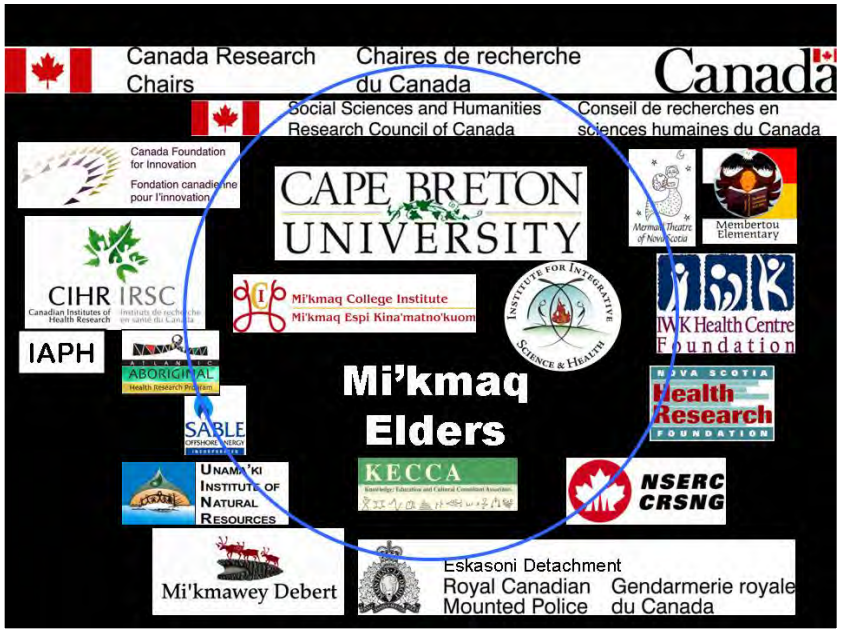
Developing Traditional Curricula

24 October 2008

Social Studies Teachers' In-service
Eskasoni First Nation

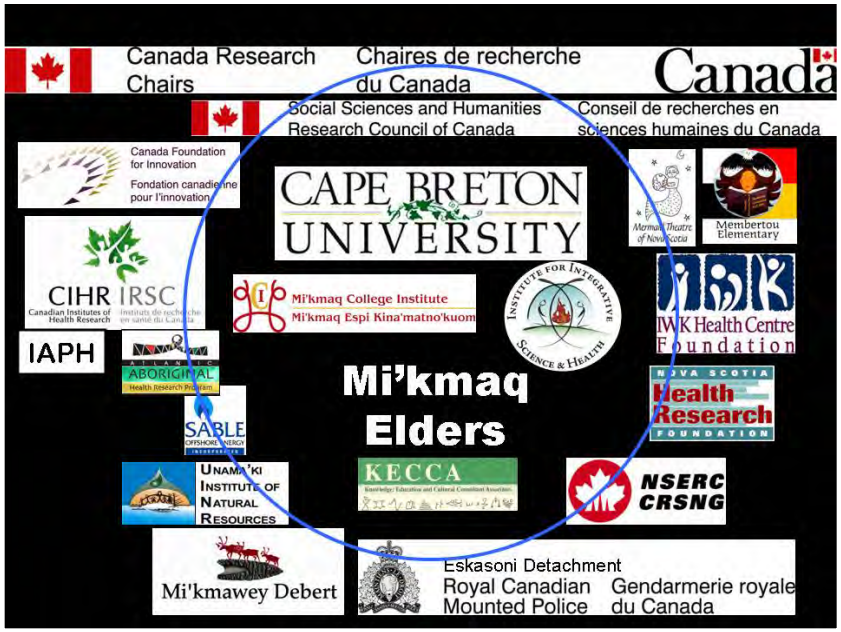
Cheryl Bartlett, PhD
Canada Research Chair in Integrative Science
Professor of Biology
CAPE BRETON UNIVERSITY
INSTITUTE FOR INTEGRATIVE SCIENCE & HEALTH

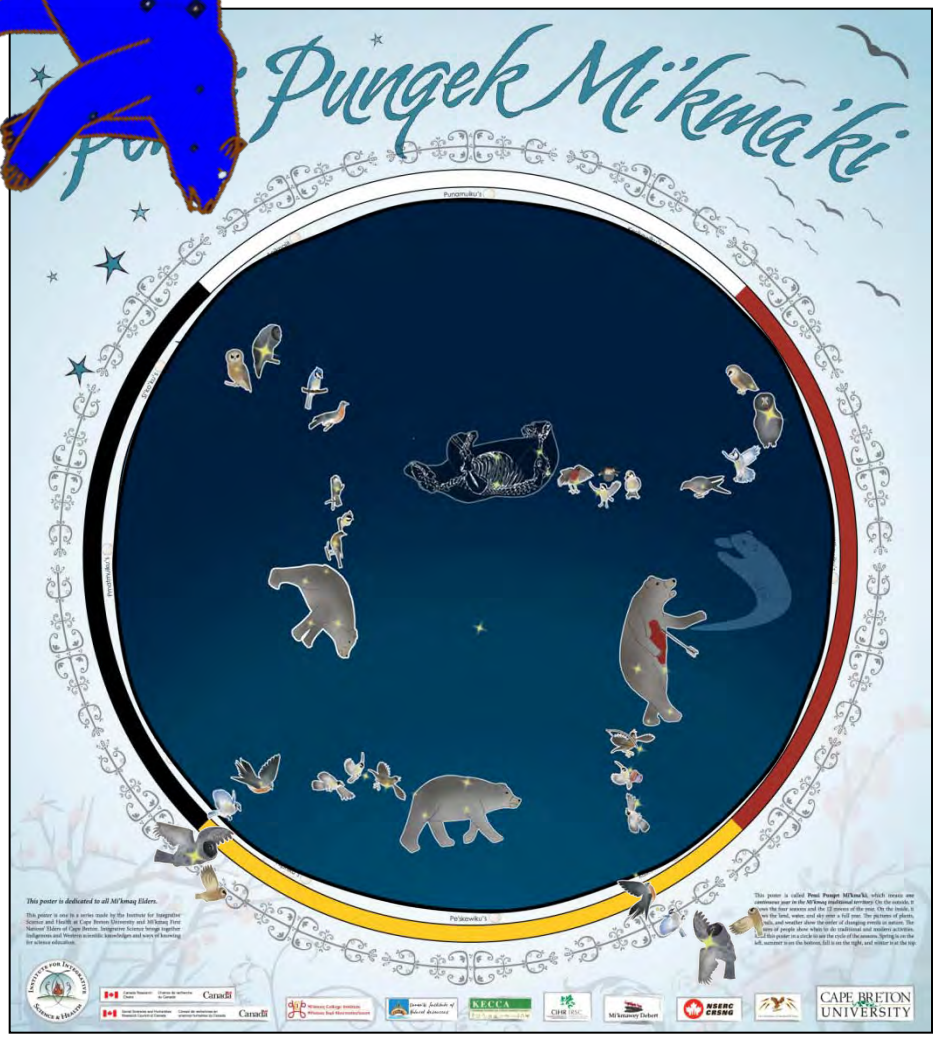
Developing Traditional Curricula



natural world, natural patterns: all our relationships

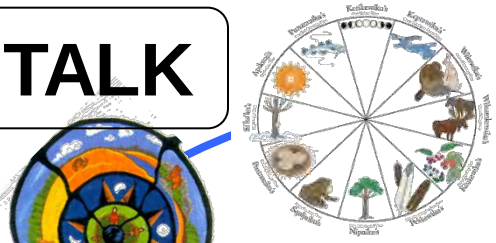
Developing Traditional Curricula





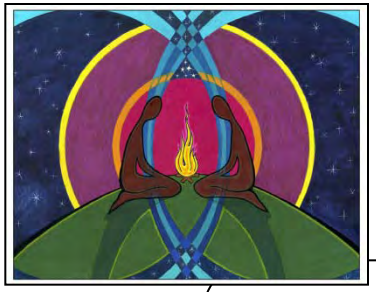
natural world, natural patterns: all our relationships

OUTLINE OF TALK

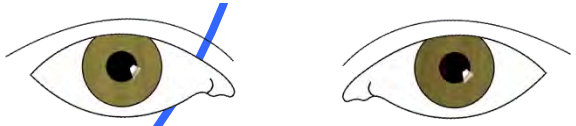


explore
“pattern”

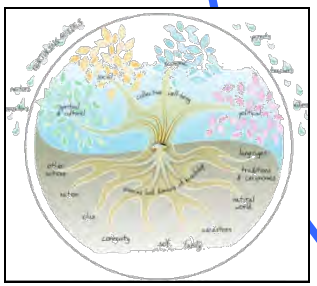
Science as
“pattern stories”

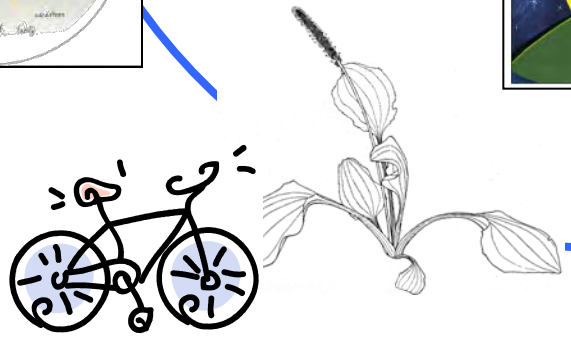


Two-Eyed Seeing



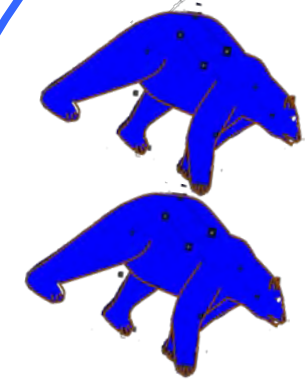
Integrative Science
within an ongoing
Co-Learning Journey



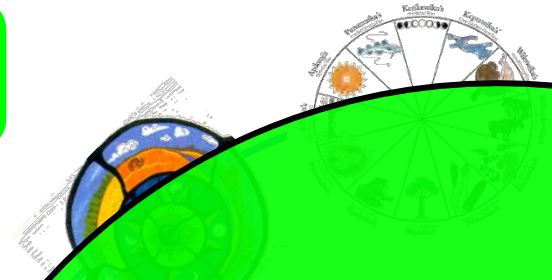


Conclusion

Introduction



MESSAGE



explore
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Conclusion

Introduction

patterns in natural world

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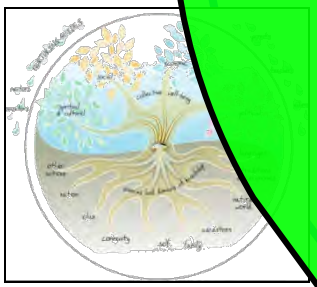


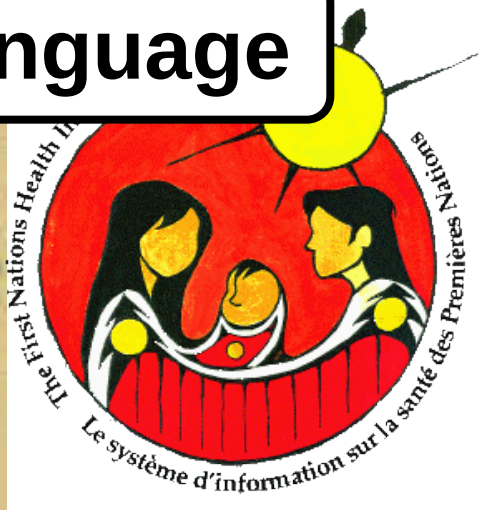
Two-Eyed Seeing

Integrative Science
within an ongoing
Co-Learning Journey

Developing Traditional Curricula

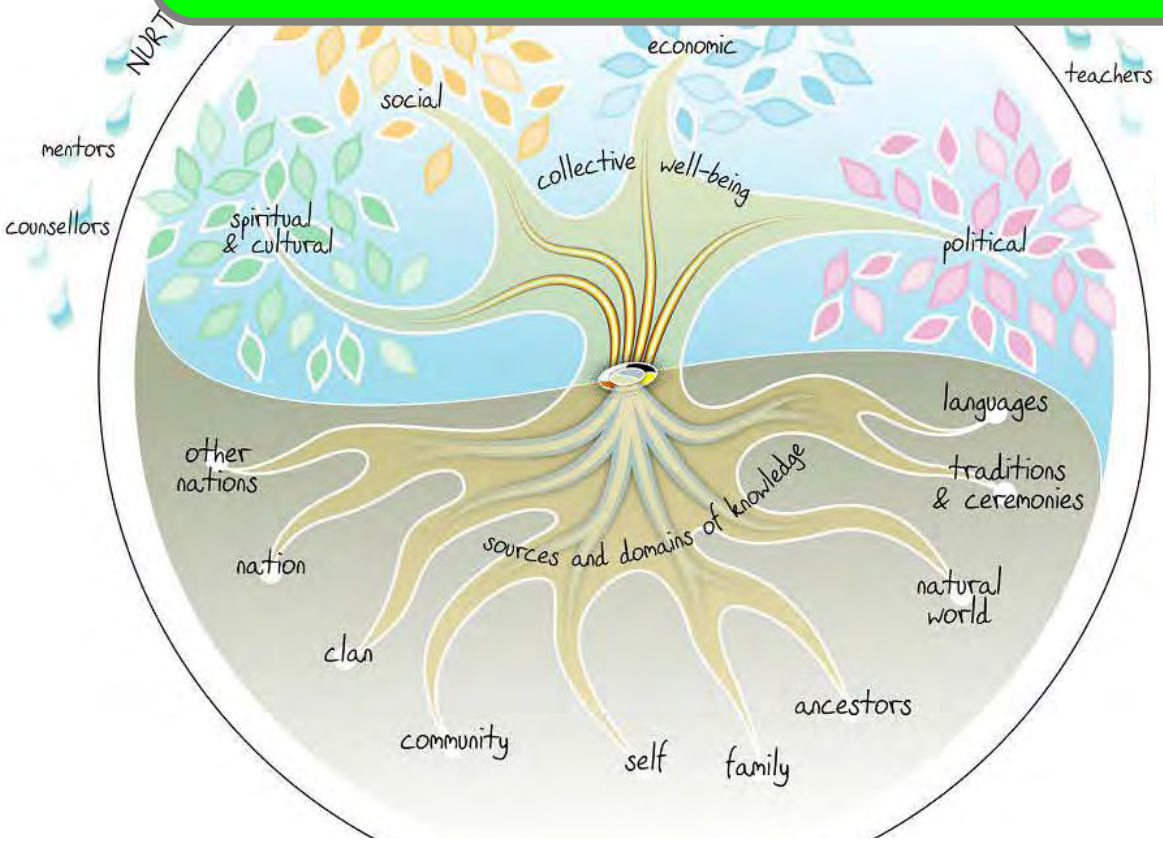
Life
Love
Land

Language



logos from: Aboriginal organizations, various sources

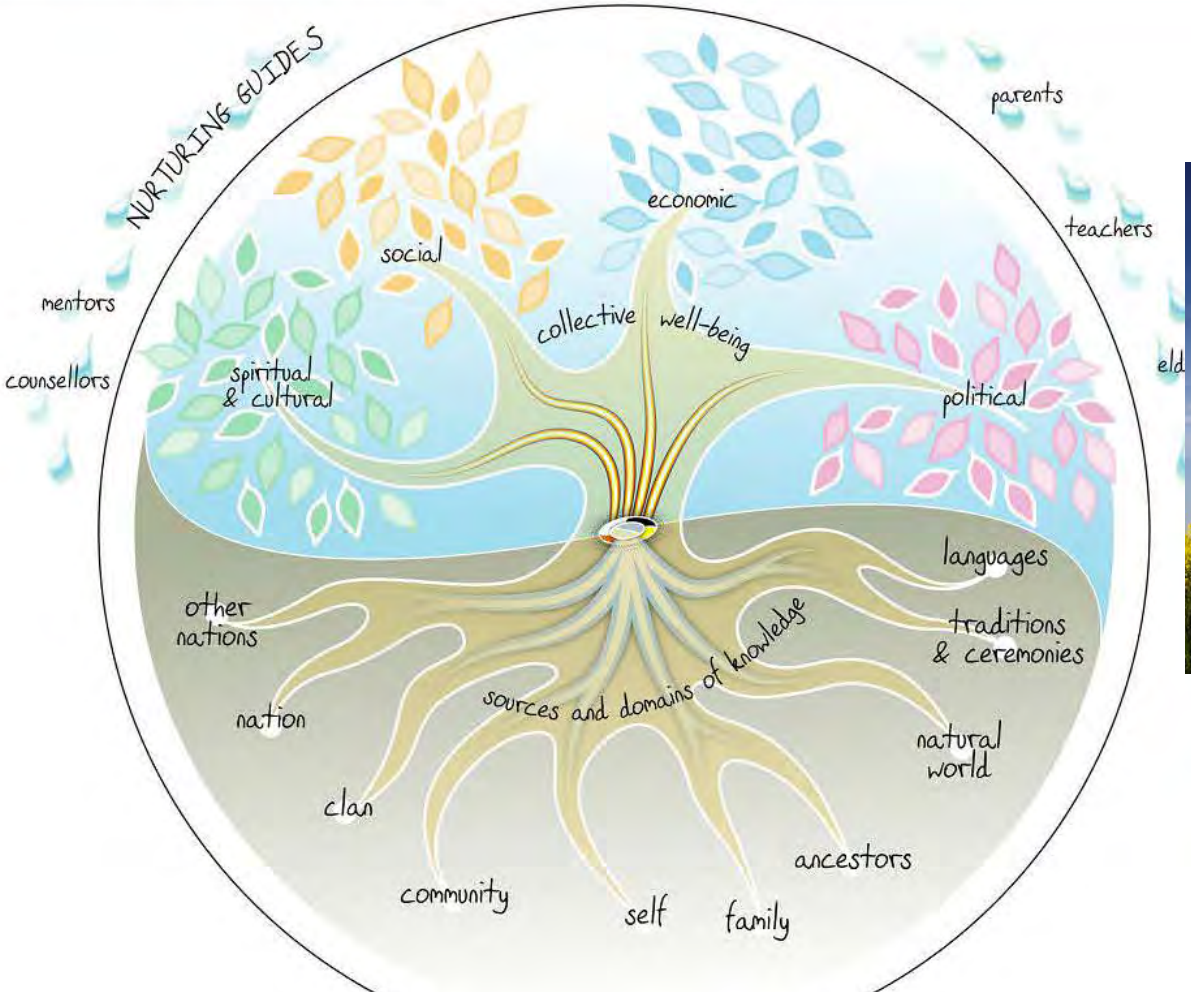
Lifelong Learning
knowledge model



First Nations Holistic Lifelong Learning Model

from: **Canadian Council on Learning: Aboriginal Learning Knowledge Centre**

(http://www.ccl-cca/CCL)



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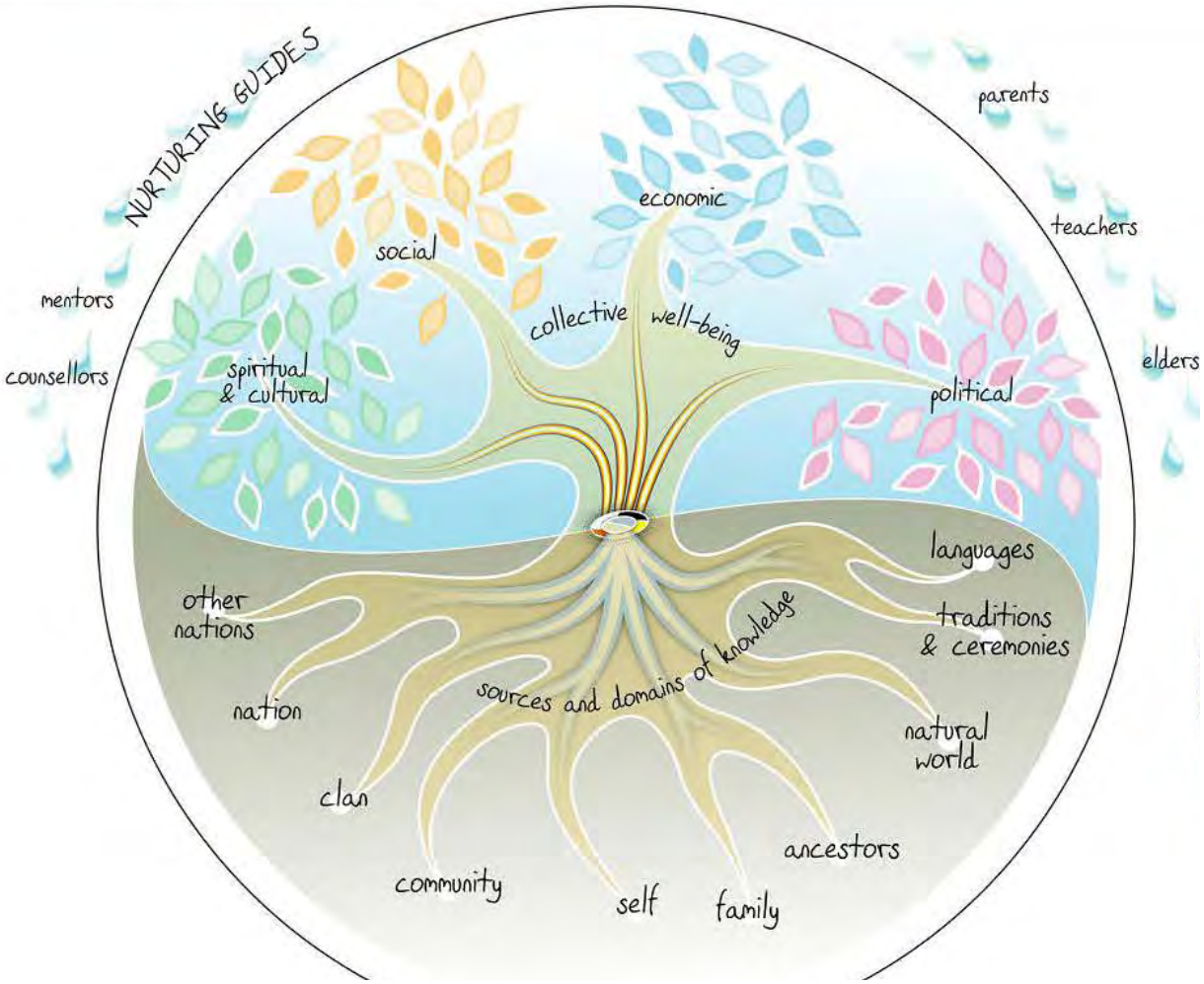

