

Two-Eyed Seeing

Indigenous Peoples' Health Institutes Advisory Board Meeting

Edmonton, AB; 19 June 2017

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



meeting hosted by:

Institute of Circulatory and Respiratory Health

Institute of Cancer Research

Two-Eyed Seeing

Indigenous Peoples' Health Institutes Advisory Board Meeting

Edmonton, AB; 19 June 2017

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

Two-Eyed Seeing

Presentation Outline

1. Introduction and Thanks
2. Core Objectives / Guiding Questions
3. TES Background
 - a) Elder Albert's Guiding Principle
 - b) two national documents
 - c) misuse
 - d) Heavy Sledge work ... *i'l'oqaptmu'k*
4. TES Essentials and Challenges
 - a) Co-Learning ... *I'l'oqaptmu'k*
 - b) Knowledge Scrutinization
 - c) Knowledge Validation
 - d) Knowledge Gardening ... Integrative Science
5. Conclusion



Discussion with Guiding Questions

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.



science

Discussion with Guiding Questions

Two-Eyed Seeing

with sincere thanks to many



Canada Research
Chairs

Chaires de recherche
du Canada

Canada



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada

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

CAPE BRETON
UNIVERSITY

Mi'kmaq College Institute
Mi'kmaq Espi Kina'matno'kuom



Canada Foundation
for Innovation

Fondation canadienne
pour l'innovation



Membertou
Elementary



CIHR
Canadian Institutes of
Health Research

IRSC
Instituts de recherche
en santé du Canada



Eskasoni First Nation Detachment
Royal Canadian
Mounted Police

Gendarmerie royale
du Canada



Mermaid Theatre
of Nova Scotia

Two-Eyed Seeing

and special thanks to TES colleagues



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, each of which brings challenges.
3. Know that Two-Eyed Seeing is, unfortunately, being co-opted, trivialized, or romanticized by some people and thus it is desirable that means be found to redress or preclude misuse in new research.

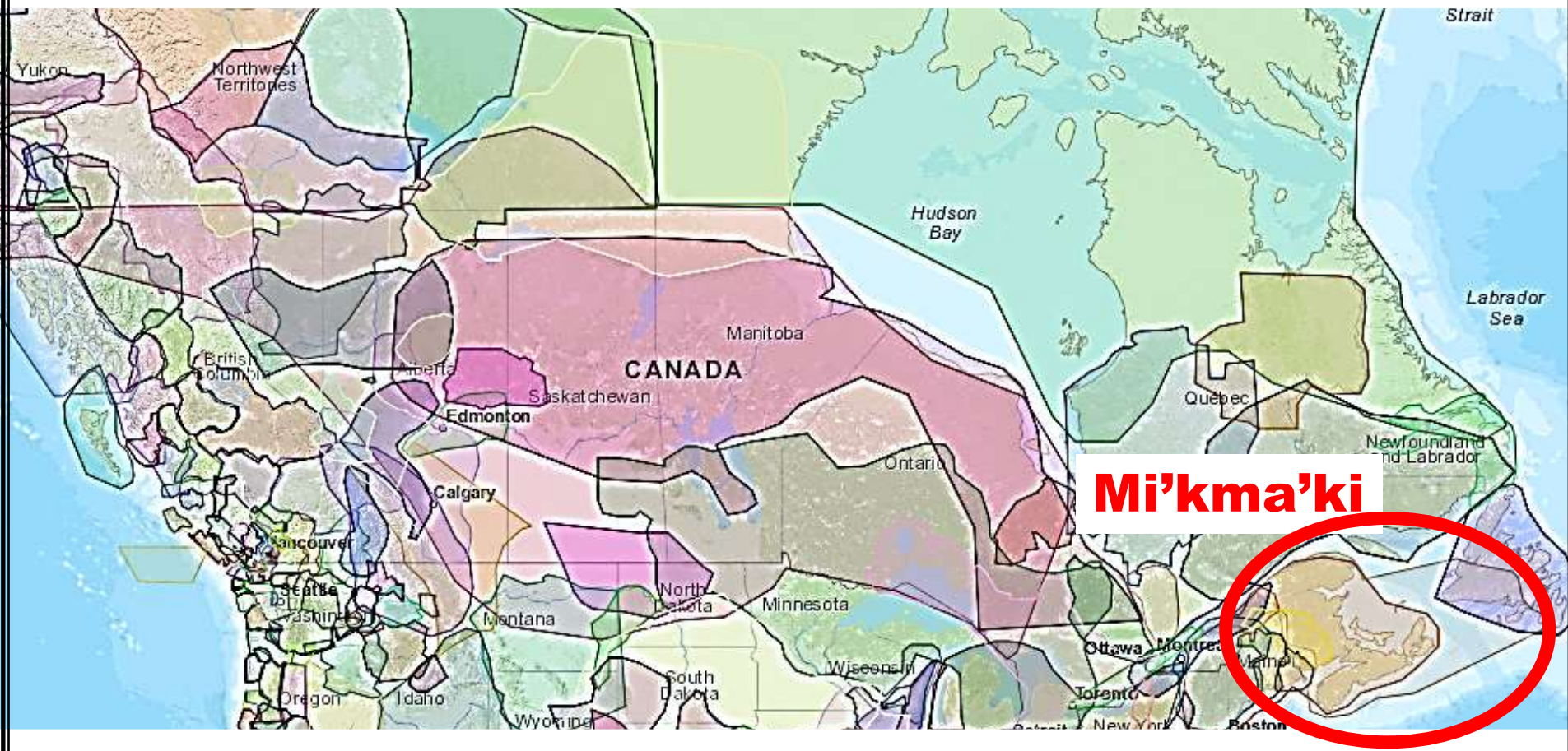
Two-Eyed Seeing

Guiding Questions (for later discussion)

1. What benefits does Two-Eyed Seeing bring to a bio-medical research paradigm? (Note: this is different than asking the same with respect to a bio-medically underpinned health care system.)
2. What pros and cons (and for whom) would be entailed in requiring that research be via co-learning and that it embed nation-appropriate and/or community-based understandings for *i'l'oqaptmu'k*? **Note error in Meeting Materials: “nation” not “national”.**
3. How might CIHR encourage research that supports reawakening to the traditional understanding that healing comes from within? E.g., consider the different messages conveyed by research policies or calls that used “guiding principle, grow, or nurture” rather than “framework, build, or measure”.

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

Core Objective #1
a **GUIDING PRINCIPLE**

- brought forward by Mi'kmaq Elder Albert Marshall
 - Mi'kmaq = *Etuaptmumk*
 - 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

Two-Eyed Seeing

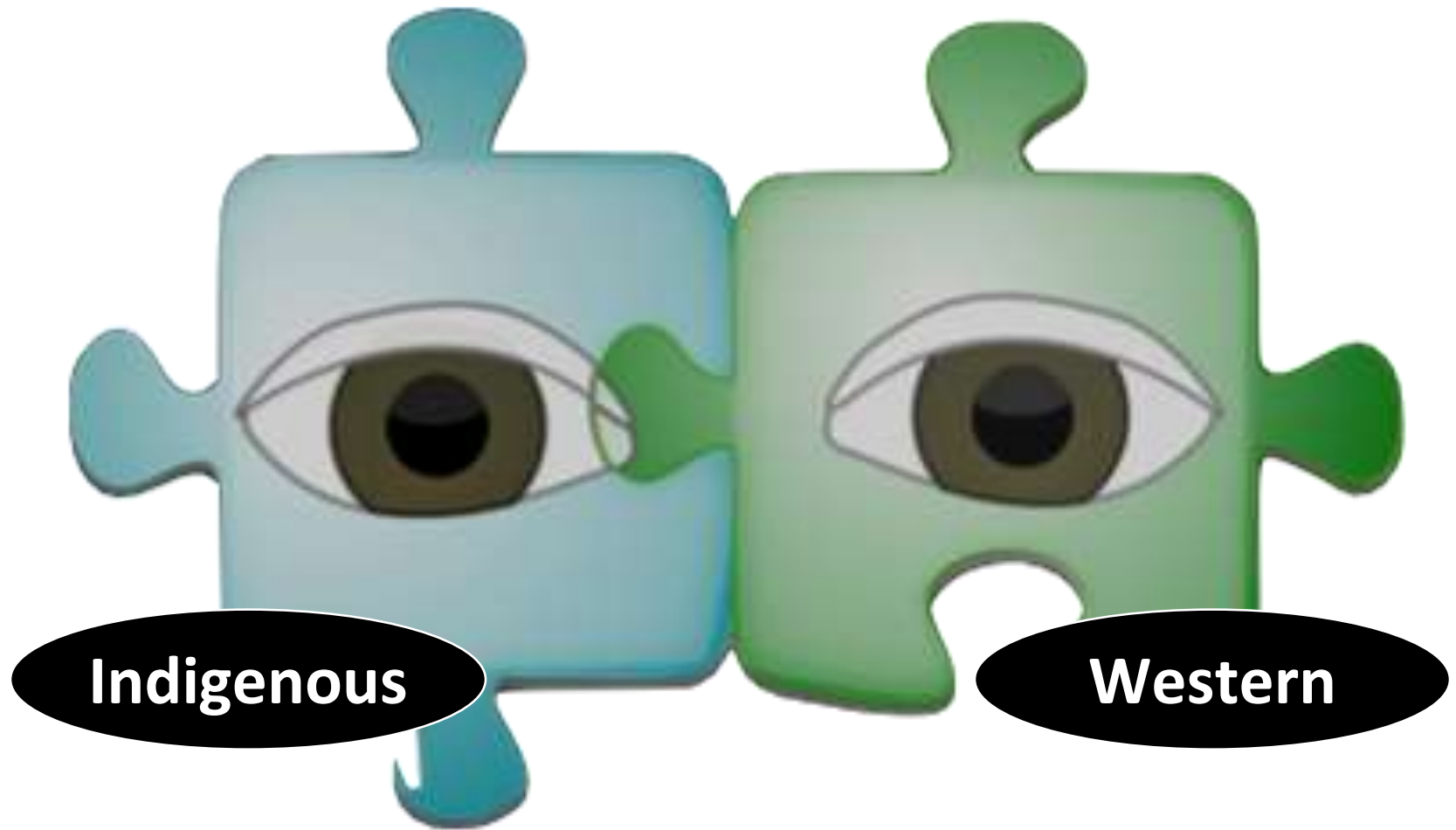
Elder Albert's words:

**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.**



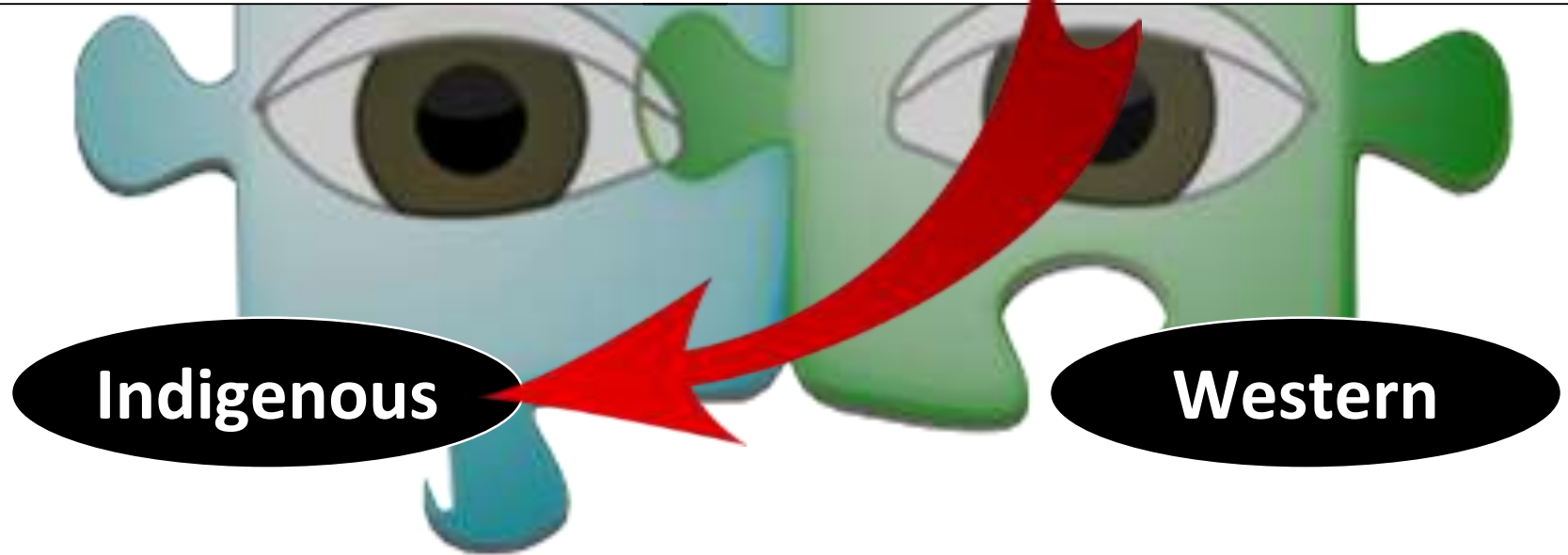
Two-Eyed Seeing



icon encouraged by Elder Albert Marshall

Two-Eyed Seeing

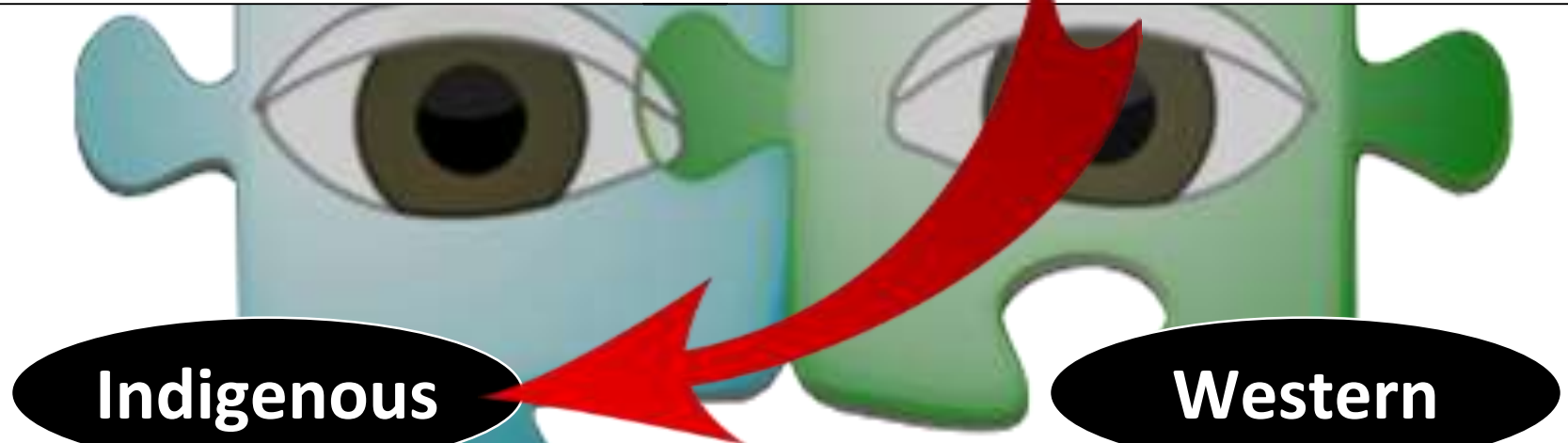
TES emerged in the arena of natural science education at the PSE level ... we wanted those involved to have a clear understanding that the mainstream (“Western”) natural sciences have an overall worldview / paradigm / culture that differs from the worldviews / paradigms / cultures of Indigenous peoples.



icon encouraged by Elder Albert Marshall

Two-Eyed Seeing

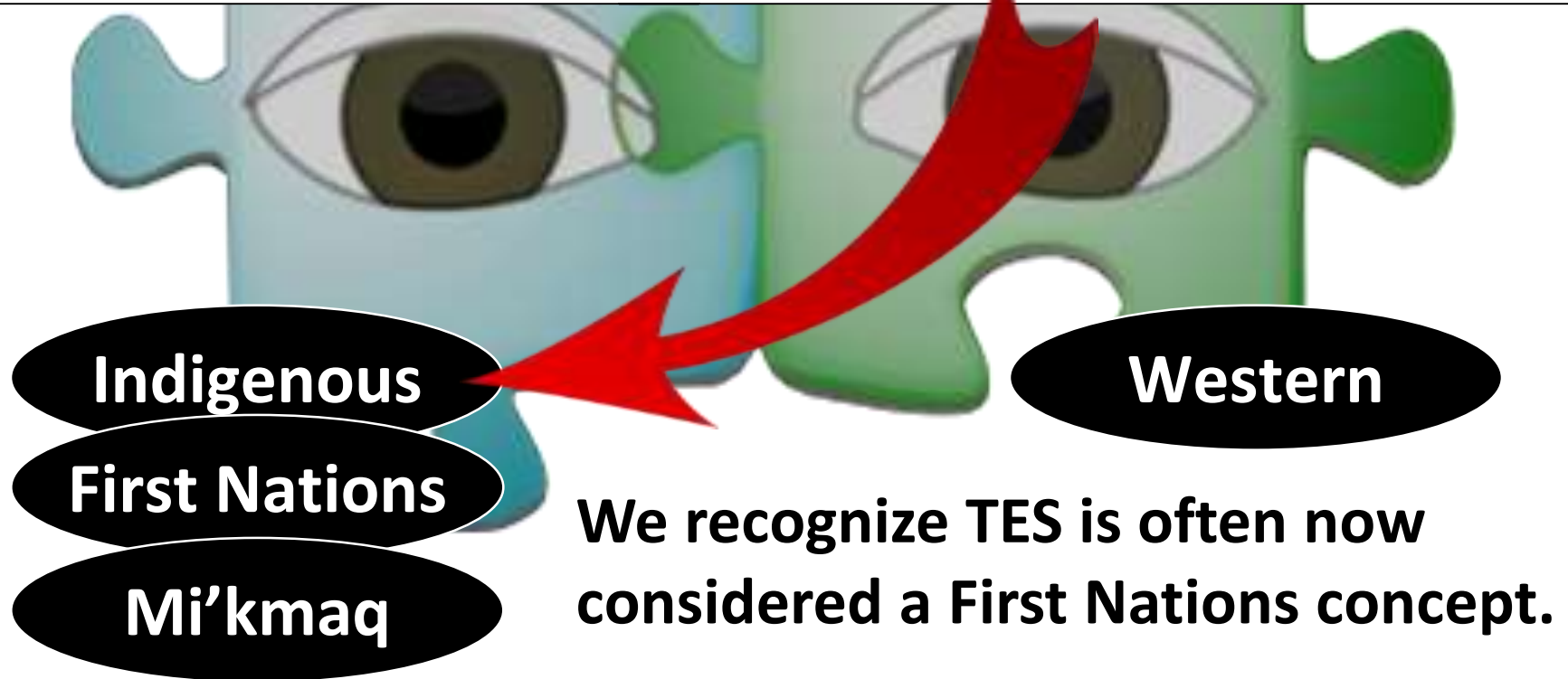
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labels congruent with
First Nations Holistic Lifelong Learning Model
(Appendix 1)

Two-Eyed Seeing

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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’liti’k

