

1 March 2011, DFO Aboriginal Fisheries Guardian Training;
Canadian Coast Guard College, Sydney, NS

TWO-EYED SEEING & CO-LEARNING

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TWO-EYED SEEING - ETUAPTUMUK

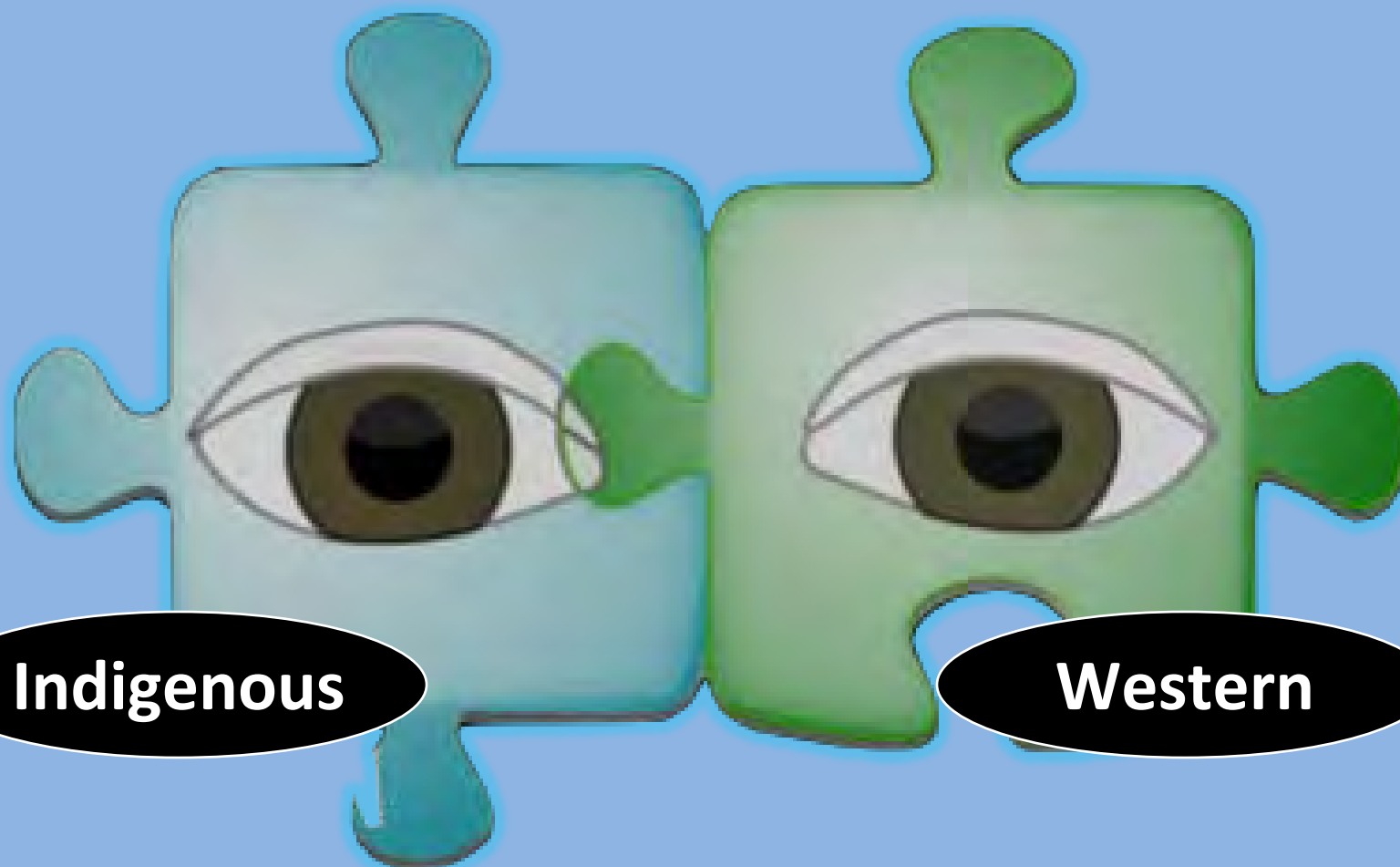
**LEARN ... to see from one eye
with the best in our Indigenous
ways of knowing and from
the other eye with the best
in the Western (mainstream)
ways of knowing ...**

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



(Guiding Principle in the words of Elder Albert Marshall, Mi'kmaw Nation)

TWO-EYED SEEING - ETUAPTUMUK

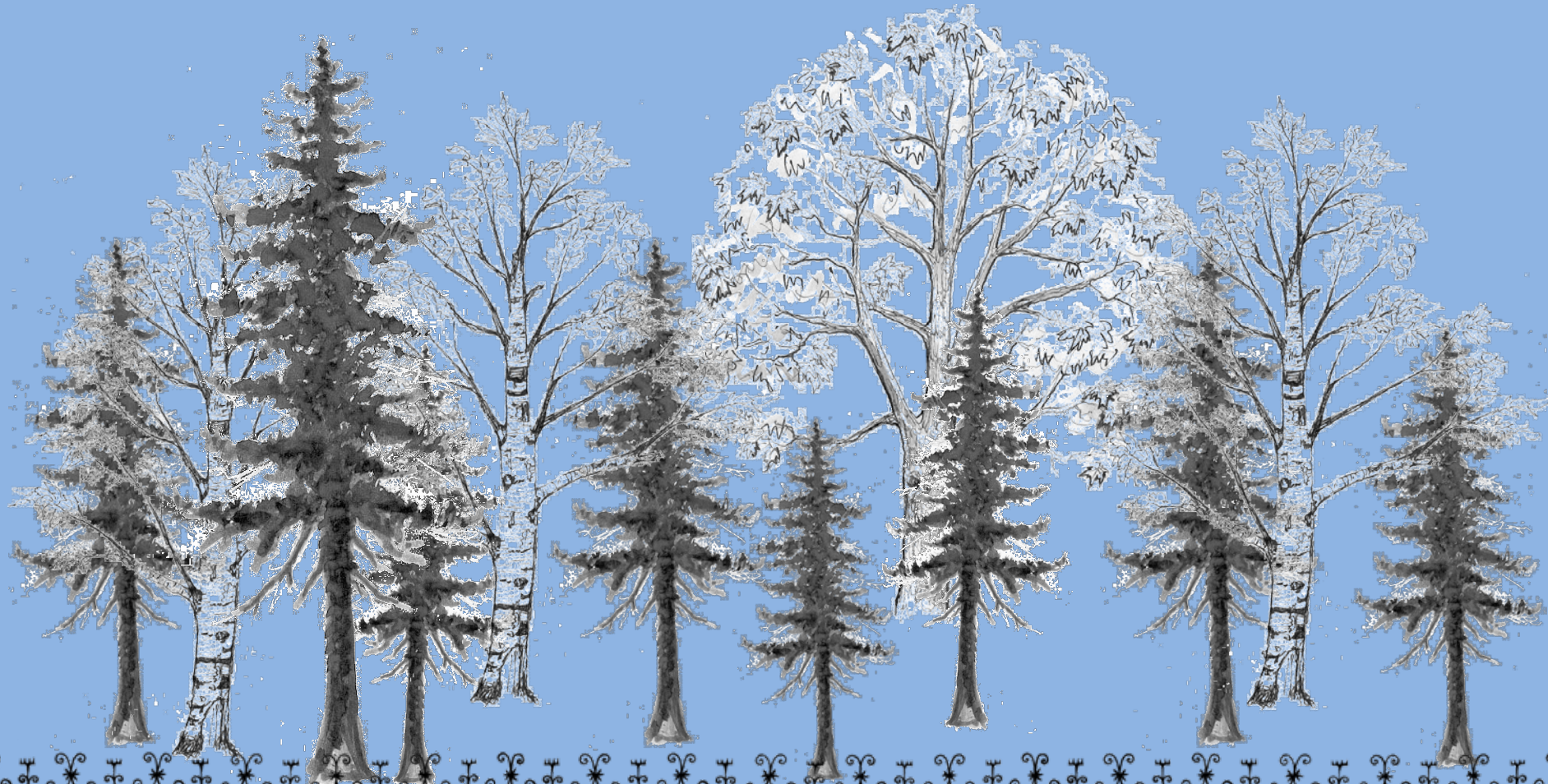


Indigenous

Western

CO-LEARNING

Go into the 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'kmaw Chief, Spiritual Elder and Healer Charlie Labrador)



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



words of Mi'kmaw Elder Albert Marshall from cover of:

*Student Training Manual for BEAHR (Building Environmental Aboriginal Human Resources),
a national joint venture of ECO (Environmental Careers Organization) – Canada
and AHRC (Aboriginal Human Resource Council)*

Membertou Trade and Convention Centre; collection of Alex Paul



Can we
fathom how
our way of life
would be ... if
we could
really humble
ourselves to
truly work
together for
the benefit
of all?

(words of Mi'kmaw Elder Albert Marshall)

