

Essay

# Indigenous Science, Climate Change, and Indigenous Community Building: A Framework of Foundational Perspectives for Indigenous Community Resilience and Revitalization

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**Abstract:** This essay presents an overview of foundational considerations and perceptions which collectively form a framework for thinking about Indigenous community building in relationship to the tasks of addressing the real challenges, social issues, and consequences of climate change. The ideas shared are based on a keynote address given by the author at the International Conference on Climate Change, Indigenous Resilience and Local Knowledge Systems: Cross-time and Cross-boundary Perspectives held at the National Taiwan University on 13–14 December 2019. The primary audience for this essay is Indigenous Peoples and allies of Indigenous Peoples who are actively involved in climate change studies, sustainable community building, and education. As such, it presents the author’s personal view of key orientations for shifting current paradigms by introducing an Indigenized conceptual framework of community building which can move Indigenous communities toward revitalization and renewal through strategically implementing culturally responsive Indigenous science education, engaging sustainable economics and sustainability studies. As an Indigenous scholar who has maintained an insider perspective and has worked extensively with community members around issues of culturally responsive science education, the author challenges all concerned to take Indigenous science seriously as an ancient body of applied knowledge for sustaining communities and ensuring survival over time and through generations. The author also challenges readers to initiate new thinking about how to use Indigenous science, community building, and education as a tool and a body of knowledge which may be integrated with appropriate forms of Western science in new and creative ways that serve to sustain and ensure survival rather than perpetuate unexamined Western business paradigms of community development.

**Keywords:** Indigenous science; climate change; Indigenous community; self-determination; sustainability; Indigenous peoples; traditional ecological knowledge; social and environmental justice

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## 1. Introduction

In many Indigenous communities, efforts are underway to find sustainable and culturally responsive community-based models that help to strengthen Indigenous communities and do not perpetuate their long-standing social or cultural issues. Over the last three decades, various Native initiatives in the United States have evolved which attempt to rebuild Indigenous nations from the inside out. Their intent is to build infrastructures that serve a broader spectrum of the community, explore local resources and solutions, advocate for local rather than governmental control of community development, and most importantly evolve from the cultural and practical knowledge foundations of the communities themselves. These efforts represent an indigenized approach to applying sustainable

environmental education for community resilience and revitalization. This kind of process-oriented strategy for community education and action can form a contemporary context for the application, creative expression, and evolution of Indigenous science.

This essay explores strands of thought and previous writing of the author leading to the articulation of a general framework for contemporary Indigenous community building. It begins with the philosophy of Indigenous science, followed by the challenges of climate change, and issues with Western models of development. These strands set a context for understanding why learning about community is important, the importance of creating relevant community building models, and the need for a new generation of Indigenous studies that prioritizes sustaining healthy Indigenous community.

## 2. The Principles of Indigenous Science

First it is important to understand what is meant by “Indigenous science” and why Indigenous science is important to consider as a cornerstone for creating an authentic Indigenous approach to the contemporary and future building of Indigenous communities. The development of knowledge through Indigenous science is guided by spirituality, ethical relationship, mutualism, reciprocity, respect, restraint, a focus on harmony, and acknowledgment of interdependence. This knowledge is integrated with reference to a particular people and “place” toward the goal of sustainability and perpetuation of culturally distinct ways of life through generations. Indigenous science perceives from a holistic, “high context,” and relational worldview that includes all relational connections in interdependent dynamic balance in its essential considerations and activity. In contrast, Western science perceives from a “low-context” view, reducing context to a minimum with a focus on material objectivity, either-or logic, and reproducibility [1,2].

### *Indigenous Science*

A working definition of “Indigenous science” is “that body of traditional environmental and cultural knowledge unique to a group of people which has served to sustain that people through generations of living within a distinct bioregion”. All of this is founded on a body of practical environmental knowledge which is learned and transferred through generations of a people through a form of environmental and cultural education unique to them. Indigenous science is really Indigenous knowledge and may also be termed “traditional ecological knowledge” (TEK) since a large proportion of this knowledge served to sustain Indigenous communities and ensure their survivability within in the environmental contexts in which Indigenous communities were situated [3].

