

**Learning Communities
As a Tool in Natural Resource Management**

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Knowledge Inclusivity: “Two-Eyed Seeing” for Science for the 21st Century

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Introduction

Among the “big three” federal agencies that fund university research in Canada, both CIHR (Canadian Institutes of Health Research) and SSHRC (Social Sciences and Humanities Research Council) have made focused efforts in recent years to provide research funding opportunities for programs and projects that are inclusive of Indigenous knowledges and methodologies. CIHR created the Institute of Aboriginal Peoples’ Health (IAPH) as one of its 13 institutes; SSHRC engaged in a year plus consultation and dialogue about better ways to include and serve the interests of Canada’s Aboriginal peoples and then created a new Aboriginal program. These are extremely worthy efforts and both CIHR and SSHRC deserve appreciative acknowledgement.

The third of the “big three” agencies, namely NSERC (Natural Sciences and Engineering Research Council), has jurisdiction over research topics that are especially relevant to Aboriginal peoples owing to the central importance of “the land” (environment, nature) in all Indigenous world views and knowledges. In spite of this, NSERC has not provided research funding opportunities for programs or projects that seek to include Indigenous knowledges and methodologies alongside those of the natural sciences. However, at the global level it is acknowledged that a dialogue leading to greater understanding of relationship should occur between Indigenous knowledges and the natural sciences. For example, the 1999 World Conference on Science (UNESCO 2000) issued a call for science in the 21st Century to become engaged in more meaningful ways throughout society, including interactions with Indigenous knowledges. An immediate outcome was the formation of a committee, which has now brought some philosophical understandings forward for the scientific community.

The vast majority of mainstream scientists are unaware of the potential collaboration of the natural sciences with Indigenous knowledges and ways of knowing, i.e. this is unknown and unacknowledged territory. Thus, efforts may easily falter, fail to be conceptualized, or frighten at their mere suggestion. Indeed, Mr. Douglas J. Cardinal (Canada’s internationally renowned architect) has pointed out that the human journey from the domain of the known to the domain of the unknown immediately confronts a barrier of FEAR which frequently is never overcome due to our tendency to remain all too human (Cardinal, in Doyle 2001). Peterson (1999) explores such fear at great length in a book entitled “Maps of Meaning; the architecture of belief” in which he synthesizes understandings gleaned from mythology, psychology, and neuroscience.

This paper offers insights re the “co-learning journey of inclusion” of Indigenous knowledges alongside Western sciences, based on two on-going “learning communities” in Cape Breton, Nova Scotia, both of which involve Mi’kmaq First Nations and university scientists, as well as diverse others. I will first describe the two learning communities and then explain “two-eyed seeing” (i.e. seeing via the strengths of both Indigenous and Western scientific knowledges and ways of knowing) as it has emerged within the first described learning community. “Lessons learned” will be outlined, followed by four “big patterns” useful to bear in mind when navigating the co-learning

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journey. I offer these based on my personal, participatory involvement with the two learning communities and on shared discussions with select others who are similarly involved. I wish to emphasize that the insights are put forward in the spirit of assisting others, especially hoping that they can help reduce the fear barrier that may preclude a journey into the unknown (starting from either of Indigenous or Western scientific knowledges).

Learning Community #1: Integrative Science at Cape Breton University

One learning community has come into existence around an innovative post-secondary science initiative known as “Integrative Science” (<http://msit.capebretonu.ca>) at Cape Breton University (CBU) in Sydney, Nova Scotia. This initiative was conceived in the mid-1990s as an effort to attract more Mi’kmaq First Nations’ students into university level science and science-related programming via new curricula that would provide a welcome space for *Indigenous knowledges and ways of knowing* alongside *mainstream science and the scientific method* in the science classroom and laboratory. Thus, Integrative Science can be defined as the “bringing together of Indigenous and Western scientific knowledges”.