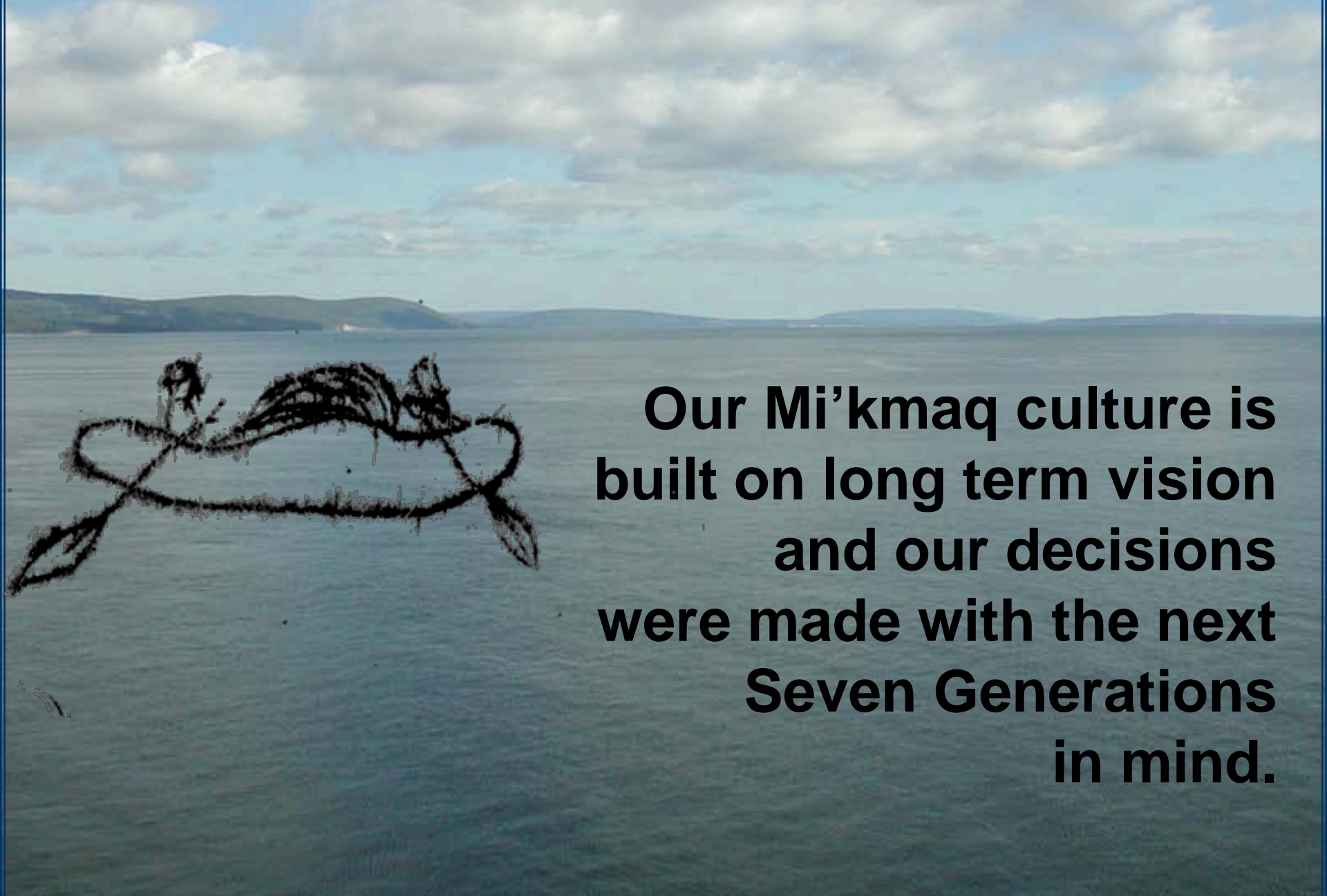
**Mi'kmaw Traditional Knowledge
was never meant to be
static and stay in the past.**

**Rather, we must bring
it into the present so
that everything
becomes meaningful
in our lives and
in our communities.**

(words of Mi'kmaw Elder Murdena Marshall)



artist Basma Kavanagh



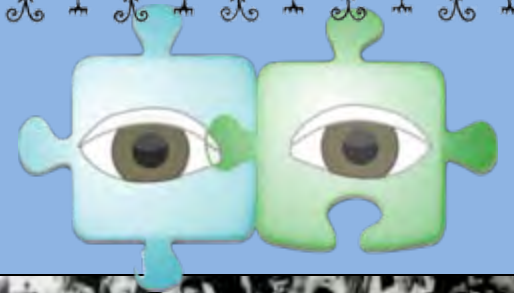
**Our Mi'kmaq culture is
built on long term vision
and our decisions
were made with the next
Seven Generations
in mind.**



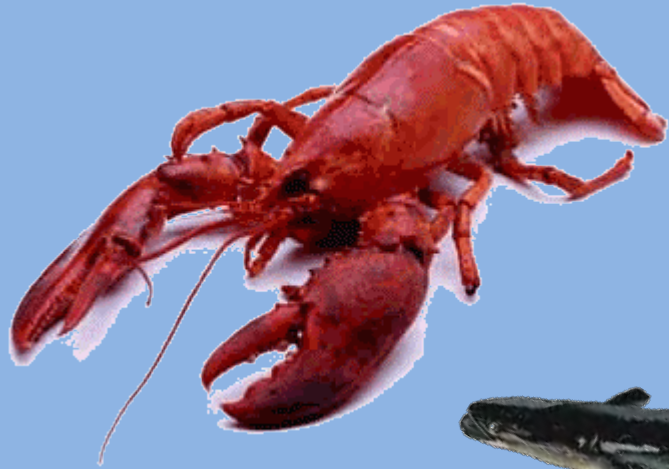
As Elders in Our Time

We seek to be a conduit for wisdom of our Ancestors.

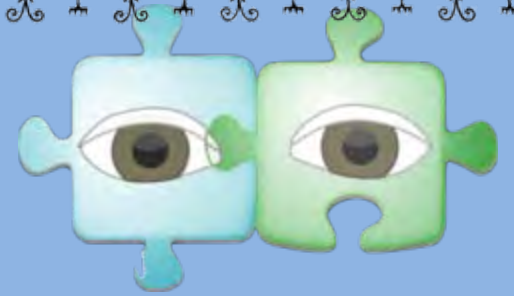
We seek to see with "TWO EYES" ... to take the accomplishments of the white man's ways further by blending it with the wisdom of our Ancestors.



Fisheries



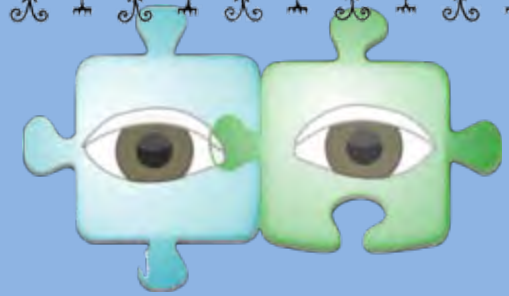
All our fisheries face the same risks as the cod fishery if our approaches do not change.



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

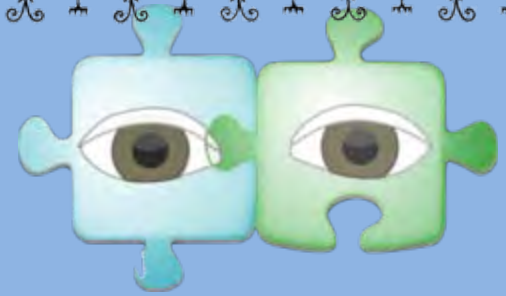
image: www.blackfootcrossing.ca

**If pollution exceeds
the natural cleansing capacity of
our ecosystems ...**

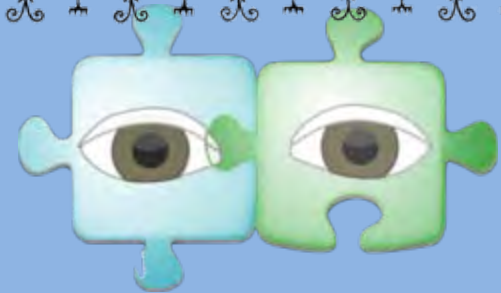


Artist Basma Kavanagh

If consumption of resources exceeds the carrying capacity of our ecosystems ...



**If species become extinct,
some of our relations are
gone forever ...**

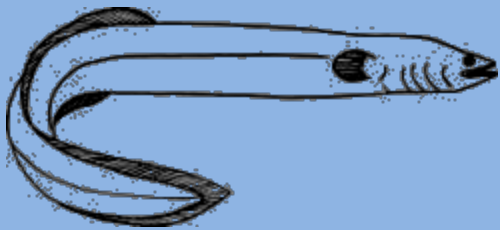
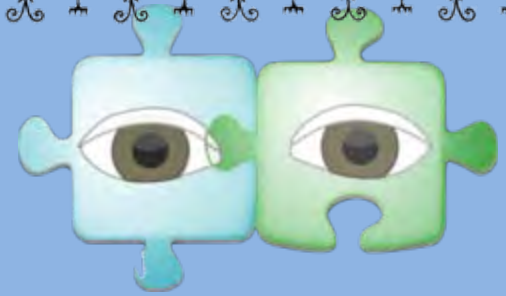


**Ples
(Passenger Pigeon)**

http://www.pollsb.com/photos/o/31479-last_passenger_pigeon_dies_cincinnati_zoo.jpg

<http://www.wunderland.com/WTS/Andy/ProjectEBAY/pics/Death.icon.jpg>

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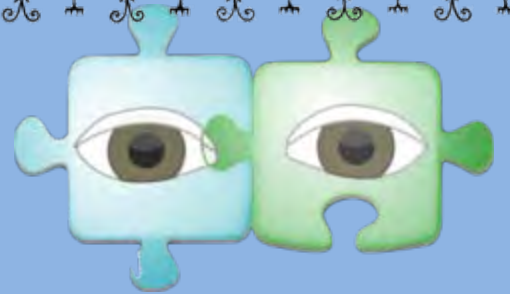


Eels (Kataq)
are now a
*Species
of Concern.*

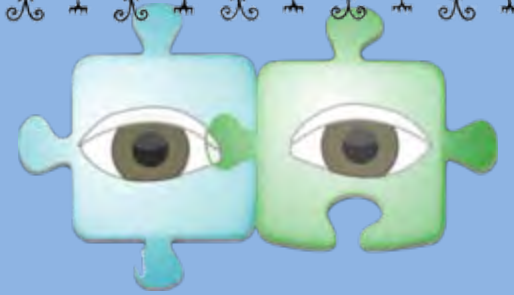


Artist Basma Kavanagh

**If people are starving,
they will not care about
environmental sustainability ...**



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



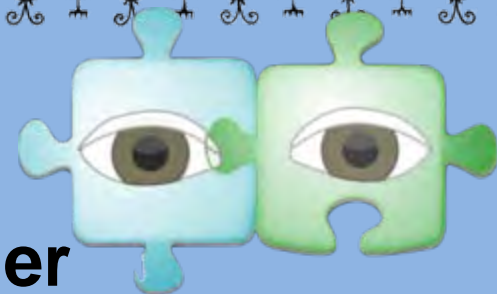
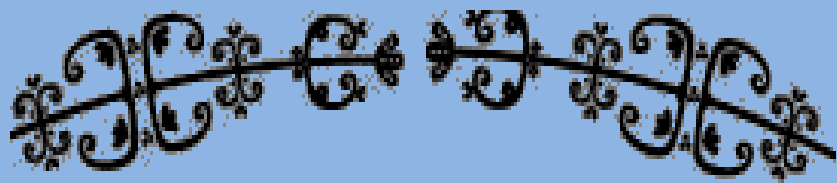
**The onus is on the person
to look at our natural
world with two
perspectives.**

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



**We have to
dissociate
ourselves from the
“*Myth of False Security*”
that the industrial
revolution has
instilled in our minds.**





**We need to
come together
as one where all these
things can be taken in.**



Our Mi'kmaw culture is
still very much alive ...
and we can extract
those principles of how
one can sustain
oneself without
compromising abilities
for the future.