Indigenous science may also be defined as a “multi-contextual” system of thought, action, and orientation applied by an Indigenous people through which they interpret how nature works in “their place.” Indigenous knowledge may be defined as a “high-context” body of knowledge built up over generations by culturally distinct people living in close contact with a “place”, its plants, animals, waters, mountains, deserts, plains, etc. Indigenous science is learned through oral transmission; based on observation over generations; relies on cyclic time orientation; applies quantification at a macro level; incorporates a specific cultural/literary style and represents ideas through symbolism; focuses on knowledge that is contextually specific to tribal culture and place; and knowledge that is conserved through time and generations through oral and visual traditions.

There are four challenges to doing sustainable education. These are: (1) creating better, more integrated science and accounting tools to measure biophysical wealth; (2) getting people involved; (3) transforming societal value systems through “empathic education”; and (4) improving knowledge transfer around sustainability [4]. Tied to these challenges is addressing associated issues revolving around human health, social justice, equity, economic development, ethics, and governance. The context of relationship in which this occurs must bring about the balanced and ethical interaction of three interacting contexts of relationship between individuals, community, and the environment. In these understandings and relationships, the aim must be to maintain cultural diversity, protect

human health, create sustainable economic relationships, reconcile social issues non-violently, and most essentially protect the environmental life support system.

Culturally responsive sustainability education for Indigenous peoples also requires the inclusion of Indigenous knowledge on an equal par with modern Western science. This is a relatively new and radical idea for Western science and education which has been met with much debate. Proponents of inclusion of Indigenous science argue that all cultures have developed a form of science which is important to the overall diversity of human knowledge related to the biosphere. However, for some, only Western science is “true science” and all other forms of knowledge must be subordinate. Despite such attitudes, teaching for sustainability provides a context for the inclusion of Indigenous science in all aspects of science education [5]. Indigenous science in its expression as traditional ecological knowledge (TEK) integrated with appropriate insights and models from the evolving field of “sustainability” provides possibilities for creative models for Indigenous communities to sustain themselves and their cultural ways of life in the 21st century and beyond.

### 3. Indigenous Peoples and Climate Change

Indigenous Peoples are close to the land and many still depend on it for their livelihood. Many still abide by a historical relationship to places based on their tribal relational worldview. Today, Indigenous Peoples find themselves increasingly vulnerable to the negative impacts of climate change. Meeting for the past thirty years in the context of many associated conferences and forums, Indigenous people have been discussing and documenting climate change and its impact on them. Using traditional ecological knowledge and their experience, they have been describing the same drastic shifts scientist now recognize as occurring. The scale of change presents severe challenges for tribal culture and well-being.

Throughout North America, climate change has already drastically impacted Indigenous Peoples. As the crisis of climate change unfolds, Indigenous Peoples are being affected in pronounced ways. Coastal tribes are impacted by sea rise to the extent that some villages may have to be relocated. Climate change significantly affects cultural ways of life and place-based rights of many Indigenous tribes. Species and treaty boundaries are directly affected because they are based on place. There is loss of traditional knowledge due to the loss of key plants, animals, and the cultural contexts that formed the traditional foundation of relationship tribes once had with these entities.

These impacts can also include food and water insecurity in the face of crop failure due to drought, flood, insect infestations, or disease. They can include loss of fisheries or plants and animals that Indigenous Peoples have traditionally depended on due to habitat loss or human migration. They can include new health hazards such new virus strains (COVID-19, Ebola, SARS, HIV, etc.), antibiotic-resistant bacteria, and other harmful microbial agents due to loss of natural diversity and the continued encroachment of humans into natural environments. In some cases, this has precipitated the forced migration of Indigenous Peoples into urban settings many times leading to poverty and homelessness.

“[Many] small communities are suffering particular hardships, and indigenous cultures, traditions, and languages are facing major challenges to their existence [6].”

Historically, Indigenous Peoples have survived epidemics, extreme weather events, droughts, floods, wars, colonization, displacement, and religious conversion. In the face of these challenges, Indigenous Peoples remained highly adaptive and resilient. In addition, Indigenous Peoples share an ethic of mutual-reciprocal relationship and responsibility toward one another and the natural world. Therefore, plants, animals, and the natural world are not viewed as resources but as valued relatives that have the right to exist and be cared for responsibly [7]. It is these orientations that can provide a foundation for creating different kinds of educational, leadership, and social-economic activities that strengthen community while simultaneously mitigating the challenges of climate change for all.