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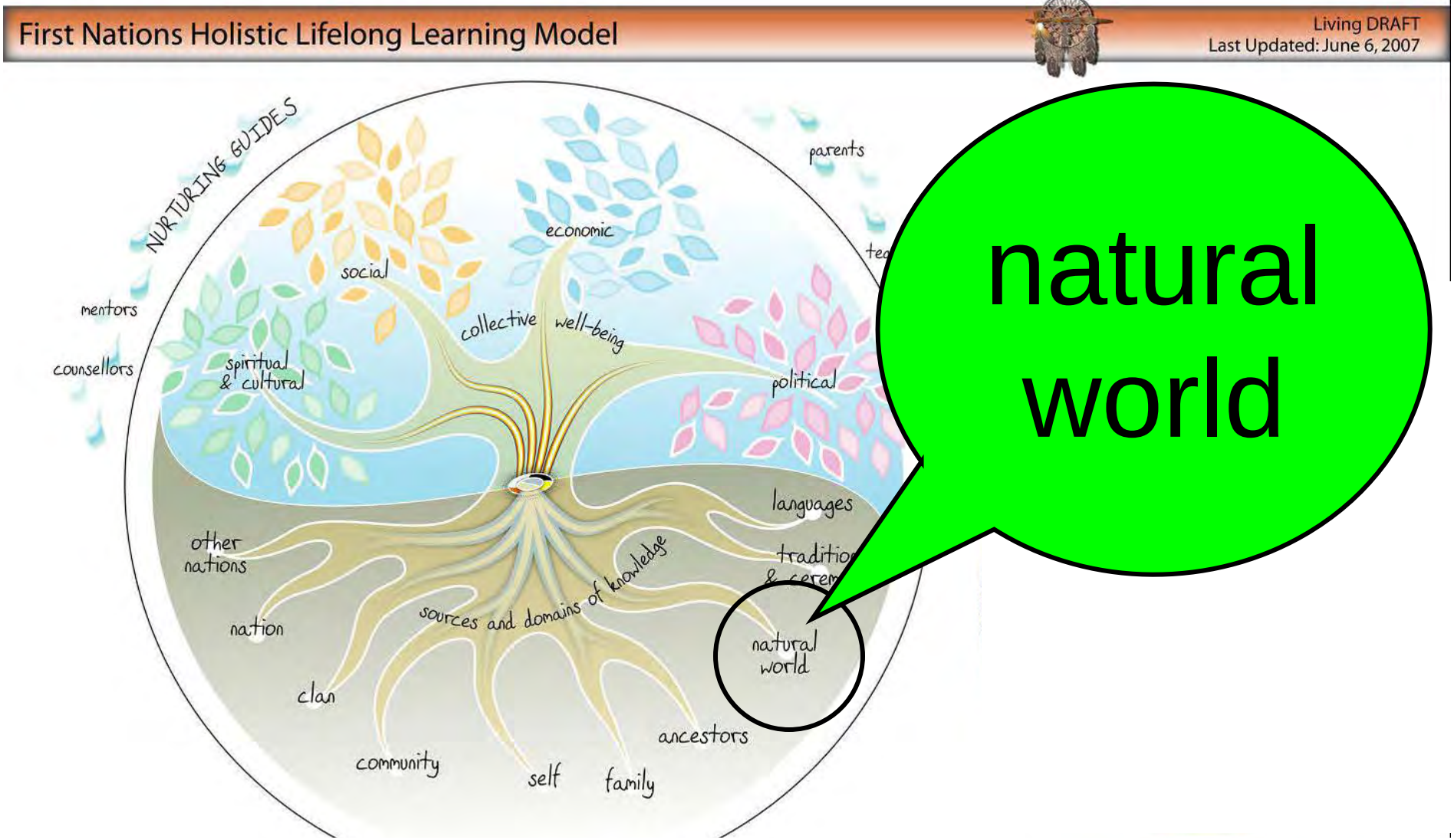

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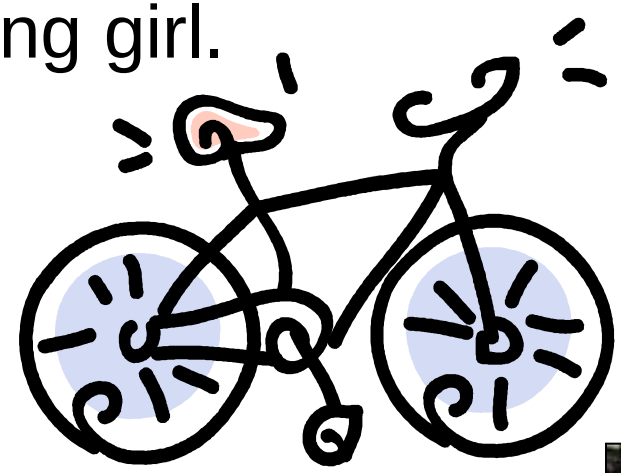
Elder Murdena Marshall, MEd
Mi'kmaq Elder & Spiritual Leader
Eskasoni First Nation

Murdena's Story

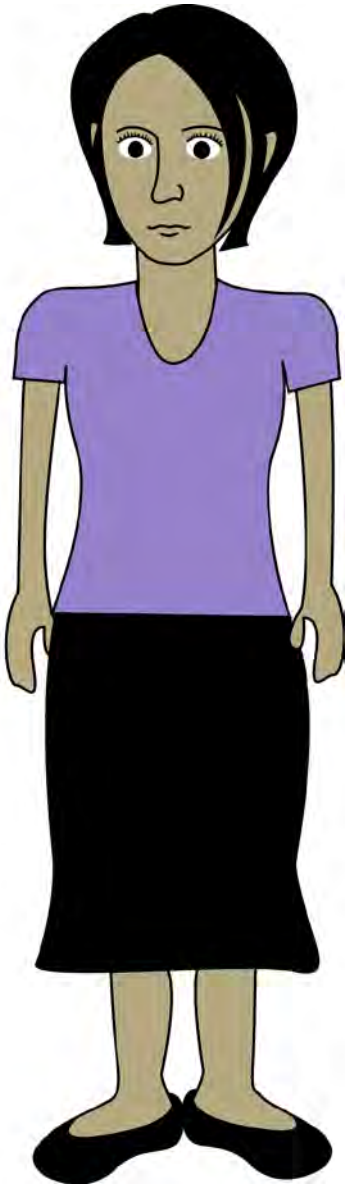
(with permission)

from: Marshall, M. 2008. Traditional Health & Healing and Women's Roles. Workshop Module Materials.

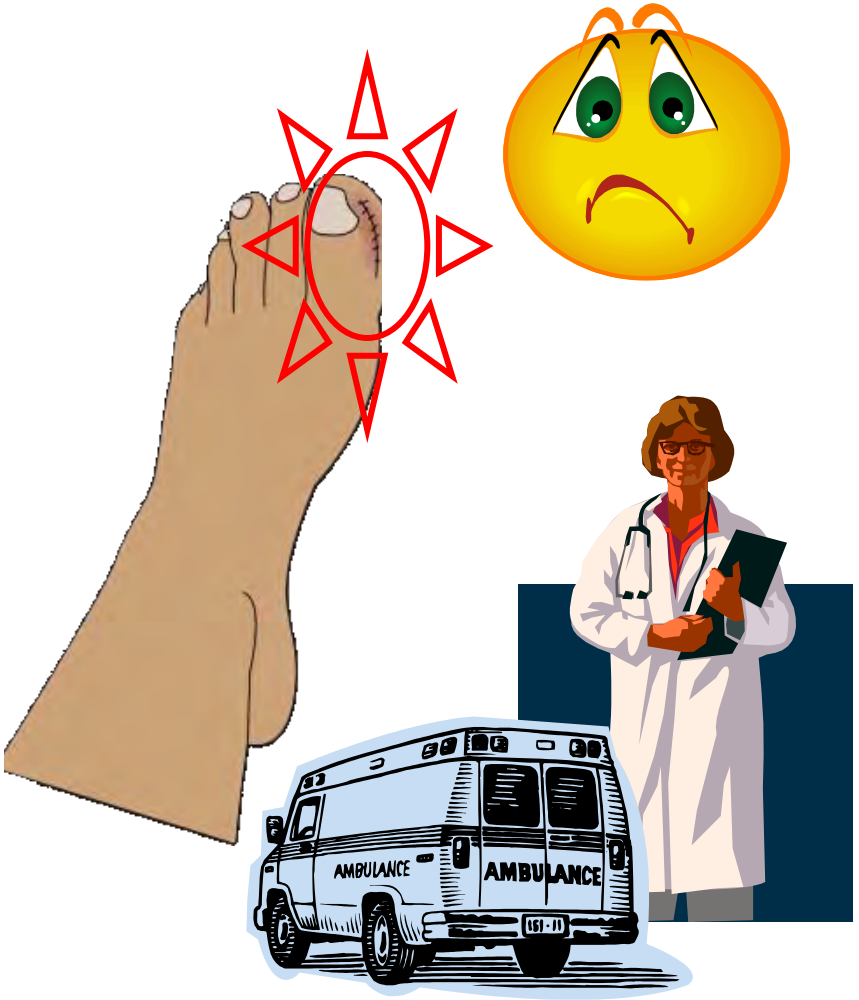
Murdena is a young girl.



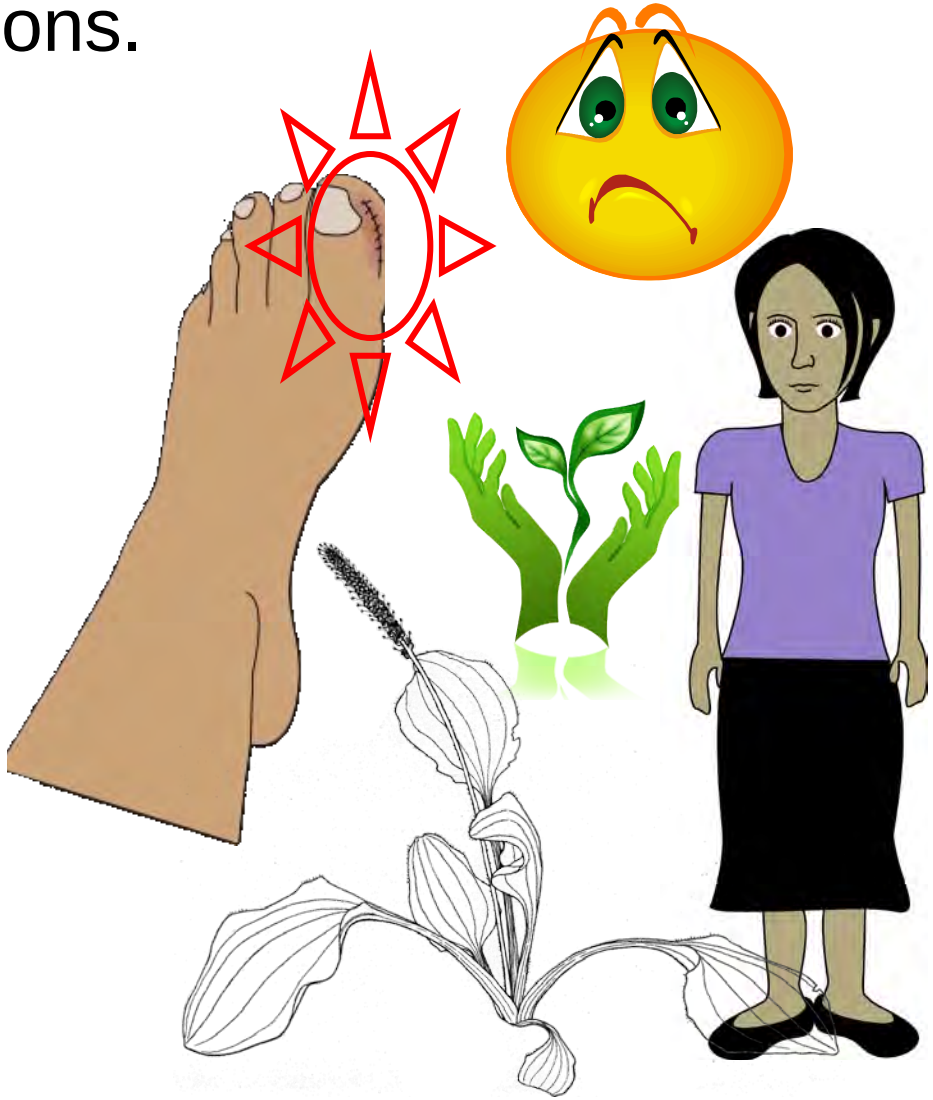
Murdena has an Auntie.



Murdena is a Grandmother.



Murdena is a Grandmother whose Journey of Life has experienced many relations.



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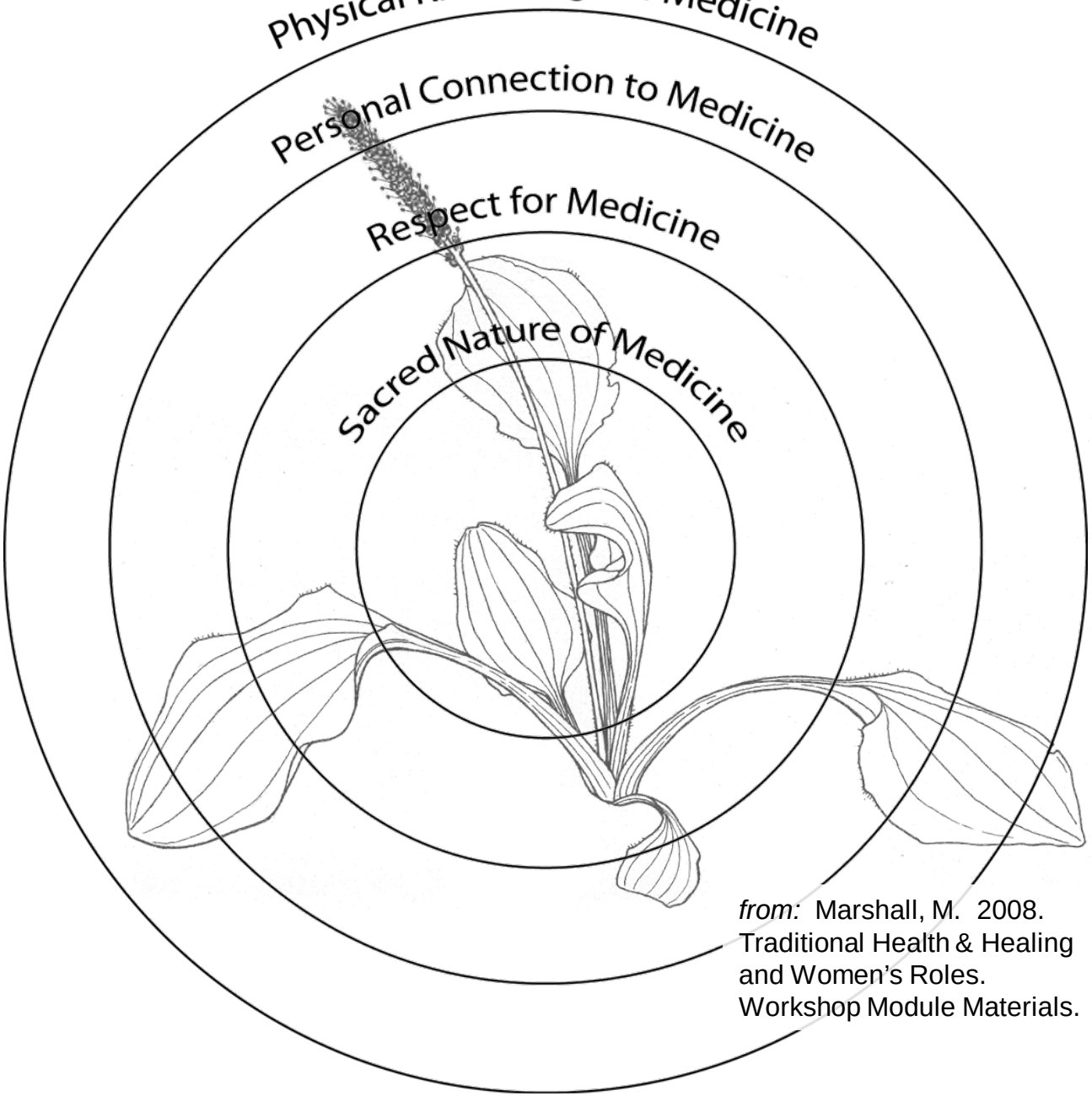
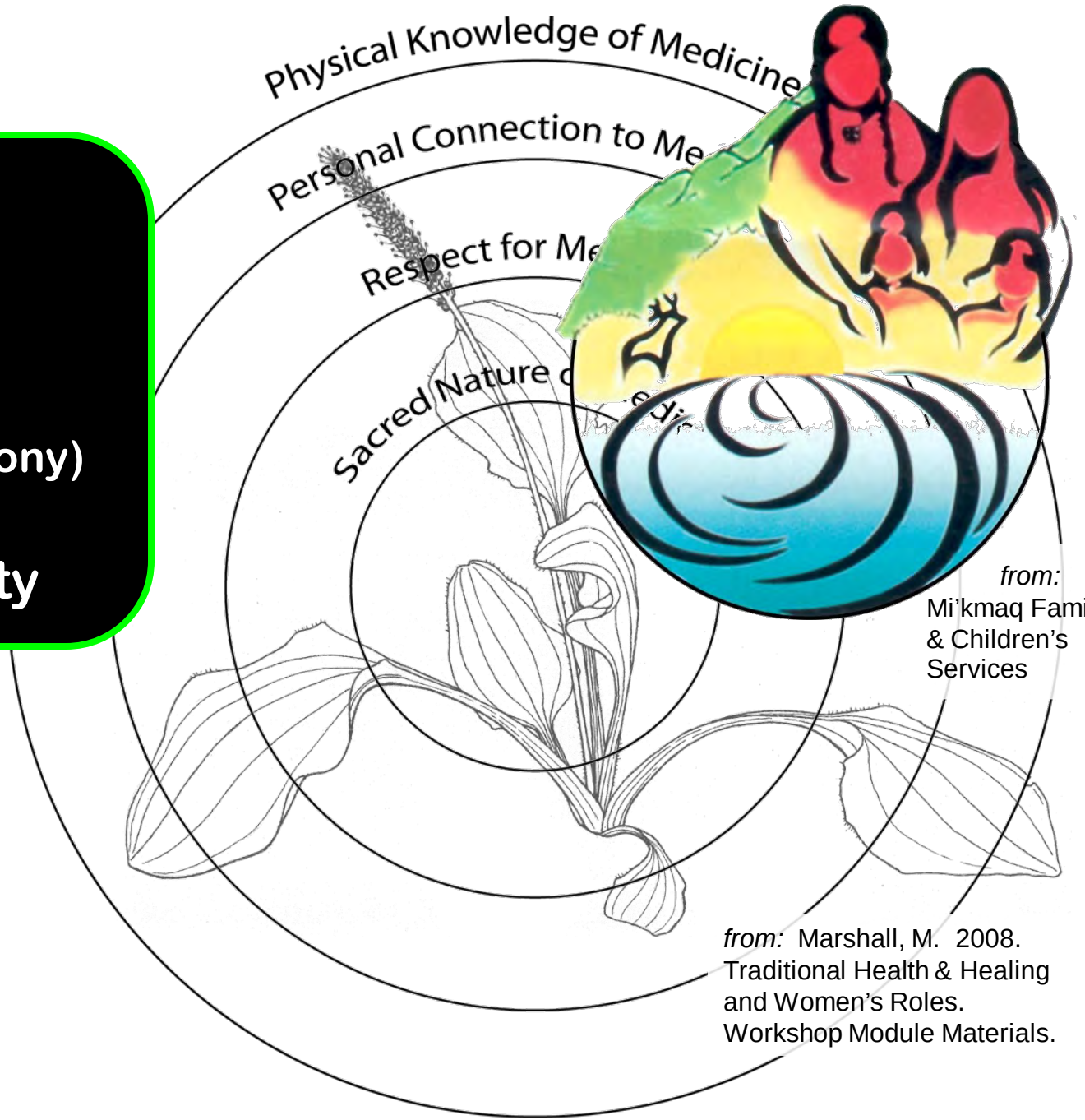


from: Marshall, M. 2008. Traditional Health & Healing and Women's Roles. Workshop Module Materials.

