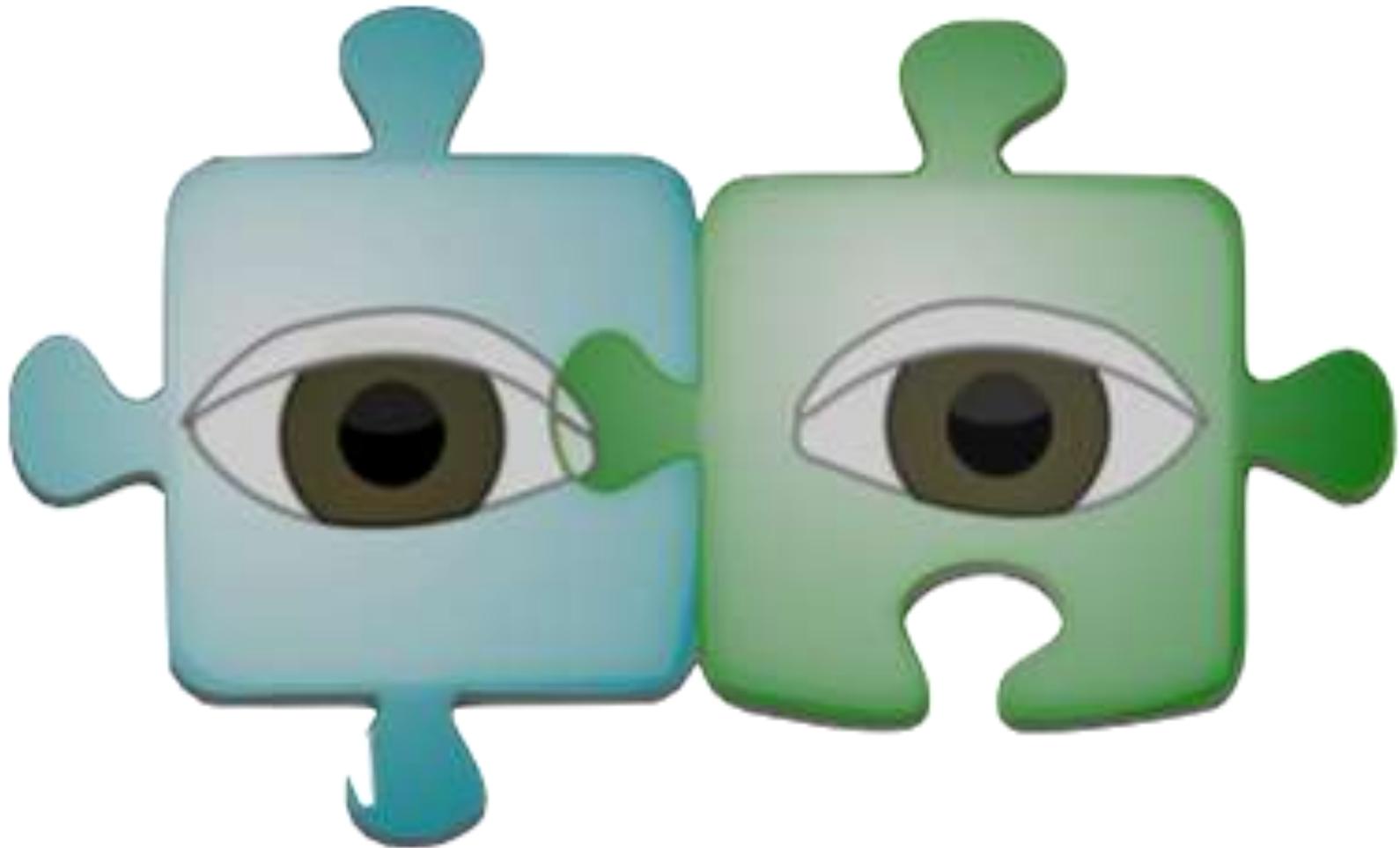


# Two-Eyed Seeing

*an overview of the guiding principle plus some Integrative Science*



# Two-Eyed Seeing

\* *presentation for: Dominique Blanchard, new Assistant Deputy Minister*

Public and Indigenous Affairs and Ministerial Services Branch  
within Environment and Climate Change Canada / Government of Canada  
Dartmouth, NS; 23 August 2017

*presented by:*

**Cheryl Bartlett, CM, PhD**

Professor Emerita

- retired Professor of Biology
- former Tier 1 Canada Research Chair  
in Integrative Science

Cape Breton University

Sydney, NS

Traditional Territory of Mi'kma'ki



\* *adapted mainly from presentation for  
CIHR's Indigenous Peoples' Health Institutes Advisory Board Meeting  
in Edmonton, AB, 19 June 2017 ... with select additions*

# Two-Eyed Seeing

*presentation for: Dominique Blanchard, new Assistant Deputy Minister*

Public and Indigenous Affairs and Ministerial Services Branch  
within Environment and Climate Change Canada / Government of Canada  
Dartmouth, NS; 23 August 2017

*based on work by: "We, Together"*

**Cheryl Bartlett, CM, PhD**

settler / newcomer lineage  
grew up in Blackfoot Territory

**Albert Marshall, Elder, LLD**

**Mi'kmaq Nation**



**Murdena Marshall, Elder, LLD**

**Mi'kmaq Nation**



[www.integrativescience.ca](http://www.integrativescience.ca)



# Two-Eyed Seeing

## Presentation Outline

1. introduction and thanks
2. three core objectives
3. TES: background
  - i) Elder Albert's guiding principle
  - ii) two national documents
  - iii) misuse
  - iv) Heavy Sledge work ... *i'l'oqaptmu'k*
4. TES: four essentials with challenges
  - i) Co-Learning ... *I'l'oqaptmu'k*
  - ii) Knowledge Scrutinization
  - iii) Knowledge Validation
  - iv) Knowledge Gardening
    - examples: CEPI and Integrative Science
5. more from Elders Albert and Murdena
6. conclusion ... followed by additional information



# Two-Eyed Seeing

## Presentation Outline

Whenever and as much as possible, try to teach or present using visuals. Traditionally, we Mi'kmaq were visual thinkers and visual learners ... we need to re-awaken these skills to help us re-connect with our traditional ways, with our natural world.



# Two-Eyed Seeing

with sincere thanks to many



Canada Research  
Chairs

Chaires de recherche  
du Canada



Social Sciences and Humanities  
Research Council of Canada

Conseil de recherches en  
sciences humaines du Canada



Elders, Colleagues,  
CRC Team, Friends,  
Students, Youth



Canada Foundation  
for Innovation

Fondation canadienne  
pour l'innovation



Membertou  
Elementary



**NSERC  
CRSNG**



Mi'kmawcy  
Debert  
CULTURAL CENTRE



Mermaid Theatre  
of Nova Scotia

**CIHR IRSC**  
Canadian Institutes of  
Health Research    Instituts de recherche  
en santé du Canada



Eskasoni First Nation Detachment  
Royal Canadian Mounted Police  
Gendarmerie royale  
du Canada

# Two-Eyed Seeing

and special thanks to TES colleagues



# **Two-Eyed Seeing**

## **and special thanks to TES colleagues**

[from previous page]

### **top row, left to right**

- **Emily Root, Cape Breton University (faculty)**
- **Michelle Hogue, University of Lethbridge (faculty)**
- **Amy Bombay, Dalhousie University (faculty)**
- **Heather Castleden, Queen's University (faculty)**

### **bottom row, left to right**

- **Gillian Austin, Trent University (graduate student)**
- **Debbie Martin, Dalhousie University (faculty)**
- **Ann Fox, Saint Francis Xavier University (faculty)**
- **Margot Latimer, Dalhousie University (faculty)**  
**and IWK Health Science Centre (clinician scientist)**
- **John R Sylliboy, Mount Saint Vincent University (graduate student)**

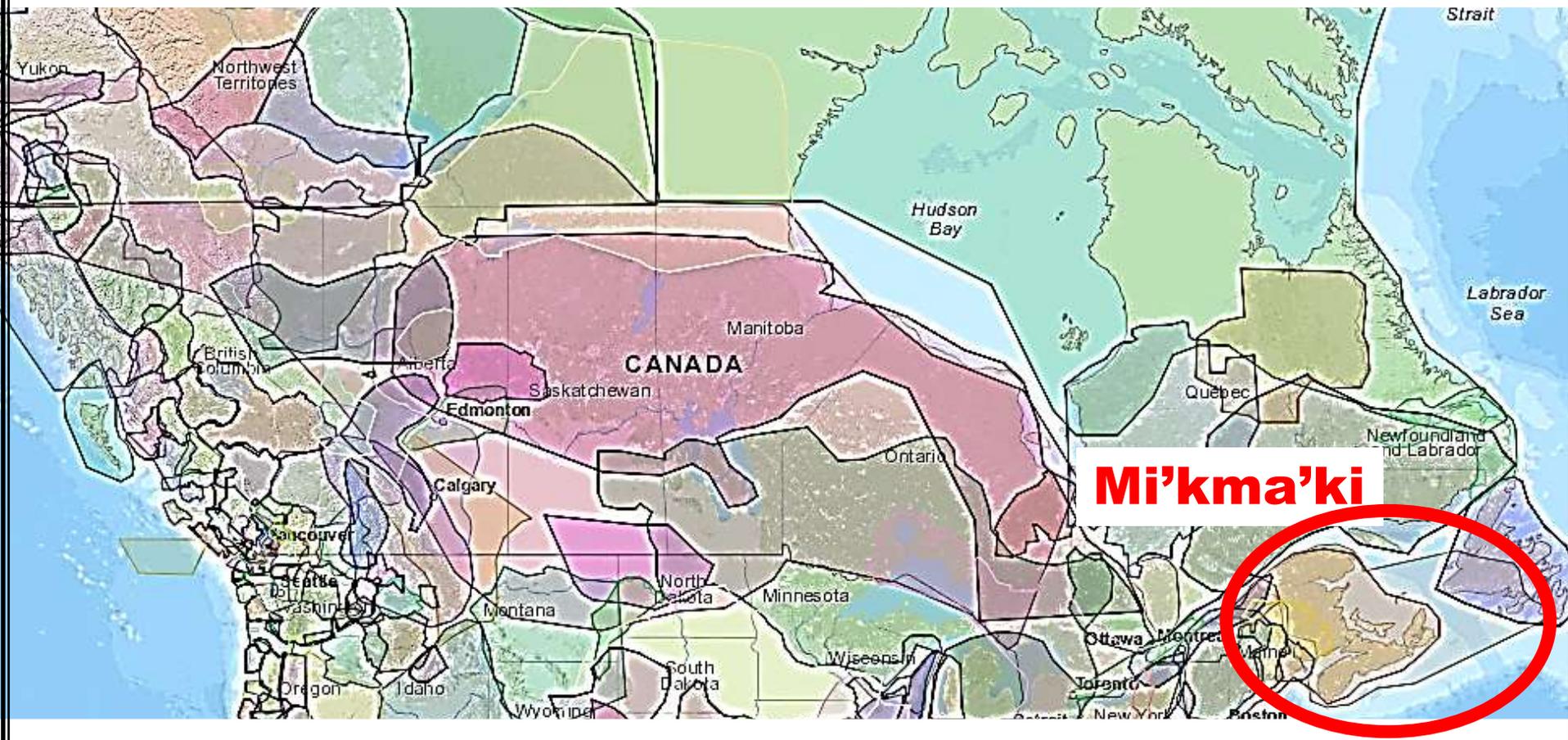
# **Two-Eyed Seeing**

## **Core Objectives (for presentation)**

- 1. Understand that Two-Eyed Seeing is a guiding principle, not a mechanism.**
- 2. Understand that Two-Eyed Seeing requires ongoing co-learning which in turn encompasses at least three additional key essentials ... and all four bring challenges.**
- 3. Know that Two-Eyed Seeing is, unfortunately, being co-opted, trivialized, and/or romanticized by some people and/or organizations ... and understand, therefore, that means need to be deployed to recognize such and (when required) to redress or preclude misleading work that refers to itself as *“Two-Eyed Seeing”*.**

# Two-Eyed Seeing

... starts in Mi'kma'ki over 2 decades ago



**Indigenous Traditional Territories**

*screen capture from <http://native-land.ca/>*

# **Two-Eyed Seeing** *Etuaptmumk*

**a GUIDING PRINCIPLE**  
Core Objective #1

- brought forward by Mi'kmaq Elder Albert Marshall
  - Mi'kmaq = *Etuaptmumk* → “the gift of multiple perspectives”
  - 1990s-2000s for Integrative Science (brief info later)
- subsequently adopted / adapted by other inter- or cross-cultural collaborations wherein the overall effort is towards “the working together” of Indigenous and mainstream knowledges and ways of knowing
  - 2011 ... Dr. Malcolm King, CIHR-IAPH
  - 2017 ... Canada's Fundamental Science Review (Naylor Report)

# Two-Eyed Seeing

## Elder Albert's words:

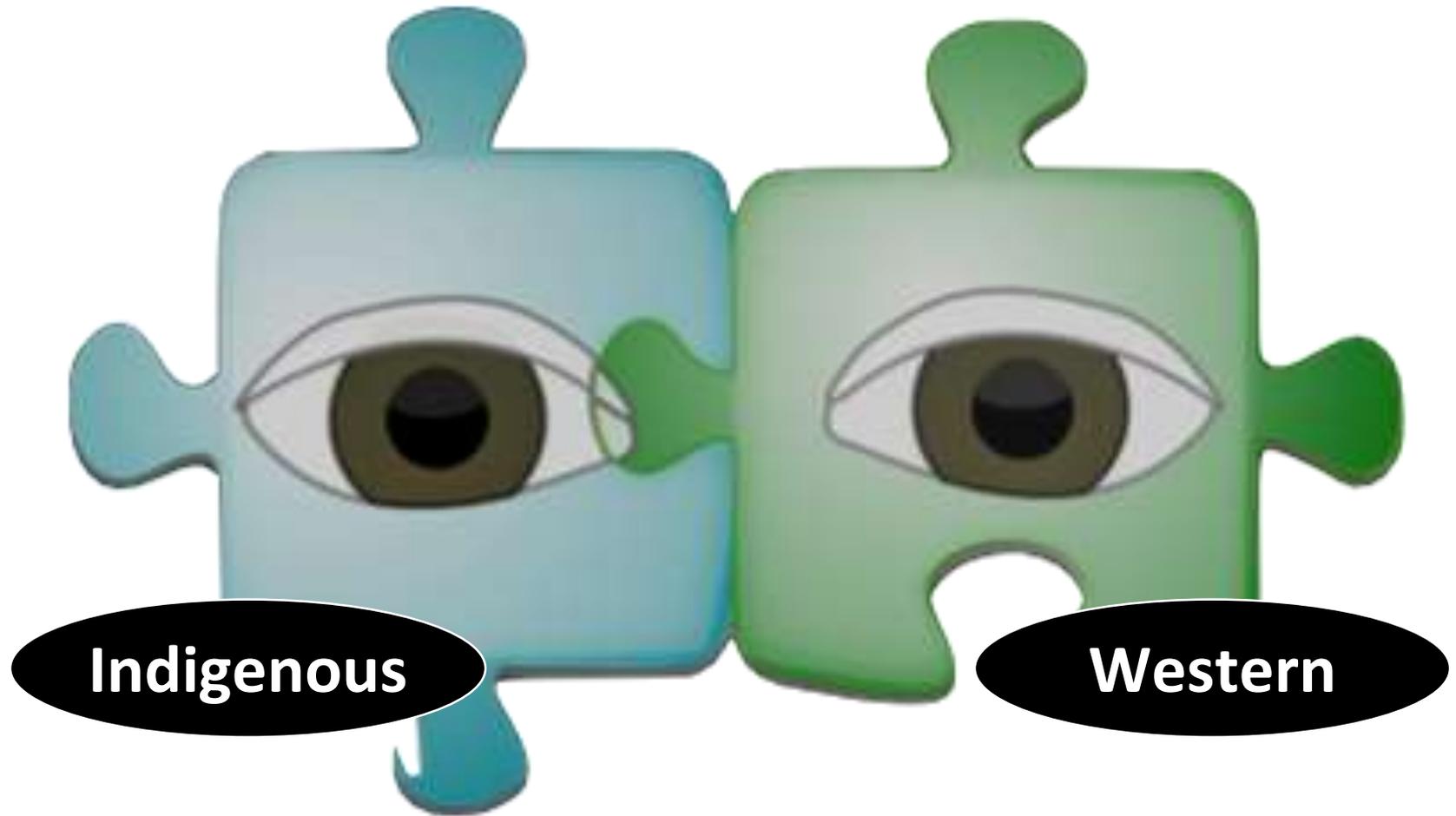
**LEARN ... to see from one eye with the best in Indigenous knowledges and ways of knowing, and from the other eye with the best in Western (or mainstream) knowledges and ways of knowing**

**... and LEARN to use both these eyes together for the benefit of all.**

→ “the gift of multiple perspectives”



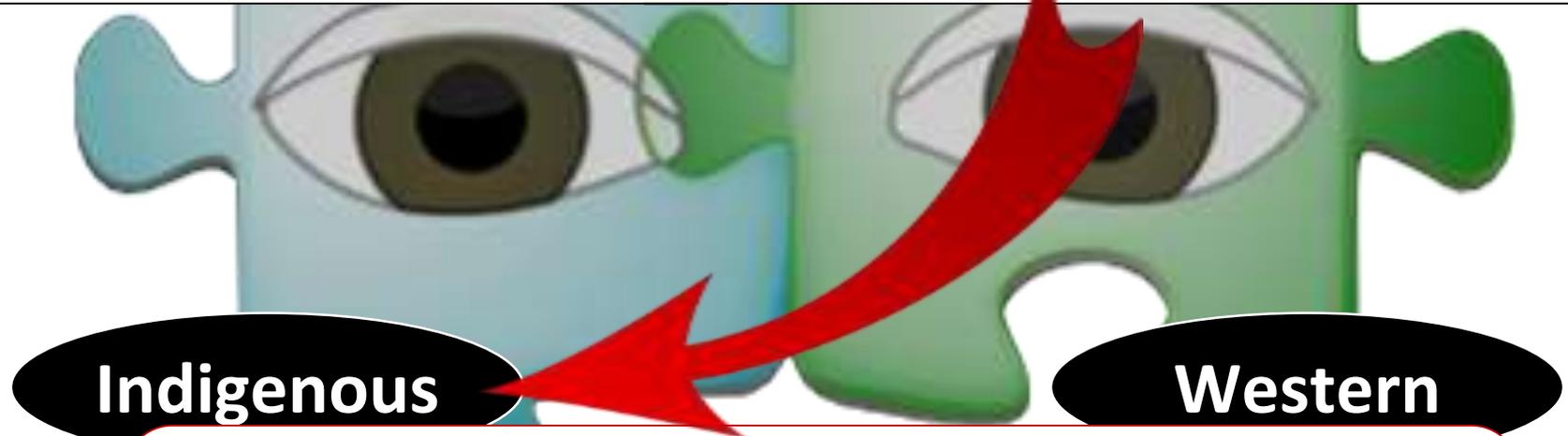
# Two-Eyed Seeing



icon encouraged by Elder Albert Marshall

# Two-Eyed Seeing

TES emerged in the arena of natural science education at the PSE level ... we wanted those involved to have a clear understanding that the mainstream (“Western”) natural sciences have an overall worldview / paradigm / culture that differs from the worldviews / paradigms / cultures of Indigenous peoples.



Indigenous

Western

labels congruent with

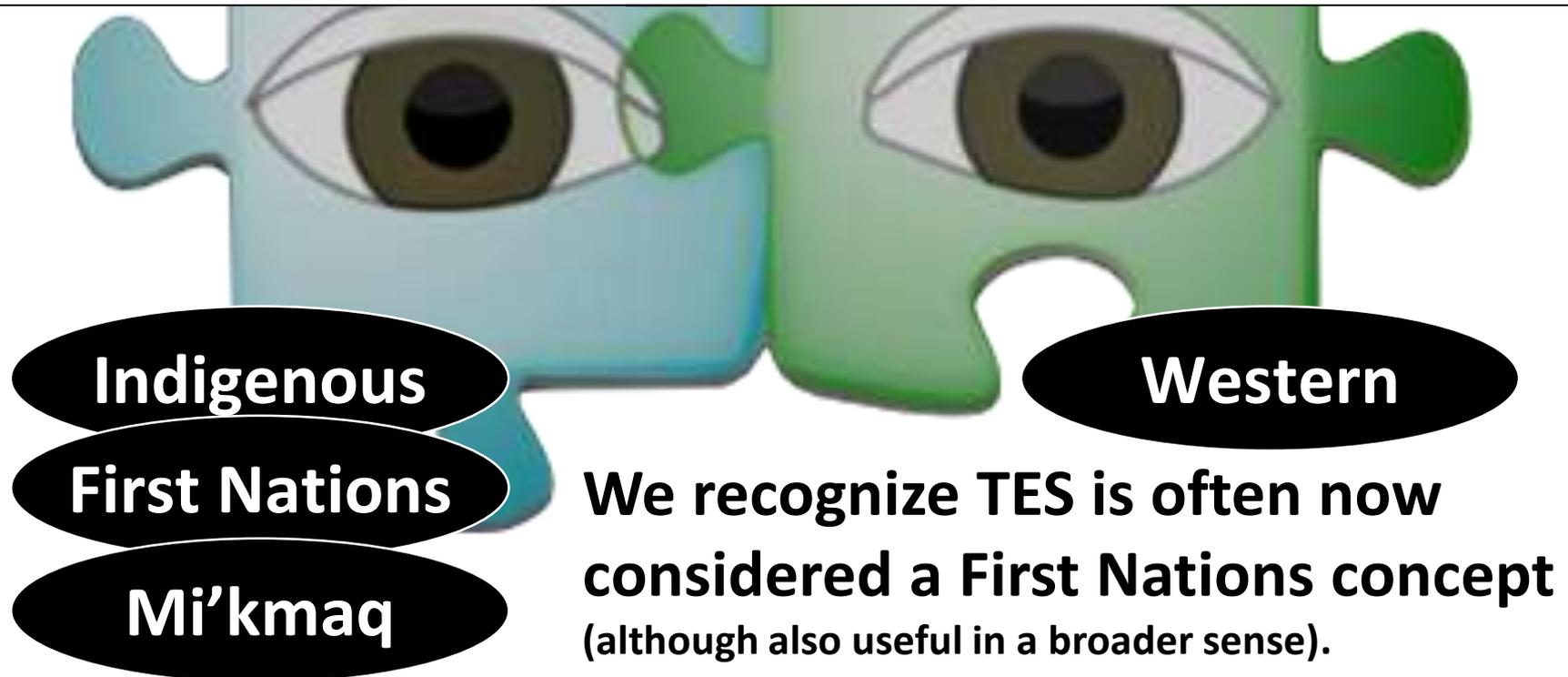
*First Nations Holistic Lifelong Learning Model 2007*

<http://www.ecdip.org/docs/pdf/FN%20Learning%20Model%20CCL.pdf>

(by Aboriginal Learning Knowledge Centre in Canadian Council on Learning [de-funded by Harper Gov't])

# Two-Eyed Seeing

TES emerged in the arena of natural science education at the PSE level ... we wanted those involved to have a clear understanding that the mainstream (“Western”) natural sciences have an overall worldview / paradigm / culture that differs from the worldviews / paradigms / cultures of Indigenous peoples.



# Two-Eyed Seeing

TES emerged in the arena of natural science education at the PSE level ... we wanted those involved to have a clear understanding that the mainstream (“Western”) natural sciences have an overall worldview / paradigm / culture that differs from the worldviews / paradigms / cultures of Indigenous peoples.