#### 4. Indigenous Communities and Western Economic Development

The term “economic development” connotes new language for old practices in the minds of many Indigenous Peoples. Paradoxically, the modern social concept of development and the value structure that goes with it both attract and exploit Indigenous people and communities. That is, Indigenous people are made to feel that they need development through the good graces of external agents to exist in modern society. This is a self-serving view on the part of governments and corporations, and it largely negates the possibilities for “creative” development initiatives that may emerge from within Indigenous cultures themselves. Nonetheless, many Indigenous people are enticed into thinking that the only way to progress is to adopt colonial ways to solve community problems [8].

Yet, when some Indigenous communities examine government or private sector economic development programs, they find little relevance to their real lives and community practices. They are suspicious of more external control and further disruption of their cultural or community life. They suspect that profit or benefit of these initiatives will flow to others outside the community. This is often exactly what happens [9]. Many community members become frustrated, apathetic, dependent on external agents, and resigned to surviving from day to day. All of this disempowers real community renewal and serves to perpetuate community apathy and various social ills such as poverty, alcoholism, domestic violence, drug abuse, and exodus of many members from a community in search of a better life and livelihood [10].

Some Indigenous communities may apply conventional models of Western economic development out of sheer necessity to serve pressing needs of their community members. But they often face challenges which prevent them from utilizing these models to their full potential. These challenges can include the lack of the necessary administrative infrastructure, lack of skilled or adequately educated people to perform needed work, inadequate startup capital, political instability, and general absence of basic regulatory codes or jurisdictions. Often, when Indigenous communities and their economic development efforts are viewed by governmental or private funding agencies, they are viewed as poor or marginal risks at best and always in need of external co-signers or capital [11]. This scenario plays out in many contexts throughout the Indigenous world and reflects another legacy of colonization and the continued political, cultural, and economic disenfranchisement experienced by Indigenous communities.

For example, in the United States, even after years of heavy investment by government and private sector agents, American Indian communities remain the least economically developed of the population. This continued lack of economic development is many times the result of policies and approaches that have been applied based on conventional Western economic development approaches. At other times it is the result of poor governmental leadership or the absence of practical “self-rule”. In addition, approaches such as the “entrepreneurial” model or “Chamber of Commerce” promotional models have had limited success and have not been sustainable in many Indigenous communities because they are predicated on largely unexamined assumptions of Western development and capital investment which have limited applicability in Indigenous communities [11].

This is not to say that there have not been successful applications of these models and other models in Indigenous communities. But on closer examination one sees that these successes are largely the result of close collaboration with and authentic involvement of Indigenous communities in respectful ways by all external agents involved. It is through such a spirit of authentic collaboration that an atmosphere of mutual trust evolves to form a foundation for the empowerment and efficacy of sustainable Indigenous community building.

However, the view of some Indigenous community leaders, that Western notions of development and its paradigm of “progress” with little regard for social, cultural, and ecological consequences is an extension of colonialism, has been gaining momentum. As is the view that the Western economic paradigm and its focus on material economic indicators as the sole measure of development perpetuates a distorted and dysfunctional vision of what is in fact a dynamic multi-dimensional, multi-contextual social, cultural, and spiritual process for Indigenous communities [11]. As a result of such views of

negative manifestations of the application of Western economic development models, many Indigenous peoples have begun to actively search for alternatives and new paradigms of “development” which are sustainable and more in-line with their cultural and spiritual ethos [8].

### 5. Creatively and Effectively Addressing the Sustaining of Indigenous Communities

In the context of climate change, Indigenous leaders are realizing that addressing basic sustainability factors, such as ensuring freshwater supplies, secure food supplies, and mediating impact on key plant and animal species, also requires attention to our practiced forms of community. It requires our re-forming of traditional eco-knowledge and the exercise of our sovereignty at every level. It requires that we plan locally and cooperate with other communities or tribes as well as educational agencies, NGOs, and governmental agencies. It requires that Indigenous Peoples create, as they once did, unique solutions to issues of physical and communal survival. Given these propensities, it is important to consider the following strategic orientations for how Indigenous science, traditional environmental knowledge, and communal ingenuity may be engaged toward the development of sustainable Indigenous education and community building at the community level.

