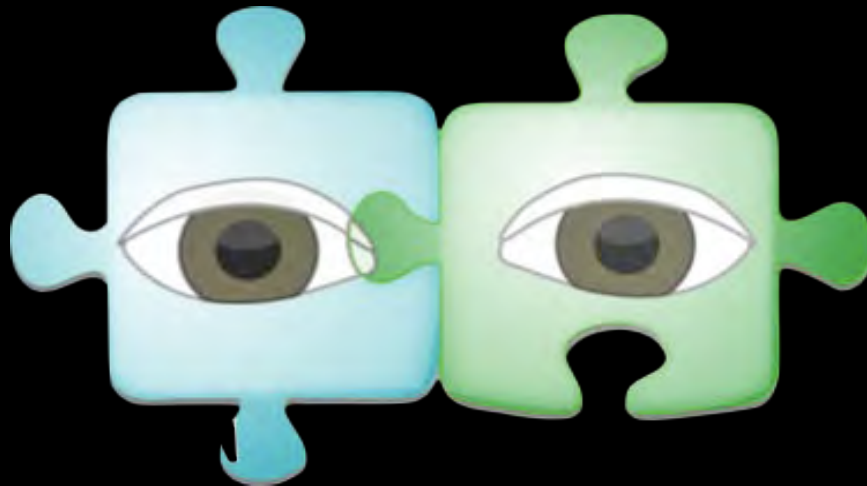


Cheryl Bartlett, PhD

Canada Research Chair in Integrative Science

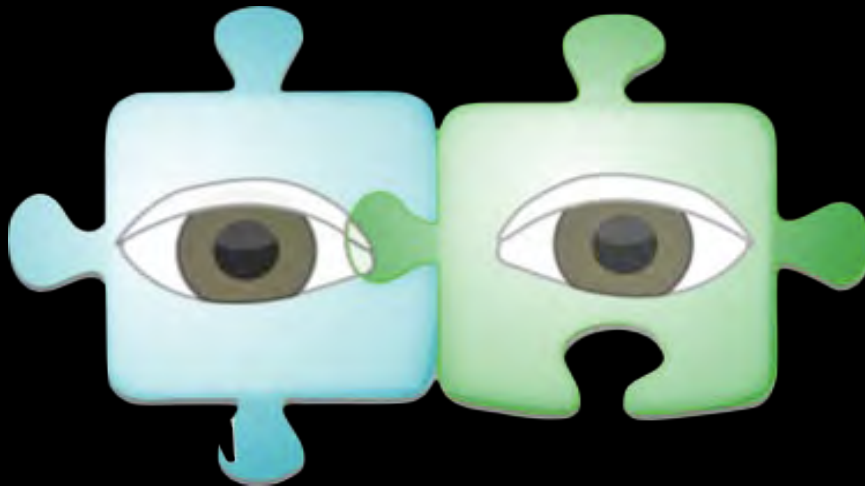
Coast Guard College; Sydney, NS; 14 January 2009



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Two-Eyed Seeing & Integrative Science



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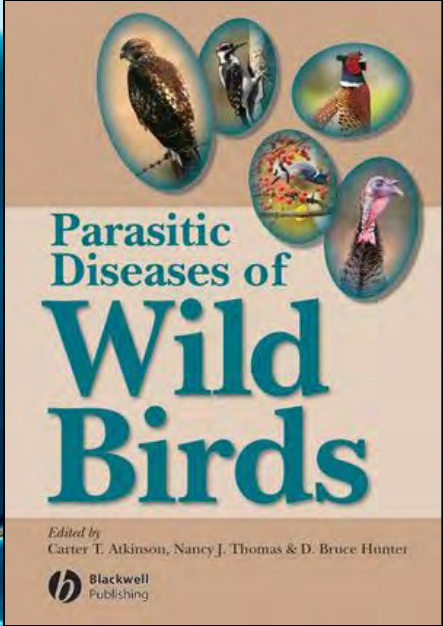


Territory of the Blackfoot Confederacy Siksika Nation (Treaty 7)









Indigenous

Western



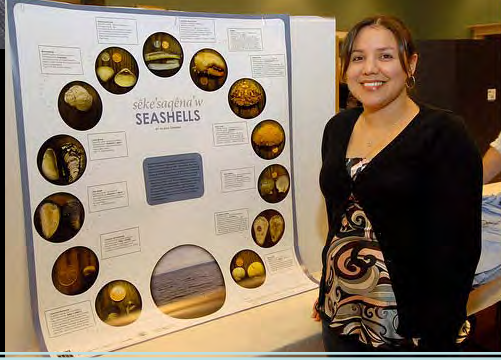
The central dilemma of science education today is the teaching of science from only one cultural perspective, and in an incomplete and non-connected manner.

Gregory Cajete, PhD
Native American Scientist & Educator, Univ. of New Mexico

collaboration

≈ 15 years







Canada Research
Chairs

Chaires de recherche
du Canada



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada
Canada

Thank you / Wela'liog

Mi'kmaq Elders



CIHR IRSC

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



**NSERC
CRSNG**

Canada Foundation
for Innovation

Fondation canadienne
pour l'innovation



Mi'kma'wey Debert



Membertou
Elementary



**IWK Health Centre
Foundation**



Mermaid Theatre
of Nova Scotia

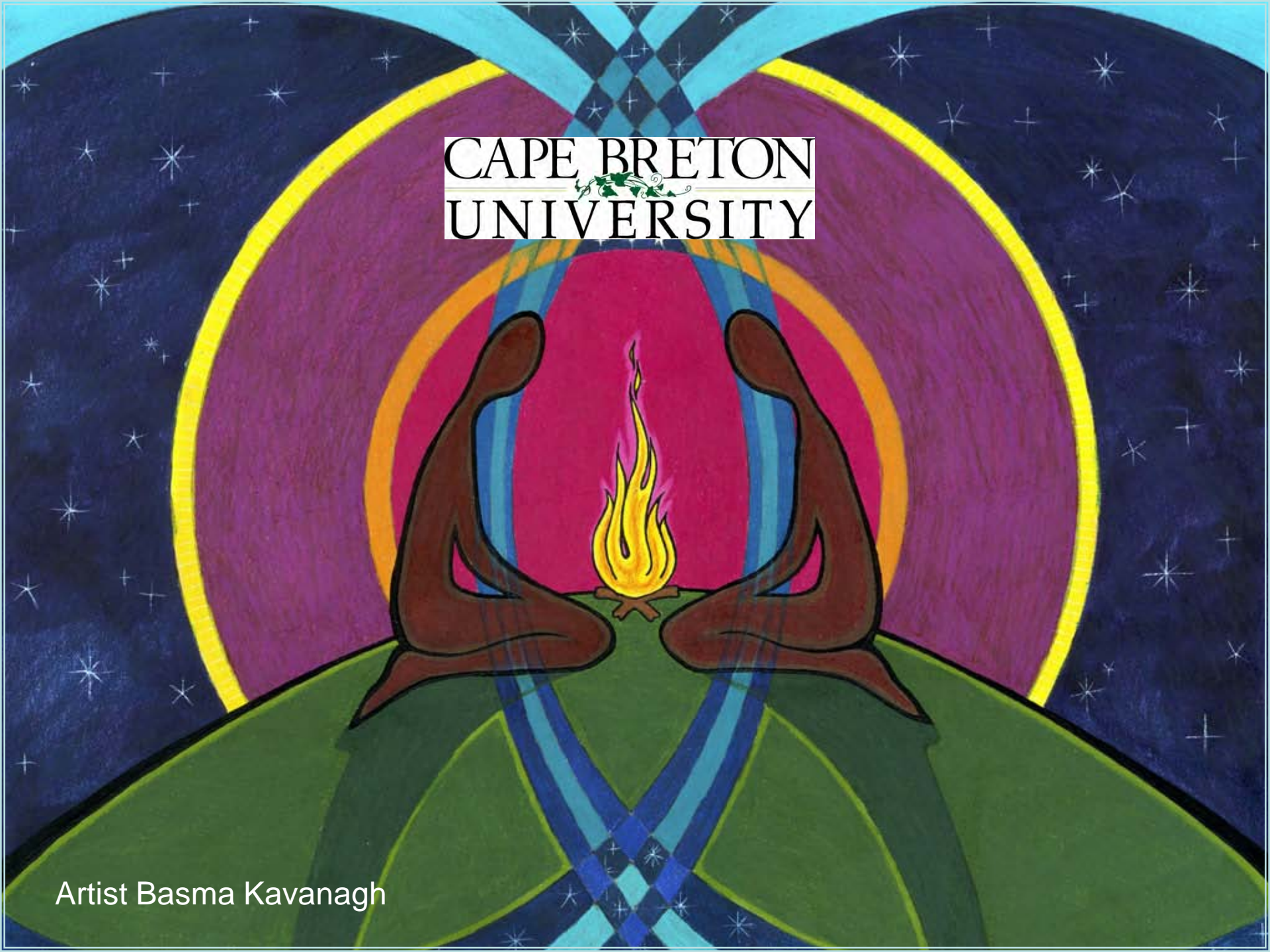


Eskasoni First Nation Detachment
Royal Canadian Gendarmerie royale
Mounted Police du Canada



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

The support of various partners
and funding agencies is
gratefully acknowledged.



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Artist Basma Kavanagh

Integrative Science

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Indigenous

our sciences
our stories

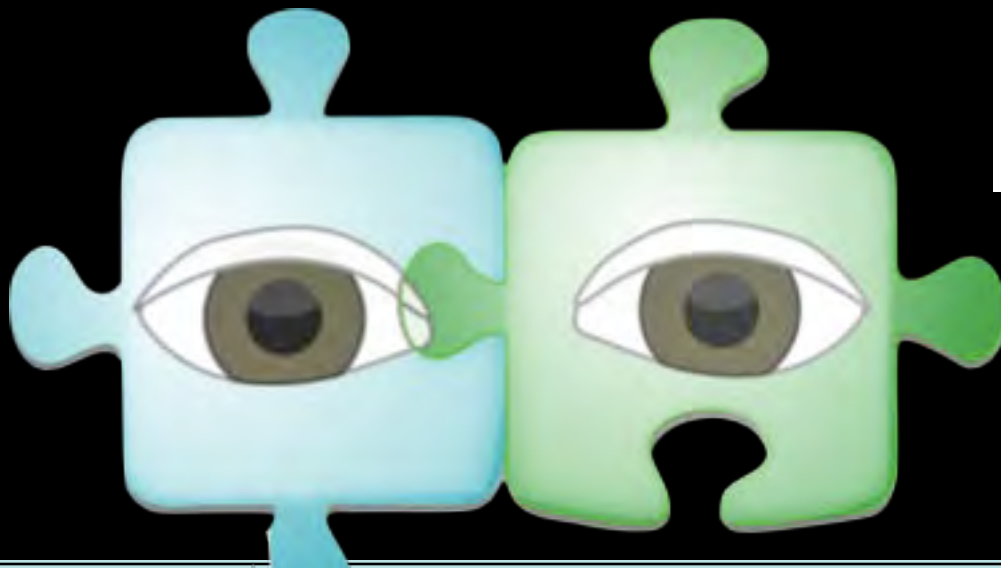
Western

“bringing our knowledges together”

our worldviews

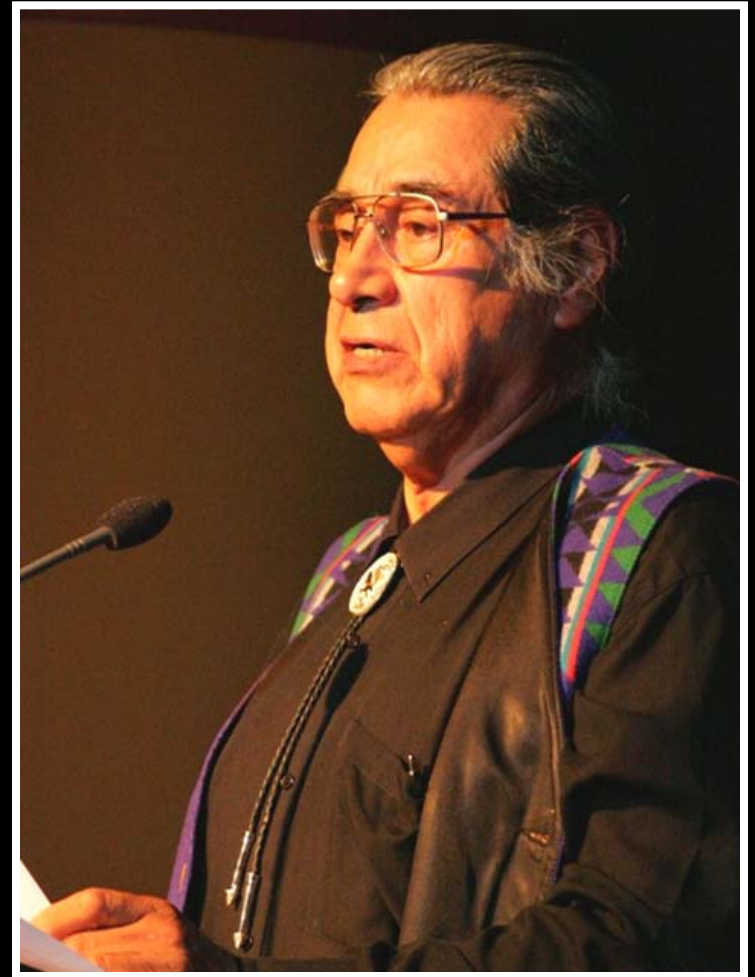
Artist Basma Kavanagh

Two-Eyed *Seeing*

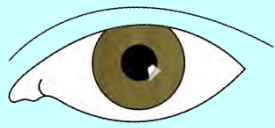
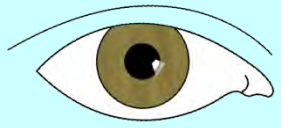


Elder Albert Marshall
Eskasoni community
Mi'kmaq Nation

“LEARN ... to see from one eye with the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of Western (or Eurocentric or mainstream) knowledges and ways of knowing ... and to use both these eyes together, for the benefit of all.”

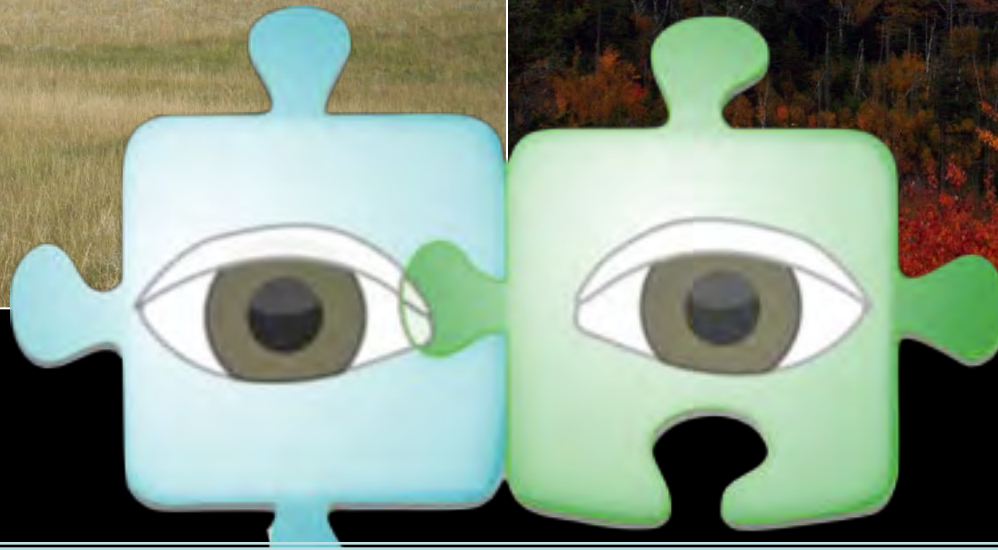


Two-Eyed Seeing



Two-Eyed Seeing

learning to see with the strengths of each & together



stories of our interactions with and within nature

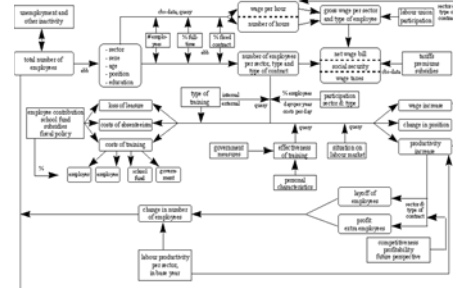
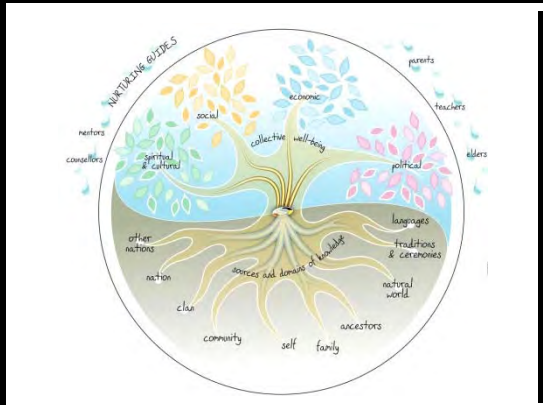
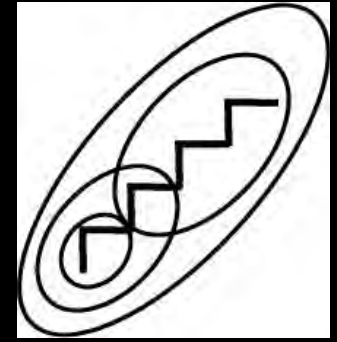
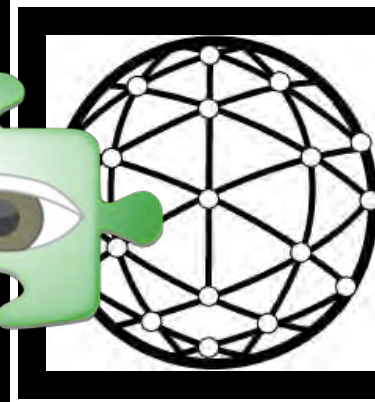
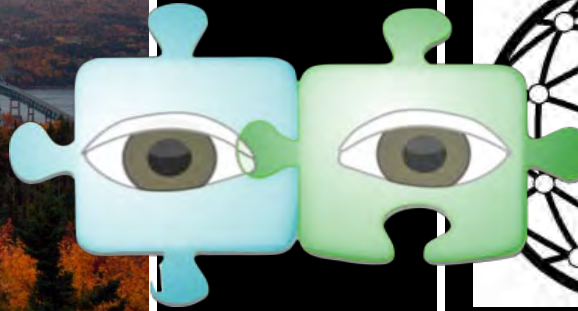
Science



