

# INDIGENOUS KNOWLEDGE AND TRADITIONAL KNOWLEDGE

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## Introduction

Over time, Indigenous peoples around the world have preserved distinctive understandings, rooted in cultural experience, that guide relations among human, non-human, and other-than human beings in specific ecosystems. These understandings and relations constitute a system broadly identified as Indigenous knowledge, also called traditional knowledge or aboriginal knowledge. Archaeologists conducting excavations in Indigenous locales may uncover physical evidence of Indigenous knowledge (e.g., artifacts, landscape modifications, ritual markers, stone carvings, faunal remains), but the meaning of this evidence may not be obvious to non-Indigenous or non-local investigators. Researchers can gain information and insight by consulting Indigenous traditions; these localized knowledges contain crucial information that can explain and contextualize scientific data. Archaeologists should, however, strive to avoid interference with esoteric knowledges, sacred sites, ritual landscapes, and cultural property. Research consultation with local Indigenous knowledge-bearers is recommended as a means to ensure ethical practice and avoid unnecessary harm to sensitive sites and practices.

## Definition

Traditional Indigenous knowledge can be defined as a network of knowledges, beliefs, and traditions intended to preserve, communicate, and contextualize Indigenous relationships with culture and landscape over time. One might distinguish "knowledge" as factual data, "belief" as religious concepts, and "tradition" as practice, but these terms are often used imprecisely and interchangeably to describe Indigenous epistemologies. Indigenous knowledges are conveyed formally and informally among kin groups and communities through social encounters, oral traditions, ritual practices, and other activities. They include: oral narratives that recount human histories; cosmological observations and modes of reckoning time; symbolic and decorative modes of communication; techniques for planting and harvesting; hunting and gathering skills; specialized understandings of local ecosystems; and the manufacture of specialized tools and technologies (e.g., flint-knapping, hide tanning, pottery-making, and concocting medicinal remedies).

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Indigenous communities have devised distinctive methods of encoding useful data within philosophies of thought and modes of activity that are linked to particular landscapes. This data includes geographical, genealogical, biological, and other evidence that maps human relations to flora and fauna, land and water, and supernatural forces. Knowledge is often passed on through regular Indigenous performances---including oral traditions, song, dance, and ceremony---that convey both literal and metaphorical truths about these relations. Skilled individuals and families are entrusted to maintain these traditions; some are specialists who protect esoteric knowledges. Although many aspects of traditional knowledge have been identified and recorded through ethnographic and ethnohistorical research, some are still unknown to outsiders.



Fig. 1. Roger Paul (*Passamaquoddy*), bending saplings to construct the frame for a traditional Wampanoag *wetu* (dome-shaped shelter) beside the Penobscot River in Maine, during a Wabanaki Writers retreat in 2009. Photograph by Margaret Bruchac.

Individual ethnic and tribal communities, in different regions of the world, have preserved different versions of traditional knowledges. While these knowledges might share some things in common, they do not comprise a single (or simple) tool-kit. Indigenous knowledges can be envisioned as an

hereditary system of learned awareness and skill that enables wisdom to be gained and tools to be constructed, as needed, from the materials at hand. These knowledges are rooted in a particular place or ecosystem, but they are not necessarily static or fixed. Religious knowledges, for example, are quite portable, and can be used to mediate human encounters with ancestral spirits and other-than-human beings, wherever these encounters might take place. Ecological knowledges are also portable, in that they call for reliance upon local resources and careful observations of the interactions between living beings and natural processes within an ecosystem (any ecosystem) to ensure human survival.