ATK / MTK / IK / TEK

Indigenous

First Nations

Mi’kmaq

conventional

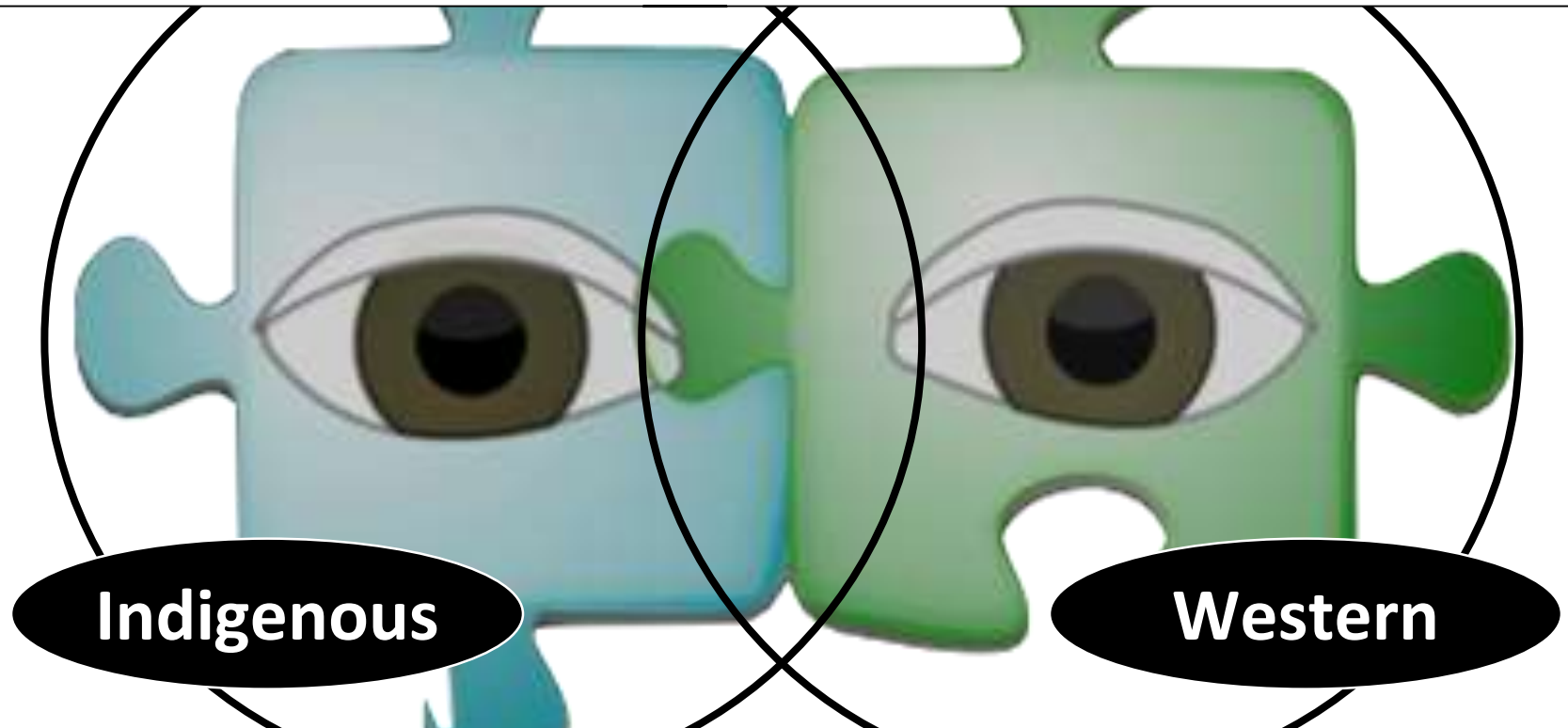
mainstream

Western

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

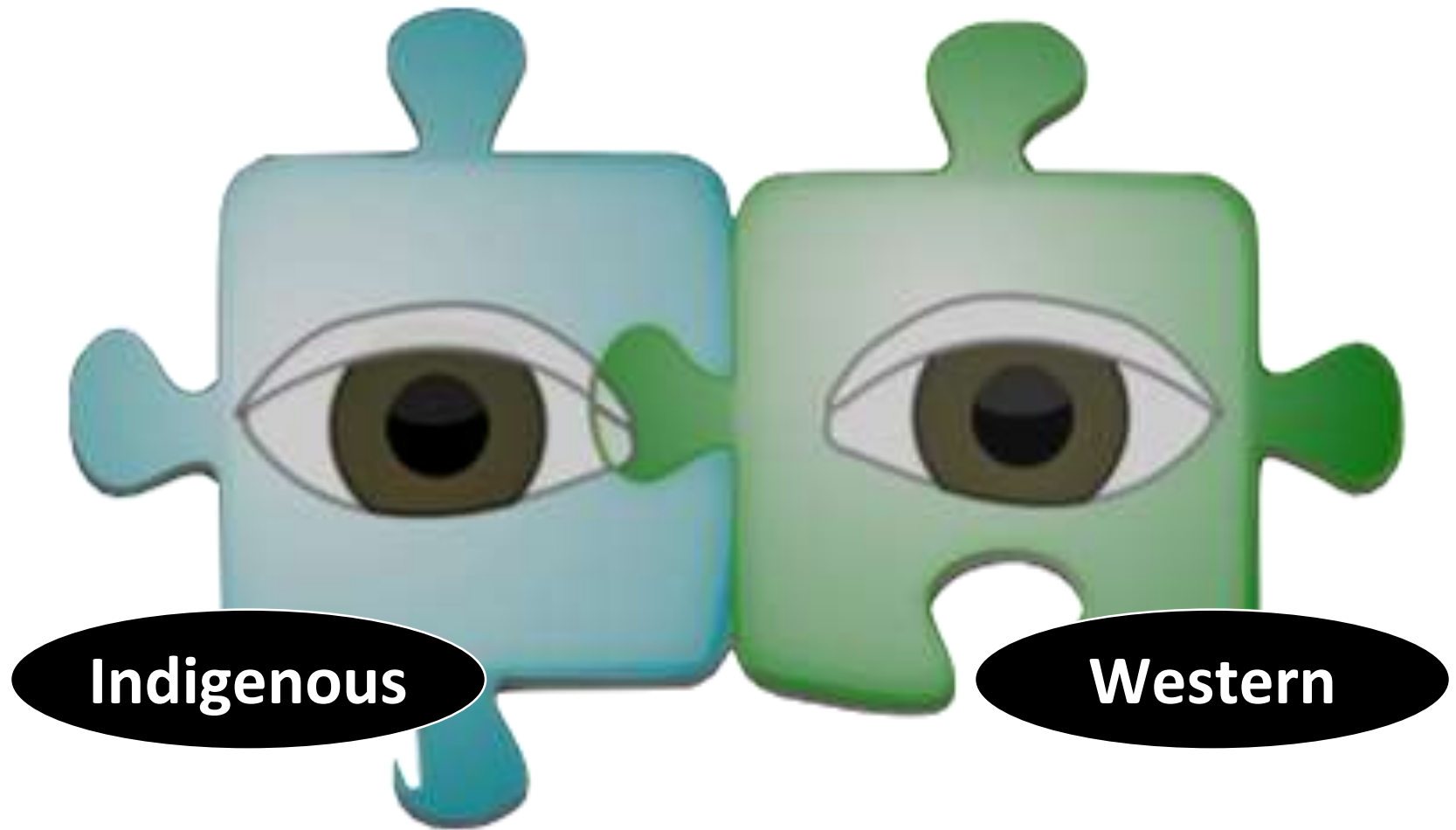
Two-Eyed Seeing

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.

a **GUIDING PRINCIPLE**



GUIDING WISDOM

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

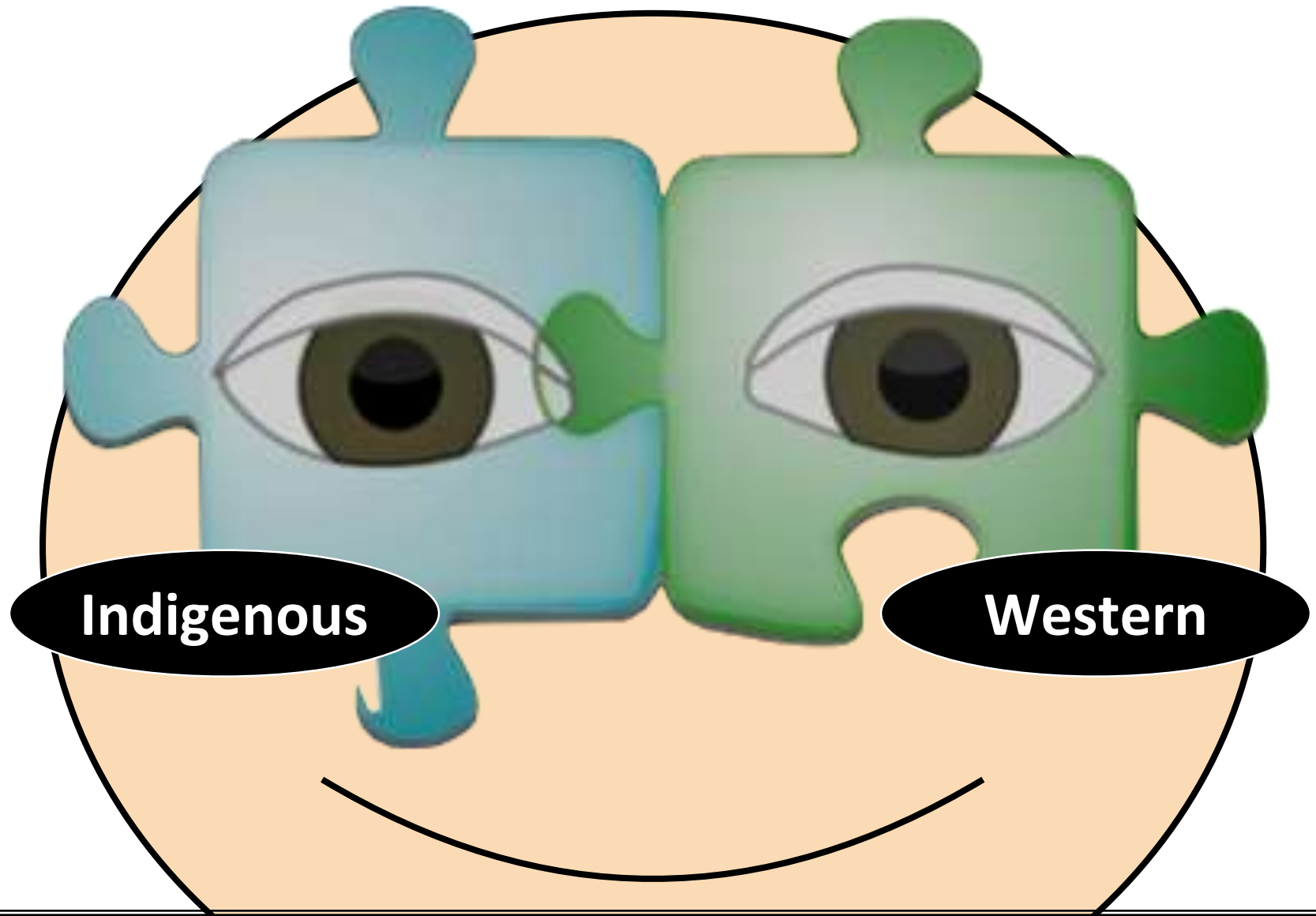
We as people must do the same.

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



a **GUIDING PRINCIPLE**

for our minds, souls, spirits



Indigenous

Western

a **GUIDING PRINCIPLE**

for our minds, souls, spirits

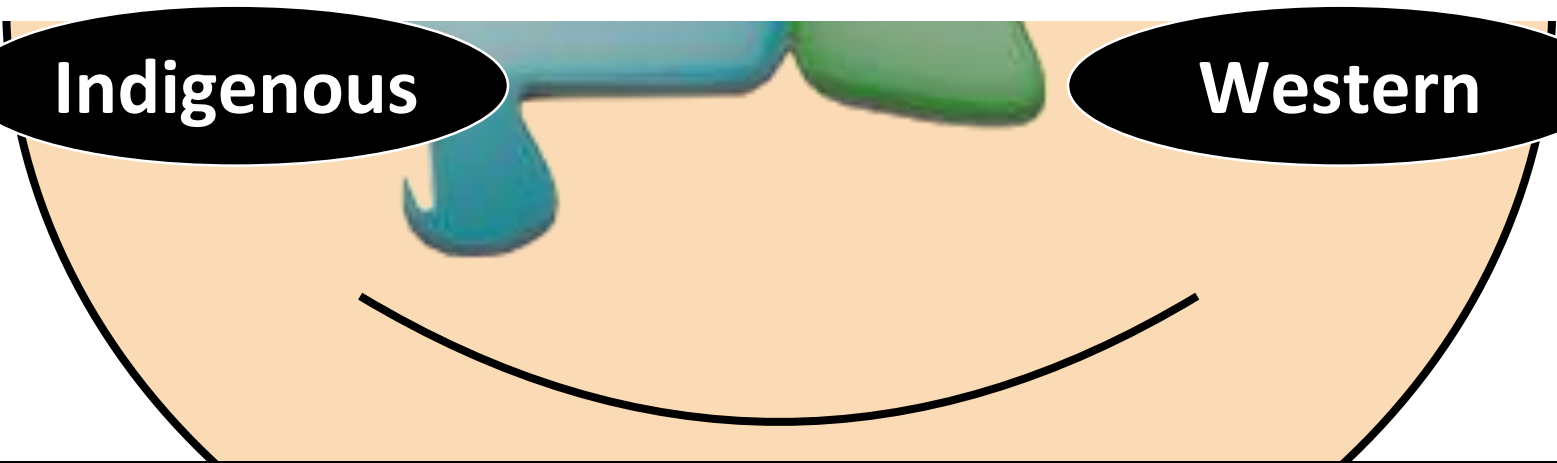
- requires ongoing commitment to relationships
- requires ongoing personal efforts to understand positionality and to act upon responsibilities for reciprocities and accountabilities
- requires ongoing consideration to key essentials (outlined later)



NOT A MECHANISM!!!

Indigenous

Western

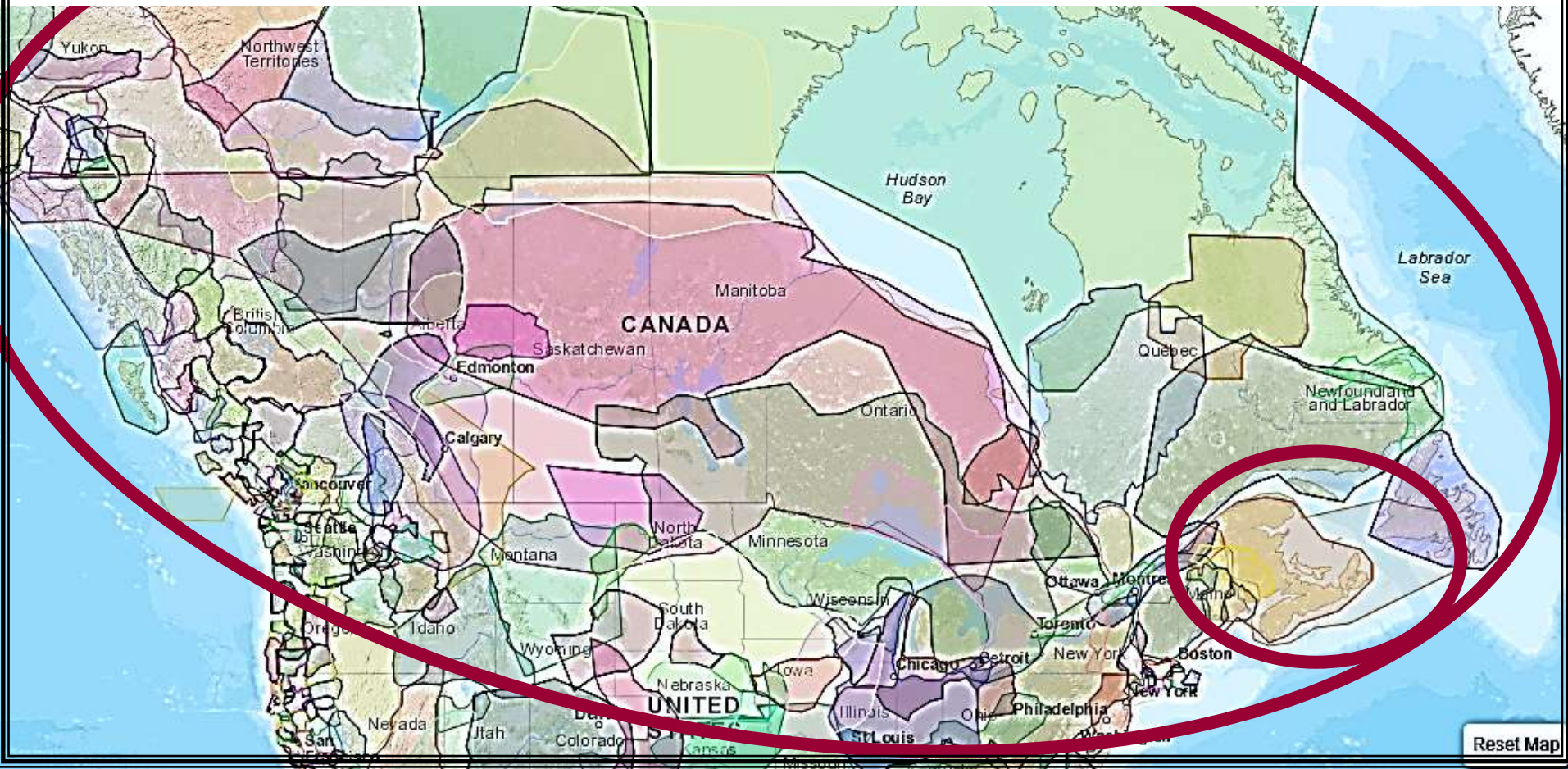


a **GUIDING PRINCIPLE**

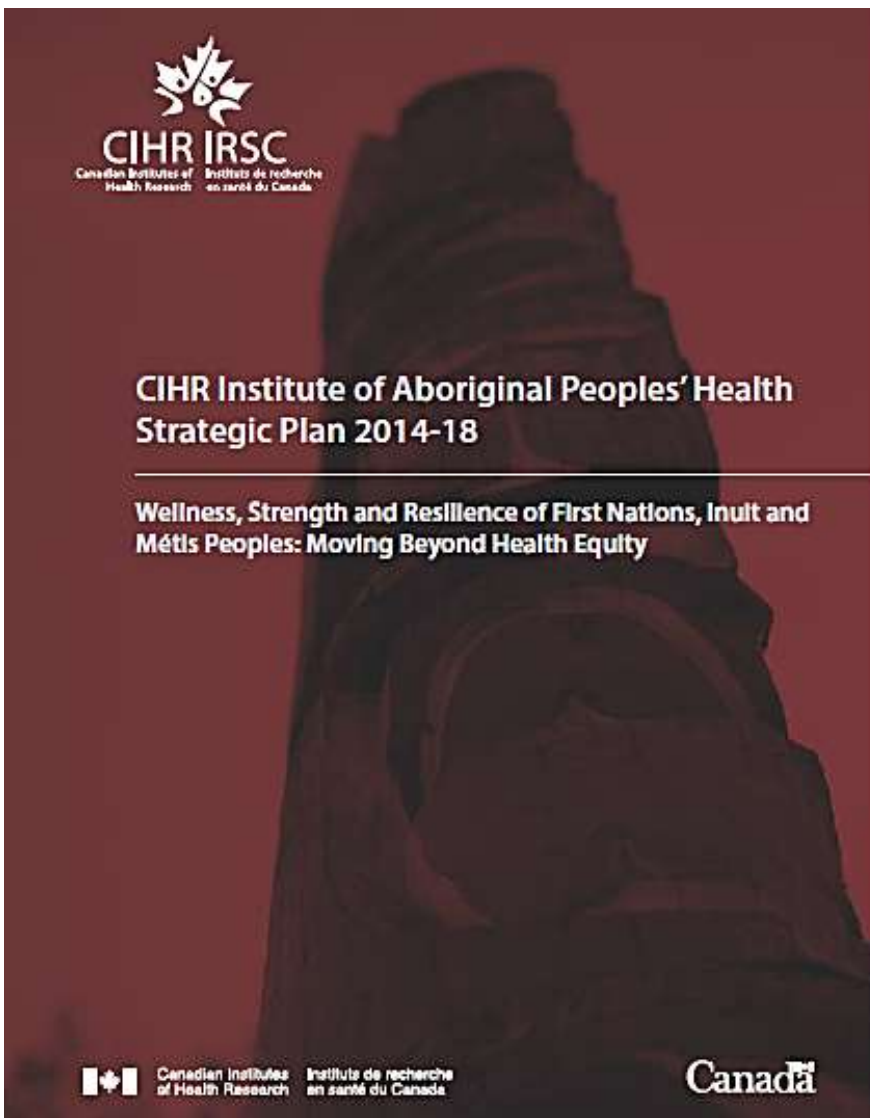
Two-Eyed Seeing

2017: from Mi'kma'ki across Canada ... plus international

- **in two key national documents plus many research and other projects**
(most research projects thanks to CIHR-IAPH or broader CIHR funding)



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



under the leadership of
Malcolm King, PhD, FCCP

Scientific
Director
CIHR-IAPH
2009-2016



**key
document**

released
Feb 2016



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

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>

Two-Eyed Seeing

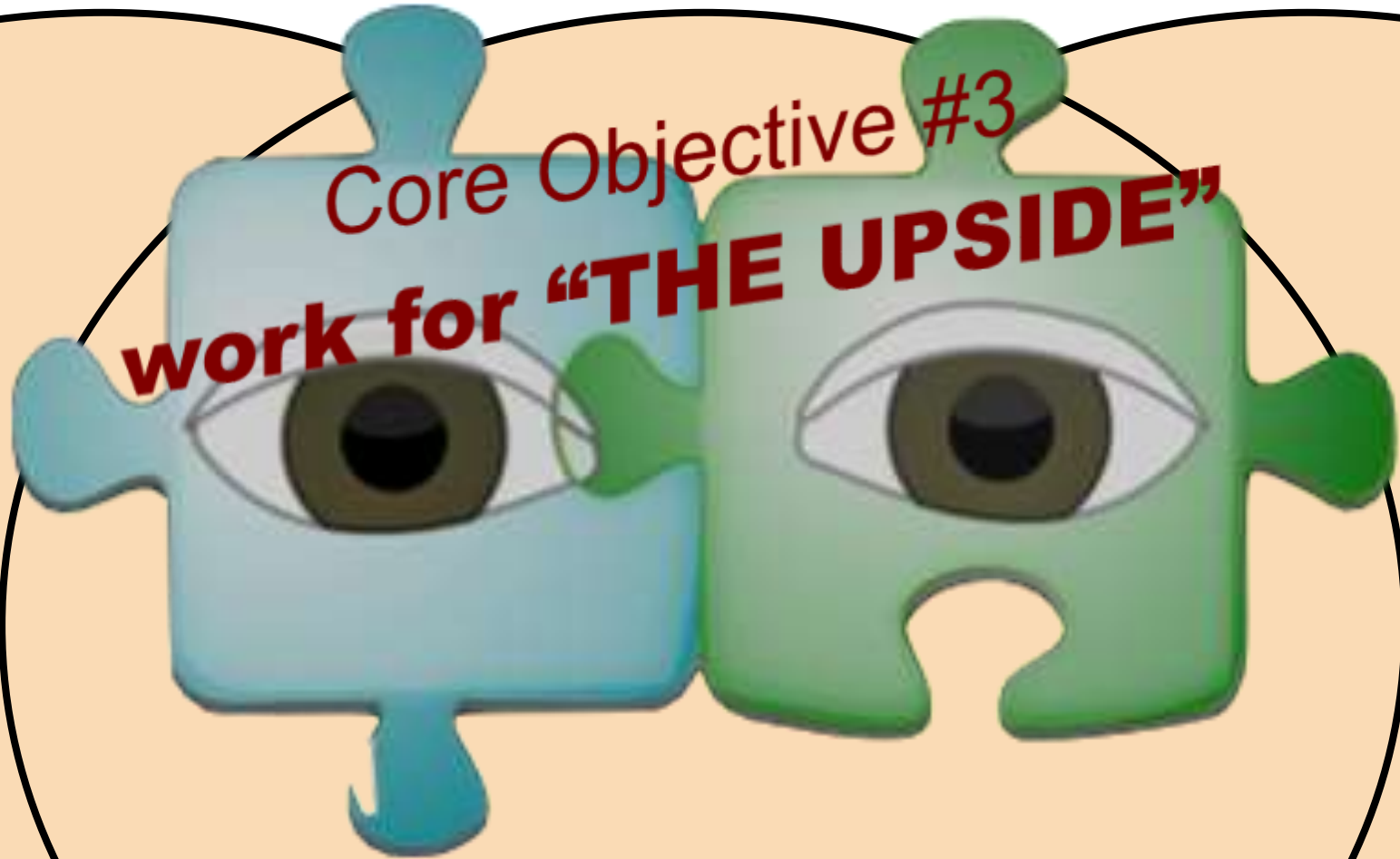
some individuals misuse TES ...