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

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



from:
Mi'kmaq Family & Children's Services

from: Marshall, M. 2008. Traditional Health & Healing and Women's Roles. Workshop Module Materials.

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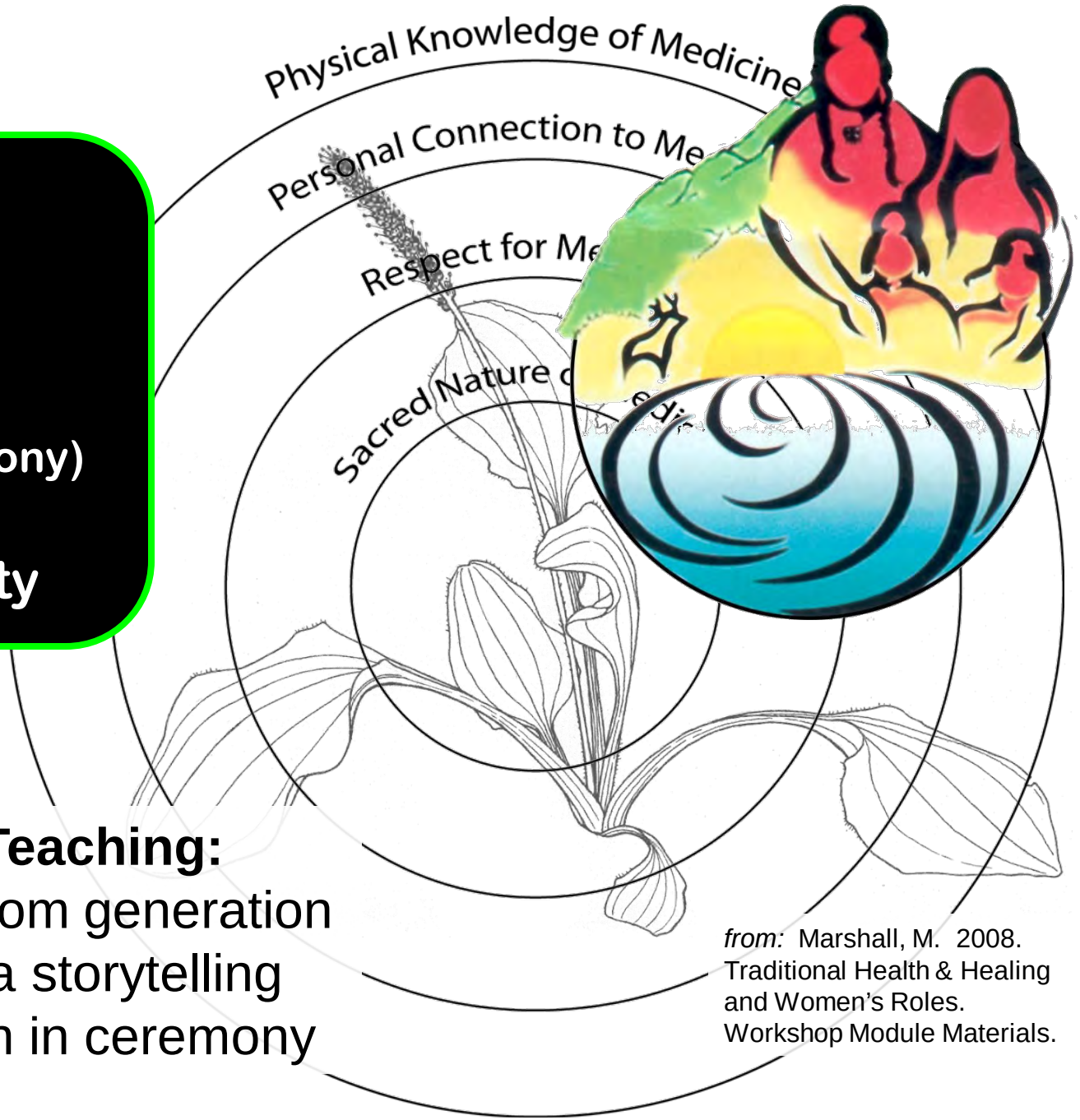
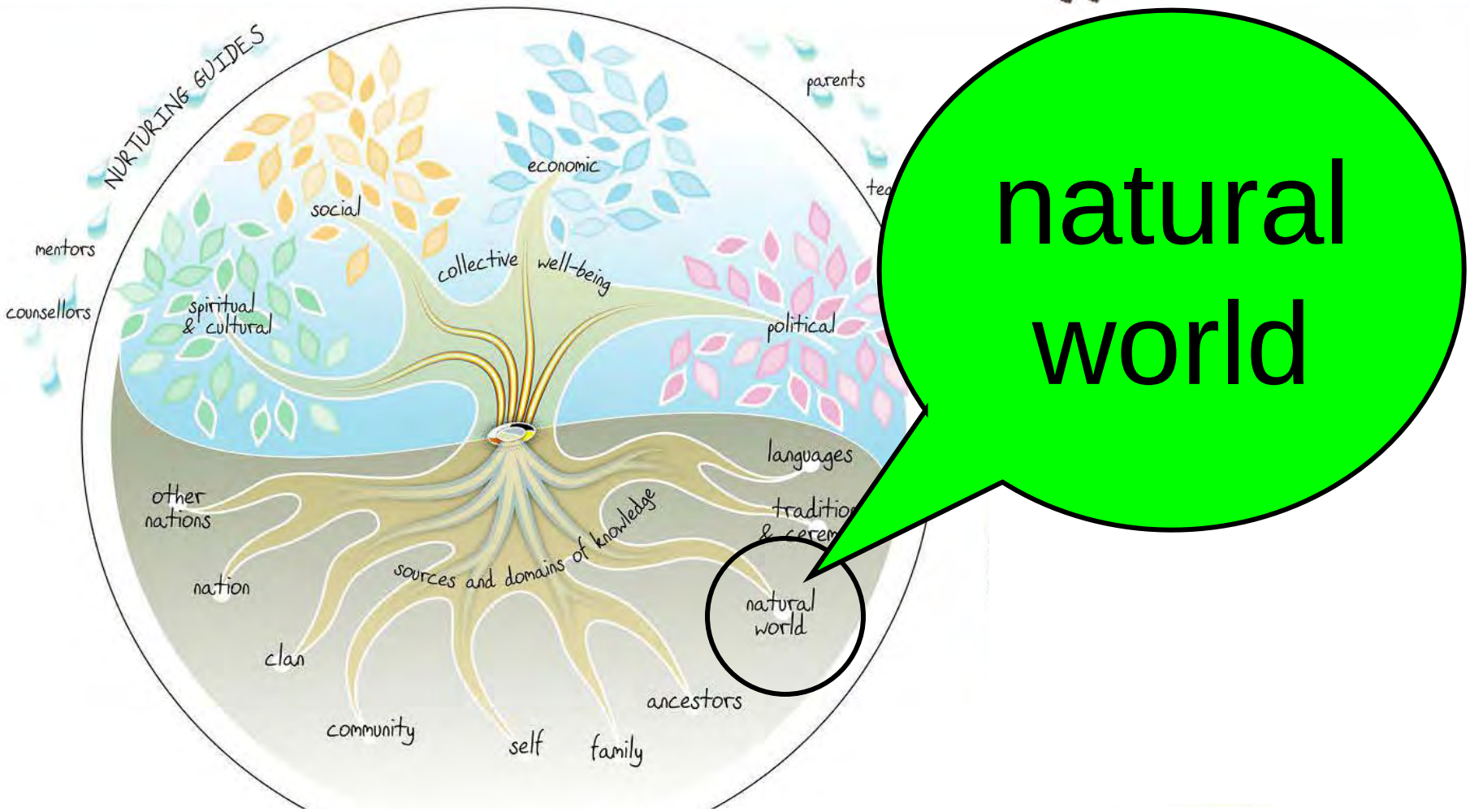


Sacred Circle Teaching:
reality passes from generation to generation via storytelling and participation in ceremony

from: Marshall, M. 2008. Traditional Health & Healing and Women's Roles. Workshop Module Materials.



First Nations Holistic Lifelong Learning Model

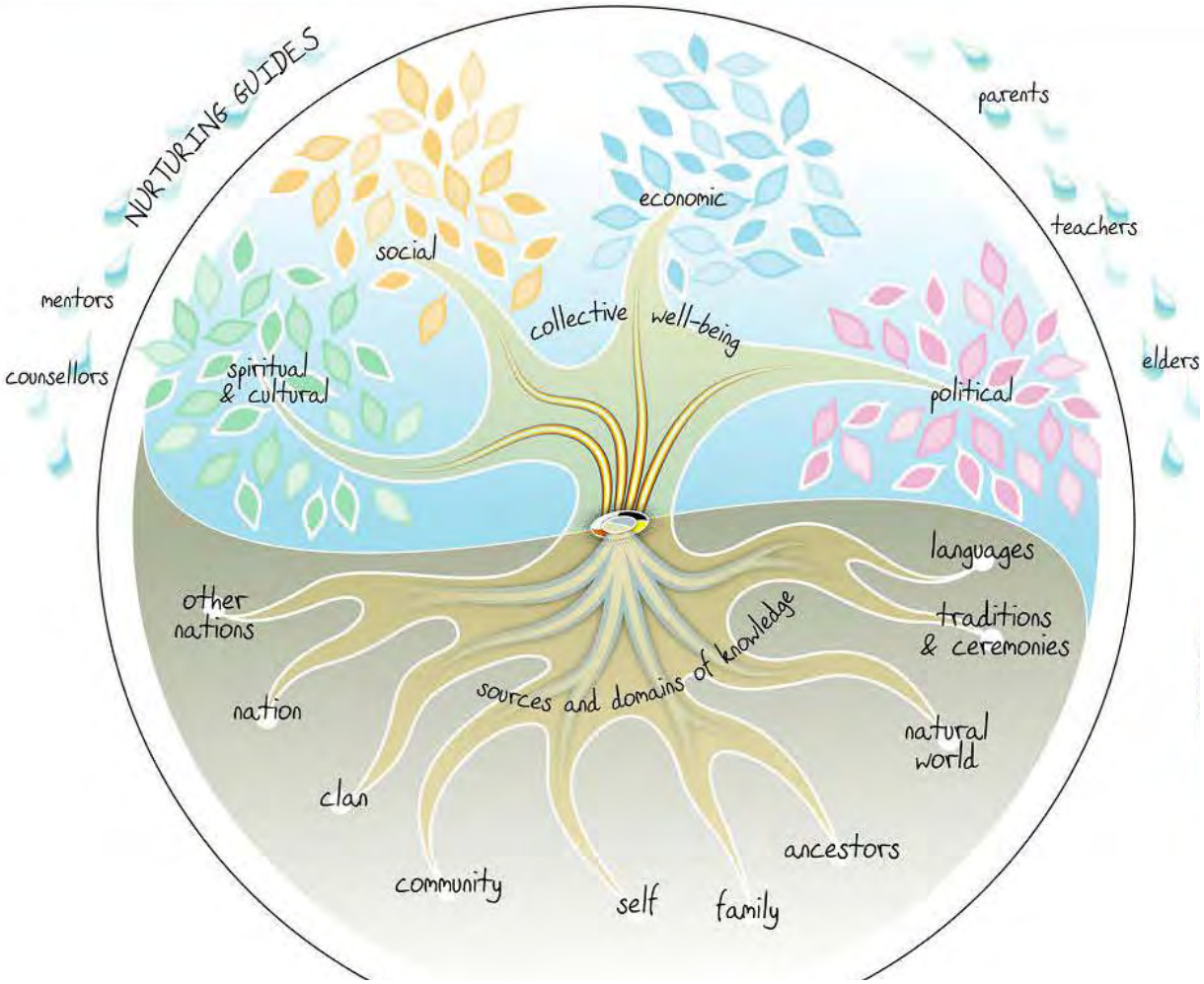
from: **Canadian Council on Learning: Aboriginal Learning Knowledge Centre**

Pemi Pungek Mi'kma'ki

This poster is dedicated to all Mi'kmaq Elders.

This poster is one in a series made by the Institute for Integrative Science and Health at Cape Breton University and Mi'kmaq First Nations' Elders of Cape Breton. Integrative Science brings together Indigenous and Western scientific knowledges and ways of knowing for science education.

This poster is called **Pemi Punqet Mi'kma'ki**, which means ***one continuous year in the Mi'kmaq traditional territory.*** On the outside, it shows the four seasons and the 12 moons of the year. On the inside, it shows the land, water, and sky over a full year. The pictures of plants, animals, and weather show the order of changing events in nature. The pictures of people show when to do traditional and modern activities. Read this poster in a circle to see the cycle of the seasons. Spring is on the left, summer is on the bottom, fall is on the right, and winter is at the top.



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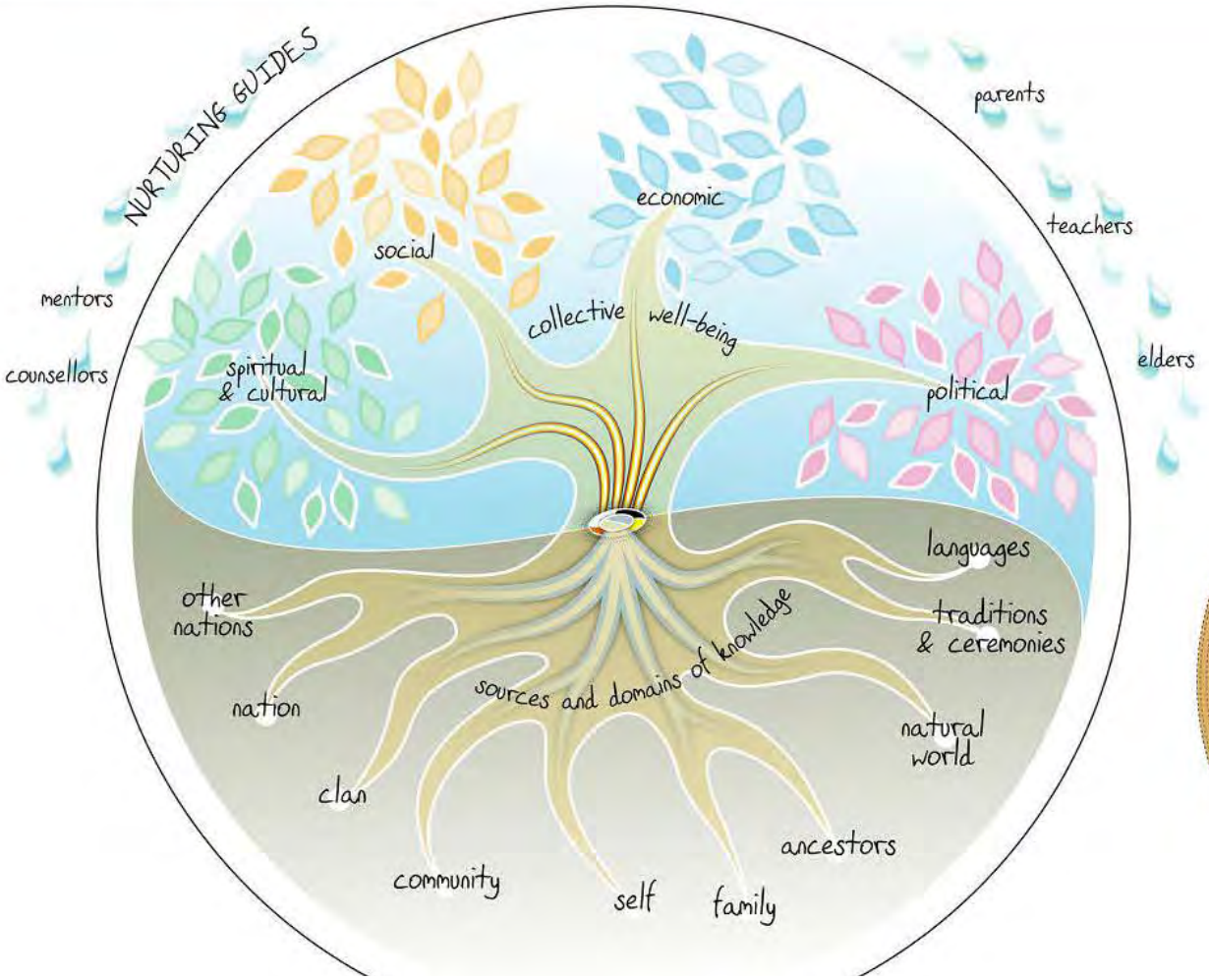

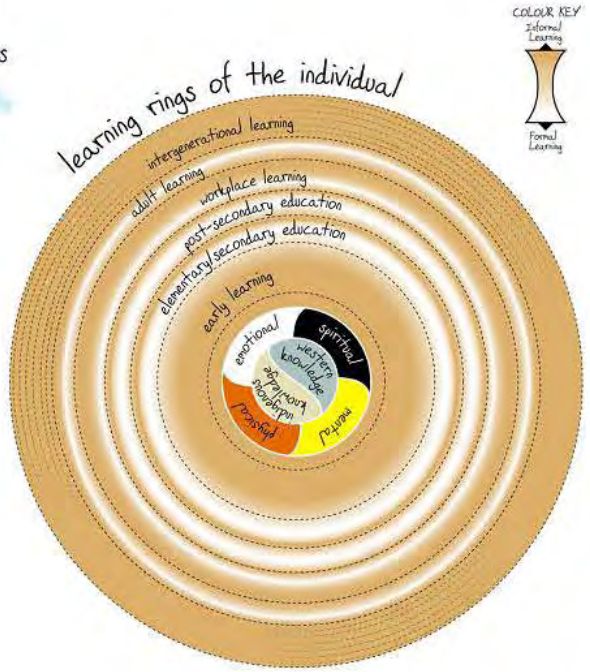

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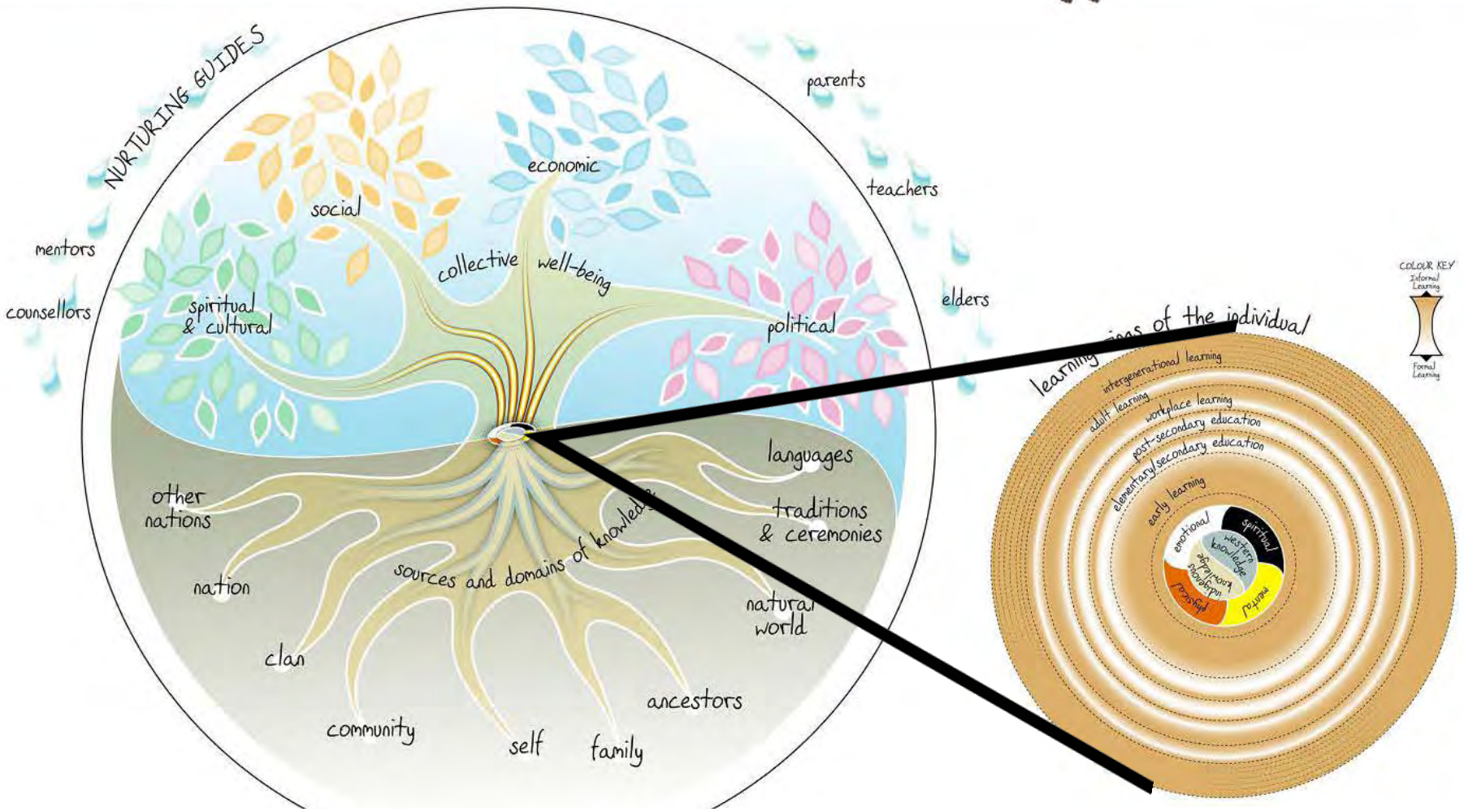

