarr" (Powell and Murdoch 2010). Geoff Kyle of the Gundjeihmi Aboriginal Corporation indicated that the Mirrar were not necessarily seeking benefits, but rather were keen to be informed and consulted about such activities (Powell and Murdoch 2010; Atkinson 2011). Several similar statements were issued by Aboriginal organizations and the Northern Land Council. Subsequently, a number of these organizations also came forward expressing the desire to develop community protocols.[20]

If some of the Aboriginal communities had developed and publicly conveyed clear procedures for when and how they expect to be engaged in such negotiations, then there may have been few or no criticisms of this venture, and it may have benefited indigenous populations more directly and explicitly. As in other cases we have seen, several of the communities that utilize the Kakadu plum have cultural associations with the plant and are able to derive some economic benefits from it. The development of such community protocols would represent an "art of speaking" tool, which would communicate the desires of these specific communities about their values, concerns, and interests. Such protocols could help ensure that the communities are involved in any future consultations relating to the Kakadu plum or other biological resources; are able to benefit from the sourcing, research, and development of this resource; and are able to document their values and beliefs with respect to their traditional knowledge and stewardship of biodiversity.

The "art of speaking" tools that communities have begun to develop are, at their core, "tools of conviviality." They are tools, as Illich points out, that are developed and controlled by communities and provide communities with the greatest opportunity to enrich a dialogue with their vision. They ensure that communities can articulate their "space within" in their own voice, while accompanying the listener on his/her journey of understanding the community, its values, and its

needs.

A community protocol is a convivial legal tool that is collectively developed by a community. It is aimed at those who want to engage the community and it seeks to articulate to the community's way of life, history, customs, and decision-making processes. It begins a dialogue that goes beyond a purely instrumentalist or use-value interaction and embarks on building a relationship. Through its community protocol, a community says to the listener: if you want access to our lands, biodiversity, and knowledge, then you need to hear our story, you need to understand what these things mean to us, what our values are, and how we make decisions. By engaging with our protocol, we step outside the prescribed roles of "willing buyer" and "willing seller" and begin the process of accompaniment.

Community Protocols: Towards a People's History of the Law

Indigenous peoples and local communities have always had customary laws and norms through which they regulate the use of their lands and knowledge. Stable governance of commonly shared lands and knowledge, as Ostrom points out, is based on the knowledge of these laws and norms within and amongst communities that partake of these lands and knowledge. Community protocols, however, are convivial tools that are dialogic in their purpose. They represent the community and its cosmovision in a manner that allows for engagement that goes beyond the superficiality of a market transaction. While they are clearly not a panacea, community protocols take the community and their partners on a journey, including negotiation processes, towards more equitable research or commercial arrangements – for example, e.g. for tourism, cosmetics, and other industries. Community protocols are also strategic in their deployment and are emblematic of the "agency" of indigenous peoples and local communities. For the most part, communities are not passive victims of external social, economic, and legal forces, but are active agents who critically analyze these forces and strategically engage them to secure rights.

In his classic work *The Making of the English Working Class*, the English historian E.P. Thompson marshals rich evidence to disprove what he calls "the enormous condescension of posterity" (1963) where history is written as if it is a result of great figures or global forces, erasing the struggles of the ordinary people who

have resisted and informed these forces. History, according to Thompson, is not just made by the forces of the market but also by the struggles, aspirations, and hopes of ordinary people, striving to influence the condition of their lives (Thompson 1963).

A community protocol in the international legal landscape is an example of the agency of indigenous peoples and local communities to write their history into the process of law making. They seek to address the lack of community participation in the development and implementation of laws and policies that affect communally managed biodiversity and traditional knowledge. The existing soft laws relating to indigenous peoples rights, such as the United Nations International Labor Organization's Indigenous and Tribal Peoples Convention (ILO 169) and the Declaration on the Rights of Indigenous Peoples, are outcomes of years of struggle by indigenous peoples. At the same time, indigenous peoples and local communities have begun to advocate for the recognition of these soft law rights in treaty law, and the achievement of the Nagoya Protocol may now be utilized as a lever towards further recognition of rights (Bavikatte and Robinson 2011). Communities argue that if Article 8(j), and now the Nagoya Protocol, recognize their right to give consent for the use of their knowledge, then their consent will be given according to their customary laws and community protocols, which must be recognized by states. Community protocols as tools of interface and dialogue were developed to strategically respond to concerns of states and external stakeholders that it would be difficult for non-community members to know what the customary norms or laws of a community were.

The experience of states stepping in to make decisions on behalf of communities or businesses entering into rough and ready agreements with select individuals in the community who lack the mandate, has been chastening. Indigenous peoples and local communities in the international ABS negotiations have repeatedly pointed out that communities who share biodiversity or knowledge can come together on the basis of common cause, shared values, or collective decision making to develop community protocols that provide the legal certainty and clarity that external stakeholders need. The next section provides some examples of these, and explains their practical relevance in the context of Ethical BioTrade and ABS.

Experiences with Community Protocols

Although it is very early in their history, there are several community protocols that have been developed around the world of relevance to our discussion here (see Table 1). These protocols reflect the growing concern amongst communities about the respect of their basic rights (land rights, cultural rights, use of natural resources), customary laws and norms, and their engagement with outside parties, like companies, researchers and government agencies, on fairer and more ethical terms.

Table 1. Recently-Developed Community Protocols and Main Focal Areas
Source: Authors; Natural Justice's Community Protocols
(www.community-protocols.org); Swiderska (2012)

Community	Location	Date Protocol Finished	Main Areas of Focus
Peruvian Potato Park Quechuan Communities	Pisaq, Cusco, Peru	2009 (started consultations in 2007)	ABS, TK and GRs, trade, tourism
Bushbuckridge Traditional Health Practitioners	Bushbuckridge area of the Kruger to Canyons UNESCO Biosphere Reserve in South Africa	2009 (started in 2009)	ABS, TK and GRs, sustainable use of biodiversity
Raika Pastoral Community	Rajasthan, India	June 2009	ABS, TK and GRs, sustainable use of biodiversity
Samburu Pastoralists	Various districts in Kenya	2009	ABS, TK and GRs, sustainable use of biodiversity
Vaidyas (healers) from the Malayali Tribe	Vellore District of Tamil Nadu, India	August 2009	ABS, TK and GRs, sustainable use of biodiversity
Gunis and Medicinal Plant Conservation	Mewar Region of Rajasthan, India	August 2009	ABS, TK and GRs,

Farmers			sustainable use of biodiversity
Tingandem	Tanchara community, Upper West Region, Ghana	2010	Mining, FPIC, sacred sites
Maldhari Pastoralists	Banni grasslands of Kachchh, India	2010	Endogenous development, TK and GRs, ABS
Ulu Papar Protocol	Penampang, Sabah (Borneo), Malaysia	March 2012 (started consultations in 2010)	FPIC, engagement, land
Melangkap community Protocol	Melangkap cluster of villages, Kinabalu, Borneo, Malaysia	Under development in 2014	Endogenous development
Khoe Community Protocol	Bwabwata National Park, Kavango and Zambezi Regions, West Namibia	Under development in 2014	Land, genetic resources, ABS

The main areas of focus in Table 1 provide only a snapshot of the values and concerns expressed by these communities – these protocols cover more thematic concerns than we can easily describe here. Although it would be difficult to try to compare and evaluate the impact of these protocols at such an early stage, there is some growing evidence from these communities of the benefits (Swiderska 2012; Argumedo 2011). As the table suggests, most of these have been developed with biodiversity in mind, with many of the protocols responding to the three main objectives of the CBD: conservation of biodiversity, sustainable use of biodiversity, and fair and equitable sharing of benefits arising from the utilization of the basic elements of biodiversity. With the advent of the Nagoya Protocol in 2014, it seems likely that we will see the development of many more community protocols, and that we will have the opportunity to see how they impact external parties and to monitor the emergence of potential disputes. Indeed, it will be important to see how state and international bodies respond to these grass-roots expressions of customary law and legal pluralism. Already, community protocols are developing legal and moral force as a prerequisite for ensuring free and prior informed consent, not only in ABS and biotrade agreements, but also in REDD+

and payments for ecosystem services. [21]

The relevance of community protocols in Ethical BioTrade was explored through a joint project conducted by UEBT, Natural Justice, and GIZ from 2011 to 2012. This project looked at the potential role of community protocols as tools to facilitate and strengthen community engagement in Ethical BioTrade activities. In particular, the project included three test cases in Peru, Brazil, and Madagascar, which involved UEBT members and their indigenous or local (UEBT 2012b). In these cases, suppliers participated in internal discussions on issues such as their rights over biological resources and associated traditional knowledge, related governance structures, social and cultural values, and the specific vision, expectations, and commitments pertaining to existing commercial relationships. These points were later described in one or more documents, which, in one of the cases described above, eventually became a community protocol.

Moreover, the test cases in Ethical BioTrade involved an additional step: a dialogue between the UEBT member and the suppliers, based on the outcomes of the internal discussion process. This dialogue facilitated a balanced and participatory exchange of information about each group's respective context, values, decision-making procedures, expectations, and commitments. The outcome was a joint understanding of the rules of engagement that guide the relationship between company and community, as well as the particular challenges of the relationship and ways to address them moving forth.

This project reaffirmed the value of community protocols – and their rationale and underlying concepts more generally – in promoting the "art of dialogue'" in the context of Ethical BioTrade. Indeed, these lessons have been included in a recently-published UEBT (2014b) guide to Dialogues in Ethical BioTrade: How to establish respectful, balanced, and inclusive discussions in the sourcing of natural ingredients. This guide, which supports UEBT members in meeting requirements of the Ethical BioTrade Standard, describes the core elements of a dialogue, including respect, participation, and information-sharing. It also outlines the measures necessary for establishing a dialogue, including clarifying rights and obligations, determining local needs and expectations, understanding the biocultural context, and establishing rules of engagement jointly with local actors.

Conclusion

Indigenous peoples and local communities around the world have begun to highlight their existing protocols or develop new protocols in an effort to occupy this unprecedented opening in international legal space. They have begun to hold up their protocols as examples of how communities can self-determine the terms and conditions of access to their lands and knowledge by external stakeholders, in accordance with customary norms and values. By doing so, communities have undercut the old argument that communities are incapable of engaging with external stakeholders without state intervention and make a resounding case for legal pluralism.

Brendan Tobin, a lawyer for indigenous peoples, notes:

> Legal pluralism cannot be envisaged as the mere acceptance of co-existence of legal regimes, with customary law applicable to indigenous peoples within their territories and in relation to their own internal affairs. Rather it will require incorporation directly or indirectly of principles, measures and mechanisms drawn from customary law within national and international legal regimes for the protection of traditional knowledge. (Tobin 2009, 110)

Therefore, community protocols are a way to incorporate principles of customary law into national and international law. This is done by securing national and international legal recognition of these protocols as a clear representation of a community's values, decision making structure, and set of terms and conditions for engagement with the community.

In contexts such as ABS and Ethical BioTrade, community protocols begin the process of relationship building. While they are legal interface documents, they are also able to communicate the richness of the community "space within." It is this depth of a community protocol that makes it a pedagogical tool that accompanies external stakeholders in their journey of beginning to know a community. Ultimately, a community protocol is a way of doing business "the old fashioned way." A community protocol says: before we negotiate any terms, let's talk awhile, let us tell you a little more about ourselves so you can understand our way of life and what we hold most dear to our hearts. And, when you know what is in our

hearts, perhaps you will value what we value and join us in protecting the "space within."[22]

Notes

[1] Cited by Lehman, Karen. 1997, 354.

[2] The traditional knowledge referred to here is 'traditional knowledge associated with genetic resources' which is the dominant interpretation by State Parties of the term 'knowledge, innovations and practices' referred to in Article 8(j) of the CBD.

[3] See www.cbd.int, accessed September 8, 2015.

[4] See www.cbd.int, accessed September 8, 2015.

[5] The term 'cosmovision' has to do with basic forms of seeing, feeling and perceiving the world. It is made manifest by the forms in which a people acts and expresses itself. This means that a cosmovision does not necessarily correspond to an ordered and unique discourse (cosmology) through which it can be described/explained and understood. In some cases the only way to understand a cosmovision is through living it- by sharing experiences with people who sustain that mode of living and that life-world (Ishizawa 2009, 118).

[6] For example, Ostrom 1995

[7] There are also other useful examples, such as those in Fisher (2008).

[8] Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices.

[9] Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

[10] The loss of biodiversity and the loss of cultural diversity are integrally linked because cultures of rural communities are integrally tied to their resource-dependent ways of life. For example, indigenous peoples represent the largest portion of cultural diversity on earth. Linguistic diversity can be considered a measure of cultural diversity; nearly 5000 of the over 6000 languages in the world are spoken by indigenous peoples and 90% of the world's languages will be extinct in the next 100 years. Language extinction is linked to cultural extinction, which is in turn linked to species extinction. Lack of secure rights to sustainable livelihoods is rendering many indigenous communities extinct. See www.terralingua.org, accessed September 8, 2015.

[11] For example, see Forsyth 2011, an example of community rights in the Pacific.

[12] Cited in Crawford (2009).

[13] The intimacy that the Raika and the Maldharis have with their animals and nature is articulated in their community protocols available at www.community-protocols.org. Accessed September 8, 2015.

[14] Our efforts to understand how some communities relate to Nature are best explained by the French philosopher Maurice Merleau-Ponty. He asks the question: 'is what we perceive is based on an empirical fact or our own judgment'? To apply his question in our context- "Is our perception of Nature based on observing Nature as a 'fact out there' or is it based on what 'we judge' Nature to be?" He answers this question using the popular optical illusion of the picture, which is both the profile of a young girl and an old woman depending on the perception of the viewer. . In the picture if we see a young girl, we don't see the old woman and vice versa. So according to him, reality is not just an empirical fact, based on what we perceive- because our perception could be limited. On the other hand reality is not just a judgment either because even if we are told that there are two images in the picture, we cannot just judge that until our eyes are able to work out the two images. Perception then is neither what we plainly perceive nor our judgment but a conversation between the body and the world. Perception is a learnt competence or an embodied knowledge like driving a car. The embodied knowledge incorporates the internal space of the car, such as the brakes, the accelerator, clutch and steering wheel and also the external space of the car such as its dimensions, speed etc. The car in many ways becomes incorporated into one's body rather than separate from it where one does not think about the car, but rather thinks through it or as it. See, Merleau-Ponty, Maurice. 1962, 153.

[15] In the community protocol of the Gunis on the resources page of www.naturaljustice.org. Accessed September 11, 2015.

[16] In Article 20, the Nagoya Protocol encourages the development, update and use of voluntary codes of conduct, guidelines and best practices and/or standards in relation to access and benefit-sharing.

[17] '…the search for an alternative paradigm has to be a search for a new basis of unity, not merely the assertion of a diversity of cultures….The philosophical perspective that should guide such an endeavor should steer clear of both imperialist claims to universality and the normless striving for relativity: it should affirm both the principle of *autonomy* of each entity (human as well as social) to see out its own path to self-realization and the principle of *integration* of all such entities in a common framework of interrelationships based on agreed values.' From Rajni Kothari in Alvares, Claude. 1980, xii-xiii.

[18] This has been described as a process of 'collectivization' for the sake of benefit-sharing in Hayden (2007). It is also worth noting another of Hayden's articles with regards to community inclusions and exclusions in the bioprospecting activities of the International Cooperative Biodiversity Groups (ICBG) Latin American projects in Hayden (2003a).

[19] See interesting discussions about indigenous representation, conflicting ideas about prior informed consent and its interruption of bioprospecting activities, in Greene (2004) and also Hayden (2003b).

[20] Interviews and meetings by Robinson in 2010, 2011 and 2015.

[21] See http://www.community-protocols.org/community-protocols. Accessed September 14, 2014.

[22] The authors note the opinions expressed in this article are not necessarily those of the institutions they represent.

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Socially-Just and Scientifically-Sound: Re-Examining Co-Management of Protected Areas

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Abstract: Co-management of protected areas is a growing trend within the conservation management field, but current practices often fail to replicate the ideals. The core tenets of co-management governance must be re-examined. An improved co-management governance structure would incorporate many of the tenets important to self-management of protected areas. A key tenet would be indigenous peoples' rights to self-control their knowledge, resources, and cultures, as is done within self-management governance structures. Best practices of co-management of a protected area should include the equal power relationships between partners, dynamic understanding of indigenous peoples (as opposed to a static understanding), and the acceptance of traditional ecological knowledge (TEK) as a legitimate knowledge system. This paper examines the current ideal best practices of conservation of protected areas, delves into the problems currently facing most co-management implementations, demonstrates the depth of TEK as a legitimate knowledge system, explores how self-control is the key tenet of self-management, uses self-management as an approach to re-think co-management, and discusses the ways in which co-management should be re-structured as a governance approach to conserving protected areas. Without an examination of the core tenets that comprise it, co-management as a governance structure will continue producing unequal partnerships that view indigenous peoples as unable to properly join in the protection and management of the world's important ecosystems, landscapes, and species.

Introduction

As climate change and other forms of environmental degradation increasingly threaten the world's most biologically and culturally important areas, it is important to create systems to effectively halt this alarming degradation. Conservation management works to ensure the protection of some of the world's most ecologically-diverse and culturally-valuable areas.

Such conservation is often achieved through the management of protected areas through organizations like the IUCN. The IUCN (International Union for Conserving Nature), which has observer and consultative status at the United Nations, is an international organization comprised of over twelve hundred governmental and non-governmental organizations that work together to create and define conservation best practices. The IUCN defines a protected area as a "clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values" (Dudley 2008, 2). Each protected area is different: diversity in political actors and environments means that each protected area has a unique system of governance and management that aligns with the six IUCN management categories recognized by the Convention on Biological Diversity -- Ia: Strict Nature Reserve, Ib: Wilderness Area, II: National Park, III: Natural Monument or Feature, IV: Habitat/Species Management Area, V: Protected Landscape/Seascape, and VI: Protected Area with Sustainable Use of Natural Resources. In this approach, protected areas are the "fundamental building blocks" of almost all efforts toward ecological and cultural conservation theory, practice, and strategy (Dudley 2008, vi). They provide internationally recognized systems to protect endangered species and threatened landscapes, while also playing key roles in climate change resiliency strategies for ecological and social systems.

Co-management as a governance strategy is becoming recognized as a potential way forward in conservation management that solves multiple problems in current practices of conservation. Borrini-Feyerabend et al. (2004) define a co-managed protected area as a discrete area, defined by the government, in which government and partner stakeholders share power and responsibility (32). The partner

stakeholders referred to by Borrini-Feyerabend et al. (2004) are often indigenous peoples and mobile communities that require the area for the survival of their culture and livelihoods. Co-management can create governance in which the decisions and responsibilities of protecting an area are based on multiple knowledge types and are enforced through a strengthened management approach that is agreed upon by a multiplicity of political actors. Western science knowledge and traditional ecological knowledge (TEK) should equally and fairly inform management decisions. Berkes (2012) defines traditional ecological knowledge as "a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" (7). In ideal co-management governance, TEK is not synthesized into scientific knowledge but instead understood as a discrete, holistic, and legitimate knowledge system.

To determine the extent to which TEK is effectively incorporated, respected, valued, and used in co-management governance, this paper examined literature on relevant conservation efforts. It was found that the current practice of co-management falls short of the ontological ideals and often disempowers indigenous peoples. This paper argues that the current practices of conservation in protected areas do not allow for proper co-management governance in which power is equally shared between indigenous peoples, conservation practitioners, and government officials. This paper shows that this unequal relationship stems from an invalidation of the complex nuances of TEK and that this unequal relationship ultimately hurts conservation efforts.

Many of the problems currently facing co-management can be drawn back to an inability of the international community to view TEK as a legitimate knowledge system. Delegitimizing this knowledge system disempowers the peoples whose lives, cultures, worldviews, and practices are founded upon TEK. Unless TEK is seen as equal to scientific knowledge as a basis for conservation management, there will not be fair partnerships in co-management governance. Adams and Hutton (2007) argue that such partnerships are inherently political and must address "issues of rights and access to land and resources, the role of the state (and increasingly non-state actors in NGOs and the private sector), and the power of scientific and other understandings of nature" (151). All too often, the current

approach to co-management ignores the underlying power relationships that drive and are driven by larger understandings of the validity of knowledge systems. Until TEK, and its role within protected area management and governance, is explicitly addressed and properly included, conservation cannot take place in a socially-just and scientifically-sound manner.

This paper calls for a re-examination of the core tenets that comprise co-management governance. As suggested by this paper, an improved co-management governance structure would incorporate many of the tenets important to self-management of protected areas. A key tenet would be indigenous peoples' rights to self-control their knowledge, resources, and cultures, as is done within self-management governance structures. Best practices of co-management of a protected area should include the equal power relationships between partners, dynamic understanding of indigenous peoples (as opposed to a static understanding), and the acceptance of TEK as a legitimate knowledge system. This paper examines the current ideal best practices of conservation of protected areas, delves into the problems currently facing most co-management implementations, demonstrates the depth of TEK as a legitimate knowledge system, explores how self-control is the key tenet of self-management, uses self-management as an approach to re-think co-management, and discusses the ways in which co-management should be re-structured as a governance approach to conserving protected areas. Without an examination of the core tenets that comprise it, co-management will continue producing unequal partnerships that view indigenous peoples as unable to properly join in the protection and management of the world's important ecosystems, landscapes, and species.

Current Ideal Practices of Co-Management

All protected areas should uphold best practices for ecological, cultural, and governance considerations within conservation efforts. Dudley (2008) argues that ecological and cultural best practices can only be achieved when implemented through a governance structure that values fairness among partners. This governance structure works best for the particular protected area, however, it must be managed through a system flexible enough to ensure long-term ecological and cultural resiliency of the area.

Co-management is a governance form in which multiple stakeholders and partners negotiate to create an agreed-upon management plan for the conservation and the enforcement of rights. In such governance systems, indigenous peoples are not mere stakeholders but rather are understood to be full partners in the process of management. A strong co-managed governance structure must incorporate historical events and relationships, previous governance structures, multiplicity of actors with explicit interest in the protected area, and ecological realities, as well as the more intangible aspects of governance, such as fairness of process, capacity and means to manage, and true power-sharing (Borrini-Feyerabend et al. 2004) Co-management governance allows for knowledge integration of scientific knowledge and TEK. Knowledge integration promotes resiliency in both governance and management. More resilient governance structures and management approaches provide stronger conservation practices (Bohensky and Maru 2011). A properly created and implemented co-management structure can result not only in the protection of cultural systems, but also of ecological systems (Redman and Kinzig 2003). In many protected areas, ecological and social systems are interconnected. The resiliency of one system can promote the resiliency of the other—as long as neither is allowed to over dominate the other (Plummer and Armitage 2007).

As was declared in the 1997 IUCN Inter-Commission Task Force on Indigenous Peoples, "The best guarantee of the conservation of biodiversity is that those who promote it should uphold our rights to the use, administration, management and control of our territories. We assert that guardianship of the different ecosystems should be entrusted to us, indigenous peoples, given that, we have inhabited them for thousands of years and our very survival depends on them" (25). Co-management presents the possibility that a protected area could incorporate the ecological and cultural needs of an area in a manner that upholds the best practices required by governments, communities, scientists, and conservationists. When done well, a co-managed protected area shares both power and responsibility among the partners in the management of an area. In doing so, proper co-management acknowledges the rights of the partners and increases the participation of peoples involved in the conservation of protected areas.

One example of a co-management process heralded by many as successful is Nahanni National Park Reverse. Established in 1972, the Nahanni National Park

Reserve is co-managed by the Dehcho First Nations, the Canadian Government, and the Northwest Territories Government (UNESCO World Heritage Committee 1978; Parks Canada 2009a). The ongoing process of co-management draws upon the rights to land of the Dehcho First Nations, the knowledges of the Dehcho First Nations, the ecological best practices of conservation, and the realities of the existing power and capacity for the multiple political actors to manage the Park Reserve (UNESCO World Heritage Committee 2001). The protection of this ecologically and culturally rich region depends upon an ever-evolving and constantly negotiated management plan that respects past historical events, relationships, and traditional knowledge (The Deh Cho First Nations, the Government of Canada, and the Government of the Northwest Territories 2001b; Parks Canada 2003; Parks Canada 2009b). The Nahanni National Park Reserve is managed by a multiplicity of political actors who have social and ecological interests in the protection of the area. The 2010 Nahanni National Park Reserve Management Plan states that a major objective of future management is: "The cultural heritage and values of Naha Dehé are protected and management respects traditional users and interests" (Parks Canada 2010, 23). As such, a cultural resource values statement will be written and implemented throughout the overall management strategy to ensure proper protection and inclusion of Dehcho First Nations' worldviews, interests, and knowledges (Parks Canada 2004). The existing management plan was developed in coordination with the Naha Dehé Consensus Team (The Deh Cho First Nations, the Government of Canada, and the Government of the Northwest Territories 2001a). The process of co-management of Nahanni National Park continues to be premised on a negotiation between the Dehcho First Nations, the Government of Canada, and the Government of the Northwest Territories, and be advised by community members, academics, and conservation practitioners (Dehcho First Nations 2011; Ford 2011; UNESCO World Heritage Committee 2011).

The management planning process of the Nahanni National Park Reserve is continually under review to ensure conservation best practices and fairness in the distribution of burdens and benefits of the protected area (Parks Canada 2010; Dehcho First Nations 2011). Such a paradigm of fair negotiation has been essential to the management plan of the Park Reserve from the beginning. As explained in the most recently published Management Plan: "Dehcho First Nations and the Government of Canada are negotiating self-governance, land use planning and

resource management issues through the Dehcho Process. As part of the Dehcho Process Interim Measures Agreement, Dehcho First Nations and Parks Canada created the Naha Dehé Consensus Team in June 2000" (Parks Canada 2010, 2). The process of maintaining ecological integrity in a socially just manner is essential to the management of the Nahanni National Park Reserve. The Naha Dehé Consensus Team plays a key role in ensuring fair negotiation and adherence to best practices of conservation. Comprised of four appointees from Dehcho First Nations and three appointees of Parks Canada, the Consensus Team works together to co-manage the protected area (Parks Canada 2009a).

The management planning process focuses on the ever-evolving negotiation between the conservation partners (The Deh Cho First Nations, the Government of Canada, and the Government of the Northwest Territories 2003; Parks Canada 2009b). Each new management plan agreement builds on the previous plans, emphasizing the previous plans' strengths and addressing its weaknesses to ensure the production of relevant and effective management (Parks Canada 2009b). Key features of successful co-management strategies include partnerships that are multi-party, multi-level, multi-disciplinary, and flexible, with an emphasis on constantly evolving process, and created in a paradigm in which powers are shared and benefits distributed. An explicit focus on multi-party collaboration requires incorporating different types of political actors, including their respective capacities and interests. A co-management structure that can balance these diverse political actors' differing capacities and interests will provide much stronger long-term governance than one that ignores these complexities to focus only on the politically powerful. The complexities of power relationships between politically and culturally diverse groups can present major difficulties to a successful co-management governance structure, but, when successful, this diversity can likewise ensure the long-term stability and success of a protected area.

A diversity of political actors with a wide spread of informal and formal political power must come together in a co-management agreement. All political actors involved should recognize that governance is a process, not than an end result. The process of co-management is strengthened by a structured, regular review process of the management structure in a manner that emphasizes flexibility to create continual improvement. These key features of co-management are founded on a basic principle of power-sharing among the political actors involved in the

management of protected areas. All political actors involved have a responsibility to ensure that decisions are fairly decided and that those management decisions result in the sharing and distribution of the benefits of a protected area.

Shortcomings of Current Practices of Co-Management

While, in theory, co-management systems have the potential to create the ever-idealized "win-win" solution, in practice, many co-management protected areas do not achieve these ideals. Many fall short of the idealized theories that inform co-management. The losers in such situations are often those who are most politically disempowered and those who are not properly included in the conservation process and creation of a protected area. The problems that undermine a co-managed protected area can often be drawn back to an unequal relationship of power, inclusion, and knowledge legitimization.

Lockwood, Worboys, and Kothari (2009) describe the seven major flaws of many co-management protected areas: "1) Denial of cultural identity and rights of communities; 2) Inadequate or absent policies/laws; 3) Applications of rigid, universally applied prescriptions; 4) Local and national inequities in power; 5) Inadequate, short-term or see-saw government commitment; 6) Inadequate capacity; and 7) Continuing threats from external sources" (541-544). Denial of cultural identity denies any validity of TEK and its use in a co-management structure. Denial of communities' rights denies the ability of TEK to be seen as a legitimate knowledge. Inadequate policies and laws reduce the possibility that the theory of co-management could be adequately continued in the practice of co-management. Little to no enforcement of the agreements created through the co-management process undermines the entire governance structure. Applications of universally applied prescriptions often overvalue scientific knowledge and undervalue TEK in a manner that eliminates most knowledge produced at the local level. Prescribed standard management is not well-suited to culturally and ecologically diverse landscapes. Rigid prescriptions prevent the necessary flexibility in the process of co-management. Local and national inequities in power prevent true partnership relationships and result in benefits to only certain political actors. Inadequate commitment by governments undermines the co-management process and dramatically shortens the long-term viability of such an endeavor. Co-management best practices cannot be implemented if the political actors involved

lack the capacity to manage the protected area as agreed upon by the partners of the co-management structure. External threats, like extractive projects, international market demand, and improperly planned tourism projects, can overwhelm the structure of co-management governance.

Tokenism of TEK underpins the seven major flaws outlined by Lockwood, Worboys, and Kothari (2009). Subpar co-management strategies create unequal partnerships in which TEK is co-opted through overly prioritized Western-style governance (Stevenson 2006; White 2006; Ross et al. 2010). As Nadasdy (2003) writes of his work with the Kluane people of Yukon Canada, "within the context of contemporary bureaucratic wildlife management and land claims negotiations, decisions/concessions simply cannot be based on anything other than Euro-North American assumptions about land and animals" (8). Within such a paradigm, TEK is reduced from a highly nuanced and complex knowledge system to a shallow dataset to be incorporated into datasets that align better with scientific knowledge.

When the knowledge underpinning a culture is not valued equally within a partnership, the negotiations concerning management decisions can never be equal between indigenous peoples and Western science conservation practitioners. As Berkes (2012) argues, knowledge produced by conservation professionals in the normative, positivist paradigm of science is often prioritized over knowledges produced by indigenous peoples (252). Such an approach neglects the needs of indigenous peoples and degrades TEK. It allows for nothing other than a tokenism of TEK to be used in the management of a protected area. If those who possess power in the governance of a protected area do not see value in TEK, they will not and cannot fully employ it as a legitimate knowledge system. Nadasdy (2003) says, "when First Nations peoples make claims about animals as intelligent social beings, they get nowhere because government biologists and resource managers, regardless of their own personal beliefs or understandings, simply cannot implement management decisions based on such alternate concepts of animals" (8). All too often, if TEK is used at all, only a tokenism of inclusion of multiple knowledge systems will exist. Tokenism of TEK can only create unequal partnerships within a co-management approach.