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

for Guiding Question #2
in Discussion
i'l'oqaptmu'k



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)

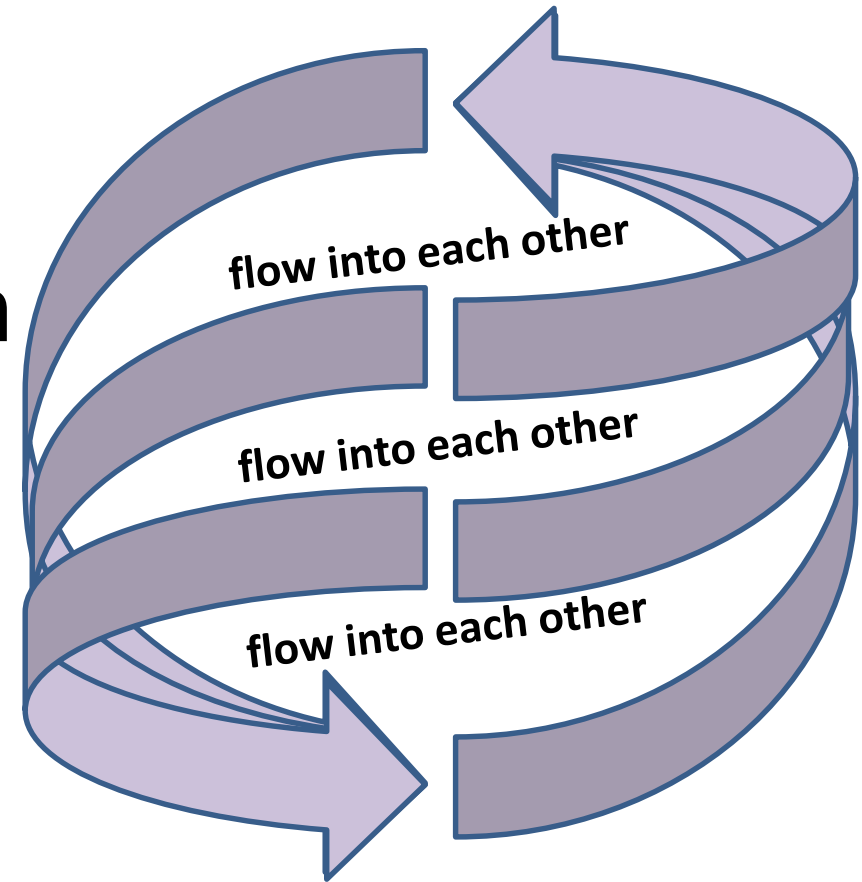
and address the challenges these bring

Two-Eyed Seeing

embed four key essentials

fluidity

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



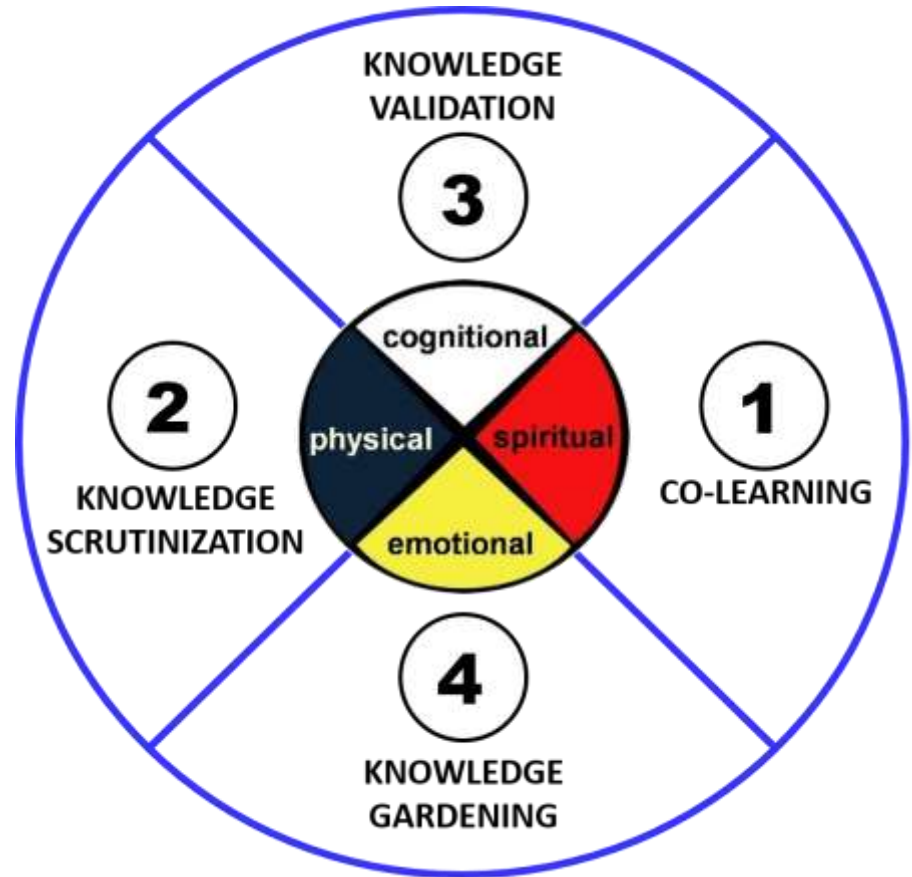
and address the challenges these bring

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
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1. Co-Learning



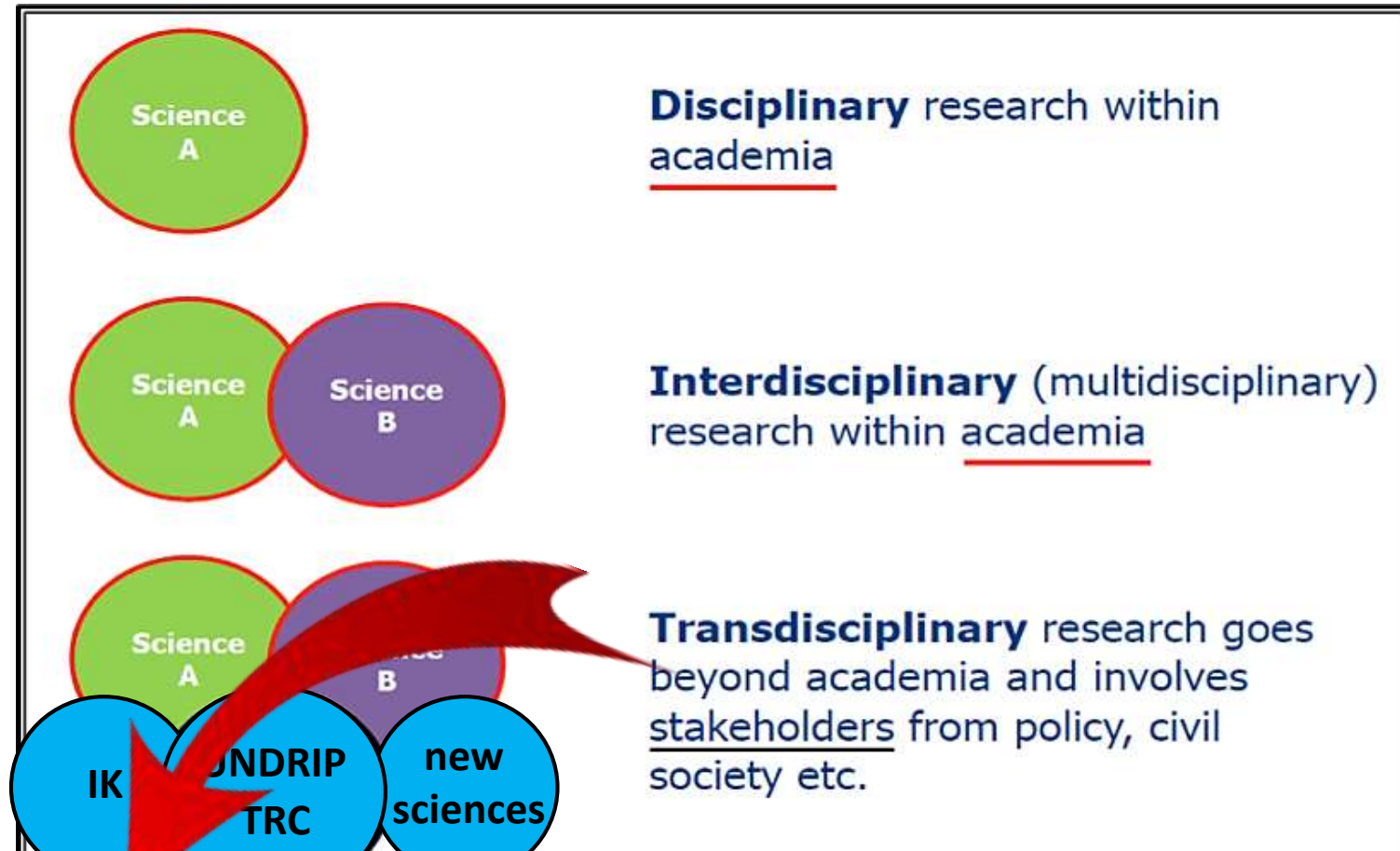
- **How do we invoke the Spirit of Co-Learning at universities?**

- Traditionally, we would not have to say “co-learning” because that is 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*.

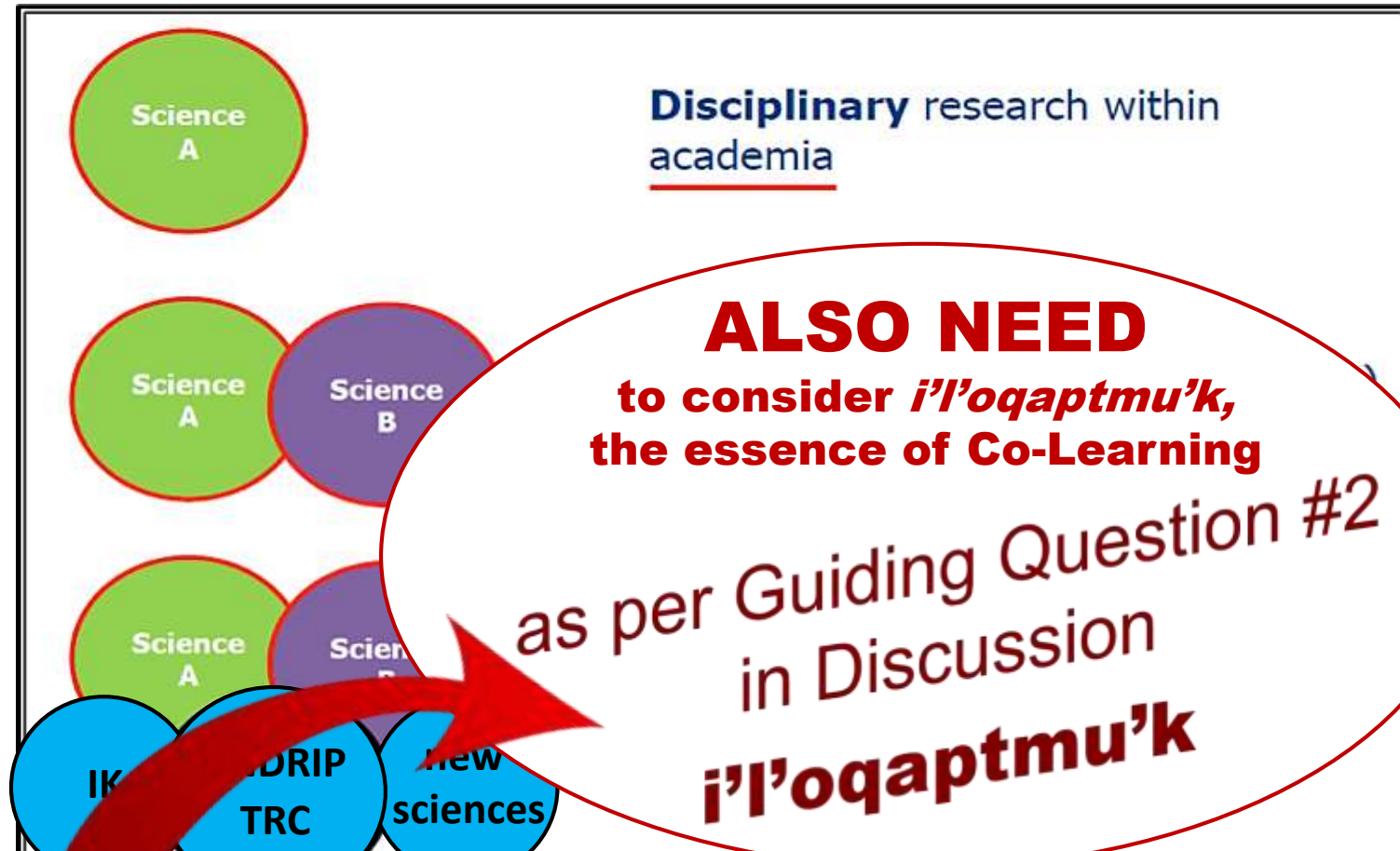
for Guiding Question #2
in Discussion
i'l'oqaptmu'k

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 ... ??



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?**

**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

example “Opinion Piece”

THE GLOBE AND MAIL 

21 February 2014

about then pending (later cancelled) federal legislation

**First Nations Control of
First Nations Education**

2. Knowledge Scrutinization

example “Opinion Piece”

THE GLOBE AND MAIL 

21 February 2014

Columnist Jeffrey Simpson’s words:

“Money alone cannot fix Aboriginal education”

Opinion Piece re First Nations Control of First Nations Education Act

“... 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's words:

❖ 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

Columnist Jeffrey Simpson's words:

“Money alone cannot fix Aboriginal education”

Opinion Piece re First Nations Control of First Nations Education Act

“... 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.”

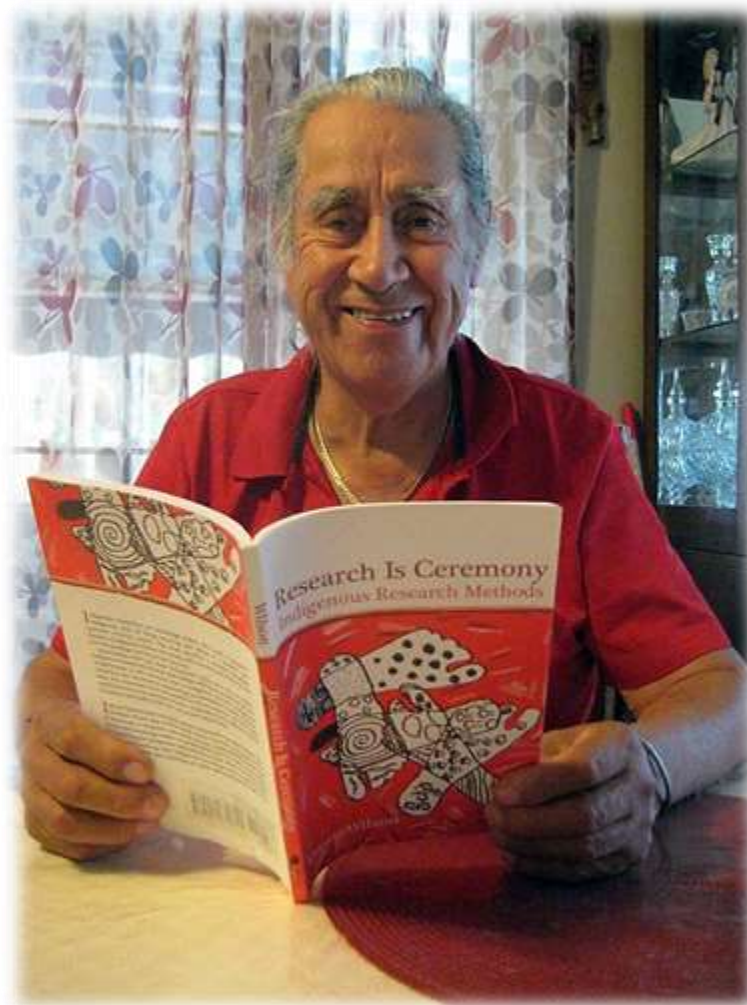
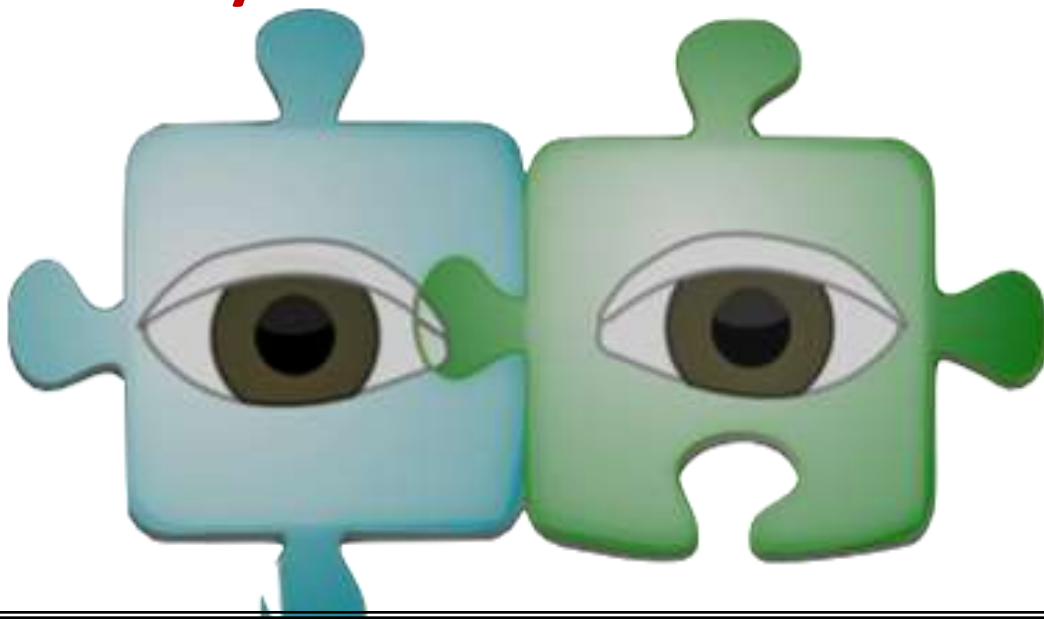
<https://www.theglobeandmail.com/opinion/aboriginal-education-needs-money-and-more/article17008070/>

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)