### **Knowledge Keepers**

Some traditional understandings are common knowledge, shared by all members of a tribal community, ethnic group, kin network, or family. Many of these are learned through phenomenological experience and everyday activities. More specialized types of information are preserved by gatekeepers (e.g., tribal leaders, ritual practitioners, medicine people) who have vested interests in, deep experience with, and long-standing connections to significant sites. Keepers of oral traditions are often carefully trained to link parts of traditional narratives to specific events and locales, and cultural coherence is ensured by regular repetition (Vansina 1985). In Native American communities, these people are often selected as children and carefully trained up by elders. In Australian communities, there are gatekeepers identified as "Traditional Owners" who may inherit this role within a family line; it is their responsibility to monitor and mediate human interactions with the ancestral landscape (Smith & Wobst 2005). Among the Maori, specific categories of specialized, protected knowledges are entrusted only to select members of a group (Smith 2012). In general, Indigenous knowledge-keepers and traditional elders are afforded considerable respect in their home communities; in the academy, however, they have not yet gained the same degree of status afforded to scientific knowledge-keepers.

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### **Traditional Ecological Knowledge**

Traditional ecological knowledge (also called traditional aboriginal knowledge) can be defined as practical applied Indigenous knowledge of the natural world. This is more than a mere collection of primitive survival tactics; it is a system of awareness that offers both moral guidelines and practical advice. Local practitioners conduct their activities (e.g., plant medicine, shelter construction, hunting skills, craft manufacture, etc.) using natural materials; they must rely upon intimate understandings of local flora and fauna to collect the necessary resources. Traditional ecological knowledges emerged from environmental understandings shaped over time by incremental learning (including trial and error and experimentation), and they cross-cut the scientific disciplines of biology, botany, geography, cosmology (Augustine 1997; Berkes 2012). Some evidence suggests Indigenous overuse of fragile environments, but in general (in the pre-colonial era), Indigenous peoples endeavored to maintain traditional landscapes. They did not depend upon large-scale resource extraction and development; instead, they maintained unique floral and faunal communities through measured harvests and ritual activities that emphasized reciprocity (Apffel-Marglin 2011). Among many Indigenous groups, proper attention to local spirits is believed to be an essential element of long-term lifeways (Berkes 2012; Smith 2012). The religious tenets of ecological awareness, (identified as

sacred ecology) were encoded in instructive narratives and dynamic interactions with local environments, intended to ensure long-term survival (Berkes 2012:219). Human health was a natural by-product of environmental health.

Stephen Augustine (*Mi'kmaq*) identifies traditional knowledge as a system that derived from the survival tactics that Indigenous peoples perfected over generations, preserved in collective memory and community teachings:

This knowledge is exercised within the context of the social values and philosophies of the tribe...The fact that Native science is not fragmented into specialized compartments does not mean that it is not based on rational thinking, but that it is based on the belief that all things are connected and must be considered within the context of that interrelationship (Augustine 1997:1).

Gregory Cajete (*Tewa*) identifies this expansive mapping of knowledge as "Native science":

Native science is the collective heritage of human experience with the natural world; in its most essential form, it is a map of natural reality drawn from the experience of thousands of human generations. It has given rise to the diversity of human technologies...in profound ways Native science can be said to be "inclusive" of modern science, although most Western scientists would go to great lengths to deny such inclusivity (Cajete 2000:3).

Traditional ecological knowledge, as a system, encompasses sophisticated philosophies and practical measures that are intended to preserve cultural heritage and protect ancestral landscapes and lifeways. Some of the archaeological evidence suggests that present-day Indigenous peoples have maintained practices that as far back as the Pleistocene era (see, for example, discussions of *Dene*, *Inuit* and *Gwich'in* archaeology in Nicholas & Andrews 1997). These practices are equivalent with (if not superior to) modern heritage conservation and stewardship (see examples in Apffel-Marglin 2011; Nicholas & Andrews 1997; Sillar and Fforde 2005).

Traditional ecological knowledges can inform everyday and ritual activities, in public and private venues. Some ritualized activities aim to combine the knowledge and phenomenological experiences of multiple individuals for maximum effect. For example, in preparation for hunting, individuals may prepare their tools in a traditional location. The movements of the stars, measured by means of standing stones, may be used to predict the appropriate time and season to hunt. Traditional knowledge-bearers may utilize forms of divination, and a group might join together in dance to call the game. The products of the hunt may be selectively offered as reciprocal gifts to the forest or ritually shared at a community feast.