Ta'ntelo'lti'k

ATK / MTK / IK / TEK

Indigenous

First Nations

Mi'kmaq

Eurocentric

conventional

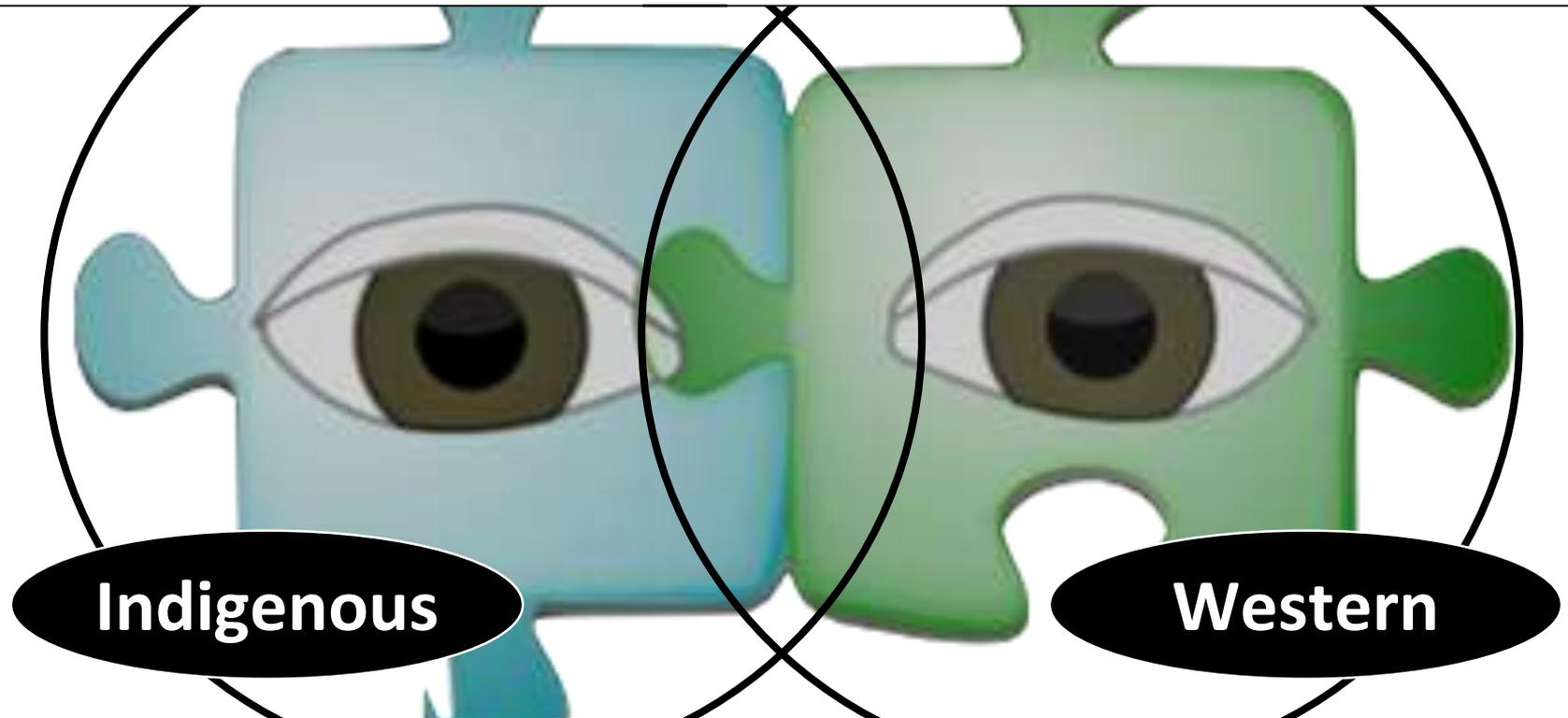
mainstream

Western

We recognize there are many labels ... with pros and cons.

# Two-Eyed Seeing

We further wanted to emphasize that there is common ground between the worldviews (as well as differences).



And, we wanted to recognize and respect each culture's worldview as a whole knowledge system.

# GUIDING WISDOM

**Go into a forest, you see the birch, maple, pine.  
Look underground and all those trees are holding hands.**

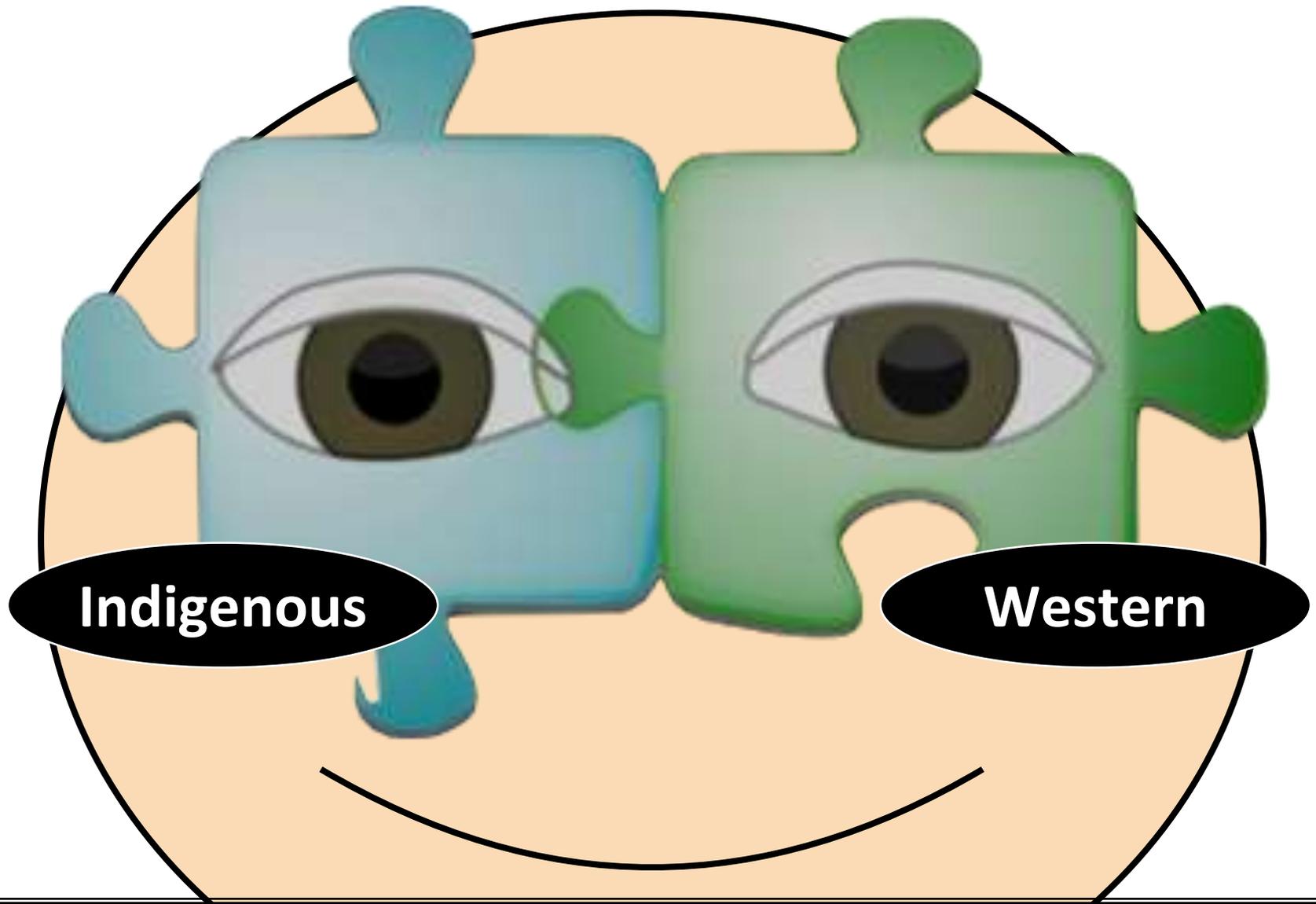
**We as people must do the same.**

(words of late Mi'kmaq Chief, Spiritual Elder, and Healer Charlie Labrador)



# a **GUIDING PRINCIPLE**

**speaks to our minds, souls, spirits**



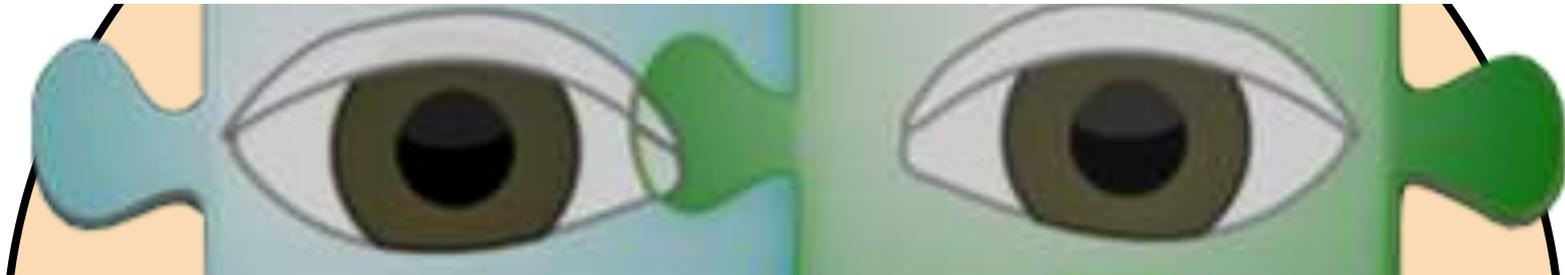
**Indigenous**

**Western**

# a **GUIDING PRINCIPLE**

**speaks to our minds, souls, spirits**

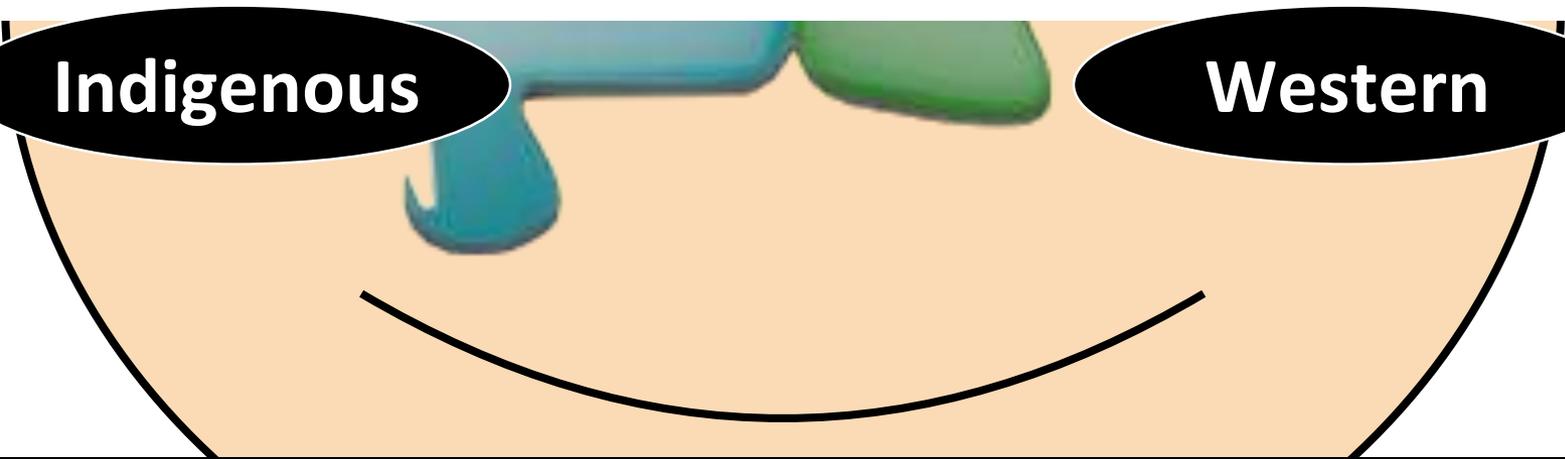
- requires ongoing commitment to relationships
- requires ongoing personal efforts to understand positionality and to act upon responsibilities for reciprocities and accountabilities
- requires ongoing consideration to key essentials (outlined later)



**NOT A MECHANISM!!!**

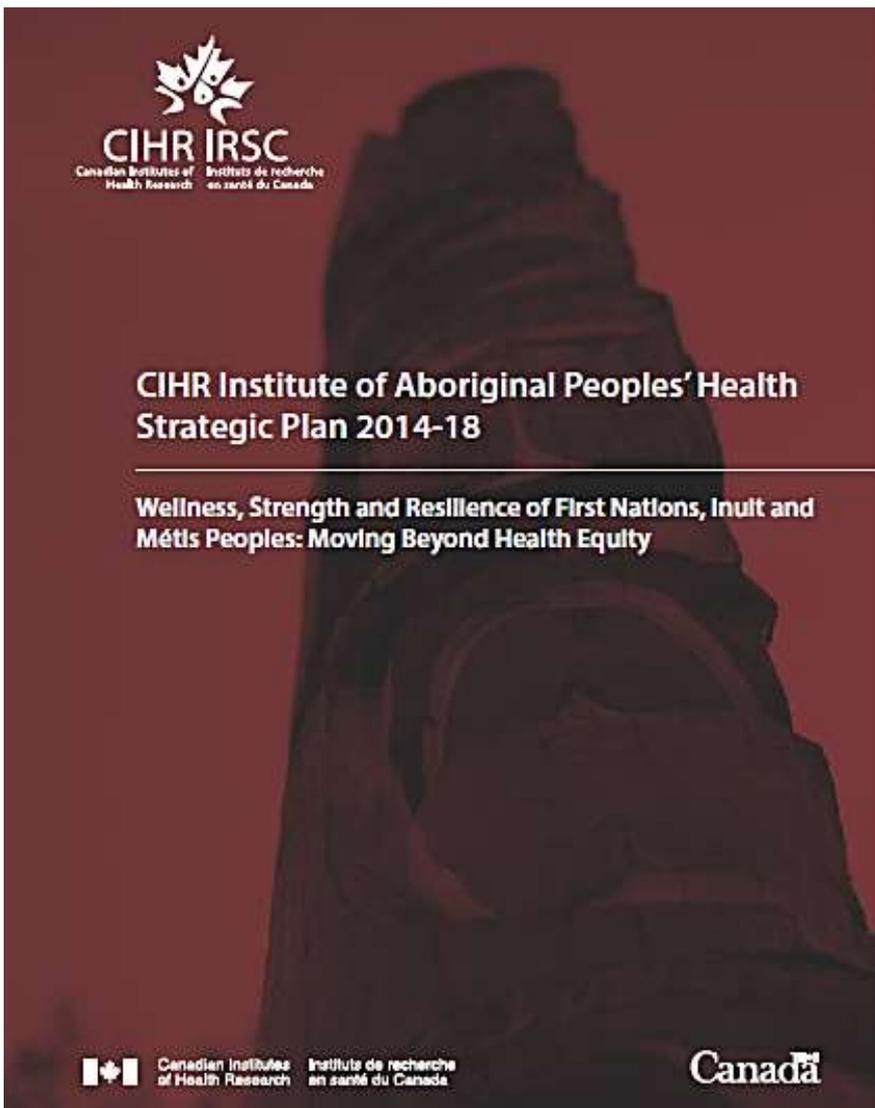
**Indigenous**

**Western**





# CIHR-Institute of Aboriginal Peoples' Health: Strategic Plan 2014-2018



<http://www.cihr-irsc.gc.ca/e/49589.html>

under the leadership of  
**Malcolm King, PhD, FCCP**

Scientific  
Director  
CIHR-IAPH  
2009-2016



**key  
document**

released  
Feb 2016



Strategic Direction 2:

**TWO-EYED SEEING**

Transforming First Nations, Inuit and Métis Health through Indigenous Ways of Knowing and Two-Eyed Seeing

page  
**26**

The concepts informing IAPH's Indigenous Ways of Knowing and Two-Eyed Seeing opportunities are guiding principles of IAPH's vision and mandate, and several funded studies have incorporated and qualified the benefits of these approaches. IAPH continues to advance Indigenous Ways of Knowing in health research through community-specific and common Indigenous health research. This is reflected in the March 2013 National Colloquium on Indigenous Health Research.

Two-Eyed Seeing<sup>6</sup> in research  
research that engages  
analysis, data  
Seeing

**The 2014-2018 CIHR-IAPH strategic plan embeds Two-Eyed Seeing. Page 26 indicates it has been qualified by research and incorporates it as a strategic direction.**

# 2017 report to Government of Canada

This report sets out a multi-year agenda that, if implemented, could transform Canadian research capacity and have enormous long-term impacts across the nation.

- C. David Naylor, Professor of Medicine, University of Toronto (Chair)



Dr. David Naylor (Chair),  
former president of the  
University of Toronto



## CANADA'S FUNDAMENTAL SCIENCE REVIEW

Final Report



**INVESTING IN  
CANADA'S FUTURE**

Strengthening the Foundations of Canadian Research



**key  
document**  
released  
April 2017

<http://www.sciencereview.ca/eic/site/059.nsf/eng/home>

# 2017 report to Government of Canada

The Panel was encouraged to learn about some relevant changes in the research landscape. We were apprised that attitudes, processes, and beliefs

page  
99

## INTEGRATIVE SCIENCE

they are moving towards a respectful partnership culture based on research *by* and *with* Indigenous researchers and communities. As relationships and

## TWO-EYED SEEING

These communities have also asserted better access to and appropriate control over how information is gathered, used, and disseminated so that they can benefit from outcomes.

We note that highly credible colleagues have drawn on traditional Indigenous knowledge to improve their understanding of the workings of complex social and environmental systems. They argue that through methods for acquiring knowledge based on systematized observation and the formation and testing of hypotheses, Indigenous ways of knowing are not unlike the paradigms used within academe. Oral traditions represent reproducible, organized bodies of knowledge that are beneficial to answering specific questions within specific contexts, geographies, and timescales. Canadian researchers in this regard are now affirming what Indigenous people have known for centuries about geological events and human migrations.

### Indigenous Approaches to Research and Discovery

**Integrative Science** is an initiative designed to bring together Indigenous and Western scientific knowledges and ways of knowing. It takes a much broader view of science that emphasizes the natural world and our human participation in it, cultural inclusivity, and the role of the agent in the knowledge system.

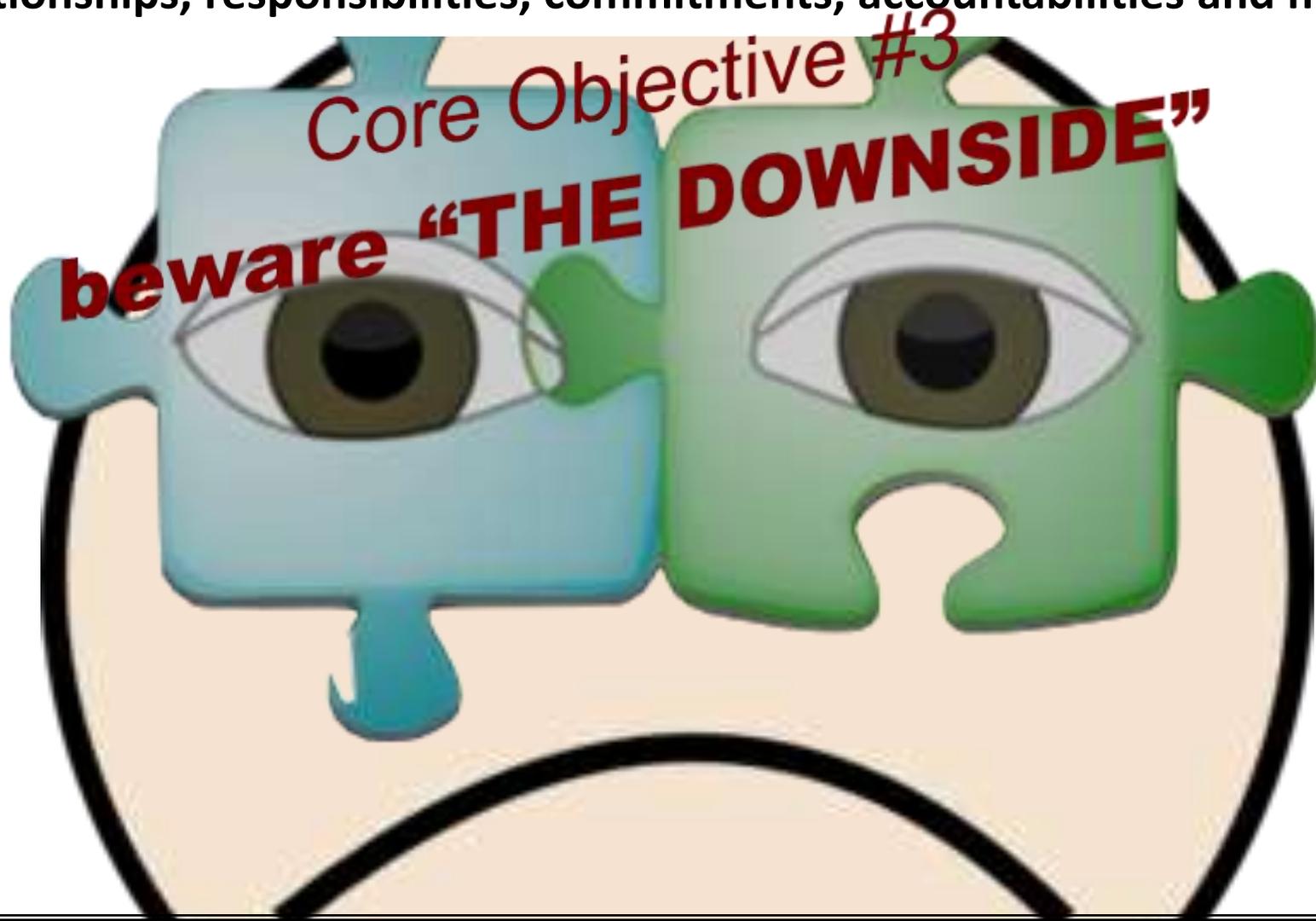
**Two-Eyed Seeing** is the guiding principle for integrative science. It refers to the achievements that can be gained by learning from the best of Indigenous ways of knowing, inherently tied to the natural world, and the best in Western (or mainstream) ways of knowing. In effect, it involves learning to use each eye to see the world through the lens of one tradition, and then using both eyes together for the benefit of all.

– From: [www.integrativescience.ca](http://www.integrativescience.ca)

# Two-Eyed Seeing

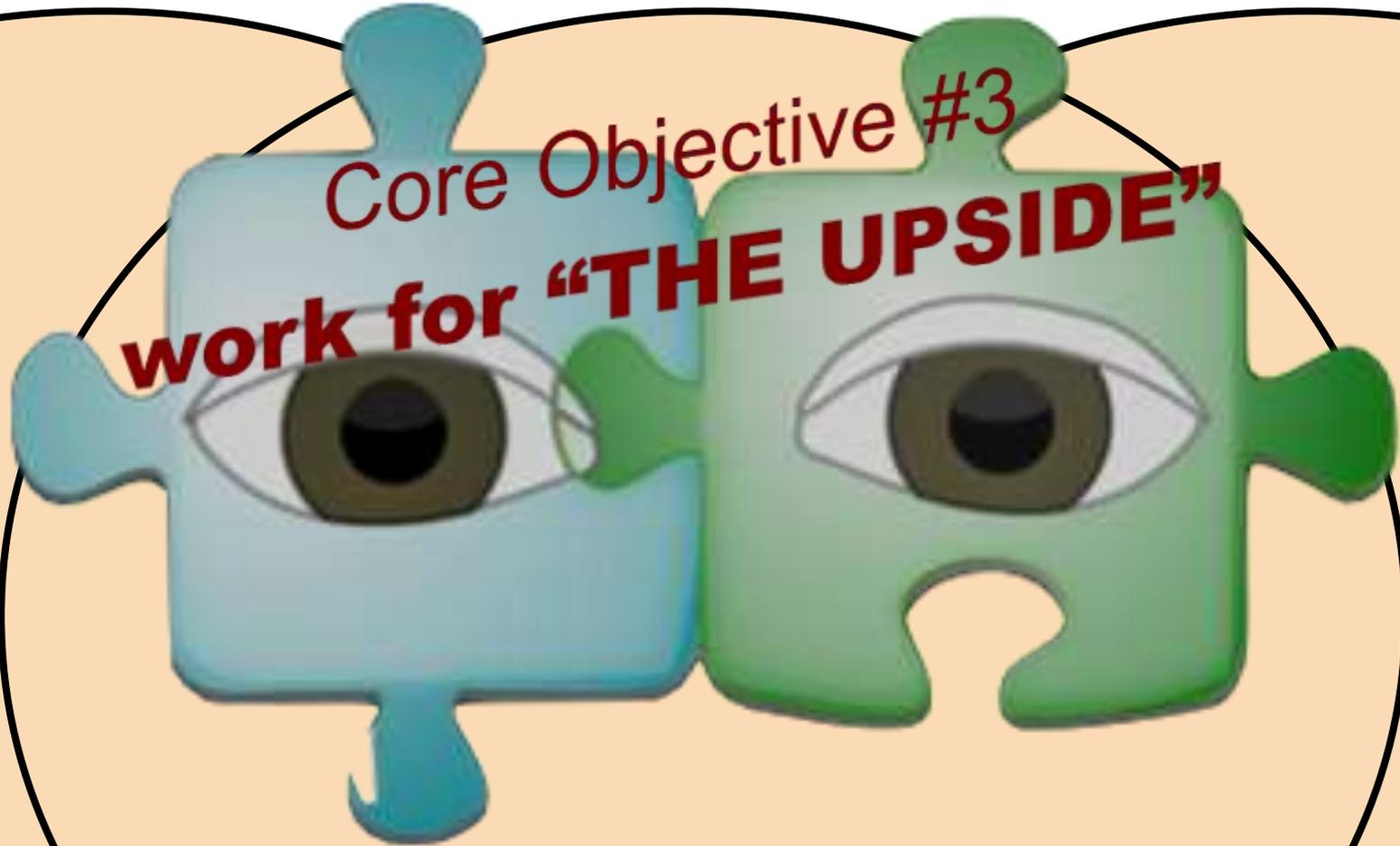
some individuals misuse TES ...

merely co-opting it or treating it as a mechanism, thereby neglecting relationships, responsibilities, commitments, accountabilities and more



# Two-Eyed Seeing

to preclude “The Downside” we need to embed more understandings and enact them. Elder Albert’s words: “This work of TES is not easy ...”.