Netukulimk

All Our Relations

“sustaining ourselves”

yes ... but really is a much richer concept; it is holistic.



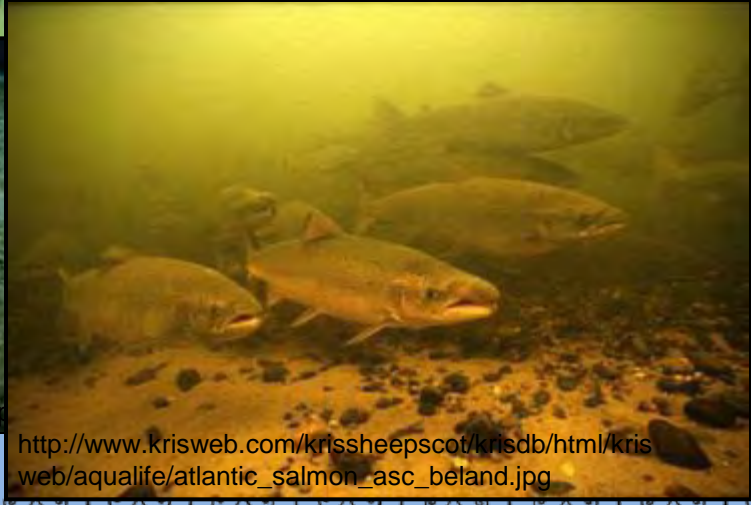
<http://myanimalblog.files.wordpress.com/2008/03/g-bull-moose.jpg>



<http://blog.silive.com/weather/2007/09/red-maple-tree.jpg>



http://images.enature.com/fishes/fishes_l/fi0016_11.jpg



http://www.krisweb.com/krisshoopscot/krisdb/html/krisweb/aqualife/atlantic_salmon_asc_beland.jpg

Netukulimk

All Our Relations

“sustaining ourselves”

Co-existence

Interrelativeness

Interconnectiveness

Community Spirit

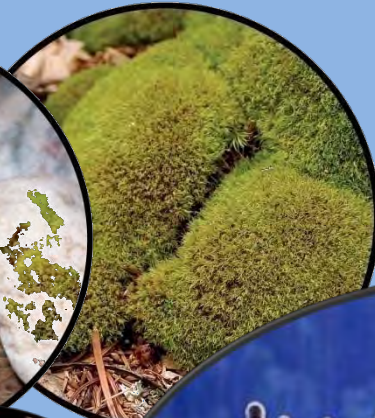


<http://blog.silive.com/weather/2007/09/red-maple-tree.jpg>



... takes you into a place where you are very conscious of how the human two-leggeds are interdependent and interconnective with the natural world ...

this philosophy / ideology is so ingrained in your subconscious that you are constantly aware of not creating an imbalance.



Humans possess responsibilities.
Other species possess rights.



Consciousness of Knowing



artist Basma Kavanagh

Co-existence

Interrelativeness

Interconnectiveness

Community Spirit

*... with each other and
with Mother Earth*

All people must learn

Two-Eyed Seeing

**so that knowledge of the
physical is not separated
from wisdom of the spiritual.**



TWO-EYED SEEING

AND

CO-LEARNING

“CO-LEARNING” ...

our way of working collaboratively

Three Basic Ways*

that transdisciplinary research teams
organize their collaboration
in order to reach integration:

1. deliberation among experts
2. work by subgroup or individual
3. common group learning

“CO-LEARNING”

= our way



* Pohl, C., Kerkhoff, L., Hadorn, G.H., Bammer, G. 2008. Integration. In: Hadorn, G.H., Hoffman-Riem, H., Biber-Klemm, S., Grossenbacher-Mansuy, W., Joye, D., Phol, C., Wiesmann, U., and Zemp, E. (eds), Handbook of Transdisciplinary Research. (pp. 411-424). Heidelberg, Germany: Springer.

“CO-LEARNING” ... pioneered within Integrative Science research program at Cape Breton University in conjunction with Mi’kmaw Elders and educators ... our approach continues to evolve.



DEFINITION: “Integrative Science”

What: bring together Indigenous and Western scientific knowledges and ways of knowing

Why: for the purposes of science education, science research, science applications, and science outreach to youth and communities

Integrative Science



artist Basma Kavanagh

Integrative Science

our cosmologies
our philosophies
our stories

Indigenous

our worldviews

Western

“bringing

our knowledges

together”

our sciences

Integrative Science



artist Basma Kavanagh

TWO-EYED SEEING

learning to see with the strengths of each & together

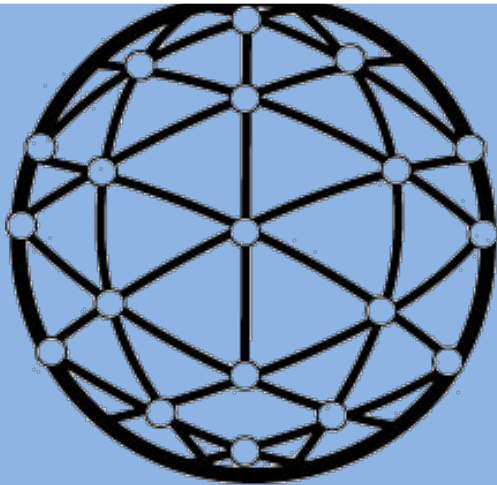


OUR WORLD

BIG QUESTION

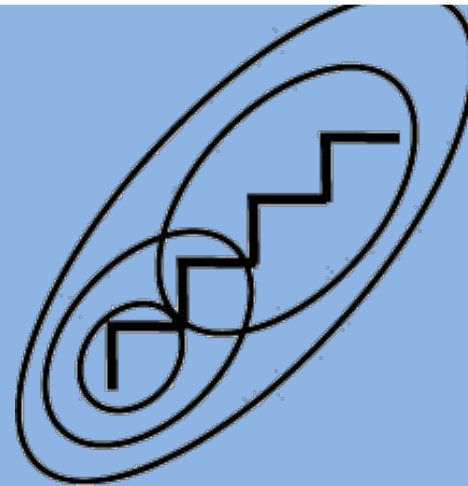
What do we believe the cosmos to be and what is our place in it?

interconnective



CONSTANT CHANGE
within balance and wholeness

parts & wholes



CHANGE
through time

TWO-EYED SEEING

learning to see with the strengths of each & together



OUR WORLD

BIG QUESTION

What do we believe the cosmos to be and what is our place in it?

interconnective

beings (subjects) ...

interconnective

and animate:

spirit +

energy + matter

with

CONSTANT CHANGE

within balance and wholeness

parts & wholes

objects ...

comprised of parts and

wholes characterized by

systems and emergences:

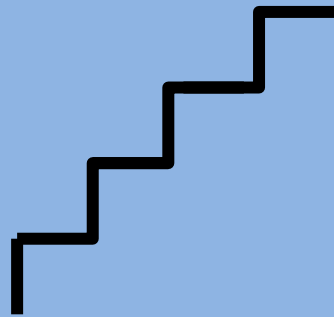
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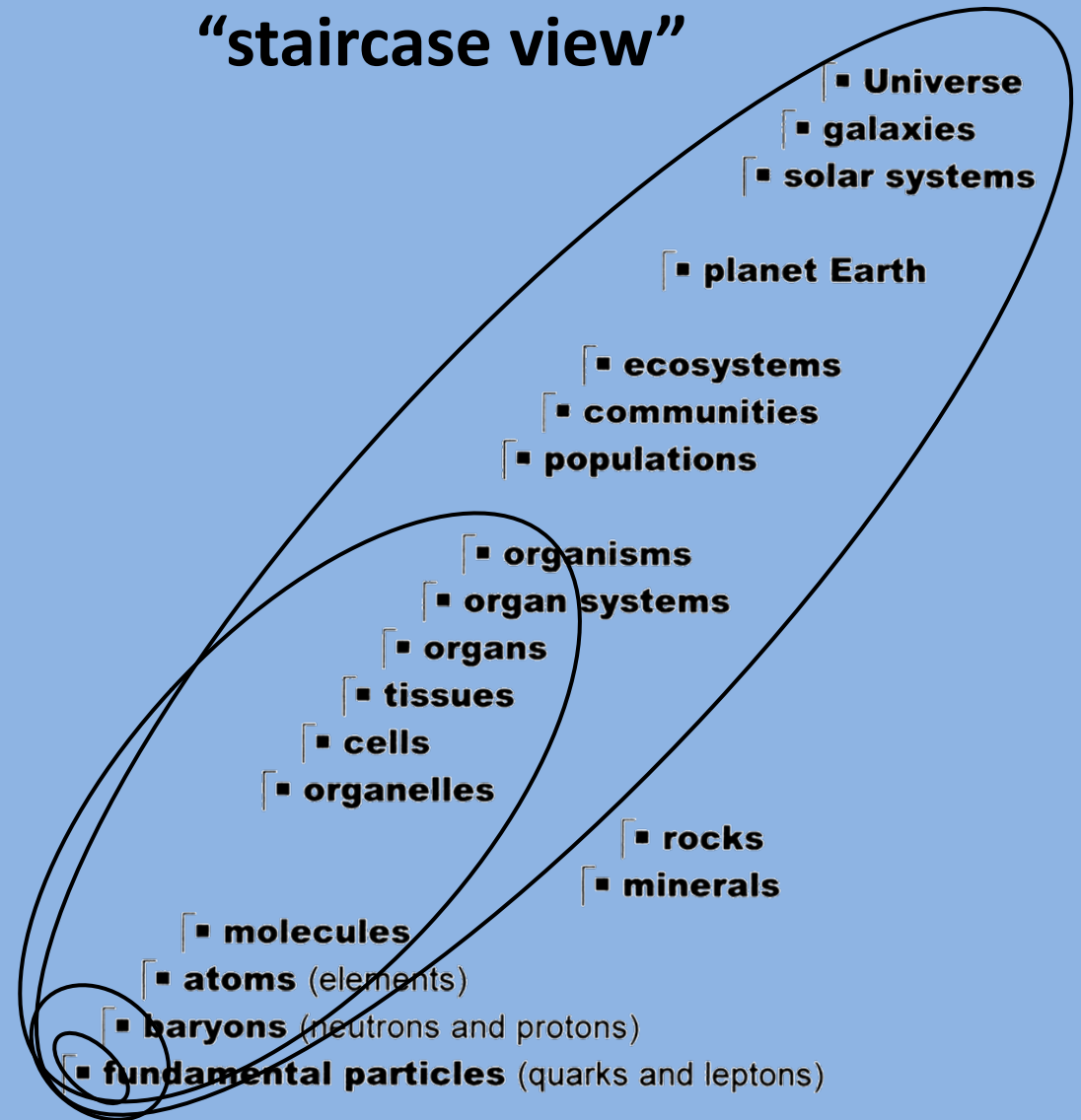
**English language:
noun-based and
object-focused**