stories of our interactions with and within nature

Science

Periodic Table of the Elements



stories of our interactions with and within nature

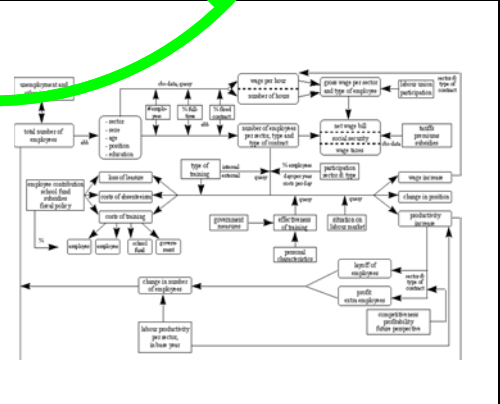
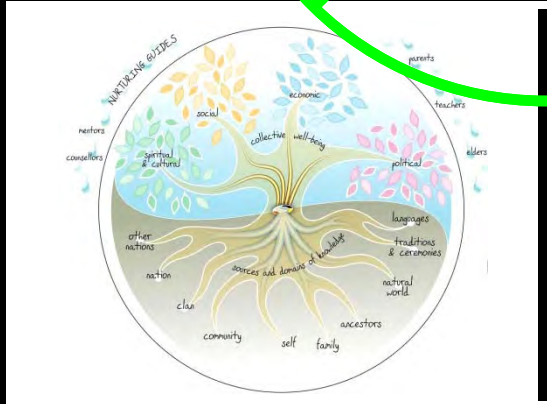
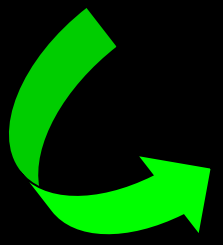
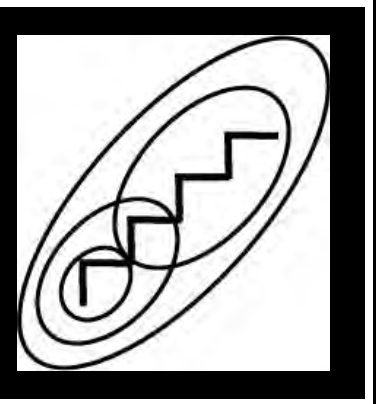
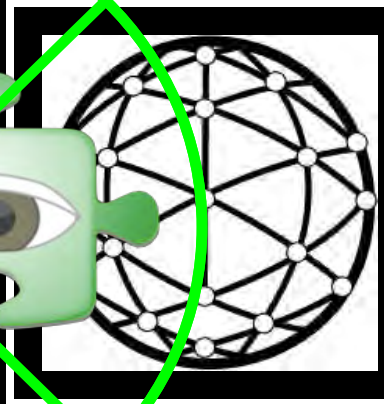
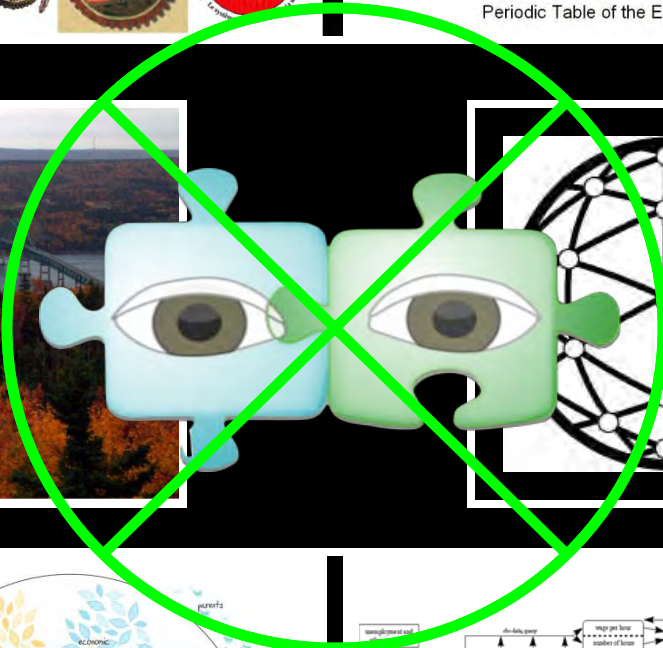
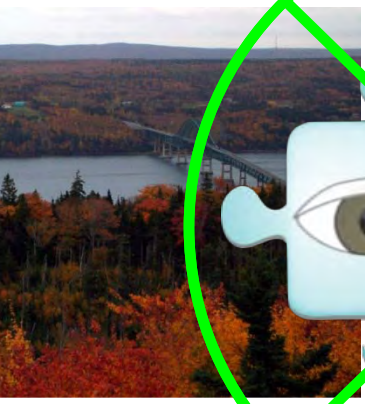
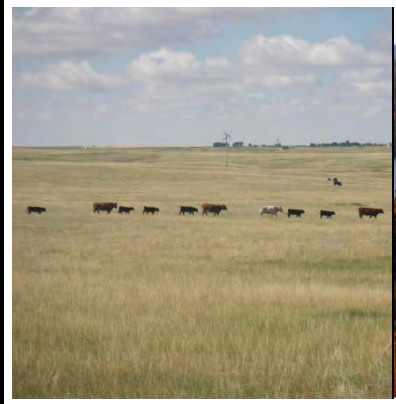
Science

Life Love Land

stories of our interactions with and within nature

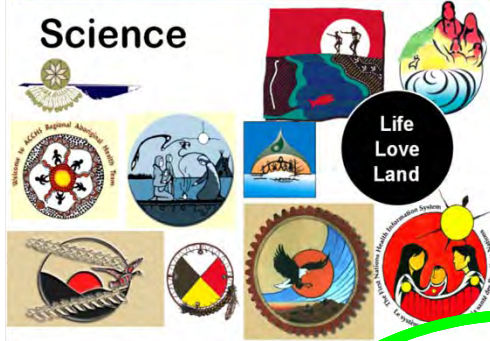
Science

Periodic Table of the Elements



stories of our interactions with and within nature

Science

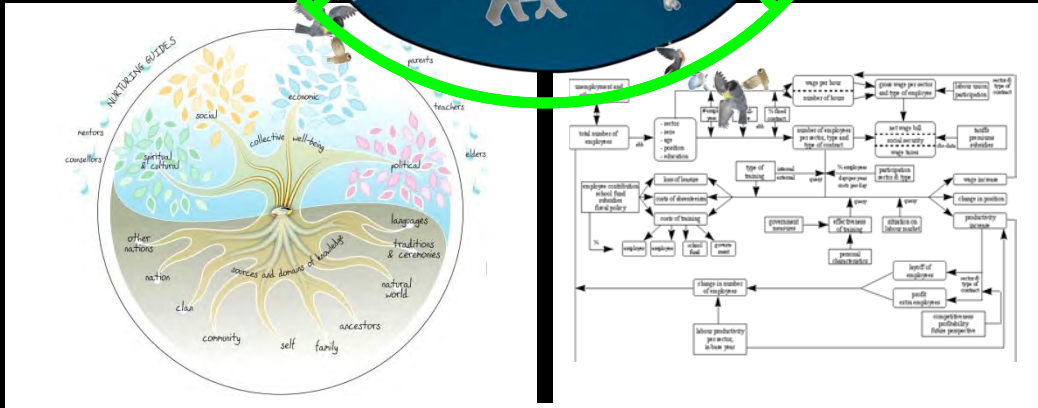
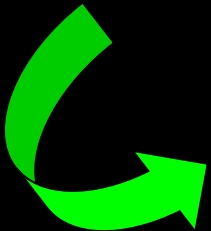
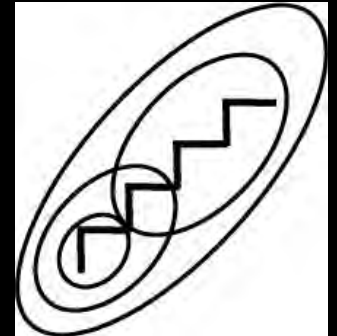
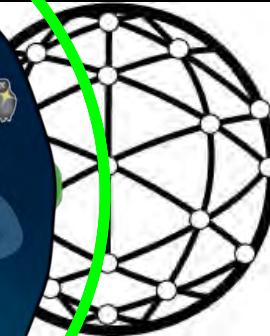


stories of our interactions with and within nature

Science



Periodic Table of the Elements



stories of our interactions with and within nature

Science

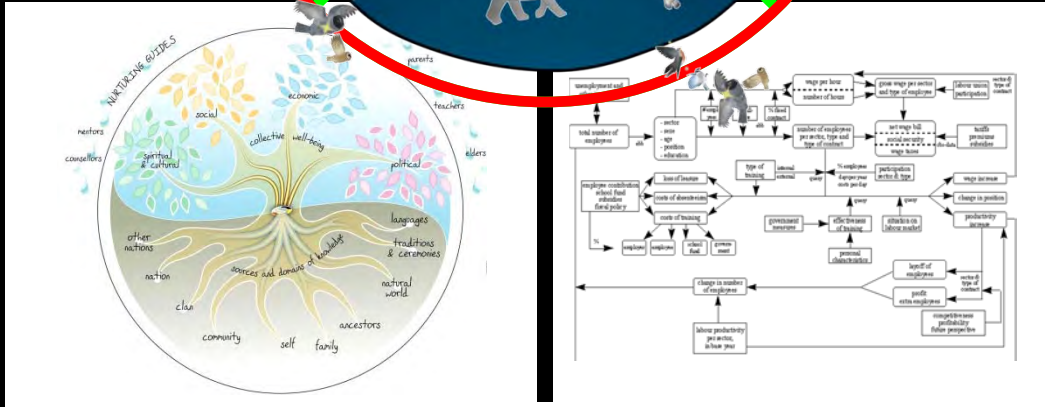
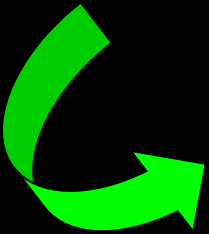
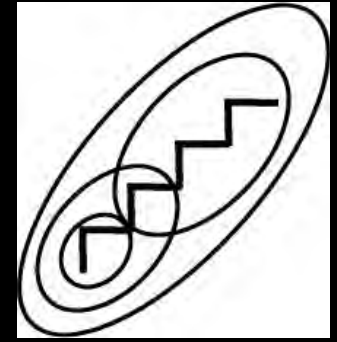
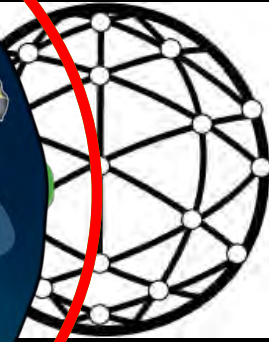
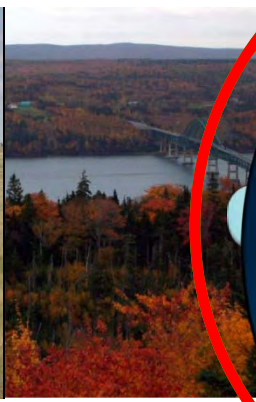
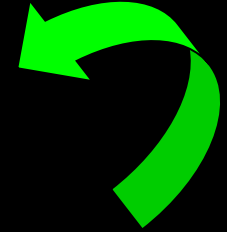


stories of our interactions with and within nature

Science



Periodic Table of the Elements



stories of our interactions with and within nature

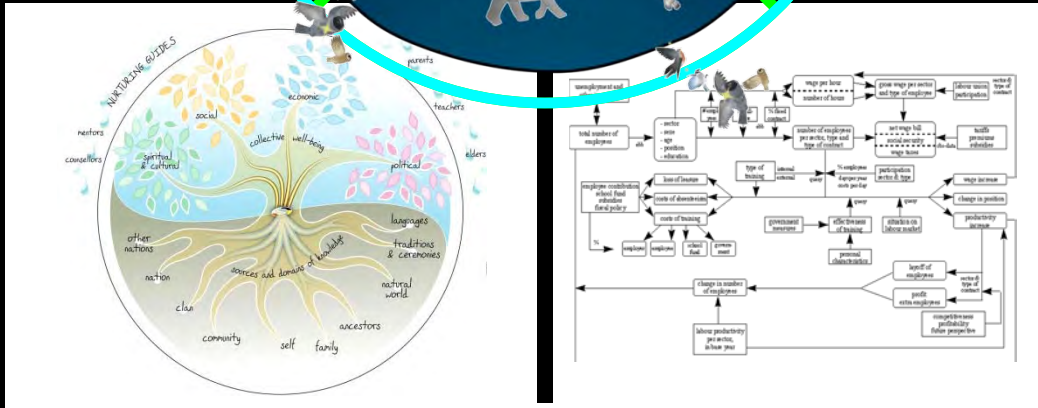
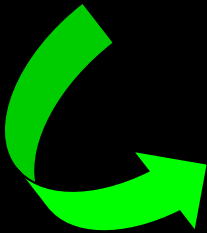
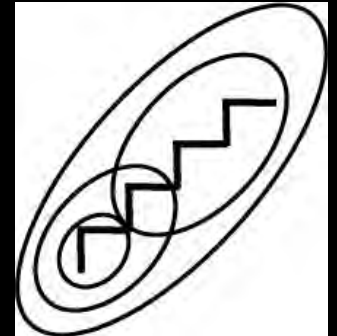
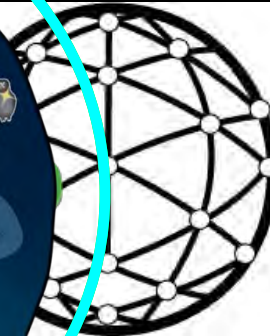
Science



stories of our interactions with and within nature

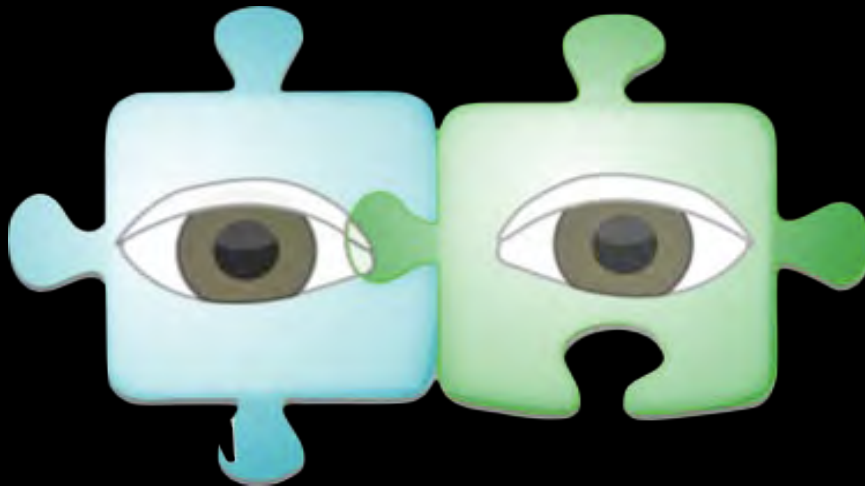
Science

Periodic Table of the Elements





Two-Eyed Seeing & Integrative Science



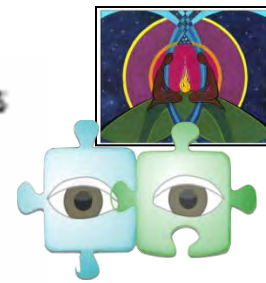
CAPE BRETON
UNIVERSITY

Being Nature's Mind: Indigenous Ways of Knowing and Planetary Consciousness

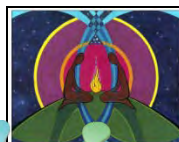
by

(ReVision 2004)

Mary Jane Zimmerman, Ph. D.



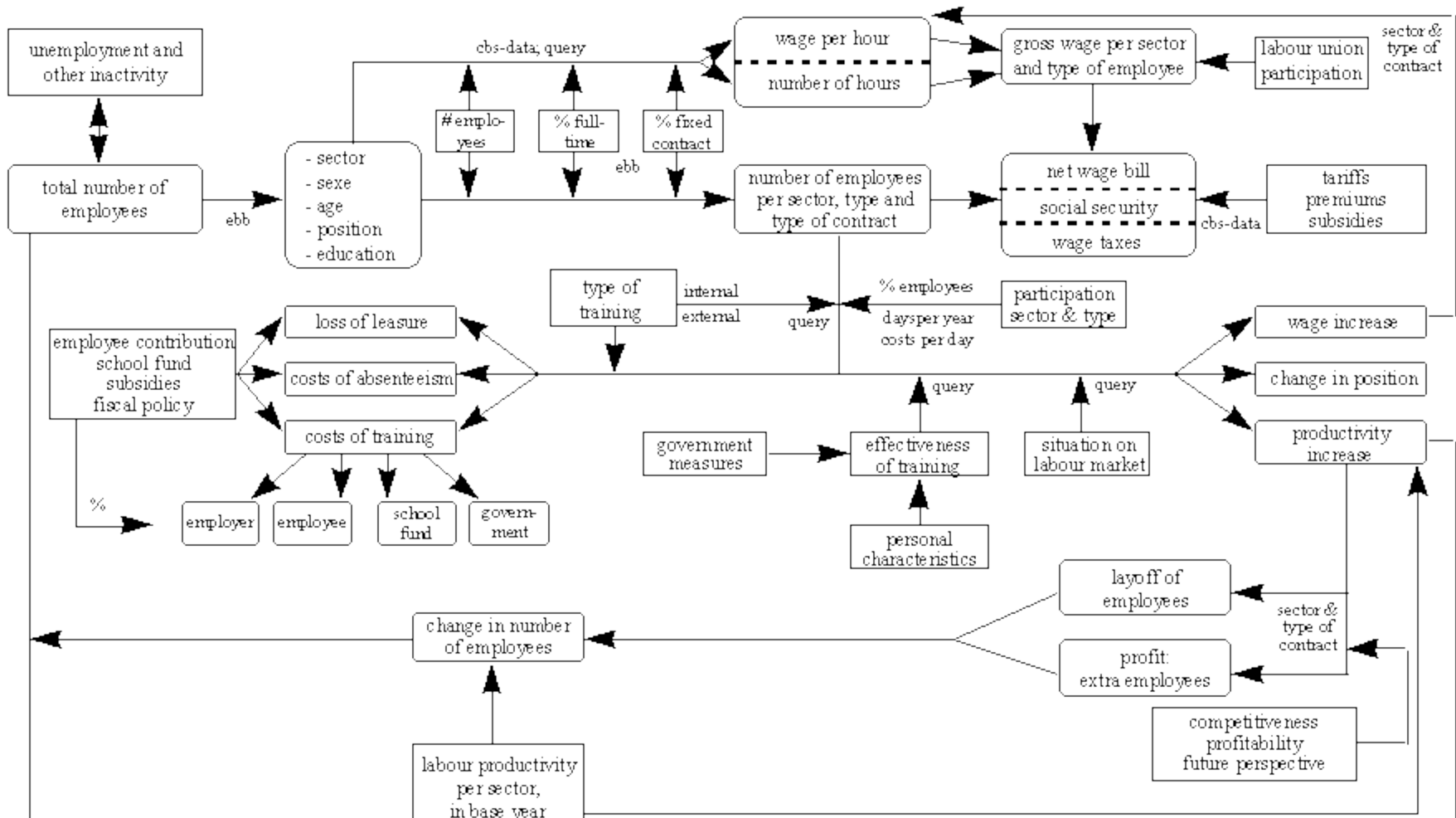
Since 1999, I have participated in the Language of Spirituality dialogues between Native Americans, scientists, and linguists, which are held in Albuquerque, NM, every summer. During one such dialogue, a number of the Native American participants told long, winding stories, seemingly unconnected to the topic at hand. Finally, one of the Anglo physicists lost his composure and began criticizing the proceedings: "Let's get beyond just telling stories," he said, "and get down to a real discussion. Let's really get into it and sort out what is good and what is bad about Western science and Native science." What he had heard so far had not qualified for him as a "real discussion." The response, from the Native Americans present, was not the direct, confrontive type of argument that he was seeking, but instead, more stories, even more long and winding, which then elicited another outburst from the impatient physicist, who felt that his earlier plea had been ignored.