The use of traditional ecological knowledge in a balanced relationship with other forms of knowledge to address the challenges of climate change is an essential activity. In an Indigenous context, traditional knowledge is handed down through generations, based on stories and experiences of a People through time. Empirical knowledge is gained through careful observation and practice over time. Revealed knowledge is personal and collective insights gained through vision, ritual, and ceremony. Contemporary knowledge is gained through experience, problem-solving, and applying contemporary knowledge to sustaining people and community. This form of knowledge includes contemporary forms of education including science and other skills learned in a contemporary setting. In reality all three of these forms of knowledge are needed in addressing the challenges of climate change and community building.

Today, there is a compelling need for communal action and simultaneously a lack of the communal cohesiveness necessary to address climate change issues. People today are searching for meaning. Many lack a sense of the communal good. Collectively, we struggle without recognizing the need for communal virtue and ethical action. A healthy society can only come from healthy communities comprised of self-determining individuals acting and taking responsibility for their actions for all [8]. This is the essence of the traditional Indigenous view of community. And it is this compelling need for communal action that must be energized to address the challenges of global climate change in both Indigenous and non-Indigenous communities. Community is a socially learned perception. Humans are social beings. We learn to be in community through participating and learning in community. Indeed, this process of communal renewal and action has begun to take hold among many Indigenous and non-Indigenous people worldwide.

Dee Hock, in his book, *Birth of the Chaordic Age*, states, “the essence of community, its very heart and soul, is the non-monetary exchange of value: things we do and share because we care for others, and for the good of the place . . . It arises from a deep, intuitive, often subconscious understanding that self-interest is inseparably connected with community interest” [12].

Creating Community is an essential ongoing task that requires work and constant attention but provides us with invaluable benefits. Community provides us with a perception of belonging and supports a sense of identity. It places our identity in context. It requires participation and commitment. It requires support of individuals and in turn supports individuals. Community creates a synergy through which it attains coherence, which is to say when you are in community, you feel it in a tangible way [13]. Practiced forms of traditional community and culture have been an integral factor in enhancing the resilience of Indigenous communities through time. Yet, Indigenous communities have also been impacted by historical trauma, social change, and economic and political upheaval. Indigenous communities are an integral foundation of Indigenous life, yet they are significantly vulnerable in confronting modern forces of change. Therefore, creating community in conscious and

healthy ways must be both a practice and foundational strategy as Indigenous communities fully express their innate communality to address the challenges of climate change.

Healthy community processes reflect and reinforce ethical values which serve to preserve community cohesion and sustainable use of natural resources. Healthy community gives us a sense of purpose. In its requirements for a collective agreement on core values, participation, communication, commitment, collaboration, and trust it connects us to our humanity. To function in a healthy way requires our conscious choice, our participation in a shared responsibility, an acceptance of healthy community norms and accountability. It requires us to respect one another, to have accountability to one another, and to practice reciprocity, transparency, and efficacy. In addressing these requirements, we learn and internalize what it is to be in healthy relationship. By being in a healthy community our innate sense of human communality is awakened and guided in positive ways. Indeed, from this perspective, community is the medium and the message [13].

## 6. Creating a New Paradigm of Indigenous Community Development

Environmental scientists, policy makers, and community developers create and apply theories to the ever-evolving complex situations of a rapidly degrading global environment. Environmental educators create curricula to bring about both an awareness and deeper understanding of chronic ecological issues. New models are constantly being debated and alternatives applied to address specific environmental situations. Yet, most of this work continues to be done and viewed from the “old” paradigms of Western science and policy development. Success and impact of these models continue to be tied to traditional and mono-dimensional economic references such as numbers of people trained or graduated, goods and services delivered, loans or profits made, etc. While these are quantifiable indicators of impact or relative success, it must be remembered that they are but one kind of indicator. Deeper level indicators which reflect the broader dimensions of change or impact are rarely researched and when they are, they are rarely taken seriously. The so-called business “bottom line” psychology continues to predominate as what is most valued in measuring relative success of a development initiative, even as community and environmental issues continue and even worsen. This is the case in many Indigenous communities that attempt to apply Western concepts of development to their unique community development issues. In general, we know more about the issues than ever before yet continue with the old paradigm of thinking and actions, seemingly helpless as we continue to speed ahead to ecological disaster. A deeper and more conscious education about sustainability and the development of a new consciousness therein are key to making the necessary changes for our collective survival.