The birth of Integrative Science was accompanied by considerable inquisitional pain both internally at CBU and externally at the Maritime Provinces Higher Education Commission (MPHEC); the latter is a regulatory entity that holds approval jurisdiction re new university programming in the Maritimes. None-the-less, Integrative Science was fully approved by MPHEC in February 2001 as a concentration within CBU’s four year “Bachelor of Science Community Studies” (BScCS) degree. The first students entered in Fall 1999 (as “pilot” prior to approval) and the first graduated in Spring 2003. At the time of the writing of this paper (June 2006), Integrative Science has produced seven direct graduates (BScCS Integrative Science), and four indirect (i.e., from a start in Integrative Science and thence into another science or science-related program): two from a Bachelor of Science Nursing, and two from a Bachelor of Science Biology. In academic year 2005-2006, about 25 Mi’kmaq First Nations students were enrolled in various levels of science or science-related programs at CBU. These numbers are a dramatic contrast with the picture of “no or almost no Aboriginal students” seen in science and science-related programs at CBU prior to Integrative Science. However, the “no or almost no” picture is still the status quo at other universities across Atlantic Canada, as well as universities across the whole of the country. In addition to these Mi’kmaq First Nation science students and science graduates at CBU, many other Mi’kmaq First Nation students who took first year Integrative Science have graduated from other degrees at CBU, especially the Bachelor of Arts.

From its initial birthing in the arena of post-secondary education, CBU’s Integrative Science program has grown to include projects in the arenas of science research and science applications (especially issues related to human and ecosystem health) and science outreach (especially to elementary school children in Mi’kmaq band-operated schools). Funding for various projects has been awarded by CIHR, SSHRC (both through its interdisciplinary committee and via the Canada Research Chairs program), NSERC PromoScience (albeit for science promotion not research), Canadian Foundation for Innovation, Nova Scotia Research Innovation Trust Fund, IWK Health Centre Foundation, Nova Scotia Health Research Foundation, Mounted Police Foundation, and Sable Offshore Energy Inc.

From the outset, the main participants in the overall Integrative Science initiative understood they had embarked upon a “learning journey” although most have come to realize (albeit more

clearly in hindsight) that their journey would be more accurately termed a “co-learning” journey and also that the more articulate explanations have come after felt realizations. Suffice it to say, the mainstream was neither a proponent nor a supporter of the Integrative Science initiative at its outset although interest has significantly both quickened and deepened in the past 2-3 years. The first granting agency funding (among the “big three” federal agencies mentioned in the Introduction) was procured only in Fall 2002, via a Tier 1 Canada Research Chair to the author, funded by SSHRC. The Integrative Science initiative has mainly involved an on-going, small group of dedicated individuals (less than 10) although as the initiative’s efforts have grown, interested and/or dedicated others have participated for varying lengths of time. Mi’kmaq Elder Mr. Albert Marshall of Eskasoni First Nation (in Unama’ki - Cape Breton) has coined the descriptive label “Two-Eyed Seeing” for the co-learning journey that characterizes this initiative, a label that is explained later in this paper.

Learning Community #2: Collaborative Environmental Planning Initiative for the Bras d’Or Lakes Ecosystem in Cape Breton

The second learning community is, in various ways, the opposite of that above. The group involved is larger (generally two to three dozen participants, with many more on occasion) and much more complex (with representation from agencies, organizations, businesses, and departments in both community and government at various levels including First Nation, municipal, provincial, and federal), and the effort has had support and participation from the mainstream from the outset. At the same time, many participants have yet to consider that the planning initiative could be a “learning journey” and declarations of conviction re knowledge and procedure have oft left little room for inclusion of perspectives from the traditional Mi’kmaq world view. This is unfortunate given that the initiative is a collaborative environmental planning initiative (CEPI) for the Bras d’Or Lakes ecosystem in Cape Breton and its lead is, by intent and by design, a First Nations’ organization, namely the Unama’ki Institute of Natural Resources (UINR, which works on behalf of all five Mi’kmaq bands in Cape Breton).

In addition to the above, the CEPI initiative emerges from a complex background; it draws from several well-intentioned efforts in the past plus various engaged parties and projects in the present, both bi-cultural (native and non-native) and not. The Federal Government is a main participant and source of funding, largely through Fisheries and Oceans Canada (“DFO”), and also through Environment Canada and Indian and Northern Affairs Canada. It is important to note that other agencies and entities, plus individuals, have also contributed in meaningful ways.