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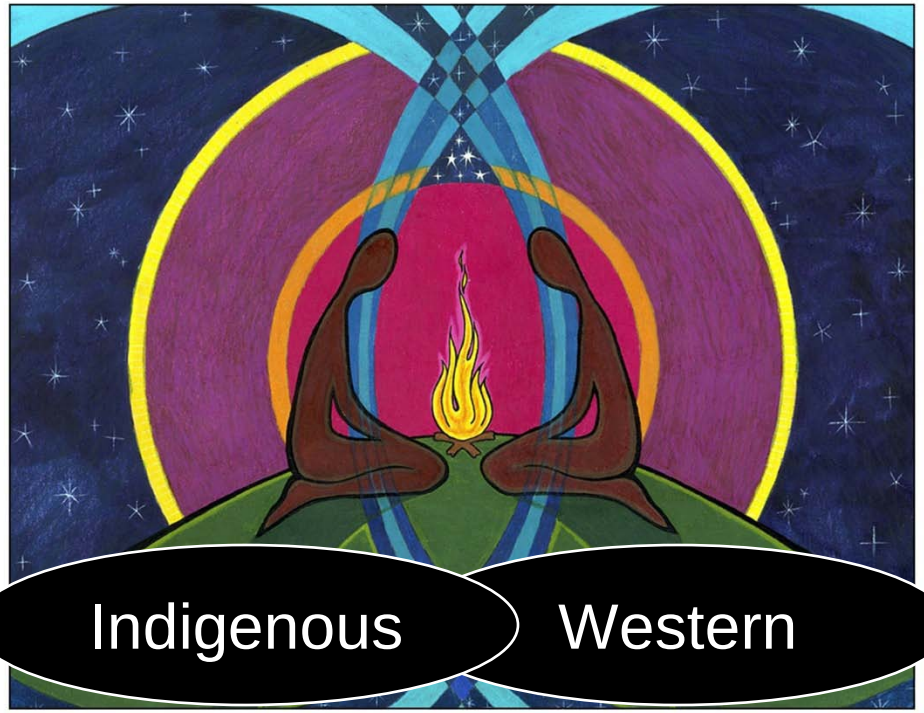
CAPE BRETON UNIVERSITY

Integrative Science



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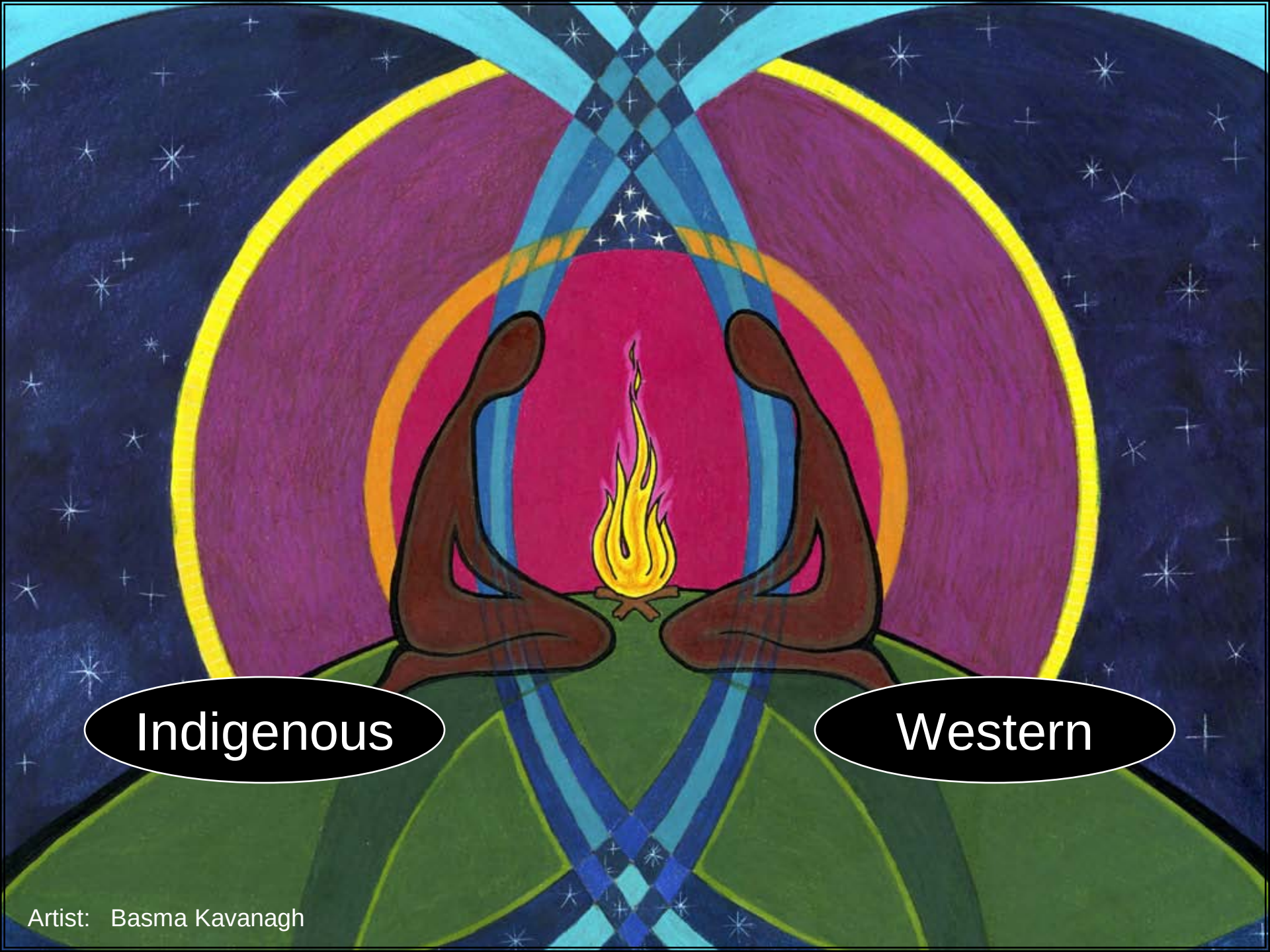

Artist: Basma Kavanagh


CAPE BRETON UNIVERSITY
Integrative Science
SCIENCE
education, research, applications,
youth and community outreach
Indigenous
Western
“bringing our knowledges together”
Artist: Basma Kavanagh

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, scientist & educator, Univ. of New Mexico

Indigenous

Western

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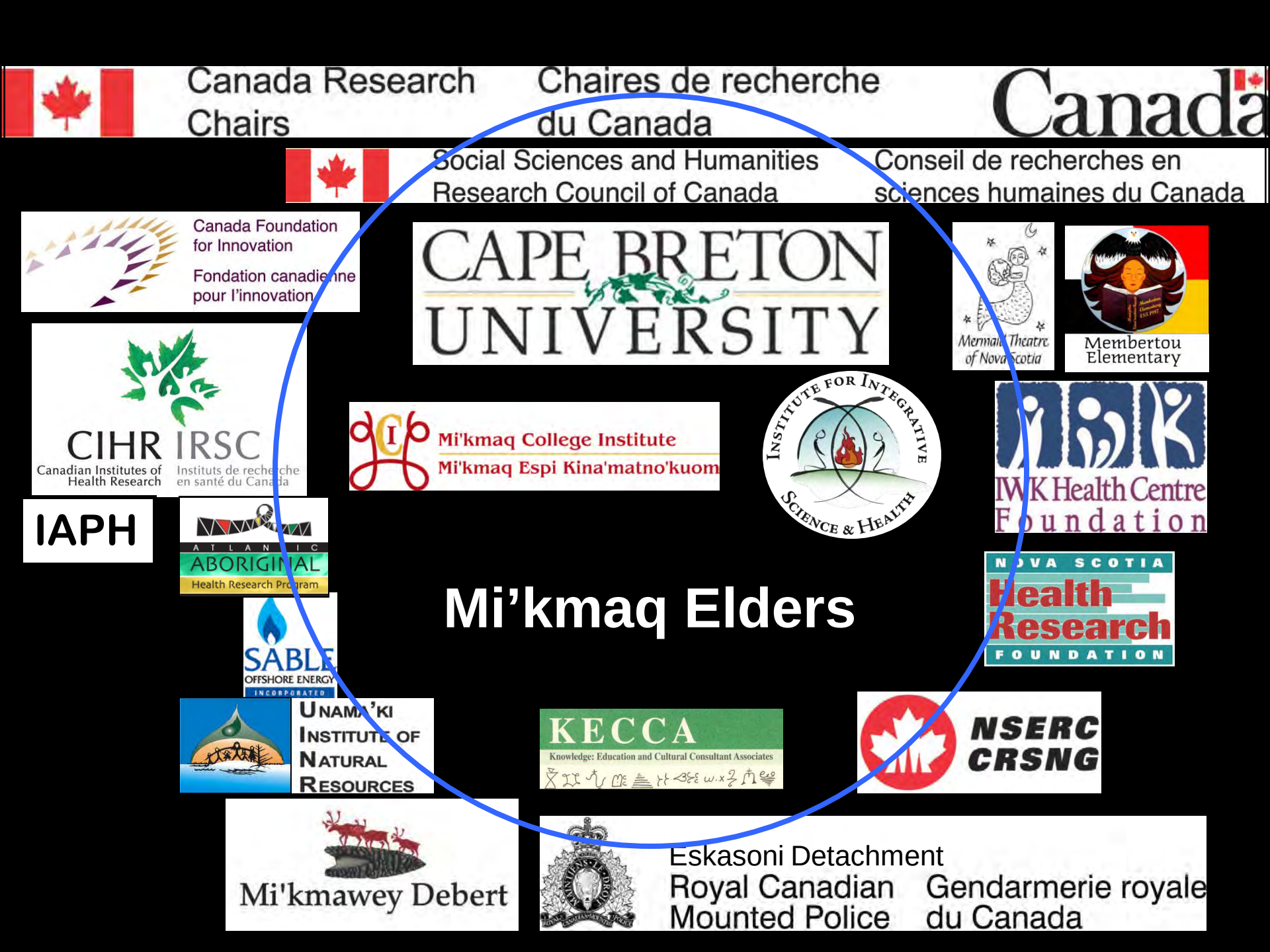
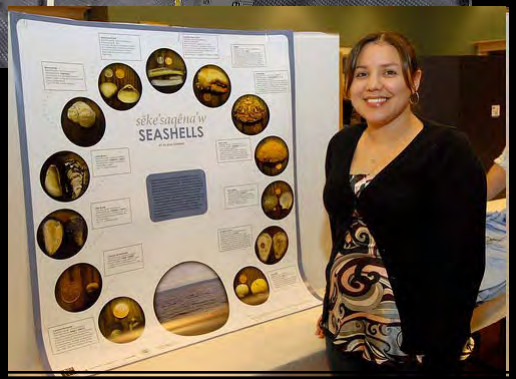

Canada Research Chairs
Chaires de recherche du Canada
Canada
Social Sciences and Humanities Research Council of Canada
Conseil de recherches en sciences humaines du Canada
Canada Foundation for Innovation
Fondation canadienne pour l'innovation
CAPE BRETON UNIVERSITY
Mermaid Theatre of Nova Scotia
Membertou Elementary
CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada
Mi'kmaq College Institute
Mi'kmaq Espi Kina'matno'kuom
Institute for Integrative Science & Health
IWK Health Centre Foundation
IAPH
Atlantic Aboriginal Health Research Program
Mi'kmaq Elders
Nova Scotia Health Research Foundation
SABLE OFFSHORE ENERGY INCORPORATED
Unama'ki Institute of Natural Resources
KECCA
Knowledge: Education and Cultural Consultant Associates
NSERC CRSNG
Mi'kmawey Debert
Eskasoni Detachment
Royal Canadian Mounted Police
Gendarmerie royale du Canada


Sipu ji'j 8

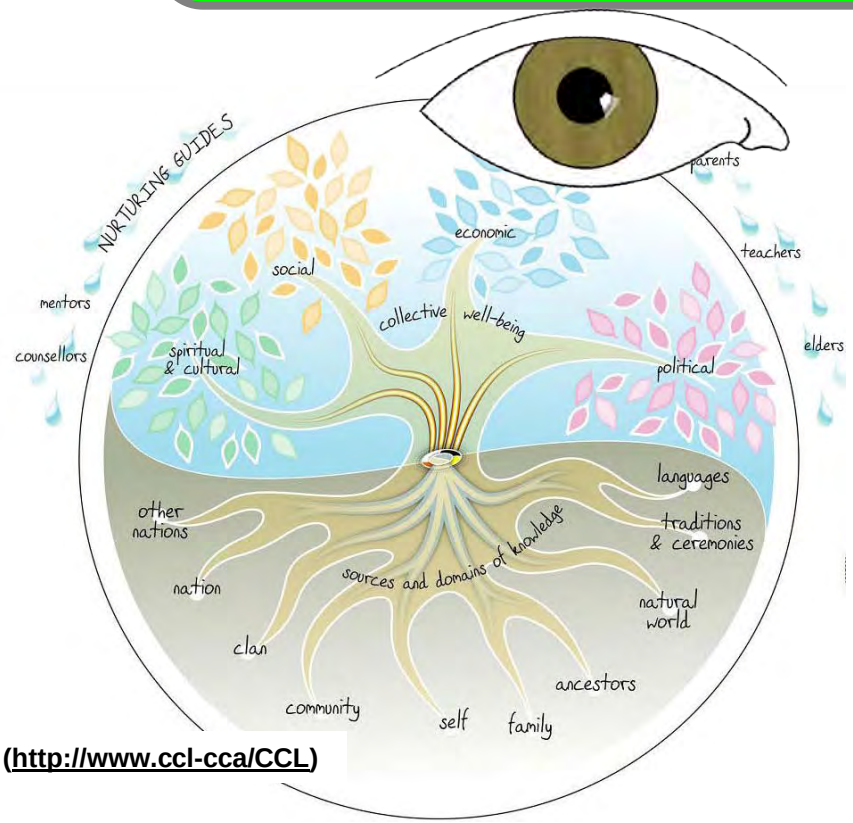

sëkë'saqëna'w
SEASHELLS

“Two-Eyed Seeing”

learning to see with the <u>strengths</u> of each & together

Mr. Albert Marshall, Mi’kmaq Elder
Eskasoni First Nation

Lifelong Learning
knowledge models



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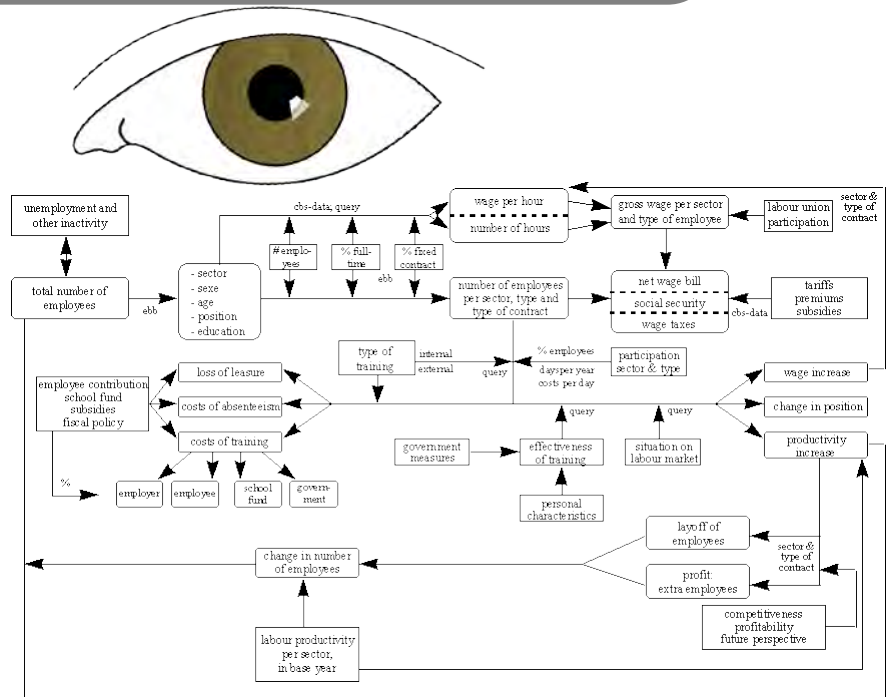