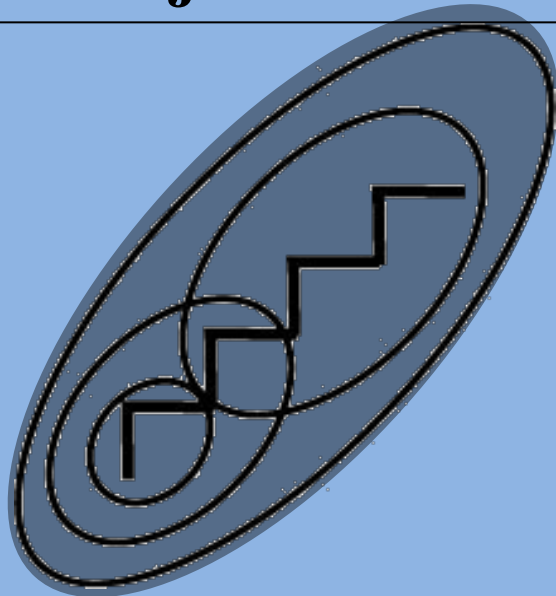
**ENERGY
four
fundamental
forces**

VISIBLE MATTER

“staircase view”



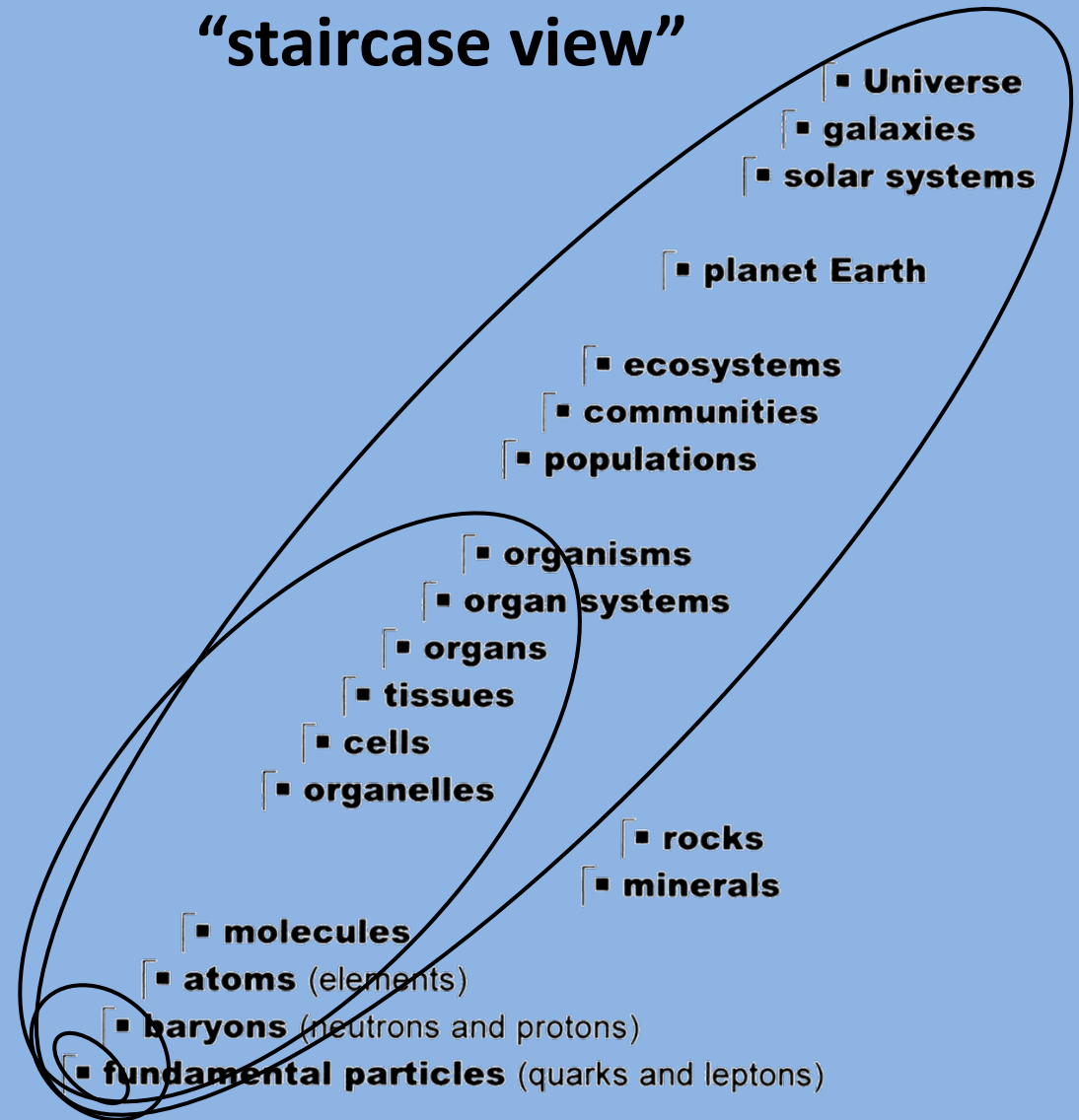
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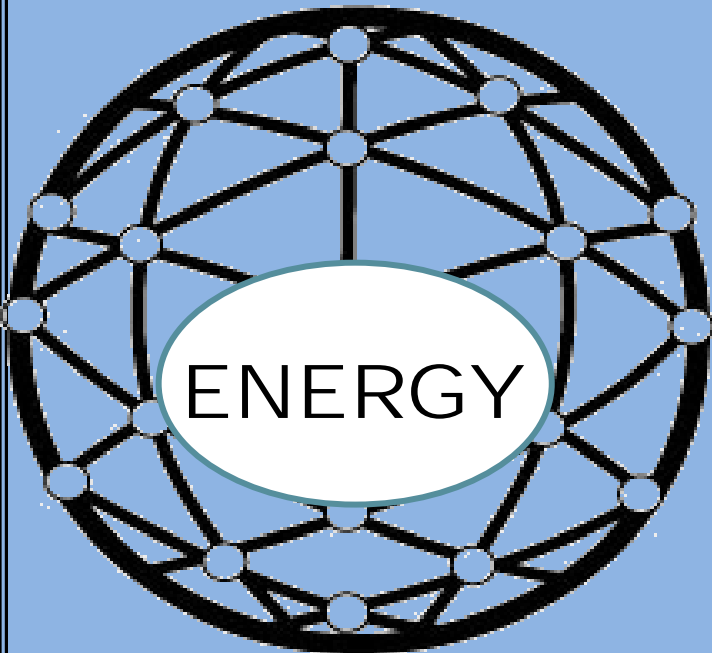
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**Mi'kmaw language:
verb-based and
relationship-focused**



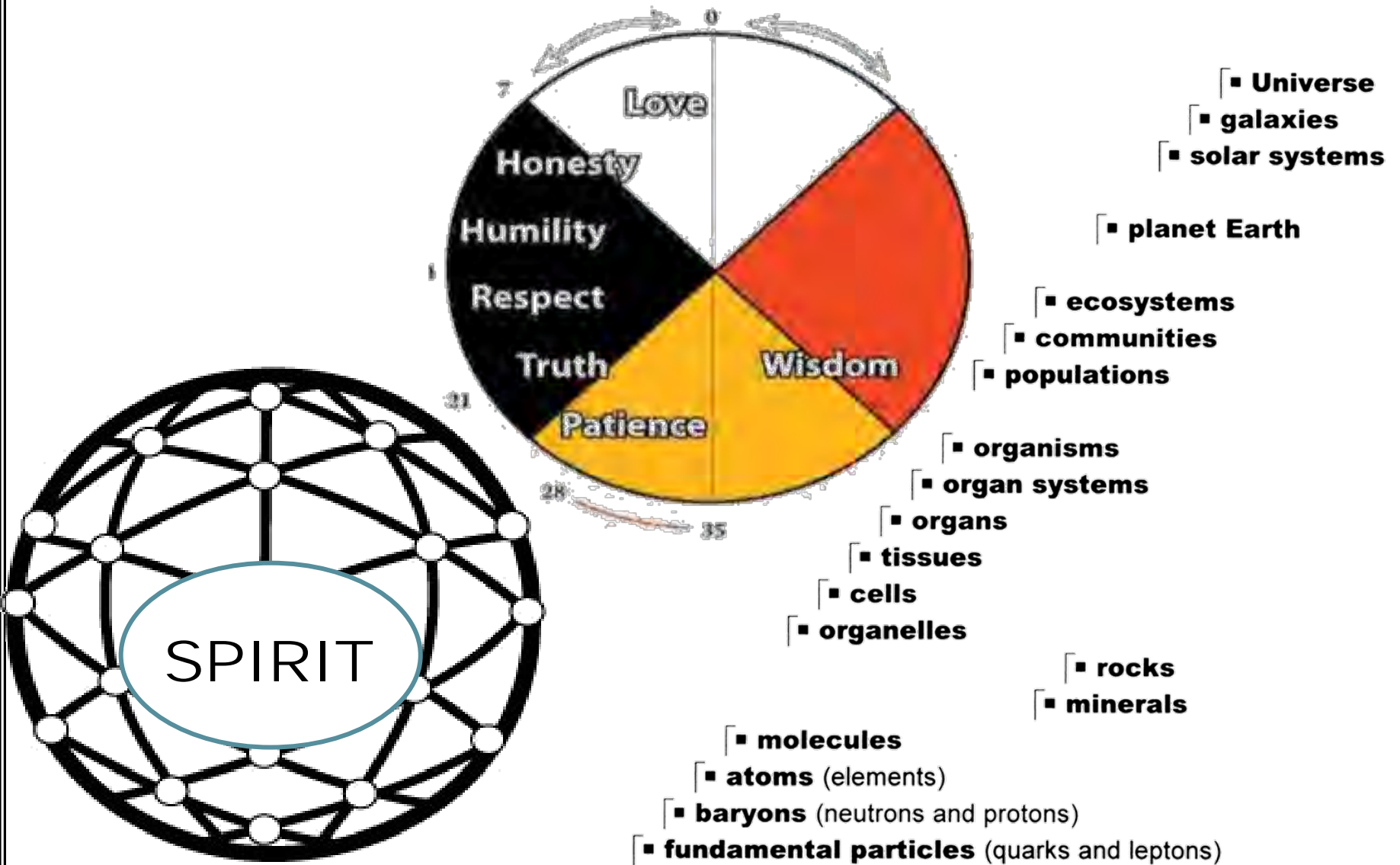
- Universe
 - galaxies
 - solar systems
- planet Earth
 - ecosystems
 - communities
 - populations
- organisms
 - organ systems
 - organs
 - tissues
 - cells
 - organelles
- rocks
- minerals
- molecules
- atoms (elements)
- baryons (neutrons and protons)
- fundamental particles (quarks and leptons)