Mi’kmaq Elder Mr. Albert Marshall of Eskasoni First Nation has suggested the roles seemingly reserved for the Mi’kmaq component in this initiative fall into the categories of “jesters” and “Hollywood Indians”. “Jesters” reflects a tendency for the Mi’kmaq Nation’s traditional knowledge and way of knowing to be relegated to entertainment or ceremony and “Hollywood Indians” reflects a tendency for the script to be provided by outsiders re Mi’kmaq participation in the overall process. Voicing these thoughts has resulted in *some* adjustments and accommodations (opinions differ on extent and meaningfulness).

Finally but importantly, CEPI is not perceived as a “co-learning journey” or as an initiative that attempts “Two-Eyed Seeing”. Even the labeling herein of CEPI as a “learning community” may be inappropriate in that learning is not an acknowledged dimension of the initiative. Its comparison and contrast with Integrative Science and “Two-Eyed Seeing” is extremely informative,

however, much the same way a “control” is within scientific experimentation.

Co-Learning within Integrative Science and Two-Eyed Seeing

As mentioned previously, the expression “Two-Eyed Seeing” was coined by Mi’kmaq Elder Mr. Albert Marshall of Eskasoni First Nation. Two-Eyed Seeing refers to the mindful effort of learning to see from our one eye with the strengths of the Indigenous knowledges and ways of knowing while also learning to see from our other eye with the strengths of the Western (or mainstream, or Eurocentric, or conventional) scientific knowledges and ways of knowing and, furthermore, to mindful efforts towards using them together in our contemporary academic programs and community endeavours. Furthermore, Two-Eyed Seeing needs to be understood as often a “weaving back and forth between” the perspectives represented, namely “Indigenous” and “Western (or, Eurocentric / conventional)”, and not domination or assimilation. Our efforts towards Integrative Science and Two-Eyed Seeing have resulted in numerous “action lessons learned”, some of the more significant of which are outlined below.

Action Lessons Learned within the Co-Learning Journey of Integrative Science and Two-Eyed Seeing

- 1) Acknowledge we need each other.
- 2) Acknowledge we are on a learning journey ... and more: a co-learning journey.
- 3) Learn to co-learn: *employ a simple integrative framework.*
 - Integrative Science is premised on mindfulness, thus use of the word “integrative” (not “integrated”) to reflect four key elements in a *simple integrative framework*:
 - i) the acknowledged role of you and me as creatively capable agents in our knowledges, especially via mindful awareness of *pattern recognition and transformation*),
 - ii) an acknowledgement of and understanding of our common ground,
 - iii) an acknowledgement of and understanding of our differences and a respect for them, and
 - iv) an acknowledgement of our need to walk (work) together in our journeys on Mother Earth.
 - A key understanding with respect to our common ground is that the brains of all creatures with consciousness work on the basis of pattern recognition. And, how we “connect the dots” to create our patterns is influenced by which among our multiple intelligences (using the nine postulated by Gardner 1983, 1993, 1998, 1999, namely: logical-mathematical, linguistic, musical, body-kinesthetic, spatial, inter-personal, intra-personal, naturalist, and existentialist/spiritualist) we employ or privilege (or even acknowledge), as well as the environment in which we are reared and conditioned (e.g. language, culture, ecosystem). In our co-learning journey, we have re-considered Gardner’s named intelligences as “pattern smarts”.
 - A key outcome of the mindful employment of pattern recognition in our co-learning journey is our acknowledgement that both Indigenous and Western knowledges share and differentiate some understandings re “big patterns” in our knowledge efforts with respect to “the land”, environment,

and nature (use of these “big patterns” is emphasized as point #10 later in this list, and four examples are then explained in a separate section). In doing this, we use the broad categories of “Western” and “Indigenous” pragmatically, invoking their extremes as descriptions of our differing perspectives. We also accept these disparate perspectives as strengths that can complement the efficacy of each.

4) Help institutions of higher learning to help us legitimize Traditional Knowledge *in the minds of youth* (and many others).