from: www.leads.ac.uk

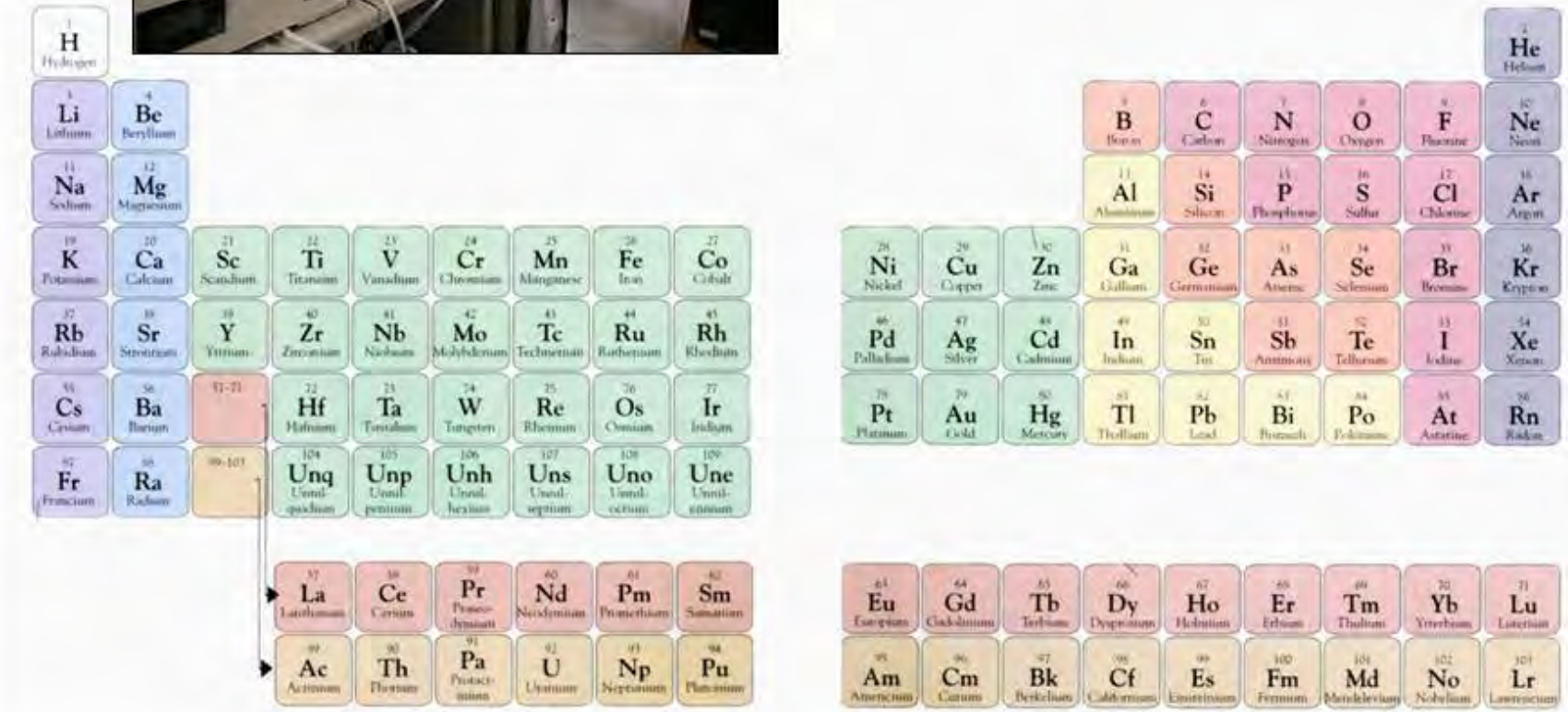
natural world

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

stories of our interactions with and within nature

photo credit: NRC

Western Science



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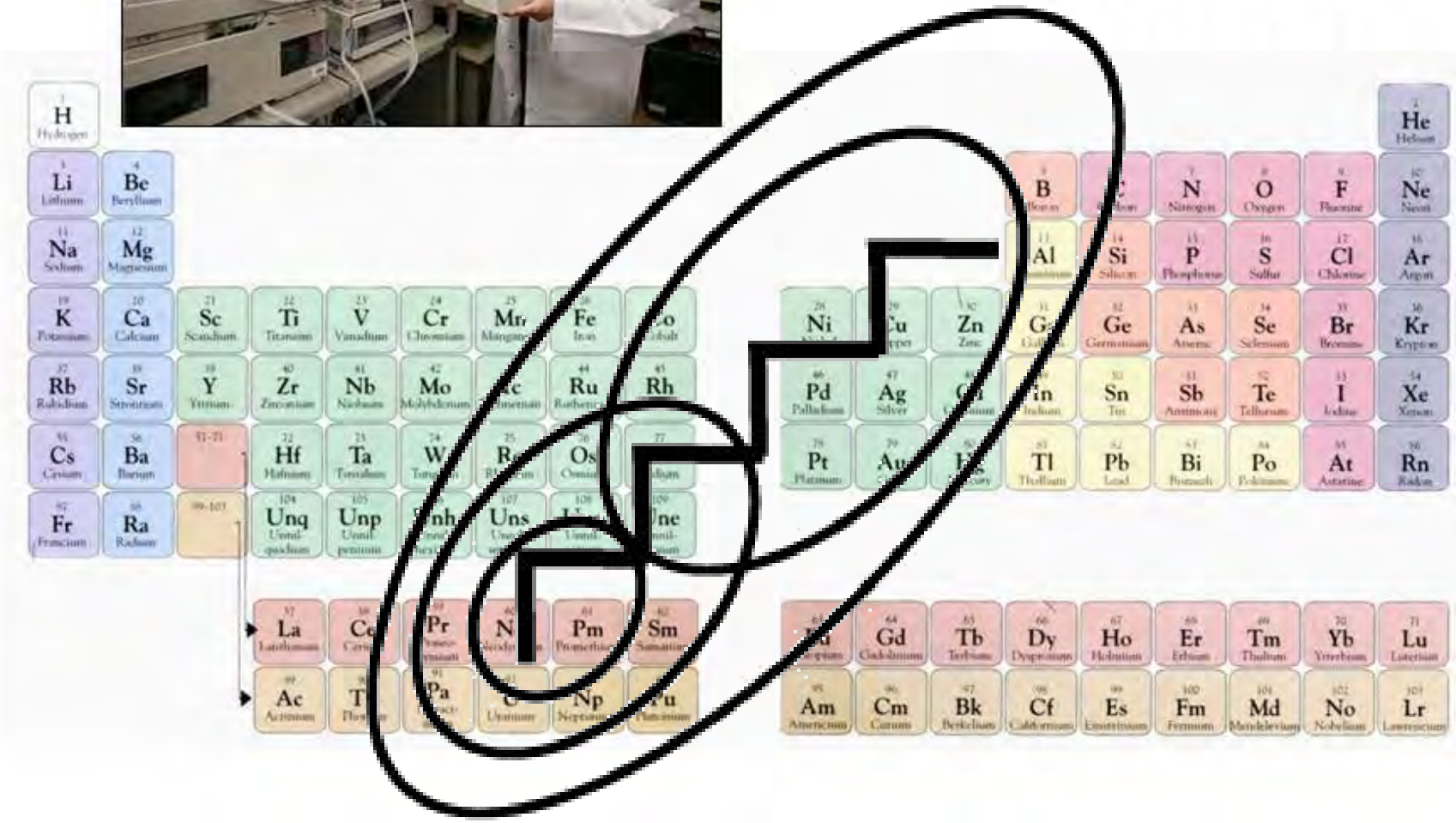

Indigenous Science

Life
Love
Land

Language

images from: Aboriginal organizations/artists, various sources

Indigenous Science

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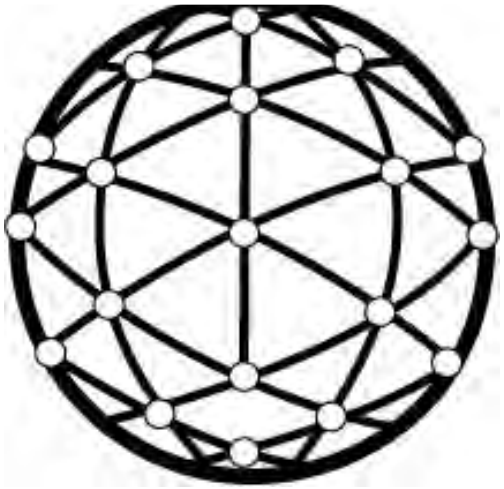
Two-Eyed Seeing

learning to see with the strengths of each & together

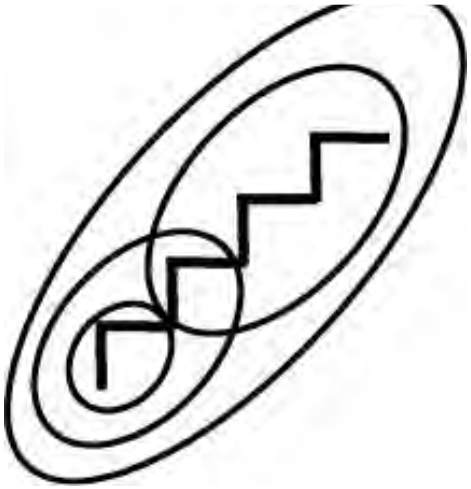
OUR NATURAL WORLD

interconnective



constant change

parts & wholes



ongoing evolution

Two-Eyed Seeing

learning to see with the strengths of each & together

OUR NATURAL WORLD

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

Two-Eyed Seeing

learning to see with the <u>strengths</u> 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

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

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

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

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

Two-Eyed Seeing

learning to see with the <u>strengths</u> of each & together

OUR KEY CONCEPTS and ACTIONS

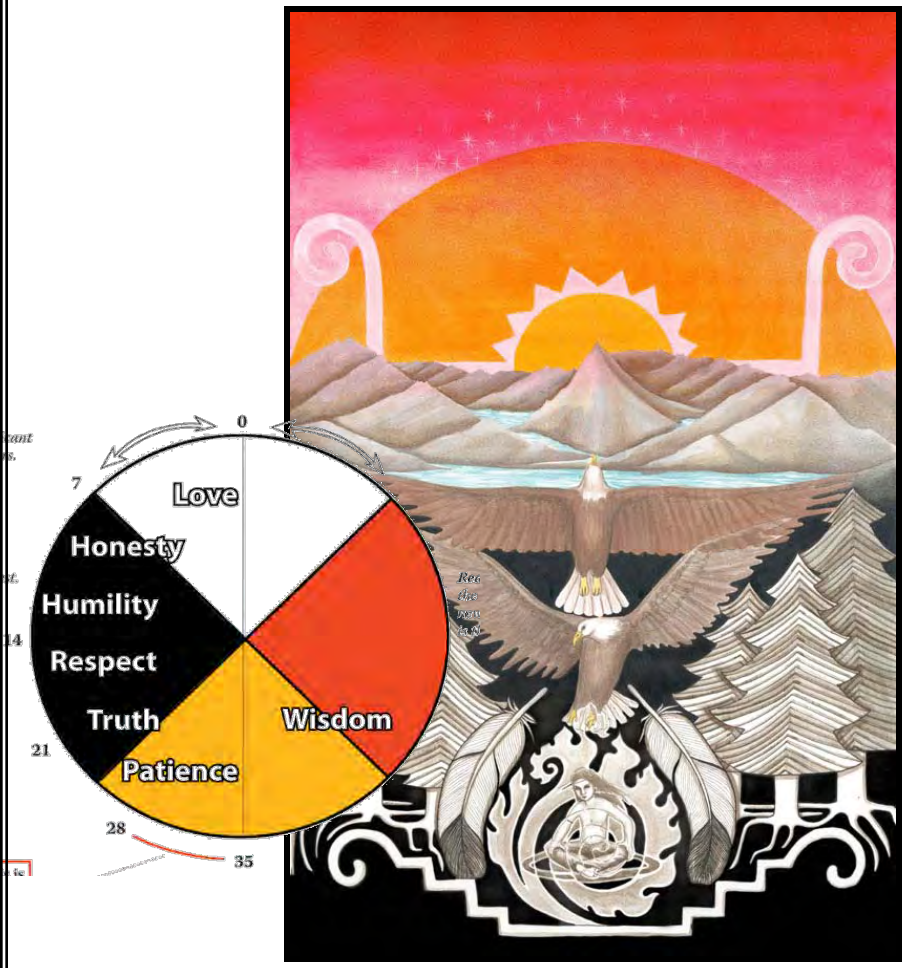
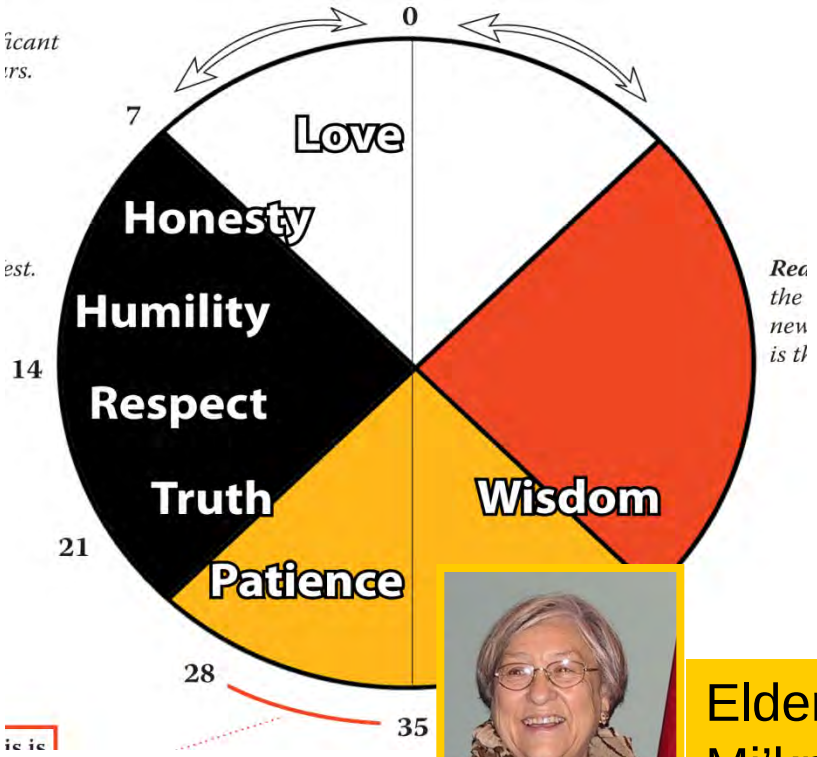
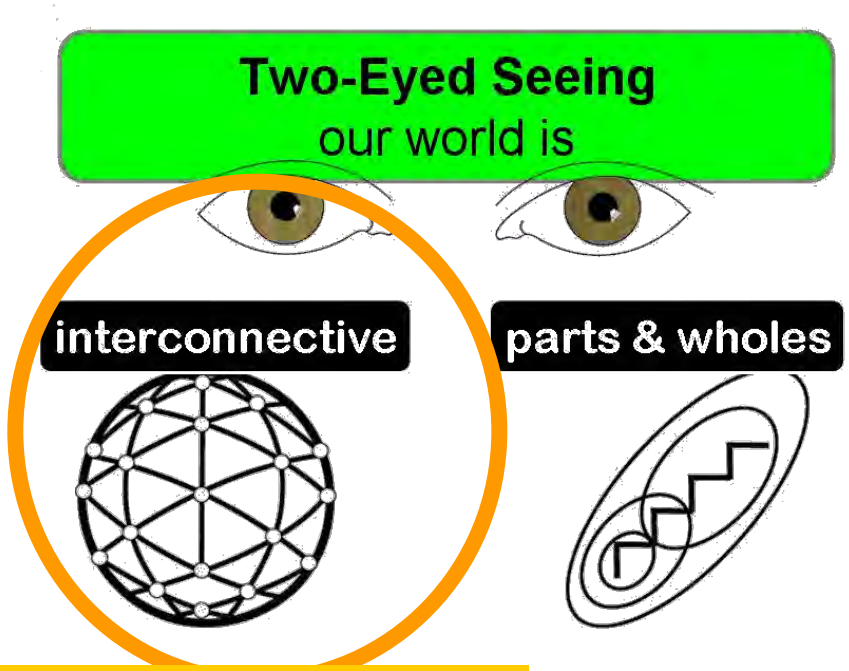


photo credit: NRC

participatory & creative choice

JOURNEY OF LIFE: Seven Sacred Gifts offered ... up to you to accept or not





Elder Murdena Marshall, MEd
Mi'kmaq Elder & Spiritual Leader
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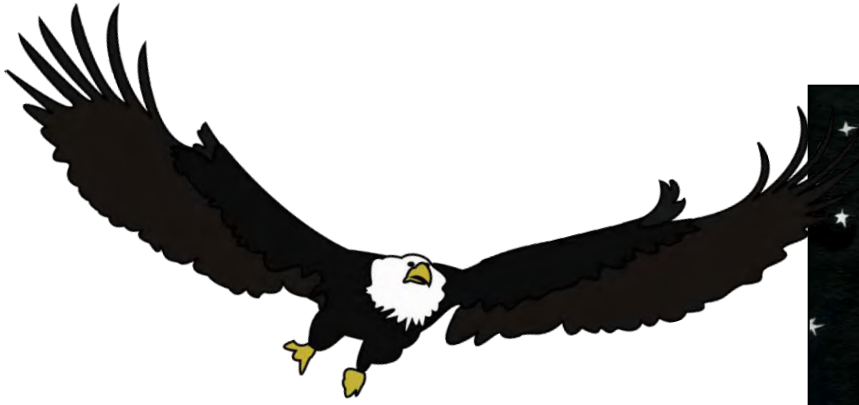
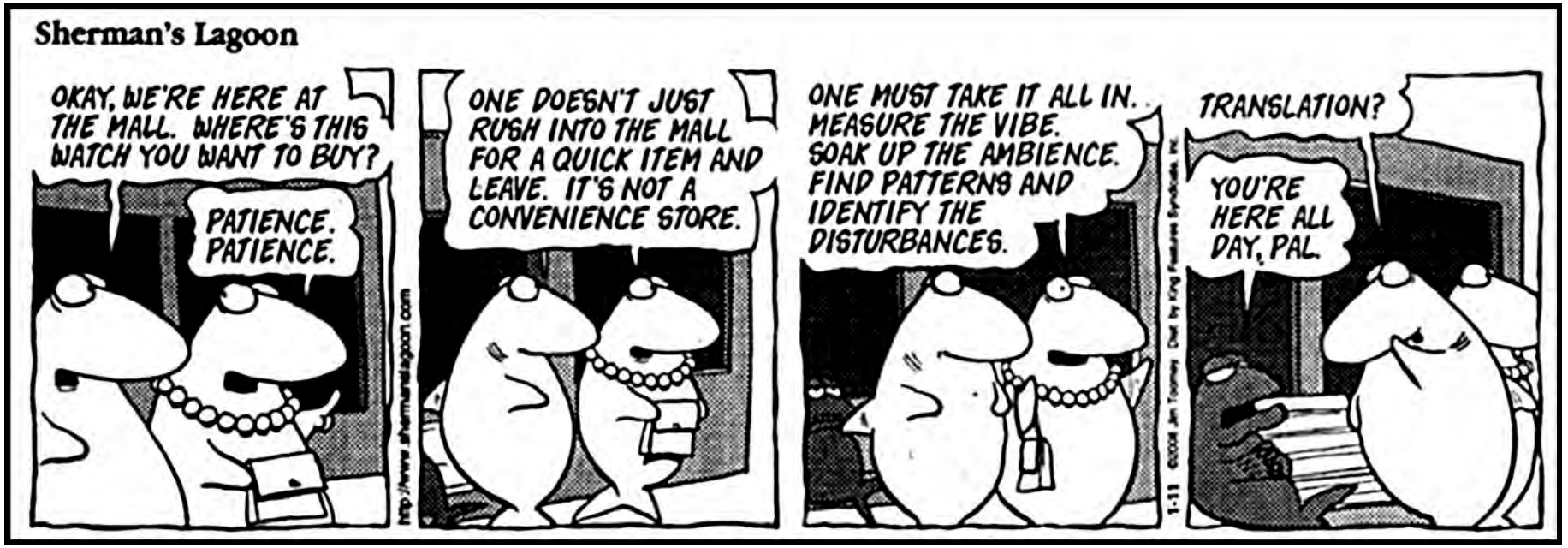


Science is dynamic, **pattern-based** knowledge.

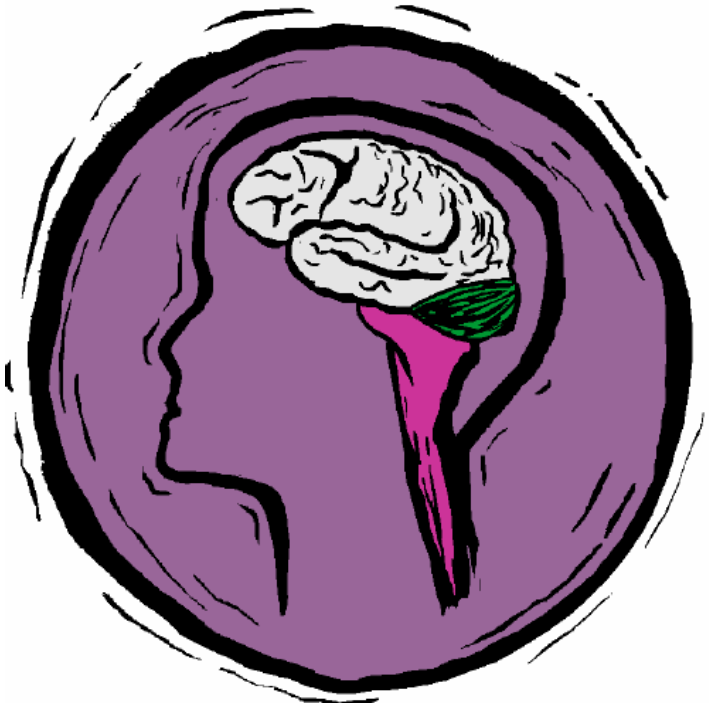
stories of our interactions with and within nature

PATTERN


Sherman's Lagoon
OKAY, WE'RE HERE AT THE MALL. WHERE'S THIS WATCH YOU WANT TO BUY?
PATIENCE. PATIENCE.
ONE DOESN'T JUST RUSH INTO THE MALL FOR A QUICK ITEM AND LEAVE. IT'S NOT A CONVENIENCE STORE.
ONE MUST TAKE IT ALL IN. MEASURE THE VIBE. SOAK UP THE AMBIENCE. FIND PATTERNS AND IDENTIFY THE DISTURBANCES.
TRANSLATION?
YOU'RE HERE ALL DAY, PAL.