It is a misuse of TEK to employ it only as something to supplement scientific knowledge. Babidge et al. (2007) argue that this misunderstanding, and resulting

disempowerment of indigenous peoples, stems from the fundamental difference between TEK and scientific knowledge. They argue that TEK should be understood as a holistic system, while scientific knowledge should be understood as "categorized and compartmentalized" (151). Scientific knowledge lends itself to being dissected and creating data points. TEK does not. It is a holistic system that cannot and should not be reduced to data points or used in context-free generalization (Kuhn 2007).

The conflict between conservation practitioners and indigenous peoples over knowledge sources and the validity of a multiplicity of knowledge paradigms presents a major hurtle to true partnership relationships in co-management systems. As Berkes (2012) asks, "How can the researcher avoid the trap of treating indigenous knowledge as just another information set form which data can be extracted to plug into scientific frameworks? How can both indigenous and scientific kinds of knowledge be used together respectfully?" (174). Indigenous peoples cannot be seen as full partners until their knowledge(s) are seen as equal to scientific knowledge.

Berkes (2012) suggests that this conflict can be traced back to knowledge authority claims within the Western positivist tradition (173). Knowledge produced outside normative, positivist science does not fit well inside the current, Western science paradigm and is thus easily dismissed (Berkes 2012, 173). Those who hold the authority over the knowledge informing the management strategies hold the power of the governance system. The common use of TEK within conservation uses a shallow version of the depths of TEK.

An understanding of TEK that views it as inferior to scientific knowledge is a poor representation of the depth and breadth of TEK as a knowledge system (Li 2001; Peloquin and Berkes 2009; Kothari et al. 2014). Such a reductionist approach is all too often replicated in projects that follow policy and legislation that require an inclusion of TEK into protected area management, but with little instruction on how to incorporate it effectively. This approach proves incredibly problematic for the equal treatment of indigenous peoples, the protected areas being conserved, and the integration projects in co-management governance structures that aim to bring together TEK and scientific knowledge in the name of conservation.

In theory, the mandated integration of TEK and scientific knowledge in the name of conservation seems logical. In practice, it often proves disastrous and unhelpful to indigenous peoples. Sweeping generalizations are made about TEK and misconceptions are abundant. Unrealistic expectations are put onto these integration projects with little to no support to ensure their success. Simpson (2005) explains: "Governments often create requirements of inclusion of TEK but do not emphasize a process of inclusion that requires proper consultation with indigenous peoples in long-term timeframes and appropriate financial support" (1650). Many integration project frameworks require TEK to be pre-planned and written so that it can be processed and fit into the existing Western science paradigms (Simpson 2005). Such documentation changes the resonance of TEK from an adaptive knowledge system to a stagnant dataset.

A true integration of TEK and scientific knowledge can never succeed if both are not viewed as distinct and valuable knowledge systems. Integration of the two cannot happen until larger paradigms are understood. An integration project in a co-management governance cannot expect TEK to be subsumed by scientific knowledge. Nadasdy (1999) argues that integration projects are almost always problematic because they are founded on the conformation of TEK to western approaches to knowledge and knowledge production. Integration of knowledge forms cannot be viewed as a technical problem to be solved. Instead, it must be approached with a holistic understanding that views power relationships between indigenous peoples and the government as the foundation for any integration project. The problem of integration projects is not a technical one of integrating data sets but rather a political one of understanding drastically differing worldviews (Nadasdy 1999). An integration project that ignores power relationships between the political actors at play and the knowledge hierarchies assumed to be true by the powerful political actors could never be equal and fair. An approach to integration of TEK and scientific knowledge that comes from a government mandate, weakly supported financially and politically, that seeks quick fixes rather than long-term solutions will never succeed.

A Nuanced Understanding of TEK

A better approach to incorporating TEK as a knowledge system would approach TEK as a nested system of an ever-evolving process that is inseparable from one's

way of life. TEK is not a body of knowledge in which pieces can be selectively chosen to emphasize in an integrated management plan for conservation. Co-management plans cannot adapt TEK into data points of scientific knowledge. Instead, true co-managed areas must incorporate scientific knowledge and TEK approaches to the land and peoples. Doing so requires a re-framing of how scientific knowledge understands TEK. A major difference between TEK and the scientific approach is the way in which knowledge is conceptualized. Science views knowledge as a "thing known," and TEK views knowledge as an on-going process; it is a way of knowing rather than a defined known concept (Berkes 2012, 8). This is a radical difference in understanding what knowledge represents. Berkes (2012) argues that TEK is a way of knowing and a process through which one's worldview is essential in framing and understanding concepts and objects.

Defining TEK as a way of life and a worldview allows one to understand the multiple levels and nuanced relationships inherent to TEK. McGregor (2004) argues that TEK should be defined as much more than a body of knowledge. TEK includes, but should not be limited to, such a definition: "TEK also encompasses such aspects as spiritual experience and relationships with the land. It is not being just the knowledge of how to live, it is the actual living of that life" (McGregor 2004, 78). TEK, McGregor (2004) emphasizes, is "expressed as a 'way of life'; it is conceived as being something that you do" (78). TEK is not an abstract thing known but rather a worldview expressed through everyday life.

Berkes (2012) presents a similar way of defining the nuanced understanding of TEK that shows such a knowledge system to be a way of life rather than just a body of knowledge. He argues for TEK to be understood through four inter-related levels: (1) local knowledge of land and animals, (2) land and resource management systems, (3) social institutions, and (4) worldview (17). Most management systems that give preference to scientific knowledge and superficially incorporate TEK only value the first level of Berkes's (2012) description: local knowledge of land and animals. This level of information is important but, as many have argued, is not the entire system of TEK (Babidge et al. 2007; Sheridan and Nyamweru 2008; Bohensky 2011). Berkes's (2012) other three levels of TEK are equally important to the first level, but most management systems that claim to incorporate TEK only address Berkes's first level. A management system that only incorporates one

aspect of TEK but disregards the others trivializes the wealth of information provided by respective cultures that possess TEK. To oversimplify TEK is to trivialize entire cultures.

Trivializing TEK is a social injustice continually perpetrated against indigenous peoples. Bohensky and Maru (2011) argue that recognizing TEK within the context of conservation management is "beyond scientific or broader societal merit: it is tantamount to social justice, sovereignty, autonomy, and identity of indigenous peoples (e.g., Agrawal 1995, Nelson 2005, Aikenhead and Ogawa 2007)" (1). For far too long, indigenous peoples have been mistreated and disempowered in the name of colonization, governance, and progress. The current trends in governance structures of protected areas must be understood in the particular historical and social legacies in which they reside.

The colonial legacy continues to impact indigenous peoples today and to influence their capacity and mandate to manage protected areas. Repairing the damages perpetrated by colonialism, particular historical, and social legacies will require large timescales and great effort (Martin and Sloan 2012). Such injustices will not be corrected in a short time span, nor will they be adequately remediated if TEK continues to be understood within the conservation arena in an oversimplified manner. A full understanding of TEK, like the one presented by Berkes (2012), is required. Governance structures must view TEK as a nuanced, legitimate knowledge system that incorporates inter-related levels of local knowledge, land and resource management systems, social institutions, and worldviews. Such a definition is critical to indigenous peoples' ability to claim and acquire self-control—a key step in addressing past social injustices.

Self-control over knowledge, resources, and culture is inherent to creating socially-just co-management systems within protected areas. Self-control often forms the basis of indigenous peoples' claims to power in the international political arena. Self-control of the understanding and use of knowledge, resources, and culture forms the principles of self-determination of indigenous peoples. As was written in the 1997 Indigenous Peoples and Sustainability IUCN Inter-Commission Task Force on Indigenous Peoples, "…Indigenous Peoples' basic demand is that their right to self-determination be recognized" (4). Self-control, when applied to protected area management, is the ability to determine how a landscape is

managed, what knowledge(s) are used to manage that landscape, and what governance structures are employed and by whom.

The current, cumulative, and future impacts of a protected area must be considered when creating partnerships of co-management. Such an approach requires considering human rights within the context of conservation management. Self-control must be an essential tenet of future management decisions. The management, and the knowledge(s) that underpin the management decisions, are both impacted by and impact a community's ability to self-control knowledge, resources, and culture.

As was written by the 1997 IUCN Inter-Commission Task Force on Indigenous Peoples: "Successful in situ conservation and wider use of indigenous knowledge in sustainability strategies depend on strengthening Indigenous Peoples' rights to self-determination. The ideal situation is for communities to be in control of all activities both at the planning and implementation stages, with limited outside involvement if necessary" (4-5). Self-control of knowledge and an equal involvement in governance at every stage and level of management is required. Partnerships can and should be encouraged, but they must allow for indigenous peoples' ability to control the ways in which their knowledge, resources, and culture are employed in the name of conservation.

The United Nations Declaration on Indigenous Rights (UNDRIP) was adopted by the United Nations in 2007. It explicitly recognizes that "respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment" (UN General Assembly 2007, 2). UNDRIP affirms indigenous peoples' individual and collective rights to "fundamental freedoms that include territorial, tenure, political, economic, development, cultural, environmental, civil, and legal rights. The rights acknowledged in UNDRIP are considered to be the 'minimum standards for the survival, dignity and well-being of the indigenous peoples of the world'" (Stevens 2007, 20). These minimum standards then make the foundation for any relationship between indigenous and non-indigenous peoples working in partnership for conservation. UNDRIP offers an international recognition of the cultural, historic and natural rights to the lands indigenous peoples once possessed. Any conservation partnership that includes indigenous peoples as political actors must

recognize these rights and understand UNDRIP's influence on indigenous peoples' argument for self-control of knowledge, resources, and culture.

Control of their knowledge and ability to manage their lands through traditional systems is an essential part of many indigenous peoples' movements to re-claim their cultural heritage and revitalize their communities (Alcorn et al. 2003; Kimmerer 2002; Ross and Pickering 2002; Berkes 2012). UNDRIP Article 3 states, "Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development" (2007, 4). Indigenous peoples' ability to claim self-control and management rights to their lands is situated in the acknowledgement of TEK as a valid knowledge source. Respect for TEK, the knowledge system that informs and is informed by a community's relationship to land, allows communities the opportunity to possess self-control over their resources and culture.

Self-Management and Self-Control

Self-management of lands is the ultimate expression of self-control. Self-management refers to the ability of a community to solely govern and manage their land. Self-management does not preclude the assistance of NGOs (non-governmental organizations), governments, or conservation practitioners, but it does require that the community leads the management systems and determines the final decisions; the community has both the authority and responsibility of conservation (Lockwood, Worboys and Kothari 2009, 120).

Community conserved areas are the most common form of self-managed protected areas. Defined in the Seventh Conference of the Parties to the Convention on Biological Diversity congress, community conserved areas are ecosystems with a high degree of value—both ecological and cultural—that are conserved by indigenous peoples through customary law informed by (and informing) TEK (Lockwood, Worboys, and Kothari 2009). Lockwood, Worboys, and Kothari (2009) argue that within community conserved areas "much of the historical interaction with the environment happened not for the intentional conservation of biodiversity but in pursuit of a variety of interlocked objectives and values (spiritual, religious, security related, survival related), which did, however result in

the conservation of ecosystems, species and ecosystem-related values" (120). This type of conservation is not always explicitly referred to as "management" of a landscape by indigenous peoples. Instead, terms like "caring for the country," "taking care of the land," or "keeping the land" (Weir 2009; O'Flaherty et al. 2008; Miller and Davidson-Hunt 2010) are used. The end result, the protection of a landscape, has often led to the same goals of conservation practitioners, despite the differences in underpinning worldviews (Adams and Hutton 2007). Lockwood, Worboys, and Kothari (2009) write that community conservation areas all share three main characteristics: "1) Close relationship between community and environment; 2) Worldview and lifestyle choices result in conservation regardless of the explicit stated purpose of a conservation goal; 3) Communities, through select elite or entire group, make decisions on the management of ecosystems" (549).

Communities develop and are developing their own self-regulating systems, usually interrelated to TEK, that are employed through cultural practices and customary law (Luzar et al. 2011). These self-management systems usually align with conservation best practices of maintaining rich biodiversity and ecologically healthy systems (Painter, Duran, and Miro 2011). As outlined by Dudley (2008), best practice conservation objectives require nuanced management systems that exist in the long-term and focus on knowledge systems that understand the local environment. The use of TEK employed by indigenous peoples can and has achieved such results (Peloquin and Berkes 2009; Kothari et al. 2014). Indigenous peoples cannot be expected to self-manage protected areas based on outsiders' conceptions of how TEK can be employed to manage a landscape. Rather, indigenous peoples must be allowed to manage their social institutions in a manner consistent with their knowledge system. This difference is of great importance.

Terry Tanner of the Wildland Recreation Program of the Confederated Salish and Kootenai Tribes explains that the ability of the Salish and the Kootenani tribes to manage their lands and resources depends on their ability to retain their knowledge of the environment, which has been developed and honed by their community over generations (Cajune, Martin, and Tanner 2008). This intense understanding of place comes from an ever-evolving, nested system of knowledge that is inseparable from community members' ways of life in which local understanding of flora and

fauna are interwoven with land and resource management systems, social institutions, and worldviews (Berkes 2012).

TEK proves an essential part of self-management because of its flexibility and connection to place. Igoe (2004) explains that TEK is founded on inter-generational knowledge sharing (46). Knowledge of how to interact with an environment and the flexibility to deal with abnormalities in the environment comes from information gathered over multiple generations, not just one. Such an approach comes from a nuanced understanding of TEK in which one does not reduce TEK or indigenous peoples to a hyperbolic, romanticized understanding in which diverse, heterogeneous communities are slotted as static, apolitical actors (Li 2000).

True self-management of an area by indigenous peoples can prove a difficult concept to translate into larger, bureaucratic institutions. The drastic difference between the worldviews of indigenous peoples and the worldviews of the scientific community presents many stigmas and misconceptions that create barriers to the acceptance of true self-management (Ens et al. 2012). These differences make it hard to translate key conservation concepts between worldviews in a manner that allows for self-control by indigenous peoples and acceptance of management techniques by the scientific knowledge community.

Many indigenous peoples' environmental monitoring systems examine the same environmental aspects as conservation practitioners, but the way in which the variables are assessed and understood may differ radically (Berkes 2012, 201). For example, Berkes (2012) explains that killing game is understood in radically different ways by the Cree and by Western conservation managers. Western conservation managers consider hunting to be a violent act to be regulated by a preservation ethic. Cree do not view hunting as a violent act but as a relationship between the hunter and the animal killed in which the animal itself regulates the hunt. Both Cree hunters and Western conservation managers believe that their worldview of killing creates the humane approach to the issue and would bring that worldview into their conservation regulations of hunting.

Indigenous peoples' sovereignty and treaty rights are often tenuous and not always respected (Igoe 2004). Development projects and other short-term economic gains

can cause splintering within communities, which are always heterogeneous (Lockwood, Worboys, and Kothari 2009). Historical legacies, like colonization, have disempowered many indigenous peoples. While many strive to regain their lost cultures, knowledges, and political sovereignty, indigenous communities may not yet possess the cultural and political institutions that would allow them to follow through on a self-management governance structure in a protected area.

Using Self-Management to Rethink Co-management

In situations where self-management proves unrealistic, co-management governance structures must still incorporate key tenets of self-management: TEK must be viewed as a legitimate knowledge system and indigenous peoples must be true partners in all decisions at all levels and stages of the conservation effort.

Examples of good co-management partnerships between conservation practitioners and communities can often be seen in the conservation of sacred natural sites. Sacred natural sites provide good case studies for the proliferation of true partnerships in co-management governance. These sites are well protected and conserved through means that respect and require TEK and scientific knowledge (Sheridan and Nyamweru 2008).

Sacred natural sites often represent the continued conservation of culture and biodiversity through bureaucratic, governmental protection and cultural taboos, regulations, and laws. Such cultural taboos, regulations, and laws have protected these sites for long periods of time. Within the IUCN framework, sites that are recognized as sacred are afforded larger protection structures to help the site remain free of most disturbances. Within the sacred natural site protection framework, scientific knowledge is not prioritized over TEK; international governance supplement local customs instead of overpowering them. Management plans that value TEK can count on cultural practices that have ensured the continued protection of a sacred natural site. Verschuuren et al. (2010) state, "Sacred natural sites often represent the highest human aspirations and spiritual values of any given culture" (63). Dudley et al. (2009) argue that not only do these sites have high cultural value but, often, they also represent areas of concentrated biodiversity. Effective protection of a biologically-rich ecosystem is ensured through a convergence of TEK and international governance regulations.

The successful co-management of sacred natural sites that value TEK and scientific knowledge equally shows that other areas can be properly co-managed to ensure socially-just and scientifically-sound practices. Berkes (2012) argues that "it is often assumed that indigenous peoples have only two options: to return to an ancient and 'primitive' way of life, or to abandon traditional beliefs and practices and become assimilated into the dominant society. Increasingly, indigenous groups have been expressing preference for a third option: to retain culturally significant elements of a traditional way of life, combining the old and the new in ways that maintain and enhance their identity while allowing their society and economy to evolve" (271). Sacred natural sites can help move the conversation beyond this false dichotomy into Berkes's (2012) example of a third option. Well-managed sacred natural sites show that culturally significant sites can be protected, valued, and represented in scientific best practices of conservation.

Of course, not all sacred natural sites are well-managed. As with most other co-managed, protected areas, enhanced recognition of TEK as a legitimate knowledge system is necessary in many sacred natural sites. Further research is needed to ensure that indigenous peoples (and their knowledge systems) are true partners in conservation. Cultural value identification -- within the World Heritage system, for example -- should be closely examined to ensure that true partnerships exist in both designation and management of sacred natural sites.

Using the tenets of self-management, one can examine the current priorities in conservation management to better understand how indigenous peoples must be valued as true partners and how TEK should be employed a legitimate knowledge system within co-management structures. Current priorities in conservation management are to emphasize five elements within a protected area system: (1) representativeness, comprehensiveness, and balance; (2) adequacy; (3) coherence and complementarity; (4) consistency; and (5) cost effectiveness, efficiency, and equity (Dudley 2008, 10). These five elements of conservation provide a solid foundation for the achievement of the best practice objectives of protected areas. Ecological representativeness ensures the management of biodiverse and heterogeneous landscapes. Adequacy ensures that enough space is protected for the realistic conservation of an area and the species within it. Coherence ensures a beneficial relationship between an individual country's development goals and the

country's conservation management plans. Consistency ensures standardization of management to uphold best practices within conservation. Cost effectiveness, efficiency, and equity ensure that conservation is both financially feasible for the political actors involved and socially beneficial through economic and social mechanisms in which both benefits and costs are distributed equally. These five elements of protected area management create the foundation of all governance approaches, especially for co-management systems.

The success of these five elements depends on the recognition of TEK as a legitimate knowledge system and on the equal representation of indigenous peoples. Adams and Hutton (2007) state that all co-management partnerships must start with an equal relationship between indigenous peoples and the government conservation managers. To do so, "such partnerships must address the widely embedded intolerant and coercive approaches of park planners and managers to indigenous residents in parks (Colchester 1997, 2002)" (Adams and Hutton 2007, 162). The consistency between the five elements of conversation, the employment of TEK as knowledge system, and true partnership with indigenous peoples is clear:

1. Representativeness, comprehensiveness and balance: The use of TEK can inform decisions about the placement of protected areas. TEK can ensure that a protected area is established within an ecologically-important region of a country and that multiple environmental types are represented. A partnership with indigenous peoples can help to ensure the successful protection of a conservation area. Working with the surrounding communities, instead of against them, has the potential to drastically improve the effectiveness of a protected area.

2. Adequacy: Working with indigenous peoples can help to provide effective protection of an area, allowing for sufficient area for the preservation of ecosystems and species of conservation interest.

3. Coherence and complementarity: True partnerships between conservationists and indigenous peoples can create protected areas that reach conservation goals while also fulfilling the country's development goals.

4. Consistency: When valued equally, TEK and scientific knowledge create

management objectives that are applied consistently across a multitude of political actors involved in the conservation.

5. Cost effectiveness, efficiency, and equity: Indigenous peoples should be intimately involved in deciding the balance between the costs and benefits of a protected area and the location(s) of protected areas. TEK should be used to inform these decisions. Working with indigenous peoples, not against or around them, creates a much more efficient system of allocation of protected areas.

Each of Dudley's (2008) five categories of conservation management in a protected area is improved by the inclusion of TEK as a legitimate knowledge system and a true partnership with indigenous peoples. Better, more efficient protected areas can be achieved through an increased number of knowledge systems that inform conservation best practices and the inclusion of indigenous peoples through true partnerships. This type of protection can be achieved through governance that values indigenous peoples and other conservation partners equally. Such a co-management structure is achievable and improves protected areas.

Discussion

This analysis gives us a foundation of nine principles that are necessary to the creation of co-management governance structures. Above all, these nine principles are founded on a system that empowers indigenous peoples and values a nuanced understanding TEK and scientific knowledge equally. The nine principles are:

1. Establishing the kinds of partners involved in co-management governance structure: Who are they; what capacities, mandates and motivations do they possess; and how do they currently interact with one another and the site in question? Is there compatibility between the partners' interests, activities, and political powers? If there is not compatibility, how is that difference accounted for? If there is a difference in capacity, mandates, and motivations for conservation, how is that difference solved?

2. Distribution of burden and benefits of protected area: What political actors are responsible for the burdens of the area under protection? Who reaps the benefits? Are these burdens and benefits distributed fairly amongst involved political actors?

If they are currently not being distributed fairly, how is that inequality being addressed? What process is guiding that redistribution of burdens and benefits? What political actors determine the distribution of burdens and benefits of the protected area?

3. Historical legacy and Rights: Does the governance structure acknowledge the existing legal or customary rights to land and resources in the protected area? Does the governance structure acknowledge the historical legacy of disruptions (like colonization) of cultural institutions?

4. Incorporation of TEK and scientific knowledge systems as equally legitimate: What is the process to ensure fair contributions from both scientific knowledge and TEK? Is TEK being used superficially or employed in a true, nuanced manner? If it is currently being used superficially, how is that problem being corrected?

5. Flexibility and ability to continually evolve as a governance process: can the co-management structure adapt to the ever-evolving relationship between the political actors to maintain a fair governance structure?

6. Social Performance: Does the co-management governance structure promote a fair relationship between partners? In what ways is "fair" measured?

7. Ecological Performance: Does the protected area provide the necessary structure for the required ecological conservation needs? By what knowledge systems is the ecological performance judged? What political actors determine the management plan of the protected area?

8. Local Particularity: Does the co-management governance structure take into account the local, ecological, and social particularities?

9. Resiliency: Does the co-management governance structure promote resiliency in its ecological frameworks and social institutions? By what knowledge systems is "resiliency" defined?

These nine principles demonstrate the important tenets to consider when integrating TEK and scientific knowledge. They show the important questions the

political actors creating a co-management system of governance must ask at all stages of the process of establishing a protected area. Using these nine principles and asking their related questions allows practitioners and communities to create successful co-management processes that promote complementary social justice tenets and scientific best practices in the name of conservation.

Above all, the process of creating a co-management system of governance must be begin and end with an important question: "Is the governance type in place for a given protected area fair in the light of historical conditions, customary and legal rights and impact on the relevant communities?" (Borrini-Feyerabend et al. 2004, 21). These nine principles are useless as a theory foundation if, in practice, the concept of a fair relationship between partners is ignored. Fairness must drive the process of creating a sustainable, co-managed protected area.

Conclusion

Understanding the knowledge systems and the ways in which they are employed in the name of conservation of a protected area provides a key insight into co-management governance structures. It's important to acknowledge the respective differences between TEK and scientific knowledge and the ways in which they are currently perceived within most conservation projects.

This paper argues that a static understanding of TEK that reduces it to a trivial data set subordinate to scientific knowledge is not only socially unjust but is also inadequate for the protection of ecologically and culturally important areas. This paper argues that co-management governance in protected areas must consider nine foundational principles and their corresponding questions. These principles pull strongly from the theory and practice of self-management of protected areas by indigenous peoples. Such self-management requires the proper acknowledgement and employment of TEK as a legitimate knowledge system. Good examples of the proper integration of TEK and scientific knowledge can be seen in the protected sacred natural sites. Sacred natural sites, while often covering small areas, give examples of how multiple knowledge systems can work together in a conservation management system to bring together multiple political actors with an array of capacities, mandates, and interests in the protection of an area.

Self-management requires indigenous peoples to be able to self-control their knowledges, resources, and cultures. Rights to self-control over resources and cultures are often founded in the larger recognition of TEK as a legitimate knowledge source. Understanding TEK as a legitimate knowledge source allows TEK to be employed as a key principle of the management of a protected area and provides indigenous peoples with a larger recognition of their management capacities and mandates.

Self-management can prove unfeasible or unpractical in many protected areas because of historical legacies of colonization, strict government regulations, and existing unequal power dynamics between indigenous peoples and other political actors. In such cases, co-management can be a useful governance structure if it draws upon many of the key principles of self-management and recognizes TEK as a legitimate knowledge system.

TEK is a nested system of continually evolving processes that is inseparable from the ways of life of the indigenous peoples who create TEK. Rather than being understood as only a body of knowledge, TEK should be thought of as a lifestyle. It is an interconnected system of local knowledge, land and management systems, social institutions, and worldviews that impact one another and cannot be completely separated into discrete items. Viewing TEK as anything less nuanced or selectively employing only certain parts of a TEK knowledge system is nothing short of tokenism of TEK.

The recognition of TEK as a legitimate knowledge system can help to re-frame co-management governance structures. The current practices of most co-management systems fall short of the theoretical ideals of such governance structures. Most continue to create political environments in which indigenous peoples are disenfranchised and disempowered. A major step in correcting these governance structures is the recognition of TEK as a legitimate knowledge system on par with scientific knowledge.

Such a step is crucial but not easily done. As Stevens (2014) writes, "Although Indigenous peoples' rights are now established international law and policy, ensuring that these rights are honored and facilitated is a huge challenge" (22). The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) helps

to direct how co-management is understood and implemented. Most present-day approaches to co-management prioritize ecological criteria over social criteria, and, therefore, do not recognize TEK as a legitimate knowledge source to be fully used in the management of a protected area. The adoption of the UNDRIP through the United Nations requires that self-management of protected areas not only be emphasized in protected area management but also that any instances of co-management be founded on principles that value TEK and scientific knowledge equally.

Co-management as a governance structure has the potential to work well within all six categories of protected areas defined by the IUCN. From strict nature reserves to protected areas with sustainable use of natural resources, co-management provides a long-term advantage to the governance of a protected area. Further research is needed to better understand the best practices for implementing fair co-management structures within each category of IUCN protected areas. It should be noted that the previous relationships and interests of involved political partners as well as the ecological particulars would determine the individual implementation of a co-management partnership in a protected area. Regardless of the individual specifics of each protected area, the nine principles described above are applicable to all six categories of protected areas. This is because the nine principles are based on the premise that TEK should be valued as a legitimate knowledge source and that such a valuation allows for fair partnership between political actors. More work should be done to examine how these nine principles can be applied in each protected area category.

Valuing indigenous peoples as partners in conservation increases the knowledge systems used to protect an ecologically and culturally important area. This approach will be beneficial as climate change increases and other types of environmental degradation continue to threaten protected areas. Co-management premised on TEK and scientific knowledges can create strong mitigation and adaptation strategies for the predicted climatic changes. Ecosystem and social system resiliency is essential to all climate change strategies. Such strategies should rely heavily on a nuanced inclusion of TEK. TEK, as opposed to scientific knowledge, is often place-based; process-oriented; and consists of a nested system of local knowledge, management systems, values, and worldviews. Such a localized approach is essential to creating resilient systems. As we continue to find

ways to mitigate and adapt to climate change in protected areas, the principles of the UNDRIP must underline all co-management relationships. Co-management can only begin when TEK is viewed as a legitimate knowledge source. The understanding of TEK as a legitimate knowledge source is the understanding of the rights, cultures, and values of indigenous peoples.

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Homophily as a Safety Net: Investigating When Smallholder Farmers Decide to Buy Hybrid Seed in Northern Ghana

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Abstract: Dynamic social relationships can enhance farmer adoption or lead to the rejection of modern seed varieties. Different social pathways provide farmers with information about traditional and commercial seeds. Identifying how social relationships facilitate different varietal use may reveal the informal safety nets indigenous farmers rely on when transitioning to modern varieties. While homophilous relationships have been observed to stifle farmers' adoption of agricultural innovations, these bonded social relationships are the basis for informal seed exchange. Through homophilous relationships, farmers are able to communicate pertinent risks and foster greater support systems. By examining two communities in Northern Ghana, this study tests whether homophilous relationships function as safety nets that prevent farmers from using modern seed or if they mitigate risks of agrobiodiversity decline. Through social network analysis, particular relationships were observed to act as necessary safety nets for farmers' adoption of commercial seed; whom farmers commonly interact with may protect indigenous groups from adverse risk.

Keywords: Informal seed systems, Ghana, social network analysis, agrobiodiversity, homophily

Introduction

Since 1900, over 75 percent of crop genetic diversity has decreased with the introduction of modern varieties as farmers have transitioned to industrialized

agricultural production (FAO 2012). By integrating marginal subsistence communities into global food production systems, market-oriented crop introduction tends to amplify the use of commercialized, hybrid, homogenized seeds, and consequently decreases agrobiodiversity levels (Almekinders and Elings 2001). While heightening the susceptibility of crops to blights and pests, this trend undermines the resilience of communities' food systems to globalized markets, climate change, and other emerging stressors (Bellon et al. 2011). Additionally, breeding techniques and seed distribution in the Global South often diminish the quality of commercial seed reaching subsistence-based farmers, making adoption of hybrids risky (Feder et al. 1985; Tripp and Mensah-Bonsu 2013).

Understandably, there is a pressing need to increase agricultural production and efficiency to reach the currently unprecedented number of food-insecure people (FAO 2012). A diverse seed portfolio, which includes the most complimentary combination of traditional and modern varieties for particular ecological areas, is becoming a necessary solution for subsistence farmers living in the Global South (Michelini 2013). However, there is a large debate about if hybrid crops can successfully compliment traditional varieties (Chappell and LaValle 2011; Rosset 2011). An integral component of examining quality seed access for subsistence-based agricultural populations is to address how synergies can be created between market-oriented crop introduction and agrobiodiversity conservation (Camara et al. 2005; De Boef et al. 2010). Moreover, inclusive conservation and food security interventions can be implemented by understanding when farmers choose modern varieties. Identifying how social relationships inform a farmer's choice will reveal how farmers can dually benefit from using traditional and hybrid varieties.

Dynamic social relationships can diffuse modern varieties and increase a farmer's access to traditional crops (Rogers 2003). The majority of subsistence-based farmers can continually access quality, local adapted seed, through informal seed exchanges, where farmers gift each other crop seed (Bellon et al. 2011). Using kinship, farmer groups, neighbors, and other trusted members, farmers exchange crop seed with one another to meet production needs (Almekinders and Elings 2001; Badstue et al. 2006; Pautasso et al. 2012). Increasingly, modern varieties are introduced from outside, bridging actors: plant breeders, extension workers, local markets, and development projects (Morris and Bellon 2004). Identifying why farmers decide to use modern varieties may not solely depend on what the seed is

used for (e.g. drought or pest resistance), but rather if other members of the farmers' social network adopt the new technology.