**SOMETIMES IT'S LIKE A HEAVY SLEDGE  
that we are trying to move – this sledge  
represents our passions for ensuring ...**

- **ecological integrity of *Mawisikamukawey***



words of Elder Albert Marshall, Mi'kmaq Nation

**SOMETIMES IT'S LIKE A HEAVY SLEDGE  
that we are trying to move – this sledge  
represents our passions for ensuring ...**

- **well-being of our communities**
- **transmission of our culture and knowledge ...**



words of Elder Albert Marshall, Mi'kmaq Nation

**SOMETIMES IT'S LIKE A HEAVY SLEDGE  
that we are trying to move – this sledge  
represents our passions for ensuring ...**

- **well-being of our communities**
- **transmission of our culture and knowledge ...**



**We, the Elders, are  
dragging that sledge with  
all our might, and we need  
others to help us by  
pushing as hard as you can  
on the rear of the sledge.**

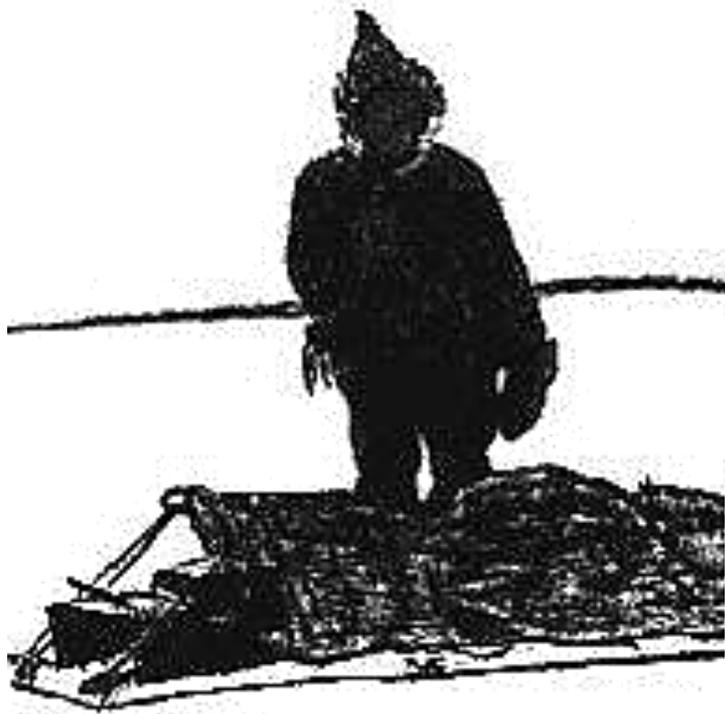
**But, it is we,  
the Elders, who will  
determine where it goes.**

**OTHER TIMES THAT HEAVY SLEDGE  
represents a passion we Elders hold  
that western science can help address.**

**Then we, the Elders, will  
help you with that sledge  
... you drag, we push ...  
while we all also constantly  
exchange understandings  
about where it is going  
... and learn to abide by**

***i'l'oqaptmu'k***

**meaning “to revisit to renew,  
to maintain movement in the  
direction Spirit intended”.**



words of Elder Albert Marshall, Mi'kmaq Nation

**“Heavy Sledge” work requires Co-Learning  
plus three more ... making FOUR key essentials.**

**Although these bring profound challenges,  
they also help guard against the risk that Two-Eyed Seeing  
will be co-opted, trivialized, and/or romanticized.**



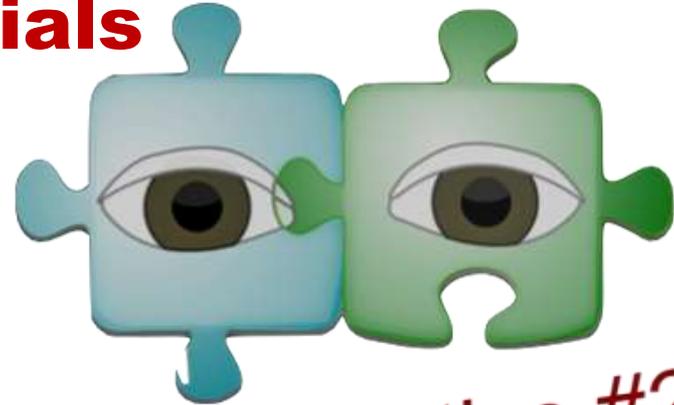
**Core Objective #2  
4 KEY ESSENTIALS**

**Core Objective #3  
work for “THE UPSIDE”**

# Two-Eyed Seeing

**embed four key essentials**

- 1. Co-Learning**
- 2. Knowledge Scrutinization**
- 3. Knowledge Validation**
- 4. Knowledge Gardening**



*Core Objective #2*

**4 KEY ESSENTIALS**

*Core Objective #3*

**work for "THE UPSIDE"**

**and address the challenges these bring**

# Two-Eyed Seeing

**embed four key essentials**

**categories**

- 1. Co-Learning** ..... learning together  
(with and from each other)
- 2. Knowledge  
Scrutinization** ... to see “the best”
- 3. Knowledge  
Validation** ..... by peers
- 4. Knowledge  
Gardening** ..... walking our talk  
(grounded applications)

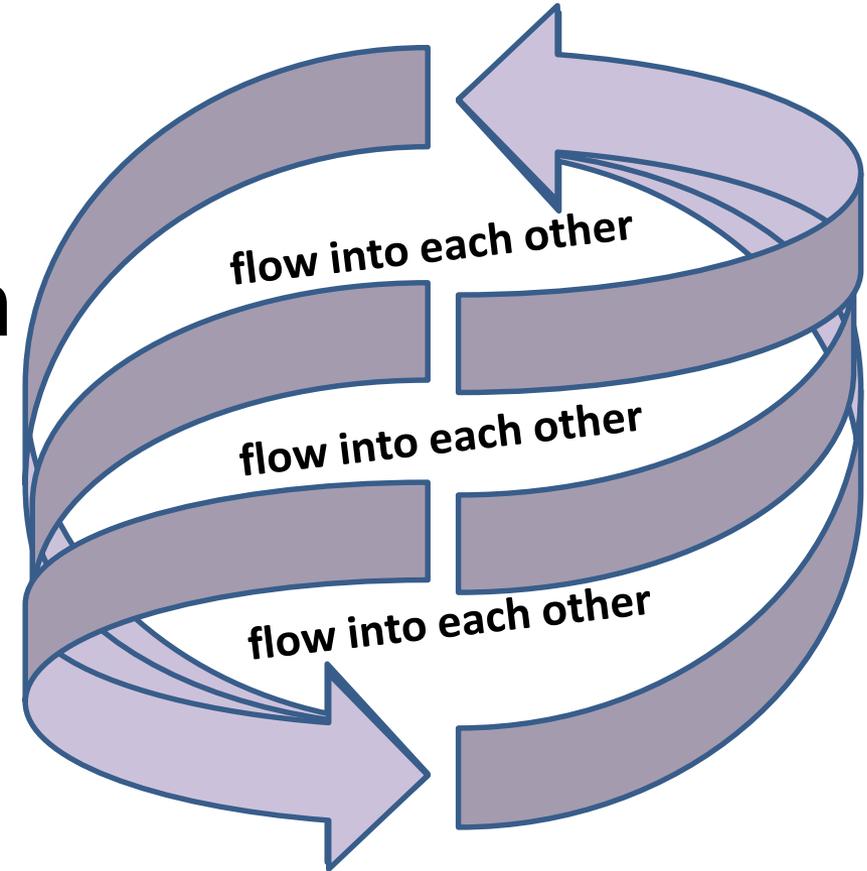
**and address the challenges these bring**

# Two-Eyed Seeing

**embed four key essentials**

**fluidity**

- 1. Co-Learning**
- 2. Knowledge Scrutinization**
- 3. Knowledge Validation**
- 4. Knowledge Gardening**



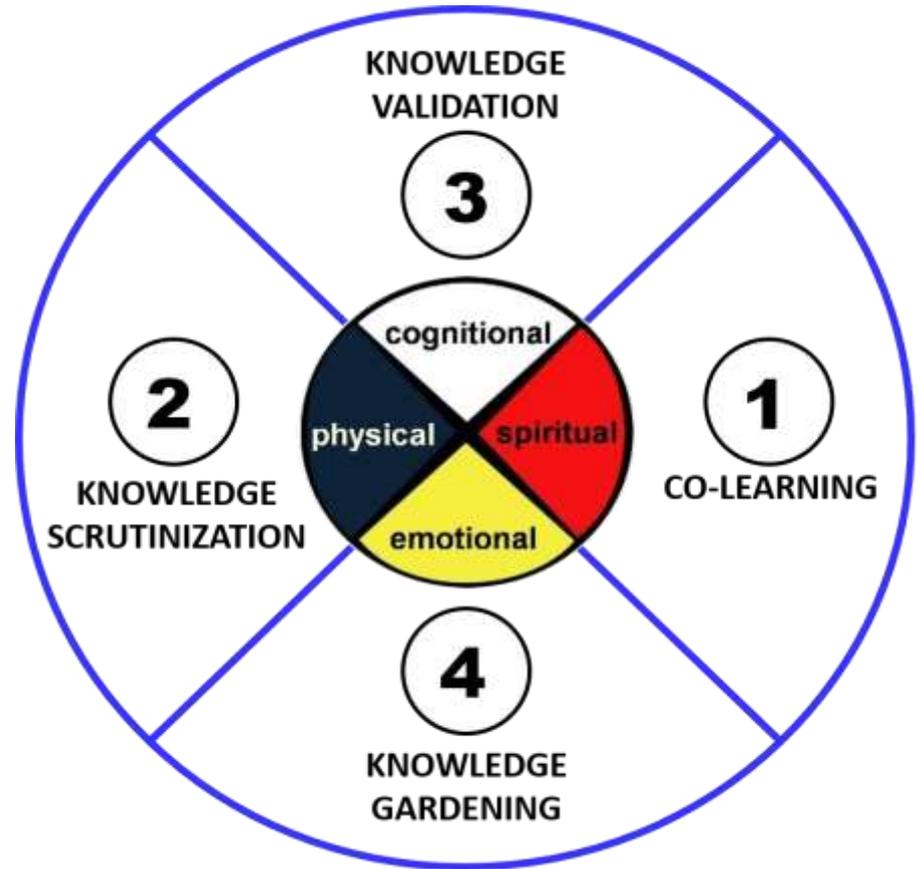
**and address the challenges these bring**

# Two-Eyed Seeing

**embed four key essentials**

**wholistic**

- 1. Co-Learning**
- 2. Knowledge Scrutinization**
- 3. Knowledge Validation**
- 4. Knowledge Gardening**



**and address the challenges these bring**

# 1. Co-Learning

relationship growth

→ nurturing collective,  
relational capacities  
to understand and  
to collaborate

→ learning together ...  
with and from each other

- We, together ... ongoing



## Why?

**new hope  
for better  
relationships  
congruent with  
TRC**

*94 calls to action  
plus*

**UN Declaration  
on the  
Rights of  
Indigenous  
Peoples**

*adopted by Canada*

# 1. Co-Learning

- **How do we re-awaken Spirit?**
- **How do we create opportunities for our spirits to start collaborating?**
- **How do we move to working collectively, rather than as individuals?**

**WE MUST ALSO CONSIDER:  
colonialism, racism,  
unequal power dynamics**



## Why?

**new hope  
for better  
relationships  
congruent with**

**TRC**

*94 calls to action  
plus*

**UN Declaration  
on the  
Rights of  
Indigenous  
Peoples**

*adopted by Canada*

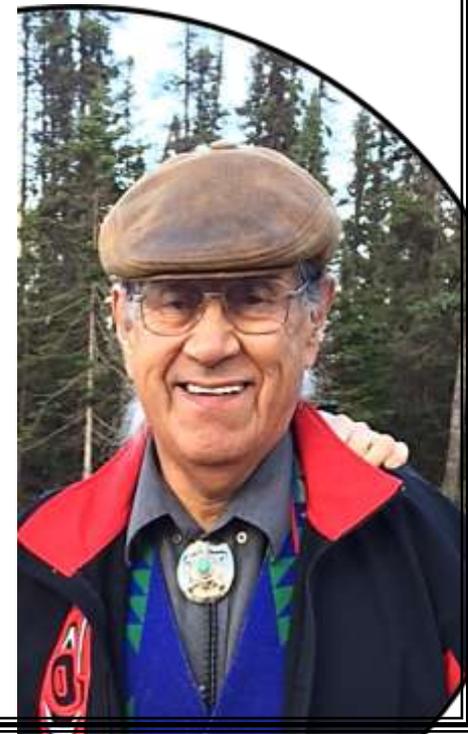
# 1. Co-Learning

## ● How do we invoke the Spirit of Co-Learning in / for groups and organizations?



● Traditionally, we would not have had to say “co-learning” because that’s how the relationship naturally functioned. “Nurturing”, on the other hand, is done in a mindful way ... anything that is alive has to be nurtured with love and compassion.

● Co-Learning does not need “evaluation” ... rather we need to understand that the essence of Co-Learning is *i'l'oqaptmu'k*.

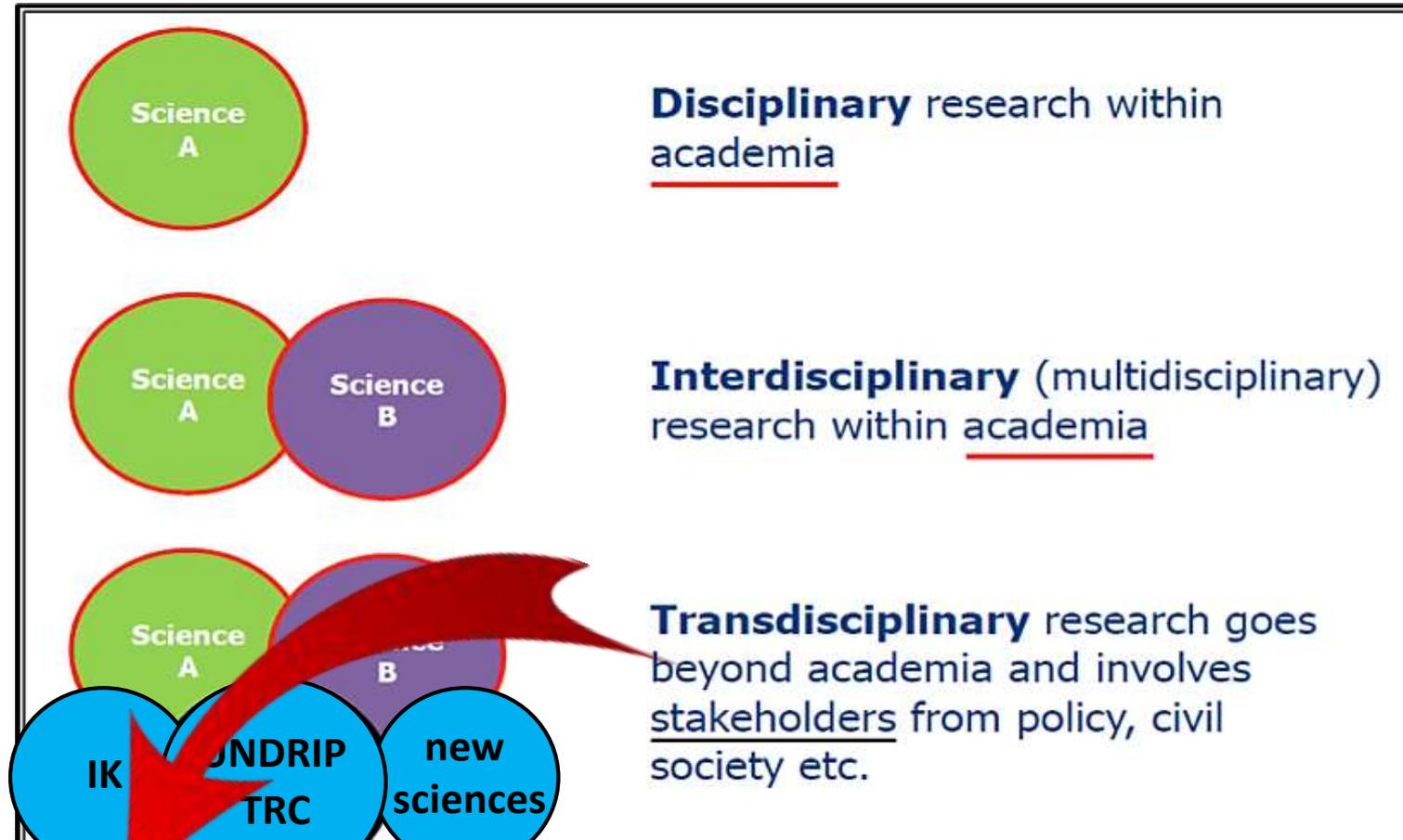


images requested by Elder Albert Marshall ... done by artist Gerald Gloade

# 1. Co-Learning

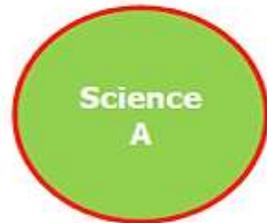


# 1. Co-Learning ... ??

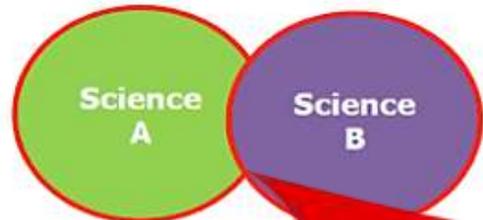


**NEED: system-wide understandings, encouragement and support for trans-disciplinary, inter-cultural, and community-based work ... including generous TIME to grow meaningful relationships.**

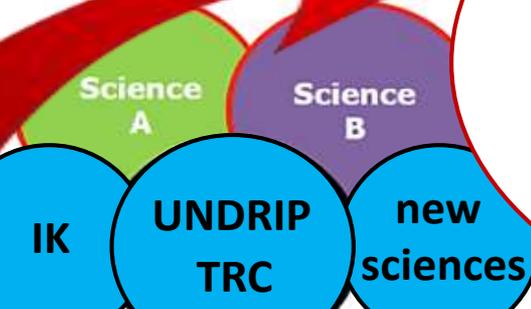
# 1. Co-Learning ... ??



Disciplinary research within academia



Int... (multidisciplinary)



**ALSO NEED**  
to consider  
*i'l'oqaptmu'k*,  
the essence of  
**Co-Learning**

**NEED:** system-wide understandings, encouragement and support for trans-disciplinary, inter-cultural, and community-based work ... including generous TIME to grow meaningful relationships.

## 2. Knowledge Scrutinization

domains, ways, substance

→ nurturing  
our capacities to  
“see the best” or  
“see the strengths”  
in each and different  
knowledges and  
ways of knowing  
... and to use them for  
the benefit of all

- We, together ... ongoing



## Why?

**Otherwise, there  
can be profound  
barriers of  
PESSIMISM  
to FEAR  
that humans  
have difficulty  
crossing, when  
faced with  
something  
new, unknown  
or different.**

## 2. Knowledge Scrutinization



- **How can we guard against negativism in this scrutiny?**
- **How can we help critics to understand and accept, rather than fear and reject?**

**WE MUST ALSO CONSIDER:  
colonialism, racism,  
unequal power dynamics**

## Why?

**Otherwise, there can be profound barriers of**  
**PESSIMISM**  
**to FEAR**  
**that humans have difficulty crossing, when faced with something new, unknown or different.**

## **2. Knowledge Scrutinization**



## **Why?**

fear / rejection: example #1, 14 February 2014

**THE GLOBE AND MAIL** 

opinion piece by: Jeffrey Simpson, Columnist

### **Money alone can't fix aboriginal education**

context: then pending (later cancelled) federal legislation

### **First Nations Control of First Nations Education**

<https://www.theglobeandmail.com/opinion/aboriginal-education-needs-money-and-more/article17008070/>

## **2. Knowledge Scrutinization**



## **Why?**

**fear / rejection: example #1, 14 February 2014**

**THE GLOBE AND MAIL** 

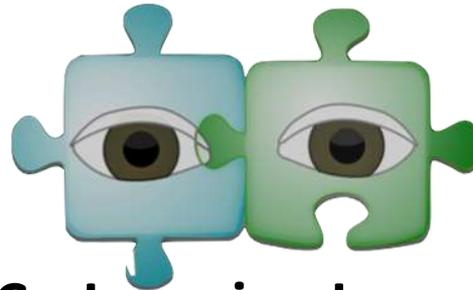
### **Jeffrey Simpson's words:**

**“... the big loser will be students, whose knowledge of basic science, math and other subjects will be so infused with cultural appropriateness by these theorists as to handicap them, rather than assist them, in wider Canadian society.”**

<https://www.theglobeandmail.com/opinion/aboriginal-education-needs-money-and-more/article17008070/>

## **Elder Albert Marshall**

- ❖ We need to be guided by Two-Eyed Seeing.
- ❖ We need to embark on a Co-Learning Journey in which our two paradigms will be put on the table to be scrutinized.
- ❖ We need to honestly be able to say that the essence, the spirit of our two ways, has been respected as we work to balance the energies of those ways.



**compare their words**

## **Jeffrey Simpson**

“... the big loser will be students, whose knowledge of basic science, math and other subjects will be so infused with cultural appropriateness by these theorists as to handicap them, rather than assist them, in wider Canadian society.”

## 2. Knowledge Scrutinization



## Why?

**fear / rejection: example #2, 21 June 2017**

**opinion piece by: Frances Widdowson**

*Associate Professor, Dept of Economics, Justice and Policy Studies  
Mount Royal University, Calgary*



SPECIAL TO  
FINANCIAL POST

June 21, 2017  
6:31 PM EDT

---

**Junk Science Week: Treating  
aboriginal 'traditional knowledge'  
equal to science in environmental  
reviews can make things far worse**

---

<http://business.financialpost.com/opinion/junk-science-week-treating-aboriginal-traditional-knowledge-equal-to-science-in-environmental-reviews-can-make-things-far-worse/wcm/bff40f1d-7b8d-456c-a60e-a5091b70a339>

## 2. Knowledge Scrutinization



## Why?

fear / rejection: example #2, 21 June 2017

### **context, quoting author's first sentences:**

Two recent reports from expert panels appointed by the Canadian government — one about modernizing the National Energy Board and the other providing a new vision for Canadian impact assessments — stress the importance of integrating indigenous “traditional knowledge” alongside “western science” and giving it “equal recognition.” Such recognition, according to these reports, not only will result in reconciliation between aboriginal and non-aboriginal peoples and a realization of “nation to nation relationships;” it also will enhance evidence-based decision making.

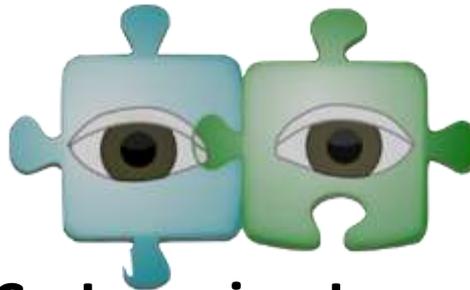
<http://business.financialpost.com/opinion/junk-science-week-treating-aboriginal-traditional-knowledge-equal-to-science-in-environmental-reviews-can-make-things-far-worse/wcm/bff40f1d-7b8d-456c-a60e-a5091b70a339>

## ***additional extracts from Frances Widdowson's opinion piece:***

- *[from introduction]* The peculiar stance of declaring the importance of something [namely, Traditional Knowledge] without stating what it is comes as no surprise to those who critically analyze the interaction between aboriginal groups and the Canadian government.
- **Good policy?** This evasion enables the government to hide the reality that the “knowledge” consists of either unsystematic observations or spiritual beliefs. Neither of these enhance “sound facts, evidence and analysis,” which both reports assert are essential for informing “good policy.” Demands that traditional knowledge be equally recognized, however, constitute a lucrative form of rent-seeking for quite a few lawyers, consultants and aboriginal leaders (a practice I have referred to elsewhere as neotribal rentierism).
- *[concluding sentence]* We need to prevent all vested interests from distorting our understanding of the environmental harm caused by economic development, and politically motivated promises to “equally recognize” traditional knowledge do not aid us in this endeavour.

## Elder Albert Marshall

❖ We need to be guided by Two-Eyed Seeing.



❖ We need to embark on a Co-Learning Journey in which our two paradigms will be put on the table to be scrutinized.

❖ We need to honestly be able to say that the essence, the spirit of our two ways, has been respected as we work to balance the energies of those ways.

**compare their words**

## Frances Widdowson

● **No scrutiny.** Traditional knowledge observations are actually protoscientific, in that they lack specificity and are not recorded, preventing them from being compared accurately across space and time and used purposefully in hypothesis testing. Even worse, designating certain people as “traditional knowledge holders” shields their claims from scrutiny, undermining the skeptical ethos of scientific research. The uncritical inclusion of these unsystematic observations is particularly problematic when it involves protecting species that aboriginal peoples have an interest in harvesting.