What was happening here? It was a failure of communication at the meta-level between people with different models of what constitutes proper social behavior and correct way to get one's opinion across. The physicist, in being direct, critical, and confrontive, was breaking every rule of Native American social interaction. The Native Americans could not directly tell him that without also breaking their rules. Their way to show him that he was in the wrong and had something to learn was through indirect stories which he was expected to be able to "hear" and apply to himself. Their response of more stories, which to them was a highly refined, polite, and indeed, ethical response to his social insult, seemed to him to be insulting.

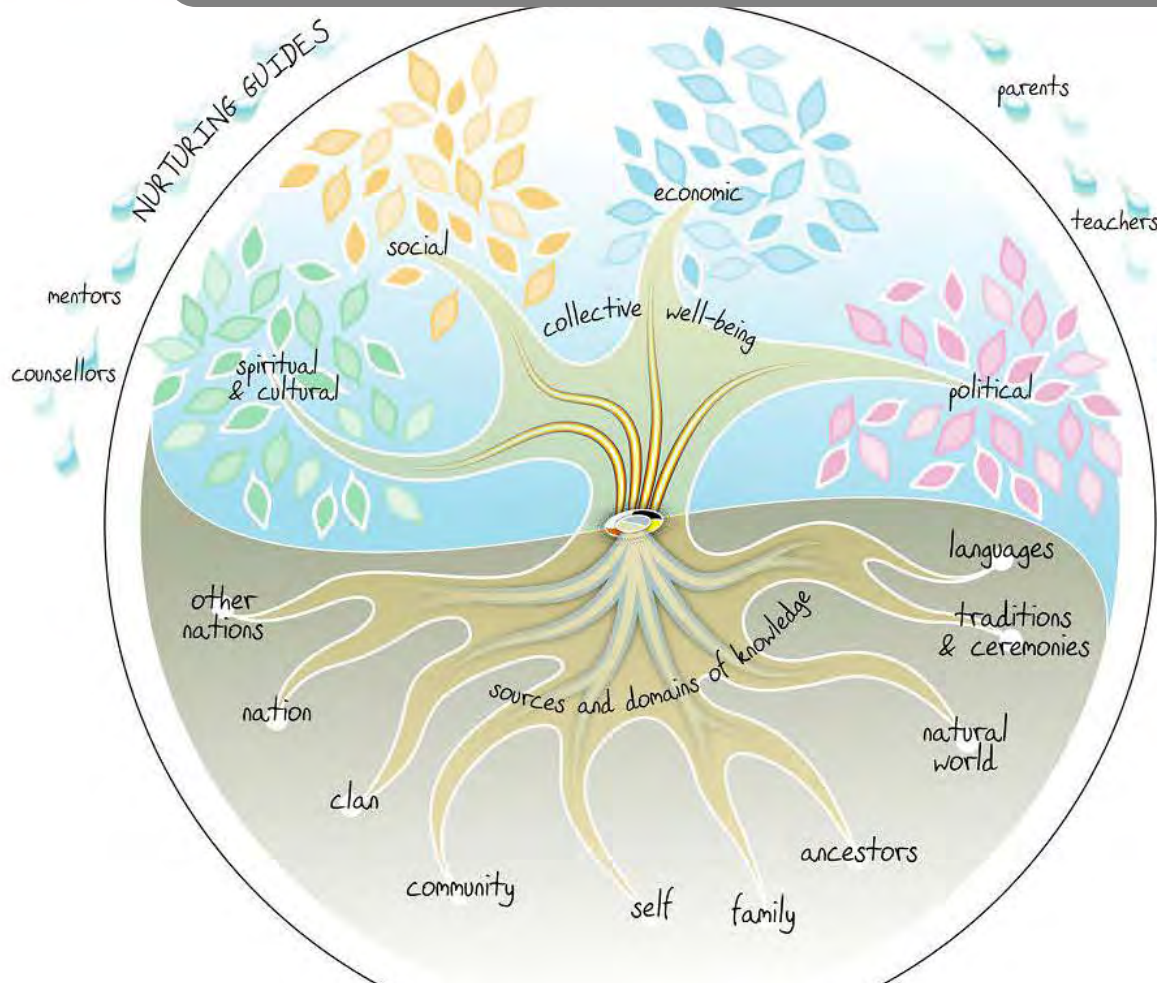
At the beginning of every Language of Spirituality dialogue, the moderator, Leroy Littlebear, tells us that in dialogue, we should set aside our tacit infrastructures, our currently held beliefs about reality, in order to listen deeply for whatever words, ideas, feelings, or perceptions surface in us during the experience. However, as the above story illustrates, becoming aware of and setting aside one's own tacit infrastructure is easier said than done.

Lifelong Learning Model



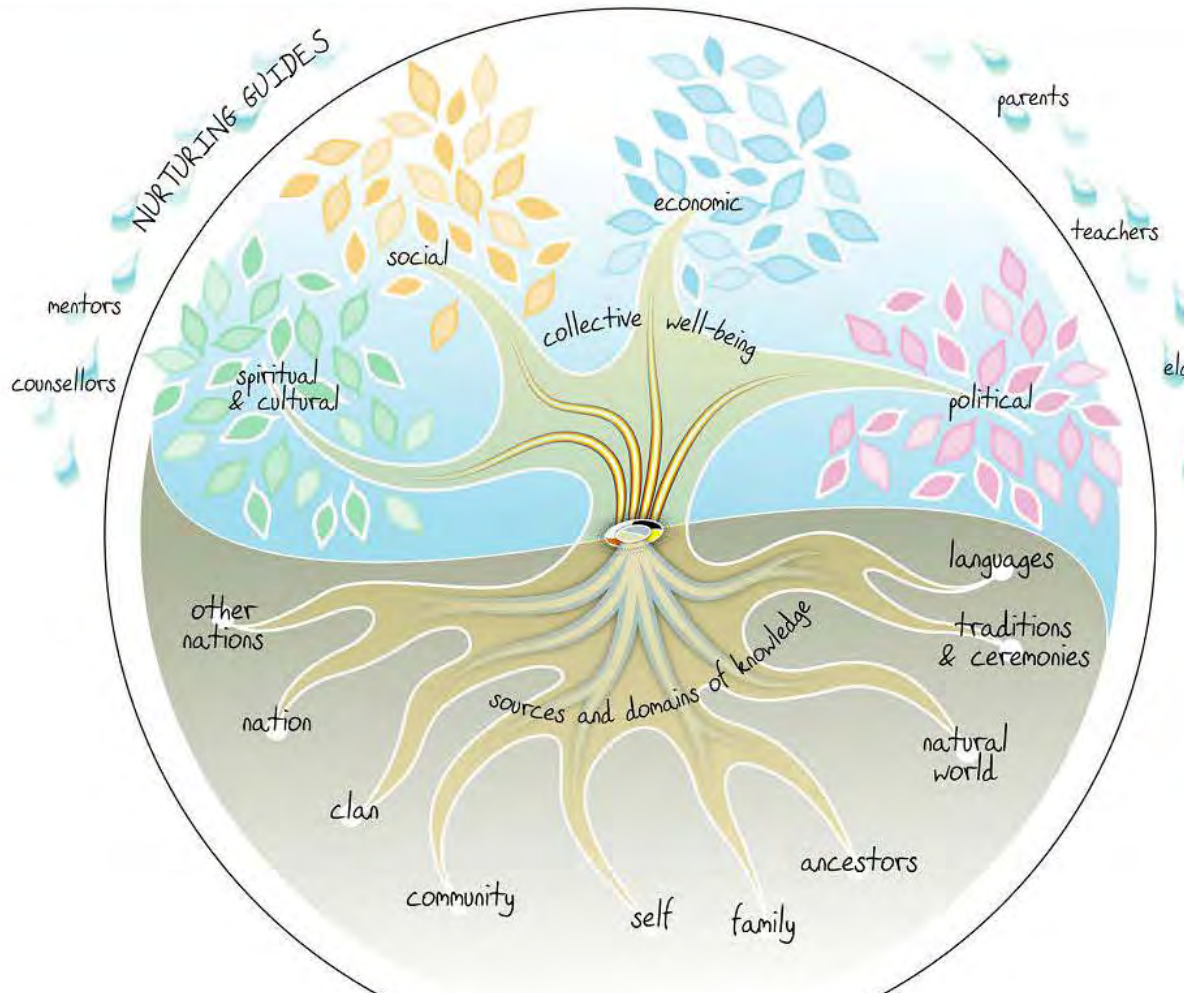
Leeds University (UK) Lifelong Learning Model

Lifelong Learning Model



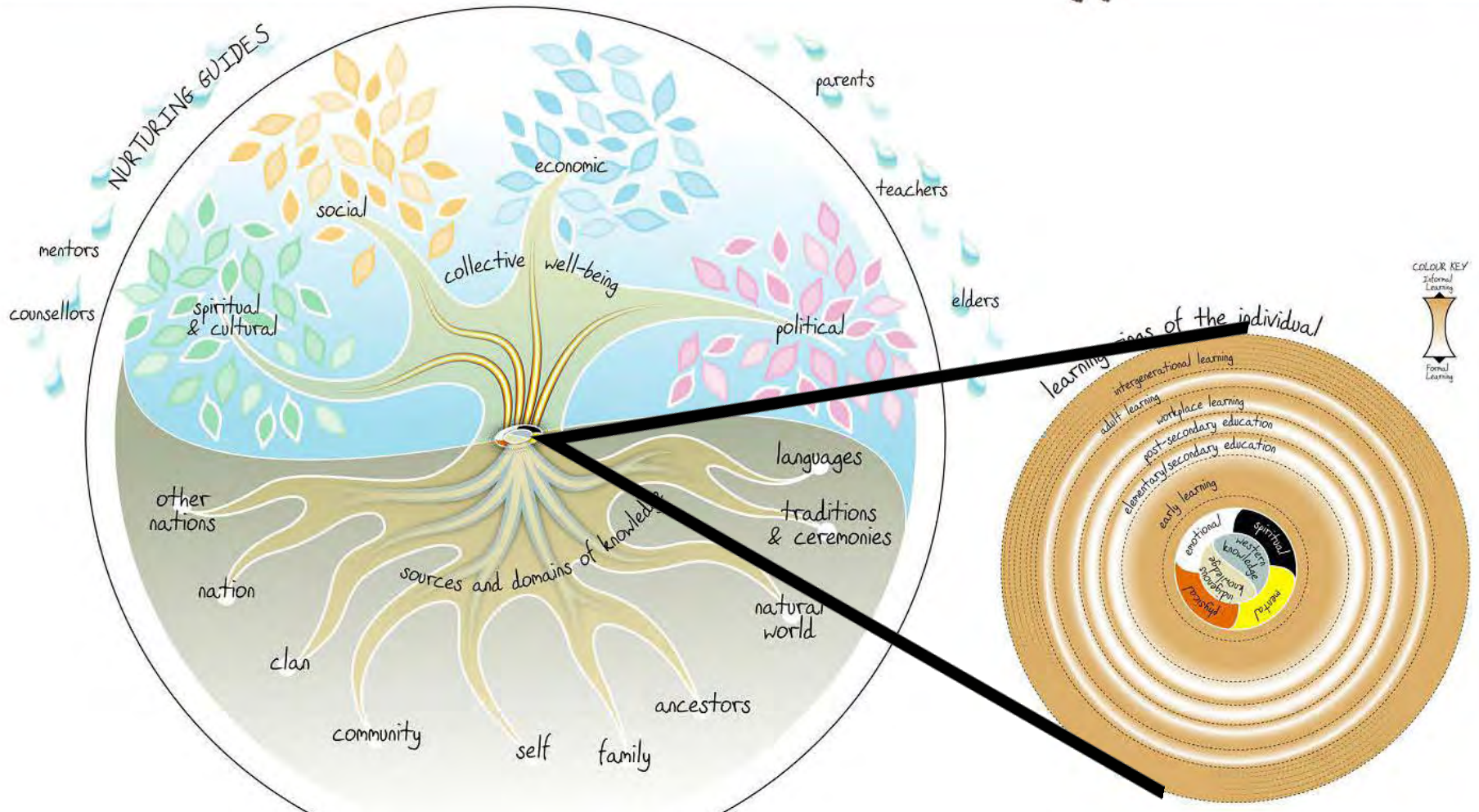
First Nations Holistic Lifelong Learning Model