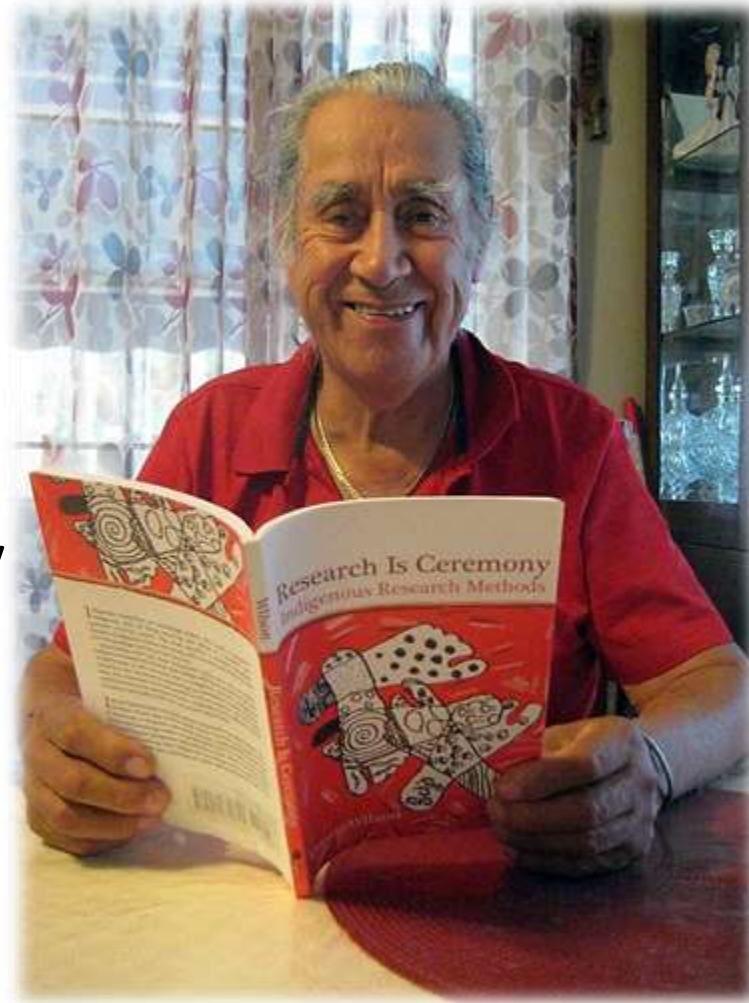
KNOWLEDGE SYSTEMS WHOLE SYSTEMS

epistemology

ontology

methodology

axiology

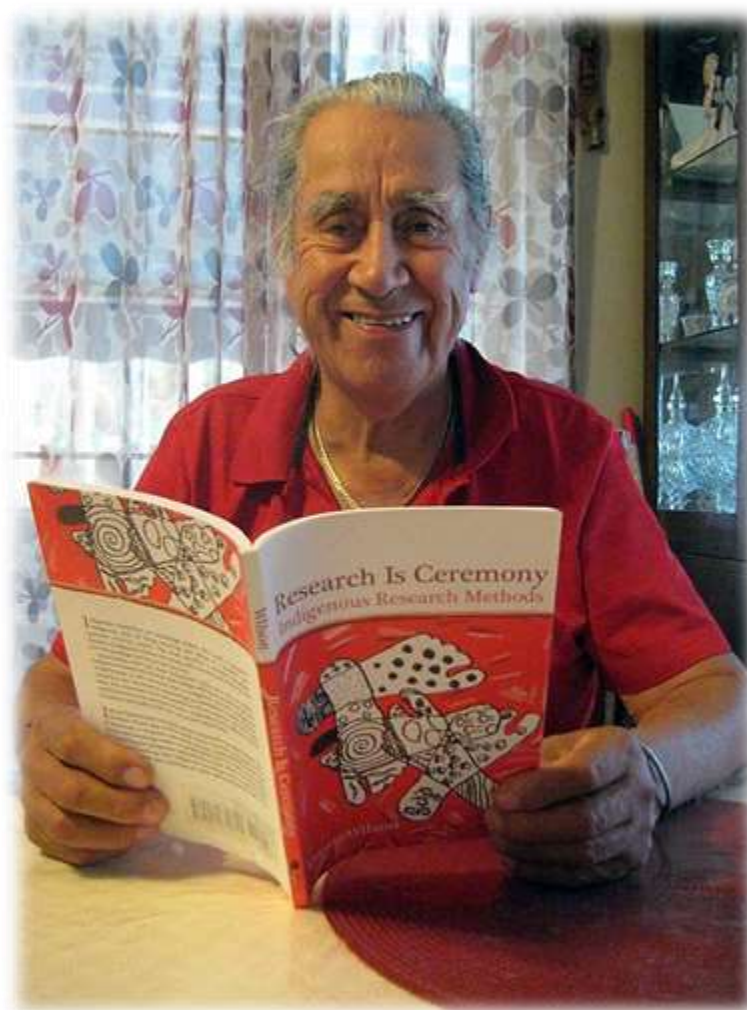


KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

(words of Elder Albert Marshall)

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



KNOWLEDGE SCRUTINIZATION:

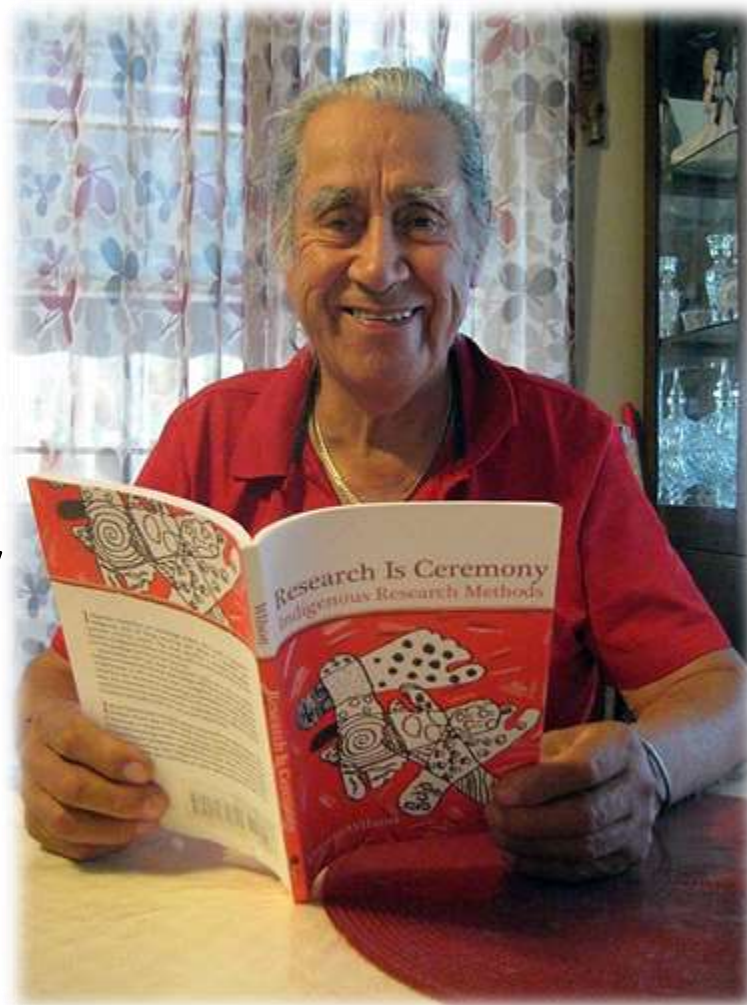
put our two paradigms on the table to be scrutinized

(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



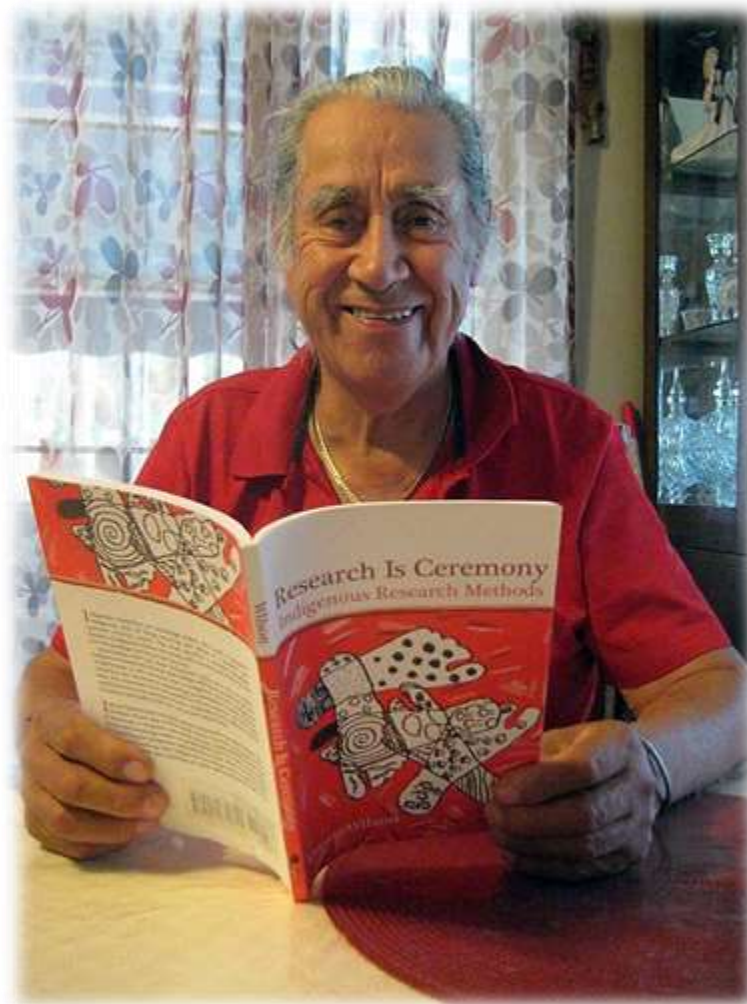
KNOWLEDGE SCRUTINIZATION:

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.

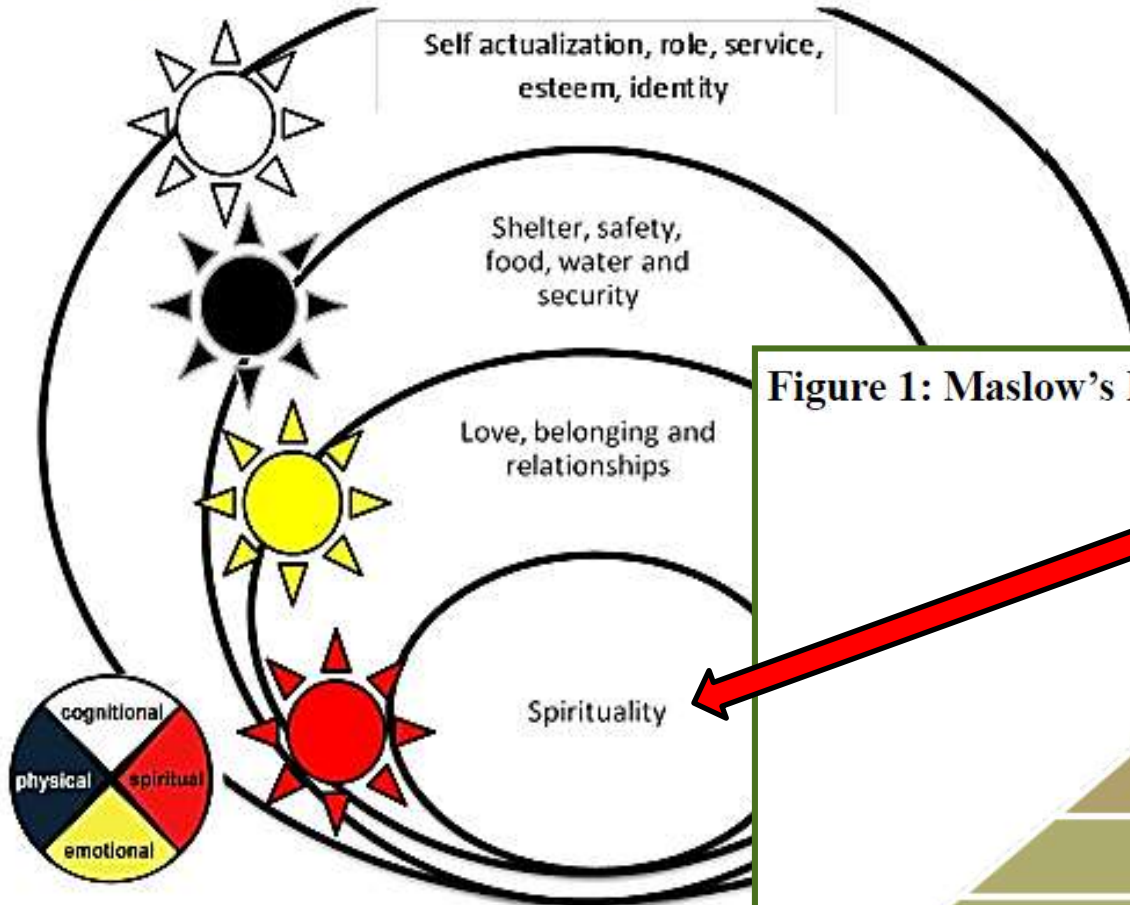


KNOWLEDGE SCRUTINY

put our two paradigms on the table

Cindy Blackstock 2011
Emergence of
The Breath of Life Theory
(Appendix 2)

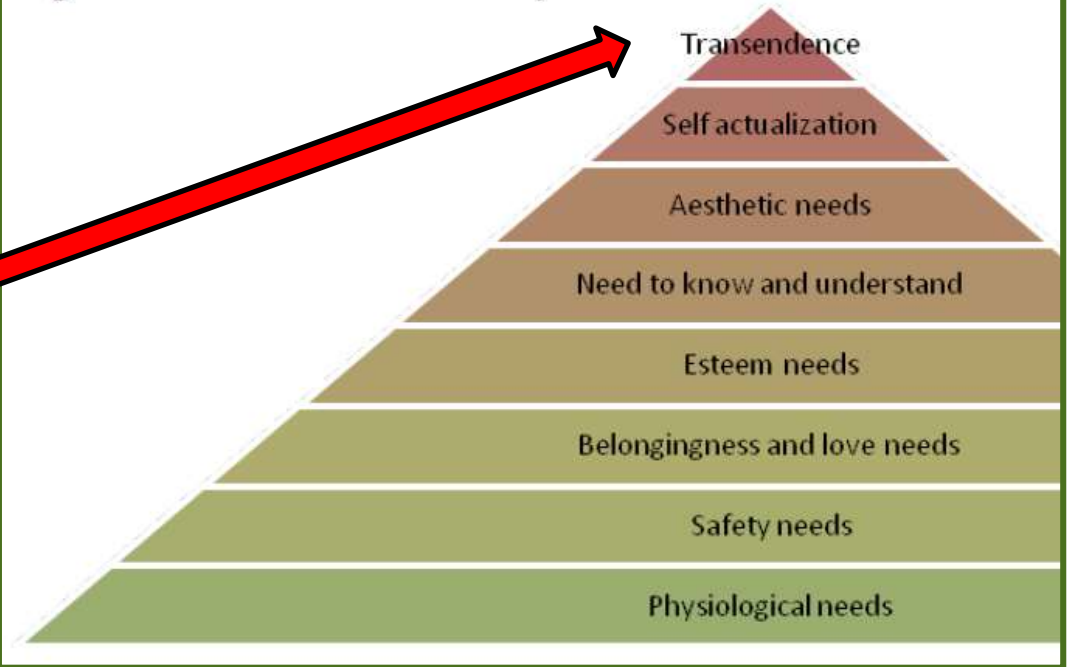
Figure 2: Cross (2007) reinterprets Maslow's hierarchy of needs through Indigenous eyes