Personal relationships may enhance an adoption or lead to a rejection of modern seed varieties. In order to effectively communicate the risks and benefits of commercial seed in local contexts, further detail on the social aspects of informal seed access is needed (Pautasso et al. 2012). For instance, the regional, socio-economic, and agroecological contexts can partially explain why farmers adopt or reject particular crop varieties (Brooks and Loevinsohn 2011). In part, the rate of adoption most likely is dependent on whether the variety enhances the resilience of farmers' access to quality seed and does not diminish their overall crop seed portfolio (McGuire and Sperling 2013). However, informal social networks may inhibit or facilitate the transition from farmers' sole reliance upon traditional varieties to their integrative use of modern and traditional varieties (Abay et al. 2013). Different social pathways, such as family or farmer group association, may filter information about traditional and commercial seeds received by farmers. By identifying how social relationships facilitate diverse variety use, the informal safety nets farmers rely upon when utilizing modern varieties may be revealed. This study examines the role these potential safety nets play in either preventing opportunities for integrated hybrid use or mitigating associated risks of agrobiodiversity decline.

Analytic Framework

Agricultural Innovation and Informal Seed Systems

Bonding and peer-based social relationships are the basis for farmer-to-farmer informal seed exchange (Badstue et al. 2006). Members of the same gender, kinship, age, or wealth group have a tendency to exchange information and resources more than members outside of their groups (McPherson et al. 2001; Badstue et al. 2006; Delêtre et al. 2011). These homogenous connections have been recognized as providing support, as well as ease of communication in natural resource management and have been documented in informal seed exchanges (Rao et al. 1980; Rogers 2003; Badstue et al. 2006).

Homophily is defined as the tendency of individuals to form social relationships with people who share similar characteristics with themselves (Lazarsfekd and Merton 1954). Because communication is more effective when using common, peer-based language, homophilous ties can speed up diffusion processes; the tighter the bond between individuals, the quicker information can flow (Rogers 2003; McPherson et al. 2001). These homophilous connections have been observed in informal agricultural systems: women typically trade seed with women, members of the same family gift seeds to one another for wedding celebrations and in times of need (Badstue et al. 2006), and poorer farmers introduce one another to innovative, economically viable approaches to farm management (Rogers 2003).

On the other hand, homophilous connections can also act as a barrier to the diffusion of innovations; homogenous groups tend to be insular, which prohibits novel approaches from being realized and discovered (Rogers 2003; McPherson et al. 2001; Newman and Dale 2007). Heterophilous relationships are better positioned to facilitate diffusion processes because they bridge connections between two distinct groups (Rogers 2003). Since there are different social norms from each distinct group, innovative ideas can be generated at the nexus of communication. These bridging relationships have been explained as "weak ties," where connections may introduce new concepts that act as catalyst for transformation or the introduction of an innovation. The strength of these heterogeneous ties is that new group members typically introduce ideas gained from their unique social networks; the less overlap between group members' networks, the greater access to a diversity of ideas (Granovetter 1973).

In natural resource management, heterogeneous groups typically find new, adaptive approaches that are invaluable to complex problems (Newman and Dale 2007). For example, major advances in modern crop varieties have been observed when heterogeneous groups of breeders and farmers come together to co-create locally adaptive, improved varieties to meet both the agroecological and cultural needs. These participatory plant-breeding (PPB) initiatives have higher adoption rates than traditionally bred crops because they are able to bridge breeder knowledge with farmer demands (Almekinders and Elings 2001).

Heterophilous relationships often are vertical, where certain identities may hold more social power than other members of the group (Woolcock 2000). PPB

initiatives, for instance, need to take special precaution to ensure plant breeders are integrating farmer needs (Almekinders and Elings 2001). Hence, complete heterophily can result in a lack of group shared identity, which may both decrease the long-term commitment to a given problem and result in disjointed solutions (McPherson et al. 2001).

On the other hand, homophilous relationships are often horizontal, where a common shared identity can allow for higher levels of communication and camaraderie. Networks of people sharing common identities have been observed to mobilize community resources efficiently for the sustained benefit of within group members. While heterophily is essential for bridging and spreading a group's overall reach, homophily optimizes necessary resources and collaboration for within group support. Shared identity helps promote homophilous ties between farmers (McPherson et al. 2001) and serves as the social capital allowing farmers to continually access traditional varieties (Badstue et al. 2006; De Boef et al. 2010). When farmers begin to incorporate modern varieties into their seed portfolios, bridging connections will most likely inform them of modern varieties, but any potential risks may be mitigated by homophilous, horizontal relationships.

Homophily, Resilience, and Transitions

Issues surrounding homophily are emerging in debates on the resilience of environmental resource management (Newman and Dale 2007; Bodin et al. 2009; Isaacs 2012). This emergence has implications for methods farmers use to reduce their risks when including hybrids in their seed portfolios. Continual change of old, stagnant, systemic behaviors, which are collapsed, reorganized, and grown, are central to how socioecological systems continually modify themselves to build resilience against shocks and stressors (Holling and Gunderson 2002; Folke 2006). In complex socioecological systems, the identification of when systems are positioned to change and what triggers regime shifts has been significant in successful adaptive management solutions (Folke et al. 2004). Heterophilous connections aid healthy regime shifts by allowing actors to discover necessary solutions through their diverse social reaches (Bodin et al. 2006). Diverse knowledge of available tools can promote a healthy reorganization of complex systems (Folke et al. 2002; Bohensky and Maru 2011). Heterogenous connections

through extension agents, agricultural input dealers, and farmer field schools may further expose farmers to modern seed.

Natural resource management projects have been observed to create more adaptive policies when there is a heterophilous group, since each member involved represents unique viewpoints with their own bridging connections. Through members' various networks, access and implementation of innovations has benefitted these projects (Newman and Dale 2007). For instance, in farmer-to-farmer advice networks on agroforestry management practices, heterophilous connections were observed to lead to more creation, adoption, and diffusion of innovative and context specific natural management practices (Isaac 2012). Furthermore, diversity of both the crops and the channels that farmers use to access seed are a key tenet in seed systems resilience (Sperling and McGuire 2013). While heterophilous connections allow farmers more diverse channels to new varieties of seed and information, they also support a repertoire of flexible responses to socioecological uncertainties (Rao et al. 1980; Rogers 2003).

Homophilous relationships, on the other hand, are often horizontal to allow fast communication channels among group members to mobilize community resources efficiently (Putnam 2000; Hill and Matsubayashi 2005). Yet, vertical relationships are commonly associated with heterophilous relationships (Woolcock 2000) and have been found to promote disconnected, immediate decisions that can become stressors within a system over time (Berke et al. 1993; Tompkins 2005; Murphy 2007).

Elements of transition management approaches echo these criticisms of heterogeneity, and provide further insight into how homophily can promote healthy regime shifts when farmers transition to using modern varieties. Transition theory explains how changes of states operate within complex systems. When particular threats are recognized, actors respond by mobilizing resources from within their community (Fischer-Kowalski and Rotmans 2009). In the context of agrobiodiversity decline, farmers who rely on traditional varieties often face threats that include inadequate yields due to climatic factors, such as erratic rainfall, drought, and shorter seasons, as well as local market price fluctuations that are tied to globalized economic trends. Incorporating modern varieties can be a solution to challenging agroecological conditions; however, hybrids can also become a threat

for farmers in particular contexts where breeding standards and commercial shelf-life are dramatically affected by poor facilities, low levels of transportation infrastructure, and inefficient storage (Tripp and Mensah-Bonsu 2013). Though farmers may not be aware of these threats, the potential risks of incorporating modern varieties into their seed portfolios is only seen when others start testing hybrids (see section 2.3): "transition experiments are high-risk experiments" (Fischer-Kowalski and Rotmans 2009, 12). In transition theory, three types of threat response patterns have been identified: actors pool resources together to form a bottom-up approach, administrators provide more rigorous standards in a top-down pattern, or actors are able to respond to the threat through "squeeze paths" in a middle approach. Squeeze paths occur when individuals with sufficient homogeneous social support try to mitigate the risk through innovations. Individuals act independently to experiment with unique solutions, but are supported by their social network if the innovation fails (Fischer-Kowalski and Rotmans 2009). Once a squeeze path successfully finds novel ways to counter the threat, the path becomes easier for future farmers to navigate.

Homophilous social relationships may be the social capital individuals rely upon to test innovations. Farmers that have an effective safety net of homophilous connections - close-knit, bonded support networks that mitigate potential risks - can make up possible lost seed stores through their embedded social contracts. Additionally, farmers who are early adopters can effectively communicate pertinent information and diffuse innovations through their homophilous connections through shared common language and contexts. While heterophilous relationships are necessary for continually adaptive capacity and innovations, homophilous ties are essential for farmers who have increased risk when using modern varieties.

In transition management approaches, diversity and heterophily are essential for adaptive systems to transition from stagnant, rigid states to continual innovative responses (Geels 2005; Rotmans 2005). However, in order to create space for squeeze paths there needs to be a social environment that offers protection if the innovation fails (Fischer-Kowalski and Rotmans 2009). These transition arenas depend on innovative ideas and technologies from heterogeneous connections. New technologies can be high-risk experiments that potentially require multiple iterations when a regime transitions to a new state that incorporates the innovation.

If this transition is successful, it will become an "empowering niche" that will provide other farmers with the necessary information, knowledge, and capabilities to also make successful transitions when incorporating modern varieties into their seed portfolios (Avellino et al. 2009). Other farmers will be able to mimic and communicate with the early adopters only if they have been supported by their social exchange network and have the necessary amounts of seed. Furthermore, if the early adopters have strong bonds with other farmers, then better information about relative risks and strategies for the successful use of hybrids can be shared (Rogers 2003).

By examining farmers who are transitioning to diverse seed portfolios that include modern varieties, I hypothesize that these individuals have horizontal social support that mitigates the risks associated with hybrids; farmers need to have strong, bonded, homophilous relationships to act as a safety net in order to find successful squeeze paths where appropriate risks are enabled.

<div align="center">Social Seed Network Analysis</div>

Many informal seed system studies have examined the effects of seed exchange on the evolution of particular, farmer-saved, open-pollinated crop varieties in order to explore farmers' mitigation strategies to shocks and stressors of traditional variety loss (e.g. Pandey et al. 2011; Vom Brocke et al. 2003). For instance, if a farmer loses their seed stores due to rot or insect damage, the farmer can ask their social network for seed; commonly, this exchange will not cost the farmer money, rather the payment may include providing labor, food, or seed at a later date. Social network analysis has recently been applied to informal seed exchanges (Subedi et al. 2003; Abay et al. 2011; Pautasso et al. 2012). Nonetheless, it has already provided important groundwork to create more effective micro policies that promote agrobiodiversity conservation and effective improved crop adoption (Gupta and Vikas 2010; Abay et al. 2011).

Only a few studies have used social network analysis to focus on strategies that strengthen human dimensions of informal seed systems, such as connecting *in situ* and *ex situ* conservation methods (e.g. connecting community-based conservation projects with local seed banks) (Subedi et al. 2003; Abay et al. 2011). Subedi et al. (2003) observed how twenty-five different rice varieties in Nepal were traded

across several villages and found that relative trading distance mattered more than kinship in predicting seed exchange partners. Abay et al. (2011) coined the term "social seed network analysis" when they identified several network centrality measures to monitor seed and variety flows in informal seed systems.

These studies have utilized the capabilities of social seed network analysis to provide detailed mapping of informal seed systems. However, more research applications of social seed network analysis are needed to strengthen informal seed systems. For instance, social seed network analysis should also be used to examine the intersection of traditional and hybrid seed usage. Social seed network analysis can measure homophily and the roles different farmers assume within their community to ensure their own continual seed access. The various social relationships of farmers may prevent opportunities for integrated use of hybrids or reveal safety nets to mitigate the associated risks of agrobiodiversity decline.

Methodology

Site Description

Data was collected June 2013 in two subsistence-farming communities, Aduyuli and Diani; these remote rural communities are located in West Mamprusi and Tolon-Kumbungu districts, respectively, in the Northern Region of Ghana. In these communities, subsistence-based agriculture with minimal small-scale commercial agriculture is the predominant livelihood strategy. This region is among the most food insecure and poverty-stricken areas of Ghana (Whitehead 2006). Complicated communal land tenure issues favor males, encourage farm fragmentation, and promote the use of land as collateral security for bank loans (Peters 2004). Likewise, limited resource environments are exacerbated by the region's sub-humid to semi-arid Guinea and Sudan savannah, where farmers rely on rain-fed irrigation (Gyasi 1994). Major staple crops that are frequently exchanged in both villages are groundnut (*Arachis hypogaea)*, cassava (*Manihot esculenta)*, maize (*Zea mays)*, millet (*Panicum miliaceum)*, rice (*Oryza glaberrima)*, sorghum (*Sorghum guineense)*, sweet potato (*Ipomoea batatas)*, and yam (*Dioscorea rotundata*). Beans and garden vegetables were grouped into general categories in this study due to the infrequency of trade mentioned.

Data Collection

Surveys were administered at the household level. Aduyuli contained forty-nine households, of which thirty-three were interviewed; each household had an average of fifteen immediate and extended cohabitating family members. Diani contained sixty-two households, of which thirty-four were interviewed; each household had an average of seventeen immediate and extended cohabitating family members. Only one interview was conducted at each household, as within the household high fluidity of shared resources was observed. Initially, six individuals were interviewed, selected via a stratified snowball sample based on relative local wealth and gender. Subsequent participants were identified when listed by the previously interviewed farmers as seed-exchanging partners. Relative local wealth was classified for each household using participatory rural appraisal (PRA) techniques. Small focus groups of key informants used a community wealth ranking technique to determine low, medium, or high wealth for each household (Rifkin 1996). Together, participants, translators, and I determined guiding criteria to rank each household into wealth categories: land holdings, motorbike ownership, non-agriculturally based employment, relatives from outside the community who send back money, and several other factors.

Through four enumerators, a mixed closed and open response questionnaire was conducted in the local languages, Mamprusi and Dagbani. The survey's aim was to identify seed exchange partners and to capture information about farmers' agricultural activities relating to crop seed use. Famers were asked with whom they traded seed according to the name-generator technique (Marsden 2004). Through several probing questions, farmers identified between five to fifteen crop-specific trading partners. Key sociodemographic information was obtained for both the interviewee and their trading partners.

From the survey, ten dichotomous, directional, N x N adjacency matrices (where actor i gives seed to actor j) were generated for each crop that farmers identified. The ties represent farmer-to-farmer crop seed exchanges. Each cell in the matrices represents if farmer i gave seed to farmer j. If they gave or did not give seed the cell was dichotomously coded as either "1" or "0," respectively. These ten adjacency matrices were summed into one weighted, directional matrix. For example, in the summed matrix, if farmer i gave seed to farmer j for only one of

the ten crops, then their shared cell (*i,j*) received a "1," however, if they traded seed for two of the ten crops their shared cell (*i,j*) received a "2."

Anecdotally, farmers spoke of obtaining new varieties and crop types from farmers with whom they already had established relationships. Hence, by combining all crop seed exchanges, a more accurate portrayal of the farmers' entire exchange network can be illustrated. Each community represented the network boundaries; there was no trade captured outside of each community as to eliminate potential broken network effects. This boundary was determined by the scope of this study and by insight from past social seed network studies that showed most seed exchange occurred within distinct communities (Subedi et al 2003; Abay et al. 2013).

Variables of Interest

Several variables of individual characteristics of farmers and characteristics of their social networks were identified from the questionnaire to capture potential homophilous trading relationships, such as, gender, age, kinship, and relative wealth. These individual-level characteristics incorporate both status homophily - where attributes are ascribed based on outward status, such as age, gender, or relative wealth – and value homophily - where values, attitudes, and beliefs form relationships, such as kinship identification, and trust formation (Lazaersfeld and Merton 1954; McPherson et al. 2001).

Gender has been cited in informal seed systems as a vital component to both crop exchanges as well as the primary tasks associated with seed-saving related activities (Subedi et al. 2003; Badstue et al. 2006; Gill et al. 2013). Gender was coded as "1" female, "0" male. A categorical age variable was coded as "youngest" (under thirty-five years old), "middle" (between thirty-five and fifty-five years old), and "oldest" (above fifty-five years old), according to the standard deviation of the sample. Farmers were asked to identify their relationship with their exchange partners (e.g. neighbors, acquaintances, strangers, extended family, or close friends); due to the abundance of responses indicating extended family, relationship was later recoded into a dummy variable "kinship." "Average kinship" is a variable that takes the average relationship between a farmer and all their exchange partners. Relative wealth has been associated with different levels of

agrobiodiversity. Lower wealth farmers typically rely on the informal seed exchanges of traditional crops and have more farmer variety agrobiodiversity, while wealthier farmers are able to purchase modern, homogenized, commercial varieties (Lipper et al. 2005). Based on the community wealth rankings, farmers' households were broken categorically into "low," "medium," and "high." Farmers were asked about modern variety use in the previous cropping season because most farmers were not certain of their trading partners' use of commercial seeds. While there were an abundance of different commercial crops purchased, modern variety use was coded dichotomously to capture farmers' general use of hybrids.

Analysis

To test if homophilous connections provide a safety net for farmers to risk using modern varieties of seed, two hypotheses were tested: firstly, the willingness and capability of farmers to connect over shared demographic characteristics allows for stronger connections that mitigate the risks of adopting modern varieties; secondly, though heterophilous connections are essential to farmer access to modern seed varieties, homophilous connections are a necessary component in a socially supported, diverse seed portfolio.

Homophily was measured in several steps. First, a metric is calculated to indicate homophily levels for certain groups (e.g. gender, age, wealth, etc.). This metric illustrates how groups operate on a whole, not how the subgroups (e.g. females or males, high or low wealth) act on their own. The purpose of this broad calculation is to assess how group members generally trade with other farmers sharing similar characteristics. To calculate this metric the "homophily" routine in the social network analysis software package UCINET was used (Borgatti et al. 2002). This routine uses an E-I index to indicate homophily. If the group has a score of -1 each subgroup has pure homophily where farmers only trade seed with members of their own subgroup. If the group has a score of +1 each subgroup has pure heterophily, where farmers only trade seed with members not of their group. The E-I index (shown below) is calculated by first taking the total number of weighted ties external to the group minus the total number of weighted ties internal to the group, then divided by the total number of weighted ties averaged across communities (Krackhardt and Stern 1998; Isaacs 2012):

E-I index = (# trades external to group - # trades internal to group)/total # ties

The score provided is for the group as a whole (e.g. gender, age, wealth, etc.), not for each subgroup (e.g. females or males, low or high wealth). Assessing which subgroup shows the highest homophily scores is critical to determining if there are subgroup differences in the amount of modern varieties each subgroup bought. The measure of subgroup differences was captured during UCINET's "Homophily" routine as raw counts that were later transformed into percentages. The percent a subgroup has when trading within their subgrouping indicates the percentage of homophilous trade -- the higher this percentage is, the higher the homophilous trade.

My hypothesis relies on these homophily percentages. If hybrid seed use is associated with higher homophily scores, then this suggests that the homophilous groups act as a necessary safety net for farmers to mitigate risk of using modern varieties. Conversely, if hybrid seed use is associated with lower homophily scores, then this suggests that farmers do not rely on homophilous relationships for a safety net.

Since each community had relatively few farmers who were beginning to use modern varieties, no statistical tests were conducted. Only eighteen Aduyuli farmers captured in the survey sample used modern varieties last year, while twelve farmers were counted in Diani that used modern varieties. While raw counts and percentages can reveal potential trends, this analysis captures the beginning of Ghanaian farmer modern variety use in both communities.

Results

Descriptive Findings

Both Aduyuli and Diani share similar amounts of seed exchange for each crop. Maize seed is the most frequently traded crop type, on average being traded 182 times in my sample over the last 12 years, while sweet potato vines were traded only 17 times (Figure 1). This difference may relate to both the amount of maize planted in the community and the difficulty in effectively handling sweet potato

vines. Cereal crops in general are more frequently traded than tubers; however, there is a moderate amount of garden vegetables traded in both communities.

Figure 1. Number of crop exchanges by variety
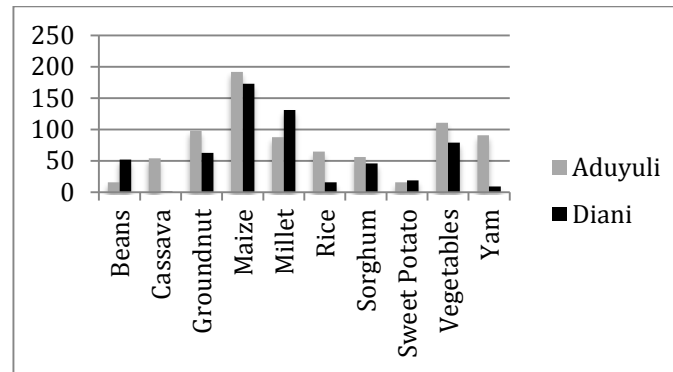
The two communities shared several similarities in descriptive sample characteristics, such as gender, and age (Table 1). There were more farmers between forty-one and forty-four years old in both communities. There was significant variability in the wealth rankings between communities for low and medium wealth, but the wealth ranking was relatively consistent for wealthy farmers. Diani had a more even distribution of wealth than Aduyuli, which had 48 percent of households classified as low wealth. One explanation for this is that Aduyuli is farther away from both the capital of the Northern Region, Tamale, and the main headquarters for the national extension and agricultural research stations. Diani is only 18 kilometers away from Tamale, while Aduyuli is 130 kilometers away. Not only does this influence off-farm work opportunities, but also extension and development project involvement. The descriptive statistics also show noticeable differences in farmer preference to exchange seed within their kinship group and the average longevity of trading relationships in each community. Aduyuli's remoteness may account for the stronger kinship preference because there is less outmigration than in Diani.

Table 1. Descriptive statistics

| | Communities Combined | | | Modern Varieties | | |
	N	Mean	St. Dev.	Aduyuli	Diani	Total(%)
Gender						
Females	245	0.38	0.49	4	3	0.24
Males				14	8	0.76
Kinship						
Witnin Kin	245	0.74	0.44	13	7	0.67
Non-Kin				5	5	0.33
Age						
Under 35 Years Old	245	0.31	0.47	5	5	0.33
Between 35 to 55	245	0.46	0.50	9	3	0.4
Over 55 Years Old	245	0.22	0.42	4	4	0.27
Wealth						
Low Wealth	245	0.39	0.49	7	3	0.33
Middle Wealth	245	0.27	0.45	5	4	0.3
High Wealth	245	0.34	0.47	6	5	0.36

Modern Variety Use

The amount and type of modern varieties used in each community were relatively similar. Only eighteen Aduyuli farmers captured in the survey sample used modern varieties in 2012, while twelve Diani farmers used modern varieties. Commercial hybrid maize (*Zea mays*) seed accounted for half of all modern seed purchases in both communities; the remainder of all seed purchases consisted of sorghum (*Sorghum guineense*), groundnut (*Arachis hypogaea*), and cowpeas (*Vigna unguiculata*). These seed purchases in Aduyuli and Diani are consistent with the top six most prevalent commercial seed varieties available in Ghana, excluding rice and soybeans (Tripp and Mensah-Bonsu 2013), which were not grown by farmers in this sample. Across communities, 31 percent of farmers interviewed purchased commercial varieties last year; this percentage exceeds the International Food Policy Research Institute (IFPRI) 2009 estimates that similar, rural periphery communities worldwide were expected to rely on 20 percent commercial seed out of their portfolios (Smale et al. 2009).

The raw counts of modern variety use reveal key differences among subgroups. Accounting for 76 percent of modern variety use, males typically purchased more modern varieties across communities than females. Males used hybrid maize, sorghum, and groundnut most prevalently, while females reported using hybrid cowpea varieties. Across both communities, the highest exchange rates of cowpeas

were between females rather than men. These findings are consistent with other studies (Vander Mey 1999; Padmanabhan 2002), as cowpeas have been well documented throughout West Africa as being cultivated, processed, and sold by females (Otoo et al. 2011; Padmanabhan 2002). Conversely, while maize has been documented in Ghana as a crop used by both genders, the rate of adoption in hybrid maize seed use is considerably higher for males than females (Doss and Moris 2000). Among wealth categories, agents revealed no differences in general and crop-specific use of modern varieties. Each wealth category had an average of 33 percent of the sample using modern seed. However, each other group showed marked differences between their own subgroups. Middle-aged farmers used more modern varieties (40 percent) across communities than farmers of other age categories. The oldest group was more likely to have longer trading relationships than other age groups and was less likely to use modern varieties. Farmers who typically trade within their kinship group accounted for 67 percent of the modern variety use.

Homophily Versus Heterophily

The E-I index was used to measure if the subgroups were typically part of homophilous or heterophilous trade relationships. Gender and kinship were the only E-I index scores indicating homophily for an entire group in both communities (Table 2). Female-to-female trade was the most prevalent trading type within this group across both communities (66.5 percent).

Table 2. Trade relationships

	E-I Index	Percent Trade Among Groups		
Gender	-0.1175			
		Females	Males	
		Females	66.48	33.52
		Males	65.67	34.33
Kinship	-0.1021			
		Kinship	Non-Kin	
		Kinship	70.92	29.08
		Non-Kin	73.77	26.23
Age	0.2118			
		Youngest	Middle	Oldest
		Youngest	41.46	40.12	18.43
		Middle	31.28	45.23	23.49
		Oldest	29.67	44.25	26.09
Wealth	0.1968			
		Lowest	Middle	Highest
		Low	46.21	15.01	38.78
		Middle	33.53	37.03	29.45
		High	47.09	17.48	35.43

Conversely, men engaged in homophilous trade in 34.3 percent of exchanges and gave seeds to women 65.7 percent of the time. Hence, seed exchanged was predominantly through female networks. Figure 2 is a sociogram, a visual network representation, of gendered seed exchanges in Aduyuli. Each gender (females are represented by triangles and males are represented by circles) is set apart to visualize both within group, homophilous connections, and between group, heterophilous connections. The grey nodes are farmers that purchased modern varieties during the previous cropping season and the black are farmers who rely solely on traditional varieties.

Figure 2. Gendered modern variety use

Each tie represents a crop seed exchanged between two farmers. The triangles represent female farmers, while the circles represent male farmers. The black nodes represent farmers who do not use any modern seed varieties, while the gray nodes indicate modern variety use. Note: farmers who use modern varieties tend to use a mix of modern and traditional seed.

Females   Males
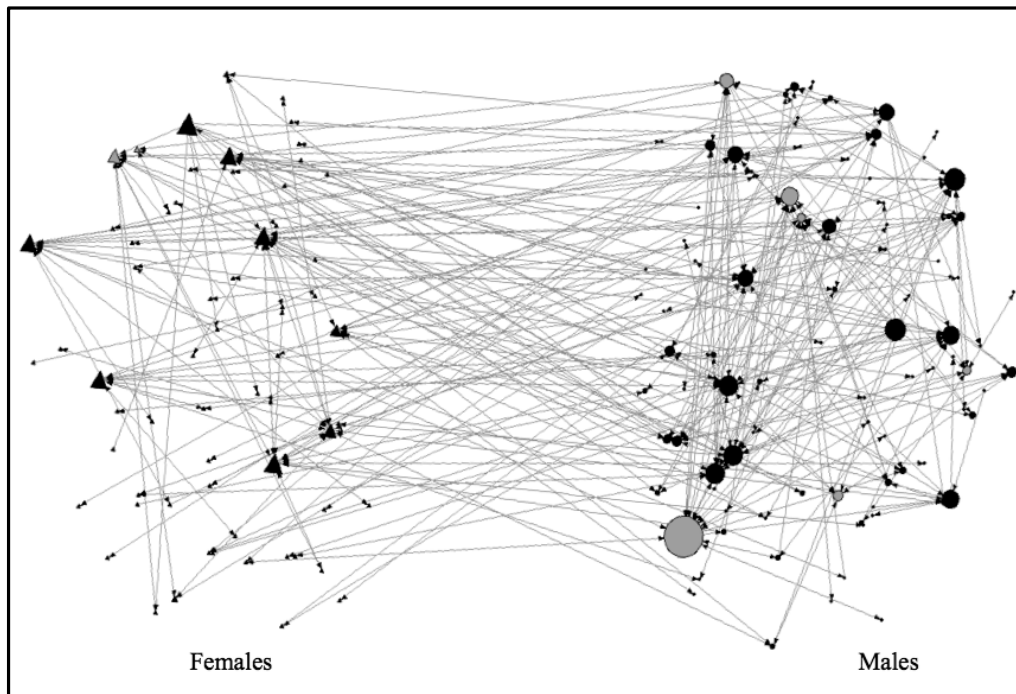
While consistent with prior studies that indicate most seed saving and trading activity are female driven, this result is actually counter to my hypothesis. Although there is higher homophilous female-to-female trade, modern varieties are primarily used by male farmers. Strong within group trade among female farmers of traditional crops and the limited use of modern varieties suggest that homophily prevents females from accessing diverse channels of seed access. Past studies indicate significant gender differences in agricultural innovation adoption in Ghana due to limited market access, lack of information, and gendered tasks (Doss and Morris 2000).

While gender homophily may account for this disparity in modern seed access, kinship homophily corresponds with greater use of modern varieties. Across communities, the E-I Index score of -0.10 indicates moderate rates of homophilous

trade between family members. Sixty-seven percent of farmers that rely on kin-to-kin trade use modern varieties. While the small sample has limited statistical power, raw numbers suggest a correlation between farmers depending on kinship alliances and hybrid seed use. These results are consistent with previous studies that observed high levels of intra-family seed exchange that replenish seed supply when yields are insufficient (Townsend 1994; Badstue et al. 2006). Kinship homophily supplies farmers with seed when testing hybrids produces inadequate yields. Through strong kinship alliances, farmers can be supported by their trade partners when integrating modern varieties. Kinship homophily appears to act as an informal safety net when farmers across communities choose to incorporate modern varieties. Furthermore, farmers' developments of squeeze paths to diverse seed portfolios are supported by homophilous kinship connections. In these ways, family alliances provide the necessary social support for farmers to mitigate the risks of using modern varieties in this context.

Although, the overall E-I index score of age groups indicates heterophilous trade, there are certain subgroups that rely on homophilous connections. The most prevalent homophilous trade within age subgroups was between middle-age farmers. The middle-age group used the majority of all modern varieties at 40 percent and was the most homophilous with 45.23 percent of middle-age farmers exchanging seed with other middle-age farmers. Notably, all other age groups typically gave seed to middle-age farmers; the amount of homophilous and cross-age support for the middle-age group was greater than any other age group. There is a connection between this within and between group support and middle-age farmers' ability to manage the risk of transitioning to hybrid seed.

Middle-age farmers were in a unique position that expands my hypothesis. Both homophilous trade and heterophilous support were available to provide safety nets to farmers in the middle-age group. Aging populations have been observed to rely on younger generations to mitigate their future risks by accessing resources or new information (Uhlenberg and Gierveld 2004). Additionally, younger populations may not have built their support networks to a level that they can mitigate risking inadequate yields, even though most social bonding occurs at younger ages (Fafchamps 2008). The middle-age group has ample safety nets to integrate risks into their seed portfolios because of homophily and their unique position, which bridges age groups.