from: Canadian Council on Learning: Aboriginal Learning Knowledge Centre



First Nations Holistic Lifelong Learning Model

from: Canadian Council on Learning: Aboriginal Learning Knowledge Centre

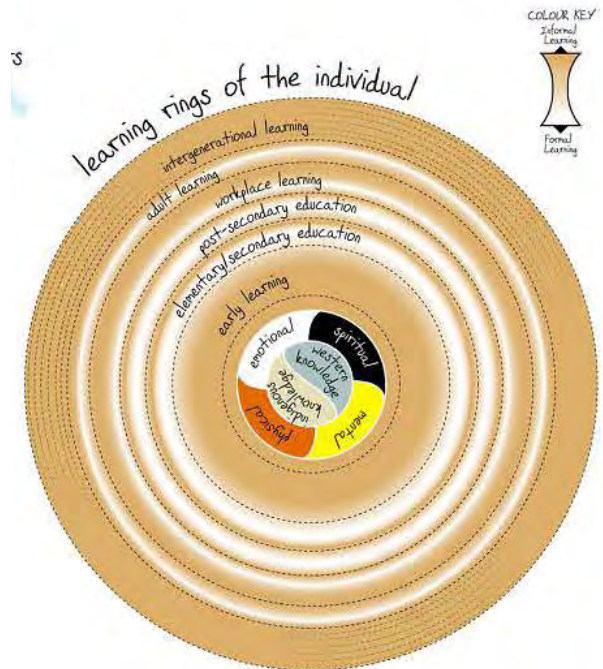


First Nations Holistic Lifelong Learning Model

from: Canadian Council on Learning: Aboriginal Learning Knowledge Centre



3



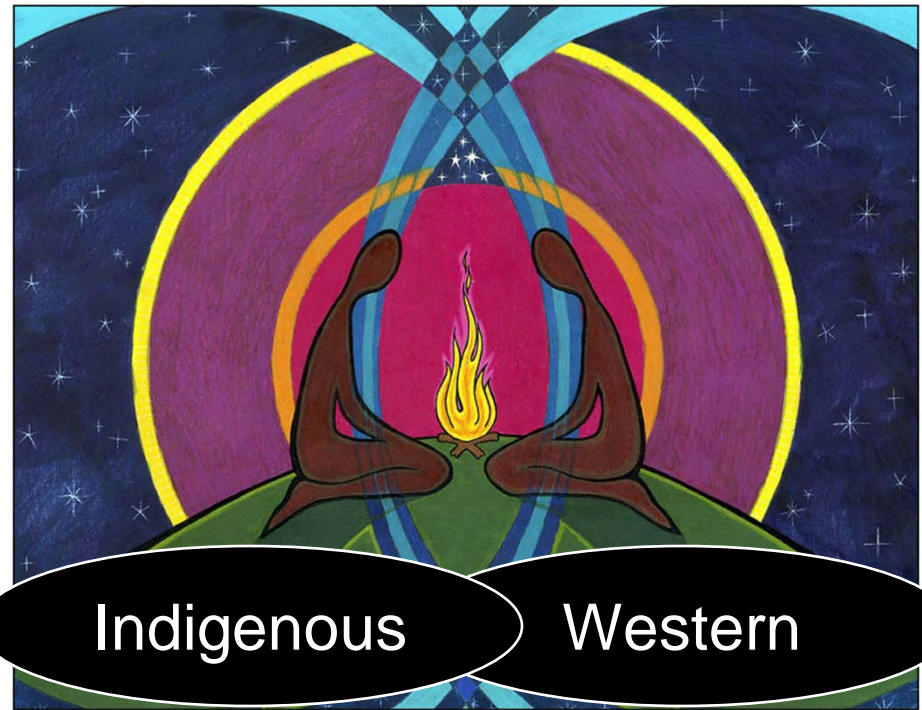
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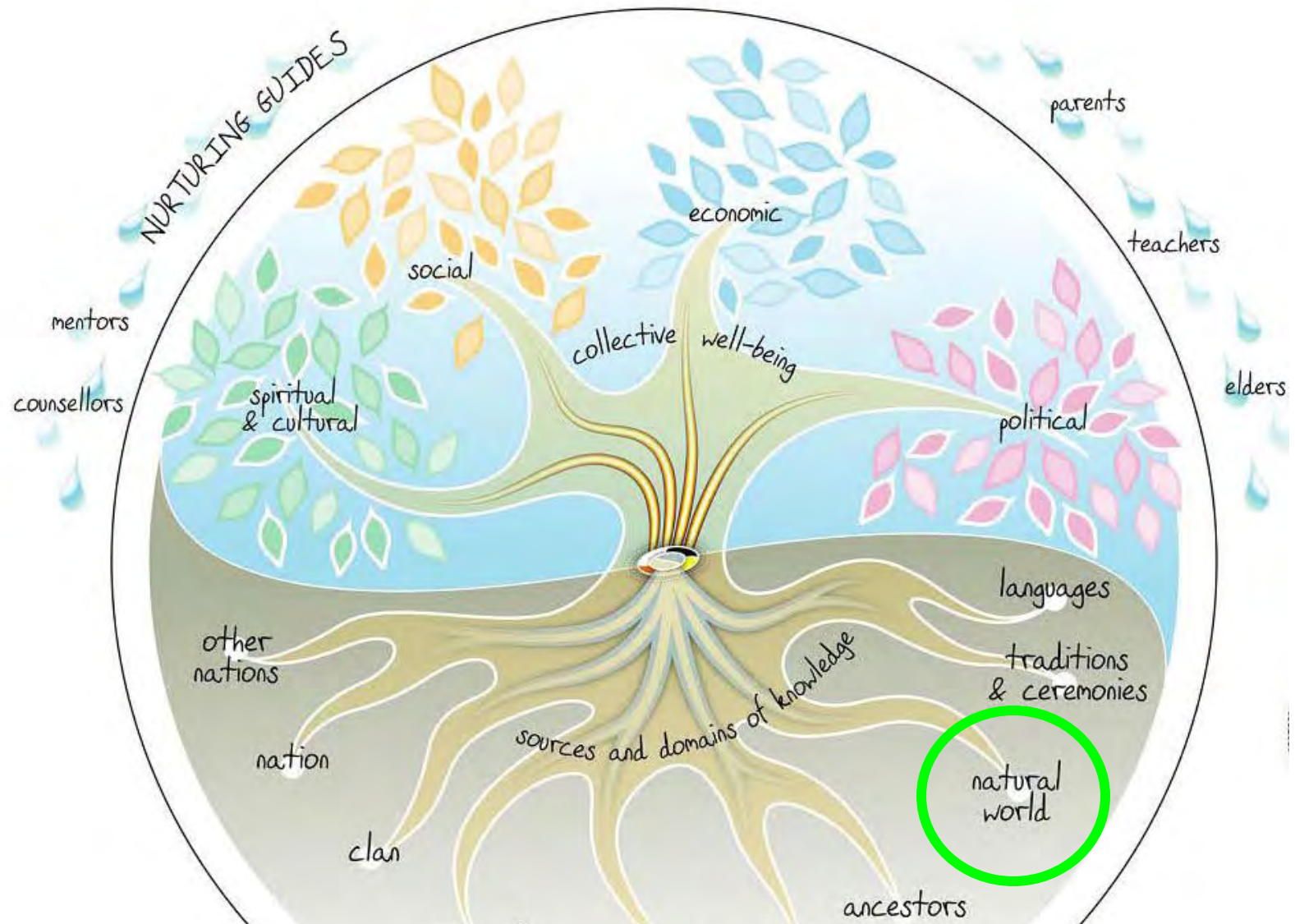
CAPE BRETON UNIVERSITY

Integrative Science



First Nations Holistic Lifelong Learning Model

from: Canadian Council on Learning: Aboriginal Learning Knowledge Centre



First Nations Holistic Lifelong Learning Model

from: Canadian Council on Learning: Aboriginal Learning Knowledge Centre



Co-Learning

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.

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



Co-Learning

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**Science is dynamic,
pattern-based knowledge.**



Artist Basma Kavanagh



Indigenous and Western scientific knowledges are based in observations of the natural world.



“stories of our interactions with and within nature”



Science is dynamic, pattern-based knowledge.

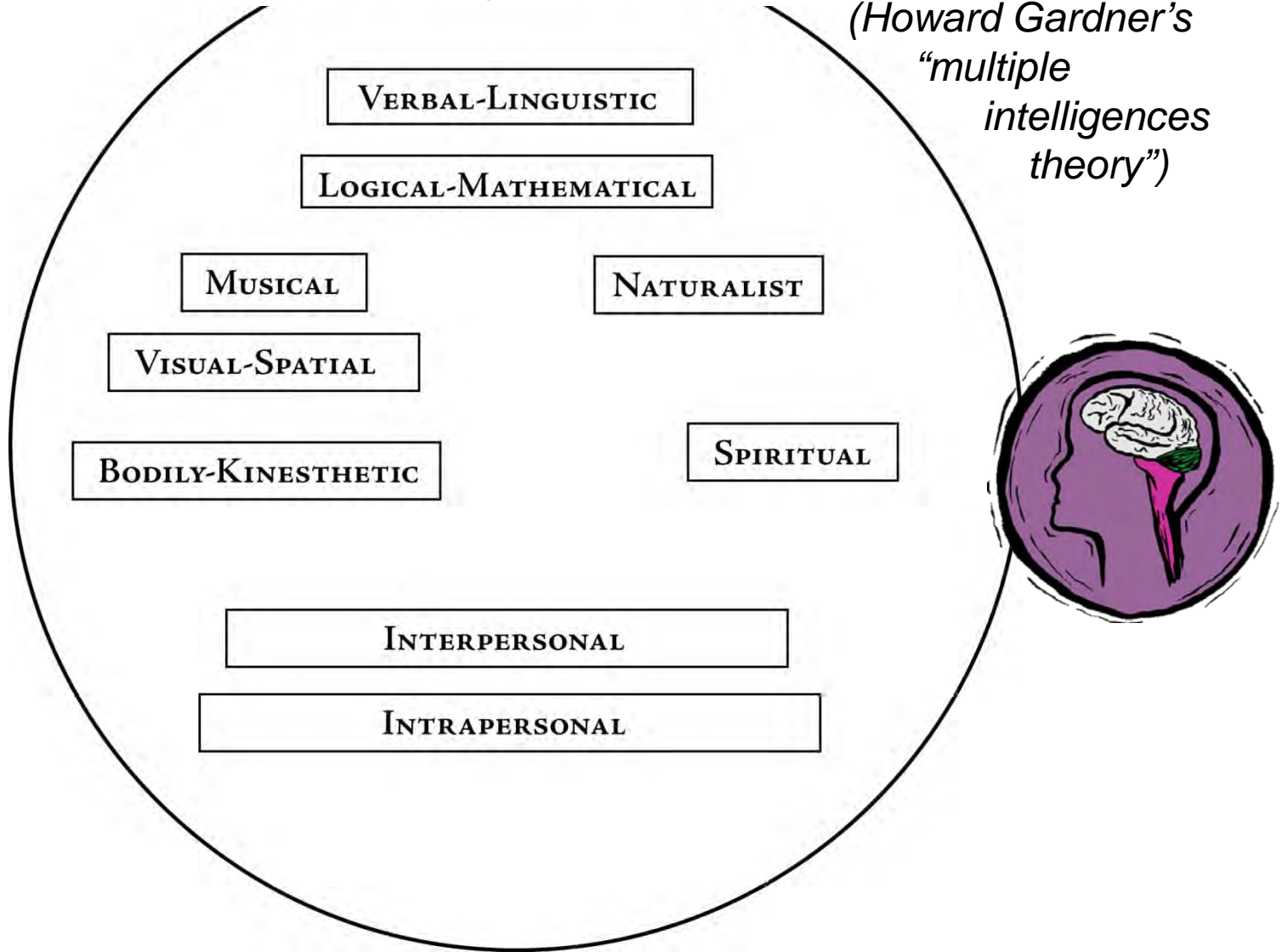


Artist Basma Kavanagh

our science stories ...

draw upon our **“pattern smarts”**

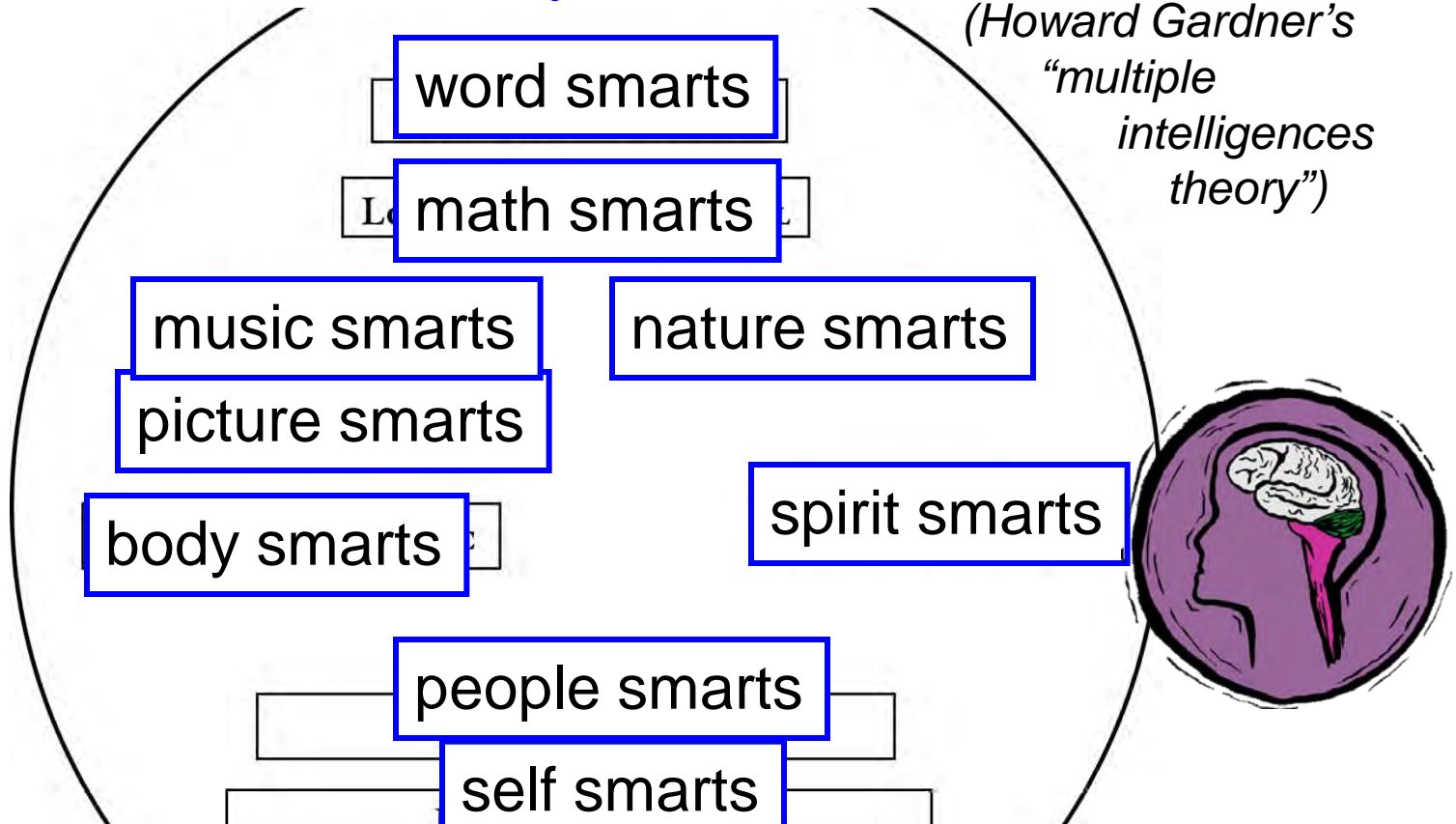
*(Howard Gardner’s
“multiple
intelligences
theory”)*



our science stories ...

draw upon our “**pattern smarts**”

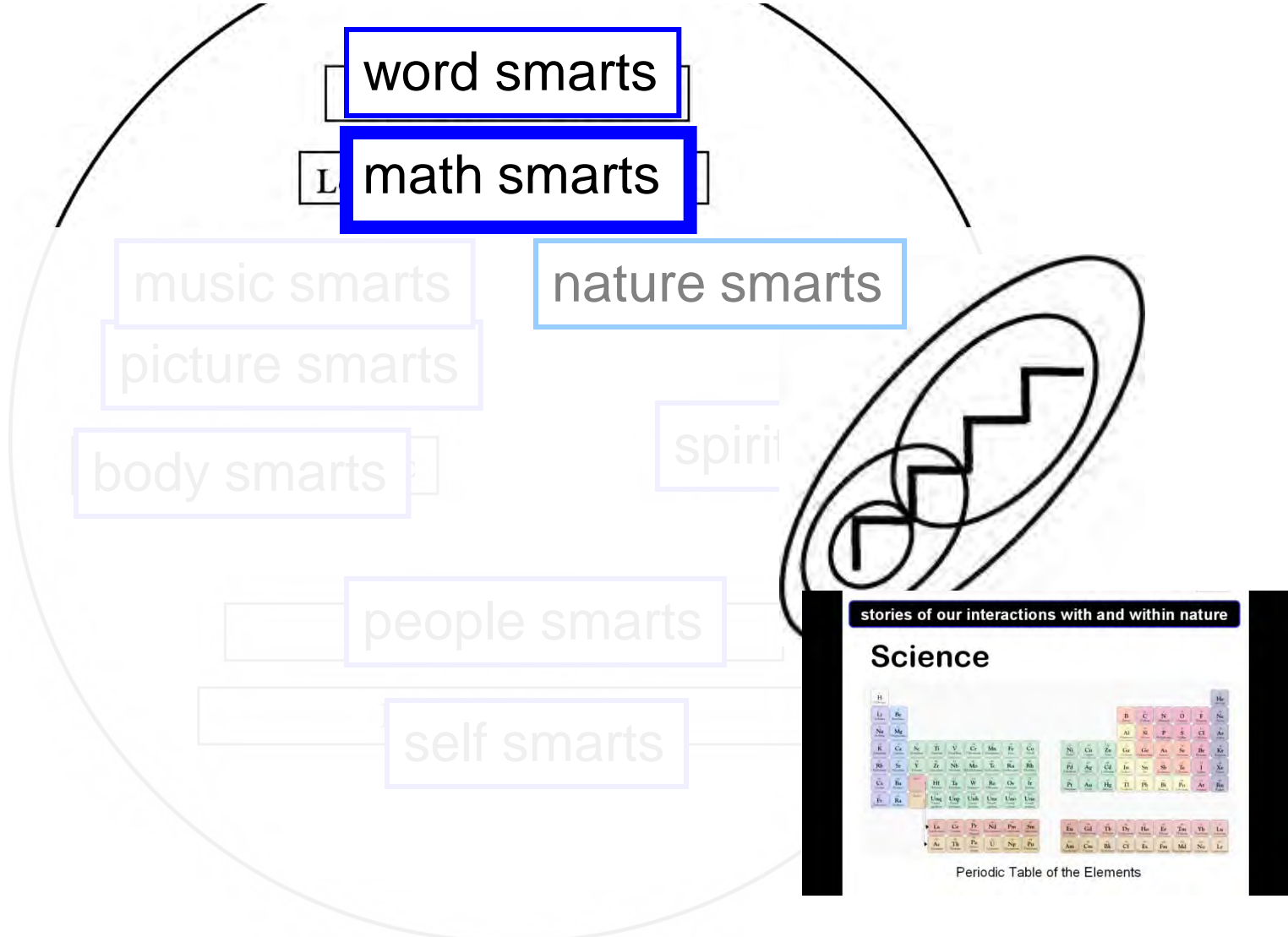
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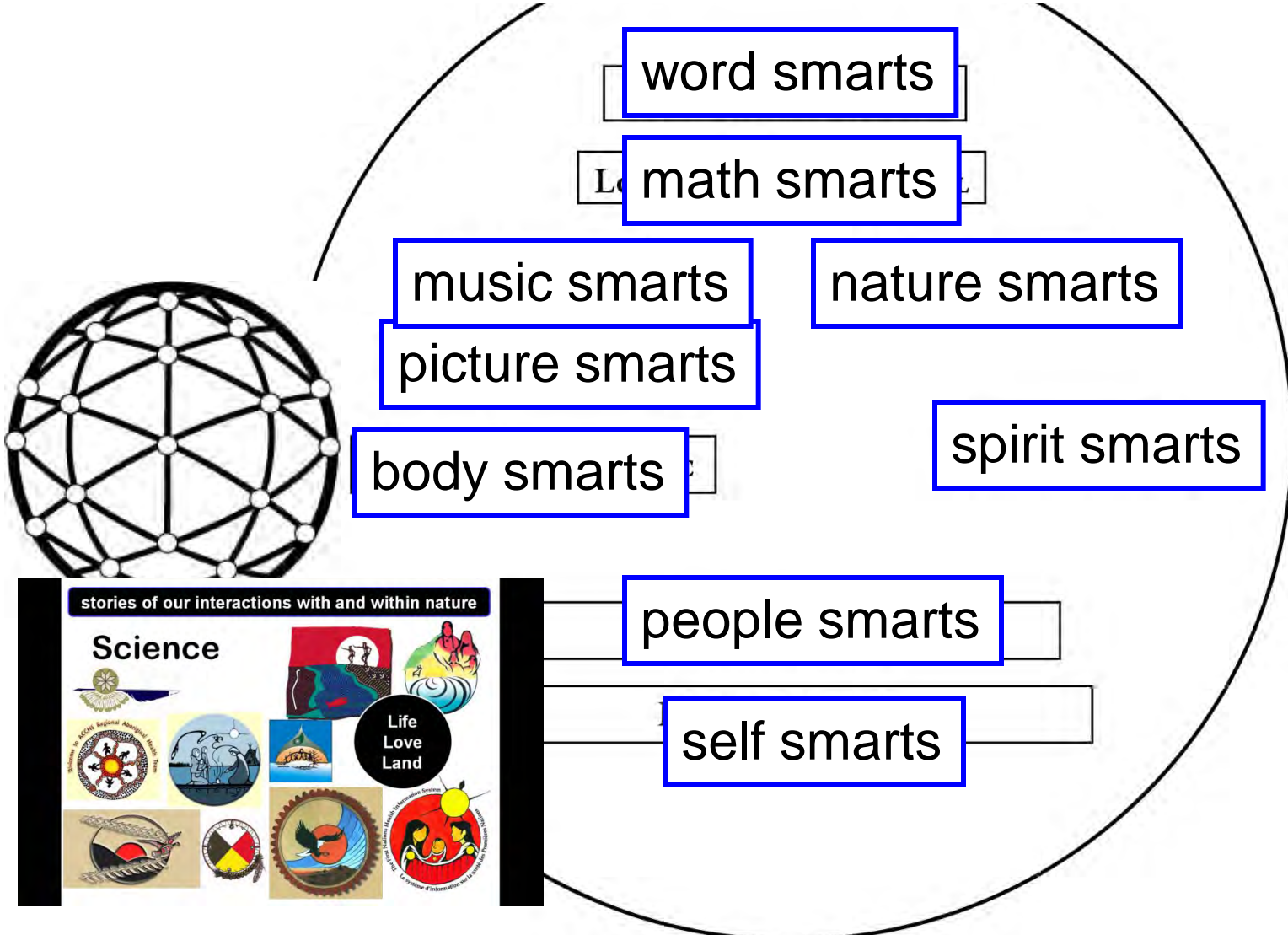
SANCTIONED PERSPECTIVES & INTELLIGENCES:

who we are; where we are; where we were;
what we know, do and value

our different science stories ... privilege different "pattern smarts"