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)



Artist Gerald Gloade; Millbrook First Nation



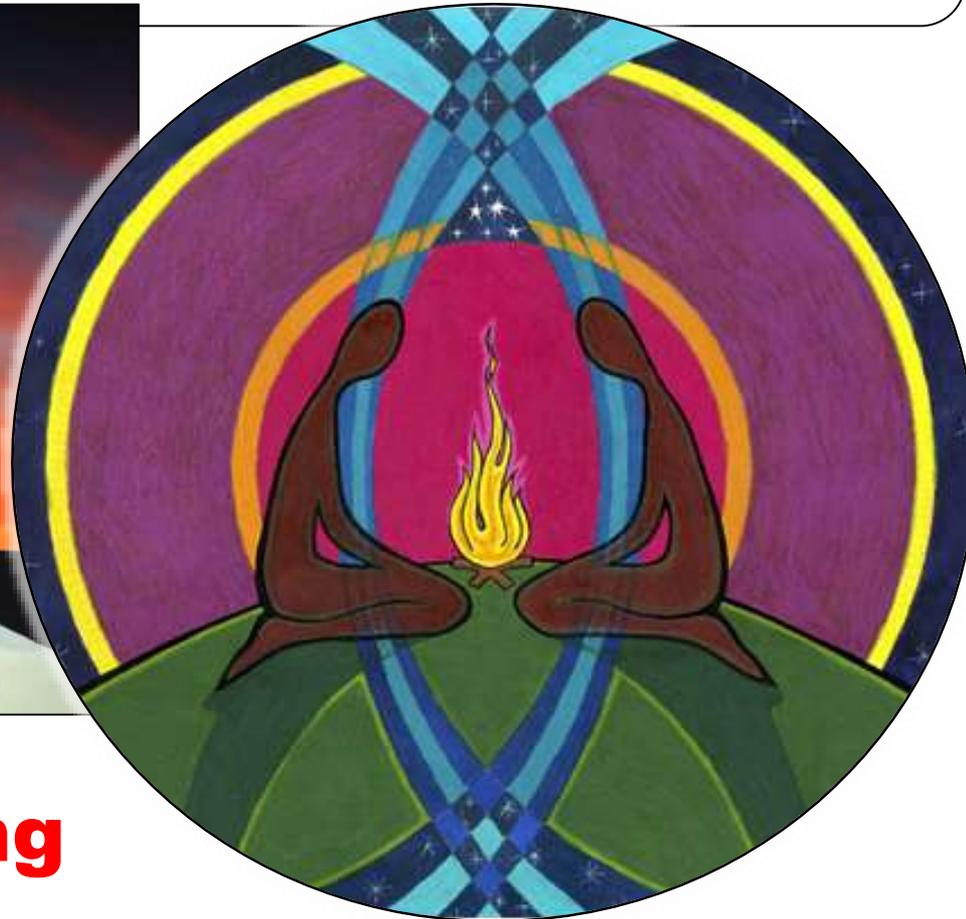
**Are we as learners, and also the critics and skeptics, willing to engage in Two-Eyed Seeing ... via Co-Learning and more?**

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized  
(words of Elder Albert Marshall)



Artist Gerald Gloade; Millbrook First Nation



**Two-Eyed Seeing  
requires time.**

**It is emphatically NOT about taking a few select “things”  
from TK to add to mainstream knowledge.**

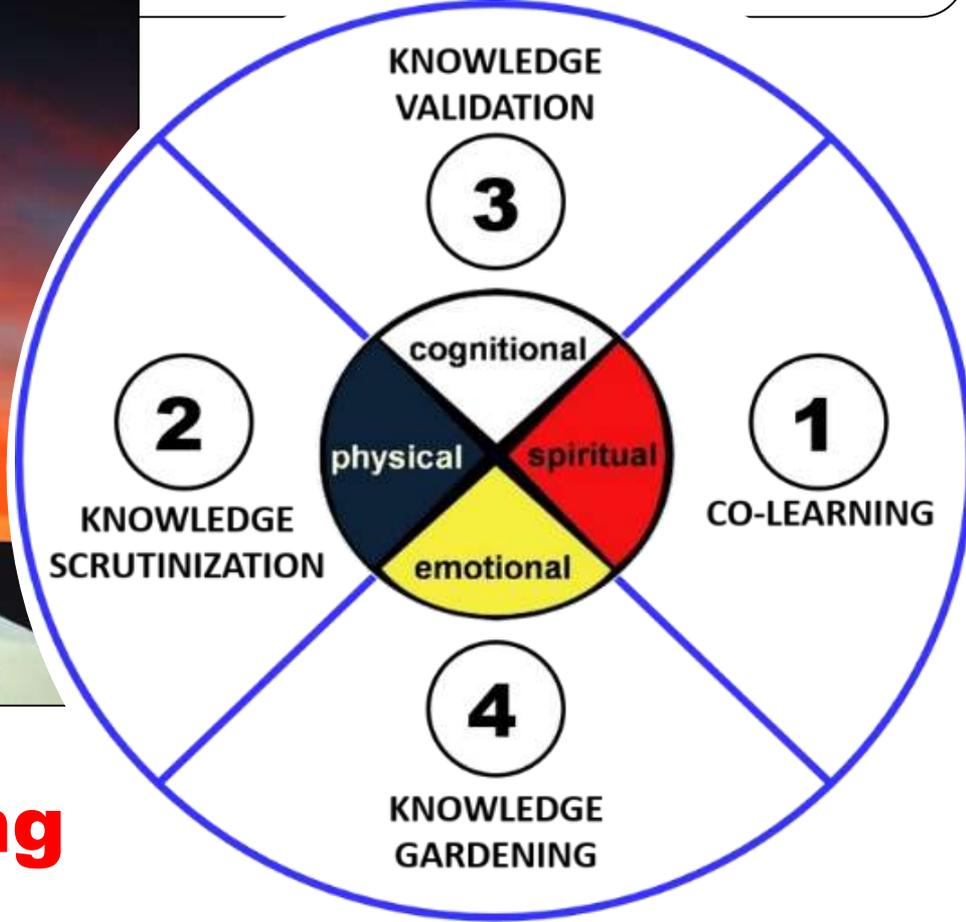
# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)



Artist Gerald Gloade; Millbrook First Nation



**Two-Eyed Seeing  
is NOT easy ...**

**... we need to consider KNOWLEDGE SYSTEMS  
and Co-Learn within genuine, meaningful relationships.**

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)

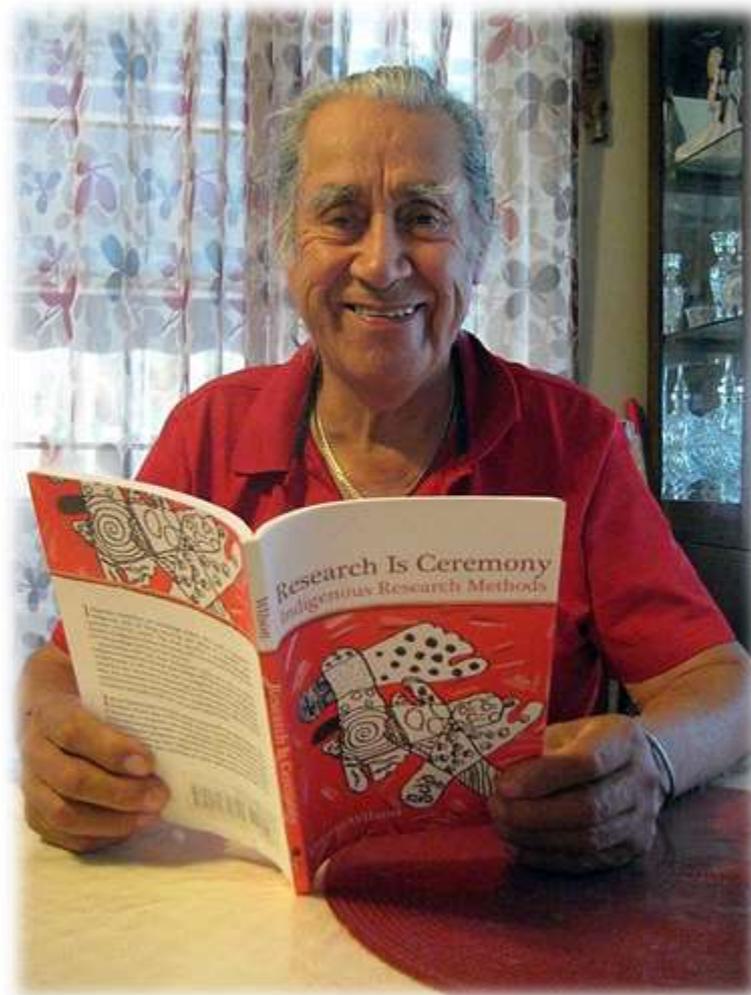
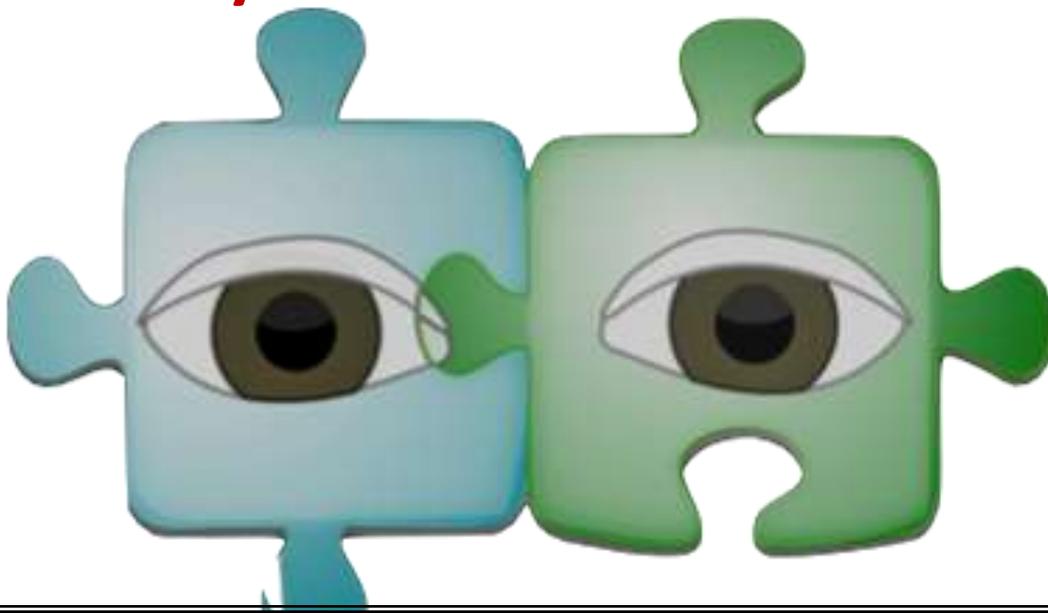
## KNOWLEDGE SYSTEMS

### WHOLE SYSTEMS

Two-Eyed Seeing

is a powerful reminder:

each eye is a **COMPLETE WHOLE.**



# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)

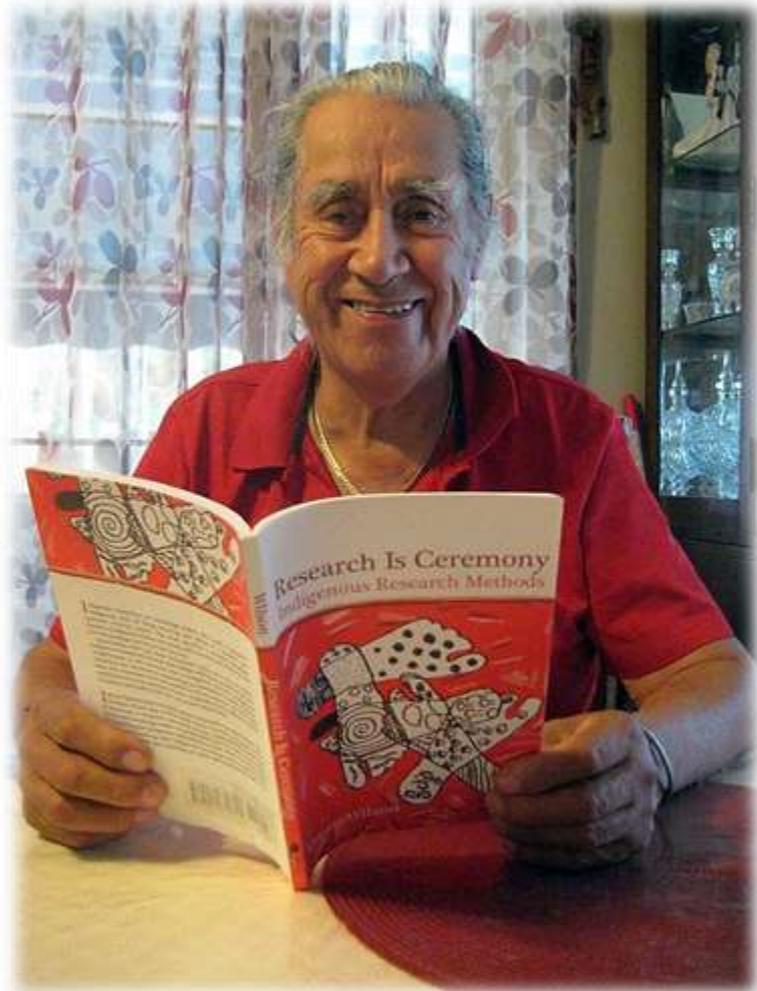
## KNOWLEDGE SYSTEMS WHOLE SYSTEMS

epistemology

ontology

methodology

axiology



# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)

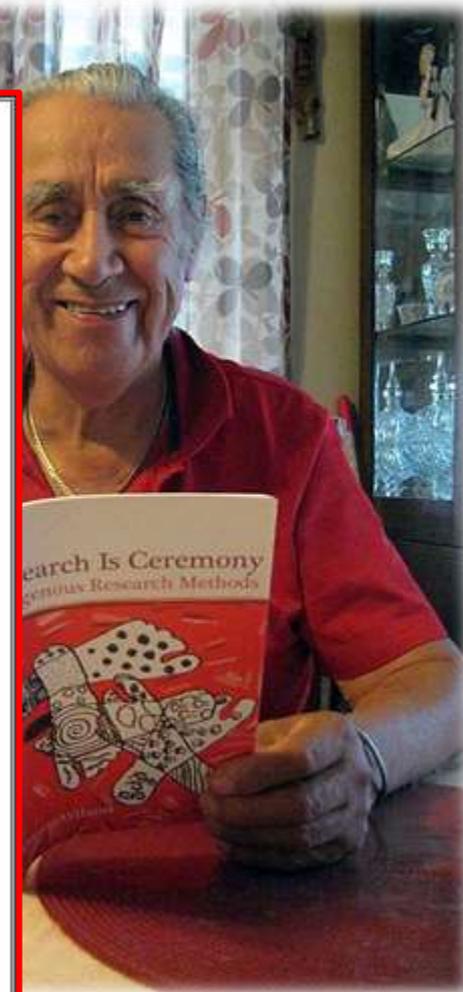
## KNOWLEDGE SYSTEMS

**“Outside of Indigenous scholarship itself, within academic circles little serious attention has been paid to examining the possibilities inherent in Indigenous ontologies”. However, any move to universalise Indigenous belief systems or world views, must also acknowledge that “... ontologies are relative and that the particularities and historicity of Indigenous peoples and nations ... give rise to unique characteristics and differences ...”.**

*(quoting Stewart-Harawira, Maori scholar, 2005, pp. 34-35)*

from: \*Haig-Brown, C. 2008. *Journal of the Canadian Association for Curriculum Studies*, 6(2): 8-24 (p. 17) ... \*non-aboriginal scholar at York University

Artist Gerald Glade; Millbrook First Nation



## KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

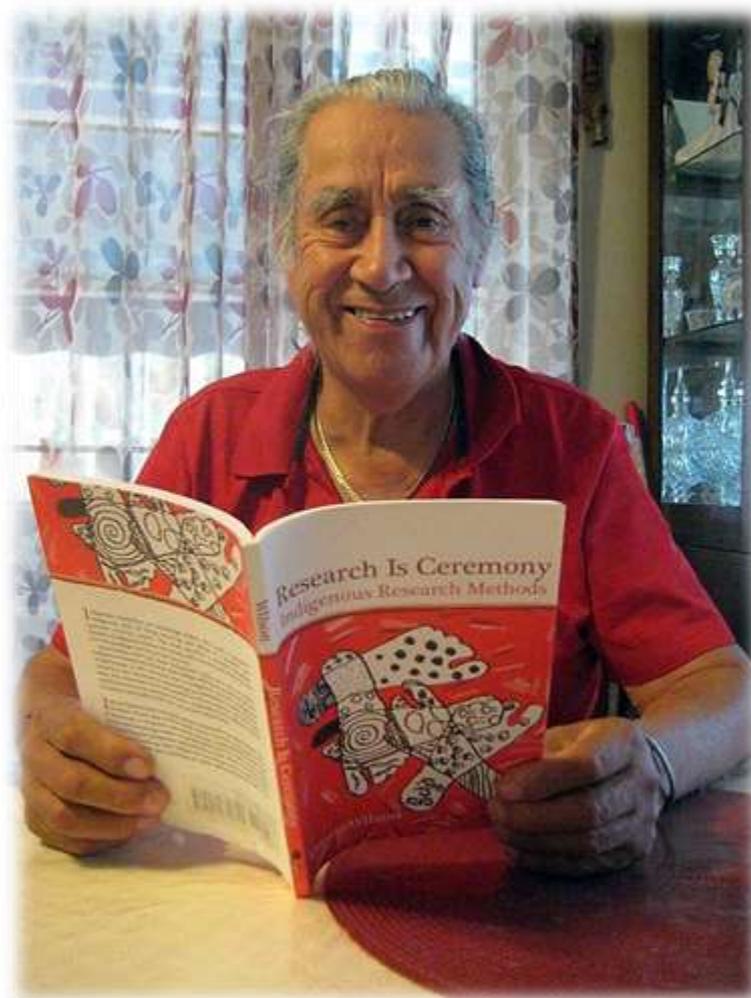
(words of Elder Albert Marshall)

Upon reading Wilson's book and then discussing with Elder Murdena, Elder Albert brought forward key conceptual understandings within Mi'kmaq Traditional Knowledge, as they are expressed in the language.

He suggests all First Nations' languages contain understandings

akin to this because of

**the importance of the relationship between the storyteller and the one receiving the knowledge.**



# KNOWLEDGE SCRUTINIZATION:

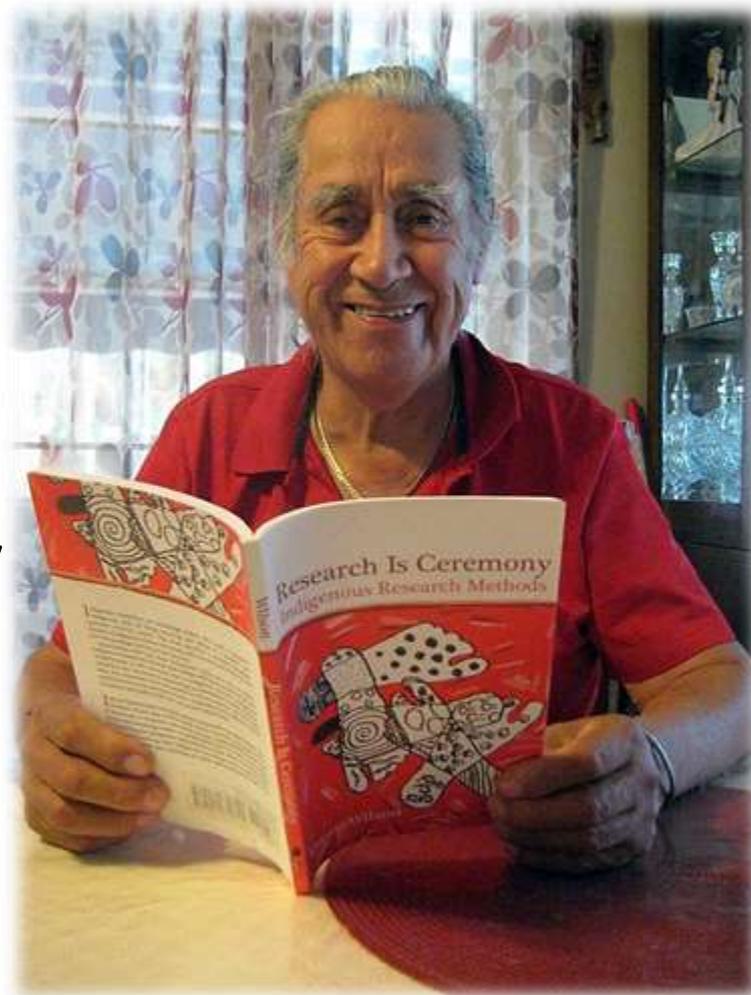
put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)

## MI'KMAQ KNOWLEDGE

- *nature of thinking or thought:*  
*wsitqamu'kewe'l ankitasuaqnn*  
(worldly thoughts or knowledge gained throughout your life) ≈ **epistemology**
- *worth of reality; real world; real life:*  
*wsitqamu'kewe'l penawsinn* ≈ **ontology**
- *how knowledge is gained:* *ta'n tel mnsnmen kjiji'taqn* ≈ **methodology**
- *worth of knowledge that will be used:*  
*kjijitaqn ta'n tel wie'wasitew* ≈ **axiology**

***italicized text = Albert's thoughts***

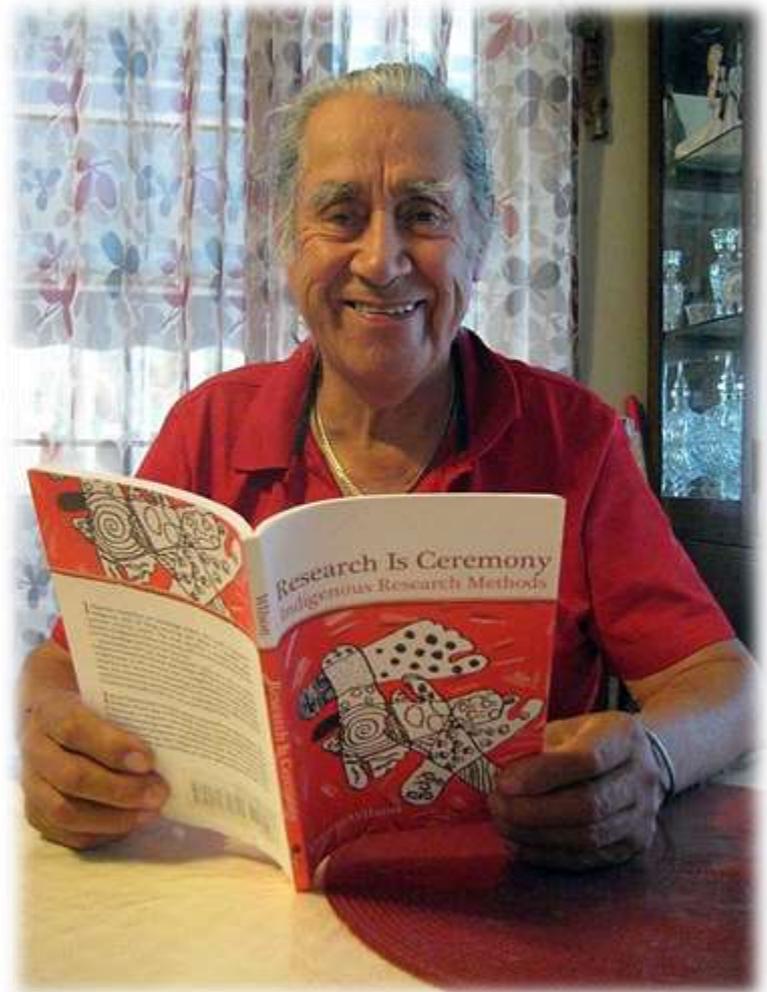


# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized  
(words of Elder Albert Marshall)

## WESTERN KNOWLEDGE

Western science can tell us what happens when people are physically starved, but it can't tell us what happens to people when they are spiritually starved. Western knowledge has not answered this yet.