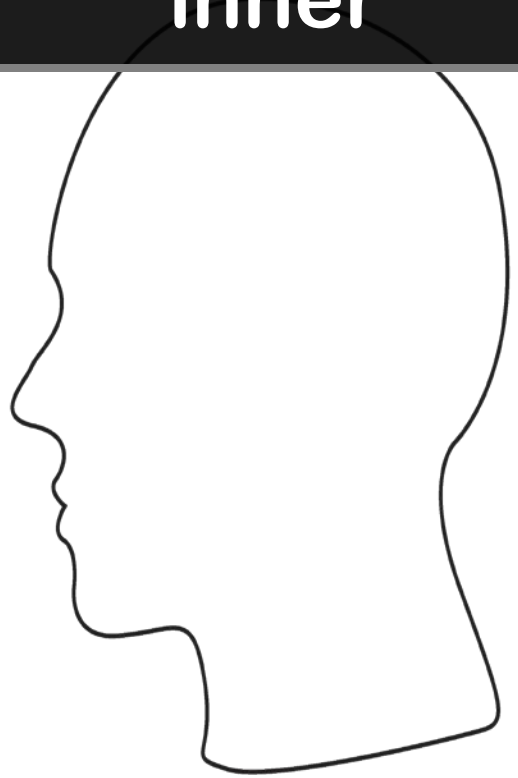
PATTERN CONCEPTUAL FRAMEWORK

outer inner outer



PATTERN CONCEPTUAL FRAMEWORK

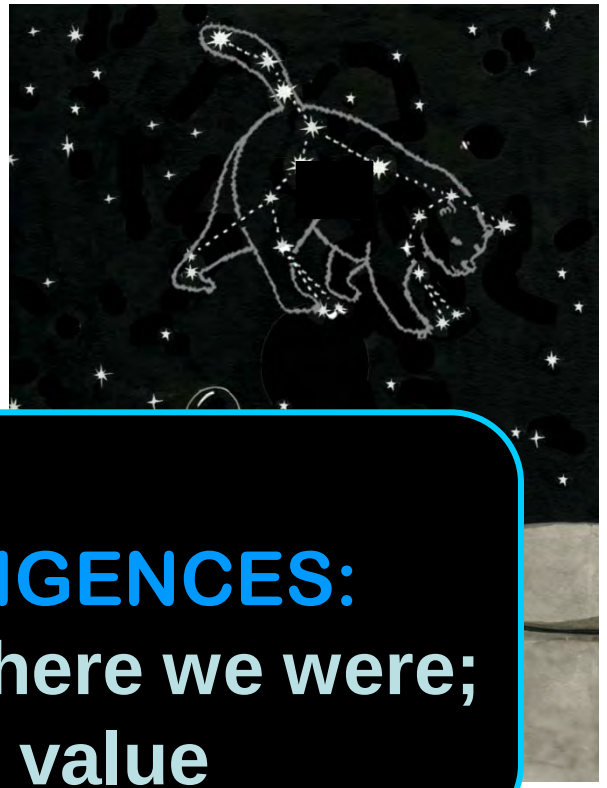
outer inner outer



PATTERN CONCEPTUAL FRAMEWORK

outer **inner** **outer**

muin / *Ursa major*

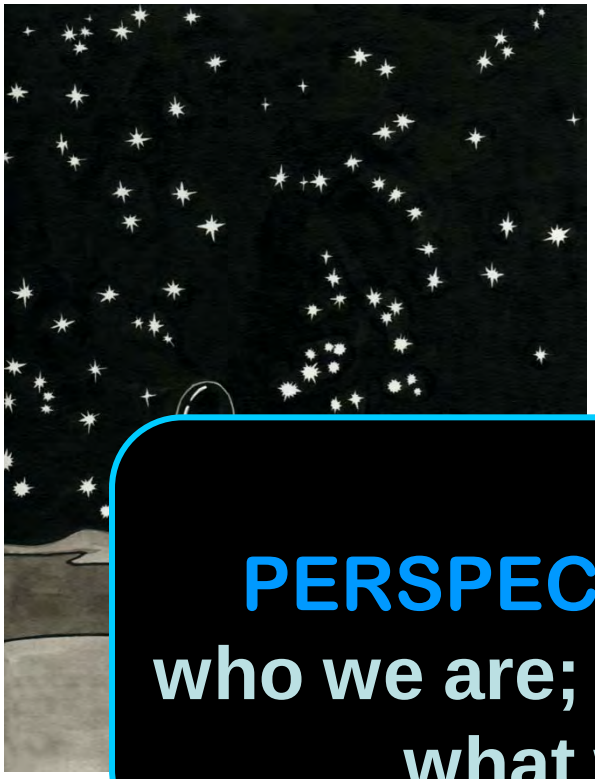


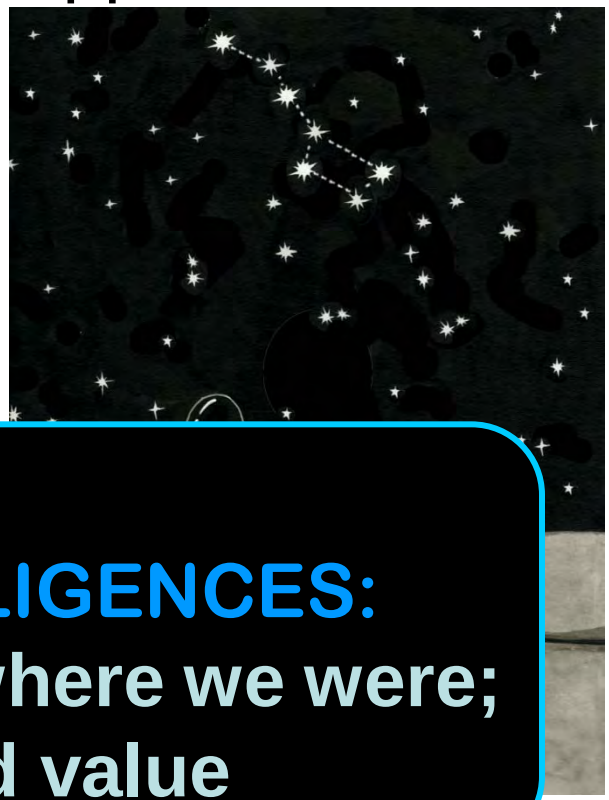
SANCTIONED PERSPECTIVES & INTELLIGENCES:
who we are; where we are; where we were; what we know, do and value

PATTERN CONCEPTUAL FRAMEWORK

outer inner outer

dipper





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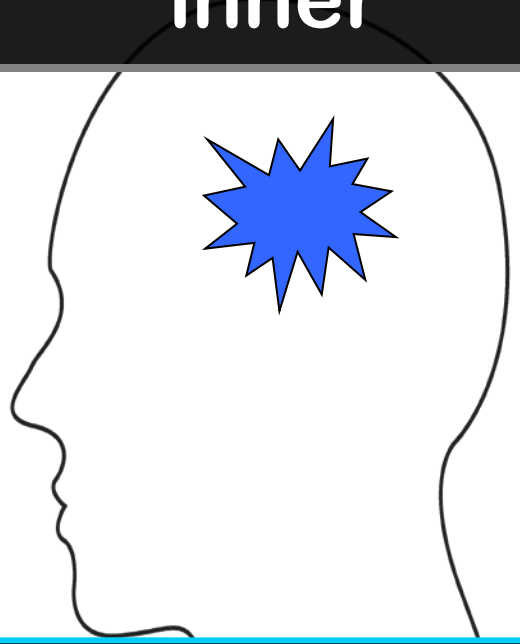
PATTERN CONCEPTUAL FRAMEWORK

outer inner outer



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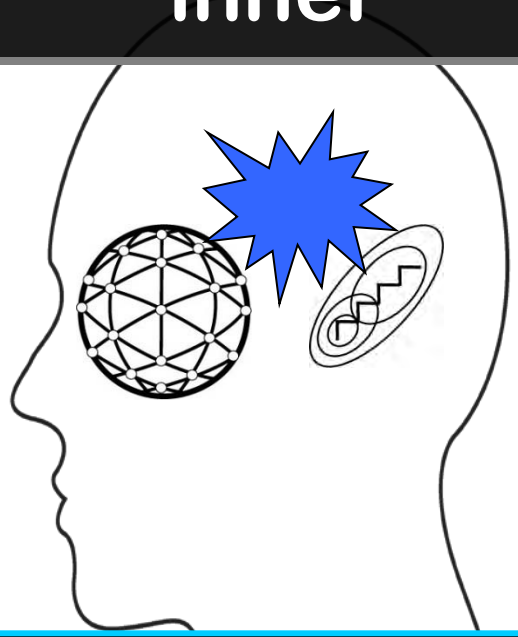
PATTERN CONCEPTUAL FRAMEWORK

outer inner outer



SANCTIONED
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who we are; where we are; where we were;
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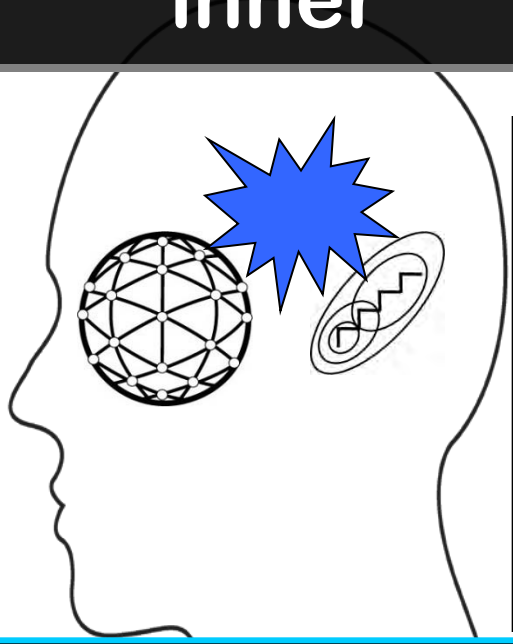
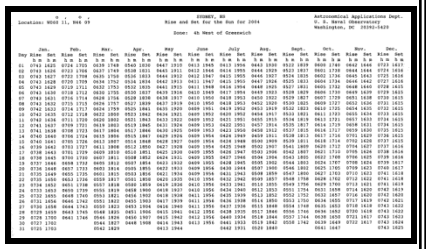
PATTERN CONCEPTUAL FRAMEWORK

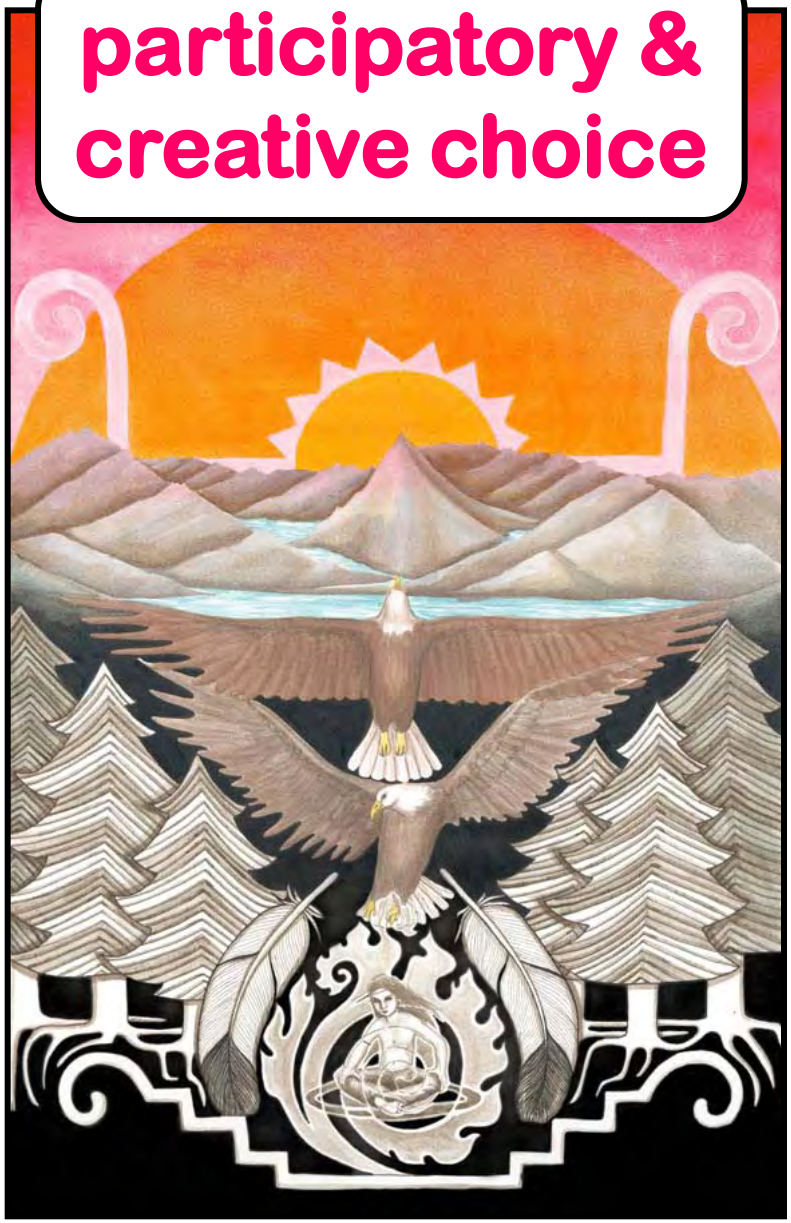
outer inner outer





SANCTIONED PERSPECTIVES & INTELLIGENCES:
who we are; where we are; where we were; what we know, do and value

participatory & creative choice



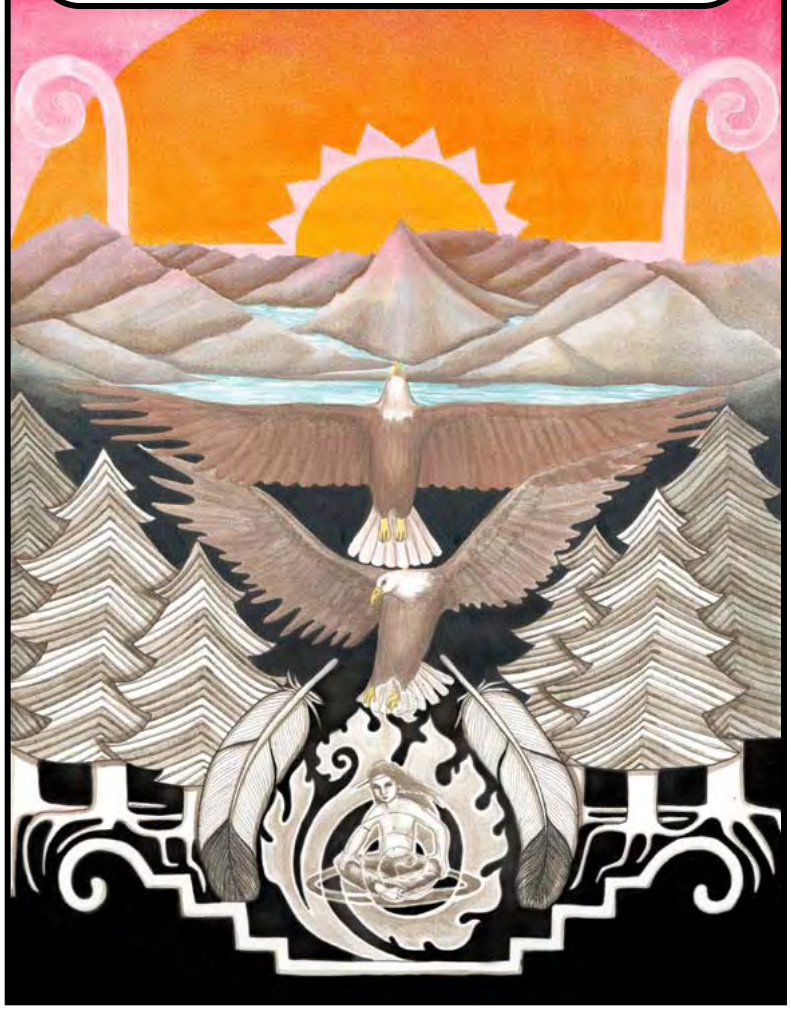
Wjipenuk Etek Lnuimlkikno'ti - Spirit of the East -

East (sunrise)

… a place of beginnings and enlightenment

… where new knowledge can be created or received to bring about harmony or right relations.

participatory & creative choice



Wjipenuk Etek Lnuimlkikno'ti
- Spirit of the East -

Two-Eyed Seeing
our key concepts & actions

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

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

Physical Direction

detached & instrumental

East (sunrise)

… measurement of the time of sunrise

… for each new day over the course of one full year.

SYDNEY, NS
Rise and Set for the Sun for 2004
Zone: 4h West of Greenwich

Location: W060 11, N46 09

Astronomical Applications Dept.
U. S. Naval Observatory
Washington, DC 20392-5420

Day	Jan. Rise	Jan. Set	Feb. Rise	Feb. Set	Mar. Rise	Mar. Set	Apr. Rise	Apr. Set	May Rise	May Set	June Rise	June Set	July Rise	July Set	Aug. Rise	Aug. Set	Sept. Rise	Sept. Set	Oct. Rise	Oct. Set	Nov. Rise	Nov. Set	Dec. Rise	Dec. Set
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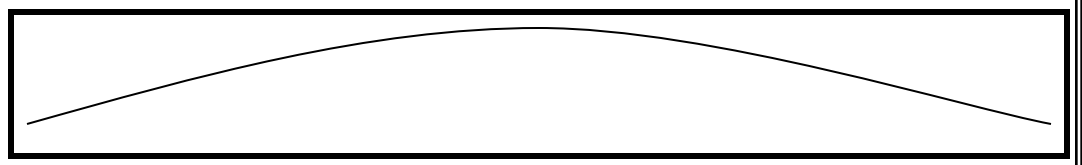

Physical Direction

detached & instrumental

Two-Eyed Seeing
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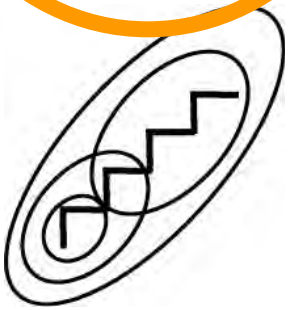

SYDNEY, NS
Location: W060 11, N46 09
Rise and Set for the Sun for 2004
Zone: 4h West of Greenwich
Astronomical Applications Dept.
U. S. Naval Observatory
Washington, DC 20392-5420

Day	Jan. Rise	Jan. Set	Feb. Rise	Feb. Set	Mar. Rise	Mar. Set	Apr. Rise	Apr. Set	May Rise	May Set	June Rise	June Set	July Rise	July Set	Aug. Rise	Aug. Set	Sept. Rise	Sept. Set	Oct. Rise	Oct. Set	Nov. Rise	Nov. Set	Dec. Rise	Dec. Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
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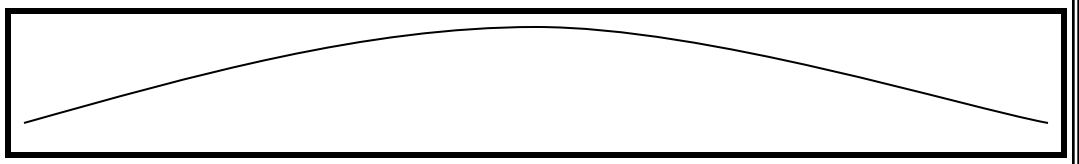
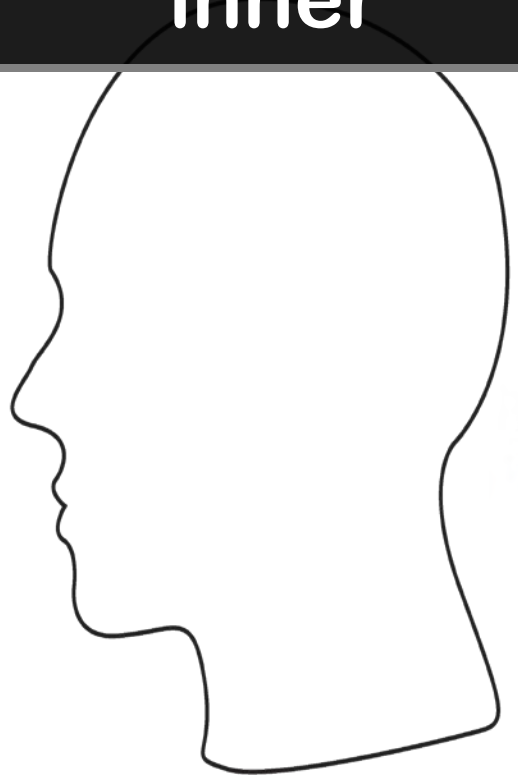
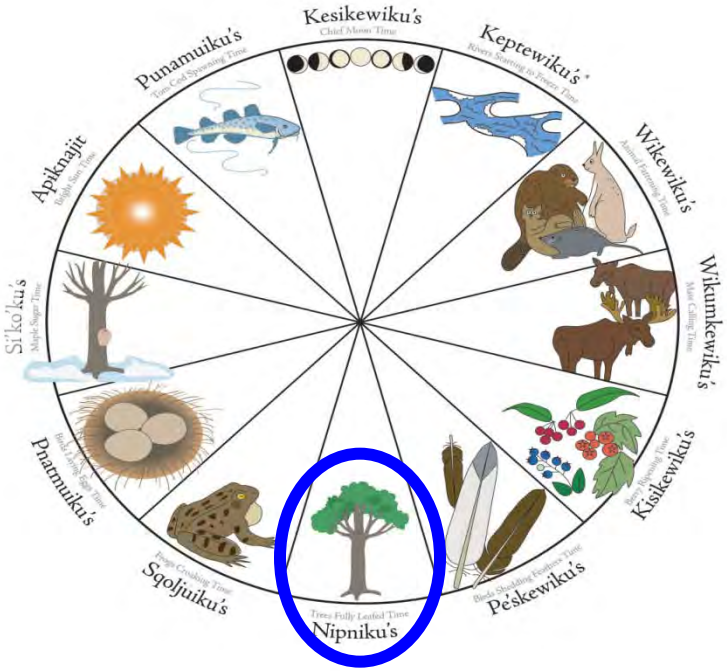