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The people who engage in these activities are not naively requesting favor from unseen forces; their actions are guaranteed success only if participants are keenly aware of the relevant ecological data (e.g., season, weather conditions, and general health of animal populations) before they begin. Evidence of these activities, in markers left on the landscape---piles of debitage, stone carvings, dance circles, bone collections---may be encountered in later archaeological investigations.



Fig. 2. Traditional Maritime Archaic toggling harpoon point, housed in the collections of Memorial University, St. John's, Newfoundland, Canada. Photograph by Margaret Bruchac.

The precepts of traditional ecological knowledge can thus provide context and explanations for artifacts, site modifications, and evidence that might otherwise appear mysterious. As examples, consider two geographically different cases: Inuit hunters in the Arctic, who learn to respect the potential animacy (and inherent danger) of certain weapons and tools in an extreme climate; and medicinal practitioners in the Amazon rainforest, who develop exquisite senses of smell to distinguish among many different varieties of potentially poisonous plants. One might encounter archaeological remains reflecting these different knowledges: a tool scratched with symbols; a bundle of leaves. In their time, these distinct regional knowledges shaped the circumstances of survival; in our time, an awareness of these knowledges provides a crucial framework that situates and explains these people from the past.

In summary, traditional ecological knowledges include sophisticated site-specific and culture-specific instructions, embedded in the landscape and evidenced in unique skill sets, activities, and localized knowledges. If followed properly, these instructions are intended to ensure both short-term survival and long-term human health, community sustainability, and preservation of unique ecosystems (Apffel-Marglin 2011; Berkes 2012).

### **Oral Traditions**

Oral traditions, whether communicated as historical narratives or mythical stories, constitute a form of traditional knowledge that can teach, carry, and reinforce other knowledges. Among Indigenous groups, oral traditions serve as the collective memories of ethnic, tribal, and kinship groups, a formal "corpus relating to the whole society" (Vansina 1985:19). Oral traditions can blur the boundaries of narrative and performance in that they are both product and process, object and experience.

Although they may be characterized as fragile or malleable, these traditions are not simple hearsay or personal reminiscence; they are community memories, regularly recounted and periodically verified by knowledgeable elders.

Indigenous oral traditions often contain insightful explanations that focus on details: origin stories referencing natural and constructed features of the landscape; descriptions of the beings that inhabit this landscape; articulations of the reciprocal relations among these beings; and traditional beliefs that guide human interactions with place. Oral traditions can also include supernatural data: stories of encounters between human and non-human beings in the distant past; messages delivered by animal intelligences; spiritual visions and transformations (Bruchac 2005; Cajete 2000; Vizenor 2008). Some of the most ancient oral traditions record the actions of other-than-human beings who moved glaciers, rivers, and rocks, actively sculpting the Indigenous homeland. Some of the more recent ones explain distinctive place names that map and mark human geographies.

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This information is typically passed on through acts of story-telling that are both literal and metaphorical, as they verbally reconstruct connections with the past (Bruchac 2005; Johnson 2007; Vizenor 2008). As Gerald Vizenor (*Anishinaabe*) articulates it, oral traditions in the hands of a skilled teller---a storier---can evoke elemental realizations:

Native storiers of survivance are prompted by natural reason, by a consciousness and sense of incontestible presence that arises from experiences in the natural world, by the turn of the seasons, by sudden storms, by migration of cranes...by the favor of spirits in the water, rimy sumac, wild rice, thunder in the ice, bear, beaver, and faces in the stone (Vizenor 2008:11).

"Survivance" is more than mere survival; it is the active continuation of traditions that preserve the knowledges of these connections, including regular discourse with the ancestors to maintain a conscious "sense of presence over absence" (Vizenor 2008:1).