Wealth group seed exchange acted similarly to age-based exchange; however, the homophilous subgroups did not predominantly purchase more modern varieties. Low wealth-to-low wealth seed exchange was the most homophilous group and received ample amounts of seed from other wealth categories. However, unlike the middle-age subgroup, the heterophilous and homophilous support given to low wealth farmers did not result in more hybrid seed purchases. There was no difference in the amount of modern varieties each wealth subgroup used across communities; on average subgroups used 34 percent hybrids. This observation can be explained in two ways. First, low wealth farmers were unwilling to accept lower yields because they cannot absorb the risk even with heterophilous social support. Past research supports this view. Dercon (2002) finds that in rural Tanzania lower wealth farmers had the least diverse income generating channels and significantly smaller diversification of crop portfolios. Another explanation is that low wealth farmers are more vulnerable than other wealth groups; hence, the amount of modern varieties they use compared to their relative risk may be far greater than wealthier farmers. Low wealth farmers only were able to seek diversified seed portfolios of similar levels to other wealth groups with heterophilous and homophilous support. The different relative risks between subgroups suggest that wealthier farmers presumably need less support than low wealth farmers to incorporate hybrids.

Discussion

This study found that certain homophilous relationships influence when farmers begin to use commercial seed. For instance, the type of relationship and the groups' status in the community may indicate in what ways homophily or heterophily facilitate farmers' use of modern varieties. Several trends were observed to support my hypothesis that homophily may act as a necessary safety net for farmers' ability to incorporate modern varieties to further diversify their seed portfolios. Farmers with greater trade around shared kinship relations and farmers who exchanged with other middle-age peers, tried modern varieties more frequently. The high amount of kinship-based trades has been well documented (Badstue et al 2006), but this study shows that greater kinship homophily is associated with increased modern variety use. Middle-age trade relationships exhibited similar patterns, where farmers were supported by homophilous

connections of other middle-age farmers to test modern varieties. The common homophilous trade patterns within these groups, fostered by shared experiences and common language, seemed to allow farmers to risk incorporating modern varieties into their seed portfolios.

However, wealth categories and gender did not support my hypothesis, which suggests that particular types of social relationships influence farmers to take risks more than homophily alone. Overall, males and high wealth farmers possessed the most heterophilous relationships and purchased the greatest number of modern varieties. Gendered trade and purchases of agricultural inputs in Ghana is consistent with other studies (Doss and Morris 2001). For wealth and gender based homophily, I observed a stifling effect on farmers' utilization of hybrids. This effect is consistent with past natural management studies where homogenous pathways to innovations offer less diffusion of innovations (Rogers 2003; Newman and Dale 2007). Because females and low wealth groups are among the most vulnerable in these communities where land holdings are governed primarily by males and wealthier families (Gyasi 1994; Peters 2004), the attempt to use modern varieties may be a larger risk to the livelihood of females and low wealth groups. In both Aduyuli and Diani, male farmers held community positions that interfaced them with agricultural companies and/or agricultural extension offices. There were no female farmers established in these roles, and men who had more family ties seemed to be able to leverage their social network to sit in these positions. Since these two communities relied heavily on subsistence-surplus agriculture, the farmers with community positions connecting them to agricultural companies and extension agencies were exposed to more information and could access more resources than other farmers. Hence, it is not surprising that males and farmers that had more kinship connections were the two groups that used more modern varieties.

Even for these well connected male farmers, farmer information in rural Ghana has primarily been shared through agricultural input dealers, who can over emphasize the benefits of hybrids and fertilizers to consumers due to their market-based agenda. Lack of educational opportunities has also led to minimal adoption and insufficient yields (Akudugu et al. 2012). In Aduyuli and Diani there was minimal to no post-primary education, and limited access to extension agents, workshops, or farmer-field schools. The available social channels present potential

misinformation about hybrids. There is an identified need for extension services to transition from high-input recommendations for inorganic fertilizers to providing farmers the necessary information and skills to optimize synergy between traditional and hybrid varieties (Snapp et al. 2003).

The transition to using modern varieties can be risky, especially in the Ghanaian context where hybrid breeding and commercial shelf-life can cause variability in quality of seed (Tripp and Mensah-Bonsu 2013). However, there may be a tipping point where homophilous connections act as a shield to vulnerable groups' adopting risky innovations. In this sense, homophilous groups' insular nature protects them from adverse change. The most vulnerable groups may not be stifled by homophily, but may actually prefer to rely on their bonded connections for continual access to locally adapted, high quality seed that they trust will grow well. Homophilous connections are not supportive niches for these groups to incorporate innovations, but rather are necessary components of farmers' sustained seed access. Finding squeeze paths is more difficult for these vulnerable groups because the seed exchange partners they depend on cannot provide adequate support. Since transitions include risky experimentation by squeeze path pioneers (Fischer-Kowalski and Rotmans 2009), vulnerable groups need to group together more tightly than other groups to ensure adequate social support. The reliance of certain groups on horizontal relationships may be invaluable insulation from potentially risky change and promote squeeze path pioneers.

This study's results suggest that a broadened understanding of how homophilous relationships function in adaptive natural management systems is needed. Newman and Dale (2007) observed that heterophilous relationships were critical to accessing a diverse array of resources. However, only some forms of heterophilous connections facilitated diverse channels of seed access. If a squeeze path pioneer makes a successful transition to integrating hybrids, then they provide other farmers with the necessary information, knowledge, and capabilities to also make successful transitions when incorporating modern varieties into their seed portfolios (Avelino et al. 2009). If enough farmers are able to follow the established squeeze path, then an "empowering niche" is developed where farmers are supporting one another successfully to further diversify their seed portfolios. Yet, the vertical nature of heterophilous relationships often are top-down structures, hence if the initial squeeze path pioneer is from a different socio-

economic group than later adopters, the more vulnerable types of farmers may face risks not yet encountered. This top down structure was present in this study, where the higher and lower wealth farmers exchanged with one another while the middle income farmers had homophilous dominated trades; both the high and low income groups purchased hybrids more often than middle income farmers. Since farmers will mimic and communicate with the early adopters (Rogers 2003), if they are not supported by their peers, then the same solutions for squeeze path pioneers may need to be adapted to meet vulnerable groups' needs. While homophilous connections alone cannot explain when farmers shift to use modern varieties, peer-based communication is essential to pertinent information exchange about how these groups can adapt the initial squeeze paths to meet their needs. The ease of communication and horizontal structure of homophilous relationships is a critical component that should be considered when formulating natural resource management groups.

This study had several limitations, which include sampling from only two communities, testing seed exchange relationships instead of other types of farmer advice networks, and limited demographic variables were collected. Future research should examine how farmer advice networks influence modern variety use or even other forms of modern agricultural technology; farmers may solicit advice from others who are outside of their seed exchange and kinship networks. Additionally, future research should test if reducing seed exchanges is affected by increased hybrid use and test if this affects farmers' ability to access traditional seed. Finally, for vulnerable groups, homophily may act as a mechanism for agrobiodiversity conservation because they primarily rely on traditional crops; understanding which homophilous connections act as informal safety nets may provide greater understanding when farmers transition to using commercial seed.

Conclusion

In farmer adoption of modern varieties and natural resource management, more attention needs to be given to the levels and types of homophilous and heterophilous relationships more broadly. The choice of social relationships farmers use to incorporate a diversity of traditional and modern varieties can make them resilient (Sperling and McGuire 2013) only if they have proper safety nets to mitigate potential risks. While bridging connections can lead to better access to

innovations, bonding relationships can be more effective at communicating pertinent information (McPherson et al. 2001) for certain groups of farmers. Where and when farmers choose to make synergy between traditional and modern varieties depends upon the balance between bridging and bonding ties. Understanding when farmers choose to take risks can lead to a clearer idea of how social relationships provide safety nets that promote diverse seed access.

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A Conversation with the World

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Abstract: "A Conversation with the World" was compiled by Audrey Maretzki*, IK: Other Ways of Knowing* editor, and is based on telephone conversations with Mr. Graham who provided personal biographical documents as well as information about the youth whose photos were selected for inclusion in this article.

In a 2013 TEDx talk at Penn State, Lonnie Graham—who was named the Pennsylvania Artist of the Year in 2006 and developed a program at the Manchester Craftsmens Guild in Pittsburgh, Pennsylvania that was cited by the White House as a National Model for Education--described his efforts to teach a Pittsburgh youth how to become a photographer and how this student taught Lonnie what to photograph. This video is an introduction to Lonnie Graham as a person, and provides a backdrop for Conversation with the World, one of Graham's ongoing projects.

Graham, a native of Seldom Seen--a town near Pittsburgh, Pennsylvania is a Pew Fellow and Professor of Visual Art at the Pennsylvania State University. In 1984, while living in San Francisco, California, he conceived A Conversation with the World. His initial idea was to use recorded interviews and large-scale photographs to document individuals he encountered at random. As the proposed project took shape, Graham collaborated with Professor James Wiley at the Cooper Union for Arts and Sciences in New York City to develop a series of eight questions that could be directed to an individual before being photographed. Graham believed that individuals, given the opportunity, would respond in a relatively candid manner, thus providing a measurement of the universality of the human condition.

For nearly thirty years, Graham has traveled the world talking with people and photographing them. Through his conversations, he has learned that, as humans, we want a safe place to live and the ability to function in the context of our traditions, our culture, and our values relative to a spiritual tradition. A Conversation with the World helps to clarify preconceptions we hold about one another and enables us to establish a climate in which we are more likely to seek support from one another than to abandon one another in ignorance. Graham notes, "Within the pool of cognition, fear is dispelled and understanding prevails."

The Youth of Calgary

In 2009, Professor Laura Swart, of the University of Calgary in the Canadian Province of Alberta, invited Graham to conduct interviews with the local First Nations population. Alberta is in the foothills and prairies east of the Canadian Rockies, an area where pre-Clovis people lived more than eleven thousand years before the arrival of Europeans. When Europeans arrived in this area, a confederation of the Blackfoot, Blood, Peigan, and Tsuu T'ina tribes occupied the region of the Bow and Elbow Rivers, at whose confluence the modern city of Calgary is now located. The early settlers that arrived in Alberta were ranchers that grazed their cattle on the prairies where First Nations people had hunted buffalo for millennia. Between 1896 and 1914, the Canadian Homestead Act brought new arrivals to the area, intent on farming the rich soils of Alberta. In 1902, oil was discovered in the Alberta sands, leading European entrepreneurs to make incursions into the oil-rich lands of the Blackfoot Confederation.

Graham's process of interviewing and photographing was profoundly significant in the revelation of First Nations peoples' personal stories, traditions, struggles, and culture, which is the result of generations of rich and enduring heritage. Because of the imposition of western culture, many First Nations individuals have had extreme difficulty not only in assimilating culturally and overcoming the injustice of that imposition but also in articulating any resonant definition of a true self, since many of their ancestors were forced to endure unimaginable hardship at the hands of invading Europeans. Through the course of ill-conceived guidance, First Nations peoples have been forced to adopt European customs and values that are inherently misaligned with their own.

Sean Soop – Blackfoot

Do not place transparent grids in front of me,
Obstacles soaked in colonial bliss,
I remember the way home.
It is time for a new resonance,
Paint with the fingertips of your soul,
Until you know every color by touch alone,
Forget boring conventional horizons,
Start with the shadows,
Must have contrast,
Must have balance,
Know that when your shadow is casting a lengthy coat,
The sun is shining hard on your face.

Sean Soop

Duran – Blackfoot

*"I want to be remembered not just as someone who tried,
but as someone who actually did positive things and made a difference."*

Jacie Alook – Blackfoot

*"My kookum (grandmother) didn't speak English, so every time I was around her
I felt like my heart was going to explode. I just wanted to talk to her. She was so strong, so powerful.
I don't know what it was. She was greatness."*

Craig Ball – Mixed ancestry of First People and early French Canadians

*"Identity is determined by an exchange between those values transmitted by tradition
and applied in the interpretation of their meaning.*

Jason – Other First Nation youth understood his tribal heritage as being Blood.

It is important to Jason that the contribution of his Blood ancestors is depicted.

Jordan Crowchild – Blackfoot

All of the Crowchild family were photographed by Lonnie. Jordan had reached the age at which he was faced with the cultural choice of cutting his hair or letting his braid grow. Lonnie thought he might not see Jordan with his braid when he returned to Calgary.

Sarah Scout – Blackfoot

Sarah is an outspoken First Nations activist. She conducts a radio program on the local station and organizes a weekly writers' group. Sarah's mother was sent to a Native boarding school as a child where her long, black hair was cut. Sarah wants people to know what her mother went through during the Canadian boarding school era.

Using the visual arts as a starting point, Graham and Swart established a fluent literary voice for this population based on the oral tradition. The individuals that were interviewed and photographed in A Conversation with the World, Calgary had the opportunity to have their voices heard and to raise questions to the non-Native population, using their own written language and pictures. Graham recalls the five-by-four foot photos with poignant messages written on the photos by the individuals he had photographed as being some of the most powerful images he has taken.

The Youth of Christchurch

Graham is currently engaged in A Conversation with the World that involves Te Ora Hou, a Maori youth organization in Christchurch, on New Zealand's South Island. On September 4, 2010, a devastating 7.1 earthquake destroyed much of Christchurch, the most beautiful city in New Zealand. In the subsequent five years, Christchurch has experienced more than fourteen thousand aftershocks. The Maori youth in Christchurch are exhibiting and employing their photos taken by Graham to tell their own story of cultural as well as physical devastation.


Maia

Maia is from the North Island of New Zealand and has come to Christchurch on the South Island to study art at Canterbury University. He is a talented artist who uses Maori traditional representation in his drawing and painting. He is active in the Maori community, but is a humanist in accepting the importance of all cultures.

Mele

Mele is known as a "bounty" in New Zealand, meaning that her parents were of mixed race. Despite the prejudice she has experienced, Mele has a strong sense of personal integrity. She has gone about her life with the attitude that being a bounty is "their problem, not hers." She is a mom and is currently expecting a baby.
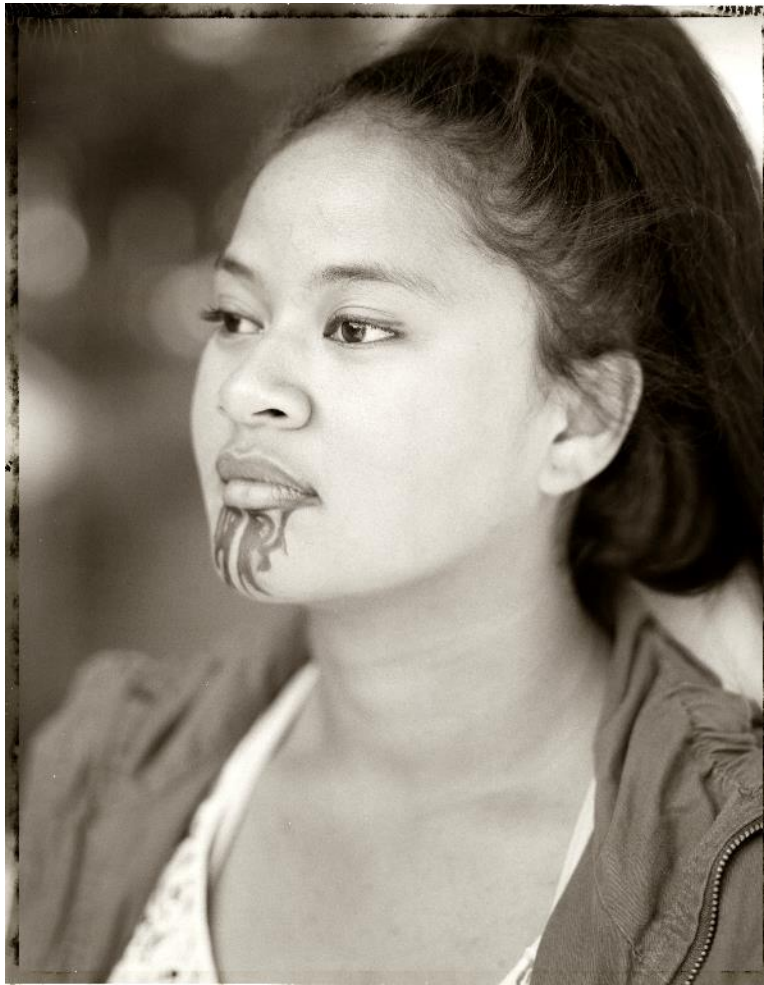
Tapedia

Tapedia is firmly committed to the revival of her Maori ancestry, a position that is not completely accepted by the Maori youth community in Christchurch. She is a talented singer.

Kala

Kala is an amazing young woman who is immersed in her Maori culture. "Revive or Remember" is her slogan, meaning that if the Maori do not bring back their cultural past, they will have nothing but memories to identify themselves as Maori.

Danette

Danette's father is Maori and her mother is Irish. She is a dedicated community youth activist and a mother. She wants her child and other New Zealand youth to have the choice of their cultural identity.

Taiko Drumming as Sound Knowledge

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Abstract: This article explores the history of Taiko drumming as a practice of sound knowledge. It also discusses the history and cultural significance of Taiko in the United States.

The history of taiko drumming underscores the complexity of identifying any one source or point in time of indigenous practice. Rather, it provides a powerful illustration of how indigenous knowledge and practice of taiko are never fixed and discrete, but, rather, are produced, assembled through various cultural influences, and on the move. According to Carter (2013), Taiko drumming is an "invented tradition" in that it continually remakes itself, both in Japan and around the globe, to reflect contemporary influences as well as historical ties.

The Japanese word *taiko* typically refers to both the instrument itself (literally translated as 'fat drum') as well as the practice and performance of drumming. Influenced by music of Japan, China, Korea and India, the many roots of taiko are found in various contexts. The tradition is thought to have originated in Buddhist practices in India, China and Korea around the sixth century, in festivals associated with Buddhism and Shintoism, in war as a battle drum, as a form of communication across distances, and as a component of *Gagaku* (Japanese Imperial court music) in the sixth century. The form and style of Gagaku are part of contemporary taiko. Gagaku music has a fixed form, steady rhythm, and an

elastic, "breath rhythm" that mimics inhaling and exhaling rather than a steady tempo (Malm 1977). Similarly, *ma*—a word associated with spiritual principals (Takemitsu 1995)--connotes the vibrancy of empty spaces, or rests, between sounds. By increasing or decreasing this silence, the expression of sound takes on different qualities, creating tension and release (Kodani). Other taiko influences derive from festival drumming in different Japanese prefectures. Festival music often uses a collection of drums and other instruments such as a *hayashi* (flute), gong, or *kagaku* (conch shell). Different Japanese prefectures often have drum patterns or melodies that are unique to particular villages or towns. To this day, certain regions are associated with certain stylized movements and stances.

The first taiko ensembles, in which different drums played different rhythmic and melodic parts together were established in the 1950s in Japan. This ensemble style of playing is generally referred to as *kumidaiko* (harmony drum) in North America or *wadaiko* in Japan. The style often includes soloing, which exhibits the characteristic melody and rhythms of the existing piece while also using the steady rhythm maintained by the other players as a base for artistic innovations, skill, and artistry. *Osuwa-Daiko*, established in 1951, is among the first Japanese ensembles of this style, and incorporates both traditional Japanese and jazz rhythms (Takata 1997). This style pervades American taiko. Perhaps one of the most noticeable appropriations is the American jazz idiom of improvisation. Many American taiko ensembles add solos to precomposed pieces. Furthermore, many taiko compositions draw on musical traditions from around the world, such as Afro-Cuban rhythms, salsa, popular music, and instruments not traditionally played in taiko, such as the guitar.

Integral to drumming is *kata*, the physical movement and visible, choreographed form of taiko drumming. Drums are played gracefully, with purposeful movement, so that the visual aspect of music is emphasized as much as the aural. Martial arts stances, such as lowering the hips to stabilize the body, have influenced the kata of many contemporary taiko ensembles. Certain styles of kata have also been developed by taiko ensembles. The *Sukeroku* style, named after *O Edo Sukeroku Taiko*, is characterized by identifiable movements that correspond with a slanted drum configuration, in which the drum and the drummer's stance are aligned on a diagonal plane.

Taiko in the United States: Re-Sounding Identity

Historical events in the United States, notably the internment of Japanese Americans during World War II, have served as the basis for a reconceptualization

of taiko in the United States as a cultural project concerned with Asian American identity politics. Although taiko drumming is characterized by the sound conventions of steady, elastic rhythms, ma, visual–sound integration through kata, percussive instruments such as small cymbals and shakers, and *kumidaiko* (ensemble drumming), North American taiko borrows from musical forms such as jazz, Native American drumming, and salsa. Like the music itself, *kata* is hybridized, incorporating movements drawn from gagaku, martial arts, and contemporary dance.

Taiko drumming has played a significant role in Asian American politics, and I have written elsewhere about the ways in which taiko drumming configures the social construction of identity (Powell 2012, 2008). Sound has been addressed as a mode of experience that has both physical and psychological dimensions (Feld 1990, 1996; Gell 1995). Acoustemology, a term popularized by Steven Feld, is "an exploration of sonic sensibilities, specifically of the ways in which sound is central to making sense, to knowing, to experiential truth" (1996, 97). Important for indigenous studies is the way in which acoustemology highlights the somatic experience of place as a means of composing identities that, paradoxically, transcend a particular instance or locale. For example, Johnny Mori of Kinnara Taiko, has noted that his practice of Japanese American taiko does not have an explicit connection with Japan. Rather, he describes "making…up" a musical style for his group, in keeping with the concept of an invented tradition (Fromartz and Greenfield 1998).

North American taiko is constructed through, and as, sonic, gestural, and overtly political discursive practices that locate it within the larger field of taiko drumming, as well as the larger landscape of identity politics. Fromartz and Greenfield (1998, 44) have called attention to the aesthetic practices of taiko drumming that disrupt the cultural myth and stereotype of a "quiet" and "docile" Asian: the strong stance, the physical stamina needed for drumming, the loudness of the drums, and the use of martial arts movements in the drumming, creates a space that is "anything but quiet". Deborah Wong (2004, 229), has discussed the ways in which taiko "remodulates" racial categories such as Japanese, Japanese American, Asian, and Asian American, noting how the "sensual, sounded body" moves through historical constructions to create new ones .

San Jose Taiko: Sounding Place, Placing Sound

San Jose Taiko, a taiko performance group located in California--with whom I've apprenticed, researched, and studied—is an example of a taiko drumming

ensemble that has composed several original compositions that nod toward older, historical elements of taiko as well as toward contemporary global music and dance. Since their inception, San Jose Taiko has been developing a style that reflects Japanese American concerns, jazz idioms, and their own American experiences and musical influences (Hirabayashi 2001, pers. comm.). Over the years, their compositions have included Afro-Cuban rhythms, electronica (see for example, their collaboration with The Bangerz, 2010), rock, funk, hip hop, and Filipino musical instruments and influences. They have also experimented with sonication of events (e.g., seismic sonification) and of urban spaces. They have developed compositions for San Jose Japantown's cultural events, such as the annual *Obon* festival and Day of Remembrance, which commemorates the United States presidential executive order 9066, authorizing the relocation of Japanese Americans to internment camps in 1942. One of three remaining in the United States, San Jose Japantown is a historic, one hundred and twenty-five-year-old neighborhood developed from the first settlement of Japanese immigrants in the Santa Clara Valley of California. Franco Imperial and Wisa Uemura--artistic and executive directors, respectively, of San Jose Taiko--are developing work pertaining to the sonification of urban spaces and stories and experiences of Japantown (pers. comm.).

Another example of experimentation with taiko as a mode of expression can be found in the work of PJ Hirabayashi, Artistic Director Emeritus, former Artistic Director, and founding member of San Jose Taiko. She has recently founded TaikoPeace, an interdisciplinary, collaborative project that brings together taiko, Japanese *butoh* dance, *haiku* writing, spoken word, and chanting towards the goal of self-expression, connection, and compassion. Over the years, Hirabayashi has engaged in numerous artistic collaborations, and TaikoPeace is an example of how sound as a way of knowing reverberates beyond a physical location.

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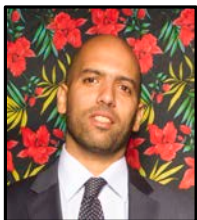Takemitsu, Toru. 1995. "A Single Sound." In *Confronting Silence*, 51-52. Berkeley, CA: Fallen Leaf Press.

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The Nile Project: Music as Metaphor

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Abstract: The Nile project, founded in August 2011 by Mina Girgis and Ethiopian-American singer Meklit Hadero, brings together accomplished musicians from the Nile Basin countries, as a way of addressing the cultural and environmental challenges facing the countries of the Nile Basin.

The Nile Project was founded in August 2011 by Mina Girgis and Ethiopian-American singer Meklit Hadero as their unique way of addressing the cultural and environmental challenges facing the countries of the Nile Basin. The Nile is the longest river in the world and the eleven African nations through which it flows are home to some of the world's oldest cultures. Over many millennia, the reliable seasonal flow and overflow of the Nile has allowed farmers to produce grains and other crops that sustain those living in deserts well beyond the Nile. In centuries past, Nile fishermen caught and sold the once-plentiful Nile perch; traders transported goods to Nile countries from the Mediterranean, Europe and Asia; and boat owners brought scores of tourists to ports along the Nile.

In recent years, however, all has not been well in the Nile Basin. Its population has grown exponentially, changing climatic conditions have made the rains that feed the Nile increasingly unreliable, and regional politicians speak of countries that take more than their fair share of the Nile waters – waters that in times past were equitably shared. It has been said regional conflicts in some parts of the world, including Africa, will soon be "water wars". If so, few parts of Africa would be as negatively impacted as the countries of the Nile Basin.

Girgis, who grew up in Egypt and studied hospitality administration and ethnomusicology in the United States, had the big idea of convening a musical "gathering" of accomplished musicians from the Nile Basin countries. Girgis describes the gathering of the musicians as "speed dating". Much like that social-mating ritual, the musicians were put in groups for short periods of time and impelled to learn quickly about each other and each other's musical tradition, then figure out how to make music together. The musicians brought together instruments and vocal styles differing in tone, pitch, and rhythm; Sudanese harps joined with Kenyan kettle drums while Ethiopian violins played beside Burundian thumb pianos and Egyptian flutes. Out of the initial cacophonies of sound, and to the delight of the musicians, came beautiful, exciting music that was turned into The Nile Project's highly acclaimed album, *ASWAN*. Alsarah, a musician from Sudan, described the musical synthesizing process: "We are creating a 'Nile sound,' not just country by country, but working together to create a new sound. It's the joy of discovering older traditions that makes them new." Girgis added, "It's taking traditional instruments and doing non-traditional things with them."

The Nile Project performing for Penn State Paterno Fellows

Miles Jay at a Community Event in State College, PA

The song Sematimba ne Kikwabanga is one example of that synthesis. Girgis sees The Nile Project as a novel initiative, using music to bridge the cultural gap not only among youth in the Nile Basin countries, but also between youth leaders in Africa and in the United States   His goals are, firstly, to bring Africa's music to

college students in the United States and, secondly, evoke engagement and collaboration among African and American peers on highly politicized issues like global climate and water issues.

In April 2014, The Nile Project spent a week in State College, Pennsylvania, on the University Park Campus of The Pennsylvania State University. Thanks to the enthusiasm and energy of Amy Vashaw, Director of Audience and Program Development of the Center for the Performing Arts, Penn State was one of twenty-five college campus communities that hosted The Nile Project musicians and staff during the academic year. The Nile Project musicians and artistic personnel brought both beautiful music and serious dialogue about water issues to the community, tapping the collective intelligence and creativity of groups from kindergarten and elementary school classes to graduate student seminars and teacher workshops. Mid-week the pace changed and a ticket-paying audience shook the walls and floor of Eisenhower Auditorium during a syncopated, hand-clapping, foot-stomping evening led by The Nile Project musicians and singers. The final event of the visit was a community get-together in the State College Borough Building in partnership with Sounds, a local nonprofit group dedicated to creating musical opportunities for State College residents. The Nile Project team and local residents of all ages were invited to bring their favorite instruments, hula hoops, and voices to play, sing, dance, meet, talk, eat, and learn from each other and about each other. The message is: we can, and must, work together to solve the problems facing Planet Earth, and enjoy ourselves as we do it.

The Nile Project Musicians
Photo credit: Peter Stanley

In a recent interview, Girgis was asked what he hoped The Nile Project would be doing ten years from now. He hoped there would no longer be a quirky, non-profit organization called The Nile Project.   That's because Girgis believes today's youth will, by then, take the reins of leadership and challenge the world's politicians to listen to their people while respectfully embracing both the academic knowledge generated in institutions of higher education and the traditional knowledge of the many cultures of the world.

Hula as a Way of Knowing: A Personal Journey toward Musical and Kinesthetic Understanding

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Abstract: This article describes the author's personal journey as a trained classical musician beginning from early childhood. The subsequent study of hula as an indigenous Hawaiian form of communication is further examined against the backdrop of Western musical knowledge and ways of doing. Hula as an ancient art form is discussed with regard to its classifications, uses, and multiple layers of meaning communicated through gesture.

Keywords: hula, Hawai'i, Hawaiian, dance, gesture, movement, music, chant, indigenous, instrument

The piano arrived without notice. A hulking specimen of Victorian-era engineering, the recently inherited upright grand stood among my toys, its ivory keys and mother-of-pearl inlays looking too expensive to touch, yet invoking that very desire. Seemingly out of place in a family space dedicated to children's amusements and Saturday morning cartoons, the piano piqued my four-year-old curiosity, and drew me to explore it further, my tiny fingers plinking out melodies and experimenting with the sonic possibilities. It was these informal encounters with the piano that set me on a lifelong course of making music and using music as a way to understand and interact with the world.

As my parents noticed my interest in the piano, they arranged for formal study to begin at age seven–and mercifully end at age nineteen. For years, I sat at the piano, practicing the scales, etudes, and repertoire issued by my teacher during my weekly pilgrimage to her home. Formal flute study began at age ten thanks to the procurement of an aunt's cast off instrument last used during the Nixon

administration and weekly band lessons provided by my school. These childhood beginnings set the stage for more advanced involvement in music, with my middle school and high school activities revolving primarily around band, piano, and church-related musical pursuits. I eventually decided to pursue music education as a career, and I enrolled in a large, state university to do just that.

Upon graduating with a degree in music education, I taught general and choral music in an urban Catholic school. There were many challenges, behavioral and monetary, that accompanied this position, and it came as a bit of a relief when the school closed and I was free to leave the area to pursue graduate music education studies, somewhat, guilt-free. I returned to the academic environment, fiercely determined to make an impact through effective teaching, quality research, and meaningful music-making. It was during this time I decided to pursue further graduate studies at the doctoral level with the intent of training the next generation of music teachers. I had reached the pinnacle of focus, determination, and purpose. It was at this point that I felt that music was my way of knowing, my way of expressing. It was so integrated into me that I felt compelled to have a larger impact on the field by training those who would bring music to children and youth in schools.