**Mi'kmaw language:
verb-based and
relationship-focused**

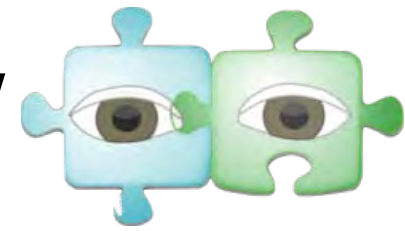


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LOVE: First Sacred Gift of Life



Our Mi'kmaw language is the key to how our actions will unfold. Each word is much deeper than only taking care of an object. Animacy brings personal connection ... such that actions fit actions (everything is in the picture) and we are always mindful of the



First Sacred Gift of Life: **LOVE**

EXAMPLES

- 1) pekajo'tmnej = consider all aspects
... *action is harmonious*
- 2) wulo'tmnej = love some one
... *action is care*
- 3) sespite'tmnej = worry about what you do
... *action is guided*

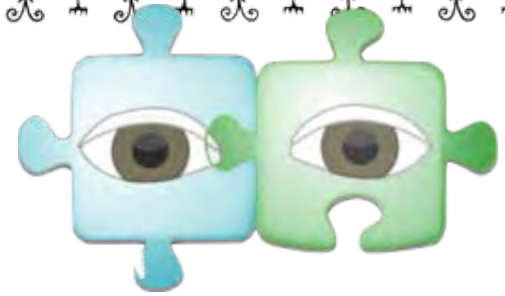


Through utilization of the Gifts from Creator we can become whole. We can take care of our needs: living, dwelling, physical, and spiritual.

All these things that Creator has given us are sustenance in both the physical and spiritual sense.



This is living knowledge.
“Principle for Humility” is based on Lnu’k
knowledge that has been
evolving for the past 10,000 years.



Extent of ice 11,000 years ago. People lived at the Debert site
sometime between 11,000 and 10,000 years ago.

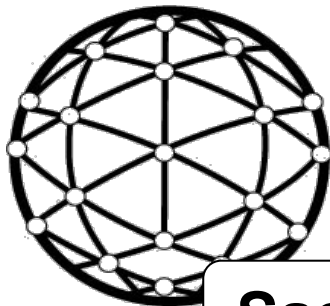


artist
Basma
Kavanagh

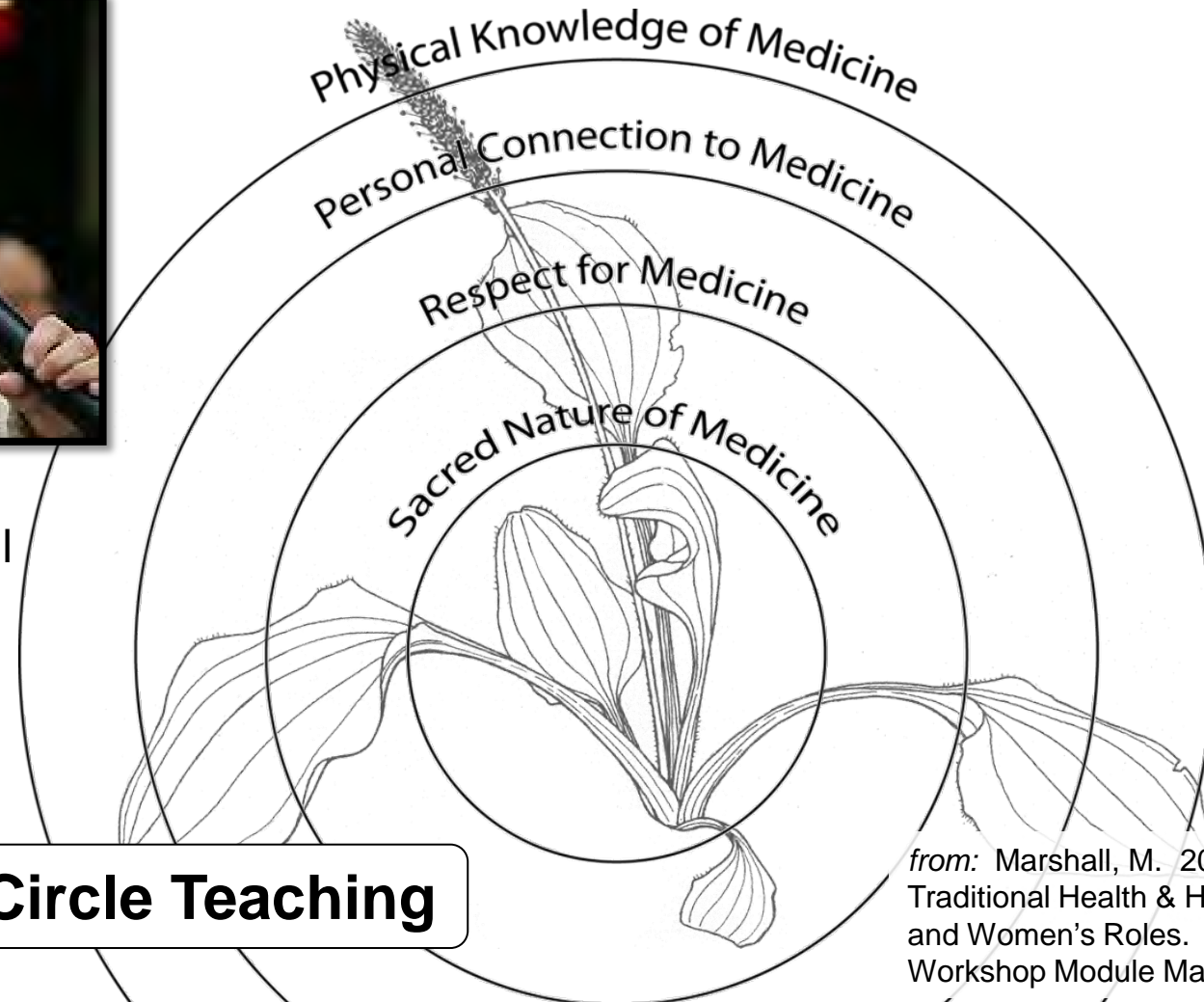
This is living knowledge. It has a cosmology or worldview of interconnectiveness.



Mi'kmaw Elder
Murdena Marshall



Sacred Circle Teaching



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



Indigenous

Western

“bringing our stories together”

artist Basma Kavanagh

Aboriginal Fisheries



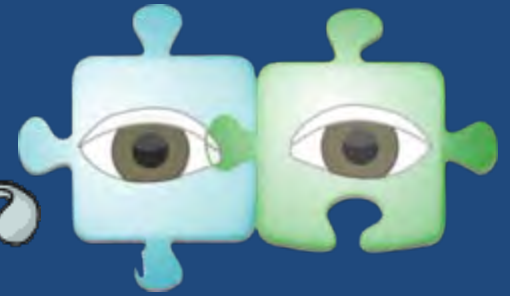
artist Basma Kavanagh

The foundational basis for any relationship is an exchange of stories.

(words of Elder Albert Marshall, Mi'kmaw Nation)



Isn't this all
"just philosophy"?



If only we would
spend a few moments
to determine if there
are possibilities for
change ... to hear the
STORIES
from cultures other
than our own.

(words of Elder Albert Marshall)

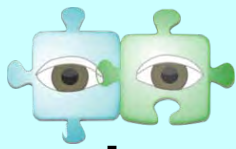




It is more than just philosophy ...
because our stories show how
we value and share the world.

We need to learn to listen to stories
from cultures other than our own.





TWO-EYED SEEING

learning to see with the strengths in our different stories

OUR WORLD

interconnective

beings (subjects) ...
interconnective
and animate:

spirit +

energy + matter

with

CONSTANT CHANGE

within balance and wholeness

parts & wholes

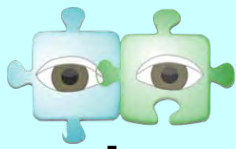
objects ...
comprised of parts and
wholes characterized by
systems and emergences:

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with

CHANGE

over time

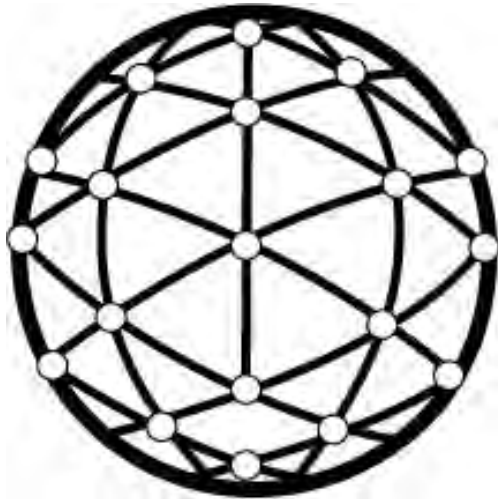


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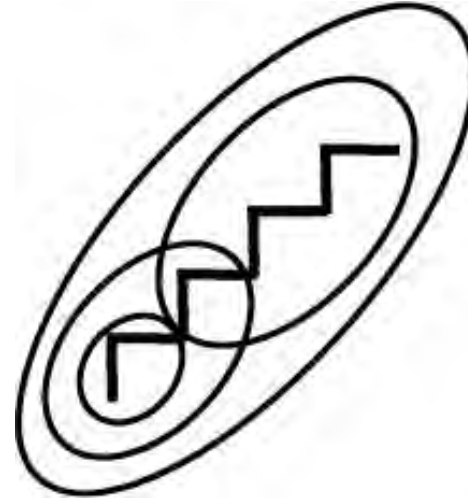
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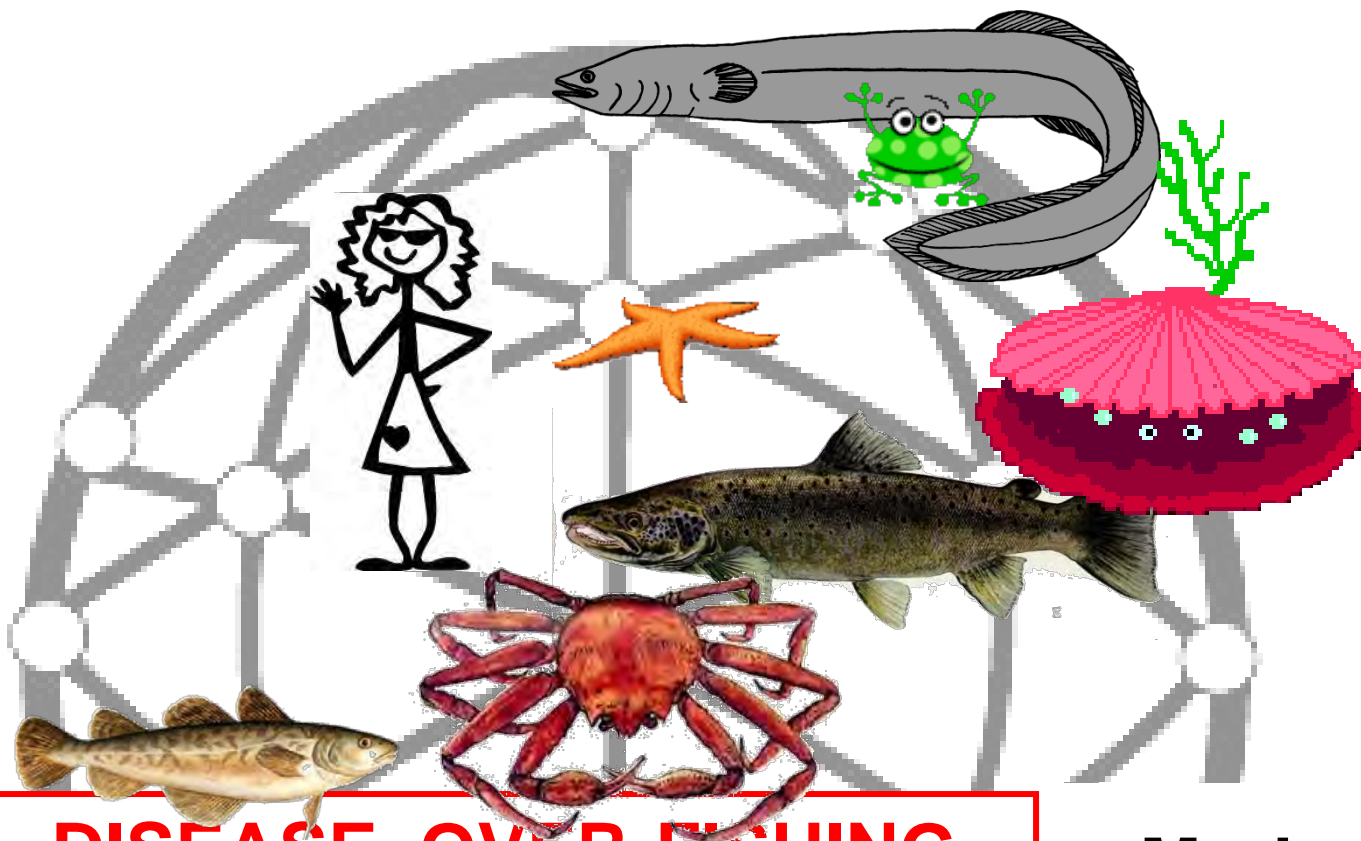


CONSTANT CHANGE
within balance and wholeness

parts & wholes



CHANGE
over time



**DISEASE, OVER-FISHING,
RESOURCE EXPLOITATION**

put

All Our Relations

at risk.

Modern science
sees objects, but
our Mi'kmaw
language teaches
us to see subjects
and relationships.



- Universe
- galaxies
- solar systems

▪ planet Earth

- ecosystems
- communities
- populations

- organisms
- organ systems
- organs
- tissues
- cells
- organelle

- rocks
- minerals

- molecules
- atoms (elem
- baryons (neutr
- fundamental pa

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

PATHOGENESIS
process (at cell and tissue levels) that leads to disease

INFLAMMATION
response at levels of cells and tissues

objective

e.g. cardinal signs

- redness
- swelling
- heat
- pain
- loss of function



subjective

signs and symptoms

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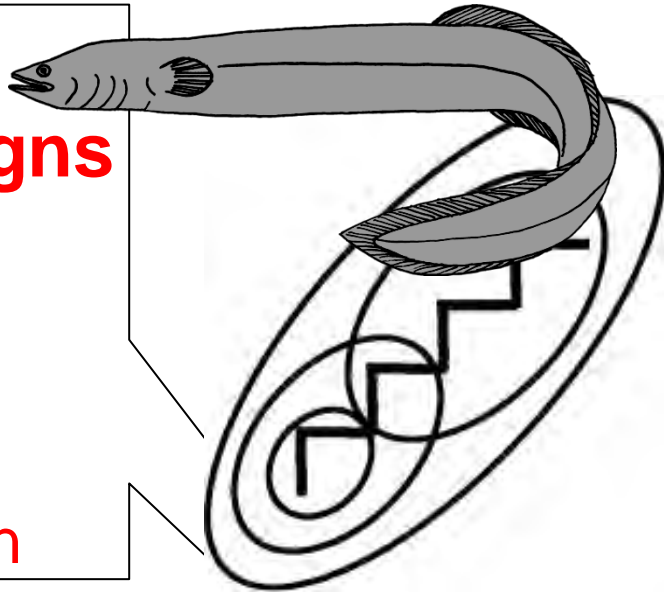
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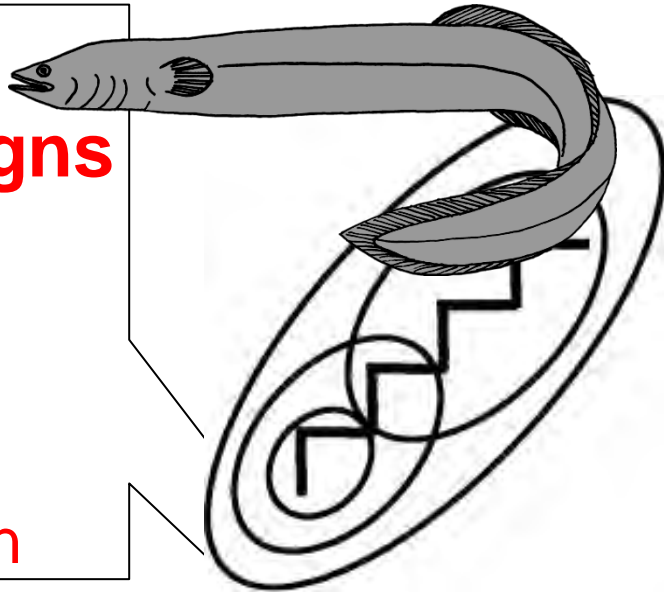
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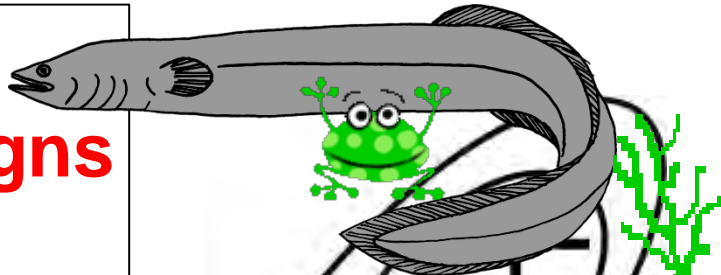
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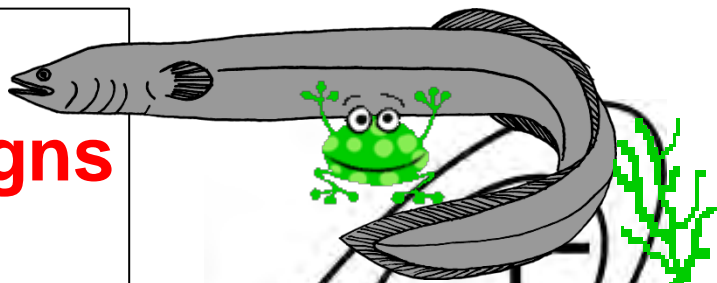
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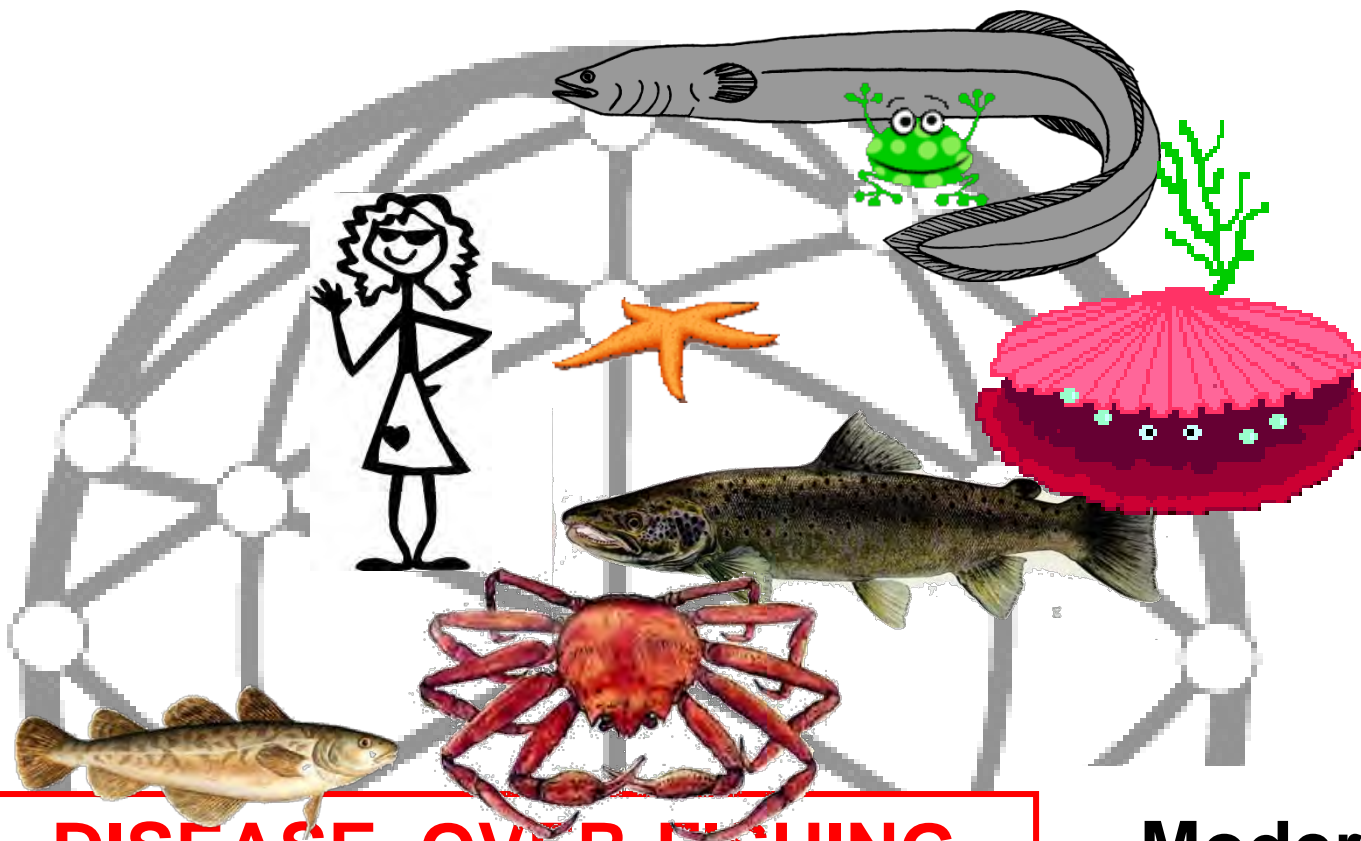
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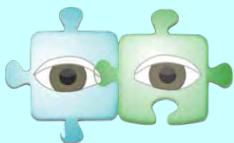
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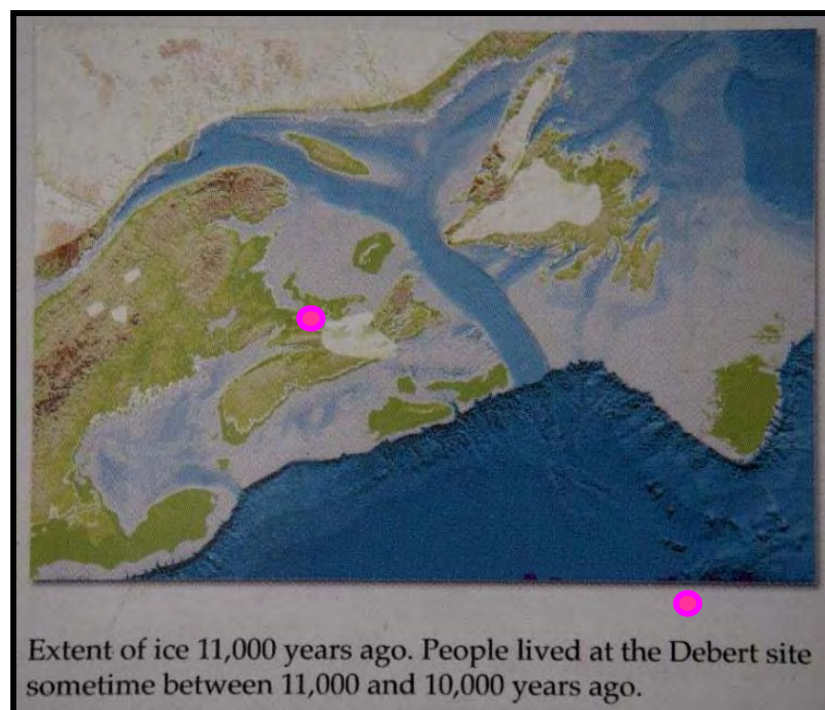