Indigenous peoples may combine the narration of these traditions with other activities and symbols--ritual practice, dance, music, art, rock carvings, mock combat---that ritually re-enact or engage with ancestral beings or other creatures. Since many of these characters are represented in symbols or totems, archaeologists should familiarize themselves with kin groups and social markings of the population under study. Particular plots, characters, symbols, or other elements of traditional narratives may appear in ethnohistorical records that can shed light on archaeological remains (Bruchac 2005).

In Native American contexts, some individuals were destined from birth to become oral tradition-keepers, historians, and interpreters (Vizenor 2008:12). In African communities, *griots* learned to recount geo-biographical narratives that recorded the lineage of key family groups and the length of residence in particular regions (see, for example, discussions of Kenya and other African locales in Sefa Die *et. al.* 2000). Oral traditions may speak of a particular family, lineage, language, or region, or serve as markers of distinct Indigenous identities. From the colonial era to the present, oral traditions have also been employed as a means of identification and a form of resistance to colonial domination (Bruchac 2005; Johnson 2007; Vizenor 2008).

Oral traditions can have both practical and ritual aspects. On a practical level, Indigenous peoples have developed technologies that enable successful hunting and gathering. Yet, they recognize that animals, birds, and other beings have agency and traditions of their own. They expect to interact with these beings not only in the flesh, but also through dreaming and ritual encounters (Apffel-Marglin 2011; Augustine 1997; Johnson 2007). Ritual activities provide a means of communicating with elemental spirits and worldly beings that have intelligences of their own (Apffel-Marglin 2011). Narratives of these encounters remind us that human relationships are inextricably intertwined with these beings and places.

Oral traditions, as products of human expression, may seem too ephemeral in locales where Indigenous agents are absent or silent. Yet, as a potential source of data, they should not be overlooked. Even when collected at a distance in time and space, local stories may still contain crucial data (e.g., site descriptions, explanations of practices, memories of social activities) that can map and mark a significant Indigenous site (Bruchac 2005).

## Historical Background

Indigenous knowledges that pre-date colonialism were once regarded as primitive and unsophisticated; this cultural bias historically obscured both the structure and practice of these knowledges. Western practitioners posed a serious threat to the integrity of Indigenous cultural traditions and territory, by regarding them as public scientific property. Archaeologists conducted investigations in destructive and ethically questionable ways. The damage included: desecration of burial places; theft of cultural property; imposition of nationalist ideologies; interference with traditional activities; damage to local ecosystems; misrepresentations in museums; and general disrespect for Indigenous culture and property.

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During the early years of archaeology, scientists were largely unaware of the validity of Indigenous knowledges, and intellectual exchanges between Indigenous and European knowledge-bearers were less than ideal. Indigenous peoples were largely treated as objectified subjects rather than participatory colleagues. Indigenous beliefs and traditions were regarded as religious superstitions when compared to both imperialist ideologies and larger organized religious movements. In North and South America, Australia, and New Zealand, Indigenous peoples were politically disempowered and living in a hostile atmosphere that made it difficult for traditional communities to maintain cohesion. Among the Maori, colonization directly interfered with the authority of traditional leaders and traditional knowledge, stripping away Maori control of their land and destiny (Smith 2012:175).

Broadly speaking, all human knowledges are rooted in traditions passed on from one generation to the next, one community to another. In this regard, scientific approaches to archaeology could be considered a body of traditions that emerged from the distinctive social relations and exercises of power that developed in the environments of modern European academies. Within those academies, a mode of research was devised---the scientific method---that is prized for its presumed objectivity. The data collected is, however, catalogued and classified in ways that are somewhat detached from practical and sensory experience (Apffel-Marglin 2011; Smith 2012). Scientific models of thinking and organizing rely upon disciplinary divisions that segregate the natural world and products of

human experience into disparate parts that do not reflect their places of origin (e.g., the use of Latin names for flora and fauna). Indigenous knowledges, by comparison, are inherently holistic and integrative, being rooted in sensory awareness and human experience of the complex relationships among multiple organisms in distinct ecosystems (Apffel-Marglin 2011; Augustine 1997; Smith 2012). Indigenous knowledge is not wholly unscientific, and concepts of "science" and "tradition" need not stand in opposition, since these are potentially complementary ways of organizing human understandings and interactions with the natural world.