However, to measure long term “sustainability” of a model or initiative, the net must be cast much broader to be inclusive of the more holistic and less easily quantifiable context of a natural community inclusive of humans. Historically, the traditional Indigenous paradigm of “development” began with gauging the sustainability of an initiative or application of a body of knowledge in reference to how well it helped an Indigenous community “survive” through time and in a place. Indeed, Indigenous communities have the historical, philosophical, and even spiritual foundations from which they may build new and sustainable models for community renewal and revitalization. Many have the cultural and historical foundations to operationalize new sustainable paradigms if they build upon their own creative sense of what it takes to be sustainable and to survive [8].

The movement on the part of some Indigenous leaders and scholars to Indigenize foundational aspects of Indigenous development in ways that are more closely aligned with Indigenous world views is itself a very practical creative strategy to address very real issues of sustainability. In addition, this movement toward “indigenization” is tied to an evolving and increasingly holistic and comprehensive approach to building Indigenous nations. Recognizing the role of local Indigenous knowledge and creating infrastructures from the inside out based on inherent strengths with an eye toward “sustainability” are some of the key tenets of this movement toward indigenization. Indigenous people are learning, creating, and evolving in their development of models for sustainability. Much of these

processes are occurring outside the confines of Western academe, institutions, government agencies, and NGOs. They are being engaged in by and through the communities themselves as emergent and organic creative actions directly addressed at the issues and needs of the communities in real time.

This community-based creative process might be summarized as follows: gaining firsthand knowledge of community needs through “problem-based action research”, developing a comprehensive understanding of the history and “ecology” of a community economy, implementing strategies for regaining control of local economies, creating models based on lessons learned and the application of research of practices that work, and cultivating networks for mutual support and action. This reflects authentic empowerment of communities from grassroots activity within the communities themselves. This also implies the need for a community education process that is initiated by the community in partnership with external expertise to produce solutions.

This new movement and new thinking regarding Indigenous development is in direct contrast with the standard approaches of the past which mimic the Western mono-dimensional model of development. Indeed, the underlying assumptions, aims, and effect of the Western model must be questioned in terms of their ultimate sustainability. It is through the application of the lens of their own histories of sustainability that Indigenous people are coming to realize the wisdom and consequences of applying the Western model of development to their circumstances. It is also the application of the conceptual framework of sustainability that gives the greatest opportunity to the application and even evolution of Indigenous science as a living and evolving base of knowledge upon which Indigenous communities might rely.

In using “sustainability” from perspectives that originate from within Indigenous communities as a guiding paradigm for building Indigenous nations, the underlying assumptions and mono-dimensionality of the standard Western development model becomes apparent. Upon close examination, the limitations of the prevailing Western development paradigm in helping Indigenous communities realize their goals of empowerment, renewal, and revitalization are also apparent.

## **7. Creating Community Education That Anticipates Change**

The creation of community-based curricula that are transformative and anticipate change and innovation must be viewed as an essential activity in the development of a contemporary and sustainable orientation to Indigenous education. Indigenous science curricula development presents the opportunity to integrate principles of sustainability along with appropriate traditional environmental knowledge. In this way, Indigenous science forms a foundation for community renewal and revitalization. In engaging the development of curriculum in this way, Indigenous science also evolves and expands in scope. Indeed, Indigenous science has always reflected this ability to integrate, expand, and create new knowledge. As community members and allies learn, strategize, plan, and act together in relationship to addressing real and pressing issues, they create a learning community that can weave and integrate traditional knowledge with practical skills and contemporary knowledge in ways that are creative, effective, and lead to new insight and community knowledge. The following are guiding considerations which can help to initiate and eventually achieve these aims.