TWO-EYED SEEING

learning to see with the strengths in our different stories

OUR KEY CONCEPTS and ACTIONS

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

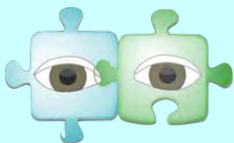


Extent of ice 11,000 years ago. People lived at the Debert site sometime between 11,000 and 10,000 years ago.

This living knowledge has been evolving for the past 10,000 years.



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



TWO-EYED SEEING

learning to see with the strengths in our different stories

OUR KEY CONCEPTS and ACTIONS

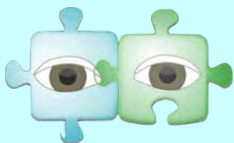
- respect
- relationship
- reverence
- reciprocity
- ritual (ceremony)
- repetition
- responsibility

- 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 strengths in our different stories

OUR KEY CONCEPTS and ACTIONS

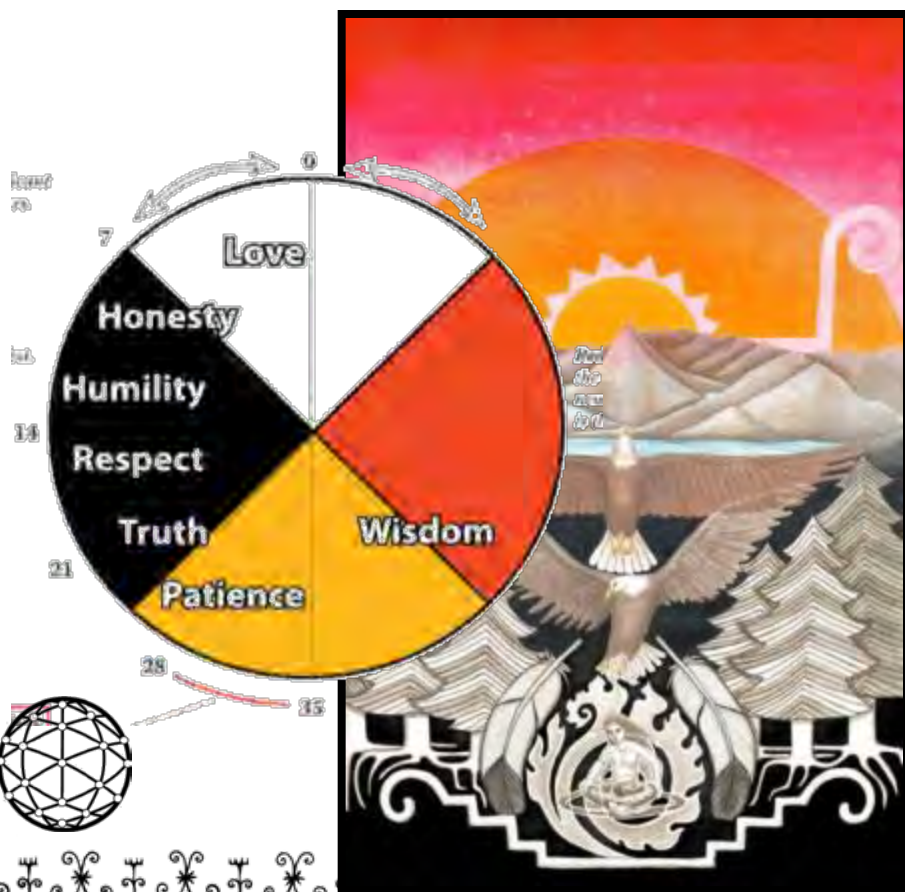
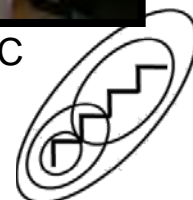
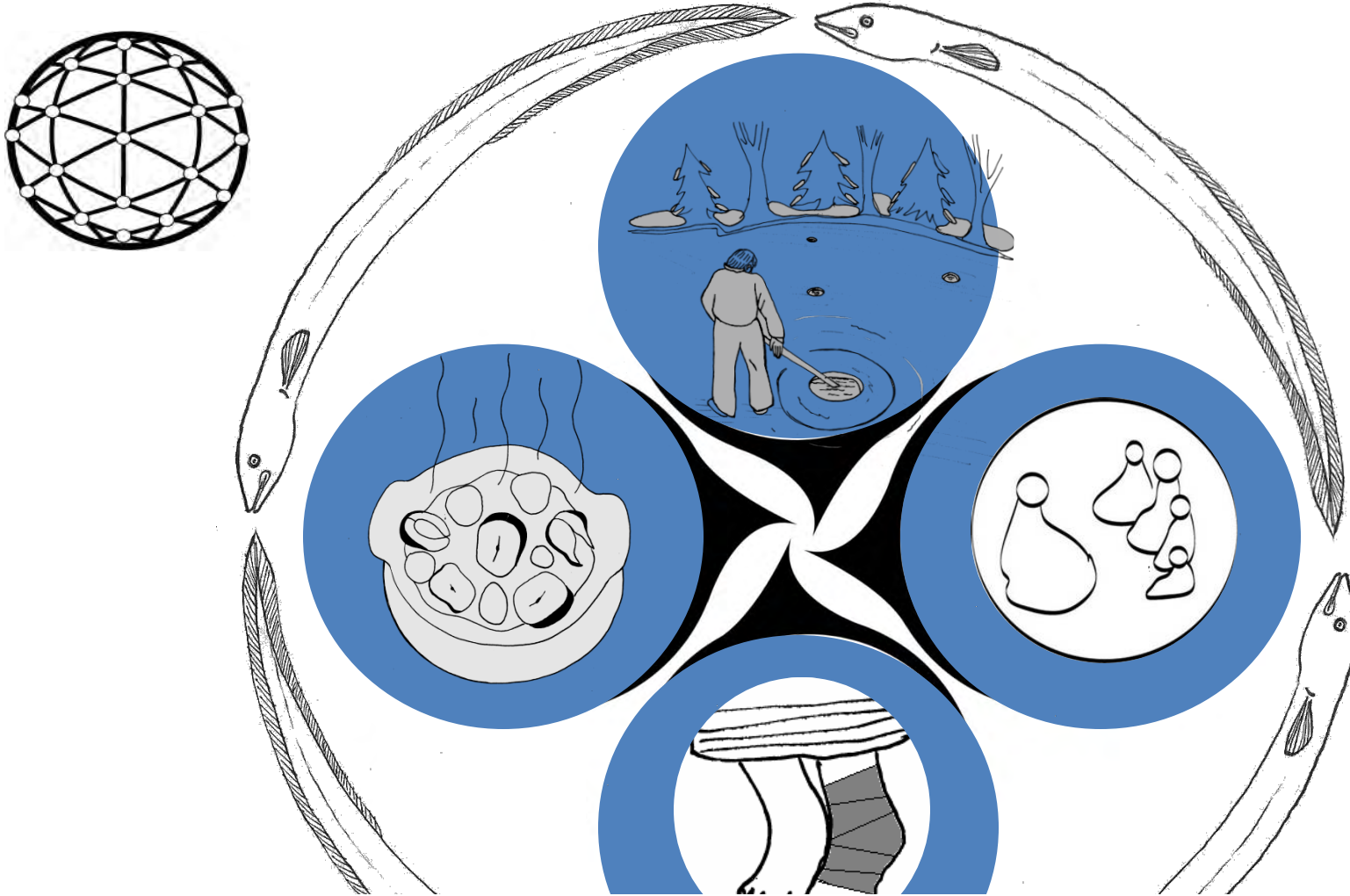


photo credit: NRC

Artist Basma Kavanagh



Netukulimk: holistic concept

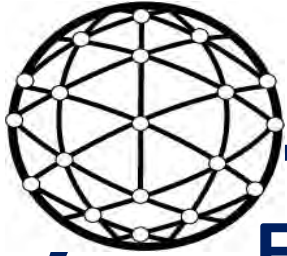


“Eels were life to our people.”