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

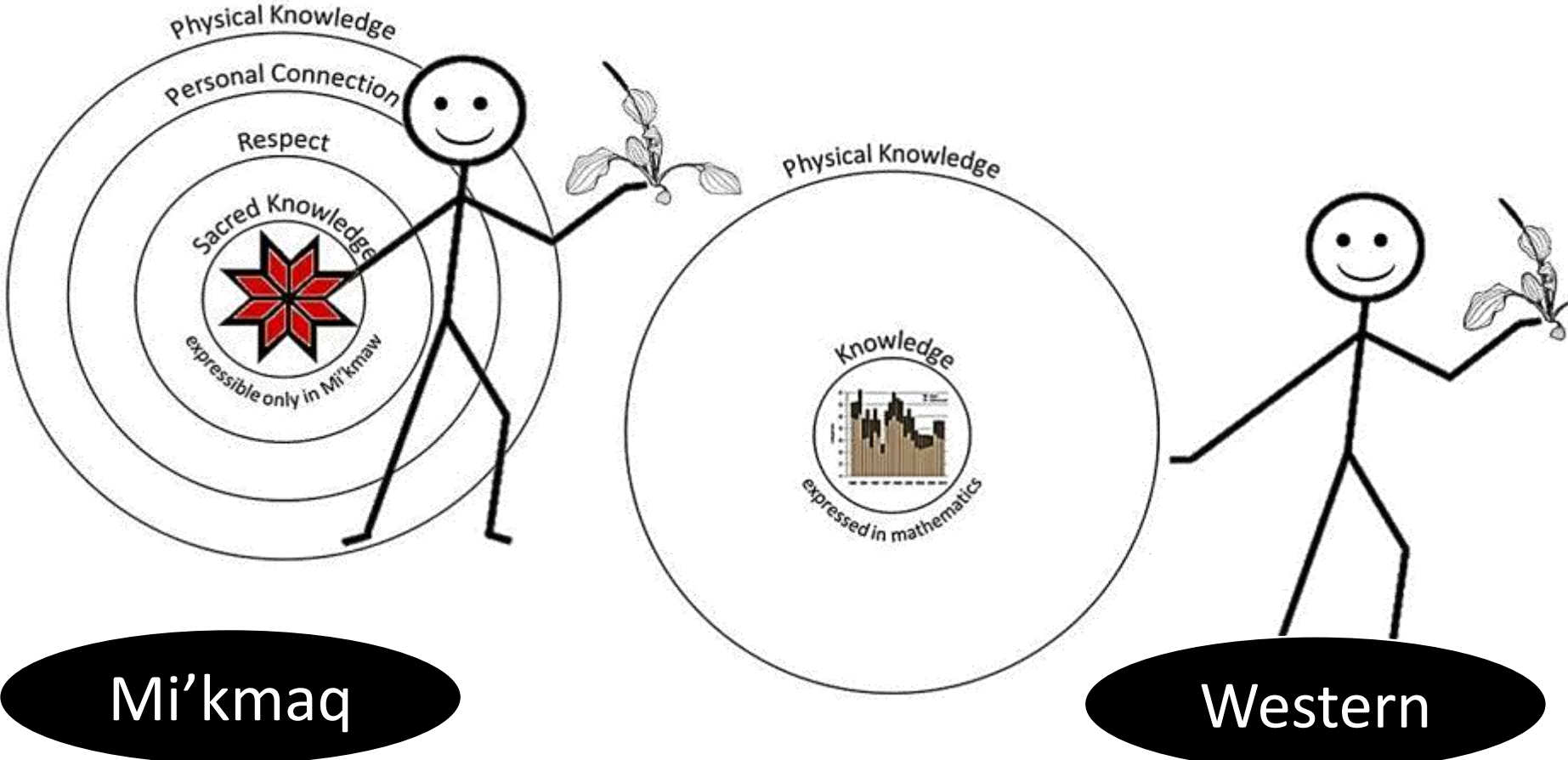


4 concentric circles

KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

Knowledge System Models



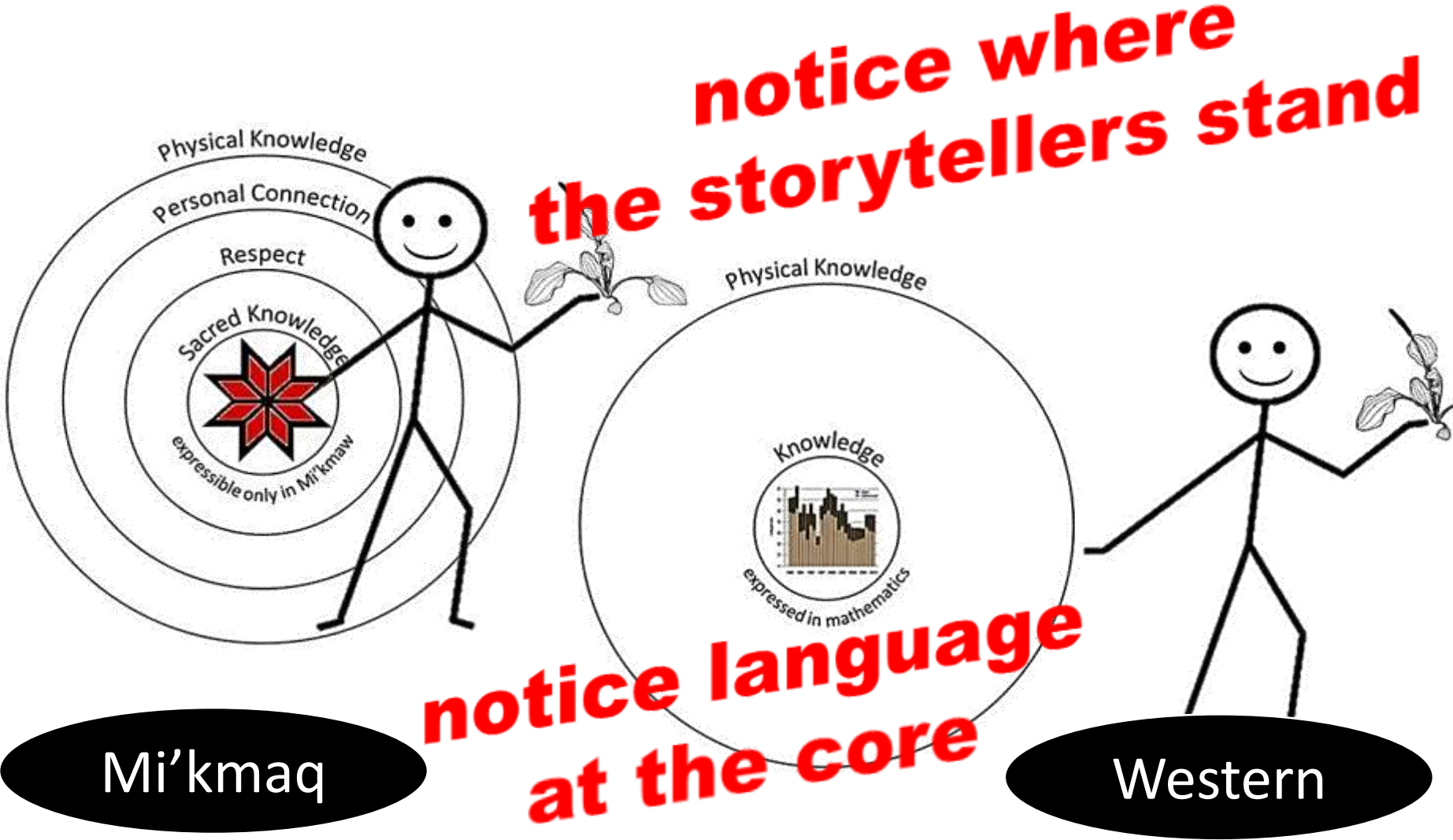
Mi'kmaq

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

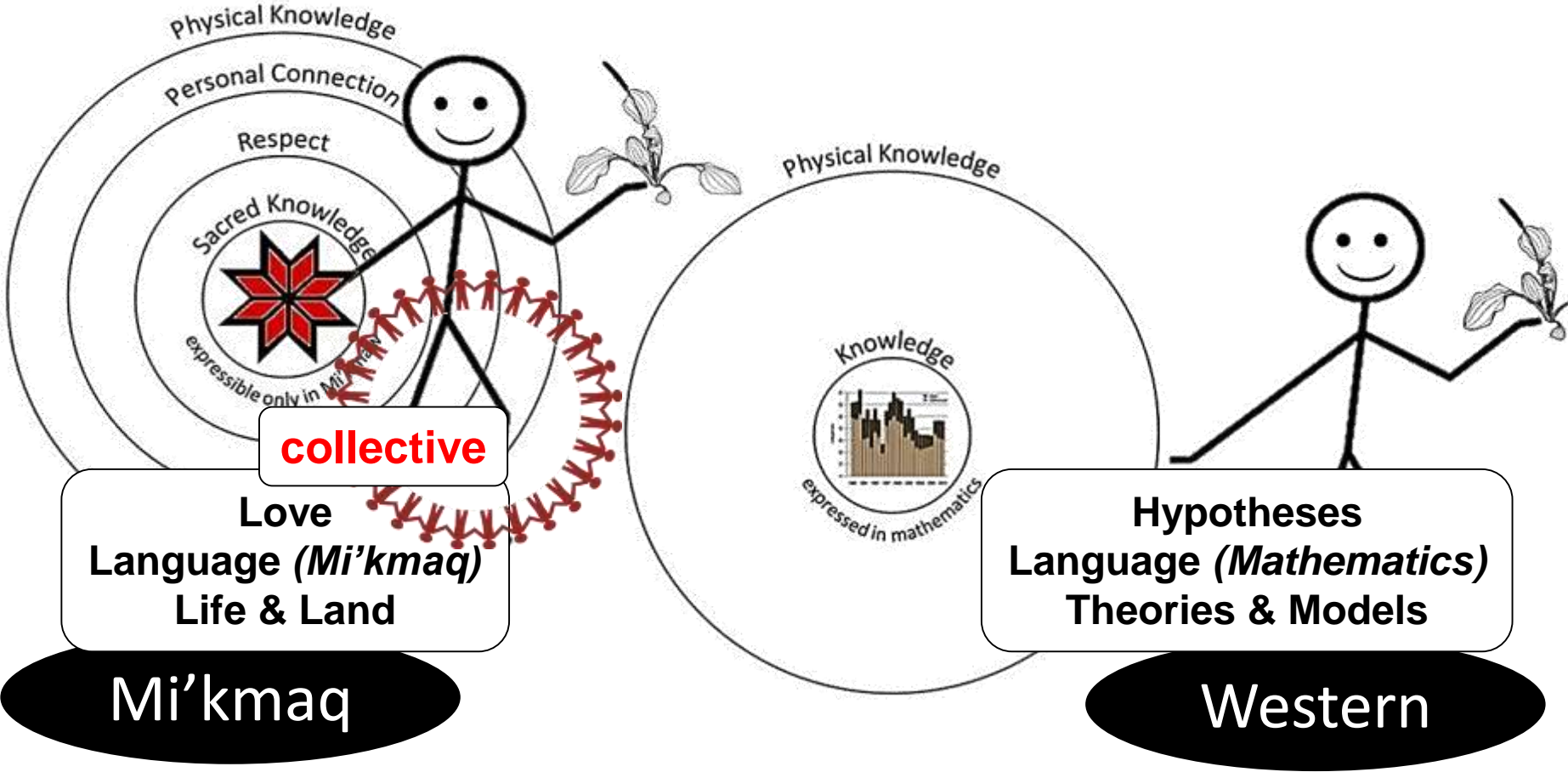
Mi'kmaq

Western

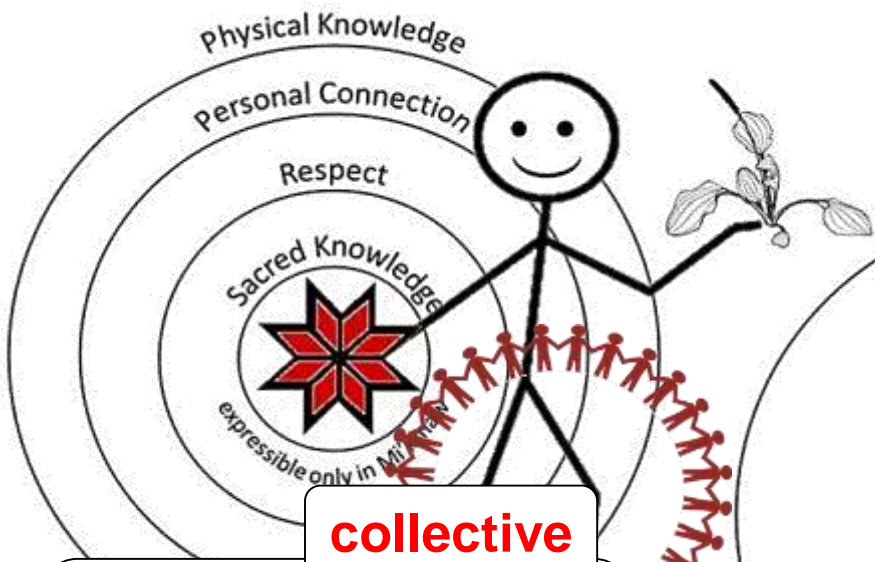
KNOWLEDGE SCRUTINIZATION:

put our two paradigms on the table to be scrutinized

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



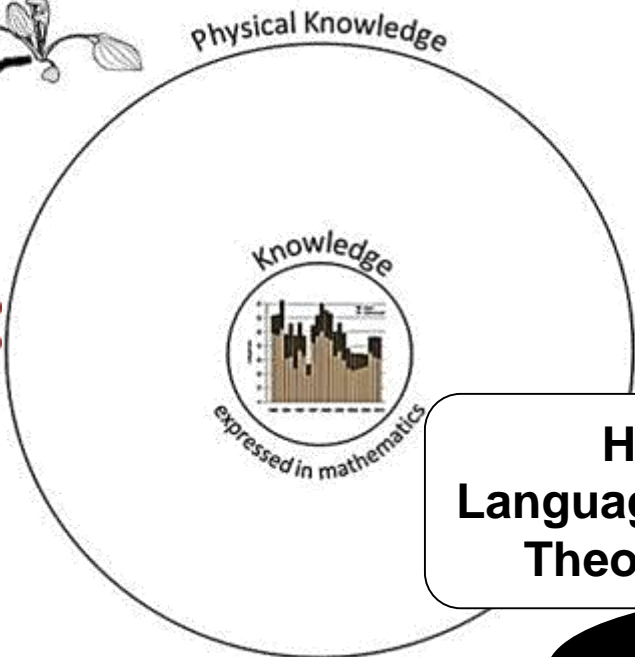
for Guiding Question #1 in Discussion
TES ↔ **bio-medical paradigm**



collective

Love
 Language (*Indigenous*)
 Life & Land

Mi'kmaq
First Nations



Hypotheses
 Language (*Mathematics*)
 Theories & Models

Western

Elder Murdena's model might also be helpful in encouraging discussions within other Nations and communities.

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
- Indigenous Knowledge Holders
 - Researchers & Scholars

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>

APCFNC 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 the 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 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, 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 nation.
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 consulting with the Atlantic region universities to create a template for the process of this knowledge transfer could.
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 measure supports and encourages education for Aboriginal learners, would be an opportunity to develop a link between traditional 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.apcfc.ca/en/resources/HonouringTraditionalKnowledgeFinal.pdf>

INCLUSIONS

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 the list of recommendations should be used in a form of consultation with Atlantic Aboriginal communities.

HONOURING TRADITIONAL KNOWLEDGE COMMITTEE

Chair: Atlantic Region

Chair: Honouring Traditional Knowledge

Chair: Atlantic Region

Chair: Honouring Traditional Knowledge

Chair: Atlantic Region

Chair: Honouring Traditional Knowledge

Chair: Atlantic Region

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Chair: Honouring Traditional Knowledge

Chair: Atlantic Region

Academics and Researchers

Author writes article and submits to journal

Editor sends copy to a peer (expert in the field) for reviewing

PEER REVIEW PROCESS

Paper accepted and published, then usually listed in databases for other researchers to find and read, to inform their writing

The peer reviewers check the manuscript for accuracy and assess the validity of the research methodology and procedures.

another example strategy to support Elder engagement:

PEPSITE'TIKOW

(Don't be Disrespectful) under development with Mi'kmaw Kina'matnewey

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

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 create opportunities to grow, together ... and help each other?**
- **How can we strive to make different knowledges “work as one”?**

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 re-awaken the understanding that healing comes from within?**

4. Knowledge Gardening: ^{retrospective} 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

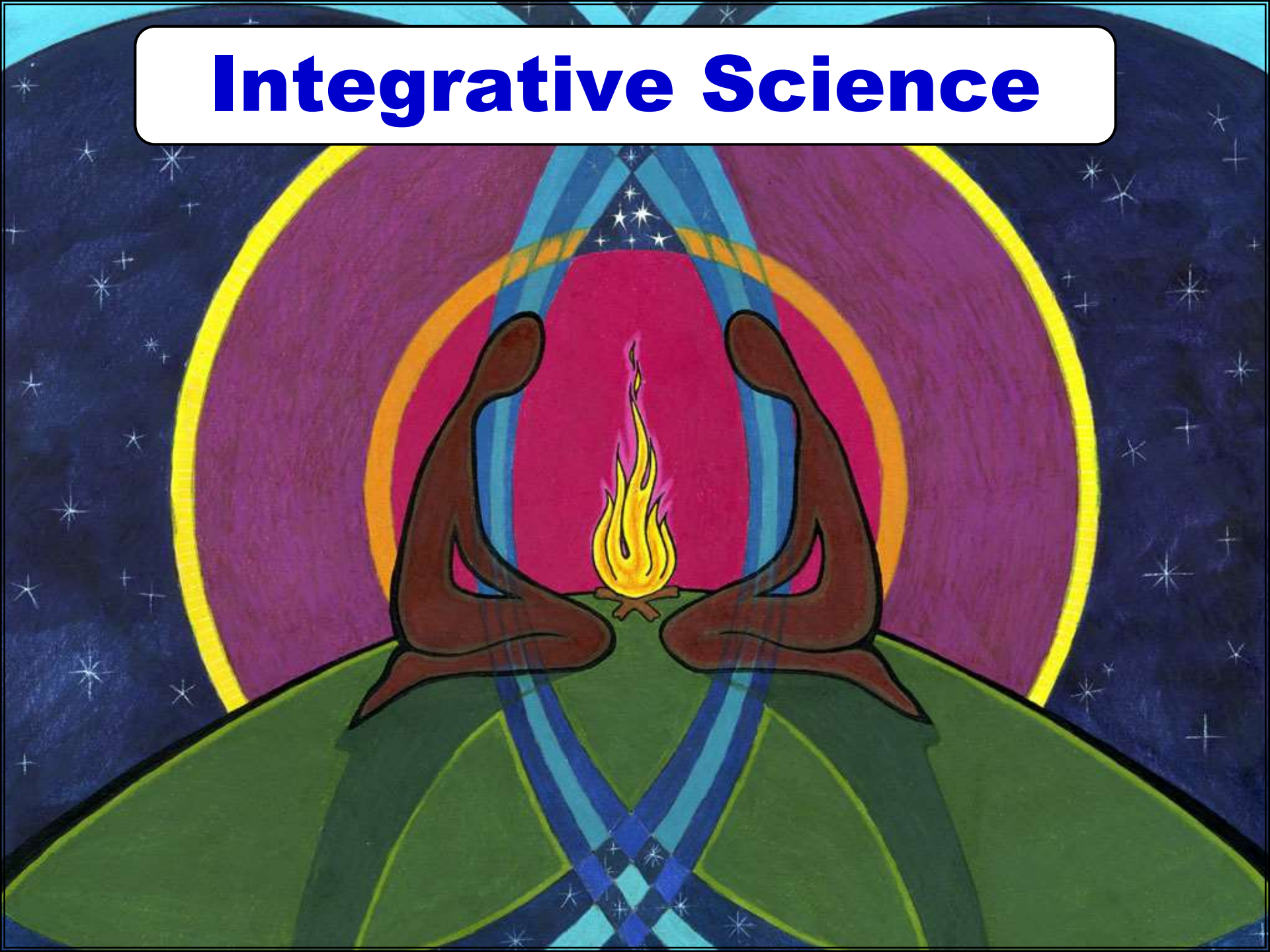
innovative, post-secondary science education program in 4 year degree, 1999-2010

PREMISE: Acquisition of scientific knowledge is essential to human survival. It 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.

INTEGRATIVE SCIENCE emphasized:

- **the natural world and our human participation within it,**
- **cultural inclusivity, and**
- **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

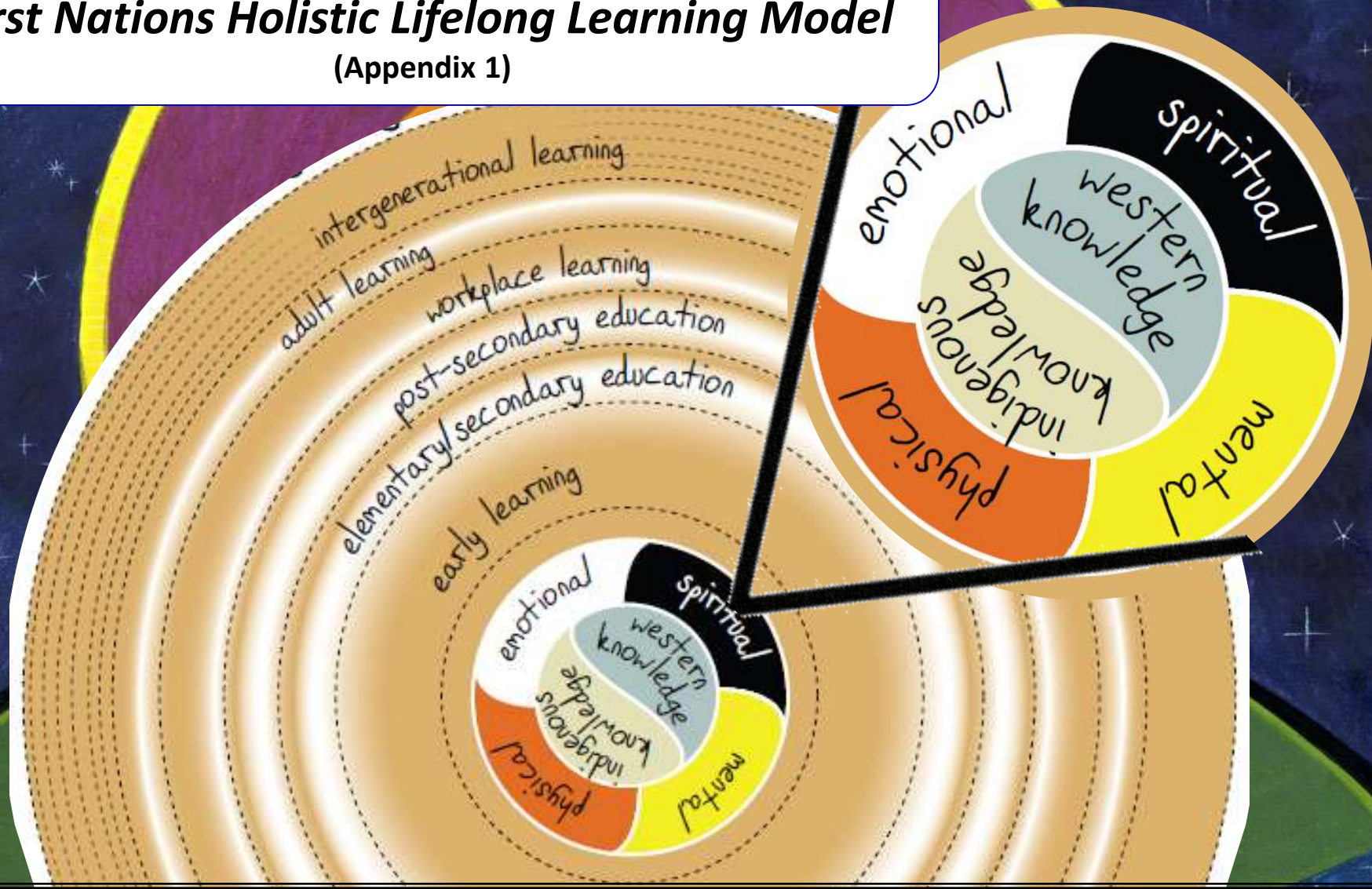
Indigenous

Western

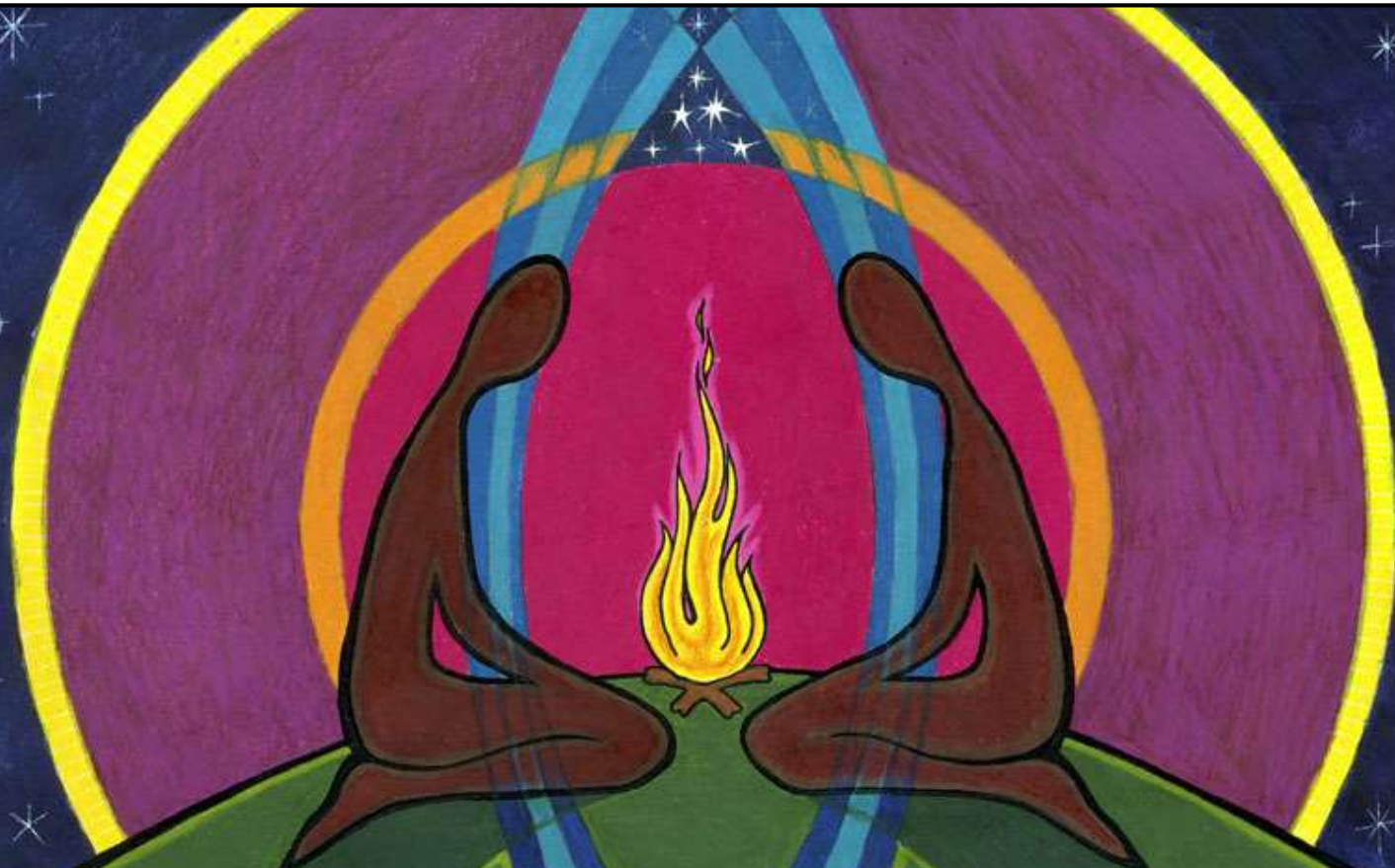
“bringing our knowledges together”

Integrative Science

vision congruent with
First Nations Holistic Lifelong Learning Model
(Appendix 1)