y

PATTERN CONCEPTUAL FRAMEWORK

outer inner outer

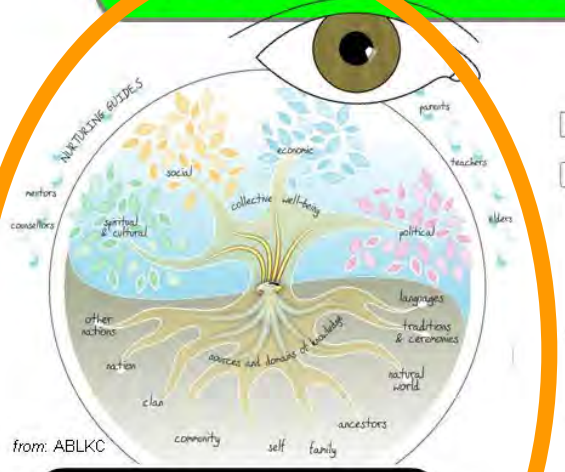




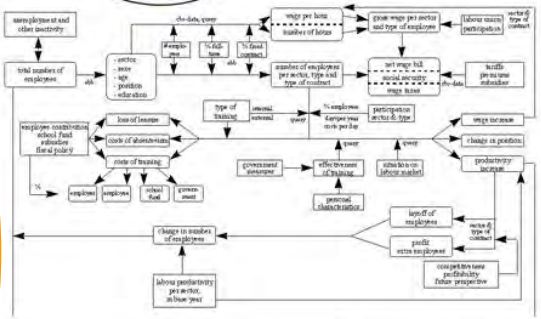
PATTERN CONCEPTUAL FRAMEWORK

outer

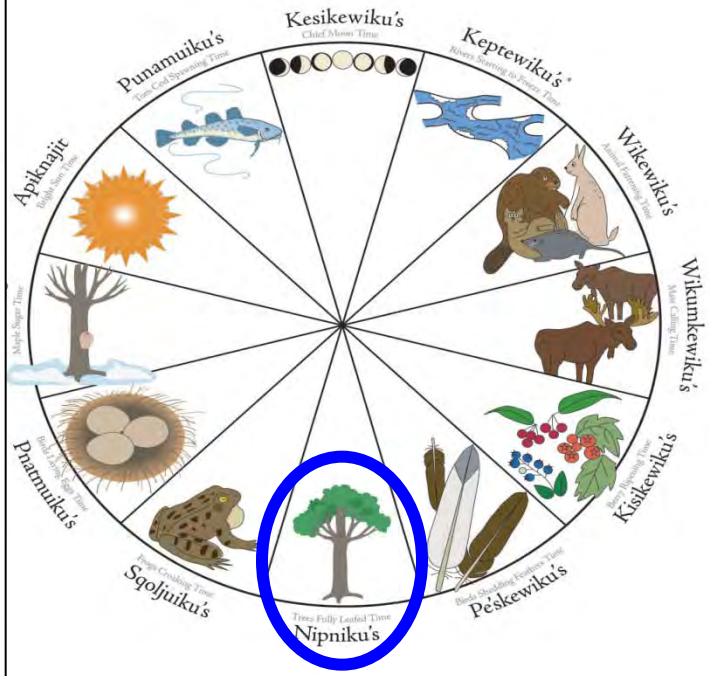
Two-Eyed Seeing
our overall knowledge objectives



from: ABLKC



from: www.leads.ac.uk



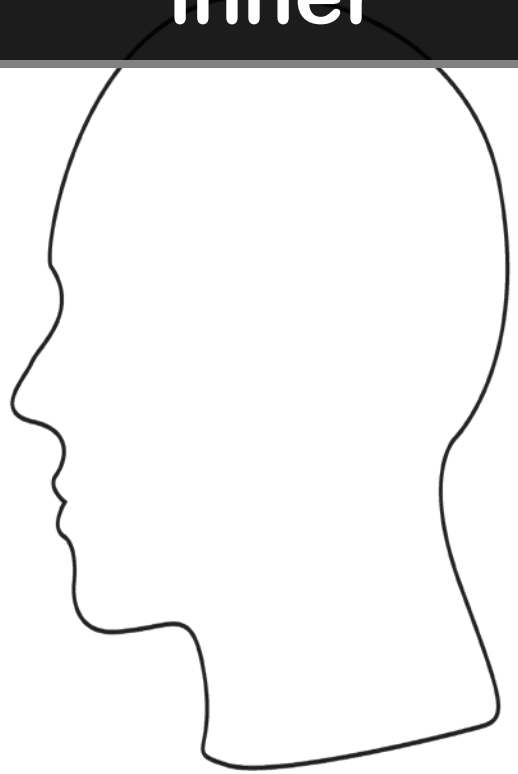
towards resonance of understanding within environment

towards construction of understanding of environment

PATTERN CONCEPTUAL FRAMEWORK

outer inner outer

X



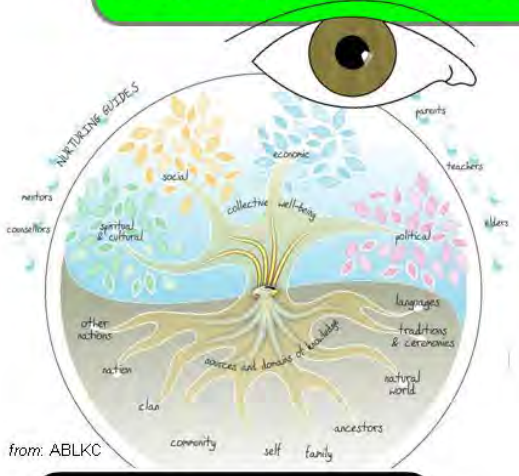
June

… in honour of “Juno”, the Roman Queen of the Gods

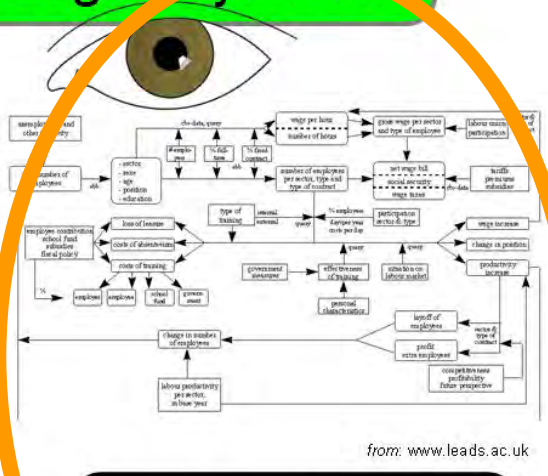
PATTERN CONCEPTUAL FRAMEWORK

outer

Two-Eyed Seeing
our overall knowledge objectives



towards resonance of understanding within environment



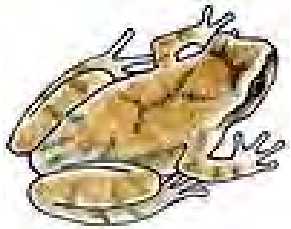
towards construction of understanding of environment

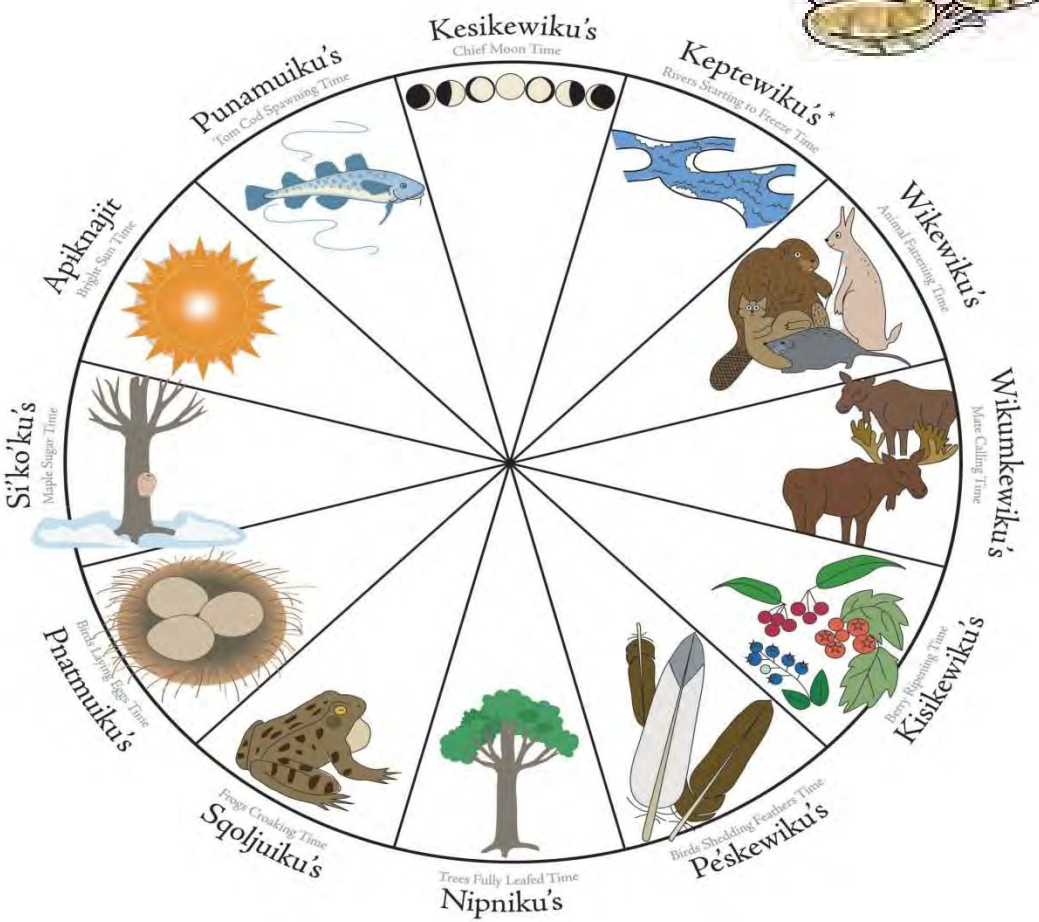
June

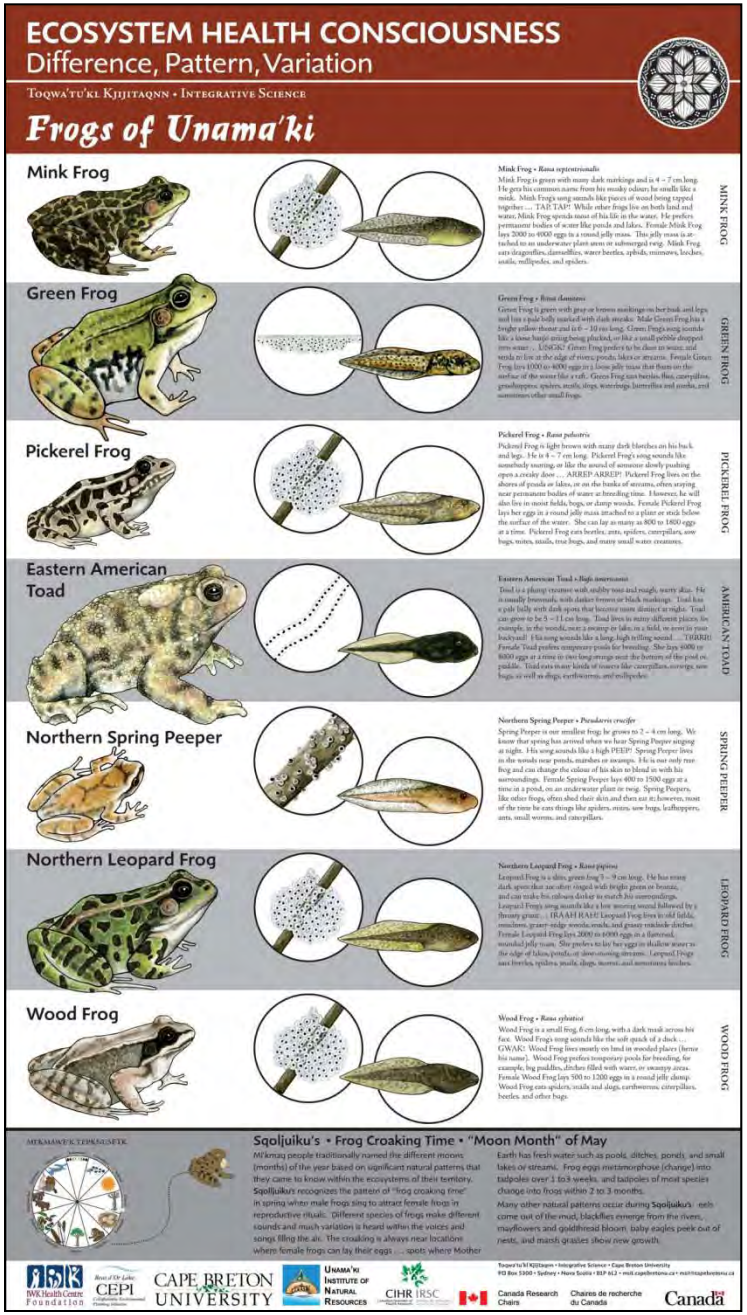
… in honour of “Juno”, the Roman Queen of the Gods

Indigenous Knowledge into Science

biology



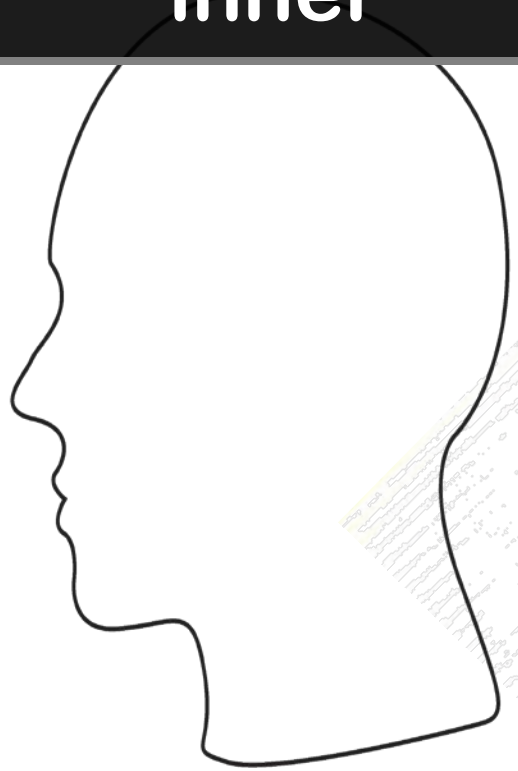




PATTERN CONCEPTUAL FRAMEWORK

outer **inner** **outer**

"human health"



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

PATTERN CONCEPTUAL FRAMEWORK

outer **inner** **outer**

"human health"

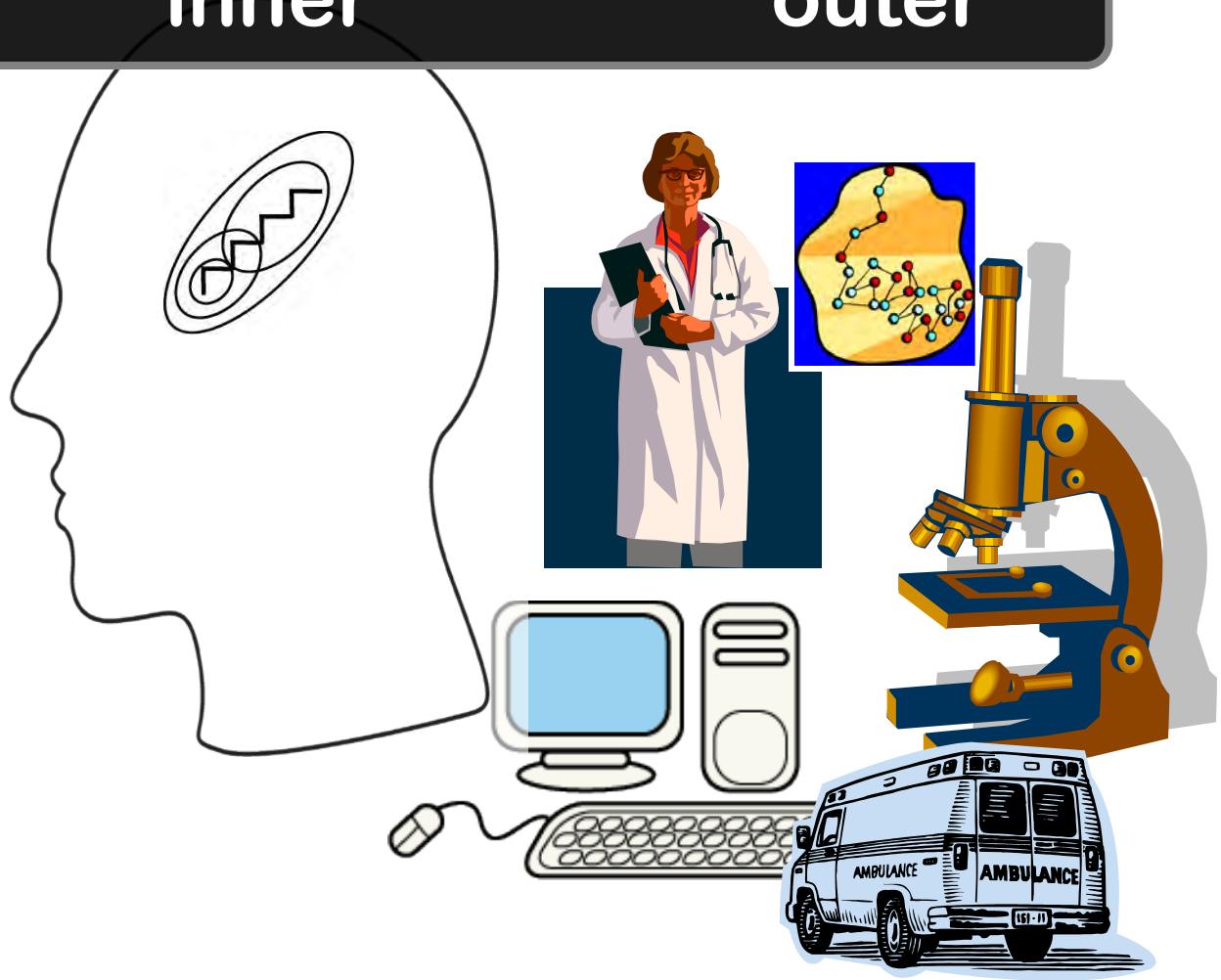
from:
Mi'kmaq Family & Children's Services

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

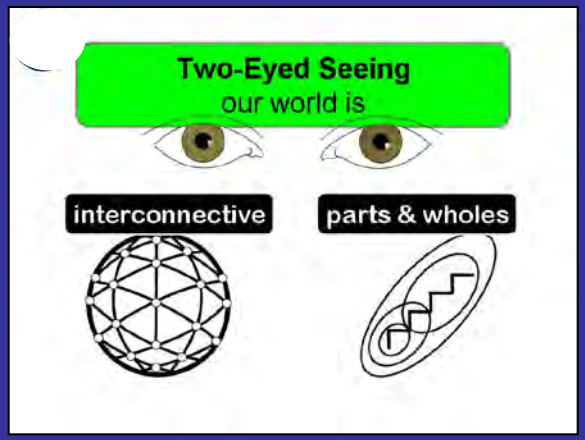
PATTERN CONCEPTUAL FRAMEWORK

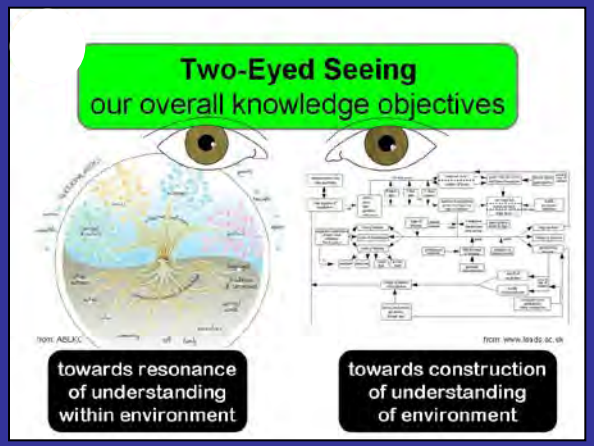
outer	inner	outer

“human health”