For much of the nineteenth and twentieth centuries, anthropological studies of Indigenous knowledge largely focused on data that was useful to Western scientists. Ethnographic studies recorded biological identifications, hunting activities, naming practices, and linguistic structure as discrete bodies of data, without full consideration for the Indigenous philosophies that guided complex relationships among these forms of knowledge. During the early twentieth century, Native American individuals often served as informants and assistants at archaeological sites, but the relations between these individuals and the actual keepers of sacred knowledges is still open to question. Archaeological sites were particularly vulnerable to pot-hunting by amateurs (and some professionals) who disarticulated remains and removed cultural objects in the search for valuable specimens. These interferences damaged the integrity of sites and destroyed some of the evidence of Indigenous knowledges. As archaeologists moved to professionalize, national organizations pressed for legislation to protect the scientific value of Indigenous sites (e.g., the American Antiquities Act of 1905). Despite this effort, Indigenous consultation was not routine in the practice of archaeology until human rights issues came to the fore in the 1970s.

## Key Issues/Current Debates

The fraught relationships between Indigenous peoples and archaeologists have shifted dramatically in recent decades, as a direct result of increasing attention to the ethics of practice and the inclusion of Indigenous people as research partners (Nicholas 2010; Nicholas & Andrews 1997; Schmidt 2009; Smith & Wobst 2005). Practitioners of Indigenous archaeologies have often insisted that Indigenous knowledges be placed foremost when excavating Indigenous sites.

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Indigenous activists have also called for corrections to the many distortions of oral traditions and local knowledges that have influenced both public views of the Indigenous past, and Indigenous views of themselves (Nicholas 2010; Smith 2012). As Linda Tuhiwai Smith (*Maori*) explains, these distortions are ideologically laden with colonial influences, and have trapped people within a vision that "does not connect with either our oral traditions or our lived reality" (Smith 2012:172).

In some regions, Indigenous people are exerting influence as sovereign nations to challenge the presumed exclusivity of state control and scientific ownership of heritage. Archaeologists can no longer assume sole authority in the field, and they should be prepared to encounter and negotiate potential disputes, not only over the ownership of sites and materials, but over the application of differing forms of knowledge (Atalay 2012; Smith & Wobst 2005). Indigenous ecological knowledges are likely to be called out as evidence in disputes over development or archaeological research in sensitive sites.



Among Native American and First Nations people in the United States and Canada, the continuation of traditional practices (e.g., ritual activities, seasonal hunts and harvests) may provoke conflicts with state and national conservation agencies and policies. Conservationists typically privilege romantic visions of uninhabited wilderness, rather than Indigenous visions of sustainable hunting, fishing, and harvesting (Apffel-Marglin 2011:23). South American Indigenous activists face similar struggles in protecting traditional landscapes and practices. Traditional sites need protection and verification (which can sometimes be provided by archaeological surveys), but exposure may invite cultural and economic exploitation (bio-prospecting, bio-piracy, tourism, development). There is also the risk that exposure and development may interfere with the delicate balance of natural world forces (weather, water, climate, spirits) that ensure community safety (Apffel-Marglin 2011).

In recent decades, there has been considerably more awareness of Indigenous knowledge and more effort to ensure community involvement (Atalay 2011; Menzies 2006; Sillar & Fforde 2005). Traditional knowledges have informed archaeological studies of Indigenous religions, rock art, ritual, and sacred landscapes, improving the accuracy and complexity of these fields of study (Berkes 2012). Archaeological evidence of sustainable ancient practices not only testifies to long-term Indigenous habitation; it can also inform future policies in cultural resource management (Nicholas & Andrews 1997).