Music was and continues to be a way of knowing for me, but, despite my advanced study, I did not realize how limited this way of knowing really was. My story is likely similar to many others who do what I do: early childhood interest, parents with the disposable income to provide lessons and training, high school music nerd, college music major, etc. Western European Art Music dominated my musical upbringing, providing rigorous training and theoretical understanding, albeit with a limited cultural viewpoint. Music was my language, but I only spoke very little of what was possible. I do not regret this background or training – only how long it took to realize I wanted and needed more.

Fast-forward to my years of doctoral study. I attended an institution well-known for its unique blend of music education and ethnomusicology. Prior to my matriculation, I barely knew what ethnomusicology was. Intimidated by the possibility of immersing myself in the music of another culture, I watched from the sidelines, hesitant to join in. It was during this time that I attended an ethnomusicology conference in Hawai'i. What started as an excuse to get some sun and sand, ended up significantly altering my musical life and my ways of knowing through that medium. While the conference offered many fascinating paper presentations, I decided to attend a hula dancing workshop. I was not sure what would happen in that ninety-minute period, but, in a rare instance of

extroversion, I decided to give it a try. What happened was that I fell in love with hula.

Hula often conjures up images of grass skirts, coconut shell tops, and other images that might be more related to tourism than the actual ancient art form. Polynesian themed restaurants and resorts frequently portray hula and its related accoutrements in either inaccurate or incomplete ways. Hula, however, is itself a way of knowing, of channeling the past and shaping the future, a way of knowing that has existed for centuries using chant and movement.

For centuries, the indigenous people of the Hawaiian Islands had no written language, yet they had an extensive body of knowledge to pass on to future generations. The Smithsonian Folkways (n.d.) archive notes that:

> Early Hawaiians recorded their literature in memory, not writing. They composed and maintained an extensive oral tradition, a body of literature covering every facet of Hawaiian life. Chants, called *mele*, recorded thousands of years of ancient Polynesian and Hawaiian history. Chants also recorded the daily life of the Hawaiian people, their love of the land, humor or tragedy, and the heroic character of their leaders.

The transmission of stories and information was vital to a culture with no written language. Early ethnographer, Nathaniel B. Emerson (1998) notes that "listening was equally as important as speaking if the traditions were to accurately survive" (2) and, further, that "when a *kupuna* (elder) dies, a library has burned to the ground" (3), speaking to the importance of transgenerational passage of information within the Hawaiian traditional culture.

The Islands' inhabitants practiced hula for centuries until the arrival of missionaries in the nineteenth century. The missionaries misunderstood the purpose and interpretation of hula, leading to the repression of this indigenous cultural expression. Their misinformed perceptions of hula and their disapproval of its practice forced hula to be transmitted in secret for many years (Harden 1999). It was with the installation of King David Kalākaua in the 1870s that hula experienced a rebirth of sorts. Kalākaua–known as the Merrie Monarch for his affinity for socializing–encouraged the Hawaiian people to resurrect their hula practices as an expression of pride in their heritage and an attempt to preserve a vital aspect of their culture. These efforts faded with his death and the fall of the Hawaiian monarchy, but the 1960s and 1970s saw a return of hula practice once again (Harden 1999).

Hula consists of chanted text and movement. Hula as a way of knowing cannot be entirely separated from text as "…the spoken word is transported by breath, and breath is life, then words, the ancients believed, are charged with a powerful mana of their own" (Harden 1999, 126). However, "the chant tells the story, and the hula sets the story in motion" (Harden 1999, 126), suggesting that the movements of hula are integral to the communication of information There are two overarching forms of hula: *kahiko*, the ancient form, and *'auana*, the contemporary form. Kahiko has been practiced for centuries and is accompanied by chanting and various traditional instruments such as the *ipu heke* (double gourd drum), *pahu* drum (shark skin drum), and *'uli 'uli* (gourd rattles) (see figures 1 and 2). Practitioners of kahiko are likely to wear a *pa'u* skirt, a traditional form of hula clothing (see figure 3). 'Auana, or contemporary hula, seems to be the more well-known form of hula, featuring modern instruments such as guitar and ukulele, as well as more contemporary costuming.

Figure 1
Ipu Heke

Figure 2
'Uli 'Uli

Figure 3
Pa'u Skirt

Hula (with the exception of *hula noho*, or seated hula) involves coordinated motions of the feet and hands that bring a story to life. Emerson (1998, 176) observes that

> gesture is voiceless speech, a short-hand dramatic picture. The Hawaiians were adepts [sic] in this sort of art. Hand and foot, face and eye, and those convolutions of gray matter which are linked to the organs of speech, all worked in such harmony that, when the man spoke, he spoke not alone with his vocal organs, but all over, from head to foot, every part adding its emphasis to the utterance

Further, in hula,

> there is a basic vocabulary of hand gestures. The dancer depicts the world around him as he sees it in relation to himself. For example, some motions for things of the sea place the hands near the waist. The motions for sun, moon, stars and clouds are placed above the head. The gestures for rain would start high and gradually be lowered in much the same way that rain really falls (Ho'omāka'ika'i Staff 2007, 72).

Motions carry with them particular literal meanings. One might see a hula dancer depict ocean waves, a rainbow, or the sun. However, it is important to recall the multiple layers of meaning found within hula. For example, a *pali* motion (see figure 4) might depict a cliff of a mountainous region, but could more deeply represent "the precipice, stand[ing] for any difficulty or obstacle of magnitude" (Emerson 1998, 177). Likewise, a *pua* motion (see figure 5) might represent a variety of flowers, but, under the surface, means something precious and valuable. For example, at a social gathering, one might notice a small child running around and inquire, "Whose *pua* is this?" indicating the preciousness of the little one. In these ways, the gestures of the hula practitioner communicate many meanings. Emerson (1998, 176) refers to the fluidity and beauty of *hula*, stating that the dancer's "…whole physique is a living and moving picture of feeling, sentiment, and passion."

Figure 4
Pali motion

I truly launched my hula journey when I returned home from the ethnomusicology conference. I wanted more and I found it when I enrolled in a hula class at a local community arts center. My expectation was that I would take the class, learn a lot, and conclude at the end of the term. What I did not expect was that I was to become part of a *hālau* (hula school) that transcended the administrivia of registration dates and times. It was at hālau that I learned the basic steps, hand gestures, and the accompanying drum rhythms. I learned both kahiko and ʻauana, as well as Hawaiian language and culture lessons. I learned Hawaiian songs and how to strum a ukulele. I crafted my own paʻu skirt as well as my own ipu heke. I reveled in each new thing I learned and felt extremely fortunate that this precious information was given so lovingly to a *haole* (foreign, white person) like me. Our hālau was a confluence of both native Hawaiians and persons of diverse backgrounds. I was definitely a cultural outsider, but always treated like family.

Figure 5
Pua Motion

I ignorantly went into my hula study thinking that, surely, my Western musical training would give me an advantage. I was sorely mistaken. While I was quite adept at sitting behind a flute and decoding notation, I had never experienced a whole-body musical endeavor such as hula. My unfortunate early efforts were more akin to marching band maneuvers and were described by my *kumu hula* (hula teacher) as a "train wreck." But, I persevered, learned to trust my body as an instrument, and learned to trust my ear more than ever before. I thought that my Western training would help me in hula, but the complete opposite occurred – my musicianship soared after being given the gift of hula instruction. My train wreck days behind me, I began taking classes twice per week, improving my skills, and participating as fully as I could in the true meaning of hula.

I am thankful for that old piano that materialized among my Cabbage Patch dolls that day in my early childhood. It set in motion a musical life and gave me a way to share and express. It led to many meaningful musical encounters and even allowed me to experience the beauty, the depth, the love – the *aloha* – that is *hula*.

* * *

To view Dr. Watts's ICIK seminar on Hawai'ian hula, visit the ICIK website.

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Maori *Waiata* (Music):
Re-Writing and Re-Righting the Indigenous Experience

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Abstract: This article examines the role of music in Maori culture and the ways music works to create meaning for Maori people. The article also provides an overview of Maori history and its context within New Zealand.

> *Kei a te Po te timatatanga o te waiatatanga mai a te Atua.*
> *Ko te Ao, ko te Ao marama, ko te Ao turoa.*

> **It was in the night that the gods sang the world into existence.**
> **From the world of light, into the world of music.**

Maori are the indigenous people of Aotearoa (island of the long white cloud) or New Zealand. According to Maori mythology, as soon as the gods turned night into light, they turned light into music. As life began, it brought with it the complexities of the lived experience that are most easily and adequately expressed through music. All Maori *waiata* (songs) stem from the emotions that the gods displayed during creation. "There are songs of sorrow, anger and lament; of loneliness, desire and joy; of peace and love" (Flintoff 2004, 12).

These aesthetic attributes of music echo its functions and uses globally. Humans

use music to define, represent, symbolize, and unify, or disrupt community or dialogue. Music is an expression of a human's social, political, spiritual, and self and group identity. It connects individuals to their humanity, to others, to the natural world, and to the supernatural world. Within Maori culture, music plays all of these roles—from its imperative position in *tapu* (sacred) ritual to its unifying task in the creation and structure of group identity. Music is a primary social adhesive that has sustained Maori culture and heritage for hundreds of years.

He aha te mea nui o te ao? He tangata! He tangata! He tangata!

What is the most important thing in the world? It is people! It is people! It is people!

While the exact date that the Maori discovered Aotearoa is debatable, it is largely believed that they arrived on the islands just prior to and during the thirteenth century. Originating in Eastern Polynesia, they navigated a long voyage in the open Pacific. Their large *waka* (canoes) were guided by expert navigators who used ocean currents, the winds, and stars to find their way. The ancestors sailed on vessels such as Te Arawa, Tainui, Takitimu, Mamari, Horouta, and many others. These vessel names live on as the names of the *iwi*, or tribal groupings with which Maori associate themselves genealogically.

Many Maori can trace their family *whakapapa* (genealogy) back to the specific navigator and waka from which they are descended. "During the voyage they displayed remarkable powers overcoming many dangers, and on their arrival they introduced valuable resources such as the kumara (sweet potato) and karaka tree" (Flintoff 2004, 12).Over several centuries in relative isolation, these Polynesian settlers developed a unique language (Te Reo Maori), a rich mythology, distinctive crafts, and complex performing arts.

While many modern Maori take pride in the collective name "Maori," which is loosely translated as "natural" or "common," it is important to recognize that Maori were not a united indigenous population until colonization when non-Maori settlers, or *Pakeha*, called for a distinction between the indigenous population and the Europeans. "Aotearoa existed in Maori oral tradition, of course, but its pre-European inhabitants defined themselves by tribe rather than race. The word Maori

was an introduced, written concept" (Ihimaera 2000, 10). Tribal affiliation, when known, still plays a dominant role in genealogical self-identity.

The first European explorer to sight New Zealand was Abel Tasman on December 13, 1642, but he was unable to come ashore because of the "hostile natives" (Wilson 2013). Captain James Cook, who reached New Zealand in October of 1769 on the first of his three voyages, was the first European able to negotiate with the Maori, allowing him to circumnavigate and map New Zealand (Cook). From the late eighteenth century forward, explorers and other sailors, missionaries, traders, whalers, and sealers arrived, with the largest wave of settlers arriving in the earliest decades of the nineteenth century. For many inland Maori there was limited cultural disruption or change at this time beyond the appearance of new goods. For the coastal Maori, however, change was occurring at an unprecedented speed, particularly due to the introduction of the musket and the conversion of many Maori to Christianity.

In 1840, Maori chieftains entered into a compact with Britain in the Treaty of Waitangi in which they ceded sovereignty to Queen Victoria of Great Britain while retaining territorial rights. Also in 1840, the British established the first organized colonial settlement. A series of land wars between 1843 and 1872 ended with the defeat of the Maori. The British colony of New Zealand became an independent dominion in 1907 and supported the United Kingdom militarily in both World Wars.

The Treaty of Waitangi, while often viewed as the founding document of the New Zealand government, is highly controversial and remains a central point of discontentment between the Maori and the New Zealand government. A point of great contention is that the treaty was actually three separate documents, which differed significantly between the English and Maori versions. This lack of clarity, if not trickery according to some Maori, has led to great strife between Maori and Non-Maori citizens. Many Maori believe the crown has not fulfilled its obligations within the treaty, and many non-Maori have suggested that some Maori are using the treaty to gain special privileges. In recent years, the government has sought to address longstanding Maori grievances stemming back to the Treaty of Waitangi. To help rectify this, the Waitangi Tribunal was established in 1975. It has ruled on a number of claims brought by Maori *iwi* (tribes) and granted compensation in

many cases ("Treaty of Waitangi").

Today, New Zealand is home to over 4.4 million people. According to data from a recent national census, approximately 71 percent of New Zealanders identify themselves as being of European descent, with just over 14 percent identifying as Maori ("CIA Facebook – New Zealand" 2014). The remaining people primarily identify themselves as being of Asian and Pacific descent. A disproportionate number of Maori face significant economic and social obstacles. With lower life expectancies and incomes compared with other New Zealand ethnic groups, they face higher levels of crime, health problems, and educational under-achievement ("Maori 'Extreme Disadvantage' – UN Report" 2011).Socioeconomic-based initiatives have been implemented aimed at closing the gap between the Maori and other New Zealanders.

Imperialism and Colonization

For the Maori, imperialism frames the indigenous experience (Tuhiwai Smith 1999, 19). It is part of their narrative and of their modernity. Maori language, knowledge, and culture were interrupted, silenced, misrepresented, ridiculed (even condemned), and radically reformulated by it. Like other indigenous peoples, Maori have had to develop the language, literature, and arts to negotiate this altered existence. "Imperialism still hurts, still destroys, and is reforming itself constantly. Indigenous peoples as an international group have had to challenge, understand, and have a shared language for talking about the history, the sociology, the psychology and the politics of imperialism and colonization as an epic story telling of huge devastation, painful struggle and persistent survival" (Tuhiwai Smith 1999, 19). This common language often used by indigenous peoples revolves around the concepts of *self-determination* and *sovereignty*, however neither term fully considers the unending reign of imperialism, nor do they consider that decolonization is a process that must engage consistently with imperialism and colonization (Tuhiwai Smith 1999, 19).

One of the most degrading attributes of imperialism for the Maori is the idea that they, as indigenous people, were not considered to be fully human. "Imperialism provided the means through which concepts of what counts as human could be applied systematically as forms of classification systems, for example through hierarchies of race and typologies of different societies" (Tuhiwai Smith 1999, 25).

For generations, Maori assentation of humanity has been a consistent struggle and is widely apparent in anti-colonial dialogue and practice. Imperialism and colonialism brought turmoil and disarray to Maoriness, disconnecting them from their histories, their landscapes, their languages, their social relations and ecology, and their own ways of thinking, feeling, and interacting with the world. This deconstruction makes it impossible to fully reclaim what once was and it requires creative combinations of the past and the present to envision their collective future.

Just as Maori mythology states that the world came into being through song, music is filling the vital role of defining Maoridom in the modern age. Maori traditional culture has always been retained through music, and the Maori cultural resurgence of today is being constructed through music. Music and arts are the basis of humanity, and thus are among the best tools for recalling and maintaining collective history, teaching future generations cultural knowledge, developing pride and collective identity, propelling advocacy and awareness, fighting against unjust practices, and for envisioning the future. For the Maori, music and dance are parts of their everyday life and are their way of advancing their culture into the future. Modern Maori musical practice has two primary intentions: *re-writing* and *re-righting*[1] the Maori story (Tuhiwai Smith 1999, 28).

Nā tō rourou, nā taku rourou ka ora ai te iwi.

With your food basket and my food basket the people will thrive.

—Maori Proverb

While there is a large variety of musical styles specific to purpose in Maori culture,[2] this article will provide a sample of five Maori *waiata* (songs) that are specific to re-writing and re-righting the Maori narrative. The presentation of these waiata is organized using terminology developed by Dr. Linda Tuhiwai Smith in her landmark text *Decoloninizing Methodologies: Research and Indigenous Peoples*. Dr. Smith's terms -- celebrating survival, claiming, remembering, reframing, and envisioning -- were selected for this purpose as they place the indigenous experience, including stories, lessons, teachings, and visions for the future, above imperialism-based western paradigms (Tuhiwai Smith 1999).

Celebrating Survival

"Celebrating survival accentuates not so much our [indigenous peoples'] demise but the degree to which indigenous peoples and communities have successfully retained culture and spiritual values, and authenticity. Events and accounts which focus on the positive are important not just because they speak to our survival, but because they celebrate our resistances at an ordinary human level and they affirm our identities as indigenous women and men" (Tuhiwai Smith 1999, 145).

The stories of Maori survival are both individual and collective. Told through narratives, song, dance, and visual arts, they are important because they remind people that despite hardships and change, Maoriness as a cultural identity will remain. It also serves to remind future generations of their connection to the past and of the sacrifices made by previous generations that pave the way for their collective future.

E kore au e ngaro, he kākano i ruia mai i Rangiātea.

I shall never be lost, a seed scattered from Rangiatea.

This proverb reminds Maori that they play a part in their long history and coming future. Kākano, meaning seed, conveys growth, development, and expansion. Even before a seed is planted or nourished, it has inherent promise. It has the capability to take root, develop, grow, and blossom. Like a seed, Maori are inextricably linked to the generations who have gone before them and those that are yet to come. "He Kākano comes from somewhere, it belongs to someone or something, and it cannot be isolated or detached from those connections. It has both history and potential. He Kākano reminds us of the opportunity we have to make new beginnings, to plant, to nurture, to cherish, to realize potential, to grow and enhance that which is. He Kākano is a symbol of productivity and the promise of success through learning and achievement" (RUIA School-whanau Partnerships).

The song "Born of Greatness," composed by Hohepa Tamehana in 2001, is based upon the He Kākano proverb. It was originally written for the *Manu-ti-oriori Show*, a Māori "pop idol" type program, established in that same year with the intention of forming a pop quartet of talented, positive young Maori role models who were fluent in speaking Te Reo Maori, as well as singing in it. Two videos of the song "Born of Greatness" can be found [here](#).

Video one is the song as it was performed on the *Manu-tioriori Show* (2001). Video two is an example of the song being sung informally at a *Hui* (social gathering). This song remains popular among young people and is frequently used in school settings.

Figure 1. Lyrics for "Born of Greatness," Hohepa Tamehana, 2001:
Translation from folksong.org.nz[3]

He kākano āhau I ruia mai i Rangiātea And I can never be lost I am a seed, born of greatness Descended from a line of chiefs, He kākano āhau	I am a seed Scattered from Rangiatea And I can never be lost I am a seed, born of greatness Descended from a line of chiefs, I am a seed.
Ki hea rā āu e hītekiteki ana Ka mau tonu i āhau ōku tikanga Tōku reo, tōku oho-oho, Tōku reo, tōku māpihi maurea Tōku whakakai marihi My language is my strength, An ornament of grace	Wherever I may roam I will hold fast to my traditions. My language is my cherished possession My language is the object of my affection My precious adornment My language is my strength, An ornament of grace
Ka tū ana āhau, Ka ūhia au e ōku tīpuna My pride I will show That you may know who I am I am a warrior, a survivor He mōrehu āhau	Whenever I stand, I am clothed by my ancestors My pride I will show That you may know who I am I am a warrior, a survivor I am a remnant
Ki hea rā āu e hītekiteki ana Ka mau tonu i āhau ōku tikanga Tōku reo, tōku oho-oho, Tōku reo, tōku māpihi maurea Tōku whakakai marihi My language is my strength, An ornament of grace	Wherever I may roam I will hold fast to my traditions. My language is my cherished possession My treasured Tiger Shell My precious ornament My language is my strength, An ornament of grace

Claiming

"In a sense, colonialism has reduced indigenous peoples to making claims and assertions about our rights and dues… these 'histories' have a focus and a purpose, that is, to establish the legitimacy of the claims being asserted for the rest of time. Because they have been written to support claims to territories or resources or about past injustices, they have been constructed around selected stories" (Tuhiwai Smith, 143).

The following waita "E Pa To Hau" is a lament of the Ngati Apakura people. The Ngati Apakura lived in Rangiapwhia, near what is present day Te Awamutu, but were exiled south of Taupo (approximately 160 kilometers away) during the Waikato Land War of 1846. The Ngati Apakura were forced from their homes during the war and their holdings were confiscated by British troops, despite them being unarmed, undefended, and having had taken no part in the war at the time of the attack.

The composer of this song was likely Rangiamoa of Ngati Apakura and it was written lamenting the death of her cousin Te Wano, yet it remains a song of mourning for the fate of all her people and an oral record of stolen tribal homelands ("Historical Notes on Te Ao Hou" 1964). Waikato tribes often sing this at a variety of occasions, although it is intended for *tangihanga*, Maori funereal rites. A video performance of this waiata can be found here.

Figure 2. Lyrics for "E Pa To Hau" composed by Rangiamoa of Ngati Apakura
Translation from folksong.org.nz[4]

E pā tō hau he wini raro,	The wind from the north touches me,
He hōmai aroha	bringing loving memories
Kia tangi atu au i konei;	so that I mourn
He aroha ki te iwi	in sorrow for my kin
Ka momotu ki tawhiti ki Paerau	lost to me in the world of spirits.

Ko wai e kite atu? Kei whea aku hoa i mua rā, I te tōnuitanga? Ka haramai tēnei ka tauwehe, Ka raungaiti au, e.	Where are they now? Where are those friends of former days who once lived in prosperity? The time of separation has come, Leaving me desolate.
E ua e te ua e tāheke Koe i runga rā; Ko au ki raro nei riringi ai Te ua i aku kamo. Moe mai, e Wano, i Tirau, Te pae ki te whenua I te wā tūtata ki te kāinga Koua hurihia. Tēnei mātou kei runga kei te Toka ki Taupō, Ka paea ki te one ki Waihi, Ki taku matua nui, Ki te whare kōiwi ki Tongariro. E moea iho nei Hoki mai e roto ki te puia Nui, ki Tokaanu, Ki te wai tuku kiri o te iwi E aroha nei au, ī.	O sky, pour down rain from above, while here below, tears rain down from my eyes. O Wano, sleep on at Mt Titiraupenga overlooking the land near our village that has been overturned. Here we are beyond the cliffs of western Lake Taupo, stranded on the shore at Waihi, near my great ancestor Te Heuheu Tukino lying in his tomb on Mt Tongariro. I dream of returning to the hot springs so famous, at Tokaanu, to the healing waters of my people, for whom I weep.

Remembering

"The remembering of a people relates not so much to an idealized remembering of a golden past, but more specifically to the remembering of a painful past and, importantly, people's responses to that pain. While collective indigenous communities can talk through the history of painful events, there are frequent silences and intervals in the stories about what happened after the event" (Tuhiwai Smith, 146).

Fortunately, with the ease of personalized music making and recording, the current generation of Maori are able to use music as a means to fill these silences, or gaps, after important modern events occur. The arts have become the keeper of not just large stories, as they have throughout the entire history of the Maori, but of smaller stories. Not only can they capture events and their outcomes, they can now easily capture the unique feelings and responses of the individuals who take part in these events.

On April 22, 2004, hundreds of Maori gathered at Te Rerenga Wairua, north of Wellington, to begin what would become a historic foreshore and seabed *hikoi* (long walk, or, in this case, a walk of protest). Foreshore rights, the fertile land between high tide and low tide, have been an ongoing point of contention between Maori and the New Zealand government dating back to the Treaty of Waitangi, with both sides laying claim to ownership. The hikoi, organized and led by Hone Harawira, departed on a two-week journey to Parliament in Wellington. The march quickly took on a life of its own, building to more than ten thousand by the time it crossed the Auckland Harbor Bridge and eventually culminating with fifty thousand marching when it arrived at Parliament on May 5, 2004. Many believe that this march gave birth to the Maori Party, a newly organized political party, signifying the beginning of an independent voice for Maori in government.

For many young Maori the foreshore hikoi was one of the first and, perhaps, most impactful events of organized Maori protest within their lifetimes. The ease of music making, recording, and sharing allowed young Maori to record the event and their feelings about it through music that could be easily shared with the world via online streaming. One such artist, who goes by the name Infinite Rensta, uploaded his remembering of this event to YouTube in a track titled "Hikoi 04." His posting displays the following tagline: "The song was composed in memory of 2004 Hikoi Takutaemaona. A protest march which saw and estimated 40,000 people converge on New Zealand parliament from around the nation. The march was in protest against the illegal taking of New Zealand foreshore and seabed into crown ownership. In affect removing the right of Maori to use the court system. The march helped inspire other indigenous protest marches around the world. Track produced by Demo and the unknown kru, unknown studios, West Auckland" (Infinite Rensta 2009).

The official video can be found [here](#).

In both Te Reo Maori and in English, this song tells the story from a street level perspective of being in the march, including the tribal leaders who led it, the Maori people who joined it as it progressed, and the paparazzi and local police who witnessed it firsthand. References are made to those who supported the cause, from other indigenous peoples around the world to the United Nations. It also contains connections to the history of Maori people from the nineteenth century onwards by asking if the New Zealand Government expects Maori to submit and then answering this question by referring to their long history as brave warriors.

Reframing

"Reframing is about taking much greater control over the ways in which indigenous issues and social problems are discussed and handled. One of the reasons why so many of the social problems which beset indigenous communities are never solved is that the issues have been framed in a particular way…the framing of an issue is about making decisions about its parameters, about what is in the foreground, what is in the background, and what shading or complexities exist within the frame" (Tuhiwai Smith 1999, 153).

Not uncommon among indigenous populations, the misuse and abuse of alcohol remains a serious problem in many modern Maori communities. Maori did not have alcohol before the Europeans arrived and when they were introduced to it, most did not like it. It was called *waipiro* (stinking water), *wai kaha* (strong water), or, by the few who enjoy it, *waipai* (good water). A taste for alcohol was not acquired by significant numbers of Maori until the 1850s and once that had occurred many Maori leaders became concerned about the impact of alcohol on their communities, especially because it was used to dull the grief of Maori communities as they experienced high rates of death and loss of land. Binge drinking, which became common in the 1870s, often occurred in settler towns where social constraints were looser. In the early twentieth century the first group of well-educated Maori doctors described drinking as a major social problem.

By the late twentieth century, average daily consumption of alcohol was the same for Maori and non-Maori, but the underlying pattern was different. "About a quarter of Maori did not drink alcohol at all, and those who did drink, did so less frequently than non-Maori. When Maori drank, however, they consumed more – in

the late 1980s about twice as much at each drinking session. This dropped in the 2000s to about 40% more than non-Maori per session" (Cook 2014). The pattern of less frequent drinking sessions at which more is consumed has continued, but the number of non-drinking Maori has thankfully increased. Binge drinking is more likely to cause harm to the person doing it and those around them than more frequent, moderate drinking. These effects have been made worse by the age structure of the Maori population, half of whom are under thirty-five, an age group more likely to suffer alcohol-related harm. Maori are more than twice as likely to suffer severe alcohol-related problems, and four times as likely to die of a condition caused or made worse by alcohol (Cook 2014).

"Whakamutungia Tenei Mahi," composed by E. Tu for the soundtrack (Grindlay and McNabb 1995) of the feature film entitled *Once Were Warriors* (Tamahori 1995), is a prime example of music being created and distributed to reframe the use of alcohol among Maori.

It can be heard here.

Sung in both Te Reo Maori and English, the song mixes Maori traditional protocols and language with descriptions of the modern problems associated with alcohol abuse, especially drunk driving. It reminds the listener that they are a part of a long and important familial history and that it is their responsibility to act as a responsible member of their tribe, if not for their own safety for the safety of others. It also tells the story of what happens when you are caught drunk driving, which includes separation from community and isolation in prison. The instrumental and vocal tracks are a haunting mixture of modern hip hop music and traditional waiata, which leads the listener to a place somewhere in between Maori history and Maori future.

> We gotta get control of our destiny and we could, if we would like to truly be free. But we continue to be statistics of this society, and that's a disgrace. More than a pity.
> Alcohol ain't all in this situation. We ain't in control we been turned into patients. Sick behavior that's against our nature, controlled alcohol that's part of the savior.

What is this source, it's called the alcohol. It's a cure for people, tell me what is wrong? In society it should be a social mediator, but the way we use it is a life illuminator. (Grindlay and McNabb 1995)[5]

Envisioning

"One of the strategies which indigenous peoples have employed effectively to bind people together politically is a strategy which asks that people imagine a future, that they rise above present day situations which are general depressing, dream a new dream, and set a new vision. The confidence of knowing that we have survived and can only go forward provides some impetus to a process of envisioning" (Tuhiwai Smith 1999, 152).

"Whitiora (Release Your Light)," composed by Maisey Rika and recorded by Rika, Majic Paora, Ngatapa Black, Sidney Diamound, and Ruia Aperahama, represents a new, imagined future for Maori Youth. Built upon the concepts of collaboration in performance, this track encourages Maori to remember where they come from mythological or time (the father sky and mother earth) and to stand together now as they look towards the future. The chorus states, "we stand for one, we stand for all, we stand together." This waita is available in Te Reo Maori and in English.

Figure 3. Lyrics for "Whitiora" Composed by Rangiamoa of Ngati Apakura
Translation from http://maiseyrika.bandcamp.com[6]

E hoki ki tō maunga kia pūrea	Upon my mountain
E ngā hau o Tāwhirimātea	I close my eyes
Ko Ranginui e tū nei	I feel the wind blow
E takoto koe Papa	Me back to life and
Ōu tamariki	To you sky father
Kia tau te aroha	To mother earth
	And all your children
Waiatatia te reo	We ask for peace
Me ōna tikanga	We ask for love
Waiatatia te mana Tāne	
Mana Wahine	In every people
Waiatatia ngā mokopuna	There's a language
O te Ao hou	There's a culture
Hui kotahi	In every woman
Hui katoa	Every man

Hui tonu rā

E whiti e te rā
Ngā whetū pīata
Whitiora e kanapa
E tīrama ana
Inā taumarutia te ao e te āwha
Whitiora e kanapa
E tīrama ana

Hangaia tōku waka
Hangaia mai anō
Hangaia mā te rātā
He taonga tuku nā Tāne
Ko au te awa, ko te awa ko ahau
Whenua, ora
Kia kotahi rā

Ei,Tākina atu ko te kawa nui
Ko te kawa roa
Ko te kawa tihei, tihei ngahuru mā ono
Hei whakawairea i tēnei whakaminenga
Oi e kia whakapūāki rangi kia wewerangi
Ki te rito o Rehua
Hūkere, hūkere ki a ihi
Ko te rite, ko te rite
Kia rite te rerenga o te hoe
Ko te hoe nā wai
Ko te waka nā wai
Tāpatupatua ka tapu te moana nui e

United we all stand
Divided we all plummet
When problems arise
Together we'll overcome it
Understand that it's easier
To rise above whatever
When the support is there for you
And yo we here for you
Hope for the best
But for the worst prepare for it
Use that thing inside your head
And keep it clear for it
Necessary to, in this day and age

Is a teacher
In every child
In every land is our future
We stand for one
We stand for all
We stand together
We are the sun
We are the stars at night
We are the one
Release your light
And when the storm clouds over
Hold on tight
We are the one
Release your light ohh

Fashion my waka
With my own hand
Make it with a rāta
He taonga tuku nā Tāne (Gifts handed down from Tāne)
Follow the river
Throughout the land
Unite our people
Forever we will stand

United we all stand
Divided we all plummet
When problems arise
Together we'll overcome it
Understand that it's easier
To rise above whatever
When the support is there for you
And yo we here for you
Hope for the best
But for the worst prepare for it
Use that thing inside your head
And keep it clear for it
Necessary to, in this day and age
If you wanna shine tomorrow
Gotta put in work today, let's go

And when the storm clouds over
Hold on tight
We are the one
Release your light

| If you wanna shine tomorrow
Gotta put in work today, let's go

Inā taumarutia te ao e te āwha
Whitiora e kanapa, e tirama ana | |

Ka mate te kāinga tahi, ka ora te kāinga rua.