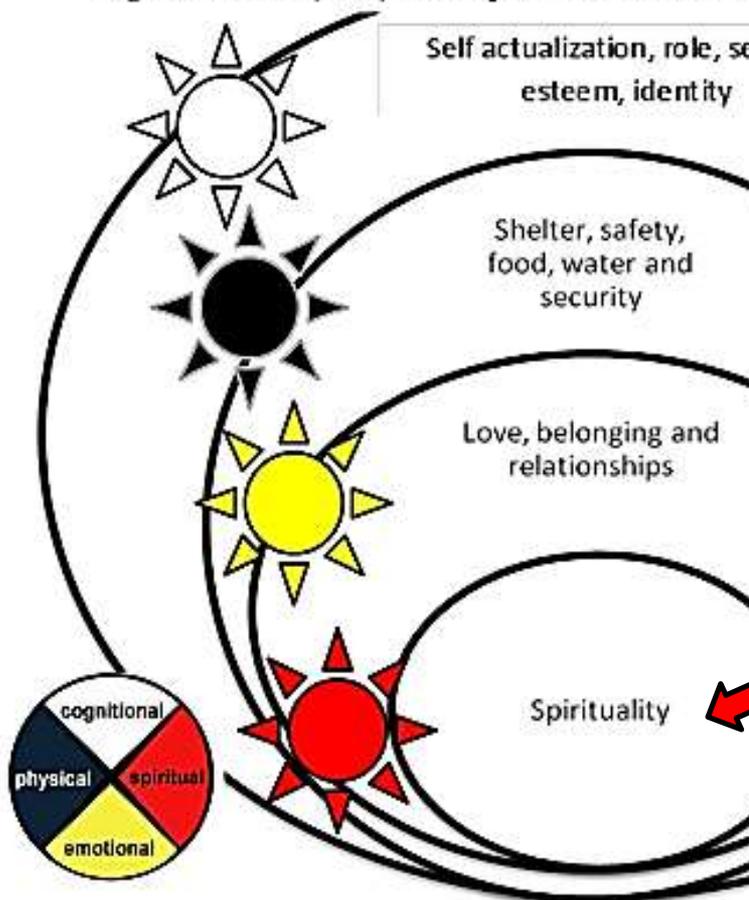
# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized  
(words of Elder Albert Marshall)



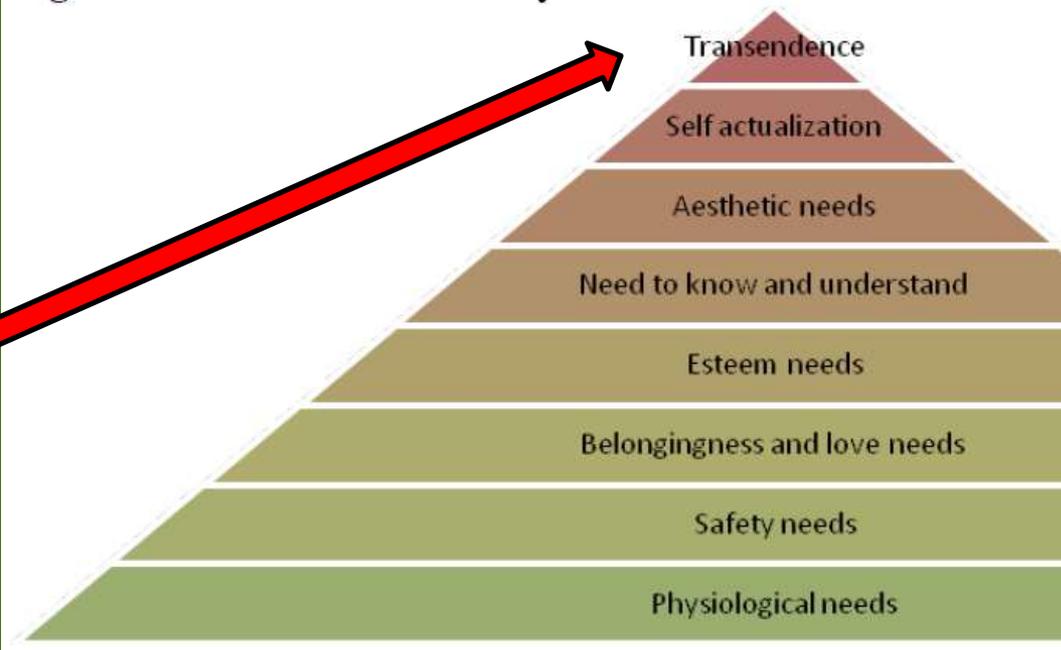
**Cindy Blackstock 2011  
Emergence of  
The Breath of Life Theory**

Figure 2: Cross (2007) reinterprets Maslow's hierarchy of needs through Indigenous eyes



from: Cindy Blackstock 2011; Fig. 2 (with correction and c  
Journal of Social Work Values & Ethics, Vol. 8, No. 1 © W

Figure 1: Maslow's Hierarchy of Needs



# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

shared with  
Western Science

**Elder  
Murdena's  
Mi'kmaq  
Knowledge  
Model**



Physical Knowledge of Medicine

Personal Connection to Medicine

Respect for Medicine

Sacred Nature of Medicine

Physical Knowledge of Medicine

Personal Connection to Medicine

Respect for Medicine

Sacred Nature of Medicine

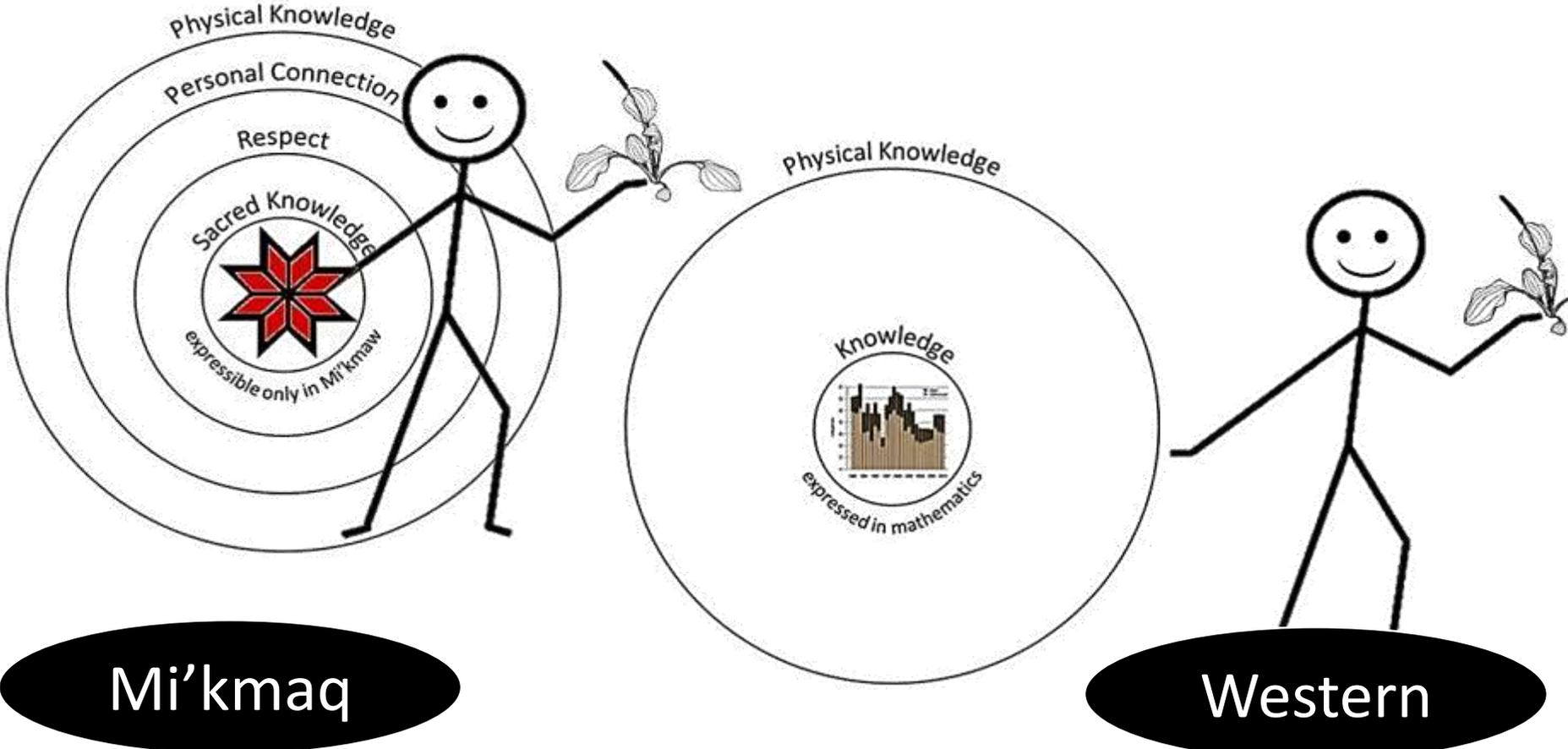


**4 concentric circles**

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

## Knowledge System Models



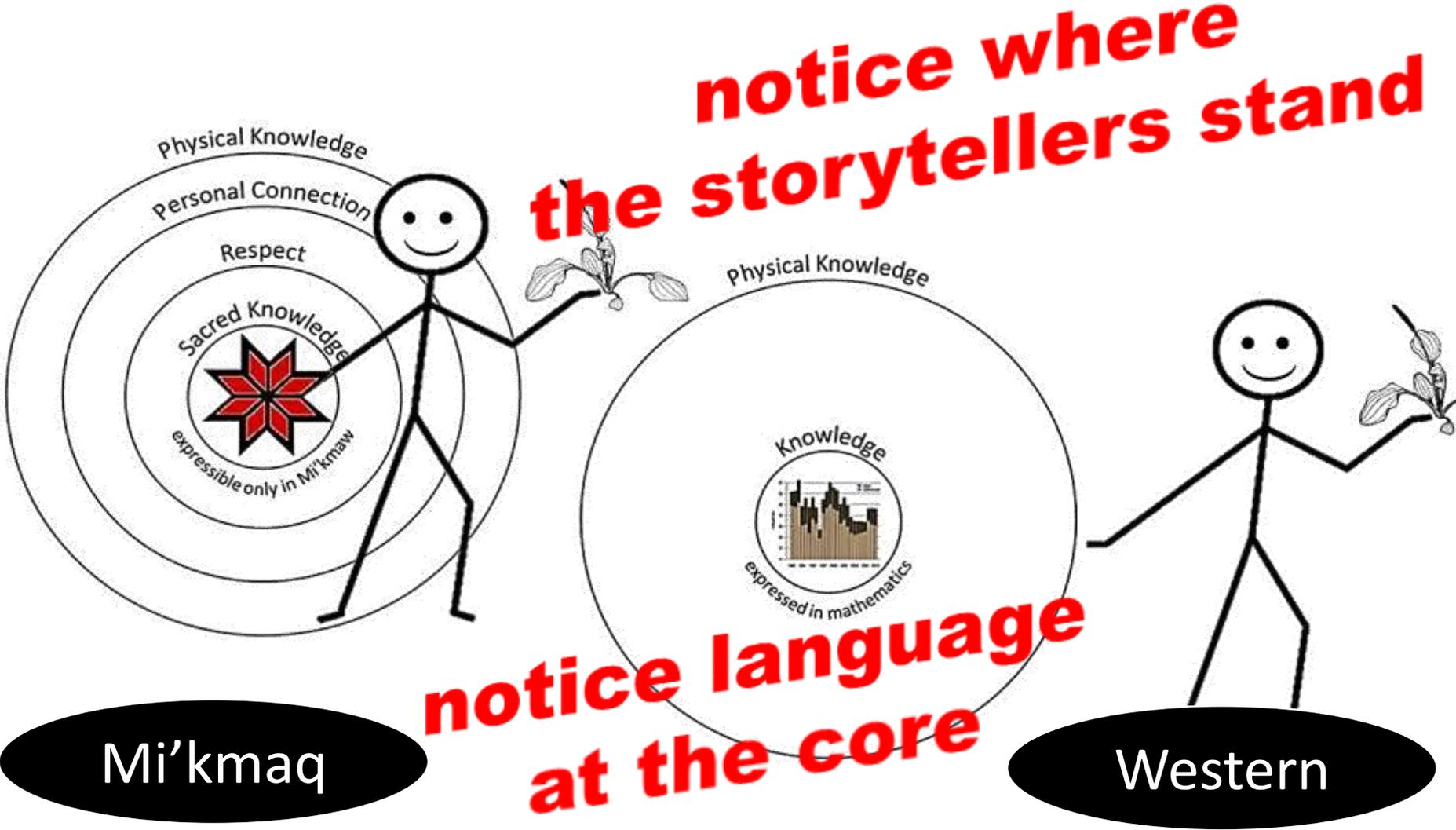
Mi'kmaq

Western

adapted from Elder Murdena Marshall

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized



**notice where the storytellers stand**

**notice language at the core**

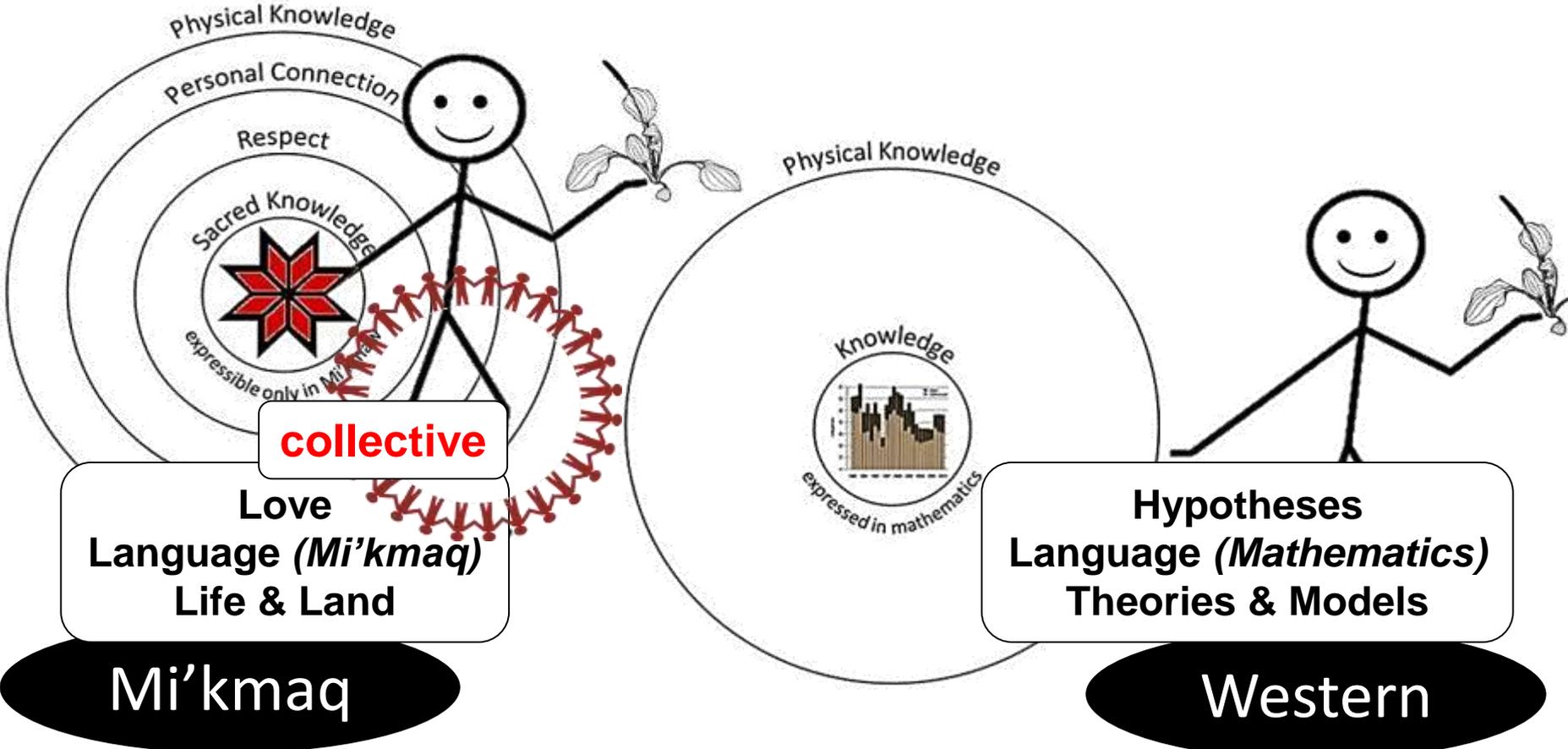
Mi'kmaq

Western

# KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

**as storytellers, as knowledge agents ...  
we have responsibilities to our knowledges**



**collective**

Love  
Language (*Mi'kmaq*)  
Life & Land

**Mi'kmaq**

Hypotheses  
Language (*Mathematics*)  
Theories & Models

**Western**

### 3. Knowledge Validation ... by peers

**Why?**

- MISTAKES HAPPEN
- ONE PERSON CAN'T KNOW IT ALL
  - FRAUD



**authenticity**

**accuracy**

**language as deemed appropriate**

- validation via acceptable peer review processes
- by Indigenous Knowledge Holders for TK
  - by Researchers & Scholars for mainstream knowledge

### 3. Knowledge Validation ... by peers

Why?

- MISTAKES HAPPEN
- ONE PERSON CAN'T KNOW IT ALL
- FRAUD



**Thus, the need for *peer review* within all knowledge systems.**

- **How can we help Elders to ensure that the validation they insist upon, is in place?**
  - Elder Albert: “accuracy, authenticity, sacredness”
  - **How does “validation” fit within oral knowledge transmission?**

# 3. Knowledge Validation ... by peers

## Elders' 8 Recommendations

<http://www.apcfc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

APCFC Elders Project:

### HONOURING TRADITIONAL KNOWLEDGE



Atlantic Aboriginal Economic Development  
Integrated Research Program



#### ELDERS' RECOMMENDATIONS

The following is the list of recommendations from the APCFC Elders Project Honouring Traditional Knowledge. It is an initiative concerning how Elders would like to be consulted about sharing Traditional Knowledge. Reading and acknowledging this list of recommendations should be used in a form of consultation with Atlantic Aboriginal communities.

1. It needs to be recognized that Atlantic Aboriginal communities are losing their Elders, their languages, and their cultural knowledge very rapidly. Therefore, Aboriginal communities and leadership need to recognize the urgency and importance of working alongside Elders and learning from their Traditional Knowledge immediately.
2. It is imperative that Elders be involved in all aspects of the territorial, cultural, linguistic, ecological, economic development, and social affairs of Atlantic Aboriginal communities. Elders are in a position to help prioritize what is most important because of their collective cultural knowledge.
3. Traditional Knowledge should be recognized in all aspects of Aboriginal community life, including economic development, education, land use, social, law enforcement, and education, etc.
4. Elders should be consulted in meaningful ways and have advisory roles in all Aboriginal community planning, development, implementation, and evaluation taking place. Meaningful involvement would include being members of steering committees and advisory committees that Elders have been less involved in.
5. Traditional Knowledge must be shared and passed on before it is lost. The ways in which Traditional Knowledge is passed on need to be directed by the Elders from each territory.
6. An Elders Council, appointed by Elders, that would advise on matters related to the sharing of Traditional Knowledge, should be formed for the Atlantic region. The Council would advise on matters related to protocols and to advise on the best practices for the sharing of Traditional Knowledge as well as the best practices for working alongside Elders. This would include working alongside Elders in all areas of community life and development including research. The Elders Council, once formed, would engage in a process of working with the Atlantic region universities to create a template for how the process of this knowledge transfer could be implemented.
7. Elders should be involved in developing and approving educational curricula related to Traditional Knowledge for Aboriginal community schools and post-secondary and post-tertiary institutions in the Atlantic region. Traditional Knowledge should be woven into the social studies, science, and language curricula for primary and secondary schools in Atlantic Aboriginal communities. This means proper and meaningful education for Aboriginal learners, which the communities to develop a balance between western and Aboriginal learning methods, and better prepare Aboriginal children for their future paths. Post secondary institutions should be consulted to seek guidance from the Elders Council (described above in paragraph 6) to develop appropriate curricula related to Traditional Knowledge for sites and post secondary programming.
8. Each Aboriginal community needs to encourage the use of traditional practices, which are products of Traditional Knowledge. This would encourage younger generations to learn about and respect traditional practices such as traditional laws, cultural and spiritual practices, language, and practices related to hunting and fishing, food gathering, medicine, ecology, and arts, and education.

To view the complete project, go to:  
<http://www.apcfc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

#### INCLUSIONS

The Elders Council would be responsible for the development of a list of recommendations to be shared with the Atlantic region. The Council would also be responsible for the development of a list of recommendations to be shared with the Atlantic region. The Council would also be responsible for the development of a list of recommendations to be shared with the Atlantic region.

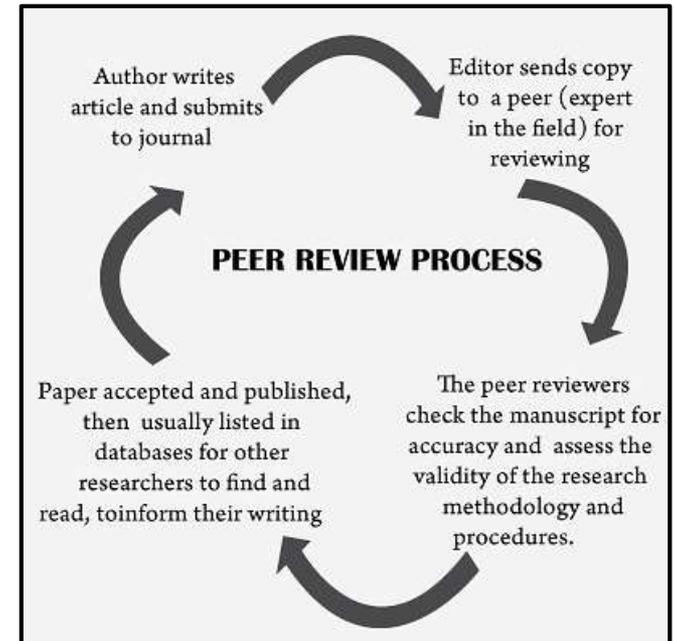
**HONOURING TRADITIONAL KNOWLEDGE COMMITTEE**  
This committee is responsible for the development of a list of recommendations to be shared with the Atlantic region. The committee would also be responsible for the development of a list of recommendations to be shared with the Atlantic region.

**APCFC Honouring Traditional Knowledge**  
This project is a part of the APCFC Honouring Traditional Knowledge project. The project is a part of the APCFC Honouring Traditional Knowledge project. The project is a part of the APCFC Honouring Traditional Knowledge project.

**THE HONOURING TRADITIONAL KNOWLEDGE COMMITTEE**  
This committee is responsible for the development of a list of recommendations to be shared with the Atlantic region. The committee would also be responsible for the development of a list of recommendations to be shared with the Atlantic region.

To view the complete project, go to:  
<http://www.apcfc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

## Academics and Researchers



... understood, by all genuine Knowledge Holders, as essential

# 3. Knowledge Validation ... by peers

## Elders' 8 Recommendations

<http://www.apcfdc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

APCFNC Elders Project:

### HONOURING TRADITIONAL KNOWLEDGE



Atlantic Aboriginal Economic Development  
Integrated Research Program



#### ELDERS' RECOMMENDATIONS

The following is the list of recommendations from the APCFNC Elders Project Honouring Traditional Knowledge. It is an initiative concerning how Elders would like to be consulted about sharing Traditional Knowledge. Reading and acknowledging the list of recommendations should be considered a form of consultation with Atlantic Aboriginal communities.

1. It needs to be recognized that Atlantic Aboriginal communities are losing their Elders, their languages, and their cultural knowledge very rapidly. Therefore, Aboriginal communities and leadership need to recognize the urgency and importance of working alongside Elders and learning from their Traditional Knowledge immediately.
2. It is imperative that Elders be involved in all aspects of the historical, cultural, linguistic, ecological, economic development, and social affairs of Atlantic Aboriginal communities. Elders are in a position to help prioritize what is most important because of their collective cultural knowledge.
3. Traditional Knowledge should be recognized in all aspects of Aboriginal community life, including economic development, education, land use, health, law enforcement, and education, etc.
4. Elders should be consulted in meaningful ways and have advisory roles in all Aboriginal community planning, development, implementation, and evaluation taking place. Meaningful involvement would include being members of steering committees and advisory committees that Elders have been part of in the past.
5. Traditional Knowledge must be shared and passed on before it is lost. The ways in which Traditional Knowledge is passed on need to be directed by the Elders from each territory.
6. An Elders Council, appointed by Elders, that would advise on matters related to the sharing of Traditional Knowledge, should be formed for the Atlantic region. The Council would advise on matters related to protocols and best practices for the sharing of Traditional Knowledge as well as the best practices for working alongside Elders. This would include working alongside Elders in all areas of community life and development including research. The Elders Council, once formed, would engage in a process of working with the Atlantic region universities to create a template for how the process of this knowledge transfer could be done.
7. Elders should be involved in developing and approving educational curricula related to Traditional Knowledge for Aboriginal community schools and post-secondary institutions in the Atlantic region. Traditional Knowledge should be woven into the social studies, science, and language curricula for primary and secondary schools in Atlantic Aboriginal communities. This means proper and meaningful education for Aboriginal learners, which has connections to develop a balance between western and Aboriginal learning methods, and better prepare Aboriginal children for their future paths. Post secondary institutions should be consulted to seek guidance from the Elders Council (described above in recommendation #6) to develop appropriate curricula related to Traditional Knowledge for sites and post secondary programming.
8. Each Aboriginal community needs to encourage the use of traditional practices, which are products of Traditional Knowledge. This would encourage younger generations to learn about and respect traditional practices such as traditional laws, cultural and spiritual practices, language, and practices related to hunting and fishing, food gathering, medicine, ecology, and arts and education.

To view the complete project, go to:  
<http://www.apcfdc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

#### ACKNOWLEDGEMENTS

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### HONOURING TRADITIONAL KNOWLEDGE COMMITTEE

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

#### APCFNC Honouring Traditional Knowledge

The APCFNC Elders Project Honouring Traditional Knowledge is a result of many consultations with Atlantic Aboriginal communities. The project was made possible through the support of the Atlantic Aboriginal Economic Development Integrated Research Program.