In some cases, however, the stereotypes (e.g., the paradigm of simplistic practice) persist, obscuring the evidence of subtle yet significant activities (Apffel-Marglin 2011). Oral traditions that record the details of sacred landscapes and ceremonial complexes may be missed by scientists in search of more recognizable evidence of human constructions. In the Andes, for example, channels constructed for the ritual conveyance of water spirits may be misunderstood as simple irrigation lines (Apffel-Marglin 2012). In Aboriginal Australia, cultural landscapes with minimal modification that house potent spirits and inspire instructive dreamings (see examples of *Barunga* and *Ngarrindjeri* lands in Smith & Wobst 2005) may not be recognized by outsiders as sacred.

The inclusion of Indigenous knowledge is not without controversy. Some have questioned the degree to which Indigenous peoples should be allowed to exert control over scientific research (Nicholas 2010; Smith & Wobst 2005). Some have questioned the veracity of Indigenous knowledges, or challenged the qualifications of community experts who have no apparent scientific training (Apffel-Marglin 2011; Augustine 1997; Smith 2012). Some wonder whether knowledges indigenous to one locale have any usefulness outside of that limited sphere (Ellen *et. al.* 2000:17). These concerns suggest that Indigenous knowledges deserve closer study and better analysis. Anthropological and Indigenous scholars are addressing these concerns by codifying the tenets of Indigenous knowledge (e.g., Berkes 2012; Cajete 2000; Sefa Die *et. al.* 2000; Smith 2012; Smith & Wobst 2005). They are also demonstrating that, in many cases, scientific knowledges can be expanded and improved through articulations with the perspectives and substance of Indigenous knowledges.

## International Perspectives

In the post-colonial era, traditional knowledges are providing more than just explanations for past practices; they are informing many of the new protocols and agreements designed to govern the protection of Indigenous natural resources, cultural knowledge, and intellectual property. Not surprisingly, the new level of respect afforded to traditional knowledges roughly parallels the increase in collaborative Indigenous archaeologies. The protection of Indigenous rights (including guaranteed access to traditional landscapes and more conscientious cultural resource management) is now a crucial area of concern in international environmental law (Ellen *et. al.* 2000; Menzies 2006; von Lewinski 2004). Concepts of intellectual property have been extended to include oral traditions, folklore, ecological knowledge, Indigenous languages, and traditional names.

In diverse locales (e.g., forest management in India, rubber production in South America, controlled fires in the Phillipines), state officials are now relying upon Indigenous peoples to use traditional knowledges to identify and prevent future environmental threats (Ellen *et. al.* 2000). In Latin America, many Indigenous peoples are exerting local knowledges as a means of reinterpreting the past and reclaiming control of ancient landscapes. In Amazonia, Bolivia, Colombia, Mesoamerica, and elsewhere, marginalized communities are collaborating with archaeologists to re-assert their identities and reframe problematic state representations of their past (Gnecco & Ayala 2011). This suggests the need for a wholesale decolonizing of knowledge, while rethinking our relationships with natural phenomena (Gnecco & Ayala 2011:34).

Efforts in some regions have been more collaborative than others. In Canada, mainstream scientists have reached out to Aboriginal knowledge-keepers and First Nations tribal leaders to develop joint strategies to address climate change, habitat loss, and other damages caused by unchecked resource extraction and modern development. Both Indigenous and non-Indigenous communities stand to benefit from efforts that encourage sustainable use of local resources. In the Aboriginal Provinces of *Nunavut* and *Nunatsiavut*, for example, governmental agencies such as the Renewable Resources Division strive to develop policies that deliberately integrate Indigenous and scientific approaches to site preservation and wildlife conservation. Traditional landscapes are recognized as potentially fragile ecosystems, but they are also seen as living homelands for Aboriginal people who can be trusted to continue their traditional lifeways (including seasonal harvests and hunting) in a responsible manner that considers the health of future generations.