### *7.1. Building New Curricula Models*

The creative process involved with the development of such new curricula is best achieved through the adaptation of metaphors and symbols that have meaning within Indigenous contexts. For example, in an American Indian context the Medicine Wheel, Corn, or Tree of Life symbolism have deep metaphorical meanings that frame essential goals and visions of Indigenous education and sustainability. As community members and educators work to unpack the meaning of such cultural metaphors, they actively begin to engage their cultural history, their epistemology, and discuss how to address issues related to community sustainability. Much of this work is already underway among some Indigenous educators as they work with Indigenous communities and students around place-, land-, and project-based curriculum models.

### *7.2. Building Sustainable Native Nations*

In the movement toward building sustainable Native nations it is important to emphasize renewing and revitalizing Indigenous communities and economics which are sustainable in the “lived” reality of the community. This means that the work being done must make sense to community members and have direct and practical application to their everyday life. This consideration is enacted through engaging the enterprise of appropriate and relevant education at every level around the project of sustaining Indigenous communities and cultures. Building Native nations is most sustainable when initiatives emerge from Indigenous communities themselves.

### *7.3. Creating a Framework for Introducing Sustainable Indigenous Knowledge*

The broader conceptual framework of “sustainable” development forms a hospitable context for the introduction of principles of Indigenous science into community education, planning, development, and policy. Within this framework, traditional environmental knowledge (TEK) can provide models and creative insights necessary to renew and revitalize Native communities. However, this requires vision, commitment, research, and sustained effort on the part of community members and allies to consciously create a long-term plan for community renewal.

### *7.4. A New Generation of Indigenous Studies*

The development of a sustainable emphasis in building Native nations will also require the development of a new kind of Indigenous studies that moves beyond the constraints of Western academe and its various institutional expressions and hegemonies. Such studies should be predicated on involving students in the exploration of the practical application of the vision of creating renewed and revitalized, sustainable, and economically viable Indigenous communities related to the lived realities of Indigenous Peoples and relating their stories through their voice and forms of communication.

As a community-based rather than institution-based activity, Indigenous studies can help us find balance and orientation as we move forward. On the one hand, it can feed our steps of renewal and revitalization with Indigenous knowledge and science. Furthermore, it can train us in the practice of critical thinking and self-awareness. With these skills, we can adjust our course and keep moving in directions true to our Indigenous values, ways, knowledge, and goals.

In this re-envisioning of Indigenous studies, we as Indigenous people must take a hard, honest look at our current economic and community development policies, planning, and process, which may at times make us “complicit” with our own continued exploitation and less resilient in the face of the challenges of climate change and globalization.

Dependency, silence, and conformity to modern notions of social development simply perpetuate colonization in ever-recycling forms, both subtle and overt. As Indigenous people we are continually required to make ourselves understood in dominant society. This is particularly the case in business, government, and higher education and its various expressions in academia. When we Indigenous people must struggle to make ourselves understood—to try to explain and justify what we think, why we think what we do, and why we do what we do—we inadvertently become complicit with the system that dominates us. We get caught up in a never-ending cycle that takes attention and energy away from the more essential questions and tasks of preserving or rebuilding Indigenous societies.

There is a dynamic to this lack of awareness by those in the colonizer/dominating role. They fail to recognize that dominating is what they are doing. Not having been on the receiving end, they often fail to recognize this learned pattern in their behavior and policies. So, the various expressions of this inherent and unacknowledged bias continue to impact open and creative communication. It will take critical awareness on all sides to break the pattern and disrupt its self-perpetuation.

## 8. Strategic Considerations for Sustainable Indigenous Community Building

Making sure that we have orientations that align with the visions that we have and what we want to accomplish is essential as we plan for change and challenge. To this end, I offer the following considerations for building a community of educational and sustainable practice that provides firm foundations for teaching, learning, and acting in community toward engendering resilience and sustainability of Indigenous communities now and in the future. They are simple precepts, but in their implications and implementation form they can be profoundly effective.