# 3. Knowledge Validation ... by peers

## Elders' 8 Recommendations

<http://www.afsc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

APCFNC Elder Project:  
**HONOURING  
TRADITIONAL  
KNOWLEDGE**

**Widdowson's claim  
does not reflect how  
Elders understand TK.**

### France Widdowson:

• **No scrutiny** Traditional knowledge observations are actually protoscientific, in that they lack specificity and are not recorded, preventing them from being compared accurately across space and time and used purposefully in hypothesis testing. Even worse, designating certain people as “traditional knowledge holders” shields their claims from scrutiny, undermining the skeptical ethos of scientific research. The uncritical inclusion of these unsystematic observations is particularly problematic when it involves protecting species that aboriginal peoples have an interest in harvesting.

# ELDERS' 8 RECOMMENDATIONS

**Therefore it be resolved** that the Atlantic Chiefs, having reviewed the recommendations at their meeting on 29 September 2011 hereby support the 8 recommendations put forward by Atlantic Region Elders as part of the APC Elders Project: Honouring Traditional Knowledge.



Atlantic Policy Congress  
Of First Nations Chiefs Secretariat  
[www.apcfn.ca](http://www.apcfn.ca)



# RECOMMENDATIONS: #1-4

- 1.** It needs to be recognized that Atlantic Aboriginal communities are losing their Elders, their languages and their cultural knowledge very rapidly. Therefore, Aboriginal communities and leadership need to recognize the urgency and importance of working alongside Elders and learning from their Traditional Knowledge immediately.
- 2.** It is imperative that Elders be involved in all aspects of the territorial, cultural, linguistic, ecological, economic development and social affairs of Atlantic Aboriginal communities. Elders are in a position to help prioritize what is most important because of their collective cultural knowledge.
- 3.** Traditional Knowledge should be woven into all aspects of Aboriginal community life, including economic development, fisheries, health, social, law, environment and education etc.
- 4.** Elders should be consulted in meaningful ways and have advisory roles for all Aboriginal community planning, development, implementation and evaluation taking place. Meaningful involvement would include being members of steering committees and advisory committees so that Elders have input into decision making.

# RECOMMENDATIONS: #5-8

- 5.** Traditional Knowledge must be shared and passed on before it is lost. The ways in which Traditional Knowledge is passed on, needs to be directed by the Elders from each territory.
- 6.** An Elders Council, appointed by Elders, that would advise on matters related to the sharing of Traditional Knowledge, should be formed for the Atlantic region. The Council would advise on matters related to protocols and/or ethics and the best practices for the sharing of Traditional Knowledge as well as the best practices for working alongside Elders. This would include working alongside Elders in all areas of community life and development including research.
- 7.** Elders should be involved in developing and approving educational curriculum related to Traditional Knowledge for Aboriginal community schools, provincial and post-secondary institutions in the Atlantic region.
- 8.** Each Aboriginal community needs to encourage the use of traditional practices, which are products of Traditional Knowledge. This would encourage younger generations to learn about and respect traditional practices, such as traditional laws, cultural and spiritual practices, language learning and practices related to hunting and fishing, food gathering, medicine, ecology, science, arts and education.

### 3. Knowledge Validation ... by peers



It has been my experience that many so called Traditional Elders don't know the first damn thing about traditional teachings. They just make things up or use what they read in books. I don't trust most of them. Traditional and spiritual people had to be mentored for a long time before they could claim that title.

Institutions are at fault for hiring people as Elders who don't deserve the title, but once you have the door with the title on it, your career as an Elder is set. I always need to know the answer to this question: "where did you get your teachings?", before I go into ceremony with anyone. You should too.

Murray Sinclair, Chair of the Canadian Truth and Reconciliation Commission

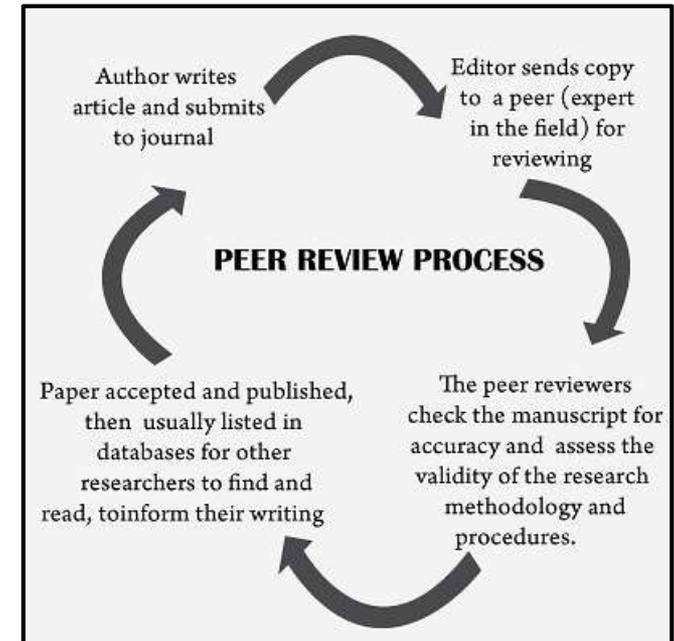
*(note: above statement from shared posting on Facebook; original posting unknown)*

**... understood, by all genuine  
Knowledge Holders, as essential**

# 3. Knowledge Validation ... by peers



## Academics and Researchers



**... understood, by all genuine Knowledge Holders, as essential**

# 4. Knowledge Gardening

## Why?



**We need to grow our understandings so our different knowledges can be respected as we co-learn how to have them “work as one”.**

*We need to “Walk our Talk”  
... abiding by and with interests and needs  
of local communities and protocols*

**grounded co-learning, mentorship, research**

→ “walking our talk” via “actionable projects”

... co-learning and research with and by communities

- Community Members & Organizations
- Researchers and Students

## **4. Knowledge Gardening**



- **How can we create opportunities to grow, together ... and help each other?**
- **How can we strive to make different knowledges “work as one”?**
- **How can we re-awaken the understanding that healing comes from within?**
- **How can we harness the power of story?**
  - **How can we learn to “listen to understand” rather than simply listening to say something back?**
  - **How can we engage our responsibility to reflect?**

# 4. Knowledge Gardening

## Why?



**We need to grow our understandings so our different knowledges can be respected as we co-learn how to have them “work as one”.**

*We need to “Walk our Talk”  
... abiding by and with interests and needs  
of local communities and protocols*

- **How can we truly learn that we are our stories, that everything is story?**
- **How can we learn to listen to stories ... to share stories ... to co-learn from stories?**

# 4. Knowledge Gardening: <sup>“potential”</sup> example

**CEPI**

Collaborative Environmental  
Planning Initiative



**“potential”** because  
CEPI’s  
*Terms of Reference*  
do not include  
**Two-Eyed Seeing**  
(this might be changing)

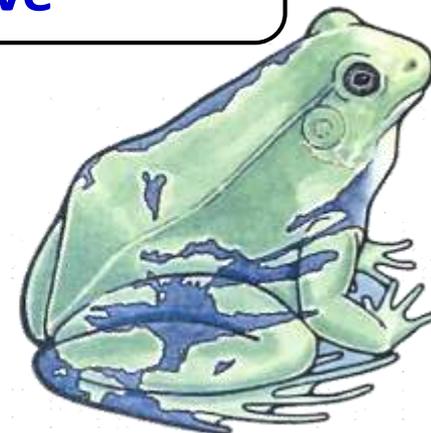
# 4. Knowledge Gardening: <sup>^</sup>example

“potential”

**CEPI**

Collaborative Environmental  
Planning Initiative

TRANSFORMATION &  
INTERCONNECTIVENESS  
*page in CEPI 2004 Report*



CAPE BRETON – UNAMA'KI

... showing our Island as the living organism "Frog" to remind us that healthy life requires healthy water, land and air and that transformation and interconnectedness are essential understandings in our collaborative human journey.

*page contributed to CEPI 2004 Workshop Report by  
Artwork by Basma Kavanagh*

**Institute for Integrative Science & Health**



Hosted by the Unama'ki Institute of Natural Resources  
in conjunction with the Integrative Health and Healing Project

# 4. Knowledge Gardening: <sup>retrospective</sup> example

## Integrative Science

*emerged in*

### **EDUCATIONAL ARENA**

CBU Faculty, Educator, Elder, Spiritual Leader, Fluent Speaker of Mi'kmaq, Grand-daughter of Grand Chief

*grown in*

### **RESEARCH ARENA**

CBU Faculty, Educator, Biologist, Tier 1 Canada Research Chair in Integrative Science



**late 1980s – late 1990s  
both on faculty**

CAPE BRETON  
UNIVERSITY

**Murdena, why no Mi'kmaq  
students in science?**

**Cheryl, enrich how you teach  
science!! Then, more  
Mi'kmaq students might  
choose to study science.**

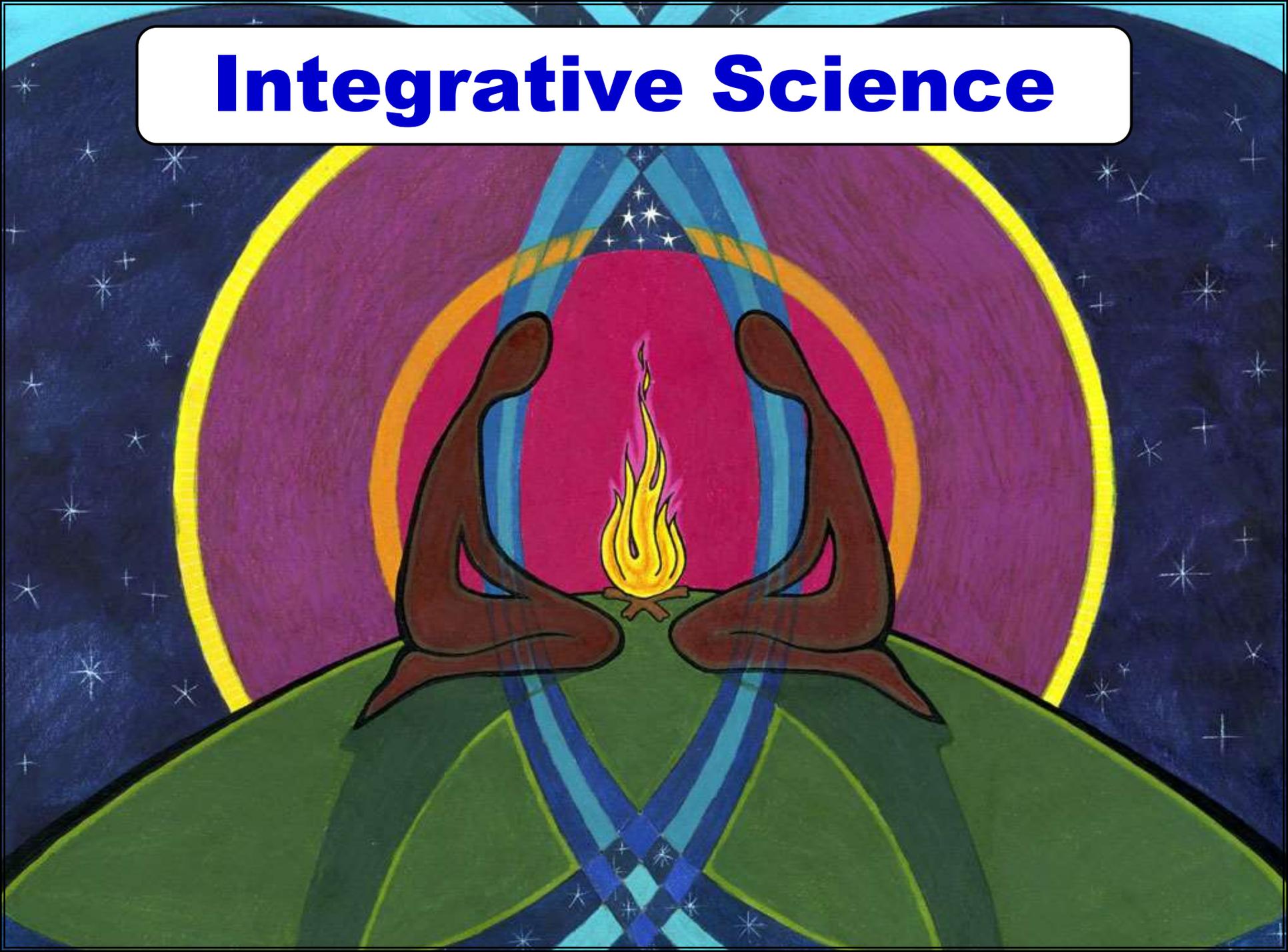


# **Integrative Science**

innovative, post-secondary science education program in 4 year degree  
at Cape Breton University, 1999-2010

- 1) embedded **TWO-EYED SEEING** as its guiding principle
- 2) was based on the premise that acquisition of scientific knowledge is essential to human survival ... and that science is a practical engagement with the real world and the scientific pursuit of knowledge must, therefore, be as old as the consciousness of our human species
- 3) emphasized:
  - a) the natural world and our human participation within it,
  - b) cultural inclusivity with respect to knowledge, and
  - c) our roles, including responsibilities, as agents ... indeed, as storytellers ... in our knowledge systems

# Integrative Science



# Integrative Science



Indigenous

Western

“bringing our knowledges together”

# Integrative Science



**NOT MERGED ... rather:**  
**COMMON GROUND** recognized  
**DIFFERENCES** respected

Indigenous

Western

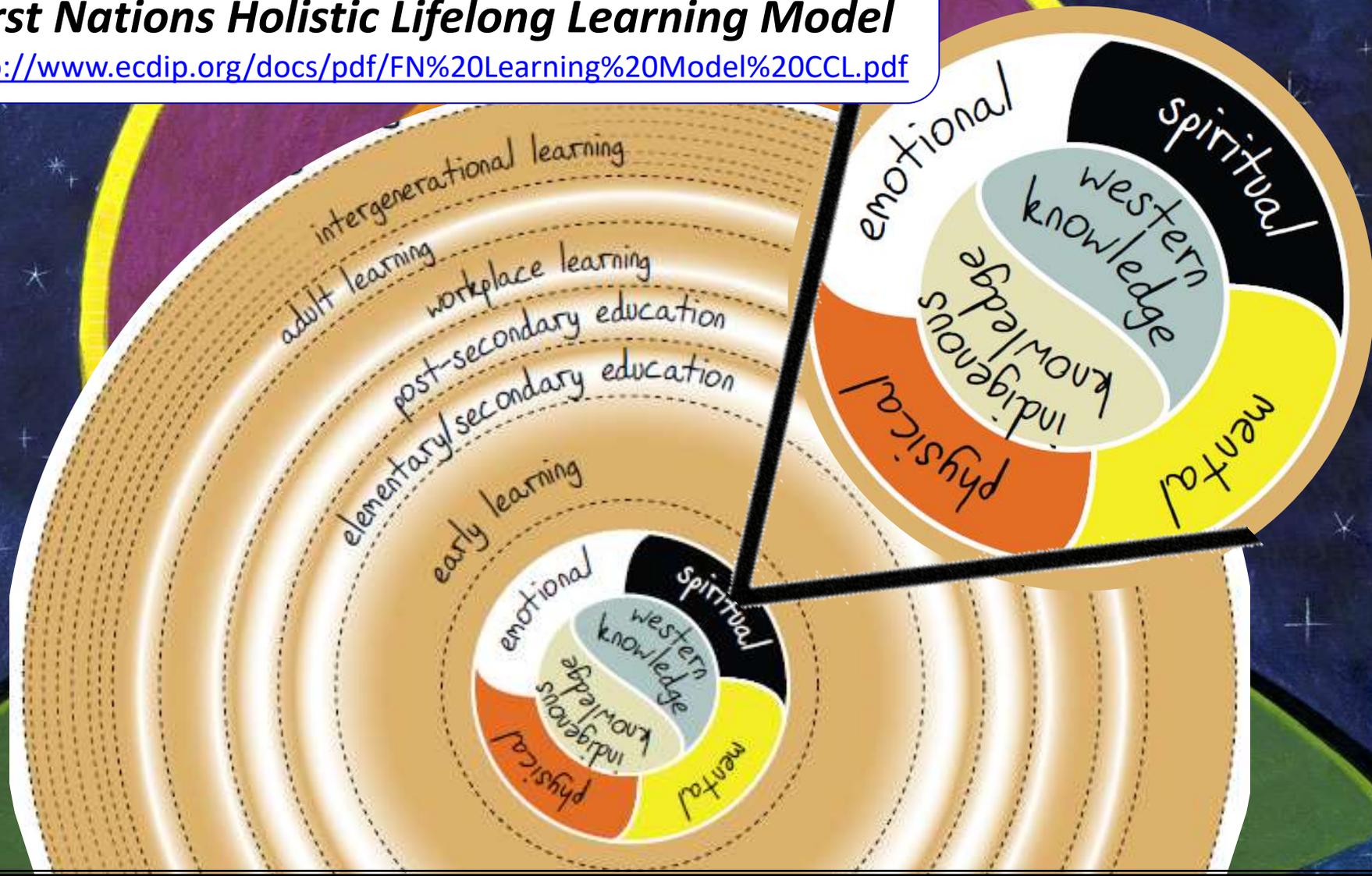
“bringing our knowledges together”

# Integrative Science

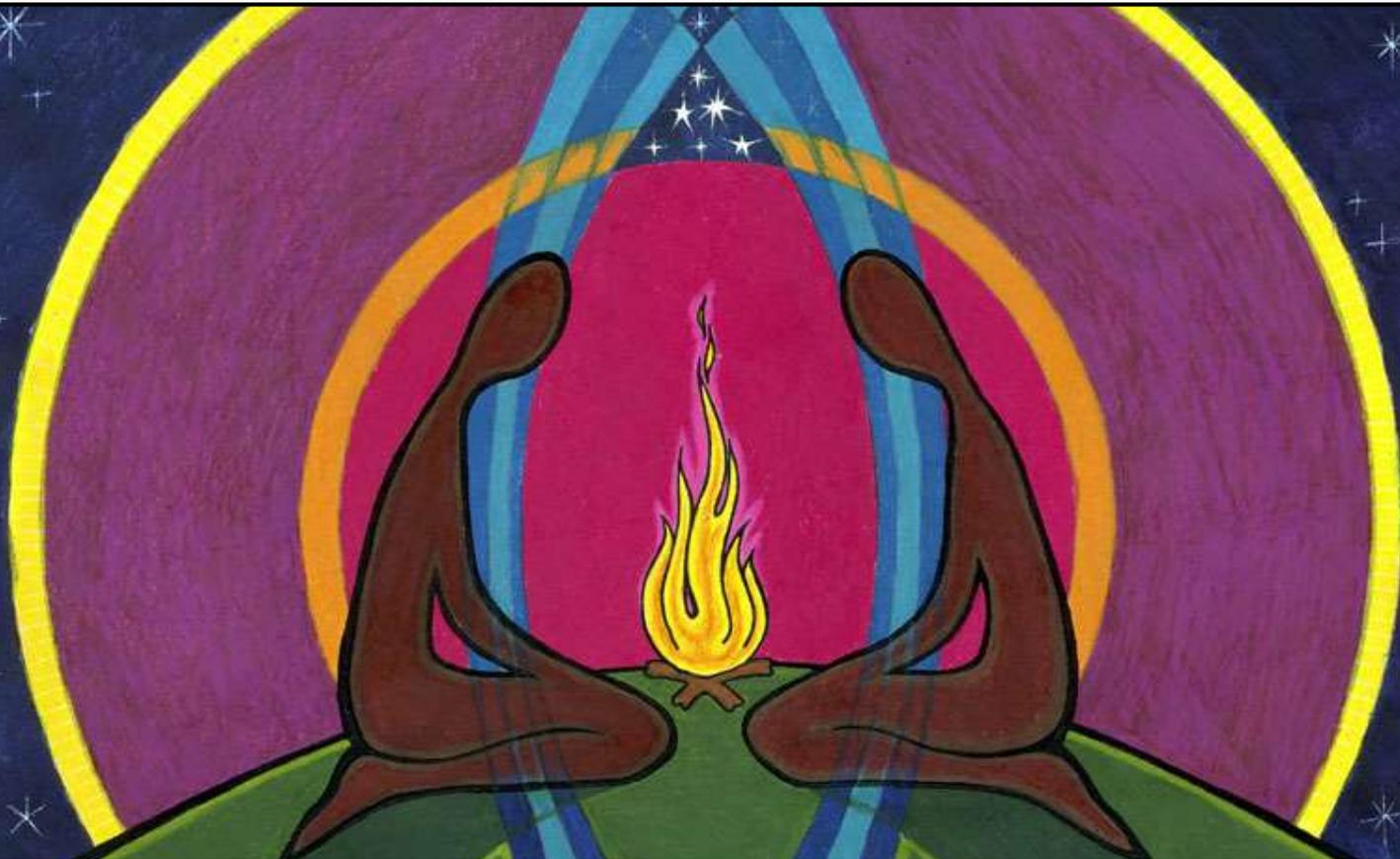
vision congruent with 2007

***First Nations Holistic Lifelong Learning Model***

<http://www.ecdip.org/docs/pdf/FN%20Learning%20Model%20CCL.pdf>



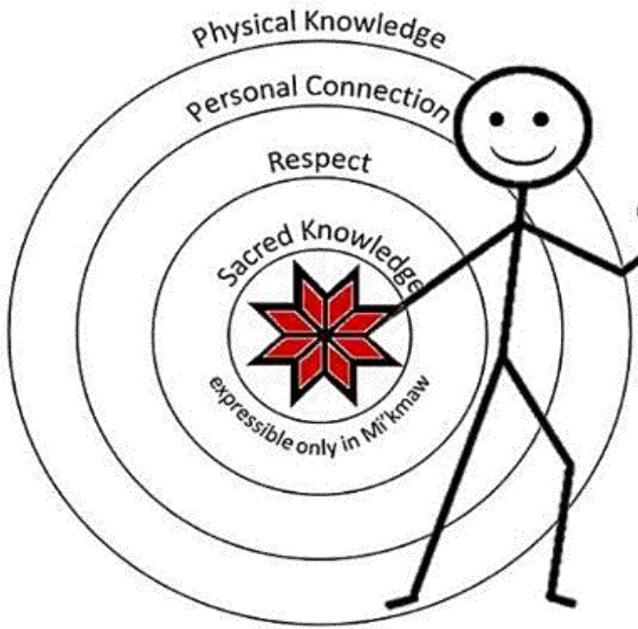
# Integrative Science



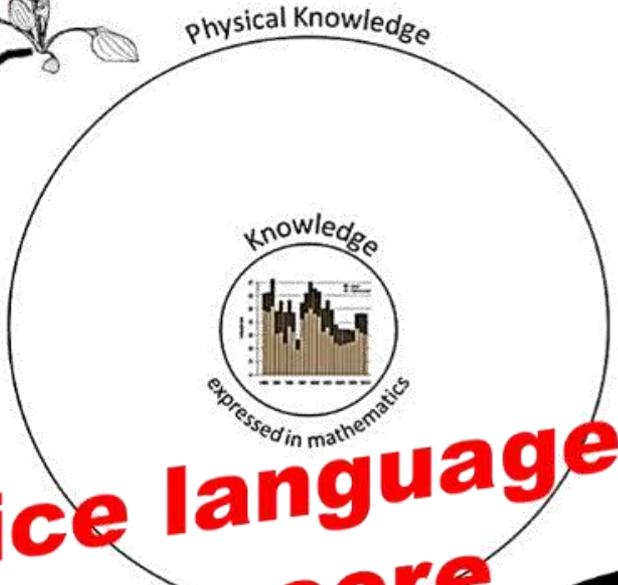
**The foundational basis for any relationship  
is an exchange of stories.**  
(words of Elder Albert Marshall)

# Integrative Science

**notice where  
the storytellers stand**



Indigenous



Western

**notice language  
at the core**

# Integrative Science

**as storytellers, as knowledge agents ...  
we have responsibilities**

- respect
- relationship
- reverence
- reciprocity
- ritual (ceremony)
- repetition
- responsibility

Indigenous

- question asking
- hypotheses  
(making & testing)
- data collection
- data analysis
- model & theory  
construction

Western

## CO-LEARNING for Two-Eyed Seeing

learning our strengths and learning together



### CONCEPTS and ACTIONS (epistemologies)

- respect
  - relationship
  - reverence
  - reciprocity
  - ritual (ceremony)
  - repetition
  - responsibility
- the question
  - hypothesis (making & testing)
  - data collection
  - data analysis
  - model & theory construction

J. Archibald, 2001, Can. J. Native Ed. 25(1):1-5

## CO-LEARNING for Two-Eyed Seeing

learning our strengths and learning together



### KNOWLEDGE OBJECTIVES

collective, living knowledge to enable nourishment of one's journey within expanding sense of "place, emergence and participation" for collective consciousness and interconnectiveness

dynamic, testable, published knowledge independent of personal experience that can enable prediction and control (and "progress")

towards resonance of understanding within environment

towards construction of understanding of environment

## CO-LEARNING for Two-Eyed Seeing

learning our strengths and learning together



### METHODOLOGIES

*weaving* of patterns within nature's patterns via creative relationships and reciprocities among **love, land, and life (vigour)** that are constantly reinforced and nourished by **Aboriginal languages**