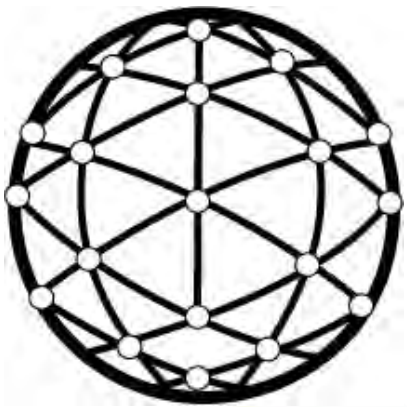


our different science stories ... privilege different "pattern smarts"

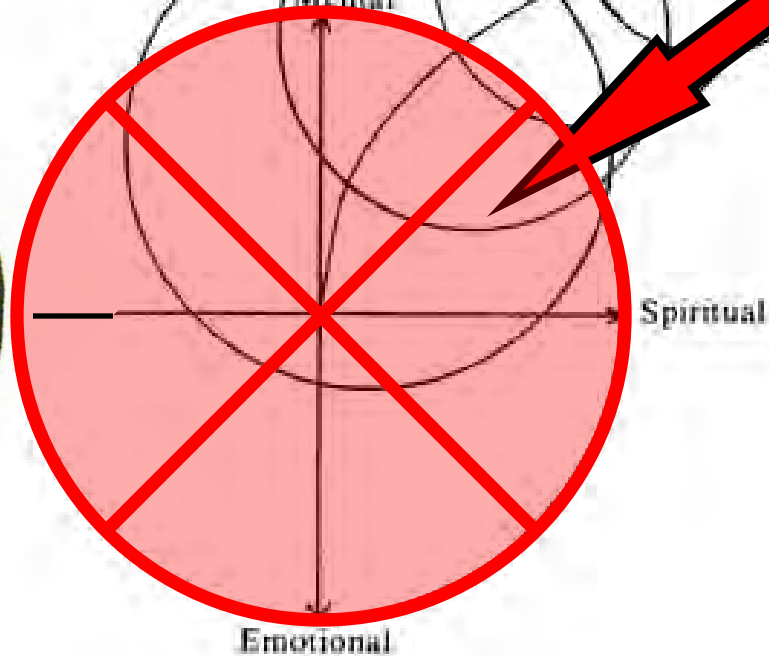


**SCIENCE stories of:
interconnectiveness**

Vision 



Artist: Rod Restoule
from: Into the Daylight;
C. Morrisseau, 1998



my world is "all my relations" (subjects)

Indigenous Science



Life
Love
Land

Language



images from: Aboriginal organizations/artists, various sources

Indigenous Science



Life
Love
Land
Language

images from: Aboriginal organizations/artists, various sources

Knowledge
is spirit.

It is a gift,
passed on
through
many people.

We must
pass it on.



Importance of Ancestors, Elders, Knowledge Holders

Knowledge
is spirit.

It is a gift,
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We must
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Pemi Pungek Mi'kma'ki

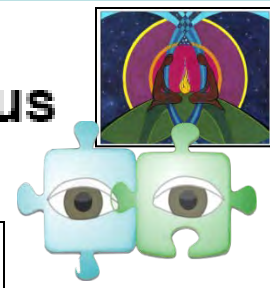
This poster is dedicated to all Mi'kmaq Elders.

This poster is and is a series made by the Institute for Language and Culture of Cape Breton University and Mi'kmaq from National Elders of Cape Breton. Linguistic Science brings together indigenous and scientific knowledge and ways of learning for better education.

This poster is called Pemi Pungek Mi'kma'ki (The Spirit of the Land). It shows the land, water, and air of the Mi'kmaq people and their animals. The picture of people show the Mi'kmaq people and their animals. The picture of the land shows the Mi'kmaq people and their animals. The picture of the water shows the Mi'kmaq people and their animals. The picture of the air shows the Mi'kmaq people and their animals.

Partners: Cape Breton University, Mi'kmaq Elders, and various community organizations.

Logos: Cape Breton University, Caracall, Mi'kmaq Culture, NSERC, and other partners.



The breath of life versus the embodiment of life: indigenous knowledge and western research

WIN-HEC Journal 2007 (World Indigenous Nations – Higher Education Consortium)

Cindy Blackstock

Executive Director of the First Nations Child and Family Caring Society of Canada

Despite the diversity of Aboriginal cultures, there are several common fundamental differences between Aboriginal and western epistemologies: ① Aboriginal peoples believe their ancestors were right on most things and western peoples believe their ancestors were either mostly wrong or their ideas could be improved upon (Assembly of First Nations 1993; Auger 2001) ② Aboriginal peoples believe they hold the land and life knowledge in a sacred trust for the generations to follow whereas many western peoples believe they can own land and knowledge and use it for individual benefit with little concern for future generations (RCAP, 1996; Pinto, in press) and ③ Aboriginal knowledge is situated within more expansive concepts of space and time (Auger, 2001). From these differences, flow very different concepts

1

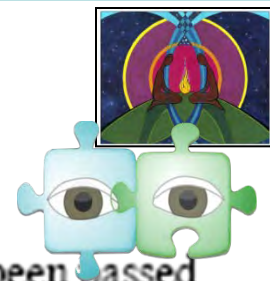


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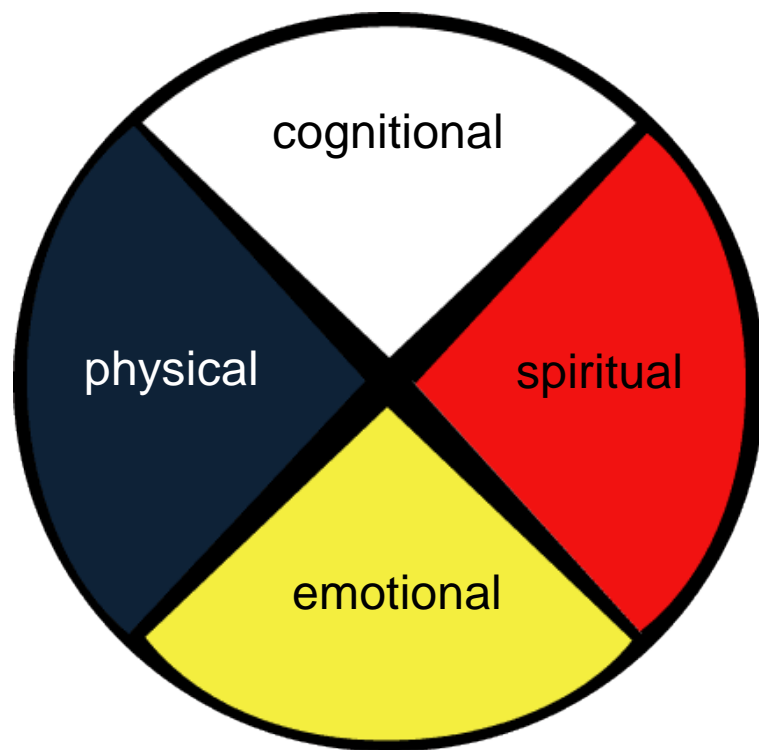


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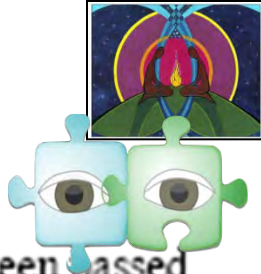




As knowledge trustees, whose job it is to understand and relay knowledge which has been passed down by generations before us, we pay great attention to the detail of the knowledge and the values and spirit embedded in it so that we can pass it on (Auger, 2001; Bennett & Blackstock, 2006). Because knowledge needs to echo across lifetimes and generations, multidimensional standards of rigor are needed to ensure knowledge is understood within the four dimensions of learning: spiritual, emotional, physical and cognitive and that each teaching is situated within an interconnected knowledge web (RCAP, 1996; Auger, 2001).

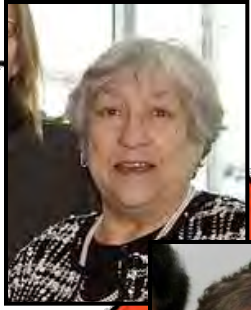
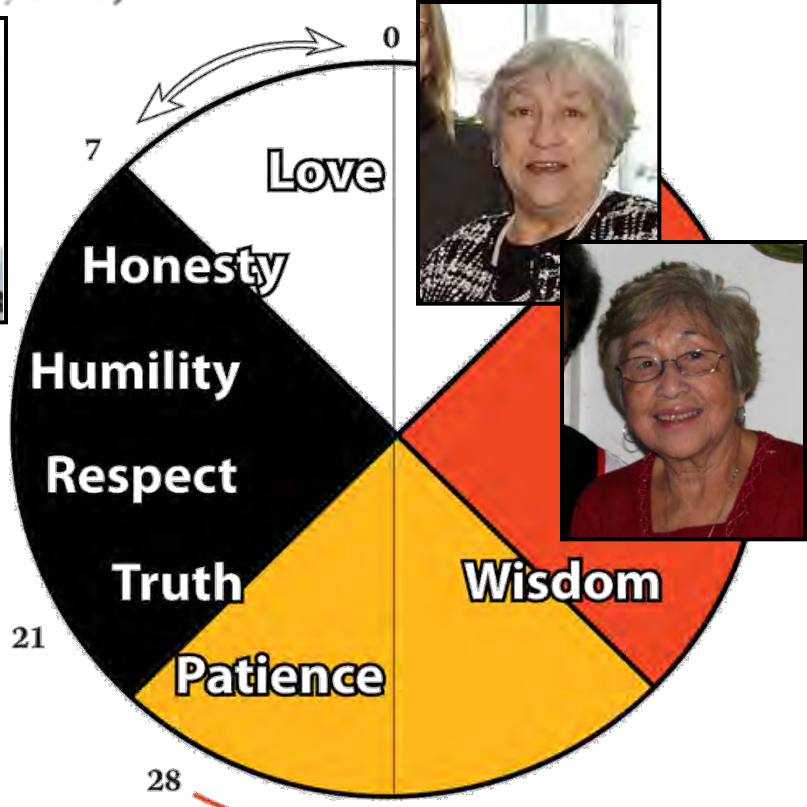
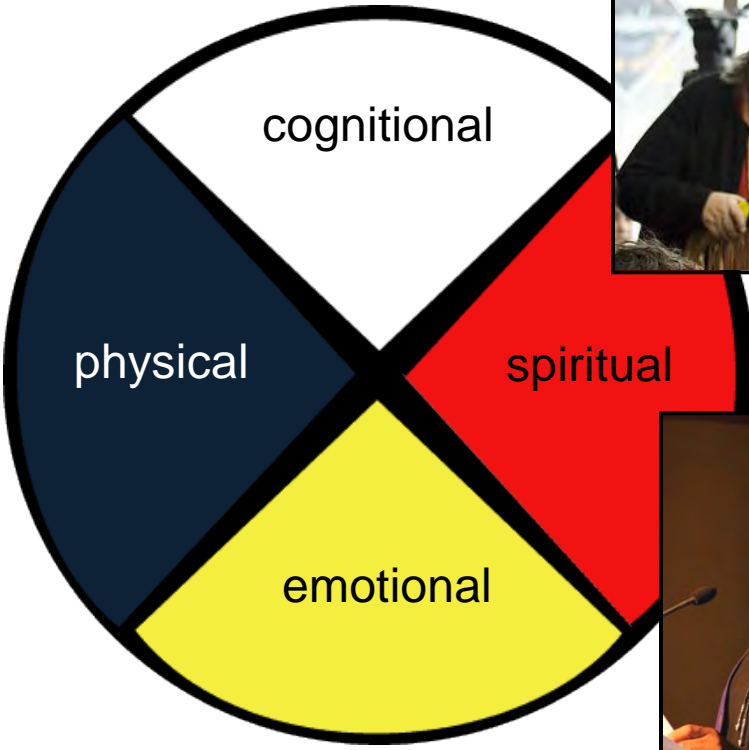


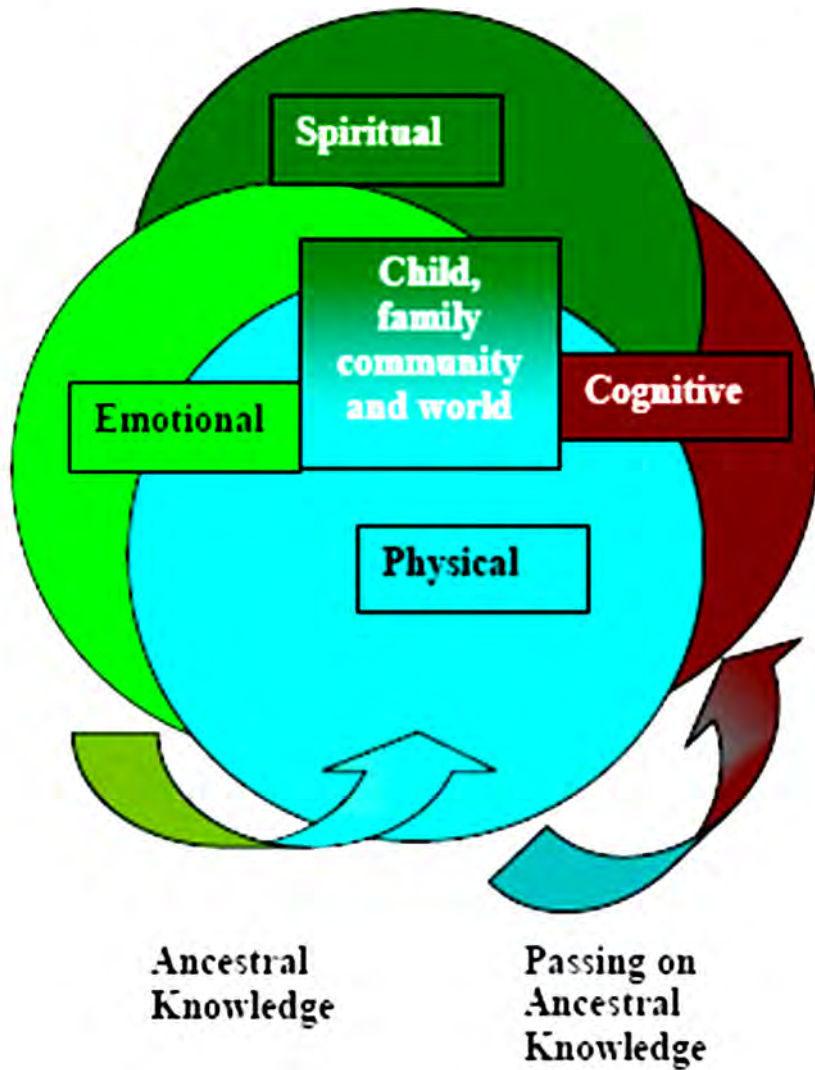
“ELDER”

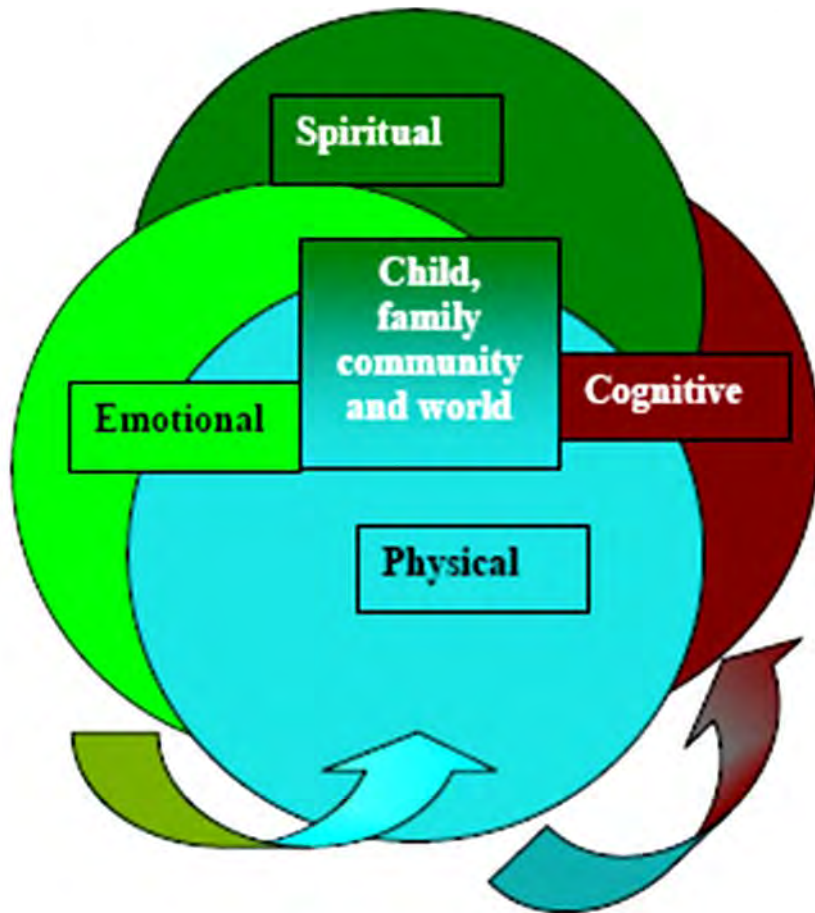


Importance of Ancestors, Elders, Knowledge Holders

As knowledge trustees, whose job it is to understand and relay knowledge which has been passed down by generations before us, we pay great attention to the detail of the knowledge and the values and spirit embedded in it so that we can pass it on (Auger, 2001; Bennett & Blackstock, 2006). Because knowledge needs to echo across lifetimes and generations, multidimensional standards of rigor are needed to ensure knowledge is understood within the four dimensions of learning: spiritual, emotional, physical and cognitive and that each teaching is situated within an interconnected knowledge web (RCAP, 1996; Auger, 2001).