In recent decades, as a direct result of increased political engagement with Indigenous communities around the world, states and institutions have devised protocols to mediate relations among Indigenous peoples and scientists. The 1991 World Archaeological Congress code of ethics, for example, unambiguously acknowledges Indigenous peoples as the originators and owners of their traditional knowledges and cultural heritage (World Archaeological Congress 1991). The United Nations' *Declaration on the Rights of Indigenous Peoples*, adopted by the General Assembly on September 13, 2007, recognizes Indigenous ownership and validates traditional practices as contributors to "sustainable and equitable development and proper management of the environment" (United Nations 2008). Articles 11 and 31 identify these rights as follows:

*Article 11.*

1. Indigenous peoples have the right to practice and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies...

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*Article 31.*

1. Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.

The Declaration also indicates that states are expected to provide restitution in instances where traditional culture and cultural manifestations have been taken without consent.



Fig. 3. Peter Jemison (Seneca), tribal Faithkeeper and member of the Haudenosaunee Standing Committee on Burial Rules and Regulations, rolling up a modern version of the traditional two-row wampum belt. Photograph by Margaret Bruchac.

In Oceania and in the Americas, tribal leaders and tradition-bearers are reaching out to non-Indigenous peoples (including the scientific community and state agents), offering to share traditional knowledges to ensure mutual survival (see examples in Atalay 2012; Nicholas 2010; Smith 2012; Smith & Wobst 2005). As one such example, the *Haudenosaunee* (also known as the Six Nations Iroquois, a tribal confederacy in the northeastern United States and Canada) are re-awakening the agreement known as the "Two-Row Wampum." This diplomatic tradition invites two disparate

cultures to co-exist, side by side, without undue interference with one another. This ideal parallels some of the current efforts to integrate scientific and Indigenous knowledge. Caution is still needed, however, since archaeological applications of Indigenous knowledge (when used to locate sensitive areas, identify material culture, or map future developments) should be conducted in ways that protect the security of traditional landscapes and lifeways and avoid further damage to the Indigenous.

## Future Directions

Archaeologists have much to gain from recognizing the data and philosophies preserved within Indigenous traditional knowledge. Oral traditions can preserve records of ancient landscapes, and traditional ecological knowledges can explain human interactions with those landscapes. Wisdom gained in one locale may be used to interpret a related locale, or to articulate linkages among past, present, and future generations. Indigenous ways of knowing are not, however, static fossils or reinvented memories. Despite the damage (and, in some cases, outright destruction) caused to Indigenous ecosystems and cultures by European colonization, many traditional practices have persisted with a surprising degree of coherence (e.g., Apffel-Marglin 2011; Augustine 1997; Smith 2012). A considerable volume of data has been retained within Indigenous languages and philosophies.

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Indigenous peoples have also devised modern applications for traditional knowledge in the wake of colonization, by utilizing new resources (including manufactured and recycled materials) to produce traditional tools and crafts. Indigenous knowledges that emphasize experiential awareness can be helpful in multiple settings, since they readily allow for the incorporation of new data in response to new environments.

Indigenous people are increasingly being recognized, not just as cultural informants or site monitors, but as intellectual partners in the archaeological enterprise. Dozens of Indigenous people have become professional archaeologists (some of their work can be glimpsed in Nicholas 2010; Schmidt 2009; Smith & Wobst 2005). Their collective insistence upon collaboration, consultation, and respect for cultural tradition (reinforced by new legal protocols) has altered the routine practice of archaeology among the Indigenous, and promises to inspire better understandings (e.g., Atalay 2012; Gnecco & Ayala 2011; Nicholas 2010; Schmidt 2009). The insights that emerge from these collaborations will continue to inform, expand, and complicate scientific understandings of the Indigenous past and present.

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