*un-weaving* of nature's patterns (especially via analytic logic and the use of instruments) to cognitively reconstruct them, especially using **mathematical language (rigour)** and **computer models**

## CO-LEARNING for Two-Eyed Seeing

learning our strengths and learning together



### NATURAL WORLD (ontologies)

#### All my Relations

beings ...  
interconnective  
and animate:  
**spirit +  
energy + matter**

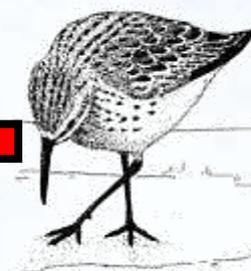
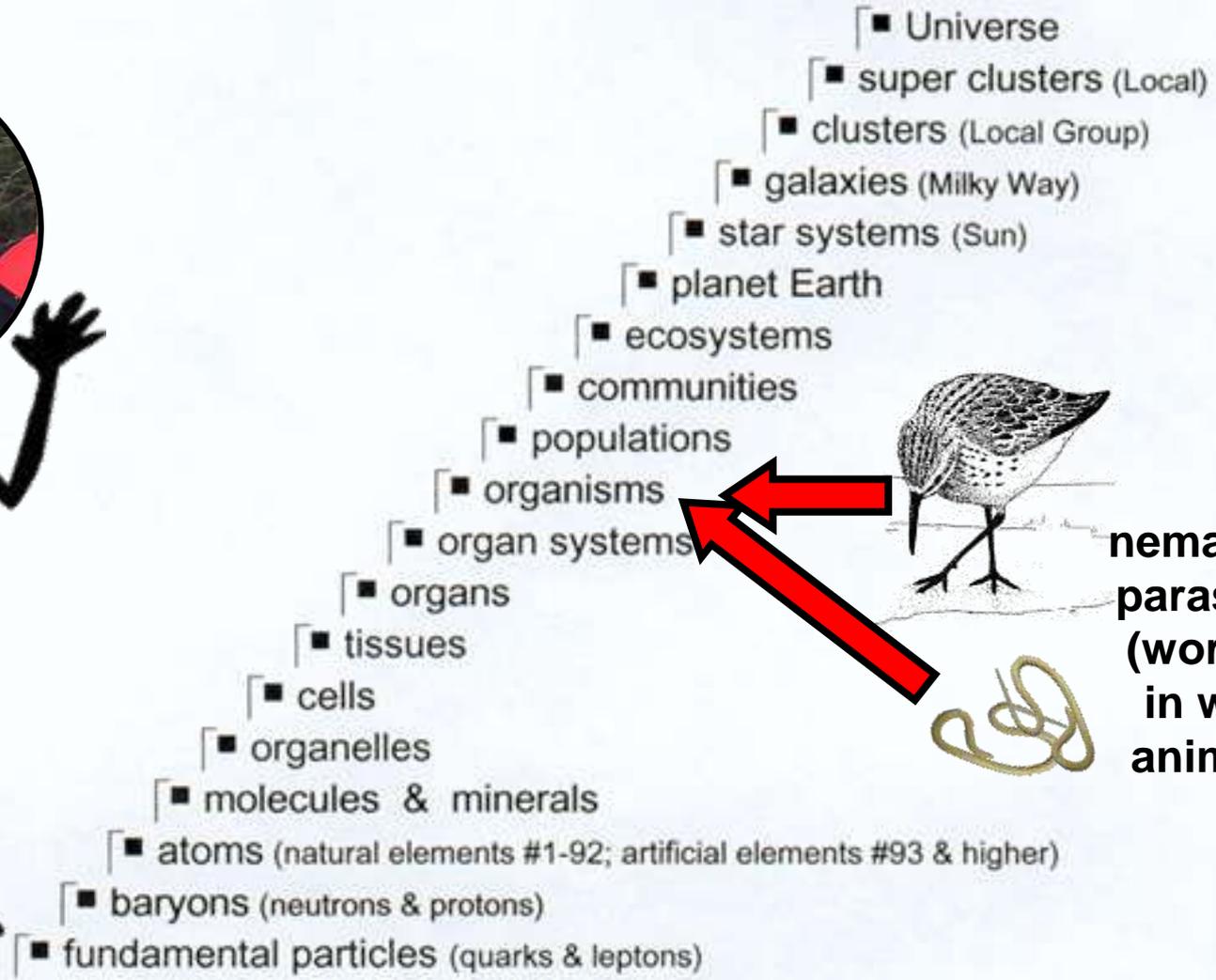
with  
CONSTANT CHANGE  
within balance and wholeness

#### parts & wholes

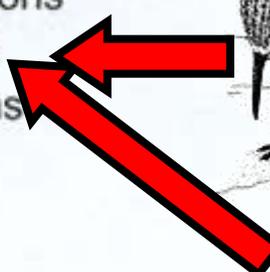
objects ...  
comprised of parts and  
wholes characterized by  
systems and emergences:  
**energy + matter**

with  
EVOLUTION

# my own research in the staircase pattern



nematode  
parasites  
(worms)  
in wild  
animals



# my own research in the staircase pattern

lots of technical words!

**EPIDEMIOLOGY**  
at the level of populations

**DISEASE**  
response at the level of  
(multi-cellular) organism

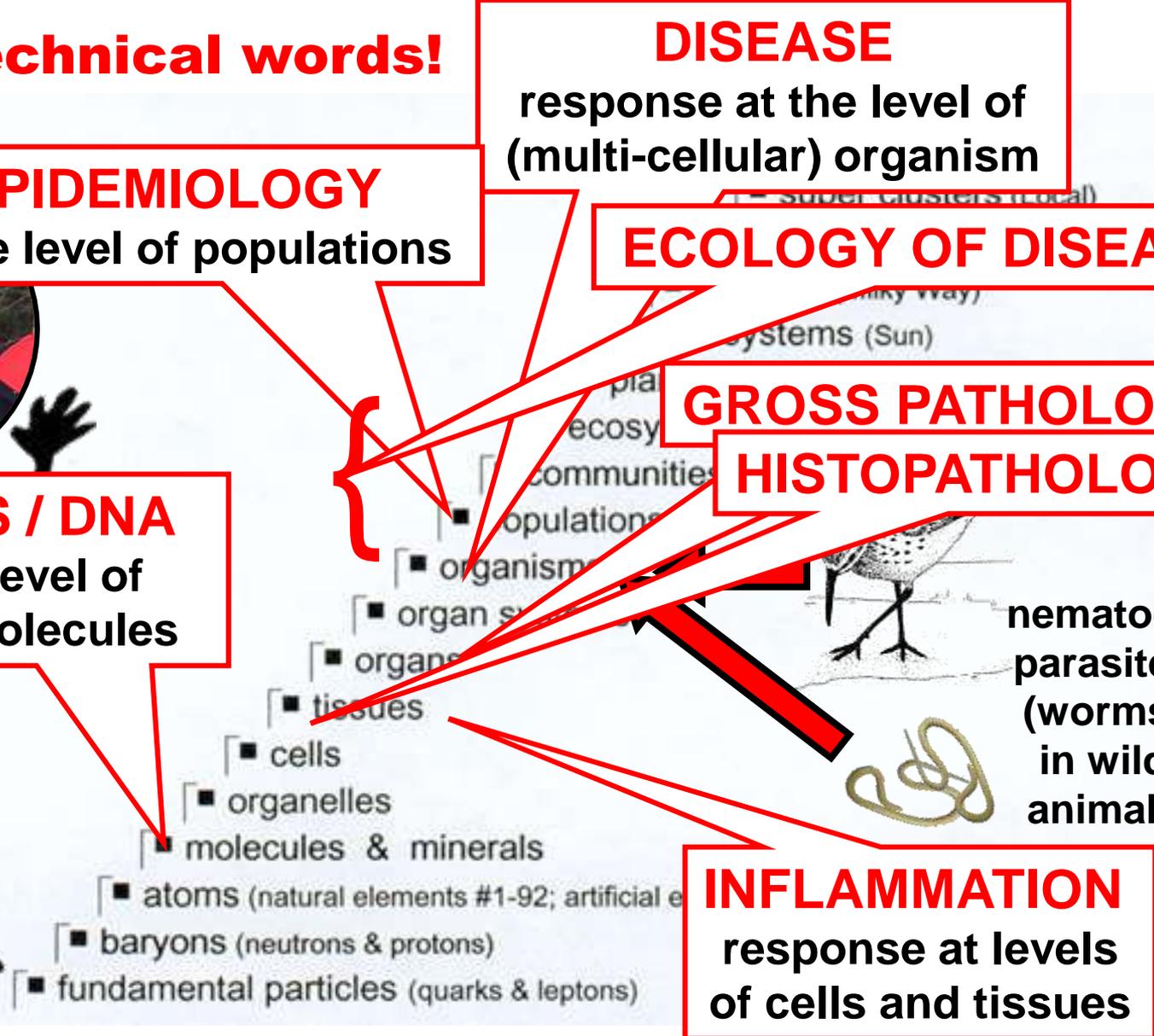
**ECOLOGY OF DISEASE**

**GROSS PATHOLOGY**  
**HISTOPATHOLOGY**

**GENES / DNA**  
at the level of  
macromolecules

**INFLAMMATION**  
response at levels  
of cells and tissues

nematode  
parasites  
(worms)  
in wild  
animals

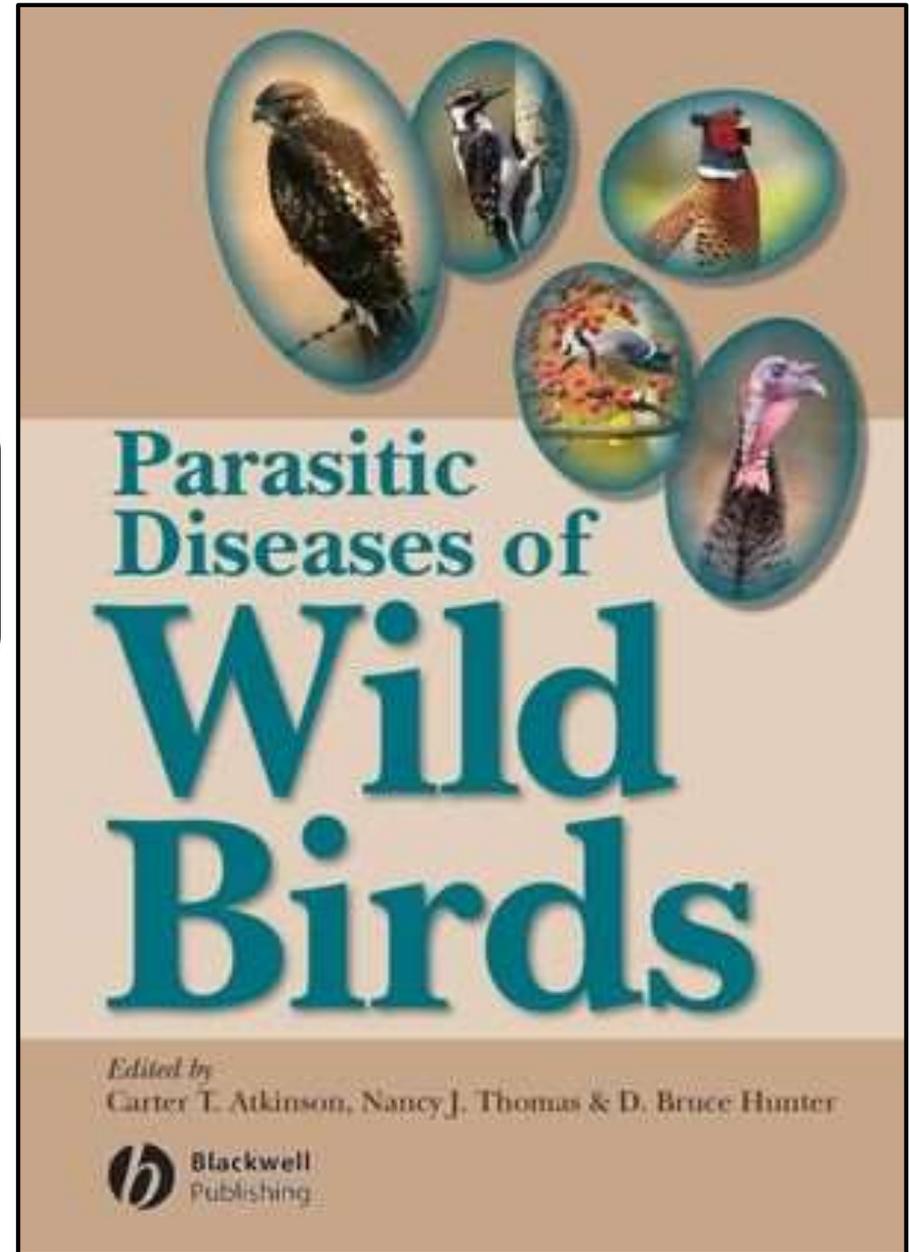


# my own research Western science stories



... and I  
am not in  
this story

patterns taken apart  
to gain understanding  
... re-assembled  
within explanatory  
professional  
publications



My Western

^ Science stories are

stories of

parts & wholes

... stories of: **MATTER**

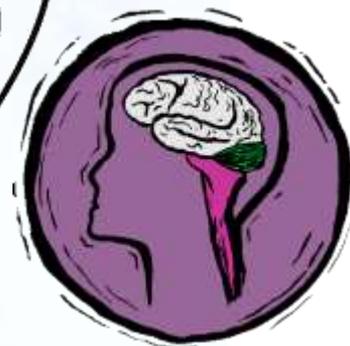
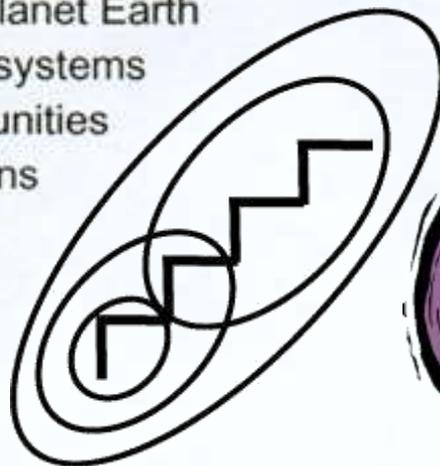
**Spirit does not exist.**  
**Consciousness is "problematic".**

... and I am not in this story



My world is many "its" (objects).

- [■ Un
- [■ super
- [■ clusters
- [■ galaxies (M
- [■ star systems (Sun)
- [■ planet Earth
- [■ ecosystems
- [■ communities
- [■ populations
- [■ organisms
- [■ organ systems
- [■ organs
- [■ tissues
- [■ cells
- [■ organelles
- [■ molecules & minerals
- [■ atoms (natural elements #1-92; artificial elements)
- [■ baryons (neutrons & protons)
- [■ fundamental particles (quarks & leptons)



**Western**

My Western

^ Science stories are

stories of

parts & wholes

... stories of:

**MATTER & ENERGY**

**Spirit does not exist.**

**Consciousness is "problematic".**

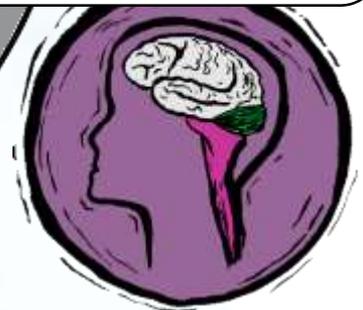
... and I am not in this story

My world is many "its" (objects).

... along with energy fields and emergent systems!



but I am in the story for quantum physics!



- [ ] Un
- [ ] super
- [ ] clusters
- [ ] galaxies (M
- [ ] star syste
- [ ] planet Earth
- [ ] ecosystems
- [ ] communities
- [ ] populations
- [ ] organisms
- [ ] organ systems
- [ ] organs
- [ ] tissues
- [ ] cells
- [ ] organelles
- [ ] molecules & minerals
- [ ] atoms (natural elements #1-92; artificial elements)
- [ ] baryons (neutrons & protons)
- [ ] fundamental particles (quarks & leptons)

**Western**

My Mi'kmaq

^ Science stories are

stories of

interconnectiveness

Our stories are alive.

**Place  
Emergence  
Participation**

... and I am  
in the story

Vision ~~is~~

Volition

Mental

Physical

**Spirit  
everywhere**



My world, our world, is  
"All My Relations" (kin / subjects).

**Mi'kmaq**

# **KNOWLEDGE lives in STORIES**

The land is alive  
with our stories.

**Place  
Emergence  
Participation**

**Moose Harvest**

**Mi'kmaq  
Youth Camp**

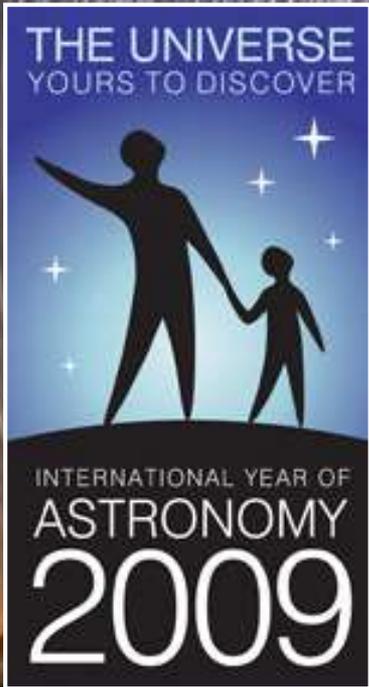
photos by Clifford Paul, Membertou FN



# KNOWLEDGE lives in STORIES

The sky is alive  
with our stories.

Place  
Emergence  
Participation



**TATAPN** (North Star)

**Mi'kmaq Traditional Night Sky Story:  
Muin and the Seven Bird Hunters**

# Mi'kmaq science stories: patterns woven within patterns

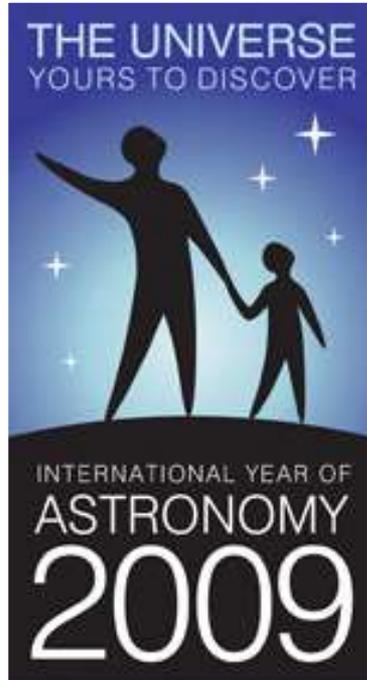
CRC Team: Sana Kavanagh, Kristy Read, Nadine Lefort, Prune Harris



**Elder Murdena Marshall  
Eskasoni FN**

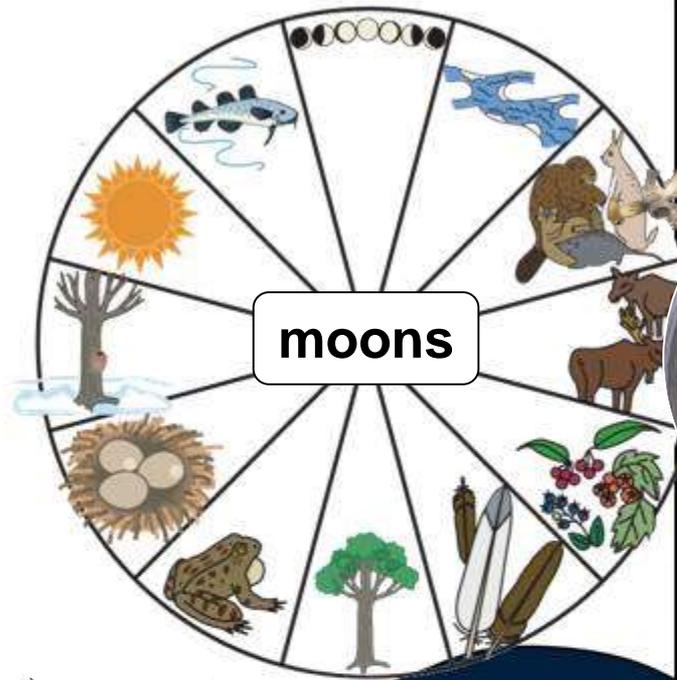


**Elder  
Lillian Marshall  
Potlotek FN**



**Mi'kmaq Traditional Night Sky Story:  
Muin and the Seven Bird Hunters  
("oral calendar")**

# Mi'kmaq science stories: patterns woven within patterns



moons



days  
(nights)



seasons



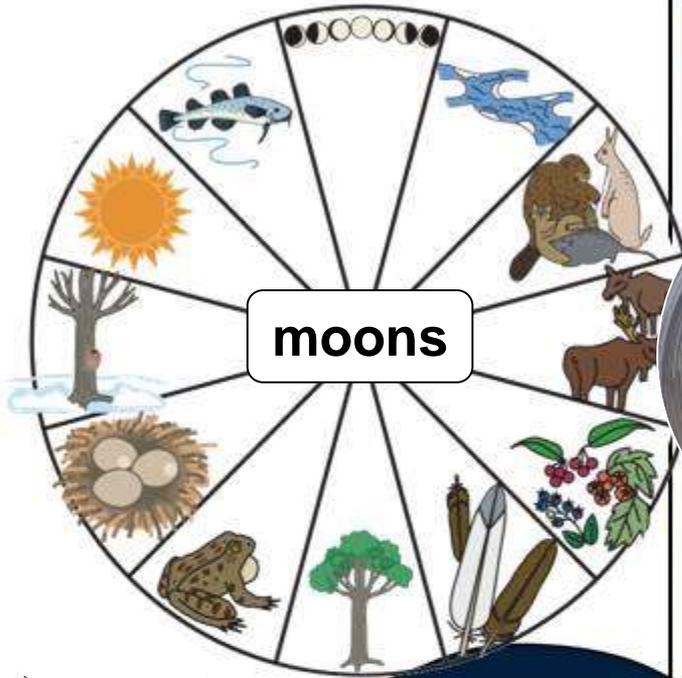
generations

**Msit No'kmaq**  
All My Relations

**Mawisikamukawey**



# Mi'kmaq science stories: patterns woven within patterns



moons



days  
(nights)

Ancestors  
(in sky)

seasons

years

generations

Msit No'kmaq  
All My Relations

Mawisikamukawey



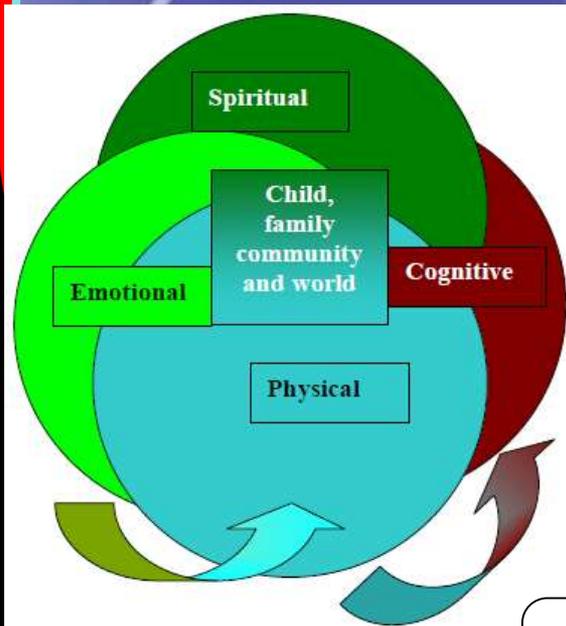
**Knowledge  
is spirit.  
It is a gift,  
passed on  
through  
many people.  
As Elders,  
we must  
pass it on.**

words of  
Elder Albert Marshall



**Knowledge  
is spirit.  
It is a gift,  
passed on  
through  
many people.  
As Elders,  
we must  
pass it on.**

words of  
Elder Albert Marshall



Ancestral  
Knowledge

Passing on  
Ancestral  
Knowledge



CINDY  
BLACKSTOCK

**Breath of Life Theory  
2007 and 2011**

# Stories

FROM ELDER ALBERT MARSHALL:

Traditionally, nothing was taught as black and white. Everything was story ... where you have the responsibility to listen and reflect. This is a much more profound way of learning because you have the opportunity for relationship with the knowledge.

I must bring relationships into my life. If a sense of relationship with the knowledge is not identified, then it becomes a duty and you memorize to appease someone. The understandings have not been assimilated; the head and heart have not been connected.



**Knowledge is alive, and thus both physical and spiritual.**

**KNOWLEDGE lives in STORIES**

# Stories

FROM LESLIE MARMON SILKO:

I will tell you something about stories ...  
They aren't just entertainment.  
Don't be fooled.  
They are all we have, you see,  
all we have to fight off  
illness and death.

You don't have anything  
if you don't have the stories.