### 8.1. Be Clear about Your Resources and Premise

People, community, culture, and land are foundational resources of Indigenous community building. It begins with Ecological Integrity. Start from the premise that what you do has integrity and honors “life-giving” relationship. A Sustainable Orientation must be the guiding ethic throughout the process. In other words, take the time necessary to consciously build in a process which sustains community, culture, and place. A Vision and Sense of Purpose must guide activities. This means envisioning that is done with an intimate relationship to revitalization and renewal of community. Apply the Indigenous precept of thinking and acting with a vision of seven generations and beyond.

### 8.2. Community Building Has a Spiritual Purpose

In Indigenous thought, communal action is integrated with spiritual purpose. Human life and Indigenous communal life stem from spiritual agency. Therefore, integration of the cultural interpretations of the guiding spirit of an activity becomes an essential component of Indigenous sustainable development. In an Indigenous context, actions stem from respect for and celebration of the *Spirit of the Land, People, and Community*. There is respect for all in the community and all that defines a community and the land that nourishes the community. This emphasis requires engaging participation of community at all levels through the acknowledgment of spiritual purpose. In this sense, the spirit of community now and in the future is both the medium and beneficiary of community-building activities [8].

### 8.3. Practiced Relationship

The Indigenous worldview is a relational worldview. Building upon and extending relationships are an essential process for development. Restoring and extending the health of the community must remain a key goal. In all this activity, the initiative should generate a dynamic and creative process of problem solving. Community at every stage is about creating a process of revitalizing old relationships and creating new ones that serve the vision and purpose of building a healthier community. Today, being in community cannot be taken for granted. It requires conscious practice which comes through the actual process of building community.

### 8.4. Deep Commitment

There must be sustained commitment for developing the necessary skills to initiate and maintain development activities. In addition, there is need for commitment to community renewal and to mutual reciprocal action and transformative change. Community building is a long-term effort and requires consistent commitment of individuals and the community over time to be successful. Deep commitment of community members to the doing what is necessary to heal and move our communities forward tends to be the single most important factor for success of community projects.

### 8.5. Learning from the Experiences of Other Indigenous People

Collaboration, dialogue, and research with other Indigenous communities about the models or approaches they have used to revitalize or implement sustainable development within their community is an essential activity. Indeed, many times we are our own best resource and advisors when it comes

to community-building activities because such collaboration is grounded in the shared experiences of lived realities that we have shared.

## 9. Conclusions

In conclusion, Indigenous science and community-based sustainability education can be strategically applied to educate for the recreation of cultural economies around an Indigenous paradigm of sustainability. This begins by learning the history of your Indigenous way of sustainability and exploring ways to translate its principles into the present. There must be research into the practical ways to apply these Indigenous principles and knowledge in tandem with what is deemed useful from modern systems of knowledge and practice. Added to this, Indigenous people must revitalize, re-learn, or otherwise maintain their traditional environmental knowledge and add what is appropriate and relevant from other cultural knowledge traditions toward addressing their contemporary needs and the needs of their future generations. This can be accomplished through applying Indigenous communal strengths of resourcefulness, industriousness, collaboration, and cooperation. In addition, we must once again apply our collective and historical ability to integrate differences in our political organizations, forge alliances and confederations, and reintroduce our propensity for trade and exchange. We have ancient systems of extended family, clan, and tribal relationships that we can mobilize in positive ways to implement sustainable changes in our economies. We have developed modern political, social, and professional trade organizations, federations, associations, and societies which we can enlist in addressing the challenges which we now collectively face. In addition, we are evolving Indigenous critical studies, Indigenous theory, research methods, and pedagogy to assist us in these tasks. These are the critical areas of Indigenous education which must continue to be explored and operationalized toward the development and revitalization of Indigenous communities as we face the challenges of surviving the ecological, social, and political challenges of a climate-changed world.

A perennial question lingers in the air; the question is, “What kind of ancestor do you want to be?” This question was first posed by Anishinaabe elder, Michael Dahl in conversation with Winona La Duke, Indigenous activist and author, at her home on the White Earth reservation. This profound question calls us to bring forth ancient wisdom and generational ethics necessary for the survival and well-being of the human community. It also calls into question colonial overconsumption of earth’s resources and domination of people globally that today threatens the viability of the earth’s life-support systems [14]. As Indigenous Peoples, inherently and collectively, I think we know the answer to this question. What we must do now is act on it!

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