Integrative Science



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

Integrative Science

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

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

First Nations

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

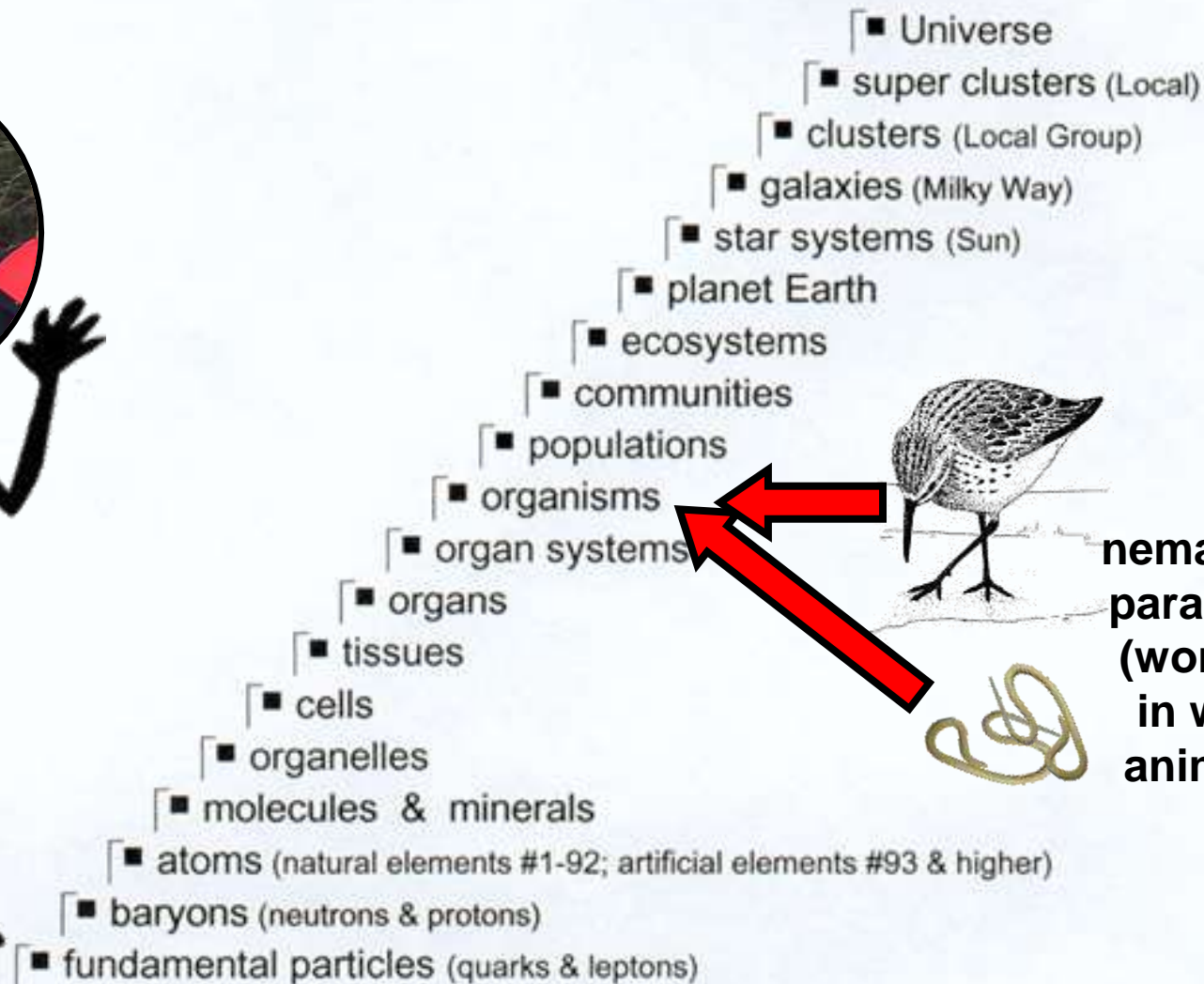
Western

for Guiding Question #1 (repeat)
in Discussion

TES ↔ bio-medical paradigm



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

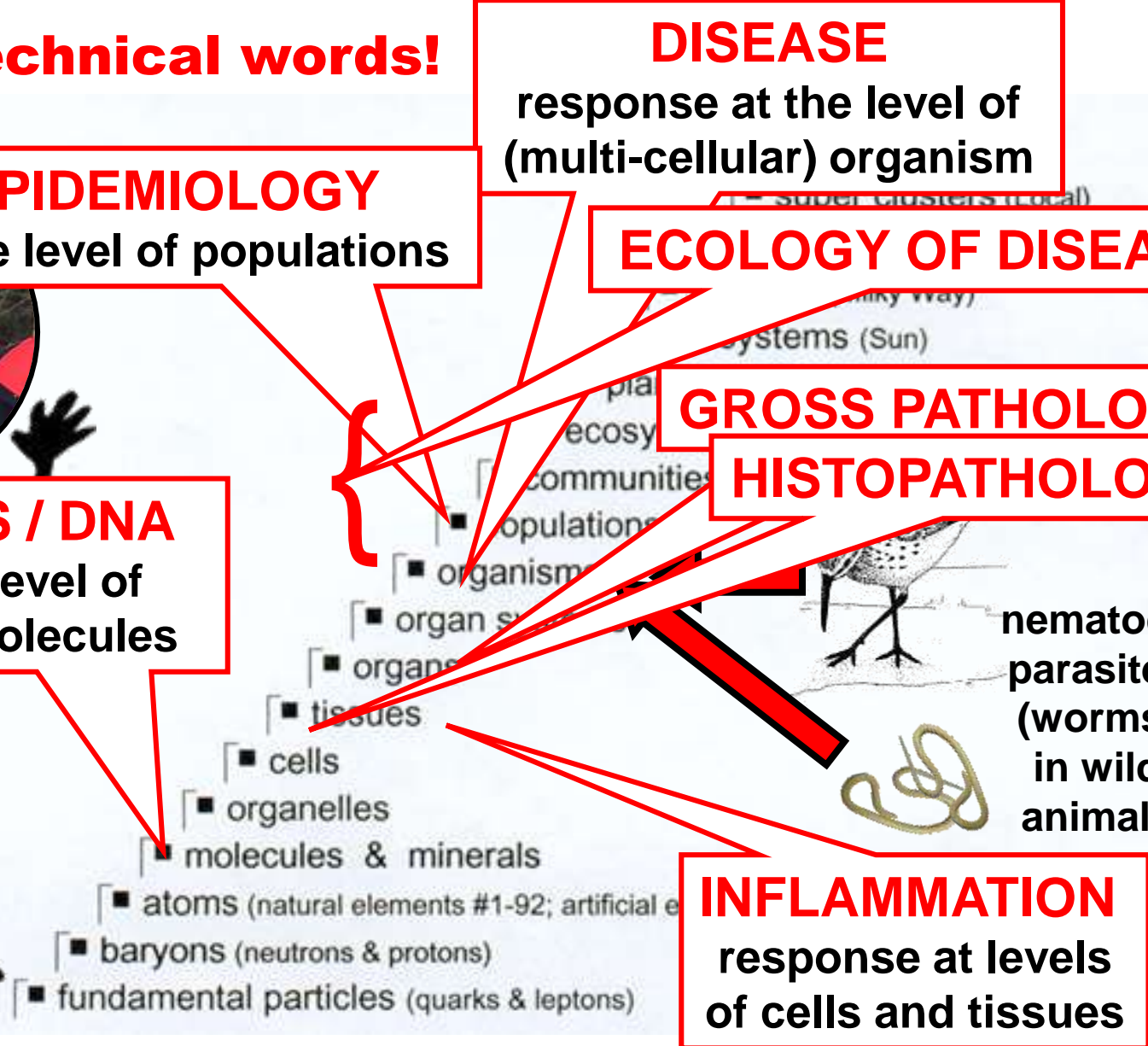
ECOLOGY OF DISEASE

GROSS PATHOLOGY
HISTOPATHOLOGY

GENES / DNA
at the level of
macromolecules

INFLAMMATION
response at levels
of cells and tissues

nematode
parasites
(worms)
in wild
animals

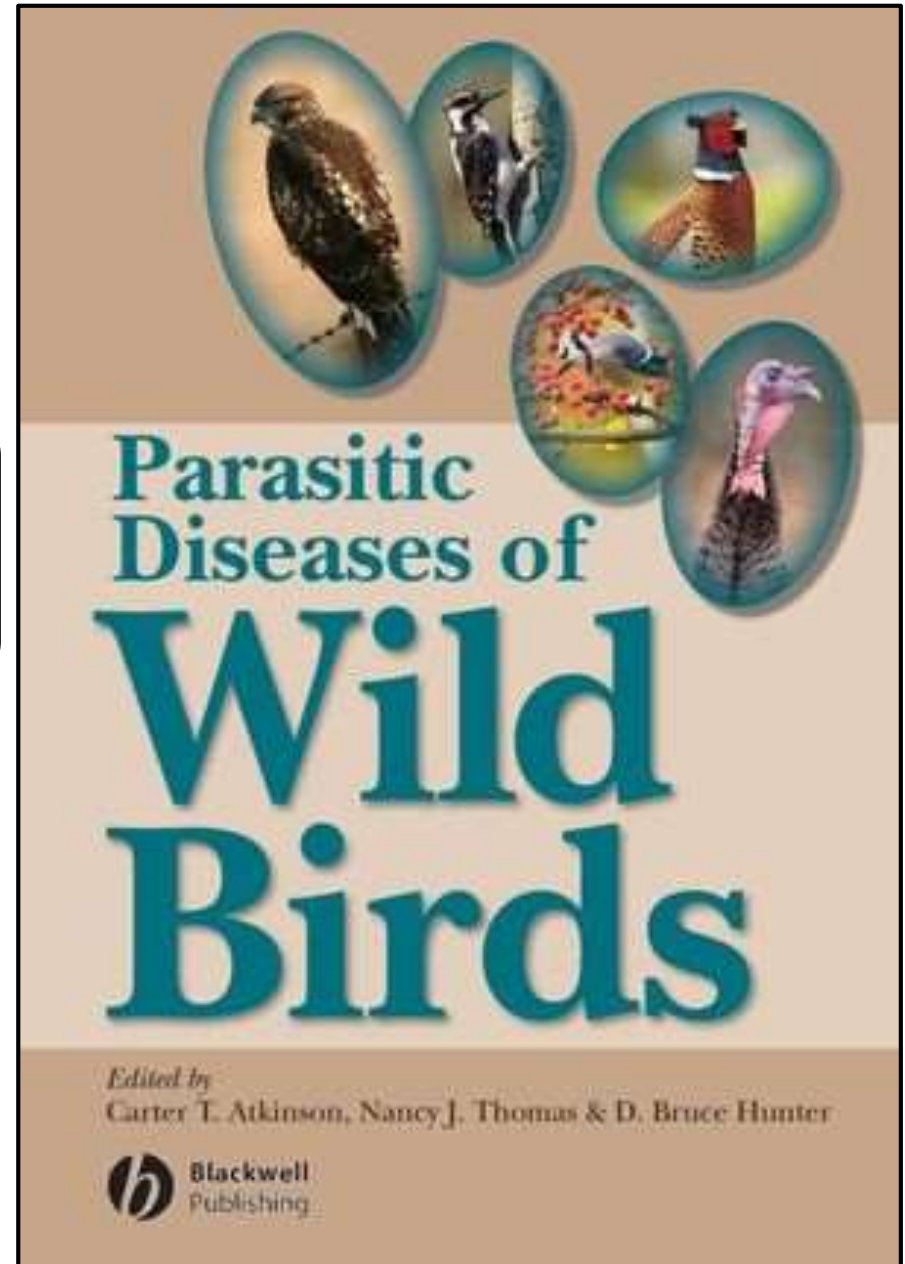


my own research Western science stories



... 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**

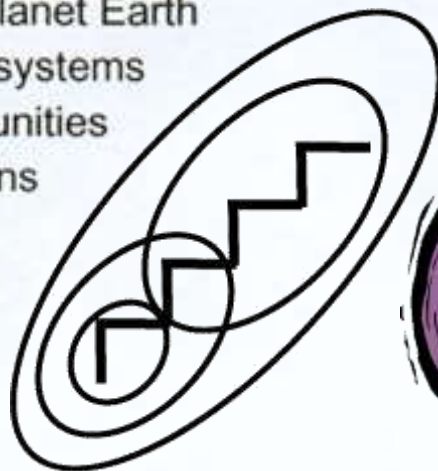
Spirit does not exist.
Consciousness is "problematic".

... 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).

... and energy fields!



but I am in the story for quantum physics!



- [] Un
- [] super
- [] clusters
- [] galaxies (M
- [] star systems
- [] 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**

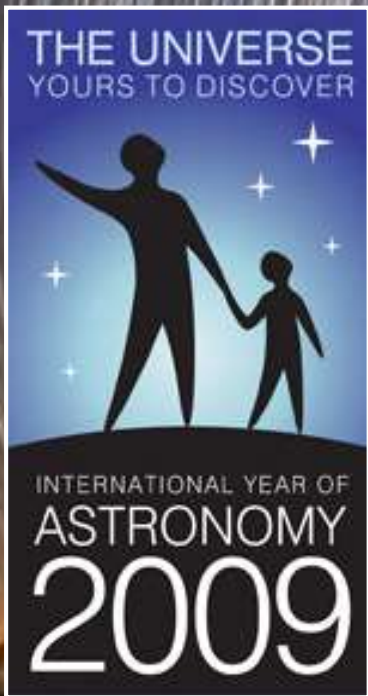
photos by Clifford Paul, Membertou FN



KNOWLEDGE lives in STORIES

The sky is alive
with our stories.

Place
Emergence
Participation



TATAPN (North Star)

**Mamtaq Traditional Night Sky Story:
Mamtaq 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**

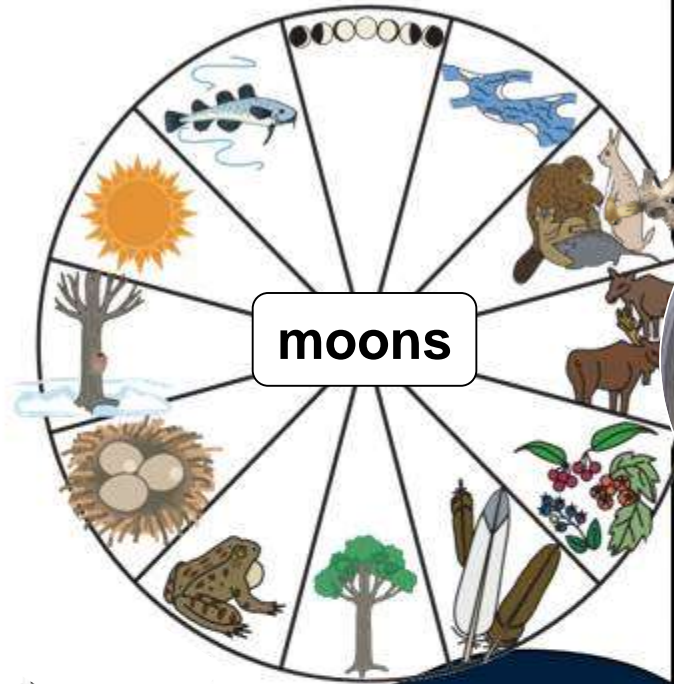


**Elder
Lillian Marshall
Potlotek FN**

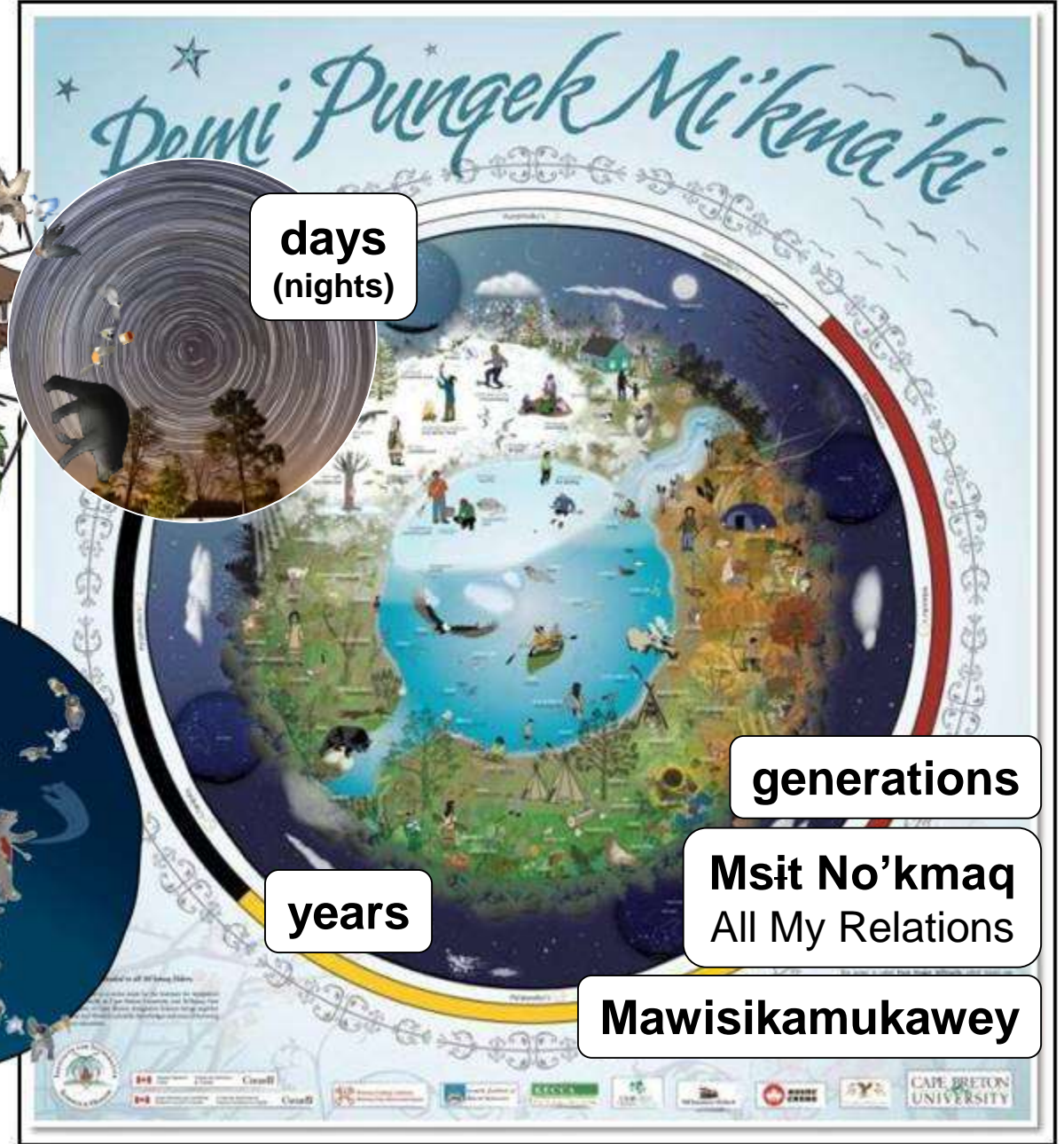


**Mi'kmaq Traditional Night Sky Story:
Muin and the Seven Bird Hunters
("oral calendar")**

Mi'kmaq science stories: patterns woven within patterns



moons



days
(nights)

generations

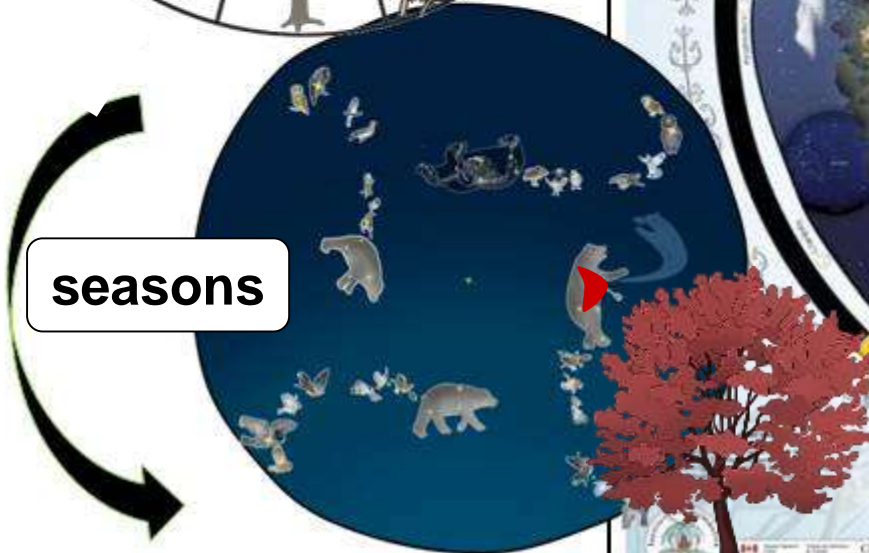
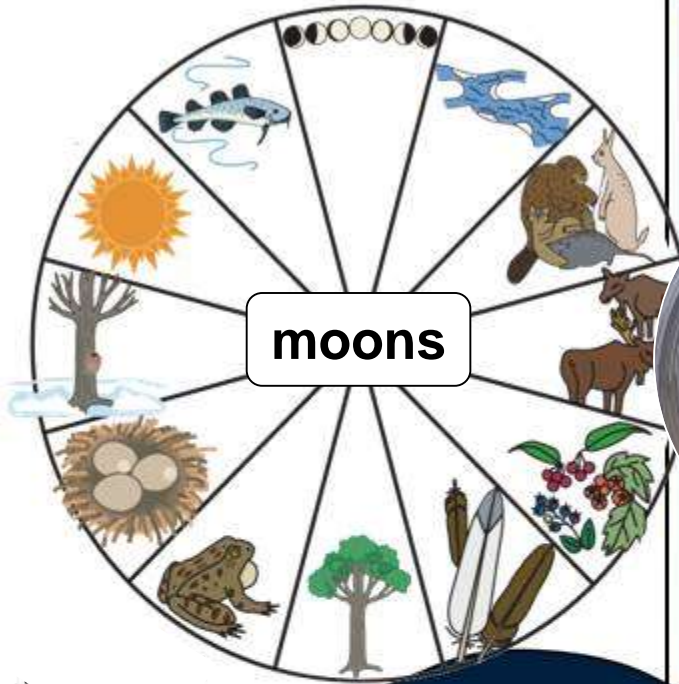
Msit No'kmaq
All My Relations