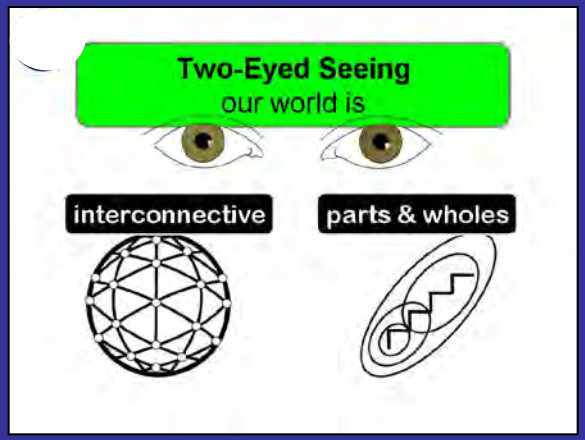


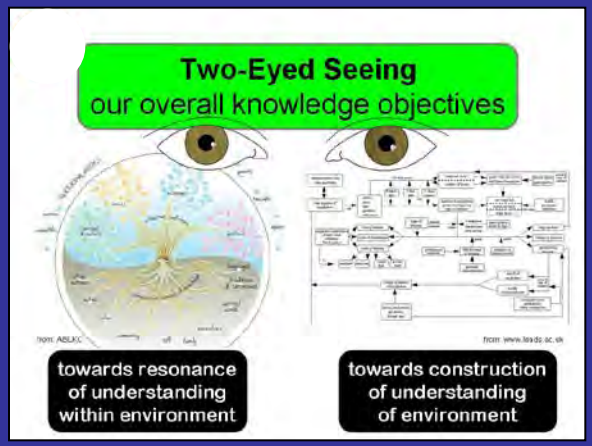
Developing Traditional Curriculum

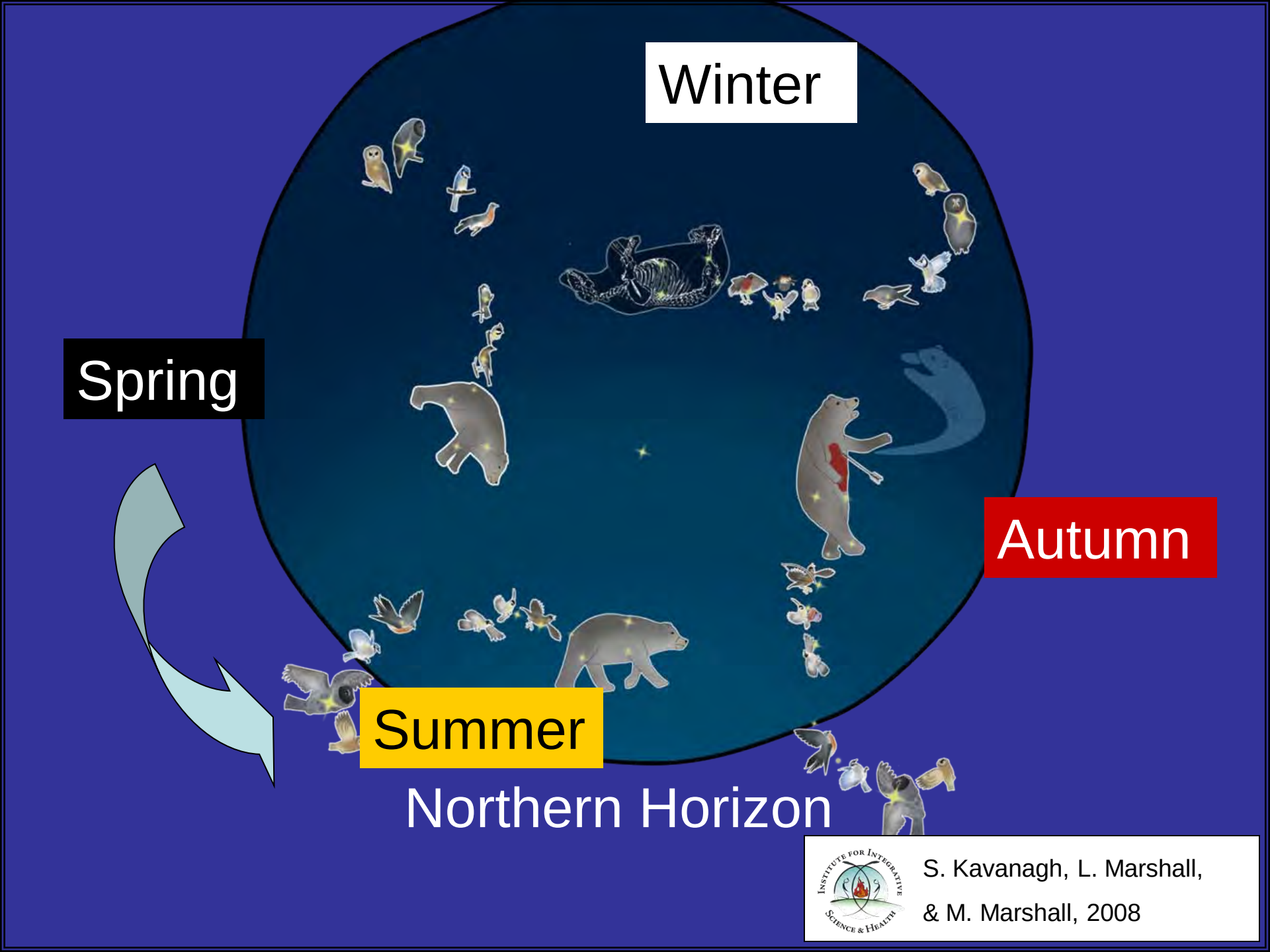




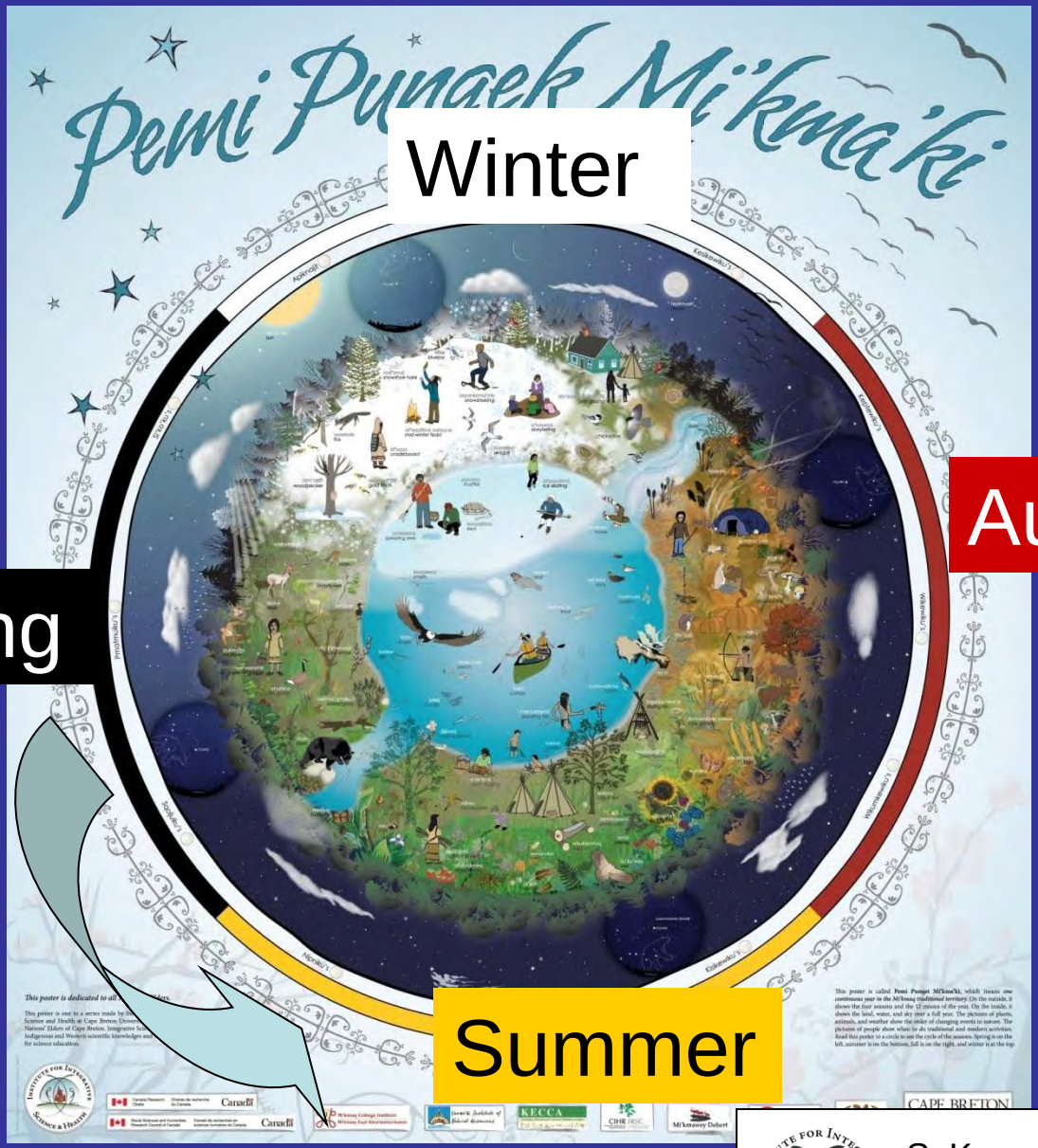
Developing Traditional Curriculum





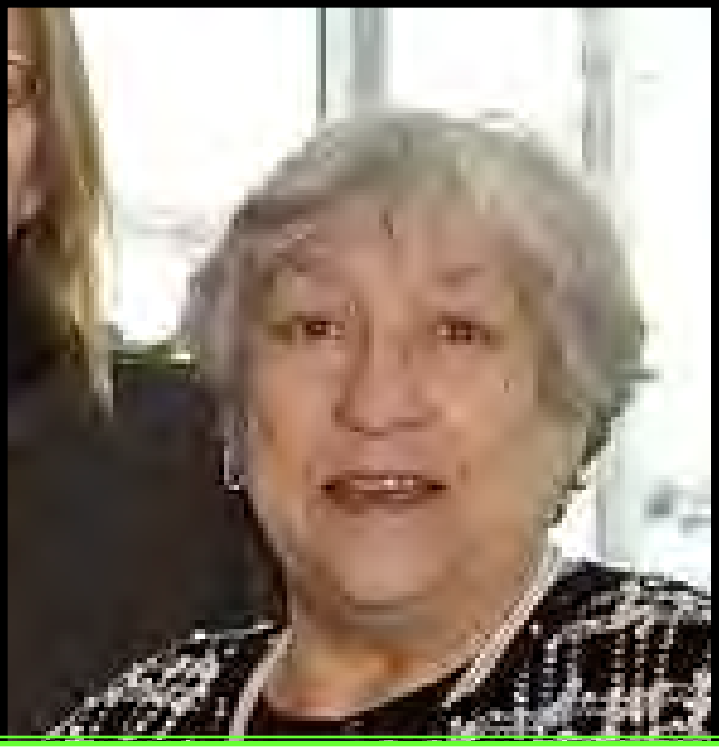


S. Kavanagh, L. Marshall, & M. Marshall, 2008



S. Kavanagh, L. Marshall, & M. Marshall, 2008

Living knowledge shared by Elders helped bring an historical source to life:

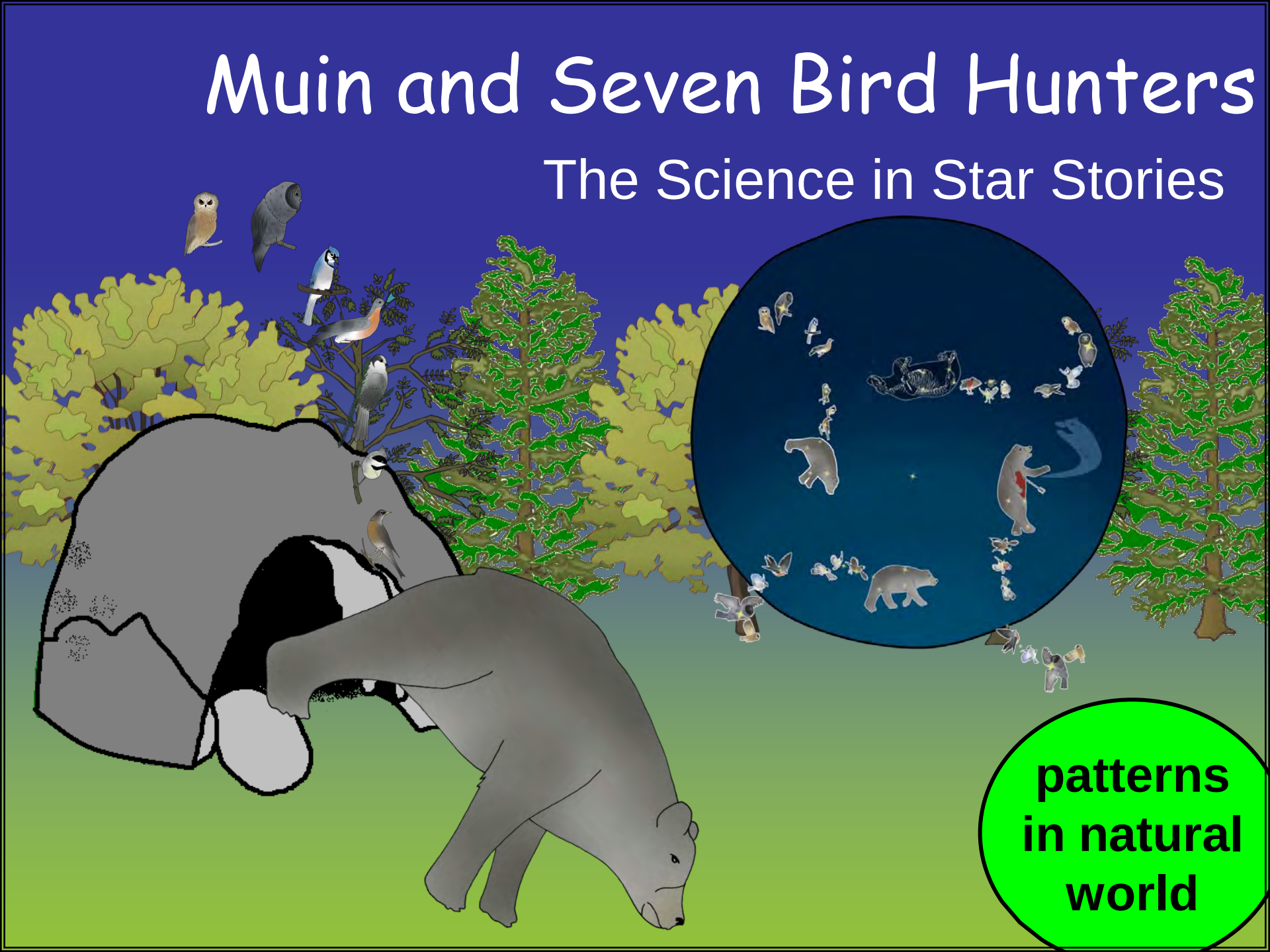


Murdena Marshall, Elder,
Eskasoni First Nation
Mi'kmaq Nation

Lillian Marshall, Elder,
Potlotek First Nation
Mi'kmaq Nation

Muin and Seven Bird Hunters

The Science in Star Stories



patterns in natural world

Patterns in Stars

“Reflections”

artist Gerald Gloade
Millbrook First Nation

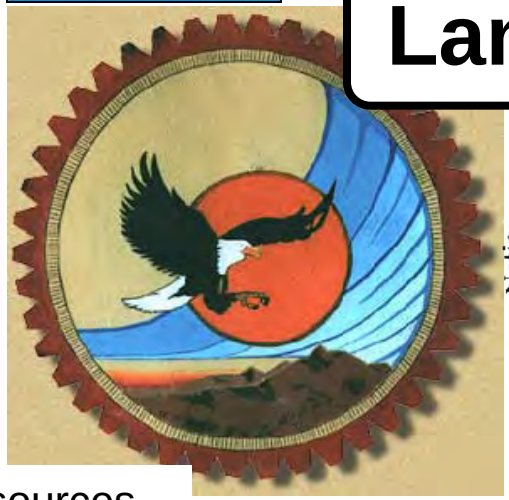
Patterns on Earth

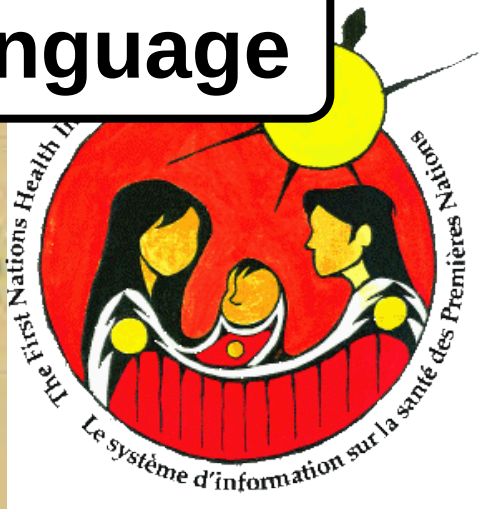
stories of our interactions with and within nature

Science

Life
Love
Land

Language





logos from: Aboriginal organizations, various sources

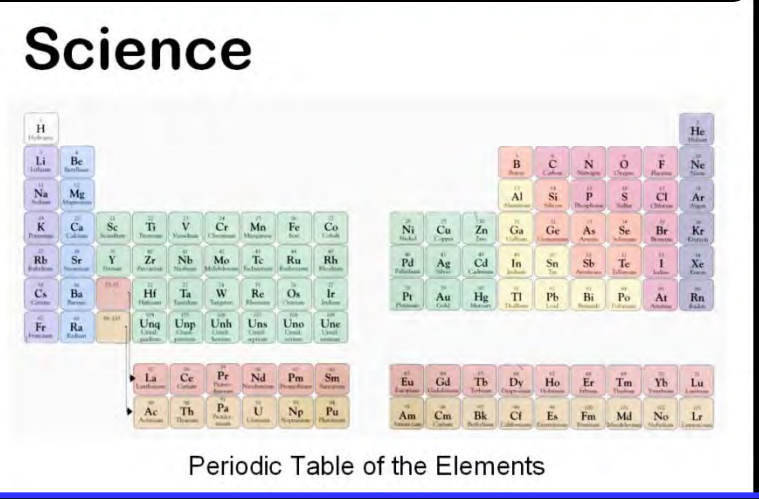
patterns in natural world

patterns in natural world

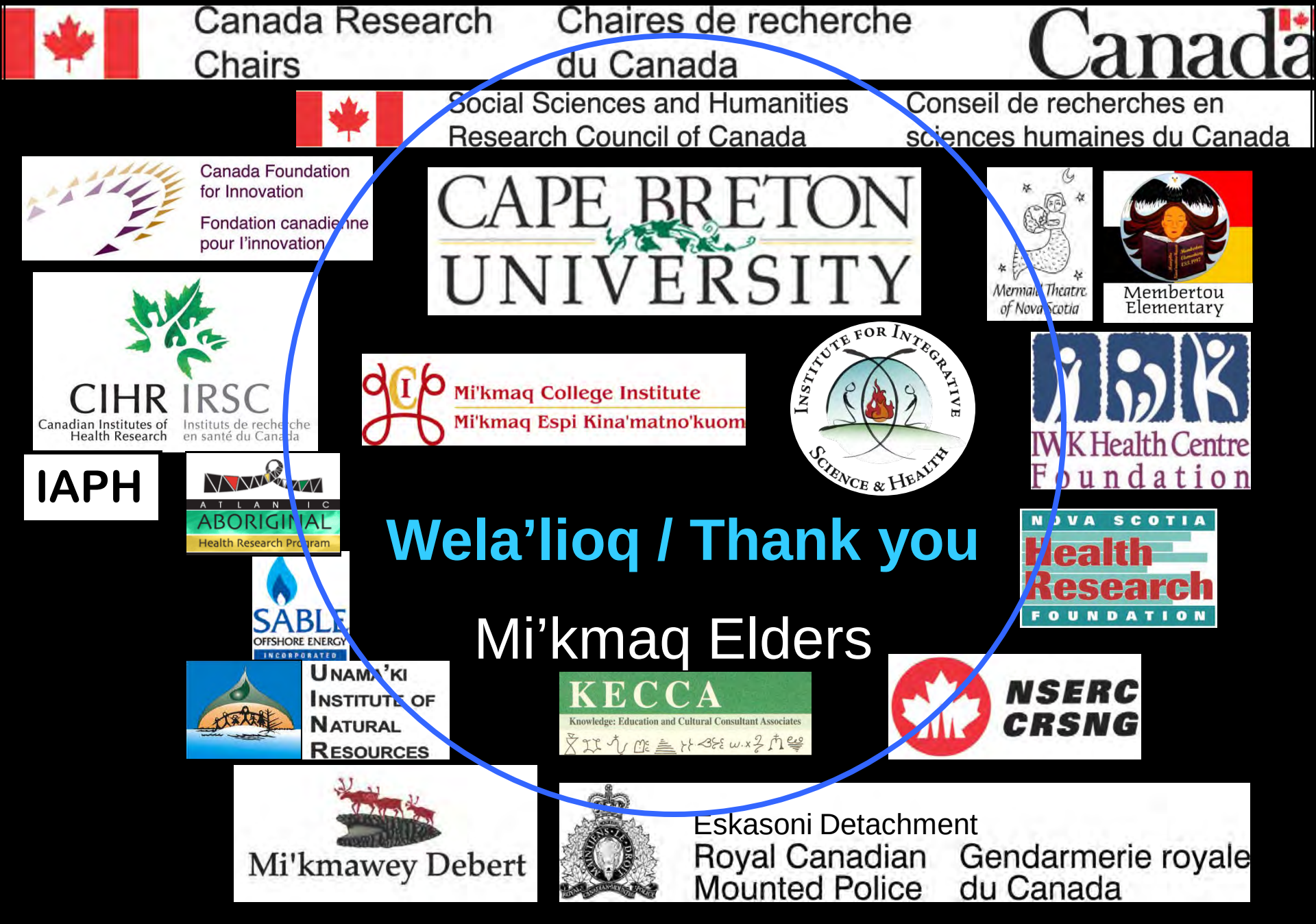
Indigenous

Western

“bringing our sciences together”



stories of our interactions with and within nature


Canada Research Chairs
Chaires de recherche du Canada
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Membertou Elementary
CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada
Mi'kmaq College Institute
Mi'kmaq Espi Kina'matno'kuom
Institute for Integrative Science & Health
IWK Health Centre Foundation
IAPH
Atlantic Aboriginal Health Research Program
Wela'lioq / Thank you
Mi'kmaq Elders
Nova Scotia Health Research Foundation
SABLE OFFSHORE ENERGY INCORPORATED
Unama'ki Institute of Natural Resources
KECCA
Knowledge: Education and Cultural Consultant Associates
NSERC CRSNG
Mi'kmawey Debert
Eskasoni Detachment
Royal Canadian Mounted Police
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