When one house dies, a second lives.

To experience Maori music is to experience Maori culture. While the impacts of imperialism are irrevocable, Maori culture is as resilient as its arts. Through preservation of traditional musical practices and the development of new, modern forms of musical doing, new paths have begun to emerge that strengthen the connections from their ancient traditions to building a foundation for a successful, collective future. By celebrating Maori survival through re-writing, remembering and claiming in waiata, Maori have the ability to teach future generations the importance of their past, which will lead to a deeper and stronger understanding of current identity. By reframing problems as shared solutions and working collaboratively to re-right injustices, they will envision a brighter future for all Maori. Music is so imminently tied to who the Maori are that, beautifully, it serves to both sustain culture and to propel them into their future.

* * *

To view Dr. Clements' ICIK seminar on Maori music, visit the ICIK website.

Notes

[1] The terms re-writing and re-righting appear in Ibid on page 28. These terms are used are used beyond the definitions within the text and applied to music and the arts.

[2] For example, Ann C. Clements, "Spirit and Song of the Maori," The Choral Journal, 55 (2), (2014): 18-24.

[3] "Born of Greatness," New Zealand Folk Song, accessed on August 13, 2015. http://folksong.org.nz/he_kakano_ahau/index.html

[4] "E Pa To Hau." New Zealand Folk Song, accessed on August 13, 2015. http://folksong.org.nz/e_pa_to_hou/index.html

[5] Grindlay and McNabb, *Once Were Warriors Soundtrack*, lyric location 4:07 – 4:25.

[6] "Whitiora" by Maisey Rika on *Maiseyrika.com* accessed August 15, 2015, http://maiseyrika.bandcamp.com/

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Channeling the Body's Wisdom

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Abstract: This article describes the author's experience with dance as a sensory experience. The author discusses dance as an experience, an art form, and a way of investigating the author's connection with the past and her ancestors.

Gut Feelings

I recently saw an article title alleging that scientists have now confirmed the "gut feeling" to be a real thing. I imagined the eye rolls, smirks, and rib jabs somatic practitioners and movement specialists might be giving their scientist counterparts. The concept of knowing in and through the body is not a foreign belief in my world. Even before I entered the academic arena of dance, the concept of trusting my visceral, intuitive, and cognitive responses equally was a touchstone for me throughout my life.

Someone once asked me why I picked dance as my art form. This is a complicated question. I didn't "pick" dance. If I were to pick an artistic talent or medium, I would choose singing for many reasons–it's easier on the knees and more readily accepted as a worthwhile talent. Dance, as I told this person, is where I am most Me. I started dancing almost as soon as I could walk. Movement is in me in a way that my small self naturally recognized and embraced; it was truly second nature. It is through movement that I know myself. By moving, I have learned, grown, and shared myself. It is, quite simply, the language of my soul. As a moving body, I

know myself in a way that I could never understand through mental processes alone.

Figure 1. Dancing in Ardmore

The Larger Context

Moving gives firsthand knowledge of one's body, its' abilities, likes, and dislikes. We move before we speak; a baby experiences his environment and himself physically long before he can verbalize. Dance can convey ideas and details that cannot be expressed through verbal language. Movement allows for metaphors, archetypes, images, and emotions to be passed from one person to the next in a shared, sensory experience.

Dance, for me, is a tool of communication. I believe it has the capability to cross boundaries of culture, language, place, and time. Dance may be used as an agent of change, a call to action, or a place of coming together for humanity. Through examining my personal story, I explore and relate to the larger human condition. I have strived to make works that speak truth about emotions and experiences. Through making and performing dances, I have longed to reach others and give them a bit of the ecstasy that movement provides me.

Figure 2. ETCH Dance Co. Rep Shot

Trips of Discovery

My first trip to Ireland in 2011 was one of recognition and acceptance. I have felt the call to visit my ancestral homeland for much of my life. I craved a connection to the land in a way that I could not communicate or understand. It was as if I needed the experience and the opportunity to encounter the past, so I could navigate my present and future. I recognized the Irish terrain. I recognized myself there. It was a sense of peace and homecoming.

During the trip, two sites were especially transformative for me: Timolegue Abbey and Dromberg Stone Circle. As I looked at the ruins, climbed upon the rocks, and touched the gravestones, I felt part of something larger. Visiting Timolegue Abbey was a completely surreal experience of arriving inside myself. In the midst of these crumbling stones by the sea, I began to move. I realized that my body is like the

abbey. It is becoming a beautiful ruin that houses all that has come before and the possibility of what will grow upon that groundwork. "I need to dance here," I said, standing inside the Dromberg Stone circle, feeling the energy of the place coursing through me. Here was not just that circle; it was the whole of the Irish land. It wasn't a clawing need or even a hunger that I was feeling. It was a beautifully serene acceptance that I had found my place in the world and, to experience it fully, I needed to move in it. I carried this throughout my trip in the country and left knowing I needed to return. At the time, I knew my heart had been touched, but I was not aware of the depth of the seeds that were planted that would change my creative life so fully.

Figure 3. Working at Timolegue Abbey

Figure 4. Working at Dromberg

The Underpinning Project

In 2013, I conceived the project Underpinning. Underpinning was an examination of how ritual and identity form the layers needed to make a site a place, something that is inscribed, embodied, and material. The objective was to create an embodied practice of dance that used memory to excavate a movement vocabulary. The role of place, memory, and ritual was explored as a catalyst for creating community through collective experiences.

Figure 5. At Dolmen

Underpinning was a new type of process for me. I developed a place-based process for the project. Work was centered around Timolegue Abbey, which I had visited in 2011. I also spent time in Dublin and on the Blaskett Islands. The place-based process went deeper than previous site-specific or site-focused work I had created. This allowed for greater inquiry and pushed the generative aspects of the place to take it to a deeper level.

Figure 6. Underpinning in Performance

Figure 7. Underpinning in Performance

Figure 8. Underpinning in Performance
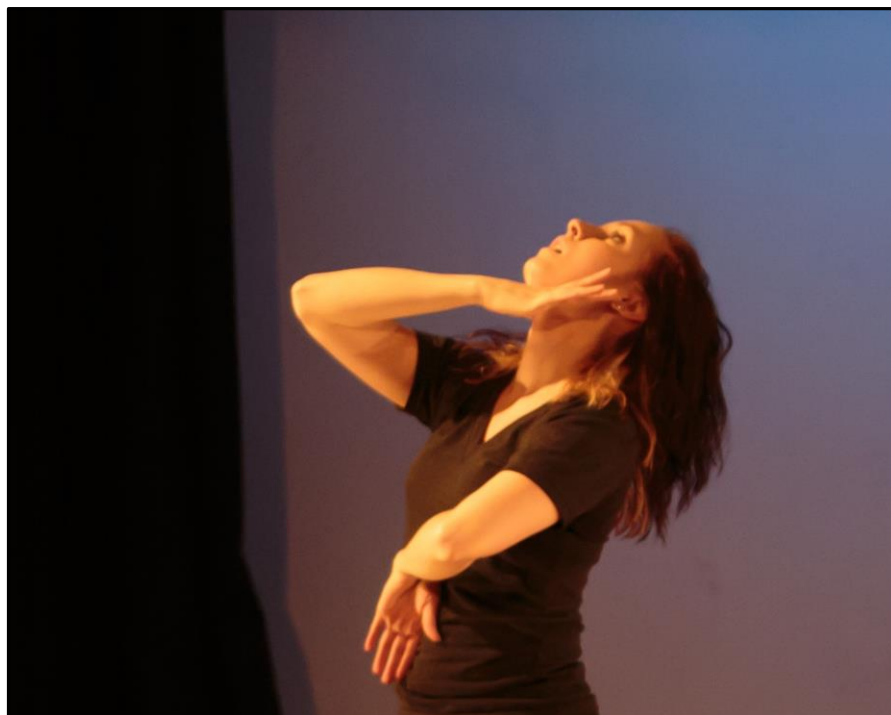
Because of this amazing exploration, my whole thinking of dance, my understanding of my body, and my experiencing of place began to change. I have struggled to find the words that can adequately explain the complete inevitably as well as colossal nature of the shift. I am not sure I can do it justice. The connection to the sacred ruins intrigued me. Why, in ancient, decaying stones, do I feel so rooted, so alive, so purposeful? Why do I need and how can my need for ritual become rooted in my artistic life? How can embodied actions counter the disconnect/dissatisfaction with modern life? These questions become the root of the Pilgrimage Project in 2015.

The Pilgrimage Project

The Pilgrimage Project revolved around visits to sacred sites, including holy wells and ruins as well as pilgrimage treks throughout the country. The footage generated by these trips will result in several dance films to be released over the course of the next year.

Figure 9. Teampall Bheanáin on Inis Mór

Through this project, much of my process has been refined. I now look at work only in terms of place based inquiry. Site rehearsals are treated dually as research and performance, due to the public nature of working in the open. Video installations and dance films are as important as traditional stage work, if not more so. Documentation and archiving of the project are fully employed in the process and are less an afterthought.

When I choose a site, I do preliminary research on the place, surrounding area, pertinent history, key figures, etc. Historical and fictional text is used. If possible, I talk to people who have been to the location to get an idea of what I might encounter. I gather pictures and check websites. Once I arrive at the place, I let most of what I learned move to the background so I can have my own experience. I spend time in the place, walking the area, noting feelings, images, and ideas that arise. I do not try to make sense of them but allow them to take shape without interference.

On my second research pass, I talk to locals and read local resources. I create my own map of a space. This is sometimes a map-like drawing at other times an abstract drawing. My map could also be a list of words or a story that I feel pressed to write. I also take my own pictures or preliminary video footage. I begin to visualize movement in that place and ask myself what the place is saying to me or what do I need to say to/about that place. When I begin actually creating dance in a place, it feels very much as if the movement just comes. I do not question why a desire to move a certain way feels right. I do not judge that I may not be moving like I would normally move. I do not worry about what the movement looks like. I just move. And, from wherever the movement springs, it feels in dialogue and pertinent to the place.

Places of Process

The process of picking the places for work in 2015 comprised a bit of research and lots of intuition. I read a book about Ardmore and knew we needed to begin our pilgrimage experiences there. It was a transformative weekend upon the cliffs with two holy wells and an ancient hermitage. A bus tour for students led to my

decision to revisit the Wicklow Mountains and St. Kevin's Hermitage. Another book on holy wells had me striking up and down the countryside to visit wells of the Goddess/Saint Brigit, Arch Angel Michael, St. John, St. Patrick, and others. Wandering in unmarked areas essentially looking for holes in the ground filled with water took some patience and lots of listening. I often felt shortly into our journey whether it would be successful. The act of listening to the stirrings of my heart from the land was a beautiful process of letting go and learning to trust. When I did trust the inner knowledge, the experience was always more poignant, even if the external goal was not achieved.

Figure 10. On Pilgrimage
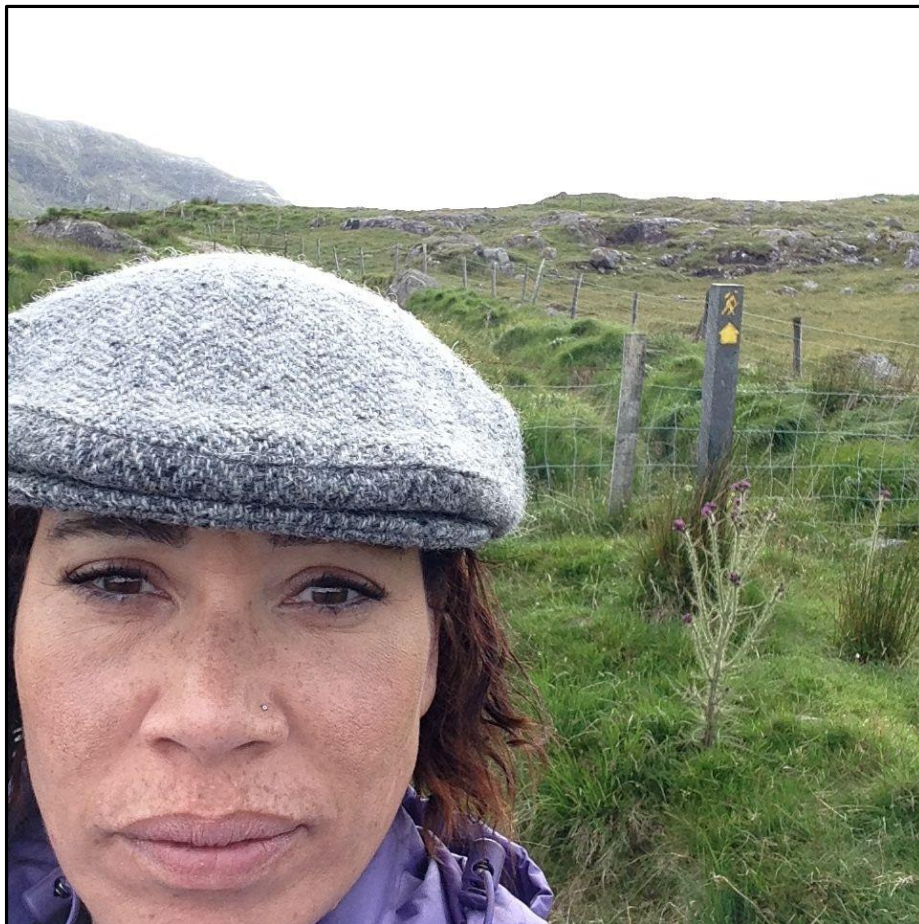
I chose the Aran Islands as a main place for the Pilgrimage Project with no research. In fact, the name popped into my head and I said, "I need to spend time there." It was beyond the "right place at the right time" scenario. Many moments

of serendipity and rightness accompanied our work on the island, including finding the books of Dara Molloy and having the chance to meet the Druid Priest and author. We also had a wonderful occurrence of meeting an unlikely guide while lost in the countryside on pilgrimage to the church ruins of Teampall Chiarain, While climbing a hill a large black dog blocked the way, as I attempted to continue along the path, the dog began to growl and move forward. Deciding that we should wander away from the growling dog, we turned to move back down the hill. Behind us and over just a bit was the Teampall we were searching for. After spending several pleasant hours dancing at the church, drinking from the holy well, and touching the standing stones, we headed off again. As we paused at the bottom of a road to determine the next path, our furry guide bounded up to us, wagging his tail and drooling happily. Clearly pleased with the part he had played, he pranced around as I laughed and offered him thanks for sending us back in the right direction.

Figure 11. Performing Scarf Rituals at Sundial

Meaningful Change

Through this project I began to know the sacred aspects of the ruins in a more in depth way. I also began to experience myself in a more sacred light. It is difficult for me to put into words what I feel, but it is not about religion or my preconceived notions of God. This work has pushed my understanding of the divine and the scope of how nature is a reflection of divine perfection. The dances felt as though they were channeled from the energy of the place more than forged by my understanding of the form and structure of dance. I felt in touch with my archetypal self and ancestral tribe in a way I have not previously known. Because of this project and these three treks, I no longer look at dance in the same manner. I can no longer separate the dance or myself from the sacred. This has been a profound and scary step in my creativity, but I cannot deny the changes of these experiences or what I feel called to create from them.

Figure 12. A Cliff in Ardmore

Figure 13. Teampall Chiarain on Inis Mór

What I know from these projects:

- When you act upon a KNOW, when you act upon an intuition, or when you move forward in yourself, transformative creativity and power that is unleashed.

- In order to know something, you sometimes have to forget or let go of other notions.

- Letting go of the tangible for the intuitive can be a rewarding, challenging, and awe-inspiring journey.

- Through my body I know myself. This is an ongoing and continual process. I can also know my archetypal self, exploring how myth is created through me and how I can continue these myths through my body.

- Through moving I know others and find my tribes, whether they are members of the dance community, the somatics/body workers community, the Celtic Christian/Neo-Pagan community, or my ancestral tribe.

- Through movement I can know place and the land. I can channel the memories and access the energy of place to experience it on a visceral level. I have access to the stories of my tribe through my interaction with the land. Though these stories do not carry words, they are transformative, emotional, and evocative.

Photo Credits

Figure 1. Photographer: Amiri Jordan, Location: Cliff Walk, Ardmore, County Waterford, IR

Figure 2. Photographer: Travis Magee. Dancers: Jennifer Stoskus and Shantel Prado

Figure 3. Photographer: Greg Halpin, Location: Timolegue Abbey, County Cork, IR

Figure 4. Photographer: Greg Halpin, Location: Dromberg Stone Circle, County Cork, IR

Figure 5. Photographer: Greg Halpin, Location: [Poulnabrone Dolmen](), County Clare, IR

Figure 6. Photographer: Eric Bandiero, Location: Triskilion Arts, Brooklyn, NY

Figure 7. Photographer: Eric Bandiero, Location: Triskilion Arts, Brooklyn, NY

Figure 8. Photographer: Eric Bandiero, Location: Triskilion Arts, Brooklyn, NY

Figure 9. Photographer: n/a, Location: Pilgrimage Walk to St. Patrick's Oratory and Well, Maam Cross, County Galway

Figure 10. Photographer: Megan Moore, Location: Teampall Chiarain, Inis Mór, Aran Islands, IR

Figure 11. Photographer: Amiri Jordan, Location: Cliff Walk, Ardmore, County Waterford, IR

Figure 12. Photographer: Megan Moore, Location: Teampall Chiarain, Inis Mór, Aran Islands, IR

Figure 13. Photographer: Janet Moore, Location: Teampall Chiarain, Inis Mór, Aran Islands, IR

No Easy Task:
Making Permanent an Indigenous Knowledge Engagement Course that Changes Lives

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Abstract: In May 2015, Penn State University's Curriculum Committee approved two related courses: CED 400, Exploring Indigenous Ways of Knowing in the Great Lakes Region, and CED 401, Exploring Indigenous Ways of Knowing among the Ojibwe. This article traces the evolution of the courses over its decade long history.

Keywords: North America, Great Lakes Region, Education, Ojibwe, cultural education, higher education, community engagement, indigenous knowledge

In May 2015, Penn State University's Curriculum Committee approved two related courses: CED 400, Exploring Indigenous Ways of Knowing in the Great Lakes Region, and CED 401, Exploring Indigenous Ways of Knowing among the Ojibwe. A course focused on indigenous knowledge of the Ojibwe has been offered at The Pennsylvania State University by Dr. Bruce Martin under an experimental course number for more than a decade, but at long last the course has found a permanent home in Community, Environment, and Development (CED), a rapidly growing program led by Dr. Leland Glenna in the Department of Agricultural Economics, Sociology, and Education in the College of Agricultural Sciences. During the eleven years in which the Ojibwe experience was an experimental (497) course, more than 220 Penn State students learned through Dr. Martin about the indigenous peoples of the Great Lakes Region and experienced a unique cultural engagement with Ojibwe in the Red Lake, Leech Lake, and White Earth nations in Northern Minnesota. He describes how engagement for learning in indigenous communities can change students' lives.

Exploring Indigenous Ways of Knowing among the Ojibwe is the Maymester "cultural engagement" segment of a two-part course offered since 2004. The first part of the course is taught on Penn State's University Park campus and explores indigenous ways of knowing in the Great Lakes region. Why focus on indigenous knowledge in the Great Lakes region and highlight the Ojibwe culture in a state

(Pennsylvania) which has no federally recognized reservation communities, little historical memory of the Delaware people, and no current connection to the Ojibwe people who now reside around the western Great Lakes?

The Great Lakes region encompasses all states and Canadian provinces bordering one or more of these inland seas, including Pennsylvania, which borders Lake Erie. The indigenous nations surrounding the Great Lakes have distinctive cultural traits that set them apart from others in the wider Algonquian language group. The lakes make a difference in a worldview that emphasizes local production of knowledge. Because the Leni Lenape (Delaware) of Eastern Pennsylvania, the progenitor nation of the Three Fires (Ojibwe, Odawa, Potawatomi), and because the Delaware, Shawnee, and other indigenous nations were "removed" from Penn's Woods centuries ago, this course is a valuable reintroduction of indigenous cultures and history for recent European immigrants to Pennsylvania, especially students and faculty who have had little exposure to the hidden history of their own region. Because local knowledge is a defining tenet of indigenous knowledge, this two-part course explores indigenous ways of knowing in the Great Lakes region followed by a two to three week cultural engagement experience on the three largest Ojibwe nations in North America—Red Lake, Leech Lake, and White Earth Nations.

Brochure advertising the Ojibwe courses

Growing up on the Northwest Angle, Lake of the Woods, Minnesota, I gained an early appreciation for the cultural values embedded in the language and traditions of the Ojibwe people. Through engagement with Ojibwe friends and neighbors, I lived daily with the stark contrasts between the dominant Western/Euro-American and indigenous/Ojibwe worldviews. I learned to respect Ojibwe generosity, endurance, and resilience in coping with centuries of historical trauma, much of which was the result of Western educational models and systems. It was my engagement with Ojibwe people and their lifeways that helped me to understand and appreciate their worldview in particular and indigenous ways of knowing in general. The richness of this personal experience enables me to see more clearly the importance of engagement as the key to learning about and understanding the indigenous people of the Great Lakes region.

I have been involved in cultural education for many years. Exploring Indigenous Ways of Knowing among the Ojibwe began to take shape in 2000 when I organized a three week cross-cultural seminar for twenty-five students from another eastern university to visit Ojibwe communities in Minnesota, Ontario, and Manitoba. This seminar was followed by a cultural engagement experience among the Inupiaq people of the Kotzebue region of Alaska along the Chukchi Sea. Both experiences confirmed my childhood education among the Ojibwe of the Lake of the Woods. By this time, I had spent more than fifteen years in eastern universities and felt strongly that indigenous peoples and their ways of knowing would always be misunderstood and even endangered as long as universities continued to introduce students to indigenous peoples' history and culture in classrooms, through texts, and occasional videos. This unengaged and extractive model of education too often reinforces the negative historical and cultural stereotypes about indigenous people that are perpetuated by the intractable, assimilationist educational methods and objectives of dominant Western culture. These forces were clearly damaging to indigenous students who were extracted to university campuses and also reinforced simplistic and inaccurate views of indigenous people in the minds of Euro-American students.

There had to be a better and different way for students and faculty to understand and appreciate indigenous peoples and their rich cultural contributions to

knowledge, past and present. Due to historical circumstances and geographical marginalization, most Americans have had little exposure to indigenous people and their ways of knowing. I structured this course to change these facts and to reverse the damage being done--usually unwittingly--by our Euro-American educational methods and objectives. The key for me in developing this course was learning through engagement.

Engagement is becoming an important, even fashionable, educational philosophy and tool in academic settings. But this term directed my approach to indigenous education long before it was fashionable because it expressed the heart and soul of indigenous education, of learning and knowing. "Cultural engagement" rather than "field experience" more accurately expresses the pedagogical method and goal of the Maymester course—*Exploring Indigenous Ways of Knowing among the Ojibwe*. Five key themes or tenets of IK—local knowledge, relational knowledge, empirical knowledge, spiritual knowledge, and traditional knowledge—are explored in this course. These themes, the framework of an indigenous worldview, provide the framework for the winter semester course and the Maymester cultural engagement. These themes and values are deeply embedded in indigenous languages and cultures, interwoven to form a coherent and meaningful worldview. Learning, or education, for indigenous people is an engagement experience because it is based on the important theme or core value of relationship. Knowledge and knowledge production for indigenous people is a socially mediated and engaged experience rather than a solitary enterprise. Relational knowing implies engagement with subjects rather than objects or even ideas in the experienced and known (local) world. In the indigenous way of knowing, all knowledge is local, requires touching the earth, and is derived from engagement with other living beings.

Ozaawagosh, from the Lac Du Flambeau Nation, writes, "Trees are…living relatives of the Anishinaabeg, and the bark is considered a gift. Anishinaabeg do the appropriate ceremonies we have been taught when harvesting any of the gifts afforded our nation" (Wrobel 2015). The idea that the world of nature is a living being that is capable of relationships and communication is one of the most difficult aspects of indigenous knowledge for Euro-Americans to understand. Another example may be helpful. Finding and catching fish is a practiced ritual for the Ojibwe people, as it was for me as a child growing up on the Northwest Angle. With no roads to the closest supermarket, which was eighty-five miles away,

fishing was a matter of survival for us and depended on a very highly developed set of skills, an intimate relationship with the lake, wind speed and direction, cloud cover, angle of light, season, water temperature, humidity, and additional factors. With their Ojibwe neighbors, my parents would often gather at the lakeshore at the appointed hour to "read the lake," or take their bearings, before going fishing. They listened to the wind in the poplars, studied the textures and colors of the water, noted the wave action, felt the moisture content of the air, observed the type and movement of the clouds, and much more. They talked among themselves, compared readings, discussed their memories, and watched and listened some more. Sometimes *kinnikinnick* (red willow tobacco) would be offered silently or with words to the spirit/life of the lake, gratitude for the relationship, for the gift of knowledge, and for the fish to be given. This reading of the natural world, devoid of modern technology and gadgets, depended on years and generations of relationship, experience, and respect. Finding and catching fish depended on finely tuned senses and skills developed through engagement with varied aspects and conditions of the natural world, not on chance or magical thinking. Using modern sonar technology and equipment certainly would have resulted in greater precision and efficiency in locating and catching fish. However, such productivity has also resulted in a broken relationship with the lake, the fish, and the natural world, a relationship more easily broken than repaired.

Engagement as relational knowing is key to the structure and dynamic of both the spring (CED 400) and the Maymester (CED 401) courses. The spring course, which takes place in a media-equipped classroom, uses the indigenous talking circle as an engagement tool to discuss and reflect on the five themes highlighted earlier and also to prepare students for a deeper learning experience in Ojibwe country. Following the spring semester course, students travel during the Maymester to the three largest Ojibwe communities in Northern Minnesota to learn *with* and *from* twenty to thirty Ojibwe elders, educators, ceremonial leaders, medicine men/women, artists, political leaders, and other enrolled community members. Take note of the prepositions *with* and *from*; they reveal the structure of the course and the meaning of engagement as a relational educational model. The course is not designed to provide information *about* indigenous knowledge or Ojibwe culture (though this is inevitably an outcome). It is designed to bring students into *relationship through engagement* with each other and with Ojibwe knowledge holders. It is designed to move them from a complacent, unengaged

Western educational tradition to a robust, relational and engaged indigenous educational tradition of learning and knowing. One of the objectives of the course is to help students understand that relationship in this model is not limited to humans but extends to the land, wind, clouds, lakes, rivers, rocks, forests, plants, and all creatures great and small. Because relationship is the key to learning in indigenous communities, students are introduced to traditional knowledge holders in Ojibwe communities, where knowledge has been produced and transmitted from generation to generation for thousands of years. Exploring and learning occurs in the context of relationships with elders and educators (knowledge holders), on their lands, in their communities, through their lifeways, in their ceremonies and traditions, and with their family members. Engagement makes possible the relationships necessary for learning and knowing in indigenous communities.

An important aspect of this indigenous approach to learning and knowing is that it democratizes the educational process. Students or faculty members who have been educated in the Western and European traditions are present, not as experts, but as mutual learners. There are different worldviews and different ways of knowing. In this course, engagement implies epistemological equality, mutuality, reciprocity, and respect for all worldviews and ways of knowing. This approach creates space for mutuality—openness, change, humility, and respect. More importantly for the design of this course, it allows both indigenous people and knowledge their rightful place in the educational process, which produces a truly democratic educational experience. Ojibwe knowledge holders, particularly those who have received a traditional indigenous education, are engaged and valued in the learning process. The design of this course provides indigenous knowledge holders with opportunities to pass on what they know to a society that has trivialized, marginalized, and eradicated indigenous knowledge for centuries.

Cultural engagement not only introduces students to a more democratic and socially mediated approach to learning, it opens them to personal growth and transformation. It introduces them to fundamental questions about their own worldviews and the assumptions that support it. It prepares them to become engaged learners for life. Learning through engagement does not end when students of Exploring Indigenous Ways of Knowing among the Ojibwe return to the university campus. Even in relationship to indigenous knowledge, the learning continues. Students who have taken this course often return to Ojibwe country to work in Native communities and to do qualitative research projects with elders,

educators, and traditional knowledge holders. For example, a recent student met with traditional elders to design and produce a healing jingle dress, a dress that is now danced annually at the Intertribal Powwow in Cass Lake. Many other students have served as summer interns with Winona LaDuke and Native Harvest in Calloway. A recent class member served as an intern with Native Legal Services in Lakota Country, Pierre, South Dakota. Yet another graduate student in art education returned to Ojibwe country for two consecutive summers to do art education research with and among traditional artists. His project produced a doctoral dissertation. Another graduate student returned to Red Lake to assist the tribe in developing a plan to promote and assist entrepreneurs and small business owners. Others have simply returned to Ponemah or Cass Lake to maintain or deepen established respectful relationships and to continue to expand their understanding of indigenous and Ojibwe ways of knowing. The complete list of the engaged scholarship that this course has produced would be very long indeed. My point is simply this: engagement as an educational model, particularly important in indigenous communities, produces students who are more likely to become engaged in learning as a life-long endeavor.

* * *

The Interinstitutional Center for Indigenous Knowledge (ICIK) is administered by the University Libraries and was engaged in the process of establishing an academic home for the Ojibwe engagement course, which has provided the opportunity for many departments within the Libraries to focus on indigenous knowledge in general and the knowledge of Native peoples of the Americas in particular. Helen Sheehy, Social Sciences and Maps Librarian, and Amy Paster, Life Sciences Librarian, have provided leadership to initiate an online, peer-reviewed, open access journal, IK: Other Ways of Knowing. This new PSU Libraries publication reflects the commitment of the Libraries to facilitate and reinforce the engaged learning experiences of students enrolled in Exploring Indigenous Ways of Knowing in the Great Lakes Region and Exploring Indigenous Ways of Knowing among the Ojibwe. Helen Sheehy and Nonny Schlotzhauer describe the role of the Penn State Libraries in the new Ojibwe course.

The Penn State Libraries play a central role in the academic life of students across all disciplines, from basic introductory courses to graduate level research seminars. With the increasingly complex nature of research, students need practical skills to discover, utilize, and analyze the abundance of resources at their disposal in order to make the most of their study on any particular topic. Yet, equally important is the philosophical understanding of the nature of information: how it develops, the ways in which it is synthesized, how it is "classified," and how a dominant culture affects the acquisition, access, and preservation of knowledge in libraries. In this respect, the courses Exploring Indigenous Ways of Knowing in the Great Lakes Region and Exploring Indigenous Ways of Knowing among the Ojibwe provide a perfect opportunity to explore both the practical and the philosophical aspects of library research.