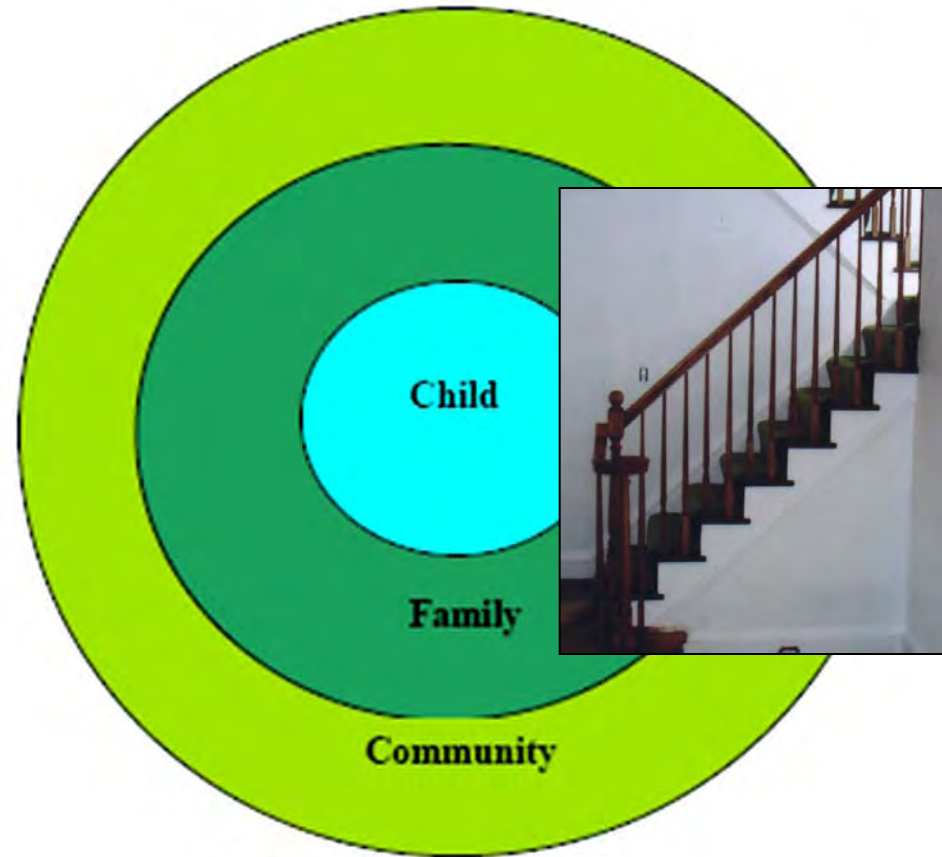






Ancestral Knowledge

Passing on Ancestral Knowledge



Western Science

Universe: Visible Matter (levels of organization - biology)

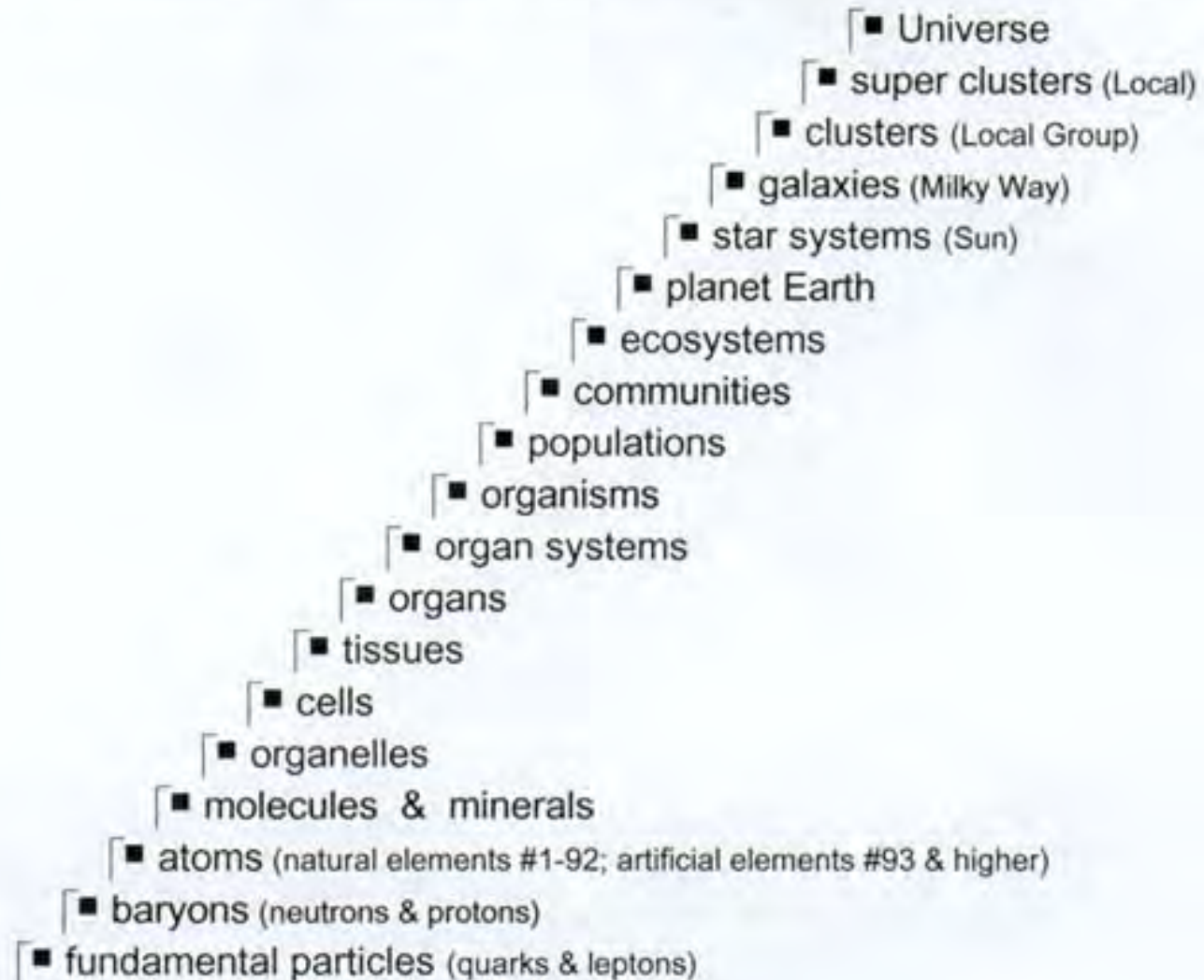


photo credit: NRC



Western Science

1 H Hydrogen																	2 He Helium
3 Li Lithium	4 Be Beryllium															10 Ne Neon	
11 Na Sodium	12 Mg Magnesium															18 Ar Argon	
19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt							36 Kr Krypton		
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium							54 Xe Xenon		
55 Cs Cesium	56 Ba Barium	57-71 Lanthanides	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium							86 Rn Radon		
87 Fr Francium	88 Ra Radium	89-103 Actinides	104 Unq Unnilquadium	105 Unp Unnilpentium	106 Unh Unnilhexium	107 Uns Unnilseptium	108 Uno Unniloctium	109 Une Unnilennium									
		89-103 Actinides	89 La Lanthanum	90 Ce Cerium	91 Pr Praseodymium	92 Nd Neodymium	93 Pm Promethium	94 Sm Samarium									
		89-103 Actinides	95 Ac Actinium	96 Th Thorium	97 Pa Protactinium	98 U Uranium	99 Np Neptunium	100 Pu Plutonium									

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																37 Rb Rubidium																	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
																55 Cs Cesium																	56 Ba Barium	57-71 Lanthanides	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
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photo credit: NRC



Western Science

A periodic table of elements is displayed, with a large, thick black scribble overlaid on it. The scribble is a complex, irregular shape that covers a significant portion of the table, including the transition metals and the lanthanide and actinide series. The elements are color-coded by groups: Group 1 (purple), Group 2 (blue), Groups 13-18 (various shades of pink and red), Groups 3-10 (various shades of green), Groups 11-12 (yellow and orange), and Groups 13-18 (various shades of pink and red). The lanthanide and actinide series are shown in separate rows at the bottom of the table.

1 H Hydrogen																	2 He Helium	
3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon	
11 Na Sodium	12 Mg Magnesium											13 Al Aluminum	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon	
19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton	
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon	
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		57 La Lanthanum	58 Ce Cerium	59 Pr Praseodymium	60 Nd Neodymium	61 Pm Promethium	62 Sm Samarium	63 Eu Europium	64 Gd Gadolinium	65 Tb Terbium	66 Dy Dysprosium	67 Ho Holmium	68 Er Erbium	69 Tm Thulium	70 Yb Ytterbium	71 Lu Lutetium		
		89 Ac Actinium	90 Th Thorium	91 Pa Protactinium	92 U Uranium	93 Np Neptunium	94 Pu Plutonium	95 Am Americium	96 Cm Curium	97 Bk Berkelium	98 Cf Californium	99 Es Einsteinium	100 Fm Fermium	101 Md Mendelevium	102 No Nobelium	103 Lr Lawrencium		

LESSONS LEARNED

7

over 15 years



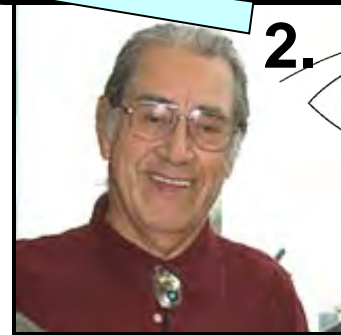
LESSONS LEARNED

1. **ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey

LESSONS LEARNED

Two-Eyed Seeing learning to see with the strengths of each & together

1.
**ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey

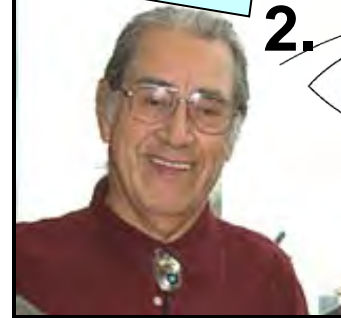


Albert Marshall, Elder, Mi'kmaq Nation

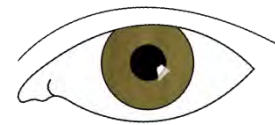
LESSONS LEARNED

Two-Eyed Seeing
learning to see with the
strengths of each & together

1. **ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey



2.



Albert Marshall, Elder, Mi'kmaq Nation

3. view "SCIENCE"
inclusively



Science?



Indigenous and Western scientific knowledges are based in observations of the natural world.



“stories of our interactions with and within nature”

pattern smarts

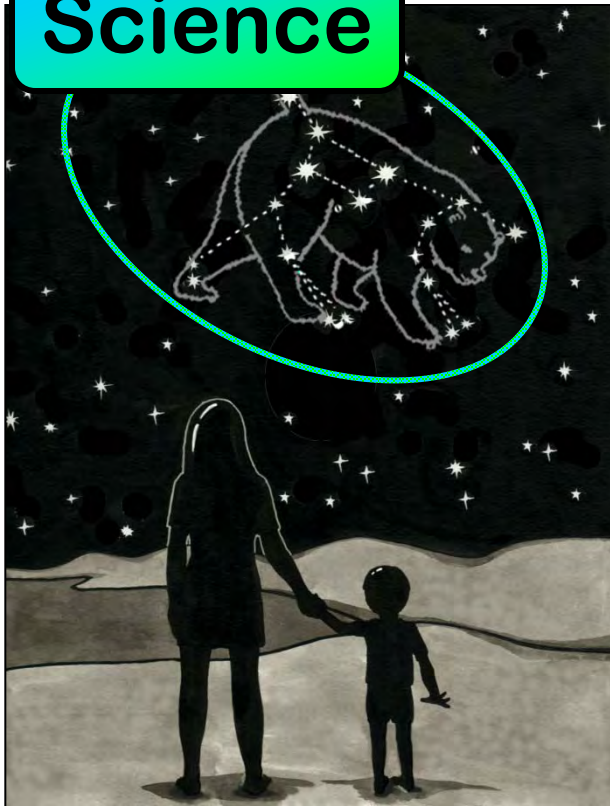
**Science is dynamic,
pattern-based knowledge.**



Artist Basma Kavanagh

stories of our interactions with and within nature

Science



pattern

- recognition
- transformation
- expression

- **pattern smarts** ... various
- various ways to connect the dots
- variety in our stories

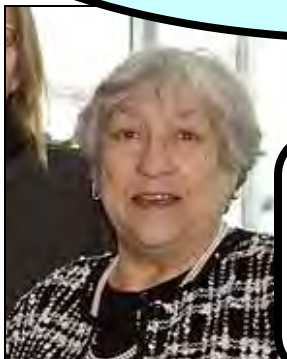
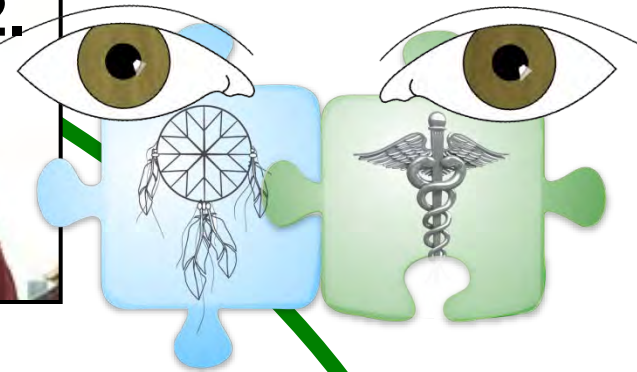
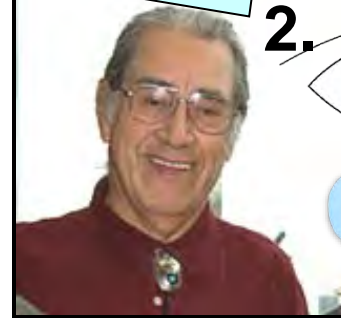
LESSONS LEARNED

Two-Eyed Seeing
learning to see with the
strengths of each & together

1. **ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey

4. **DO ... in a
CREATIVE, GROW
FORWARD WAY**

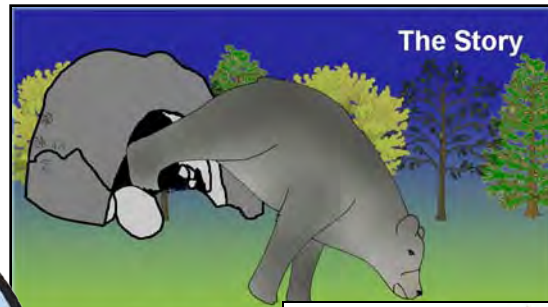
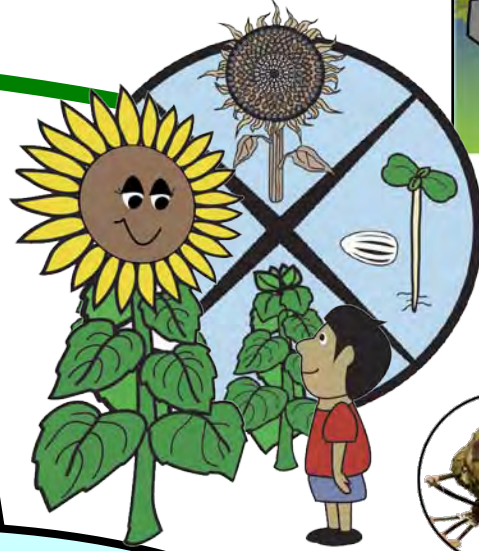
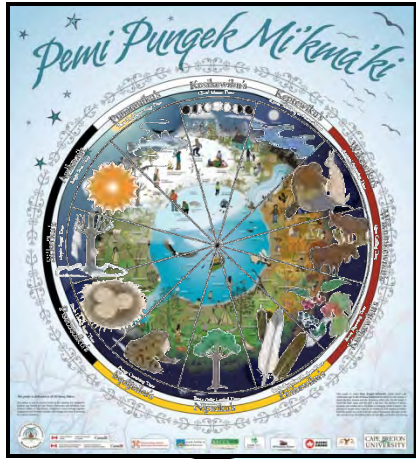
3. view "SCIENCE"
inclusively



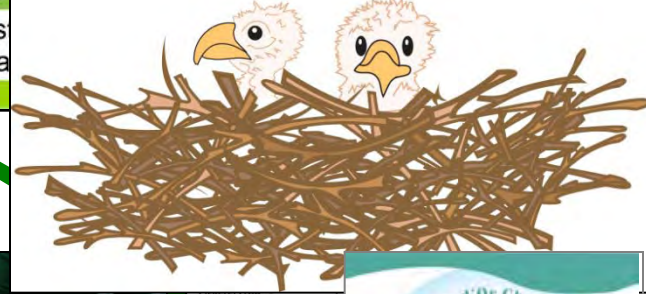
Murdena Marshall, Elder, Mi'kmaq Nation

Together We Heal & Grow
seeing & acknowledging my deeds

LESSONS LEARNED



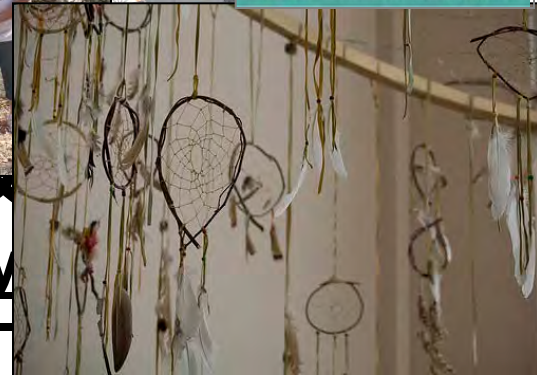
This is the s
also known a



DO ... in a
4. CREATIVE, GROW
FORWARD WAY



I Got It From an Elder
A Conversation in Haudenosaunee Language

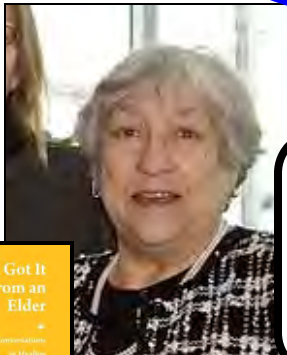


“See, in the Mi’kmaq world, in all Native worlds, you have to give recognition to everything: misdeeds, good deeds, past deeds, you know? Anything. You have to give that acknowledgement. Everything that you do, you have to acknowledge it.”