*in: Ceremony (1997) by: Leslie Marmon Silko ...*

**STORYTELLER** with mixed ancestry,  
by her own description: Laguna Pueblo, Mexican, and white



**Knowledge is alive, and thus both physical and spiritual.**

**KNOWLEDGE lives in STORIES**

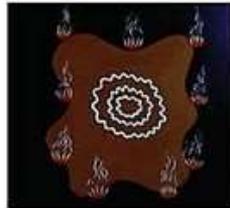
# Stories

FROM C.F. BLACK and J. BORROWS:

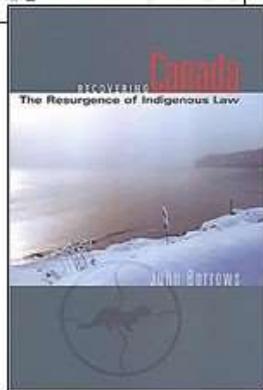
The Land is the Source of the Law

A DIALOGIC ENCOUNTER WITH INDIGENOUS JURISPRUDENCE

2011



C. F. Black



‘I want you to remember only this one thing,’ said the Badger. ‘If stories come to you, care for them. And learn to give them anywhere they are needed ... sometimes a person needs a story more than food to stay alive. That is why we put these stories in each other’s memories. This is how people care for themselves.’

p. 3 in “The Land is the Source of the Law” by **Christine F. Black** 2011  
quoting **John Borrows** 2002, 2007  
p. 13 in “Recovering Canada: the resurgence of Indigenous Law”

CF Black: Indigenous Australian from the Kombumerri and Munaljahlai Clans  
J Borrows: Anishinaabe/Ojibway and a member of the Chippewa of the Nawash First Nation

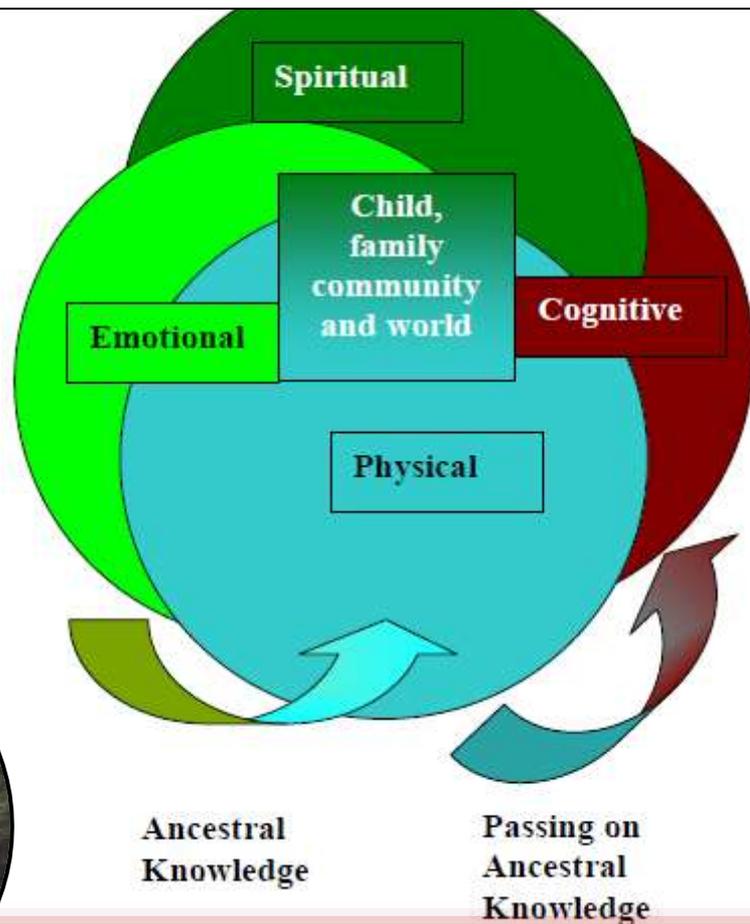


**Knowledge is alive, and thus both physical and spiritual.**

**KNOWLEDGE lives in STORIES**

# Stories → Theory

FROM CINDY BLACKSTOCK:



## Breath of Life Theory 2007 and 2011

- member, Gitksan Nation

Appendix 2:  
references plus  
additional visuals pertaining to  
Breath of Life Theory



**Knowledge is alive, and thus both physical and spiritual.**

**KNOWLEDGE lives in STORIES**

# Stories → weave elements of Mi'kmaq Traditional Knowledge

- ❖ Mi'kmaq language
- ❖ interconnectiveness of land-life-language
- ❖ four aspects of being human
  - spiritual, emotional, physical, cognitional
- ❖ **Seven Sacred Gifts of Life**
  - love, honesty, humility, respect, patience, truth, wisdom
- ❖ **Netukulimk**



# **Elder Albert's thoughts on Mi'kmaq Spirituality**

**This is what we truly believe, this is what reinforces our Mi'kmaq spirituality: that no one being is greater than the next, that we are part and parcel of the whole ... we are equal ... and that each one of us has a responsibility to the balance of the system.**



# **Elder Albert's thoughts on Mi'kmaq Language**

**Our language teaches  
us that everything  
alive is both  
physical and spiritual.**

**The onus is on the person to  
look at our natural world  
with two perspectives.**

**Modern science sees objects,  
but our language teaches  
us to see subjects.**

Artist Gerald Gloade Millbrook First Nation



# **Elder Albert's thoughts on Land – Life – Language**

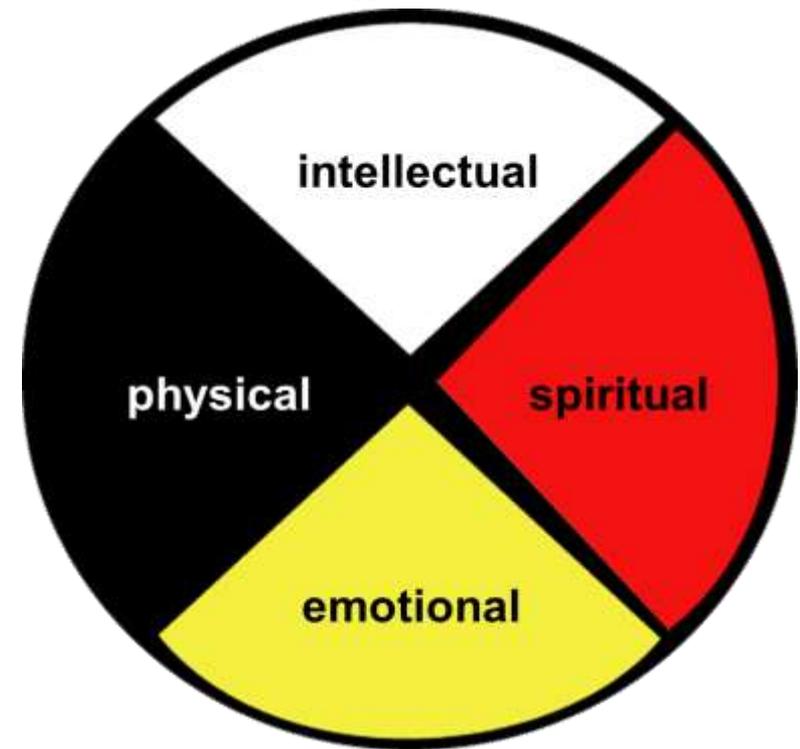
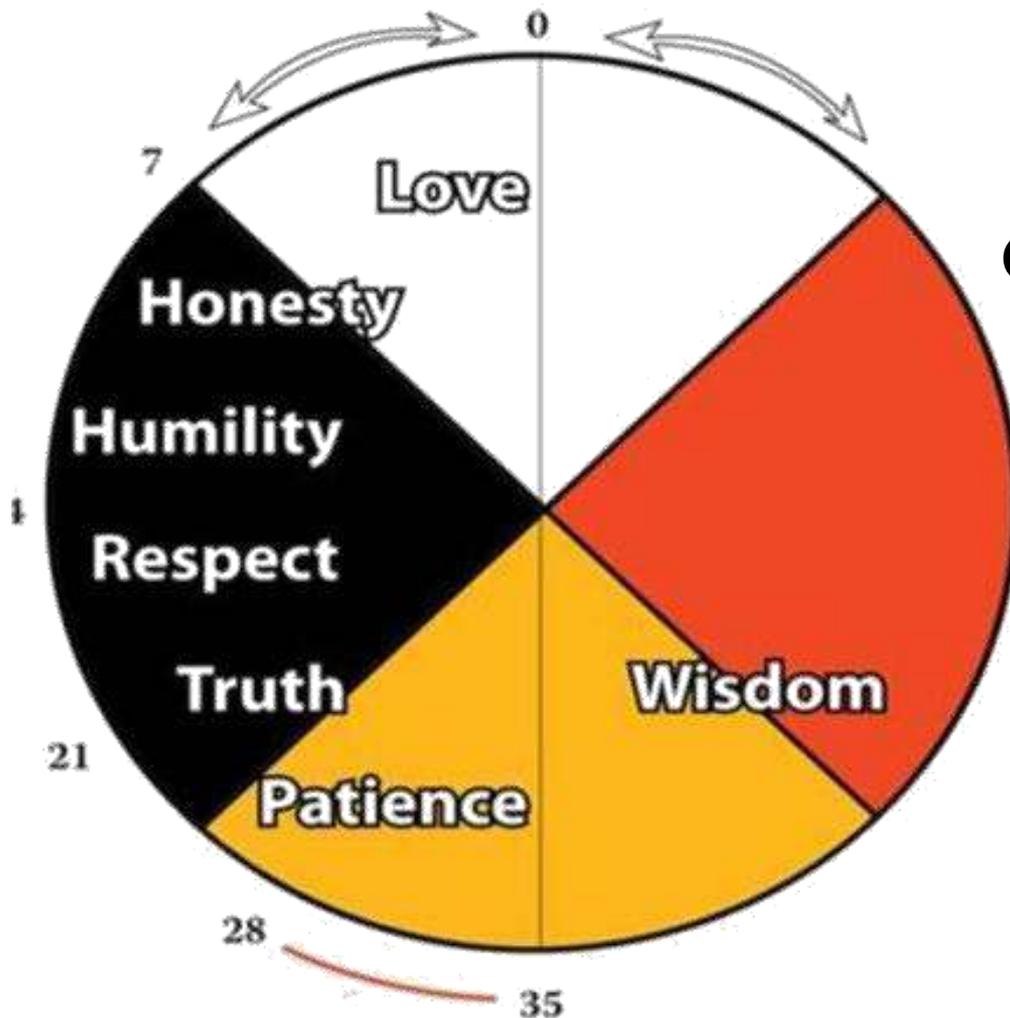
**Everything  
that we do  
to our  
natural world  
... we also do  
to ourselves.**



# Elder Murdena's teachings on Mi'kmaq Seven Sacred Gifts of Life

and

## Four Aspects of Being Human



# Elder Albert's thoughts on Netukulimk

We understand economic development as somewhat foreign. One objective has to be to provide opportunities for groups



of people so they can sustain themselves adequately, plus the community. But, at the same time as we are using Gifts from Creator, we must:

- NOT compromise ecological integrity, and
- ALWAYS look into the future so the next generations have the same opportunities.

# Elder Albert's thoughts on Netukulimk

We understand economic development as somewhat foreign.

**COMPARE TO WIDDOWSON'S 2017 CONCLUSION** (cited previously)

We need to prevent all vested interests from distorting our understanding of the environmental harm caused by economic development, and politically motivated promises to “equally recognize” traditional knowledge do not aid us in this endeavour.



Artist Gerald Gloade; Millbrook First Nation

we must:

- **NOT** compromise ecological integrity, and
- **ALWAYS** look into the future so the next generations have the same opportunities.

# Elder Albert's thoughts on Netukulimk

We understand economic development as somewhat foreign.

**COMPARE TO WIDDOWSON'S 2017 CONCLUSION** (cited previously)

We need to prevent all vested interests from distorting our understanding of the environmental harm caused by economic development, and politically motivated promises to “equally recognize” traditional knowledge do not aid us in this endeavour.



**Are critics prepared  
to engage in  
Two-Eyed Seeing?  
Co-Learning? More?**

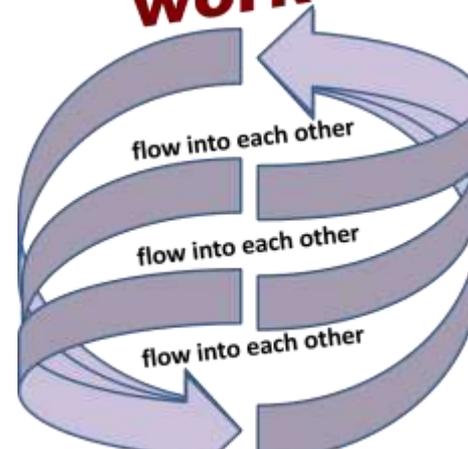
Artist Gerald Gloade; Millbrook First Nation

# Two-Eyed Seeing

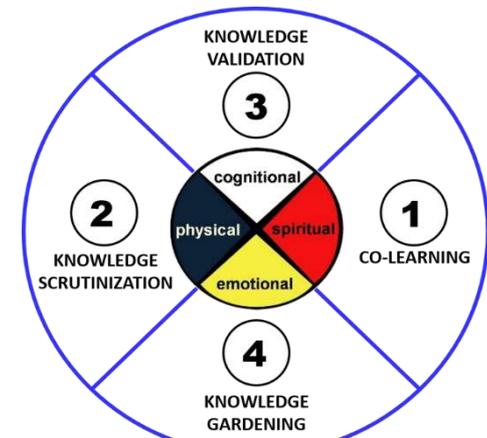
1. Co-Learning
2. Knowledge Scrutinization
3. Knowledge Validation
4. Knowledge Gardening

**categories**

Core Objective #1  
**a GUIDING PRINCIPLE**  
Core Objective #2  
**4 KEY ESSENTIALS**  
Core Objective #3  
**work for "THE UPSIDE"**



**fluidity**



**wholistic**

# **Two-Eyed Seeing**

**words of Elder Albert Marshall, LLD, Mi'kmaq Nation**

**This work of Two-Eyed Seeing is not easy.  
And so we need to understand that sometimes  
our most important job is to plant seeds  
for the future, for the youth,  
knowing seeds germinate when the time is right.**

# Two-Eyed Seeing

context = Indigenous health:

words of Dr. Alika Lafontaine BSc, MD, FRCPC; Univ. Alberta

**CHANGE IS COMING: “The choice we have is whether we work together, or we work apart, and the consequences of that choice will shake the very foundation of the Canadian health-care system.”**

*from Opinion Piece by André Picard in The Globe and Mail, 25 April 2017:*

**To improve Indigenous health, change expectations**

*context: Indigenous peoples' and communities' health in Canada today  
re health care, health policies, health resources, and related*

<https://www.theglobeandmail.com/opinion/to-improve-indigenous-health-change-expectations/article34798062/>

# Two-Eyed Seeing

Wela'liog  
Thank you

**with sincere thanks to the artist**



**Gerald Gloade, Millbrook community, Mi'kmaq Nation**

- designed the beaver for the 2017 Canadian nickel
- Culture and Education Officer with Mi'kmawey Debert  
<http://www.mikmaweydebert.ca/home/>
- formerly with NS Dept of Natural Resources

# **Two-Eyed Seeing**

## **more of Elder Albert's thoughts**

*written by Cheryl Bartlett at the request of Elder Albert Marshall for*

*Thinkers Lodge, 28 September – 1 October 2017, Pugwash, NS*

**Climate Change, Drawdown & the Human Prospect:**

**A Retreat for Empowering our Climate Future for Rural Communities**

Mi'kmaq Elder Albert Marshall (who lives in the community of Eskasoni, Nova Scotia, in the Traditional Territory of Mi'kma'ki) coined the English phrase "Two-Eyed Seeing" many years ago for a guiding principle found in Mi'kmaq Knowledge as reflected in the language. Elder Albert is a fluent speaker of Mi'kmaq ... Two-Eyed Seeing in his language is known as *Etuaptmumk*.

Two-Eyed Seeing / *Etuaptmumk* encourages the realization that beneficial outcomes are much more likely in any given situation if we are willing to bring two or more perspectives into play. As such, it can be further understood as the gift of multiple perspectives treasured by many Indigenous peoples. And our world today has many arenas where this realization, this gift, is exceedingly relevant including, especially, education, health, and environment. Elder Albert is passionate about bringing into these arenas the perspectives and knowledges of the Mi'kmaq people, of all Indigenous peoples, such that mutually beneficial, inter-cultural, collaborative relationships with mainstream society and the Western sciences can be nurtured and grown and new understandings put to work. Thus, he describes Two-Eyed Seeing as: *“learn to see from your one eye with the best or the strengths in the Indigenous knowledges and ways of knowing ... and learn to see from your other eye with the best or the strengths in the mainstream (Western or Eurocentric) knowledges and ways of knowing ... but most importantly, learn to see with both these eyes together, for the benefit of all”*. Albert acknowledges that such work is not easy and he emphasizes, therefore, that an on-going journey of co-learning is both required and essential in order to develop the profound collaborative understandings and capabilities that Two-Eyed Seeing encourages. Co-learning requires learning together, with and from each other, ongoing. Such is necessary to preclude an undemanding, facile approach in which Two-Eyed Seeing wrongly becomes mere jargon, trivialized, romanticized, co-opted, or used as a mechanism.

In addition to encouraging inter-cultural collaboration, Two-Eyed Seeing helps us to acknowledge the distinct and whole nature of Mi'kmaq knowledge and its ways of knowing, indeed of every Indigenous knowledge and its ways of knowing (i.e., they are represented as a whole eye) alongside the distinct nature of the Western knowledges and ways of knowing (i.e., they are also represented as a whole eye), while asking that these two eyes work together (as they do in binocular vision). Nevertheless, it may be that in a particular set of circumstances we will choose to call upon the strengths within Mi'kmaq knowledge or another Indigenous science, whereas in another set of circumstances we might choose to call upon those within the Western sciences. Thus, Two-Eyed Seeing can require a “weaving back and forth” between knowledges, and this will draw upon abilities to meaningfully and respectfully engage in an informed manner in collaborative settings. For such circumstances, Elder Albert recommends the approach be pictured in the following way: “Sometimes it’s like a heavy sledge that we are trying to move – this sledge represents our passions for ensuring the ecological integrity of *Mawisikamukawey* (the nurturing wholeness of the earth), the well-being of our communities, and the transmission of our Mi'kmaq culture (and/or other Indigenous cultures) and knowledge(s). We, the Elders, are dragging that sledge with all our might, and we need others to help us by pushing as hard as you can on the rear of the sledge. But, it is we, the Elders, who will determine where it goes. Other times that heavy sledge represents a passion we Elders hold that the Western sciences can help address. Then we, the Elders, will help you Western scientists with that sledge ... you drag, we push ... while we all also constantly exchange understandings about where it is going ... and learn to abide by *i'l'oqaptmu'k* meaning ‘to revisit to renew, to

maintain movement in the direction Spirit intended’’. Indeed, Elder Albert says, the capacity to abide by *i’loqaptmu’k* is the essence of co-learning and essential to Two-Eyed Seeing. Other essentials are knowledge scrutinization or inquiry (to learn to be able to see in genuine and meaningful ways the best, the strengths, within our different knowledges); knowledge validation (by peers, to ensure authenticity, accuracy, and sacredness), and knowledge gardening (to learn to walk our talk, together, within grounded projects that have meaningful community relevance).

Two-Eyed Seeing adamantly, respectfully, and passionately asks that we bring together our different ways of knowing to motivate people, Indigenous and non-Indigenous alike, to use all our understandings so we can leave the world a better place and not compromise the opportunities for our youth (in the sense of Seven Generations) through our own inaction. Elder Albert indicates that “Two-Eyed Seeing is not easy to convey to academics as it does not fit into any particular subject area or discipline. Rather, it is about life: what you do, what kind of responsibilities you have, how you should live while on Earth ... i.e., a guiding principle that covers all aspects of our lives: social, economic, environmental, etc. The advantage of Two-Eyed Seeing is that you are always fine tuning your mind into different places at once, you are always looking for another perspective and better way of doing things.”

Elder Albert's passionate concern for the well-being of the earth, for Indigenous peoples, for all peoples, can also be taken into account if/when a person might wish to ponder "how might academic or mainstream views be made more useable for Indigenous communities?" rather than seeking to follow a Two-Eyed Seeing approach of bringing into play the best of different knowledge systems (namely, Indigenous worldviews and paradigms alongside those of the mainstream). Albert's words speak clearly as to why Two-Eyed Seeing offers a richer approach than would tweaking one view to accommodate bits and pieces of the other. He directs attention to the stress placed on an Indigenous person when educational (and other) systems deny traditional knowledge a place and a role in today's times: "When you force people to abandon their ways of knowing, their ways of seeing the world, you literally destroy their spirit and once that spirit is destroyed it is very, very difficult to embrace anything – academically or through sports or through arts or through anything – because that person is never complete. But to create a complete picture of a person, their spirit, their physical being, their emotions and their intellectual being ... all have to be intact and work in a very harmonious way". For Mi'kmaq people, Elder Albert says: "This is what we truly believe, this is what reinforces our Mi'kmaq spirituality: that no one being is greater than the next, that we are part and parcel of the whole ... we are equal ... and that each one of us has a responsibility to the balance of the system." In a similar but opposite way to these understandings, and given that spirit is at the heart of Mi'kmaq knowledge and most if not all Indigenous knowledges, it would be

highly inappropriate if not impossible to ask that the mainstream sciences and much of modern academia – which have diligently scrubbed spirit out of their overall ontology – somehow reverse their diligence. And thus, the profound challenge within Two-Eyed Seeing ... and the necessity of co-learning and the other key knowledge essentials mentioned above.

Elder Albert readily acknowledges that his Mi'kmaq understandings are but one view in a multitude of Indigenous views ... similarly that of the Western sciences ... and, moreover, that all of the world's cultures (which include the Western sciences) have understandings to contribute in addressing the local to global challenges faced in efforts to promote healthy communities and ecosystems. Thus, one might wish to talk about Four-Eyed Seeing, or Ten-Eyed Seeing, or 3265-Eyed Seeing, etc. This extension also encompasses the understanding that all the world's species, all our bio- and eco-kin, have contributions to make.



# more of Elder Albert's thoughts ... MTK for Two-Eyed Seeing

**Authenticity, accuracy and sacredness of TK.** We need to recognize the great temptation for some people to “just make it up”. Validation, by recognized community Elders and Knowledge Holders, of that which is brought forward is exceedingly important.

**Appropriate sources for TK.** We need to acknowledge that Elders and Knowledge Holders ... each one of us ... has certain expertise, yes, but none of us knows everything. This is also why TK is collective knowledge.

**Nourishment of the living relationships within TK.** We need to recognize that stories, songs, crafts, practices, family, community, language, ceremonies, and connectivity with the land are important in the transmission of TK. It is living knowledge, not a book-based process of learning.

**The lifelong learning journey for TK.** We need to instill in all learners the understanding that TK is acquired over the whole of a person's life journey; it is not a 3-4 year process akin to a university degree.

# Two-Eyed Seeing and Integrative Science

information: [www.integrativescience.ca](http://www.integrativescience.ca)

Presentations post-2012 are filed in “news” or “archives” rather than in “articles and presentations”.

---

## select articles by Marshalls and Bartlett

- 1) **Bartlett, C., Marshall, M., Marshall, A., and Iwama, M. 2015.** *Integrative Science and Two-Eyed Seeing: Enriching the Discussion Framework for Healthy Communities.* Chapter 10 (pp. 280-326) in "Ecosystems, Society and Health: Pathways through Diversity, Convergence and Integration“, edited by Lars K. Hallstrom, Nicholas Guehlstorf, and Margot Parkes. McGill-Queen’s University Press.
- 2) **Marshall, M., Marshall, A., and Bartlett, C. 2015.** *Two-Eyed Seeing in Medicine.* Chapter 2 (pp. 16-24) in "Determinants of Indigenous Peoples’ Health in Canada; beyond the social", edited by Margo Greenwood, Sarah de Leeuw, Nicole Marie Lindsay, and Charlotte Reading. Canadian Scholars Press, Toronto.
- 3) **Bartlett, C., Marshall, M., and Marshall, A. 2012.** *Two-Eyed Seeing and other Lessons Learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing.* Journal of Environmental Studies and Sciences, 2(4): 331-340.

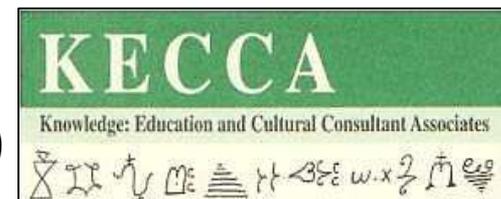
# Contact Information



**Albert Marshall, Elder, LLD**  
**Murdena Marshall, Elder, LLD**

Eskasoni community, Mi'kmaq Nation

[albertdmarshall@ns.sympatico.ca](mailto:albertdmarshall@ns.sympatico.ca)



**Cheryl Bartlett, CM, PhD**

Professor of Biology (retired emerita), CBU

[cheryl\\_bartlett@cbu.ca](mailto:cheryl_bartlett@cbu.ca)

[www.integrativescience.ca](http://www.integrativescience.ca)

CAPE BRETON  
UNIVERSITY