A core objective of the course is to provide an introduction to the distinctive ways indigenous people experience, understand, and know their world and the land to which they belong. As the CED 400 course was conceived, it was deemed important that students gain a firm grounding in the use of library resources as a means to grasp the historical, social, and material aspects of IK, and to be able to conduct research to support a short paper, required for the course. Nonetheless, as Dr. Martin points out, students were encouraged to explore, understand, and engage with indigenous knowledge and the course as a complete "learning endeavor."   In practical terms, as librarians, we set out to introduce students to the wealth of information accessible through the Libraries, including a review of the current principles and practice of library research. In CED 400, a three hour session provides a succinct yet comprehensive review of indigenous knowledge inquiry and assessment by covering an array of materials, including comprehensive subject databases, multimedia resources, archival sources, and books and journals.

Perhaps the most interesting component of our contribution to the Ojibwe course is coverage of the production, ownership, and classification of knowledge. We believe it is imperative to cover the implications of Western library practices on the collection and preservation—or lack of collection and preservation—of indigenous knowledge. We begin with a discussion about the role libraries play in forming our understanding of indigenous culture and knowledge and how, as stewards of so much "cultural heritage" that gets passed down through the years, the library becomes a filter that organizes, catalogs, and labels knowledge based upon a

classification system with a largely Western worldview. Through examples such as subject headings and call numbers, we challenge the students to think about how the world's cultures and bodies of knowledge are very much social constructs and most often reflect the views of those who acquire them rather than of the indigenous peoples who produce them. And, we discuss recent attempts by the library community to become more culturally responsive by providing opportunities for indigenous communities to have a greater say in the way traditional knowledge is portrayed and circulated. As a talking point, we provide an overview of the impetus and history of the Protocols for Native American Archival Materials (PNAAM), which recommends best practices for dealing with Native American traditional cultural expressions and indigenous knowledge held in libraries and archives.

Finally, we very briefly explore the concept of intellectual property, such as copyright and patents, as a purely Western construct and the evolving legal landscape of indigenous peoples' rights to traditional knowledge (ethnomedicine, ecological knowledge, etc.); cultural expression (art, music, dance, film, photographs, etc.); and genetic resources. The purpose of this discussion is to raise student awareness of initiatives such as the World Intellectual Property Organization's work on developing international legal instruments that negotiate the ownership and control of indigenous knowledge.

* * *

The involvement of Outreach Extension is critical to the success of the Ojibwe courses that depend upon the unique qualification and teaching experience of Dr. Bruce Martin, who is employed by PSU as an adjunct instructor. Addressing the complex fiscal and managerial issues faced by the Ojibwe courses requires the involvement of PSU administrators, as well as faculty and staff, who are committed to a course that is highly valued by students, but would not fit comfortably into most academic departments. The Ojibwe course might not have been initiated at Penn State without the support of the (then) Interinstitutional Consortium for Indigenous Knowledge whose co-directors, Dr. Ladislaus Semali and Dr. Audrey Maretzki, arranged for the course to be offered experimentally as CIED 497 in the College of Education and co-listed in the College of Agricultural Sciences as AG

497. PSU policy permits new courses to remain "experimental" for only two years before being submitted to review by the PSU Curriculum Committee. However, the positive student response and modest changes to the course resulted in its continuation with a 497 (experimental) designation for more than a decade before a permanent academic home for the course was identified.

A brief administrative history of the Ojibwe course is provided by Jenifer O'Connor, Program Assistant at Conferences and Institutes, in collaboration with Kathleen Karchner who was a Program Manager in Conferences and Institutes (C&I) prior to her retirement in 2011.

Kathleen Karchner was introduced to the Ojibwe course by Avis Kunz in the Office of the Associate Dean in the College of Liberal Arts, who was unable to identify a home for Dr. Martin's Ojibwe course. Karchner, however, was very enthusiastic about bringing the course to Conferences and Institutes (C&I) and met with Dr. Martin to learn about it, with the idea that the ICIK co-directors might know of a way for the course to be offered. The concept of an engaged indigenous knowledge course was warmly embraced by the ICIK co-directors, and the course was listed as CIED/AG 497 in 2004. Only a few students enrolled in the first year, but word spread rapidly, and by the second year, the course filled and it continued to grow, drawing both graduate and undergraduate students from across the University Park Campus for the next seven years, until, in 2011, thirty students traveled to Minnesota.

During those years, the Ojibwe course was offered as a spring semester course with several half or full-day sessions taught by Dr. Martin on one or two weekends during the semester, students then departed for Minnesota in University vans on the day after spring graduation. Students had the option of taking the course for three to six credits, with readings and additional activities assigned in proportion to the number of credits elected. Course tuition was included in the students' spring semester payment, with virtually all students being full-time. The tasks of C&I included establishing the course budget, getting the course on the Schedule of Courses, reserving fleet vehicles, processing lodging contracts, enrolling students approved by Martin, monitoring tuition and course fee payments, paying course bills and travel expenses, getting honoraria checks for the many instructors in Minnesota, and other small details. Additionally, CI answered many calls and e-mails from students and their families.

In 2008, Karchner successfully nominated Exploring Indigenous Ways of Knowing among the Ojibwe and its instructor for the prestigious Rose Duhon-Sells Program Award, presented at the National Association for Multicultural Education (NAME) Conference in New Orleans. Ms. Duhon Sells is the founder of NAME, and the eponymous award recognizes a program's outstanding contribution to multicultural education. At the time, Dr. Martin said: "This course immerses students in Ojibwe culture where they learn Ojibwe lifeways and worldview from more than twenty-five Ojibwe educators, political leaders, spiritual leaders, and traditional knowledge holders. This award should be shared by the sovereign Red Lake, Leech Lake, and White Earth nations."

In 2012, misfortune befell the Ojibwe course. Karchner, a champion for the program, had recently retired and, for reasons we did not understand, the course was offered solely through the College of Education. To make matters worse, new student financial aid restrictions were imposed, meaning that the spring semester Ojibwe course could no longer involve students in activities that took part after spring graduation. The time frame for travel to Ojibwe country is based on traditional ceremonies and celebrations that are seasonal and take place during the newly instituted portion of the summer semester called "Maymester." To take part in the engagement portion of the Ojibwe course, students, most of whom did not qualify for financial aid in summer, were required to pay summer session tuition in addition to the customary course fees. Not only was there a logistical dilemma about how Dr. Martin would prepare students for their visit to Ojibwe country, but also a financial crisis occurred when students received a bill for their regular tuition as well as summer session tuition and the Ojibwe course fees. Many students dropped the class, but a sufficient number remained to run the "Ojibwe engagement experience" segment only. In 2013, a three credit Maymester-only Ojibwe course was scheduled, but the out-of-pocket costs were prohibitive, and for the first time since 2004, the course was cancelled due to low enrollment.

The cancellation of the 2013 Ojibwe course was a call for action on the part of involved faculty and staff in the College of Agricultural Sciences, College of Liberal Arts, PSU Libraries, and Conferences and Institutes. Professor Leland Glenna, of the College of Agricultural Sciences, had experience with Maymester courses and was willing to consider providing an academic home for the Ojibwe course in the Community, Environment, and Development Program. Dr. Martin was willing to redesign and teach a 2.5 credit spring semester course via Skype that

included a field trip to the Carlisle Indian Industrial School. Danna Seballos, with administrative experience in *The World in Conversation,* was willing to serve as Martin's Teaching Assistant for both the on-campus prerequisite course and the independent 0.5 credit Maymester Ojibwe engagement. With Helen Sheehy's willingness and ability to include the Ojibwe course on the ICIK website in the PSU Libraries, the costs to the program budget were significantly reduced. With everyone's determination to keep the Ojibwe course on the books, fortunes changed and the course was back in action in 2014 with Professor Emerita Maretzki filling in for Professor Glenna during the spring semester while he was on sabbatical leave in Ireland.

In fall 2014, a proposal by Professor Glenna to make permanent both Exploring Indigenous Ways of Knowing in the Great Lakes Region and Exploring Indigenous Ways of Knowing among the Ojibwe was placed on the desk of Dr. Tracy Hoover, Associate Dean for Undergraduate Instruction in the College of Agricultural Sciences, by her administrative assistant, Kathy Pletcher--coincidentally a Bad River Band Ojibwe. With the support of Dean Hoover, the proposals were submitted through the College Curriculum Committee and then to the PSU Curriculum Committee. Just before spring graduation in May 2015, the proposed courses were approved as CED 400 and CED 401. To the proponents of this life-changing course, this was an academic miracle!

Jenifer notes, "As I prepare for retirement at the end of 2015, I can reflect on the many struggles, obstacles, and policies that seemed to conspire against our efforts to keep this program going. I was inspired by the Serenity Prayer: 'Grant us the courage to change the things we can.' The Ojibwe program can change lives!"

* * *

In ending, we hear from Dr. Leland Glenna, the faculty member who championed the Ojibwe course and has provided it with an academic home in the Community, Environment, and Development major. Therefore, creating the opportunity for undergraduate and graduate students throughout the Commonwealth of Pennsylvania and beyond, majoring in any field of study, to broaden their perspective on what it means "to know."

The Ojibwe course is an important contribution to the Community, Environment, and Development (CED) major. Critical thinking is a central component of the CED major, but that critical thinking is taught from within a Western, rational, modern science context. For example, students are likely to learn in their classes how to compare and contrast deductive and inductive approaches and how to research, compare, and contrast utilitarian, libertarian, and Kantian perspectives behind various policy assessments or prescriptions. By introducing students to an indigenous knowledge system, however, the courses, Exploring Indigenous Ways of Knowing in the Great Lakes Region and Exploring Indigenous Knowledge among the Ojibwe, offer radically different ways to think about what passes for knowledge and what is appropriate for interacting with people and with nature.

* * *

To learn more about the Penn State Ojibwe courses, visit agsci.psu.edu/ojibwe.

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No One Way of Knowing: Agricultural Science Student's Perspective Changed by Ojibwe Field Experience

In a combined course and field experience, Alexandra Dutt explored indigenous peoples' understanding of their environment -- and how it could inform her own.

Dutt, a senior agricultural science major from near Allentown, Pennsylvania, first became interested in Native American studies after taking a literature class. When she came across information about a course called Exploring Indigenous Ways of Knowing, which included an end-of-semester trip to the Ojibwe communities in northern Minnesota, it seemed like a good opportunity to learn more.

During the 2015 spring semester, Dutt participated in discussion-based class sessions about the cultures, histories, and knowledge of the Native American peoples of the Great Lakes area. Students were encouraged to ask questions and interact with one another in talking circles. "The instructors were awesome," Dutt remembered. "In addition to being great teachers, they were like friends by the end." The course helped to ready the students for what they would encounter during a three-week Maymester term with the Ojibwe tribe.

Dutt, third from right, at an Ojibwe event with the Penn State CED 401 group.

But nothing could have prepared them for the impact the trip would have. For Dutt, it was life-changing. "It's almost hard to put into words because it was so awesome," she said. A huge part of the experience was learning from members of the community. The students heard lectures on a variety of topics, like the boarding school era, during which Native American children were forcibly taken from their homes and placed into schools. There was a strong focus on sustainability and preservation -- for example, the students visited Native Harvest, a company started by the White Earth Land Recovery Project, which is focused on preserving original seeds and other land-use planning issues. "It was a chance to connect the concepts I had learned in my major and throughout the course and trip," Dutt explained. "The people we met and talked to were amazing and had so much insight."

In addition to the lecture series, the students participated in several immersive experiences among the Red Lake, Leech Lake, and White Earth Ojibwe. Dutt recalled attending pow-wow and Sacred Drum ceremonies, hiking with an ethnobotanist, and canoeing down the Mississippi River. The students were also able to stay with a host family for a night. "Everyone on the trip got so close, I almost felt like we had a family," she said.

Her experiences among the Ojibwe caused Dutt to reevaluate her plans for the future. "The trip taught me a lot about myself. It taught me what I want to do, about how to act in another culture and how to carry myself, and why culture is so important in communities," she explained. "Before, I thought I wanted to pick a job that would help me earn money. Now I want a career where I can help communities, people, and the earth."

After she graduates, Dutt plans to work for a program like AmeriCorps for a few years before attending graduate school. "I'm really passionate about teaching people the importance of agriculture and environmental issues."

* * *

Learn more about the [Agricultural Science](#) major.

Learn more about the [Ojibwe course and field experience](#).

This course is provided through a partnership between the College of Agricultural Sciences and Penn State's Interinstitutional Center for Indigenous Knowledge with support from Conferences and Institutes via Penn State Outreach.

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We Believe in Our Story: Using Indigenous Accounts of Migration Experience to Create Promotional Narratives for Diaspora Tourism

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Mass-produced advertisements, concocted by marketing agencies and aimed at enticing the mass traveler, are abundant in the world of tourism promotion. Images and narratives used to promote travel are often superficial, stereotypical, and portray the locals as a resource provided for tourists' entertainment (Buzinde et al. 2006). In advertisements, the most frequently portrayed narrative is some sort of a "national story," or typical imagery, which is expected to draw international eyes to the country (Pretes 2003). While this "nationalism for sale" may work in the global market, it certainly falls short of attracting diasporas – communities of nationals abroad. Having more intimate knowledge of the country and its culture, diasporas find mass advertisement "inauthentic," which discourages travel to their home countries. This type of travel, however, is of great importance.

As immigrants relocate to their new homes and form diasporas that are removed from the "core" national location, they experience a rupture in identity continuity – a connection between who they were before and who they are now. Iyer and Jetten (2011) suggest that the effects of ruptured identity continuity are detrimental to the health and well-being of individuals. For diasporas, these effects include depression, anxiety, addiction, and other psychosomatic illnesses (Falicov 2007). Among traditional methods, therapy (Baptiste et al. 1997; Falicov 2007), as well as social support (Aroian 1992), have demonstrated moderate success. However, scholars have recently begun to see that it may be the diaspora's connection to

national heritage, which Macdonald (2006, 11) describes as "material testimony of identity," that can help immigrants cope with immigration-related stress by allowing them to maintain the identity that was ruptured in the process of resettlement.

Diasporas' connections to national heritage may be maintained through keepsakes, upholding of rituals, and ties with relatives; however one of the most powerful avenues of maintaining identity continuity appears to be diaspora tourism (Morgan, Pritchard, and Pride 2002). Also termed "roots tourism" (Basu 2005) or "ethnic tourism" (Ostrowski 1991) , diaspora tourism occurs when individuals travel to their homeland. Diaspora tourism brings about cultural and spiritual renewal (Pierre 2009); connects diasporic individuals with political processes in their country of origin (Ostrowski 1991); helps resolve a problematized sense of belonging in host and home countries (Basu 2005); and supports the desire of diasporic communities to maintain a distinct collective identity, despite wide geographical dispersal (Morgan et al. 2002). Van Oudenhoven and Ward (2013, 91) posit that diaspora tourism "may also bolster well-being in marginalized immigrants who could find some comfort by visiting their home country."

While the benefits of diaspora tourism have been documented, very little attention has been given to the way it should be promoted. Mass-produced advertisements are marginally effective with diasporas, who have emotionally laden connections with their homelands. According to Morgan et al. (2003), the most effective promotional approaches incorporate stories of homecoming, nationhood, and the search for roots. Such stories can be incorporated into advertising through the use of narratives (Oatley and Gholamain 1997).

Communication scholars have found that narratives can influence beliefs (Green and Brock 2000), provide behavioral examples (Slater 2002), and shape individuals' cultural identities (Jacobs 2002). Since narratives "have been described as a fundamental mode of thinking" and humans tend to think and communicate in the form of stories, narratives were found to more effectively induce an attitude change than didactic and expository texts (Green 2006, S163). Dal Cin, Zanna, and Fong (2004) show the persuasive power of narratives empirically, but recognize that many challenges remain, including understanding the attributes of a "quality" narrative.

Cultural appropriateness is an especially pertinent "quality" indicator when

narratives are used to appeal to immigrant groups. While promotion of a carefully crafted national story may appeal to the international tourist, the same nationalistic myth may feel inauthentic, and therefore not persuasive, to diasporas who have emotional attachments and a national myth of their own. Challenges in building a hegemonic national narrative provide an added layer of complexity; for example, after almost seventy years of nationalism-wiping efforts of the communist party, post-Soviet countries experience difficulties in nation-building and reconstruction of national identity (Palmer 2007). How does a post-Soviet country build a coherent national narrative and promote it to the international market, let alone tailor it to attract its own diasporic community?

To this effect, Larkey and Hecht (2010, 115) suggest a process for creating "culturally grounded" narratives that are instrumental for "capturing the richness of cultural elements that most effectively reaches minds and hearts for…behavior change". This process of "message development enlists the experience of group members through the stories describing their social realities. Narrative interviews, in particular, are used to invoke a storytelling style rather than didactic discourse by a collaborative orientation" (Larkey and Hecht 2010, 117). Using the indigenous knowledge and experiences of the group in question allows for the creation of promotional materials that speak directly to other members of the group.

In this field report, I outline how the indigenous knowledge of Ukrainian immigrants was collected and used to create a culturally grounded narrative promoting diaspora tourism to Ukraine. A two-phased mixed methods approach was used because it allowed the choice of "the combination or mixture of methods and procedures that works best for answering research questions" (Burke, Johnson, and Onwuegbuzie 2004, 17). Here, however, I focus on the first phase: collecting interviews from Ukrainian immigrants.

The purpose of the first phase was to obtain culture-centric narratives about the immigration experiences of the fourth wave of Ukrainian immigrants. This was accomplished by conducting in-depth individual interviews with fourth wave Ukrainian immigrants. The results of the interviews were used to create culturally grounded promotional narratives for diaspora tourism to Ukraine.

Sample. The sample was comprised of fourth wave Ukrainian immigrants living in New York City who arrived in the United States between 1991 and 2014. Initially,

multiple Ukrainian organizations in New York City were contacted (e.g., Ukrainian churches, women's leagues, business associations, and cultural clubs) and asked to distribute recruitment materials (e.g., introductory notes, flyers through e-mail, or newsletters) to their members. Due to low response, a representative from the Shevchenko Scientific Society in New York City was contacted and agreed to serve as a gatekeeper to the Ukrainian community. Mach et al. (2005) recommends that investigators work closely with gatekeepers to gain access, develop trust, and identify potential study participants. Hence, the gatekeeper's assistance was used to identify potential participants and sites where recruitment flyers could be distributed.

The recruitment and interview process, which occurred over the course of a two-day trip to New York City, continued until saturation was reached. Guest et al. (2006) conducted an experiment with data saturation and variability and concluded that twelve interviews are enough to reach saturation on any given topic, but the exact number should be identified by the researcher. Based on the ongoing analysis of the interviews and availability of subjects, thirteen interviews were secured from fourth wave Ukrainian immigrants.

Data collection. During the recruitment process, a gatekeeper's help was secured in identifying and visiting several establishments where fourth wave Ukrainian immigrants worked (e.g., banks, credit unions, deli shops, church groups). He made introductions with potential participants and explained to them that this was part of a research study. This was followed by obtaining verbal consent from participants. Some participants scheduled a meeting on the same day during their lunch breaks or after work, and some filled out a pre-interview questionnaire and shared their phone numbers and availability so they could receive a call at a convenient time.

The following procedures were used with the on-site and phone interviews:

- I introduced (or reminded them about) myself and stated the purpose of the study. I also indicated that the participant would receive a gift at the end of the interview, that the interview was to be recorded on a digital recorder, and that I would like him/her to fill out a consent form or provide verbal consent. A copy of the consent form was sent to each participant after the interview. Participants were asked whether they wanted to speak English or Ukrainian, and the interview proceeded in the

language chosen by the participant.

- Participants were asked to fill out a short pre-interview questionnaire. For phone interviews, I read the questions and answer options aloud and recorded each participant's answer.
- Participants were asked one question at a time, supported by follow-up and probing questions when necessary.
- At the end of the interview, I asked each participant if he/she would like to add any additional information.
- In closing, I thanked participants and gave them a twenty-five dollar prepaid Visa gift card. Individuals who were interviewed over the phone were asked to share their mailing address so that the gift card could be mailed to them.

Data entry and analysis. After completing the interviews, the recordings were saved as audio files. All respondents chose to speak in Ukrainian, so the interviews were translated into English and transcribed. The translation was verified by an expert fluent in both languages. Data analysis followed Marvasti's (2003) guidelines (i.e. data reduction, display, and conclusion drawing). Data reduction and display involved the researcher and her advisor individually reading the transcriptions, making notes, and highlighting important passages. They then met to compare their findings and to draw conclusions, which were rooted in the displayed data. To make the analysis more manageable, only the data that related to the research questions and the conceptual framework of the project was maintained for further analysis.

In the subsequent steps, I used these interviews to create a narrative that promoted diaspora tourism to Ukraine. In a survey distributed to a wider sample of Ukrainian immigrants, the narrative was consistently rated more credible, informative, and persuasive than a neutral text. This finding supports the notion that use of relatable stories extracted from indigenous knowledge have a much more persuasive effect than mass-produced tourism advertising.

* * *

To view Svitlana's ICIK seminar on Ukrainian immigrants in the U.S., visit the ICIK website.

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Field Report: Traditional Methods of Rwandan Goat Production and Management

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Introduction

Looking down from one of Rwanda's thousands of hills, you see specks of white, brown, black, or possibly a mixture of all three, decorating the grassy hillside. GOATS! In Rwanda, and much of Eastern Africa, goats can be found pretty much anywhere: hillsides, backyards, on the side of the road, everywhere! During my first trip to the country in 2012, I decided to conduct my honors thesis research on Rwandan goat production. Since that initial decision, I have learned much more about Rwandan goat management and production than I ever expected. In order to accomplish this task, I visited Rwanda in 2013 and 2014 for two weeks each time to conduct interviews with a total of thirteen goat herders. I also interviewed local veterinarians and veterinary students in order to assess the overall status of the goat in Rwandan society and to gain a better understanding of medical ailments that plague Rwandan goats. This report outlines the findings from these interviews, highlights the traditional methods of goat production, and analyzes the incorporation of modern approaches with traditional knowledge.

A Brief History of Rwanda

Prior to colonial settlement, Rwanda was first inhabited by the Twa people and then later occupied by the Hutu, followed by the Tutsi by 900 AD. Since approximately 1500 AD, there has been ethnic division between the Tutsi and Hutu. Livestock were utilized as a means of payment and political reward; therefore, cattle, sheep, and goats became associated with status in society, further potentiating conflict. However, ethnic tensions were greatly exaggerated by colonial rule, including German rule in 1885 and Belgian rule, which lasted from 1918 to 1961 (Rwamasirabo 1990; Twagilimana 1998). These increased tensions led to class conflict that culminated in the Rwandan genocide in 1994, during which an estimated eight hundred thousand individuals were murdered (McKay and Loveridge 2005). In addition to the loss of human life, livestock were also slaughtered, devastating the livestock industry. Since the genocide, Rwanda has focused on regeneration and peacebuilding, both of which have helped to rejuvenate the livestock sector.

The Importance of the Goat in Rwanda

Goats have played a role in Rwandan societies for centuries, serving not only as a means of income and food, but also fulfilling more expansive roles. In the early colonial period, goat meat was the staple of Hutu diets, but today is consumed by all ethnic groups (Taylor 1988). Personal interviews revealed that Rwandans prize goat milk for its nutritional qualities, citing it to be more nutritious than cow's milk and, therefore, a more effective combatant against childhood malnutrition. Furthermore, goat manure is utilized as a biofuel and fertilizer (Riethmuller 2003).

On a different level, goats hold a place in Rwandan traditional ceremonies. For example, Taylor (1988) cites the donation of a goat to a couple upon the birth of their first child. Goats can be employed to strengthen community ties. For example, due to the lack of refrigeration in rural Rwanda, goat meat must be consumed shortly after slaughter; often times, families will share goat's meat with each other as a form of promoting societal bonds. According to two of the interview respondents, they donated live goats to local families in need, rather than sell them on the live market. Interestingly, according to the interviewees, while the goat continues to serve as a means of increasing neighborly relations, it no longer

functions as a means of social status, as it did in colonial times. At present, the number of goats possessed by an individual does not represent a form of wealth; however, this is not the case with cattle, particularly those of the Ankole-Watusi breed.

Ownership of goats also tends to empower women in the Rwandan society. Women have been the traditional raisers of goats since the time of their domestication nearly eleven thousand years ago (Fernandez, Hughes, Vigne, Helmer, Hodgins, Miquel, Hanni, Luikart and Taberlet 2006). The current proportion of women involved in goat herding in Rwanda is 26.3 percent (Murangwa 2010). According to the female goat herders interviewed, men learned of the economic incentives of goat herding, quickly entered the field, and took over the occupation. As more women continue to make strides in the goat herding sector, even as a sideline business, they will become more capable of generating their own income and supporting themselves.

Indigenous Methods of Goat Production in Rwanda

Due to their small size and agility, goats are well-suited for grazing the steep hills of Rwanda; thus, goat herding does not require any intensive process that demands full time attention. Furthermore, the digestive system of goats allows them to digest the sparse, nutrient-poor browse that decorates the hillsides and convert it into value-added products, such as meat and milk. In this manner, they are similar to cattle; yet, goats have the advantage of being smaller and less expensive, making them a more manageable and lower-risk investment. Based on these attributes, the traditional form of goat production and management in Rwanda involves allowing goats to graze in open areas. In other words, there are very few inputs for goat herders to provide. The advantages of such a system are that the goats are spread out in a way that decreases their contraction of parasitic and respiratory diseases, which are often caused by overpopulation and/or crowded conditions. Low input also translates to high profit if the goats are marketed.

In most cases, goat herders identified goat markets as a traditional means of selling live goats. Unfortunately, there are challenges accompanying this system, such as the lack of transportation and roadways to such marketplaces. Rwandan goat herders also face problems including insufficient land and water, financial

constraints, lack of veterinary expertise, inadequate genetic stock diversity, and poor nutritional quality of forage. Tackling these problems will require a multi-faceted approach that involves collaboration between goat herders, veterinarians, and the Rwandan Ministry of Agriculture and Animal Resources (MINAGRI).

Current Status of Traditional Goat Production in Rwanda

All thirteen of the interviewed goat herders incorporated some form of traditional goat production method into their herding, whether it was complete compliance with the tradition or more of a semi-intensive method. However, several of the goat herders suggested that they were moving toward a more modern, completely intensive system in which goats are stabled at all times and food and water are brought to them. The reason behind such a system is a perceived increase in profit; yet, there are complications, such as the aforementioned respiratory disease and parasites. Furthermore, intensive systems require more time and labor, making them a less viable option to be conducted as a side business.

Reflection

Over the course of my two field experiences in Rwanda, I developed a greater appreciation for both the goats and the herders involved in both goat management systems. While users of the more modern, intensive system generally dedicate more time per day to managing their goats, individuals who employ the traditional system preserve the indigenous knowledge of goat herding that has served herders for centuries, while relying on the hardiness of goats to sustain themselves on the grassy hills of Rwanda. I am fascinated by traditional methods of goat production, as they are capable of producing hundreds of goats per year without modern amenities, such as dewormers, commercial medications, and input from veterinarians, who are rare in Rwanda. Instead, they rely on substances that are more readily available. For instance, one goat herder provided her goats with water in which beans were cooked in order to increase her goats' nutrient intake. Other herders relied on plants high in tannins, such as *Sesbania* spp. and *Lespedeza*, to prevent intestinal parasites (Cannas 2014). Interestingly, such techniques are spreading to the United States as organic agriculture rises in popularity.

Conclusion

There is clear evidence of traditional goat herding methods throughout Rwanda, as can be seen by the tri-colored herds that populate the hillsides. Yet, many goat herders appear to strive toward a more "modern" approach characterized by an intensive stabling system. More studies must be conducted to assess the potential economic benefits of this system over traditional grazing before major conclusions can be drawn. While there are possible advantages to the modern system, there are still many positive aspects of the traditional system.

* * *

*To view Kira's ICIK seminar on Rwandan goat production and management, visit the ICIK website.*

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The Transformation of a Rural Village in China
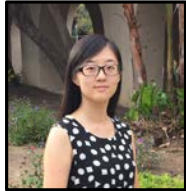
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China has been experiencing rapid modernization and urbanization over the past three decades. Along with its unprecedented economic growth, the country's traditional culture and social fabric are undergoing irreversible changes. In rural China, traditional customs, social norms, local folk arts, and geographic specific agricultural knowledge are under increasing threat of disappearance. In the summer of 2014, I conducted my dissertation fieldwork in Chongdu Valley, China where rural tourism has taken the place of agriculture to become the dominant economic driver in the last fifteen years. My experience with the village indicates that tourism has played a momentous role in the transformation of the village's standard of living, local culture, indigenous knowledge, and social configuration.

Chongdu Valley is a rural village located in central China. It is surrounded by 500 to 1,000 meter mountains with only one access road to the outside. Due to limited workable land within the Valley, local residents opened up farmland in the surrounding mountains to grow wheat and beans and have developed a sophisticated knowledge of mountain farming. Since the village drew its first tourist in 1999, the community has changed dramatically. Currently, about 95 percent of local residents work in the tourism industry and about 90 percent of households have turned their houses into farmhouses for tourist accommodations. None of the locals rely on agriculture, and only a few of them still grow vegetables in their backyards. Tourism has increased the annual household income from an

estimated 400 yuan in 1999 to an estimated 100,000 yuan in 2014. The development of tourism has also led to improvements in the village's infrastructure, including transportation, garbage disposal, water supply, and the living environment.

To uncover the changes in the local culture and residents' mindsets, I conducted fifty semi-structured interviews with local residents from June 2014 to August 2014, covering approximately 13.6 percent of the total households. I also conducted ten unstructured interviews with non-locals who live and work in Chongdu Valley. During my stay, I lived in five different farmhouses to observe the family members' daily activities and interactions and communicated with them informally nearly every day to triangulate my data and verify the facts provided by local residents.

What I found is that tourism has facilitated an appreciation of the rural environment and rural culture that has been devalued for decades in contemporary Chinese dominant discourse. In China, rural areas have long been portrayed as backward, dirty, and disorderedly, and rural people are thought to be undereducated and of low-quality (Jacka 2013, 983-1007; Whyte 2010). The same perception was true in Chongdu Valley where, before 1999, local residents were enduring extreme hardship due to limited farmland and minimal disposable income. Since the advent of tourism, they have experienced huge improvements in their livelihoods and household incomes, which has endowed them with freedom from hardship, as well as a mindset to cherish the rural environment they and their ancestors have been blessed with for hundreds of years. They have come to appreciate the amenities of living a rural life: a natural environment, organic food, close social ties, and unpolluted air.

In terms of the rural culture, many aspects of local tangible and intangible cultural heritage have been carefully preserved for the gaze of tourists and as a form of local pride. Tourists come to Chongdu Valley and share compliments about the village, which signals to local residents that there is something special about their village. Therefore, the locals have preserved local cultures and artifacts, including farming tools; wine-making equipment and techniques; ceramics-making techniques and bamboo artifacts such as chairs, baskets, and curtains, turning them into tourist objects and souvenirs. For example, wine making is performed on a fixed daily schedule, so tourists can see how wine is made in the traditional way and purchase freshly made wine after each performance. Tourists are invited to

make pottery items using ceramics-making equipment and are allowed to take home their own handmade pottery. Traditional clay houses are preserved, and farming tools and agricultural processing equipment are displayed in the yards of houses. Many old men and women sit beside the village's major roads and use bamboo to make a variety of artifacts, which they sell to tourists.