Mawisikamukawey

years

seasons

Mi'kmaq science stories: patterns woven within patterns



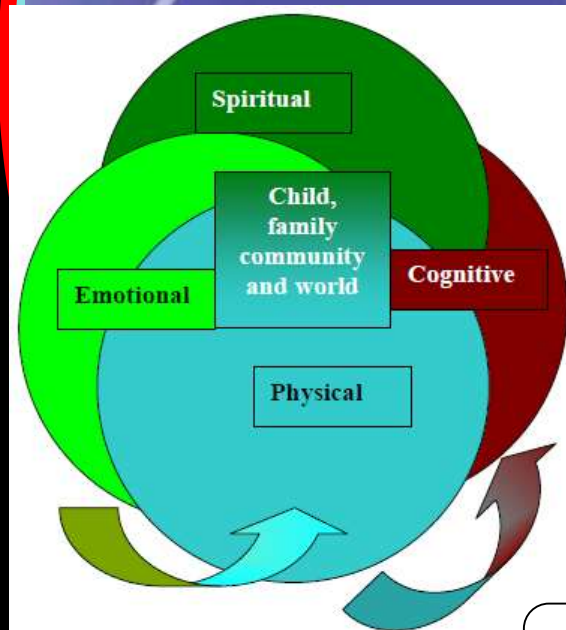
**Knowledge
is spirit.
It is a gift,
passed on
through
many people.
As Elders,
we must
pass it on.**

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:

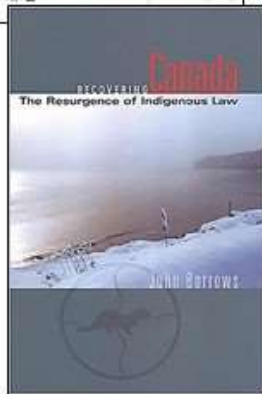
The Land is the Source of the Law

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

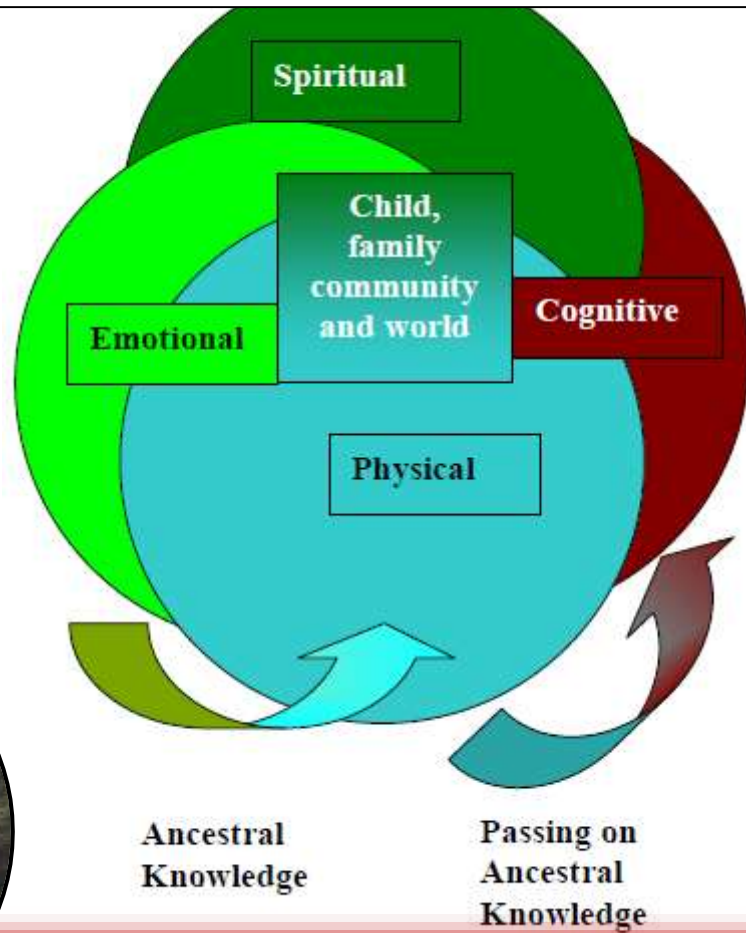


Knowledge is alive, and thus both physical and spiritual.

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.

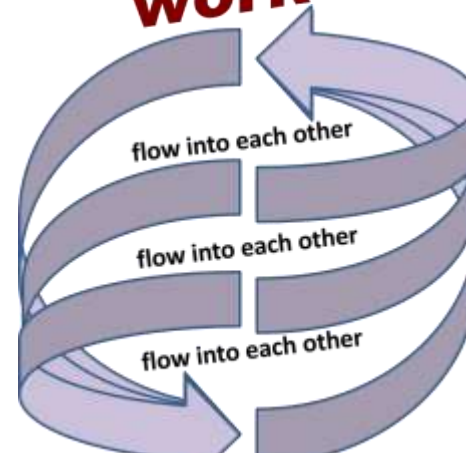
KNOWLEDGE lives in STORIES

Two-Eyed Seeing

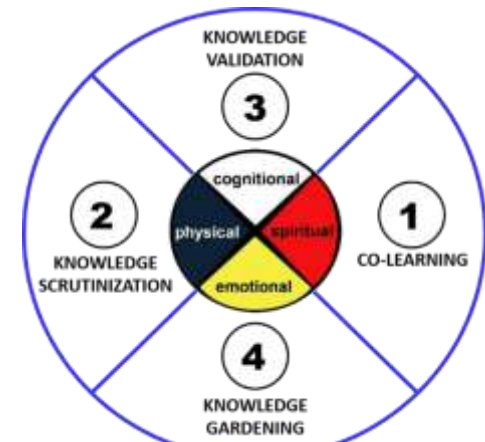
1. Co-Learning
2. Knowledge Scrutinization
3. Knowledge Validation
4. Knowledge Gardening

categories

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



fluidity



wholistic

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.**

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/>

Discussion ... Guiding Questions

1. What benefits does Two-Eyed Seeing bring to a bio-medical research paradigm? (Note: this is different than asking the same with respect to a bio-medically underpinned health care system.)
2. What pros and cons (and for whom) would be entailed in requiring that research be via co-learning and that it embed nation-appropriate and/or community-based understandings for *i'l'oqaptmu'k*?

Note error in Meeting Materials: should read "nation" not "national".
3. How might CIHR encourage research that supports reawakening to the traditional understanding that healing comes from within? E.g., consider the different messages conveyed by research policies or calls that used "guiding principle, grow, or nurture" rather than "framework, build, or measure".

CHERYL BARTLETT: TWO-EYED SEEING for meeting on 19 June 2017 in Edmonton of

CIHR Institutes Advisory Board on Indigenous Peoples' Health

Core Objectives

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, each of which brings challenges.
3. Know that Two-Eyed Seeing is, unfortunately, being co-opted, trivialized, or romanticized by some people and thus it is desirable that means be found to redress or preclude misuse in new research.

Background

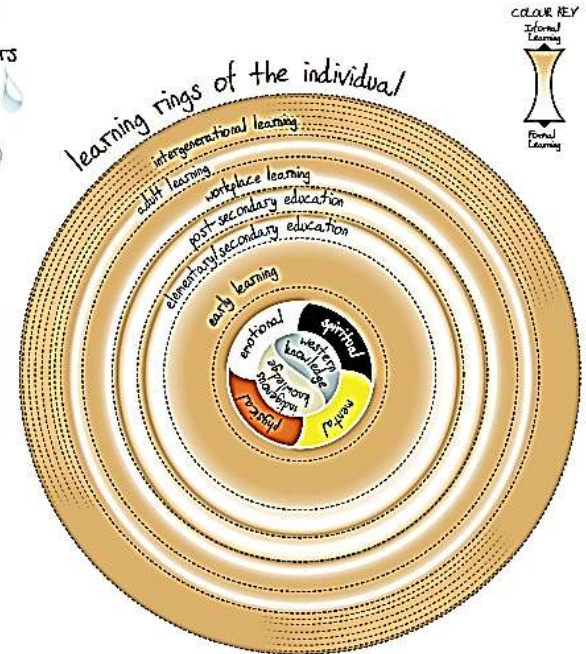
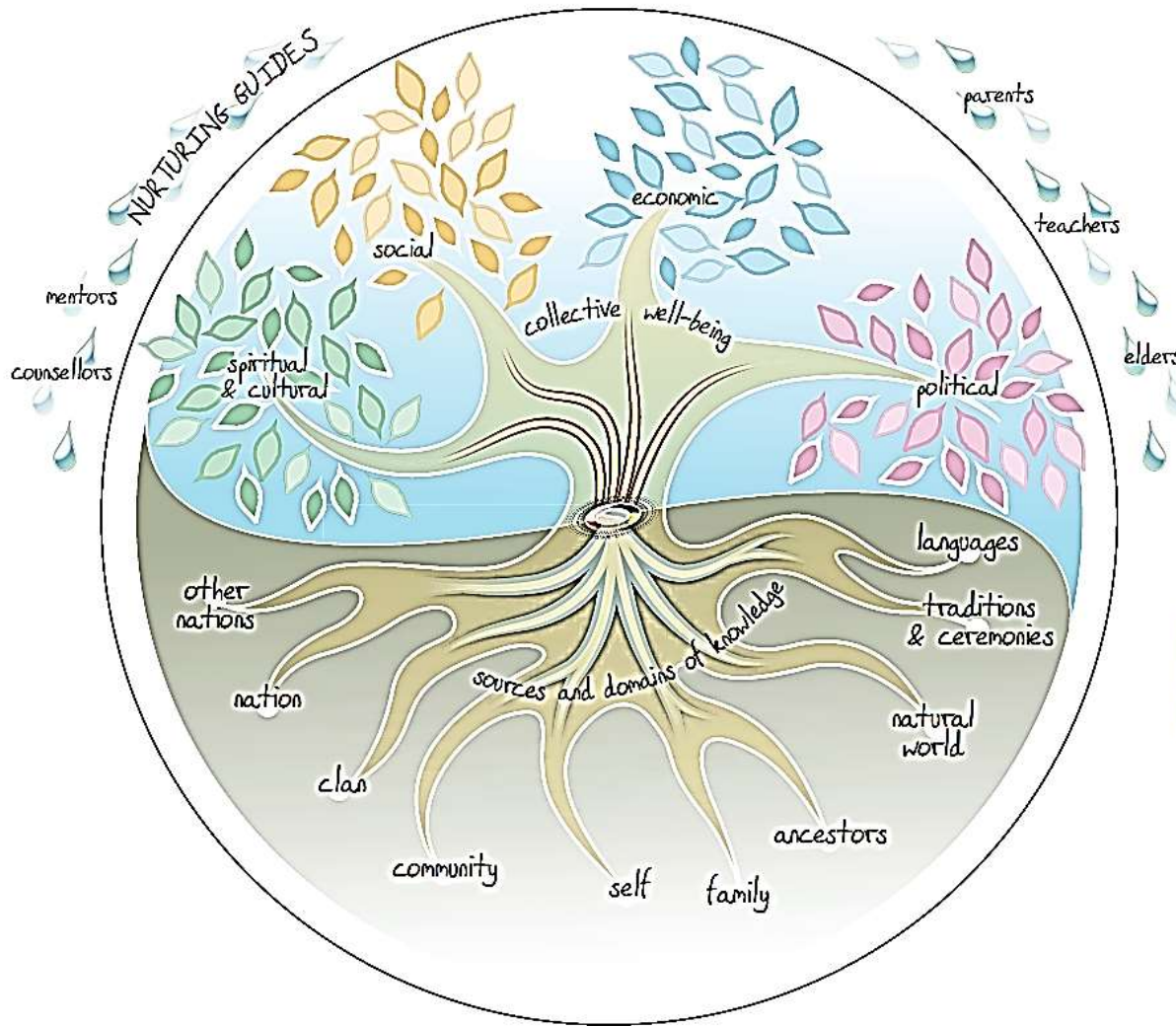
Two-Eyed Seeing is embedded as a strategic direction in CIHR-IAPH's 2014-2018 strategic plan and is highlighted in "Canada's Fundamental Science Review 2017". Known as *etuaptmumk* in Mi'kmaq, it was brought forward as a guiding principle for inter-cultural work almost two decades ago by Mi'kmaq Elder Albert Marshall (LLD – Honorary; member of Eskasoni First Nation; ex-inmate of the Canadian residential school system) to encourage working within the understanding that beneficial outcomes are more likely in any given situation if we bring two or more perspectives (worldviews, paradigms, knowledge systems) into play. In Elder Albert's words: "*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*". When introduced, Two-Eyed Seeing guided a (then) unique, new "Integrative Science" initiative at Cape Breton University wherein the vision was post-secondary science education. Dr. Cheryl Bartlett (retired Professor of Biology and former Canada Research Chair in Integrative Science at CBU) worked closely with Elder Albert and his wife Elder Murdena in this regard and also to extend Two-Eyed Seeing into the arenas of health, environment, and natural resources wherein the natural sciences are core. Two-Eyed Seeing is profoundly more than just new jargon as it requires commitment to (1) ongoing co-learning (by and with researchers and communities) inclusive of (2) knowledge scrutinization (to see "the best"), (3) knowledge validation (by peers), and (4) knowledge gardening (grounded, actionable community projects), plus willingness to acknowledge and address the many challenges within these four requirements. In the face of current misuse (e.g., co-opting, trivializing, or romanticizing) of Two-Eyed Seeing by some people, the necessity for co-learning must be emphasized. Elder Albert also passionately encourages the understanding that the essence of co-learning itself is *i'loqaptmu'k* (in Mi'kmaq) meaning "to revisit for renewal, in order to maintain movement in the direction that spirit intended" (using ways emphatically not based mainly in quantitative evaluation).

Guiding Questions

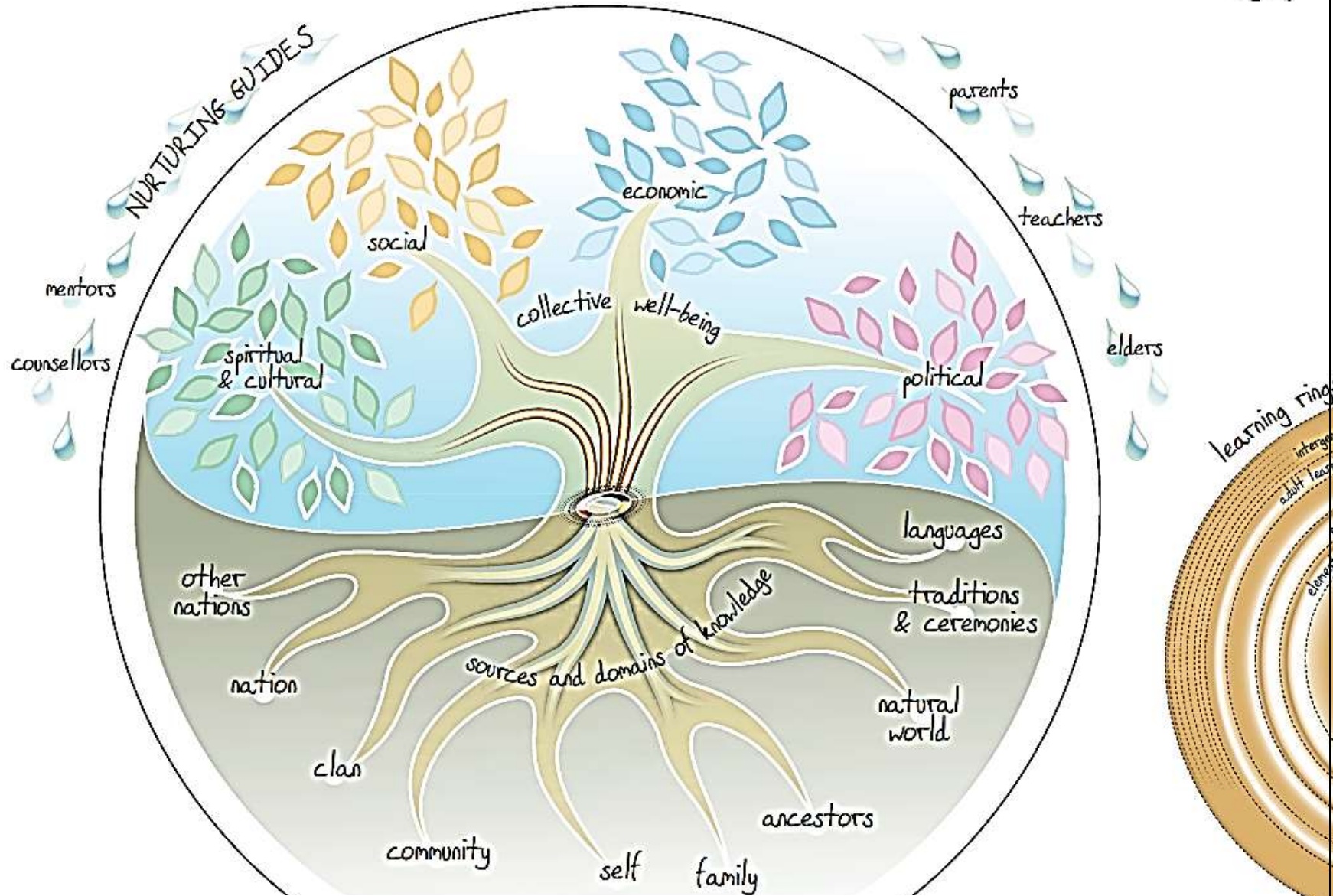
1. What benefits does Two-Eyed Seeing bring to a bio-medical research paradigm? (Note: this is different than asking the same with respect to a bio-medically underpinned health care system.)
2. What pros and cons (and for whom) would be entailed in requiring that research be via co-learning and that it embed nation-appropriate and/or community-based understandings for *i'loqaptmu'k*?
3. How might CIHR encourage research that supports reawakening to the traditional understanding that healing comes from within? E.g., consider the different messages conveyed by research policies or calls that used "guiding principle, grow, or nurture" rather than "framework, build, or measure".

Appendix 1:
visuals for
First Nations Holistic Lifelong Learning Model
developed by
Aboriginal Learning Knowledge Centre
(Co-Directors Dr. Vivian Ayoungman and Dr. Marie Battiste)
within
Canadian Council on Learning

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



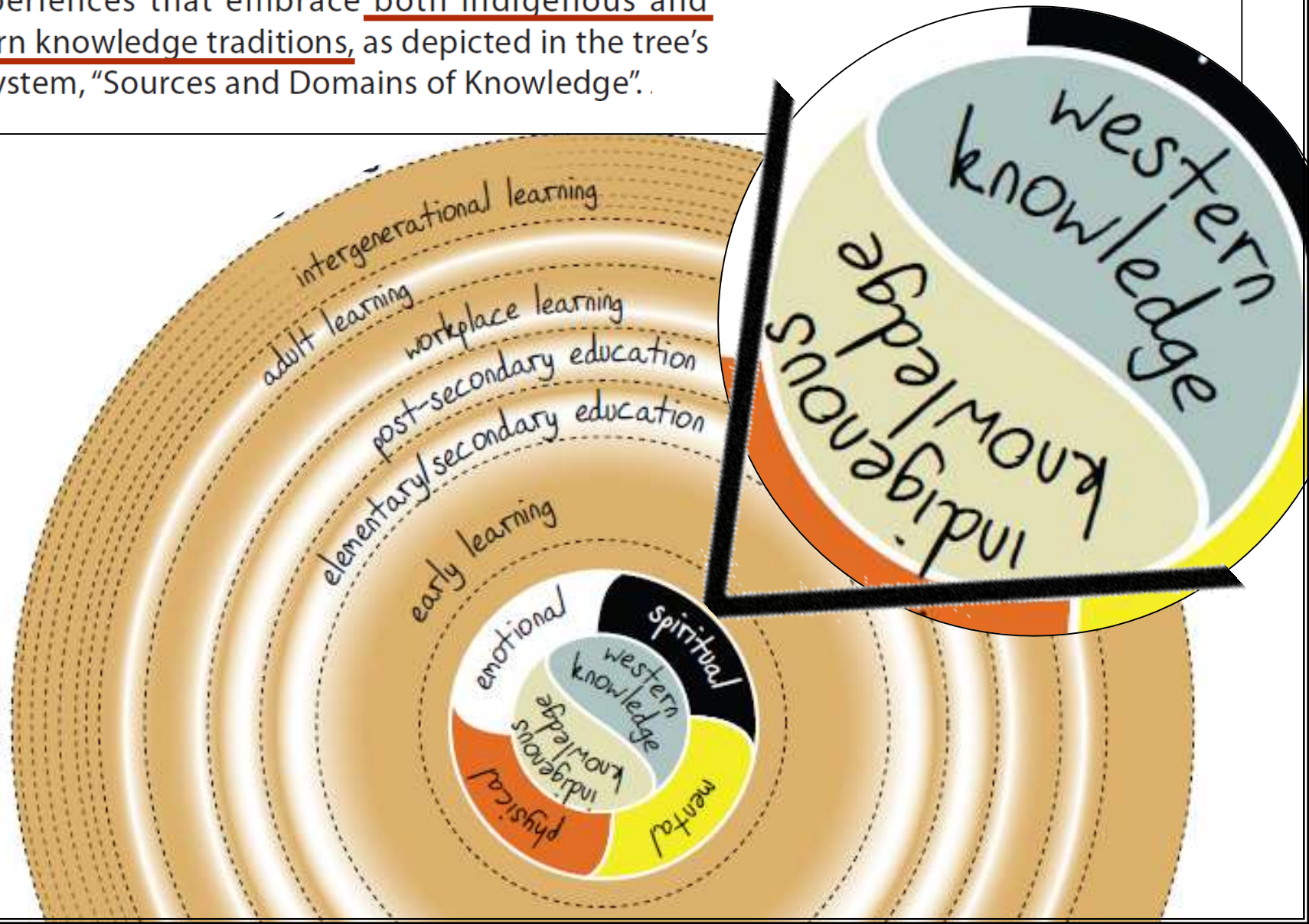
First Nations Holistic Lifelong Learning Model



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

TRUNK CORE (Heartwood) – Two Knowledge Traditions

Lifelong learning for First Nations peoples is grounded in experiences that embrace both indigenous and Western knowledge traditions, as depicted in the tree's root system, "Sources and Domains of Knowledge".