5. put our *values + actions*
+ *knowledges* in front of
us ... like an object

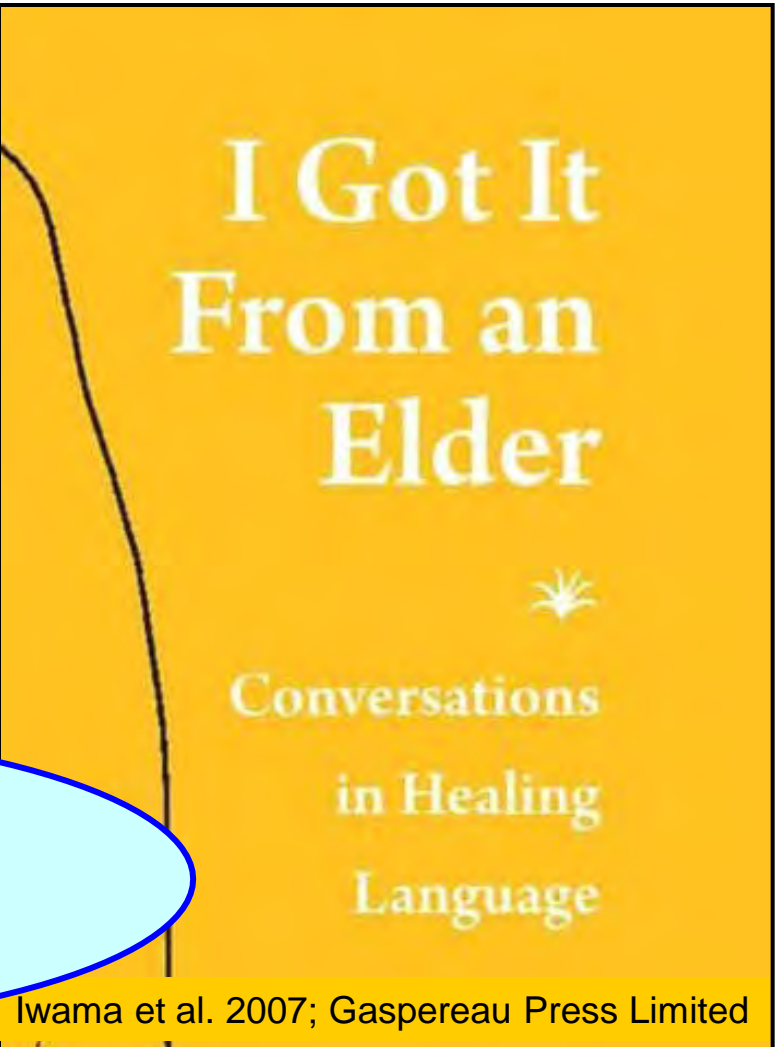
Murdena Marshall, Elder, Mi’kmaq Nation

Together We Heal & Grow
seeing & acknowledging my deeds

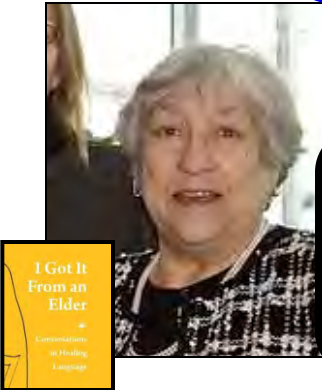


“See, in the Mi’kmaq world, you have to give everything: misdeeds, good deeds, you know? Anything you give that acknowledgement that you do, you have to

5. put our *values + actions + knowledges* in front of us ... like an object

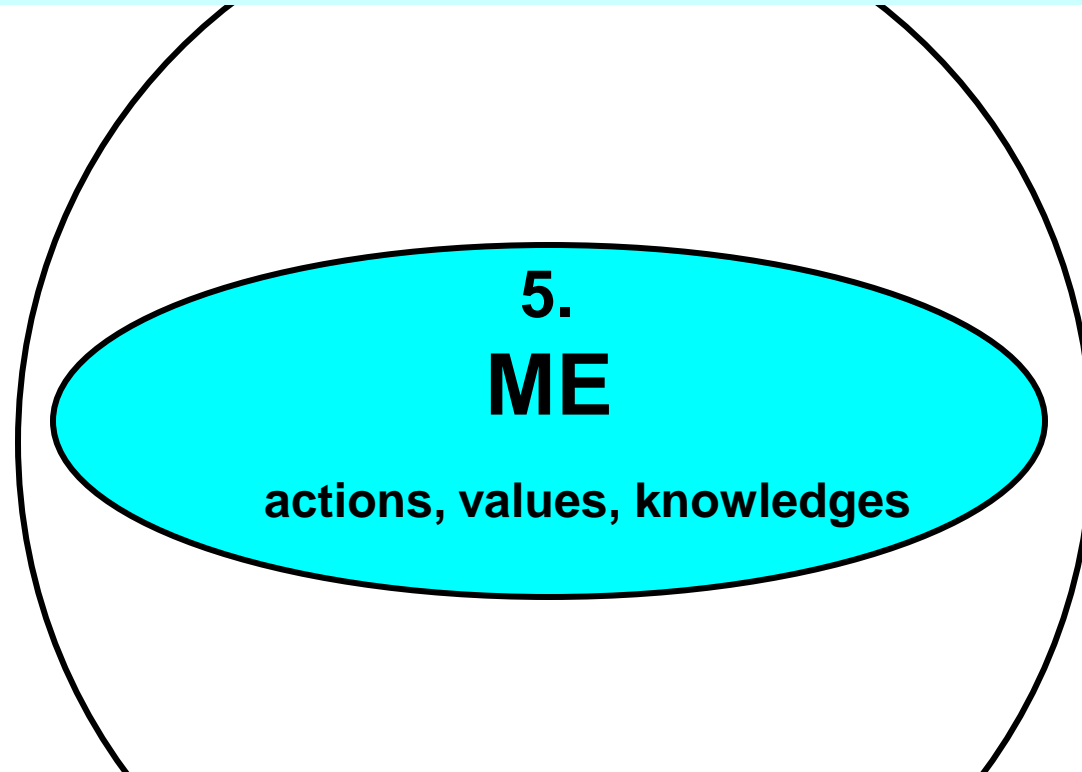


Murdena Marshall, Elder, Mi’kmaq Nation



Together We Heal & Grow
seeing & acknowledging my deeds

the “HEALING TENSE”



Murdena Marshall, Elder, Mi'kmaq Nation



Together We Heal & Grow
seeing & acknowledging my deeds

the "HEALING TENSE"



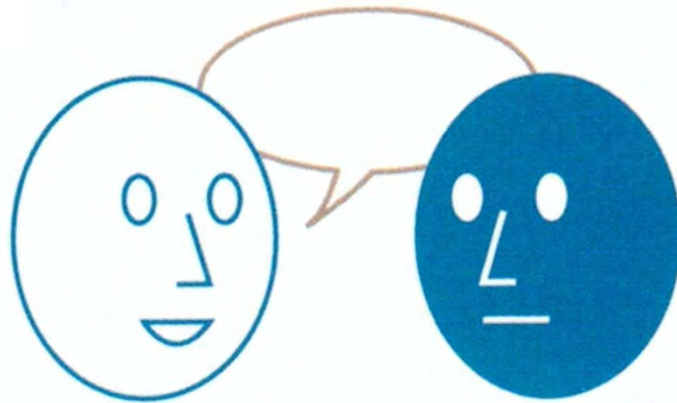
look at it, own it



5.
ME
actions, values, knowledges



acknowledge
being it



talk to it, understand it



“together we heal & grow”



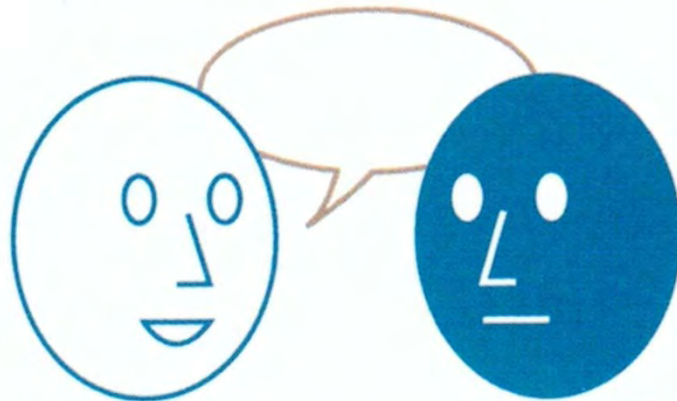
look at it, own it



5.
ME
actions, values, knowledges



acknowledge
being it



talk to it, understand it



“together we heal & grow”

LANGUAGE IS VERY IMPORTANT.

REVITALIZING ABORIGINAL LANGUAGES IS ESSENTIAL.



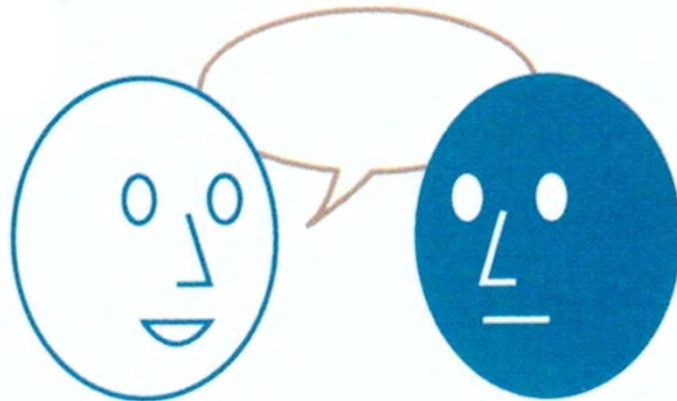
look at it, own it



5.
ME & YOU
actions, values, knowledges



acknowledge
being it



talk to it, understand it



LESSONS LEARNED

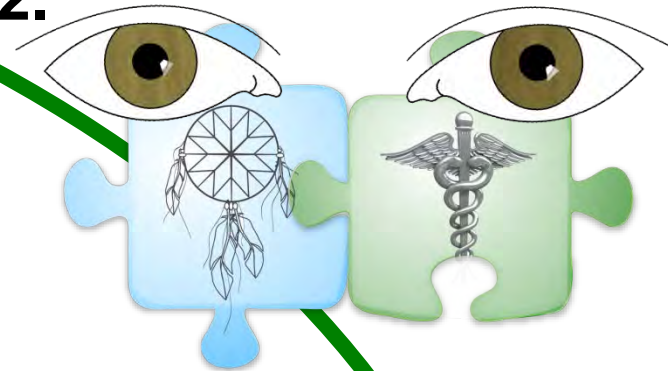
1. **ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey

4. **DO ... in a
CREATIVE, GROW
FORWARD WAY**

3. view "SCIENCE"
inclusively

5. put our *values + actions*
+ knowledges in front of
us ... like an object

2.



LANGUAGE

LESSONS LEARNED

1. **ACKNOWLEDGE
WE NEED
EACH OTHER ...**
co-learning journey

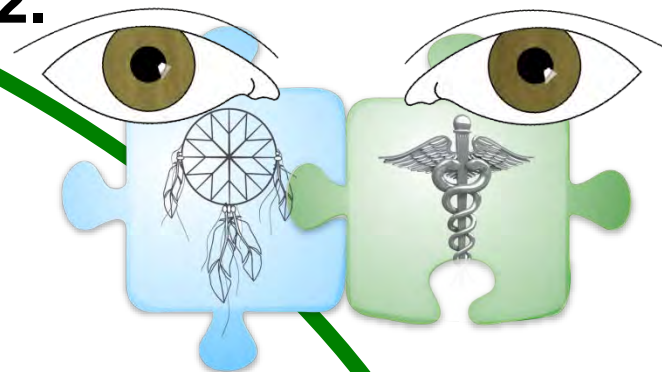
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3. view "SCIENCE"
inclusively

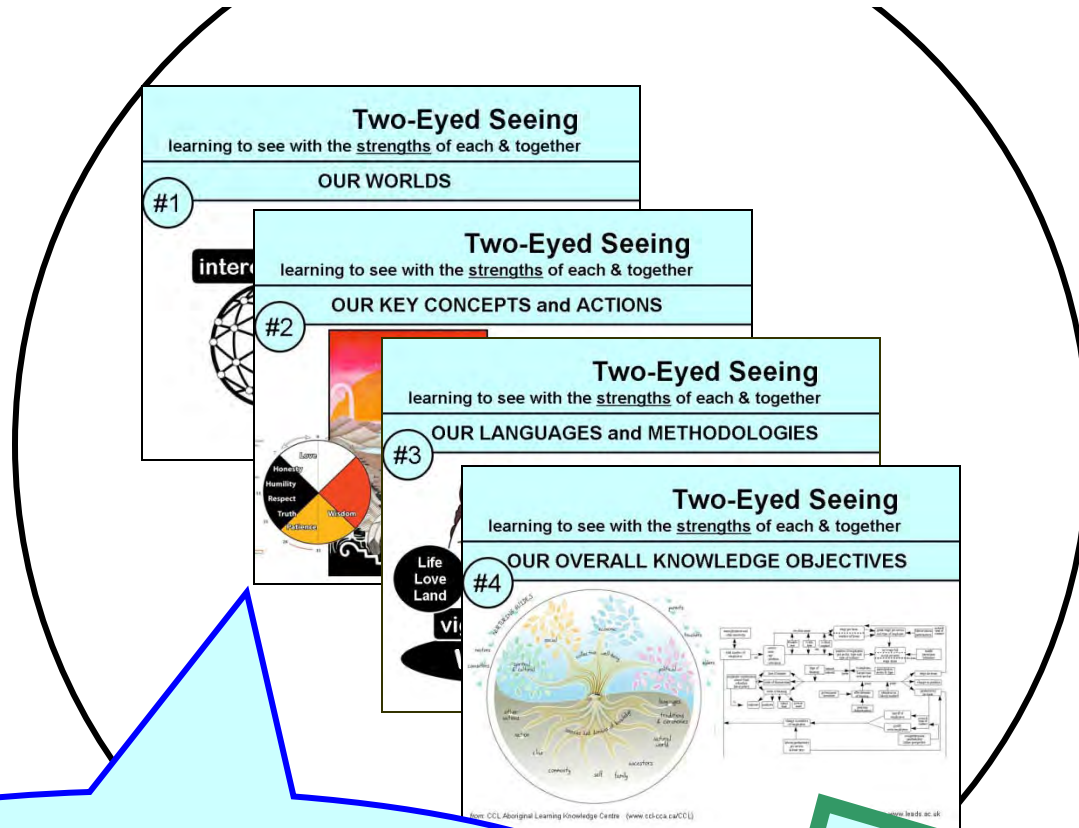
6. use **VISUALS**

2.