5) Work with living agendas.

- We have come to realize *the necessity of formal structure permeable to and receptive of new understandings and opportunities*, i.e. understandings associated with “Spirit of the East” (Lane et al. 1985). Thus, for example, we need to be able to shift our view of a printed agenda for a meeting, workshop, or conference into a “living agenda” capable of responding to the energies in the present moment (with its encompassed past and future) rather than a rigidly enforced document incapable of “being and becoming”. In other words, an agenda must be able to respond to the group’s emergent relational consciousness in the moment within an understanding of, for example, health and wisdom as expanding senses of wholeness.

6) Use other organic language.

- We have come to realize that our mindful efforts towards using “Two-Eyed Seeing” in our contemporary projects and community endeavours are fostered by cultivating our understandings in organic language rather than mechanistic language. For example, we find it much more helpful to think of “community capacity growing” than “community capacity building”. Additional examples are represented by #7 and #8 below.

7) Do ... in a creative, grow forward manner.

8) Think “knowledge gardening” more than knowledge translation or knowledge transfer.

9) Navigate our journey by weaving back and forth between our knowledges or world views.

10) Navigate our weaving via awareness of “big patterns” (knowledge orientations or maps) ... with brief explanation of four examples provided below.

11) Make visual our knowledges, our understandings, our stories: use metaphors and pictures.

Four “Big Patterns” from the Co-Learning Journey of Integrative Science and Two-Eyed Seeing

Four “big patterns” that we suggest are extremely important to constantly bear in mind, especially as we attempt to weave back and forth to achieve Two-Eyed Seeing, are briefly explained below. As previously mentioned, we use the broad categories of “Western” and “Indigenous” pragmatically, invoking their extremes as descriptions of our differing perspectives; we also accept these disparate perspectives as strengths that can complement the efficacy of each.

- 1) How Our World Is: We share a desire for our knowledges to have an overarching understanding of “how our world is”, albeit with differences as to the version seen: Indigenous as “interconnected” (or “interconnective”, which Elder Mrs. Murdena Marshall of Eskasoni First Nation suggests as a closer approximation in English for the concept in Mi’kmaq), and Western as “parts and wholes, systems and emergences”.

- 2) Our Overall Knowledge Objectives: We share a desire for our knowledges to have “overall objectives” albeit with differences as to what: Indigenous as “towards resonance of understanding with and within environment” and Western as “towards construction of understanding of environment”.
- 3) Our Language and Methodology: We both identify “key words re our language and methodology” albeit with differences as to what: Indigenous as “vigour and weaving” (life, love, and creative relationship) and Western as “rigour and unweaving” (mathematical language and analytic logic).
- 4) Our Key Concepts and Actions: We both identify “key concepts and actions” for our language and methodology albeit with differences as to what: Indigenous as “respect, relationship, reverence, reciprocity, ritual, repetition, and responsibility” and Western as “hypothesis making and testing, data collection and analysis, and model and theory construction”.

Conclusions

With respect to “knowledge gardening”, we have come to realize that the effectiveness of the diverse steps and phases within our research projects is likely to the uninitiated observer to appear ineffective yet to the inside participant to be actively taking root in individuals and manifesting in the group’s discussions and actions, i.e. to have the essential ingredient re high effectiveness. Possibly, such emic and etic perceptions will be something with which all complex learning communities will need to grapple, and it will be especially challenging when policy and funding reside largely with etic and also when the demands of time that learning or co-learning require are not broadly appreciated or meaningfully enabled.

We have come to realize that one of the more significant “action lessons learned” that we may have to share with others who wish to begin a “Two-Eyed Seeing” journey is that we need to teach ourselves how to do it, i.e. we need to “learn how to co-learn”. Yet, before that, we need to give ourselves permission to attempt to do so and thus to summon both the “generosity of spirit” and “spirit of courage” to acknowledge this and to begin ... such that unrecognized fear does not sabotage our efforts. With this in mind, we hope that NSERC will soon join CIHR and SSHRC in providing for research opportunities for “knowledge inclusivity via Two-Eyed Seeing for science for the 21st Century”.

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