Appendix 2:
visuals pertaining to
Dr. Cindy Blackstock's
The Breath of Life
Theory

ORIGINAL ARTICLES

Blackstock, C. 2007. "The Breath of Life Versus the Embodiment of Life; Indigenous and Western Research." WINHEC (*World Indigenous Nations Higher Education Consortium*) *Journal*.

<https://www.researchgate.net/publication/237555666> The breath of life versus the embodiment of life indigenous knowledge and western research

Blackstock, C. 2011. "The Emergence of the Breath of Life Theory." *Journal of Social Work Values and Ethics* 8 (1): 16.

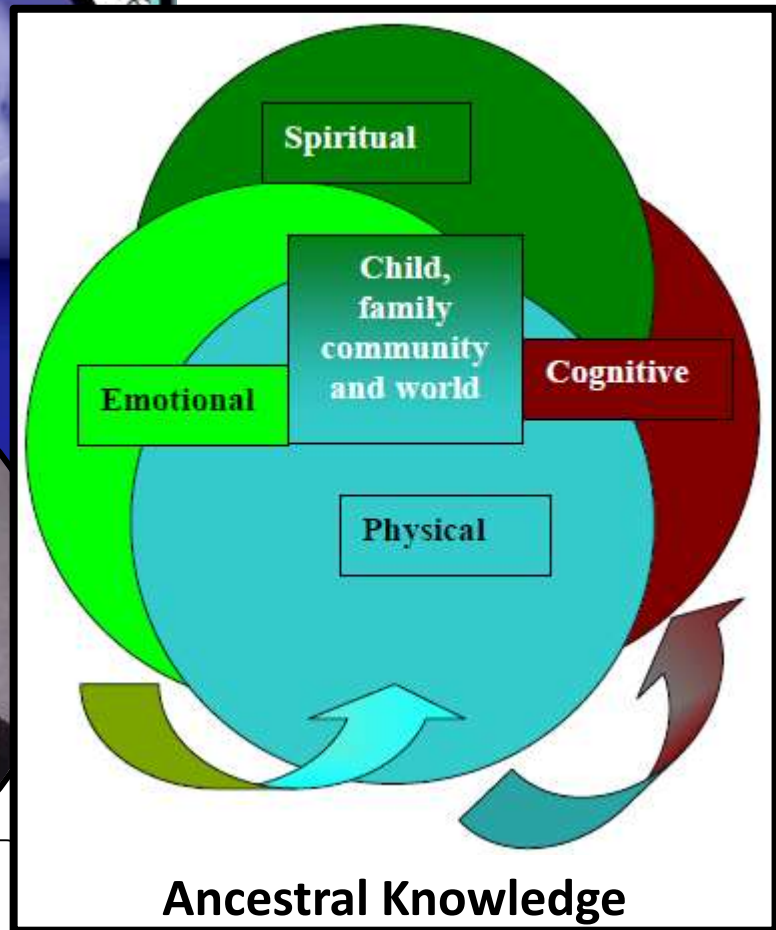
<https://www.researchgate.net/publication/264889109> The Emergence of the Breath of Life Theory

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

words of
Elder Albert Marshall

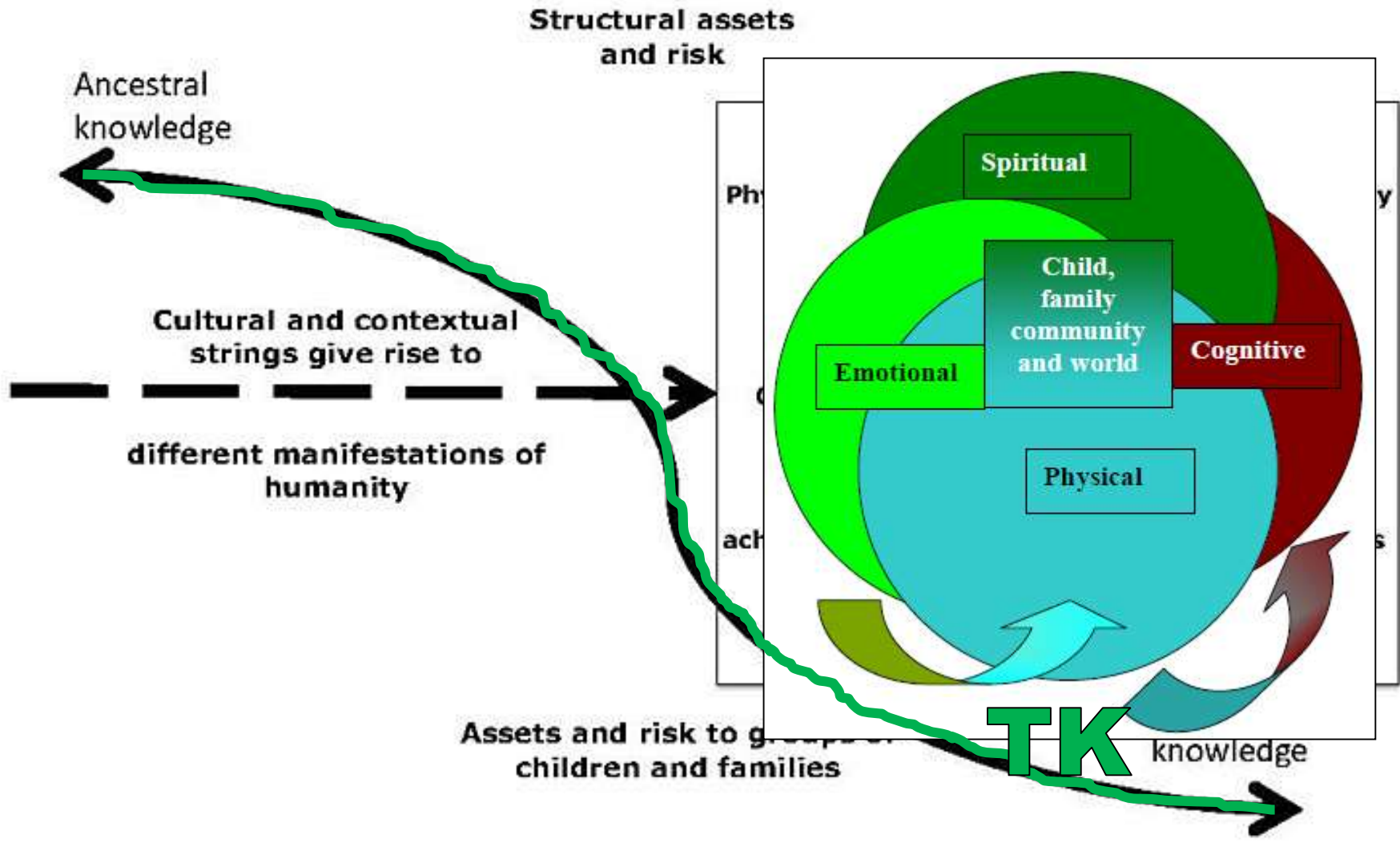


**Cindy Blackstock 2007 & 2011
The Breath of Life Theory**



Knowledge is alive, and thus both physical and spiritual.
KNOWLEDGE lives in STORIES

Blackstock 2011: model for Breath of Life Theory (with 2007 overlay)



Blackstock 2011: model for Breath of Life Theory

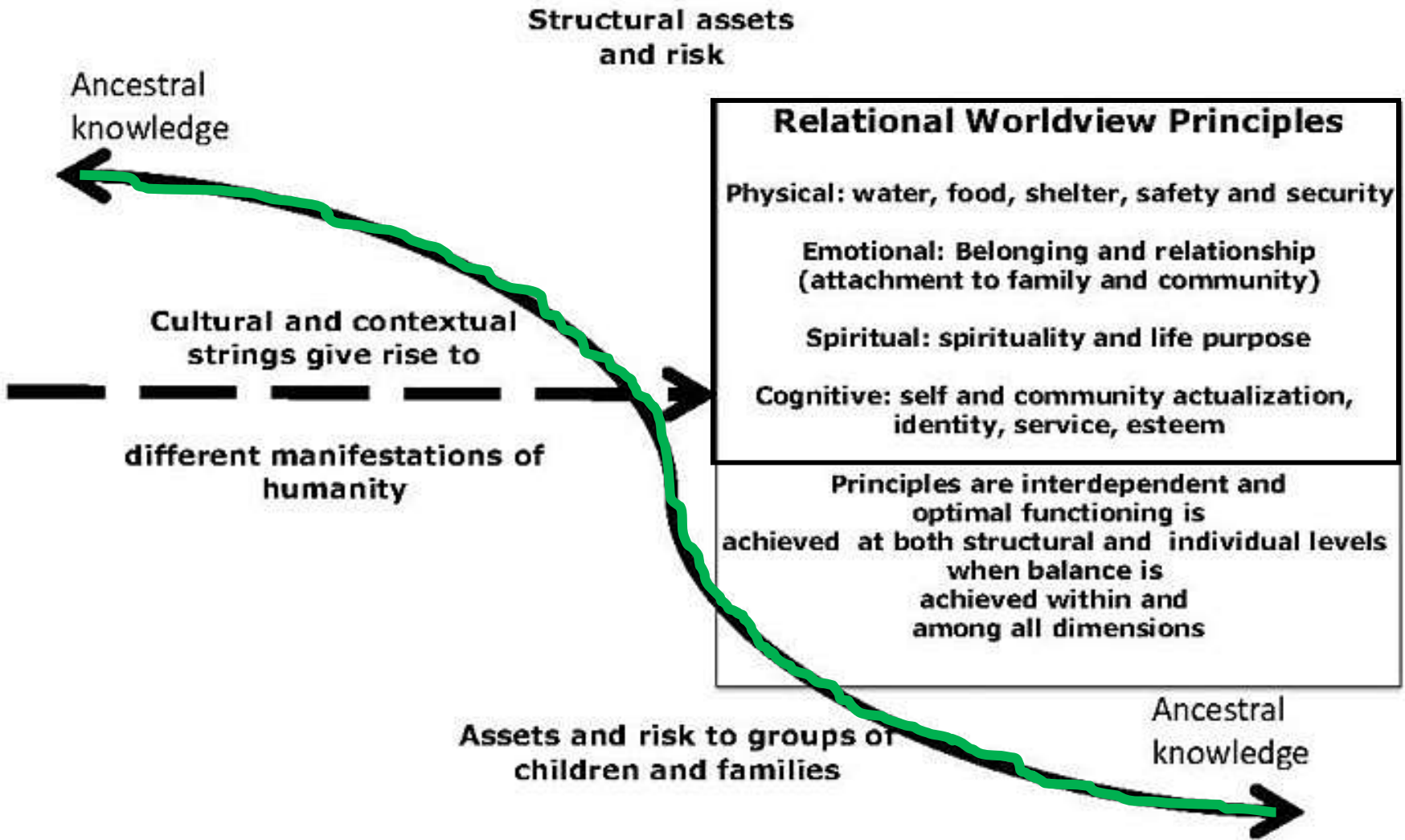




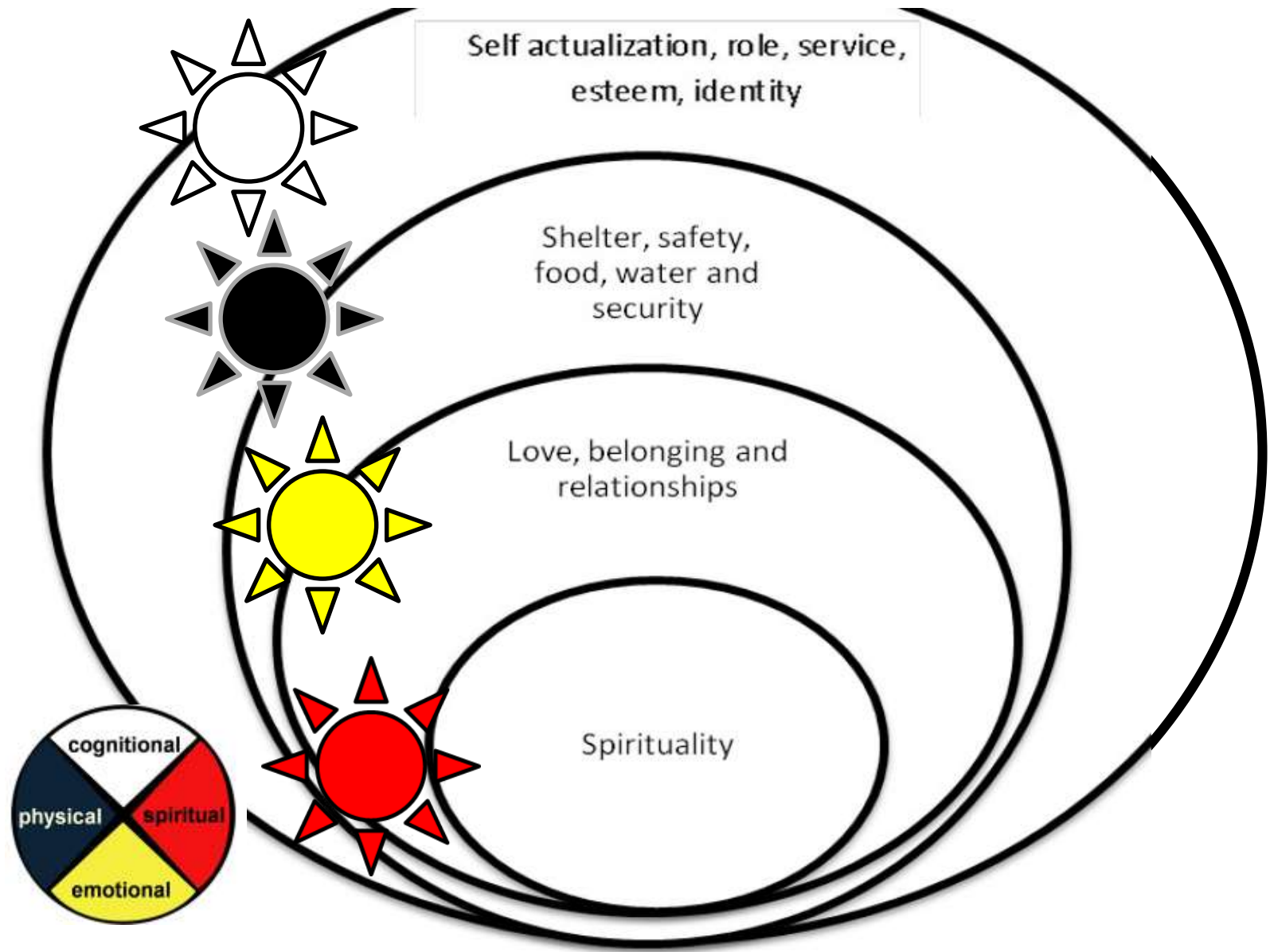


Table 1: Contrasting the Determinants of Health with the Relational Worldview Principles

Holistic Worldview Dimensions of Individual and Collective Wellbeing	Determinants of Health (Public Health Agency of Canada, 2007)	Relational Worldview Principles (Cross, 2007)
Physical 	Income and social status Employment and working conditions Physical environments Biology and genetic endowment Health services Gender Health child development Culture*	Food Water Housing Safety Security
Emotional 	Social support networks Personal health practices and coping skills* Culture*	Belonging Relationship Esteem*
Spiritual 	NOT INCLUDED	Spirituality Life purpose
Cognitive 	Education and literacy Personal health practices and coping skills* Culture*	Self actualization Community actualization Role Identity Service Esteem*

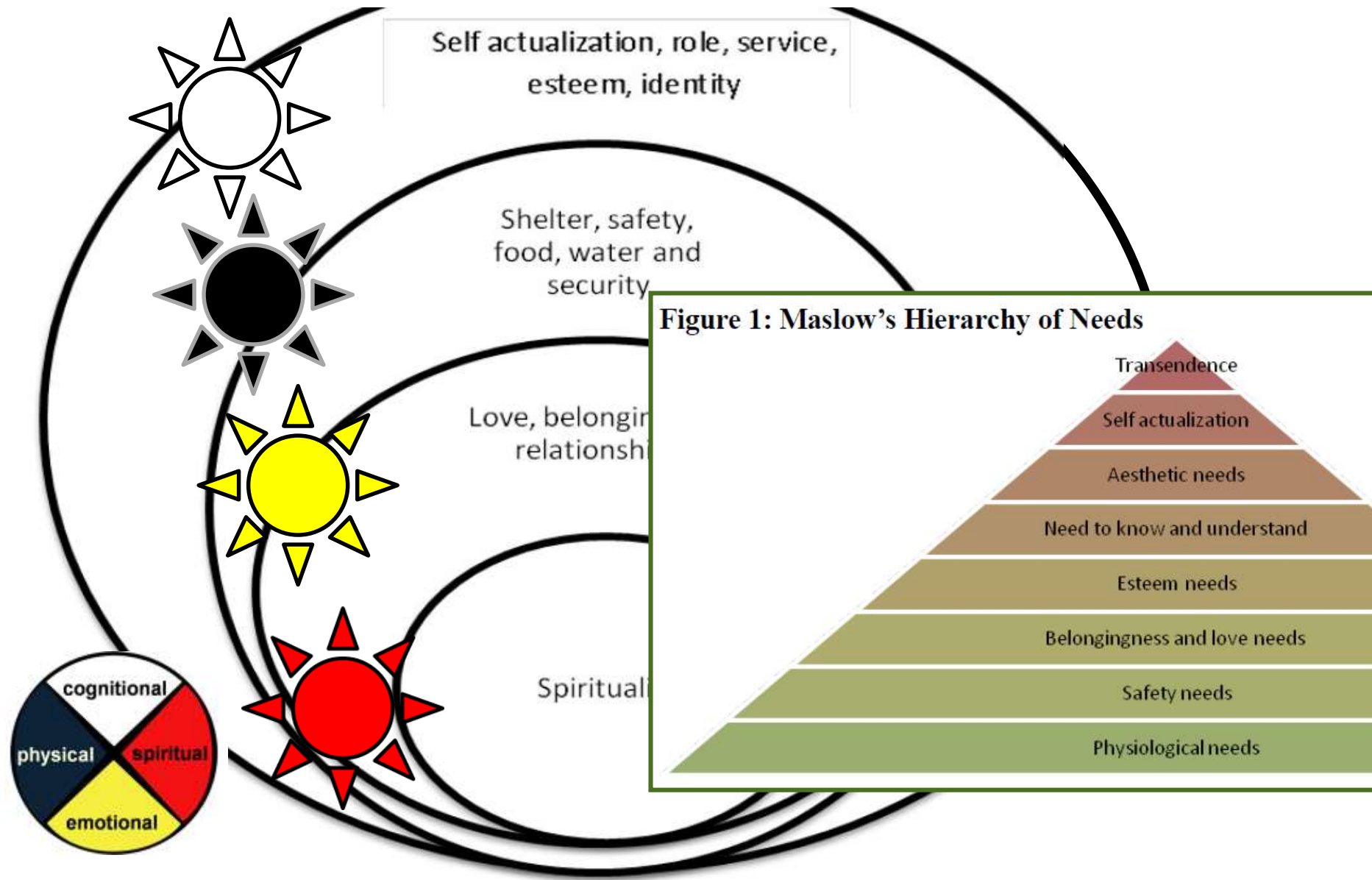
from: Cindy Blackstock 2011; Table 1 (with coloured shapes added)

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



from: Cindy Blackstock 2011; Fig. 2 (with correction and coloured shapes added)
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Figure 2: Cross (2007) reinterprets Maslow's hierarchy of needs through Indigenous eyes



from: Cindy Blackstock 2011; Fig. 2 (with correction and coloured shapes added, plus Fig. 1 [small insert])
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