LANGUAGE

4 BIG QUESTIONS

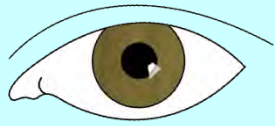
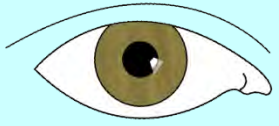


5.

put our *values + actions*
+ *knowledges* in front of
us ... like an object

LANGUAGE

6. use **VISUALS**



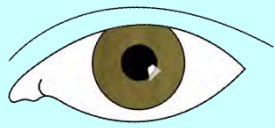
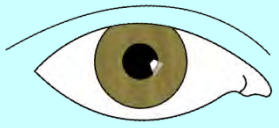
Two-Eyed Seeing

learning to see with the strengths of each & together

OUR NATURAL WORLD

#1

Question:
What do we believe
the world or cosmos to be?
(ontology)

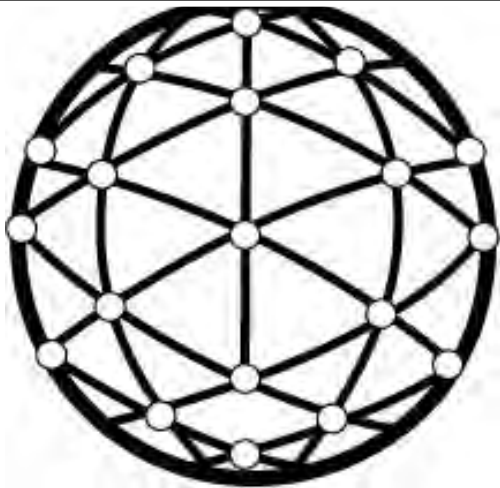


Two-Eyed Seeing

learning to see with the strengths of each & together

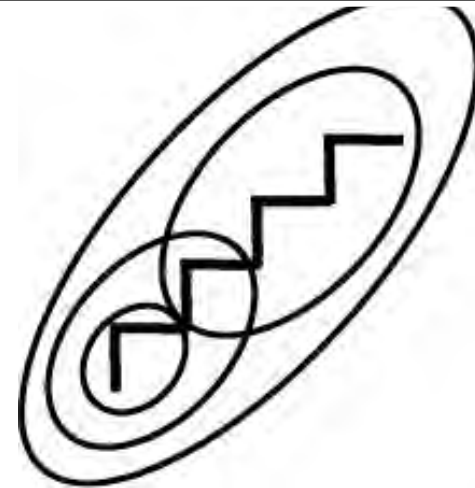
OUR NATURAL WORLD

interconnective

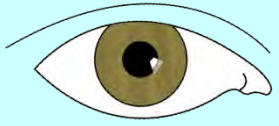


constant change

parts & wholes



ongoing evolution



Two-Eyed Seeing

learning to see with the strengths of each & together

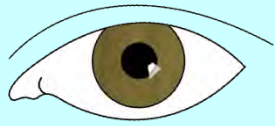
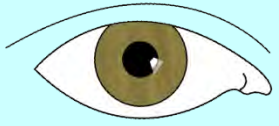
OUR NATURAL WORLD

interconnective

subject ...
interconnective
and animate:
spirit +
energy + matter
constant change

parts & wholes

object ...
comprised of parts and
wholes characterized by
systems and emergences:
energy + matter
ongoing evolution



Two-Eyed Seeing

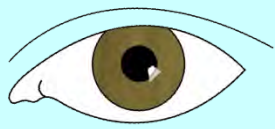
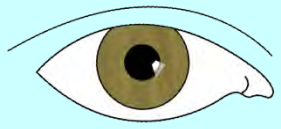
learning to see with the strengths of each & together

OUR KEY CONCEPTS and ACTIONS

#2

Question:

**What do we value as
“ways of coming to know”
the cosmos?
(epistemology)**



Two-Eyed Seeing

learning to see with the strengths of each & together

OUR KEY CONCEPTS and ACTIONS

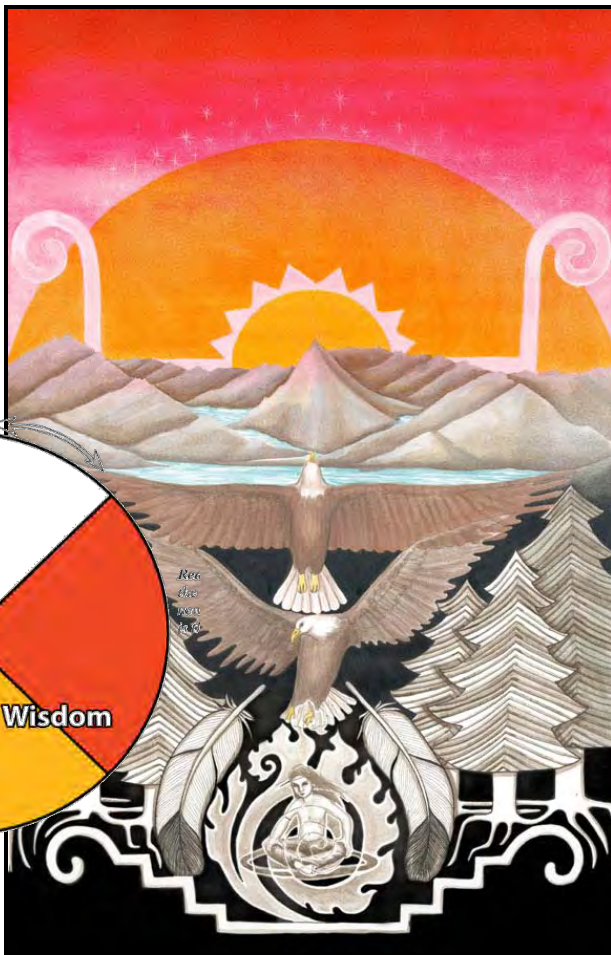
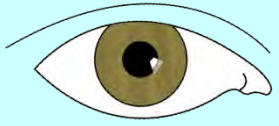


photo credit: NRC



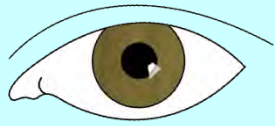
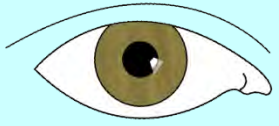
Two-Eyed Seeing

learning to see with the strengths of each & together

OUR KEY CONCEPTS and ACTIONS

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

- hypothesis
(making & testing)
- data collection
- data analysis
- model & theory
construction



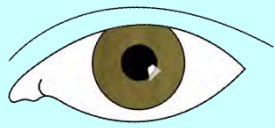
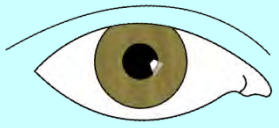
Two-Eyed Seeing

learning to see with the strengths of each & together

OUR LANGUAGES and METHODOLOGIES

#3

**Question:
What can remind us
of the complexity within
our ways of knowing?**



Two-Eyed Seeing

learning to see with the strengths of each & together

OUR LANGUAGES and METHODOLOGIES



Life
Love
Land

vigour

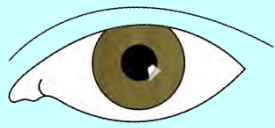
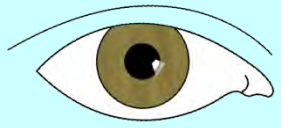
WEAVING



Math
&
Instruments

rigour

UN-WEAVING



Two-Eyed Seeing

learning to see with the strengths of each & together

OUR LANGUAGES and METHODOLOGIES

Life
Love
Land

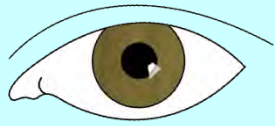
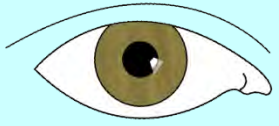
vigour

WEAVING

Math
&
Instruments

rigour

UN-WEAVING



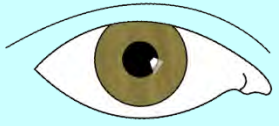
Two-Eyed Seeing

learning to see with the strengths of each & together

OUR LANGUAGES and 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



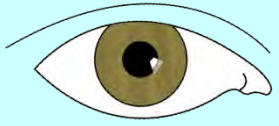
Two-Eyed Seeing

learning to see with the strengths of each & together

OUR OVERALL KNOWLEDGE OBJECTIVES

#4

Question:
**What overall goals
do we have for
our ways of knowing?**



Two-Eyed Seeing

learning to see with the strengths of each & together

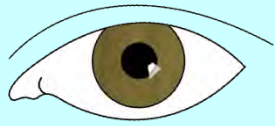
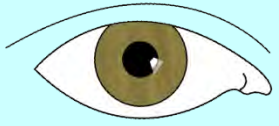
OUR OVERALL KNOWLEDGE OBJECTIVES

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

**towards resonance
of understanding
within environment**

dynamic, testable,
published knowledge
independent of
personal experience
that can enable
prediction and control

**towards construction
of understanding
of environment**



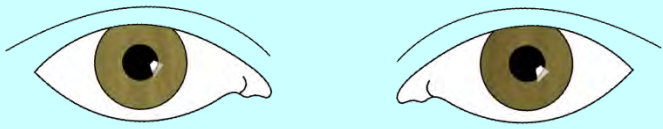
Two-Eyed Seeing

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OUR OVERALL KNOWLEDGE OBJECTIVES

towards resonance
of understanding
within environment

towards construction
of understanding
of environment



Two-Eyed Seeing

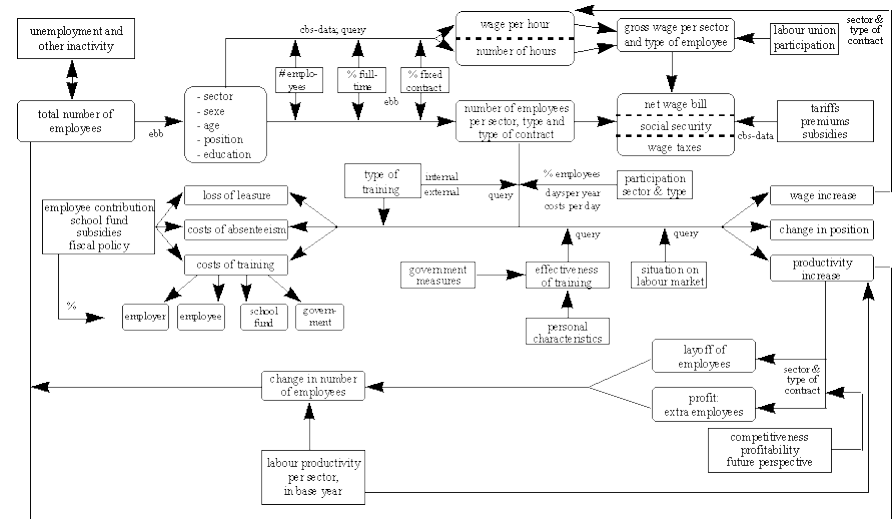
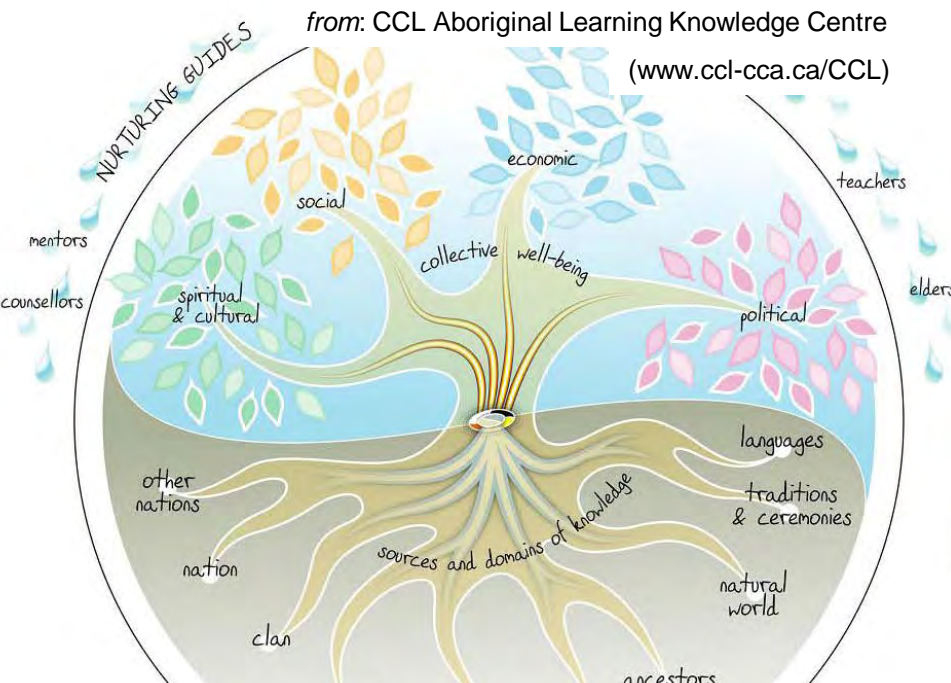
learning to see with the strengths of each & together

OUR OVERALL KNOWLEDGE OBJECTIVES

from: CCL Aboriginal Learning Knowledge Centre

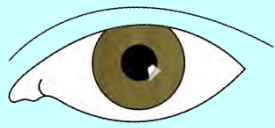
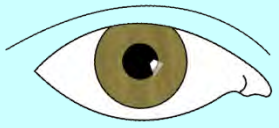
(www.ccl-cca.ca/CCL)

from: www.leads.ac.uk



**towards resonance
of understanding
within environment**

**towards construction
of understanding
of environment**

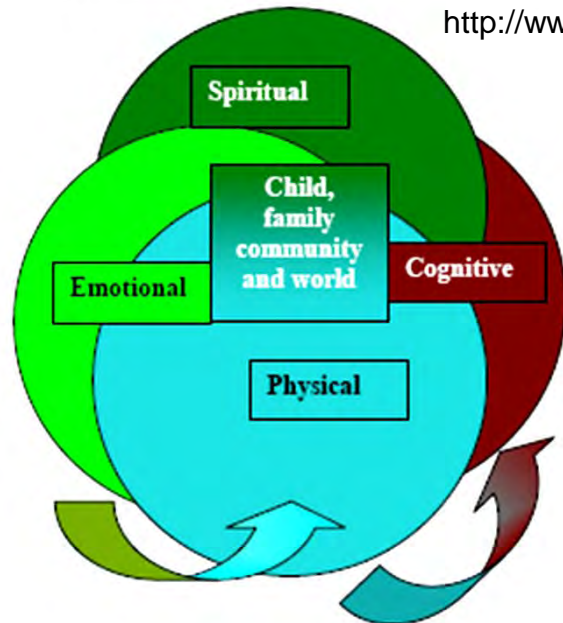


Two-Eyed Seeing

learning to see with the strengths of each & together

OUR OVERALL KNOWLEDGE OBJECTIVES

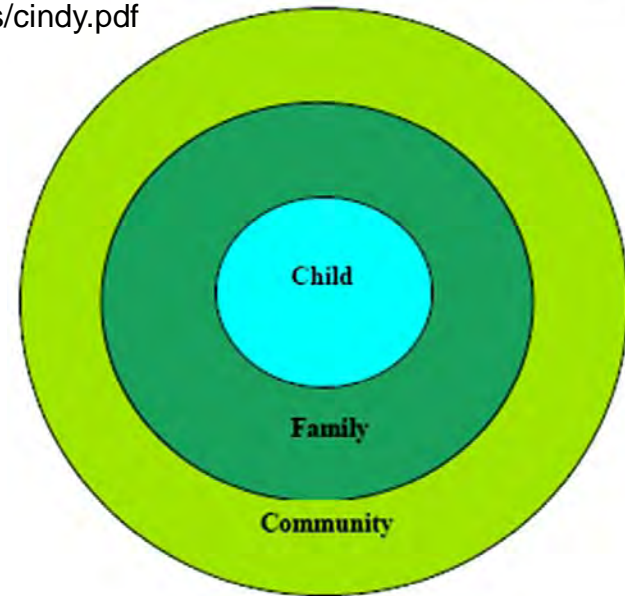
<http://www.win-hec.org/docs/pdfs/cindy.pdf>



Ancestral
Knowledge

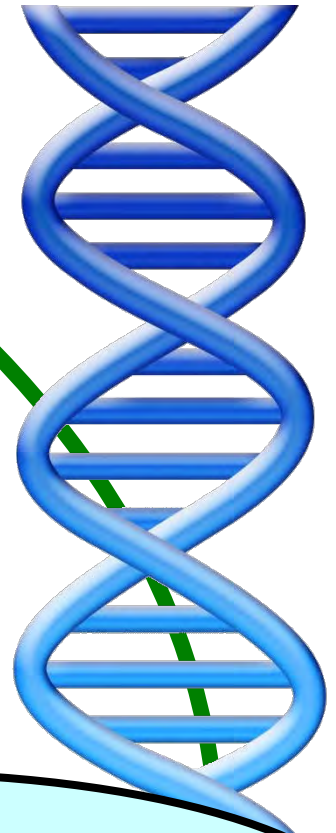
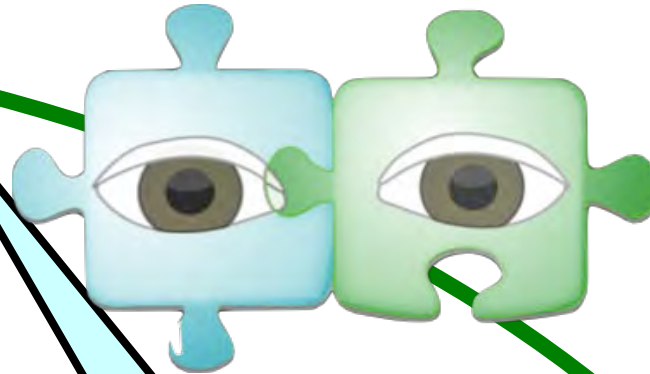
Passing on
Ancestral

towards resonance
of understanding
within environment



towards construction
of understanding
of environment

LESSONS LEARNED



Two-Eyed Seeing
learning to see with the strengths of each & together

#1 **OUR WORLDS**

inter **Two-Eyed Seeing**
learning to see with the strengths of each & together

#2 **OUR KEY CONCEPTS and ACTIONS**

Two-Eyed Seeing
learning to see with the strengths of each & together

#3 **OUR LANGUAGES and METHODOLOGIES**

Two-Eyed Seeing
learning to see with the strengths of each & together

#4 **OUR OVERALL KNOWLEDGE OBJECTIVES**

from: CCL Aboriginal Learning Knowledge Centre (www.ccl.ca/ckcc) from: www.teads.ac.uk

7. WEAVE
back and forth
between our

7 basic or fundamental LESSONS LEARNED



1. **ACKNOWLEDGE WE NEED EACH OTHER ...**
co-learning journey

4. **DO ... in a CREATIVE, GROW FORWARD WAY**

2. 
3. view "SCIENCE" inclusively

5. put our *values + actions + knowledges* in front of us ... like an object

6. use **VISUALS**

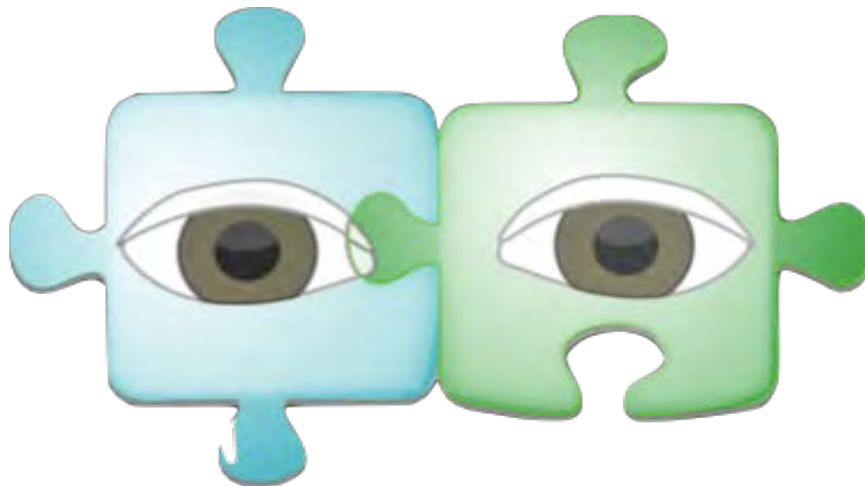
7. **WEAVE** back and forth between our



LANGUAGE



Integrative Science & Two-Eyed Seeing



CAPE BRETON
UNIVERSITY



Wela'liog

Thank you



Canada Research
Chairs

Chaires de recherche
du Canada



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

Canada
Canada

Thank you / Wela'liog

Mi'kmaq Elders



CIHR IRSC

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



**NSERC
CRSNG**

Canada Foundation
for Innovation

Fondation canadienne
pour l'innovation



Mi'kmawey Debert



Membertou
Elementary



**IWK Health Centre
Foundation**



Mermaid Theatre
of Nova Scotia



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



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

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and funding agencies is
gratefully acknowledged.