Overall, tourism has provided an alternative way of living for the locals so that they can enjoy rural amenities, cherish rural culture, and live a decent life. However, despite all these positive changes, tourism has also brought a number of challenges to the community that threatens the sustainability of rural culture and indigenous knowledge. I have discovered two major challenges that the community is now facing.

The first challenge is the loss of local knowledge and traditions. As mentioned previously, Chongdu Valley residents have made their living through agriculture for hundreds of years. They have developed sophisticated knowledge and skills that were used specifically in growing crops in mountainous areas. Now, however, all this skill and knowledge is on the edge of disappearance. The elders and middle-aged villagers who are skilled at mountain farming have failed to pass their knowledge on to the younger generations. My interviewees told me that most young people under the age of twenty have never worked on farmland, and consider farm work to be laborious and boring. Because of the boom of the tourism economy, Chongdu Valley residents of all ages are devoting their efforts to developing tourism-related businesses and are acting more like businessmen than farmers.

Although some parts of the rural culture are treasured and proudly shown to tourists, others are gone. Younger generations, drawn to popular music, movies, and urban culture, have lost interest in traditions, such as local operas, which used to be the most popular form of entertainment for Chongdu Valley residents. Along with the loss of agricultural knowledge and skills, there is also a loss of the labor and resource sharing system. Before the development of tourism, Chongdu Valley residents were very poor and the resources they owned were limited. Thus, they had developed a set of labor and resource sharing rules to plant, grow, and harvest crops. For example, in the harvest season, the local residents always set up a plan for crop harvest, so that workers from several households could work together and use less time to harvest crops. This sharing system was extended from agriculture to other situations, such as building a house, travelling outside the village, and

addressing family emergencies. The destruction of this system came along with the development of tourism. Local residents have increased their family income and are getting used to the power of money; if they find that spending money can solve their problems, they will likely hesitate to ask for help from others. Another plausible explanation for the loss of this system is that neighbors are no longer viewed simply as neighbors, but also as competitors in their tourism-related businesses (e.g., the farmhouse business). So, when it comes to business-related work, families prefer to rely on themselves instead of seeking help from others.

Another challenge is the threat of urbanization. Tourism development has largely blurred the division between rural and urban landscapes in Chongdu Valley. Some residents complain that Chongdu Valley is too "urbanized" to be considered a rural community. The village now has a karaoke store, a lake-view hotel, a movie theater, fast food restaurants, and a performance plaza. Hundreds of non-locals live and run tourism-related businesses in Chongdu Valley, complicating the social fabric and interaction of the villagers. During weekends in the summer, the influx of thousands of tourists into Chongdu Valley turns the quiet, small village into a populated, noisy mini-city.

Furthermore, local residents have started to act like urban people. Some of them have bought second homes in urban areas so that they can live in urban areas in the off season. Private cars have become a new product for demonstrating social status, and many residents choose to buy cars that are beyond their budget. Due to the effect of tourists and peer pressure, the younger generations are likely to buy expensive and high-quality products that they cannot afford. As entrepreneurs instead of farmers, the residents of Chongdu Valley have been gradually integrated into the free market, the service economy, and the financial systems of a modern society. Their life has shifted from a pristine, pure, and simple one, to a modern, pressed, and complicated one. The old, peaceful life has gone forever.

In conclusion, my study reveals that the process of modernization has permeated the remote rural areas of China via tourism (Oakes 2012, 380-407). On one hand, rural tourism is revitalizing Chongdu Valley; it has generally improved the standard of living of local residents and elicited a sense of pride in local culture and indigenous knowledge. On the other hand, tourism is also transforming Chongdu Valley, leading to an increased urbanization of rural space and the rural way of life. The continuity and stability that the countryside of China used to represent does not hold true in the new era of modernization and urbanization;

rurality is now characterized by change and dynamism.

To view Lan's seminar on Chinese rural transformation, visit the ICIK website.

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A Review of *Culture, Indigenous Knowledge and Development in Africa: Reviving Interconnections for Sustainable Development*

Book review by Rebecca Yvonne Bayeck, Tutaleni I Asino, and Mark Malisa
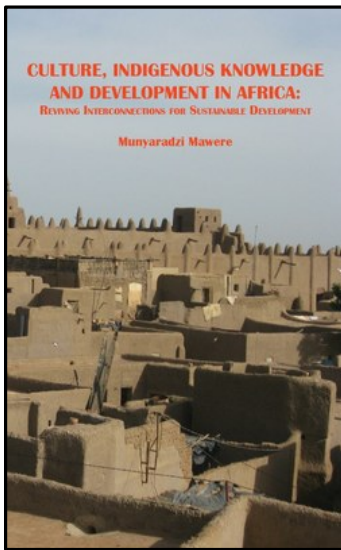
Culture, Indigenous Knowledge and Development in Africa: Reviving Interconnections for Sustainable Development

by Munyaradzi Mawere. Bamenda, Cameroon: Langaa RPCIG, 2014. 169 pp. $26.00 ISBN 978-9956-791-91-0

Mawere's book discusses indigenous knowledge (IK) and its importance in the sustainable development of Africa. The author gives an overview of the rich and currently untapped IK of African cultures. As IK authors and researchers such as Herman Batibo, Ladislaus Semali, and Emmanuel Chiwome have argued, central to this book is the notion that, prior to colonization, indigenous people -- or, for lack of a better word, natives -- in different parts of the world already had the knowledge to help them solve and address health, political, economic, developmental, and social challenges. Throughout the book, Mawere makes the reader understand that colonization destroyed African cultures and IK, which led to Africa's developmental dependence on Western technology and knowledge. Mawere's point is that reliance on Western knowledge alone will not lead to sustainable progress for Africa. Rather, Africa needs to revive her indigenous cultures to guarantee her growth in a globalized world.

This book consists of six chapters, each unveiling the value of IK -- or indigenous knowledge systems -- and their importance in the sustainable development of Africa. The first chapter sets the tone of the book. The reader quickly realizes that, for Mawere, IK and indigenous knowledge systems refer to the same concept and are used interchangeably. The author then addresses misconceptions about IK. IK is not, as Eurocentric scholars have portrayed it, primitive or static, nor is it deprived from "physical validity" (Mawere 2014,10). Rather, IK is dynamic, connected with people's culture and adaptive to changes and societal needs. The reader is also introduced to the concepts of development and sustainable development, which is discussed later in the book. Mawere argues that all models of development, economic as well as human, are cultural, and sustainable development is not different. In other words, ignoring IK and culture means preventing progress in Africa. The author argues that, in some contexts, African IK has the potential to steer development in a more efficient way than Western science. The chapter concludes with an emphasis on the need to connect IK, culture, and development to stimulate sustainable development.

The need for IK in the development of Africa is further discussed in the second and third chapters of the book when the author addresses the effects of colonization on African culture and on the IK embedded in them. The destruction of African IK also destroyed developmental, socio-economic, and political ambitions. Africans need to conserve and protect their forms of knowledge to solve problems specific to the continent, and also to contribute to solutions on a global scale. In keeping with this idea, chapter two discusses the idea of an integrated curriculum that values all forms of knowledge -- modern, indigenous, Western, Eastern, or African -- as a way to preserve and recognize the value of IK in sustainable development. And, in the third chapter, the author selects thirty-two cases, examples of IK across the continent, to demonstrate and explain the potential of IK in the development of Africa. In line with the author's goal, the selected cases are a foretaste of the richness of knowledge that, if tapped, can benefit and better lives in the continent and across the world.

Throughout the book, the author persistently presents African IK as equal to Western knowledge, but Mawere makes this point most stridently in chapters four and five. Indeed, the fourth chapter shows that African technological knowledge is also embedded in African culture. Africans have interacted with their environments and have altered it to meet their needs. This ability to transform the environment is

what the author calls "indigenous technological knowledge" or "African science" (Mawere 2014, 91). And, just like other forms of IK, these indigenous technologies have been disparaged by colonizers, and are still seen as a hindrance to current dominant technologies used by developmental agencies. However, the potential of this science is crucial for the sustainable development of Africa and its freedom. Yet, in Mawere's view, barriers such as the supremacy of Western technologies, isolation of indigenous technologies, or partial knowledge of indigenous technology have to be overcome for Africa to end its dependence on the West, and attain development and socio-economic freedom. It is essential to mention that the author does not call for Africa to isolate itself from the West, a point discussed in depth in the fifth chapter. The challenge for the West, writes Mawere, is to acknowledge that there are other forms of knowledge and that all forms of knowledge are equal. And for Africa, the challenge is to recognize that she has "something to offer from her own cultures and indigenous knowledge systems" (Mawere 2014, 90). African scientists need to make creative use of their IK in order to solve problems faced by the continent. The fifth chapter reveals the author's desire to show throughout the book that there cannot be sustainable development or global solutions to complex problems, such as HIV/AIDS and global warming, if the division between Western scientific knowledge (SK) and African science and IK persists. Both forms of knowledge are complementary, and should be treated and viewed as such.

In the sixth chapter, the author concludes the book with a call for the decolonization of African minds through the integration of IK in all levels of education - primary, secondary, and tertiary – in Africa. Western-based education has alienated Africans from their cultures and the knowledge embedded in them. This form of education, the author contends, does not relate to African realities, and keeping African IK from the mainstream educational system prevents the development of innovative thinking and makes learning difficult for African students.

With practical examples of IK, and facts on the pre- and post-colonization experience in Africa, Mawere attests to the importance of IK as a key to the sustainable socio-economic and political development of Africa. Innovation and creativity will not happen in Africa as long as Africans rely on knowledge foreign to their culture or identity. In this view, he aligns with other authors who contend that Africa "cannot fully develop on the basis of borrowed intellectual, technological and financial resources" (Chiwome, Furusa, and Mguni 2000, vi).

Although the book mainly focuses on African IK, the author gives room for readers from every culture to understand that science, technology or social approaches to development are all based on the IK of specific communities as they interact with the environment. For example, in the first chapter Mawere relates his definition of culture and IK to the work of other authors. Development, another key concept in the book, is also explained using the United Nations Development program (UNDP), the United Nations Educational, Scientific, and Cultural Organization (UNESCO) understanding of this concept.

This book is a clear call for reflection and action. Yet, the reader may wonder how to make the changes the author is calling for, as the author does not offer a framework, or step-by-step process as to how to integrate IK into education or developmental projects for the socio-economic and political development of Africa. However, to the author's credit, suggestions such as teaching IK in all disciplines in Africa's higher education, or in primary level through tertiary level are laudable efforts towards the development of strategies of integration. Perhaps, the absence of a framework could be interpreted as Mawere's desire to point to the fact that frameworks are more of a reflection of Western conceptions of reality and Western responses to problems than they are of African IK.

The organization of the book allows the reader to easily follow the author's argument. The chapters and the ideas developed in them are well arranged, which shows the author's logic and sense of continuity throughout the book. The construction of the book meshes well with its organization and lends itself successfully to the study of indigenous knowledge and sustainable development. The author also does a great service to the readers by using short and simple sentences to make his readers understand that IK represents ways of knowing that, as humans and a global society, we can all benefit from, especially in terms of sustainable development. Although Mawere does not address the logic of progress and development in indigenous knowledge systems, he succeeds in making readers recognize that other forms of knowledge and technology have existed for millennia. In this regard, Mawere does service to the field of indigenous knowledge. This book is appropriate and a must read for Africans, developmental agencies, policy makers, educators, IK researchers around the world, and anyone interested in approaching the world and its issues with creativity from a different perspective.

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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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Looking Back: Recent ICIK Activities

ICIK Seminar Series: August-December 2015

Seminars are archived and available for viewing at the ICIK Website

Global Economic Development through Tourism Research: Namibia and Beyond

On December 4, 2015, Dr. Hannah Messerli and Dr. Amit Sharma presented a seminar on the significance of tourism's socio-economic contribution which must be understood beyond numbers and headlines that may distort the full picture. Dr. Messerli provided an overview of tourism research efforts she supports at The World Bank in cooperation with its partner organizations. Dr. Sharma described a recent case study he conducted in Namibia where indigenous communities are being encouraged to preserve wildlife on their communal reserves in an effort to draw ecotourists to the area.

Dr. Hannah Messerli is a Senior Private Sector Tourism Development Specialist at The World Bank. Dr. Amit Sharma is an Associate Professor of Hospitality Finance and Director of the Food Decisions Research Laboratory in Penn State's School of Hospitality Management.

New Markets, Old Ways: Value Chains and Native Potatoes in the Peruvian Highlands

On December 3, 2015, Dr. Daniel Tobin presented a seminar on traditional and modern outlooks on Peruvian potato production. This seminar addressed how value chain development for native potato varieties intersects with the conservation of diverse native varieties and the traditional production practices smallholders utilize to produce them in the central highlands of Peru.

Daniel Tobin, Ph.D. is an Instructor for the International Agriculture (INTAG) minor at Penn State and conducts research on market development for smallholder farmers in the Andean highlands.

Pacific Perspectives: Music and Dance of Hawaii and Aotearoa (New Zealand)

On November 11, 2015, Dr. Ann Clements and Dr. Sarah Watts presented a seminar on the music and dance of Hawaii and New Zealand. This seminar provided two different perspectives on the roles of music and dance in Hawaiian and Maori cultures. One perspective focused on autoethnography as a means for exploring an unfamiliar culture. The other described how music and dance are a catalysts for writing and re-righting the indigenous perspective.

Ann Clements, Ph.D. is an Associate Professor of Music Education in Penn State's School of Music. She is a University Faculty Fellow in Teaching and Learning with Technology and a Penn State Open Innovation Winner.

Sarah H. Watts, Ph.D. is an Assistant Professor of Music Education in the PSU School of Music, College of Arts and Architecture. She specializes in early childhood and elementary music education, Music pedagogy, and musics of the Pacific.

Zambian Indigenous Vegetables: Knowledge in the Mind but not the Market

Kelli Herr presented a seminar on her research and work in Zambia on October 29, 2015. After joining the Humanitarian Engineering and Social Entrepreneurship (HESE) program last spring, Kelli began working on a food security venture geared toward implementing greenhouses in Zambia. She wondered about the types of produce greenhouse owners would choose to grow and the nutritional value of the produce, so she explored what is being grown, sold, and consumed in Zambia, in hopes of identifying the indigenous vegetables and their place in the local market economy.

Kelli Herr is a junior at Penn State in the Schreyer Honors College majoring in Community, Environment, and Development (International Development). She is minoring in Entrepreneurship and Innovation (social entrepreneurship). She is also a 2015 recipient of the M. G. Whiting Student Indigenous Knowledge Research Award.

From Garden to Fork: Serving Locally Grown Fruits and Vegetables in Johannesburg, S.A. Schools

The "From Garden to Fork: Serving Locally Grown Fruits and Vegetables in Johannesburg, S.A. Schools" seminar was held on September 17, 2015. The seminar identified the various motivations for school gardens and discussed whether current incentives would assure sustainability. Dr. Kesa shared the South African perspective and Dr. Sharma presented the U.S. perspective on farm to school programs

Dr. Hema Kesa has a Doctorate in Food Service Management, specializing in Community Nutrition. Her research includes Community Nutrition, Maternal Nutrition, Community Engagement, Food Service, Nutrition and Healthy Lifestyles.

Dr. Amit Sharma is an Associate Professor of Hospitality Finance in the School of Hospitality Management, and the Director of the Food Decisions Research Laboratory at Penn State. His research focuses on the cost-benefit and economic aspects of food decisions, particularly in foodservice environments.

Student Voices: Sharing the Experience of Learning through the Ways of Knowing of the Ojibwe

During May 2015, nineteen Penn State students traveled to the Red Lake, Leech Lake and White Earth nations in Northern Minnesota to take part in the cultural engagement experience "Exploring Indigenous Ways of Knowing among the Ojibwe." They gathered once more on September first to share their experiences as part of the ICIK seminar series. Through a unique and inspiring relationship with Ojibwe leaders, the students were able to participate in daily life with host families, take part in traditional ceremonies with medicine men and learn about the history and culture of the Ojibwe from local Native teachers. At this seminar, students shared personal accounts of students' cultural engagement experiences and their developing perspectives on the ways of knowing of the Ojibwe.

The Integration of Traditional and Scientific Knowledge in the Production of Bordeaux Wines

 In August 2015, the Interinstitutional Center for Indigenous Knowledge hosted a seminar entitled "The Integration of Traditional and Scientific Knowledge in the Production of Bordeaux Wines," presented by Dr. Serge Delrot, Professor of Plant Physiology at the University of Bordeaux. The seminar illustrated how vintners and scientists have interacted successfully with the help of the wine industry and stakeholders to maintain and improve the quality of the Bordeaux wines over the years.

Join the L-ICIK Listserv

Timely Information on Indigenous Peoples and Their Lives

Readers of *IK: Other Ways of Knowing* are invited to join the free listserv managed by the Interinstitutional Center for Indigenous Knowledge that has been open to anyone interested Indigenous Knowledge and has been growing steadily for more than a decade.

Nearly 1,000 subscribers to the ICIK listserv currently receive frequent and timely postings that include informative articles from reliable sources. You can join the list and, if you like, provide information to the listserv manager about things you believe would be of interest to others.

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

The ICIK listserv also proves information such as collaborations between Native knowledge-keepers and scientists, updates on current activities related to the impact of climate change on Native communities, efforts in the U.S to change Columbus Day to Indigenous Peoples Day, the status of Native peoples court suits and issues related to the United Nations Declaration on the Rights of Indigenous Peoples.

To join the ICIK listserv, just go to the ICIK website (see link above), then go to "JOIN US" and at "Join the ICIK listserv" just provide your name and the e-mail address at which you would like to receive listserv postings. You will receive an e-mail that tells you how you can choose to receive postings weekly in "digest" form if you prefer. You will receive a welcome e-mail that will tell you how to delete your name from the listserv and how to change your e-mail address if you wish.

Call for Submissions
Spring 2017; Vol. 3, No. 1

Guest Editor: Manuel Ostos, Humanities Librarian, Pennsylvania State University
Deadline: December 15, 2016

This Special Issue on "Preserving Indigenous Knowledge in Latin America: Current Practices, Opportunities, and Challenges" will address the challenges and opportunities inherent to indigenous knowledge creation, distribution, and preservation, with an emphasis in Latin America but not excluding other regions. This includes a wide range of topics, including research and methodologies applied in indigenous communities, storytelling, and preservation practices, as well as associated issues such as ethics and policies.

Recommended topics include, but are not limited to, the following:

• Preservation of indigenous knowledge
• Indigenous languages and literatures
• Policies for indigenous knowledge systems
• Local histories and storytelling
• Ethics in indigenous knowledge
• Indigenous methodologies and research

Authors should submit their manuscripts electronically via the PSU Libraries Open Journal System (OJS) located at http://journals.psu.edu/ik/user/register. A manuscript submission must be original and accompanied by a statement that it has not been published elsewhere and that it has not been submitted simultaneously for publication elsewhere. Submissions must include an abstract of not more than 150 words. Authors are also encouraged to suggest names of potential reviewers. Visual materials and illustrations should be included with the article. More details on author guidelines for submission can be found here.

Questions about this special issue should be addressed to Manuel Ostos (manuel.ostos@psu.edu). Please include IK Spring 2017 in the subject line. For OJS technical support, please contact Mark Mattson (mam1196@psu.edu, 814-865-2486). For other requests, please contact one of the journal's editors, Helen Sheehy (hms2@psu.edu) or Amy Paster (alp4@psu.edu).

Contributing Authors

Sanjay Kabir Bavikatte, Ph.D., is the Executive Director of the Christensen Fund. He was the Co-Founder and Director of Natural Justice, an international organization of environmental lawyers defending the rights of indigenous peoples and local communities to their territories and cultures.

Rebecca Yvonne Bayeck is a doctoral student at Penn State in the dual-degree program of Learning Design and Technology and Comparative International Education. Rebecca's research interests include games (modern and indigenous), culture and technology, online and/or distance learning, and massive open online courses. Comments and/or questions may be addressed to ryb105@psu.edu.

Sarah Casson is a graduate student of the Yale School of Forestry and Environmental Studies. She holds a Bachelor's degree in Anthropology from Grinnell College. Both in and out of academia, Sarah is interested in the intersection of anthropology and environmental studies. At Yale, her Masters in Environmental Science focuses on climate change's effects on monsoons and agricultural adaptation strategies.

Ann C. Clements, Ph.D., is an Associate Professor of Music Education at Penn State. She is an active researcher, musician, and pedagogue. Her primary research areas include music participation, game theory as applied to education, learning in blended, virtual and augmented realities, and ethnomusicology, of which she is a recognized scholar in Maori music of New Zealand. She has served in leadership and editorial roles in national and international music education and ethnomusicology organizations.

Mina Giris is an ethnomusicologist with a background in hospitality experience design; Mina explores new ways to cultivate environments conducive to learning, making, and experiencing music. He specializes in curating and producing innovative musical collaborations across diverse styles. Mina earned his bachelor's degree in Hospitality Administration from the Florida State University and his masters in Ethnomusicology from the University of California Santa Barbara. Mina is a Synergos Pioneers of Egypt fellow, a Wired 2014 Innovation fellow, and a National Arts Strategies Creative Community fellow.

Lonnie Graham is an artist, photographer, and cultural activist whose work addresses the integral role of the artist in society and seeks to seeks to re-establish

artists as creative problem solvers. Lonnie Graham is a Pew Fellow and Professor of Photography at the Pennsylvania State University. Professor Graham is the former Acting Associate Director of the Fabric Workshop and Museum in Philadelphia, Pennsylvania. Graham served as instructor of special programs at the Barnes Foundation. Graham also served as Director of Photography at Manchester Craftsmen's Guild in Pittsburgh, Pennsylvania, and developed innovative pilot projects cited by Hillary Clinton as a National Model for Arts Education.

Elisha Clark Halpin holds an MFA in Dance from The Ohio State University. She is a dance artist, somatics practitioner, filmmaker, and modern day pilgrim. Her current research centers around place, identity, the sacred, memory, consciousness, and trauma.

Kira Hydock holds a bachelor's degree from the Pennsylvania State University. Her article "Traditional Methods of Rwandan Goat Production and Management" is an extension of her honors thesis, which began after her first trip to Rwanda in 2012. Since then, she has returned to the country two additional times to conduct research under the supervision of Dr. Clemente Abrokwaa in the African Studies Department at The Pennsylvania State University. Her honors thesis was submitted upon her graduation from the institution in 2015, and she is now currently attending veterinary school at The University of Pennsylvania School of Veterinary Medicine.

Svitlana Iarmolenko was born and raised in Ukraine. Svitlana came to the United States for graduate school, enrolling in East Carolina University's Master Program and continuing on to a Doctorate Degree at The Pennsylvania State University. Reflecting on personal migration experiences, Svitlana focused her research on the nexus of tourism and migration, engaging with theories of acculturation, transnationalism, as well as mobilities research.

Bruce D. Martin grew up among the Ojibwe (Anishinaabeg) people deep in the bush of the Northwest Angle, Lake of the Woods, Pine Creek, and Angle Inlet, Minnesota. Persistence eventually transported Bruce from the one room Angle Inlet School to the University of Wisconsin-Eau Claire where he completed degrees in philosophy and psychology. He eventually completed a doctorate in theology and religion at the Princeton Theological Seminary. Only gradually did he come to understand the value of his first education and educators, the bush country of the Northwest Angle and the Ojibwe elders who lived there. For the past

twenty five years, he has been committed to and involved in cultural education and the exploration of indigenous ways of knowing. For the past fifteen years, he has developed courses and field experiences which provide Penn State students with opportunities to learn with and from Ojibwe elders and educators in the Great Lakes region and in northern Minnesota.

María Julia Oliva has been the Senior Coordinator for Policy and Technical Support at the Union for Ethical BioTrade (UEBT) since 2009. In this capacity, she provides training, advice, and technical support for UEBT members and partners on issues such as equitable trade practices, access, and benefit sharing. Julia has held several positions in international organizations and published widely on the interface between sustainability, trade, and intellectual property. She is a member of the IUCN Commission on Environmental Law and the Board of Directors of IP-Watch, an independent reporting service on intellectual property issues. She has a law degree from the University of Mendoza and a Masters of Laws (LL.M) in environmental law, cum laude, from the Northwestern School of Law at Lewis and Clark College.

Kimberly Powell holds a Ph.D. in education from Stanford University. Her research focuses on artistic practice and performance as a means of engaging in social change; the body; and the senses as critical modes of mediation, communication, and production of human experience and knowledge; and the arts as forms of public pedagogy.

Vincent Ricciardi is a PhD student at the University of British Columbia's (UBC) Resource Management and Environmental Studies (RMES) program. His research focuses on the intersection of climate smart agriculture, poverty alleviation, and land use change. Currently, I am investigating how farm size affects sustainability and if small farms are more resilient to climate variability than large farms in India. Before attending UBC, I received my MSc degree in geography from Penn State and worked as a research consultant throughout Southeast Asia and in Ghana. I have conducted agrobiodiversity surveys, brought GIS into program assessments, mapped agricultural land use change, conducted crop value chain assessments, and helped NGOs, local governments, and social enterprises test innovative ideas and appropriate technologies and distribute them to smallholder farmers.

Daniel F. Robinson, Ph.D., has worked for several years on environmental and social justice concerns relating to biodiversity, indigenous knowledge, and

intellectual property, particularly in Thailand, the Pacific, and Australia. He is a Senior Lecturer at the University of New South Wales (UNSW) in Australia, a research fellow with the International Centre for Trade and Sustainable Development (ICTSD), and a research associate with the NGO Natural Justice. He has provided research towards projects for a number of organizations including ICTSD-UNCTAD, the Pacific Islands Forum Secretariat, UNDP-GEF, Union for Ethical BioTrade (UEBT), AusAID, and GIZ. He also recently published the books *Biodiversity, Access and Benefit-Sharing: Global Case Studies* (2015, Routledge: Oxon), and *Confronting Biopiracy: Challenges, Cases and International Debates* (2010, Earthscan, London).

Nonny Schlotzhauer is the Acting Head of the Social Sciences and Donald W. Hamer Maps Libraries at the Pennsylvania State University. He has a bachelor's degree in anthropology from Temple University and a Master of Library Science from the University of Pittsburgh. He has held prior positions at Juniata College, Miami University (Ohio), and the University of Denver. He currently serves as Book Review Editor for *IK: Other Ways of Knowing*.

Helen Sheehy is a Social Sciences Librarian at the Pennsylvania State University Libraries, with subject specialties in politics, law, government, and international relations. She has a B.S. from Framingham State University (Massachusetts) and am Masters of Library Science from Clarion University (Pennsylvania). Prior to becoming a librarian she worked with CARE Honduras, in community development and relief work.

Amy Dupain Vashaw serves as Audience and Program Development Director for Penn State's Center for the Performing Arts, a position she has held since 2001. Initially hired as Education Director in 1997, her primary responsibility is to create collaborative opportunities that link the Center's artists to the community, including Penn State University students, students in grades K-12, senior members of the community, and the community-at-large. Her primary goal is to create a mutually enriching experience for both artists and their audiences by providing the knowledge and tools necessary to fully engage in the artist's work. Additionally, she works closely with the Center's director in programming the season, with her special area of focus being dance and family and children's programming. Recently, she has been appointed chair of the Penn State Commission on LGBT Equity. Amy has spent her career in the arts, with previous positions that have included associate director of development for Second Stage, an off-Broadway

theatre, and assistant to the director of the Pittsburgh Dance Council, a contemporary dance presenter. She is a graduate of Penn State University with a degree in cinema studies.

Sarah H. Watts, Ph.D., is an Assistant Professor of Music Education at the Pennsylvania State University School of Music. Her teaching and research interests include early childhood and elementary music education, music pedagogy, personal experience story in music, and musics of the Pacific.

Lan Xue is one of the recipients of the 2014 M.G. Whiting student IK research award. Lan Xue earned her Ph.D. in Recreation, Park, and Tourism Management at the Pennsylvania State University. Her research mainly focuses on socioeconomic aspects of tourism development and how the local culture of a tourism destination shapes, and is shaped by, tourism development. She has conducted a great deal of research in suburban and rural areas of China, focusing on the resettlement and identity changes of local residents as a result of tourism development.

Editors' Biographies

Audrey N. Maretzki (Managing Editor) is a Professor Emerita in the College of Agricultural Sciences at Penn State. She received an M.S. in Community Nutrition from Penn State and a Ph.D. in Higher Education from the University of Pittsburgh. Prior to joining the Penn State faculty in 1985, she was a faculty member for 20 years at the University of Hawaii and a 1983 Fulbright Scholar in New Zealand. From 1986-1992 she was Editor-in-Chief of the *Journal of Nutrition Education*. In 1995, she co-founded the Interinstitutional Consortium for Indigenous Knowledge (ICIK) that has been administratively housed in the PSU Libraries for the past five years. During this time, the initial IK consortium at PSU has expanded in scope to become the Interinstitutional Center for Indigenous Knowledge; the only global indigenous knowledge resource and outreach center in the U.S. In retirement, Maretzki continues her involvement in indigenous knowledge as a co-director of ICIK, an editor for the new publication IK: Other Ways of Knowing, organizing monthly IK seminars and managing an IK listserv with approximately 900 subscribers.

Amy L. Paster (Managing Editor) is the Head of the Life Sciences Library at Penn State. She received an M.L.S. in Library Science from SUNY Albany and a B.S. in Entomology from the University of Georgia. Prior to joining the Penn State faculty in 1985, she was a librarian at Rensselaer Polytechnic Institute in Troy, NY. She currently serves on the editorial board of the Journal of Agricultural and Food Information. In addition Paster is a CoDirector of the Interinstitutional Center for Indigenous Knowledge (ICIK) at Penn State.

Nonny Schlotzhauer (Reviews Editor) is the Acting Head of the Social Sciences and Donald W. Hamer Maps Libraries at the Pennsylvania State University. He has a bachelor's degree in anthropology from Temple University and a Master of Library Science from the University of Pittsburgh. He has held prior positions at Juniata College, Miami University (Ohio), and the University of Denver.

Helen M. Sheehy (Managing Editor) is Head of the Social Sciences and Donald W. Hamer Maps Libraries at the Pennsylvania State University Libraries. She has a B.S. in nutrition from Framingham State University and an M.L.S. from Clarion University of Pennsylvania. Prior to becoming a librarian she worked in

community development in Honduras. Peace Corps and CARE. From 2003-2009 she was a managing editor of the American Library Association journal *DttP*. In addition Sheehy is Co-Director of the Interinstitutional Center for Indigenous Knowledge (ICIK) at Penn State.

Christian Man (Associate Editor) is a PhD candidate in Rural Sociology and International Agriculture and Development at The Pennsylvania State University.

María Landschoot (Assistant Editor) is a fourth year undergraduate student at Penn State. She is majoring in English and has a strong interest in international and world literature.

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