Lawrence Bernard, We'koqma'q 2008

from: Master's thesis research “Mi'kmaw traditional knowledge of eels” by Sana Kavanagh

Netukulimk: holistic concept



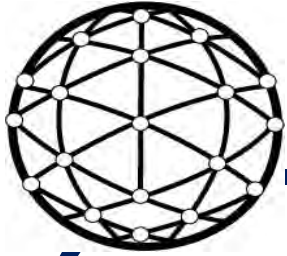
Limit Catch

FLORENCE YOUNG OF ESKASONI SAYS

.....

Me and my husband we never used to go out to get fish [eels], more than we need. **We get what we need** and we go out and get some more if we need more tomorrow or next week. [2009]

Netukulimk: holistic concept



Return Eel Parts to Water

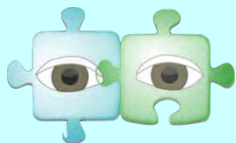
GEORGE ALEX OF ESKASONI SAYS

.....

That's taking a lot out of the water, eh?

**And when you take something
out of the water**

you got to give something back. [2008]



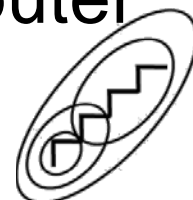
TWO-EYED SEEING

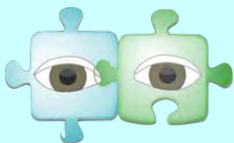
learning to see with the strengths in our different stories

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 in our different stories

OUR LANGUAGES and METHODOLOGIES



Life
Love
Land

Math
&
Instruments

vigour

rigour

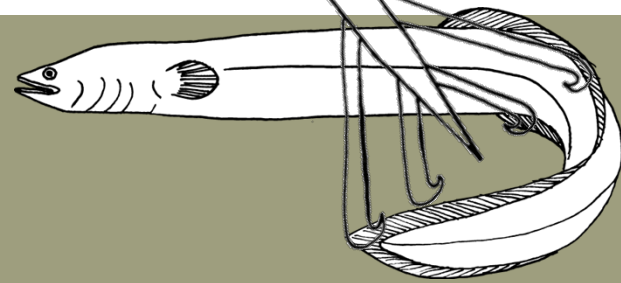
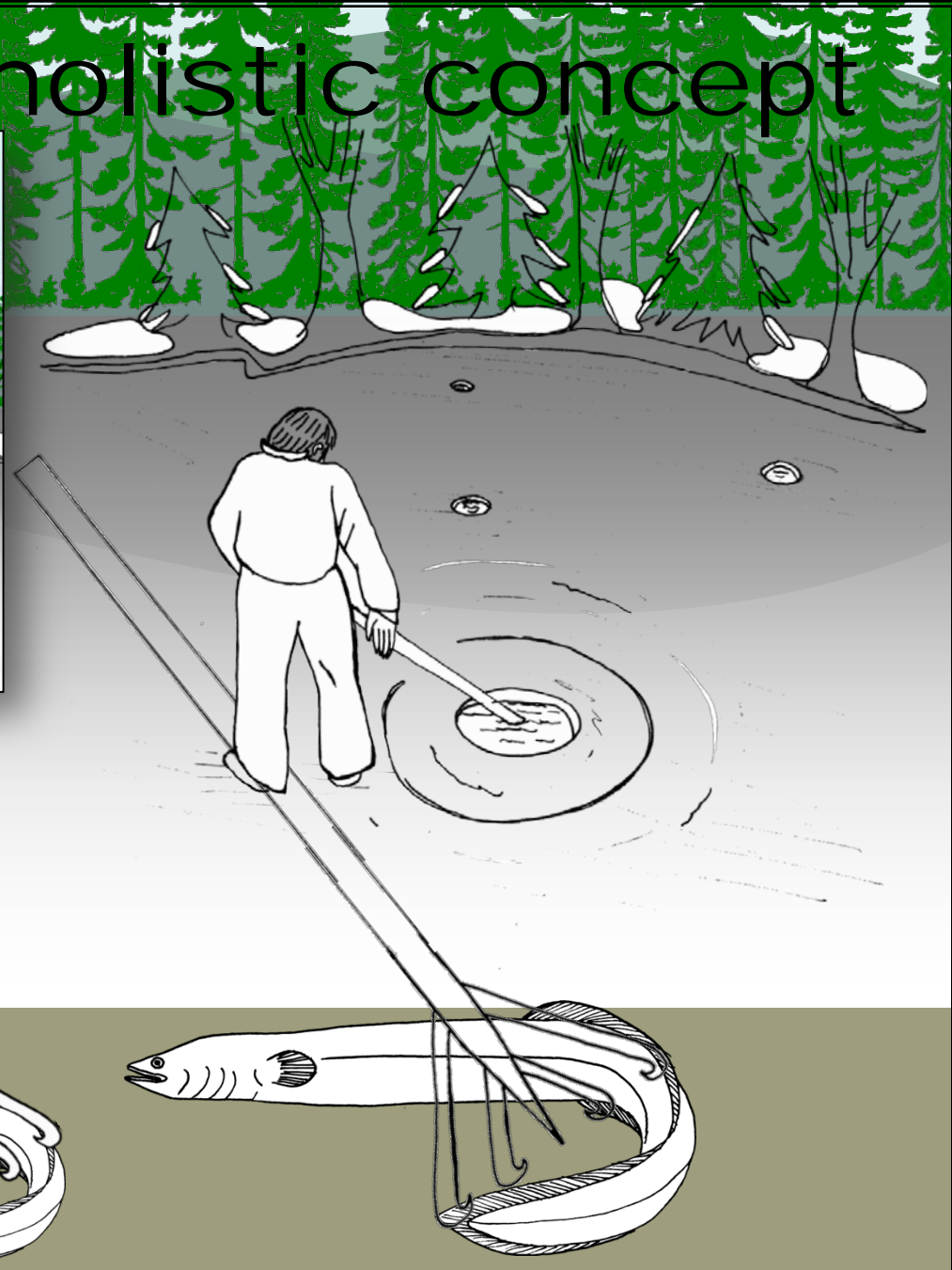
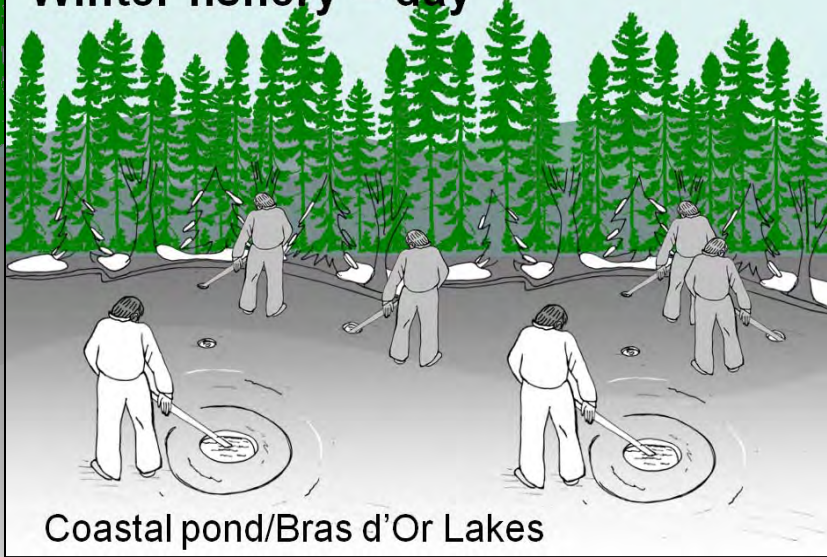
WEAVING

UN-WEAVING



Netukulimk: holistic concept

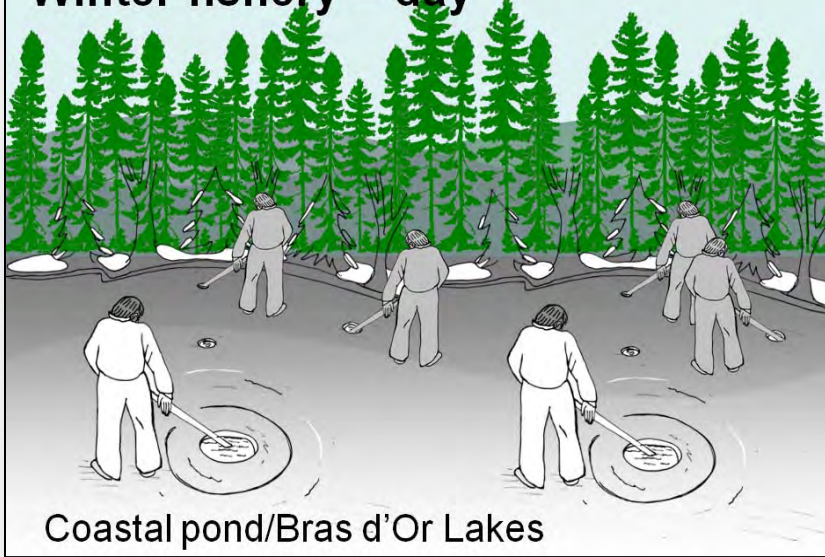
Winter fishery – day



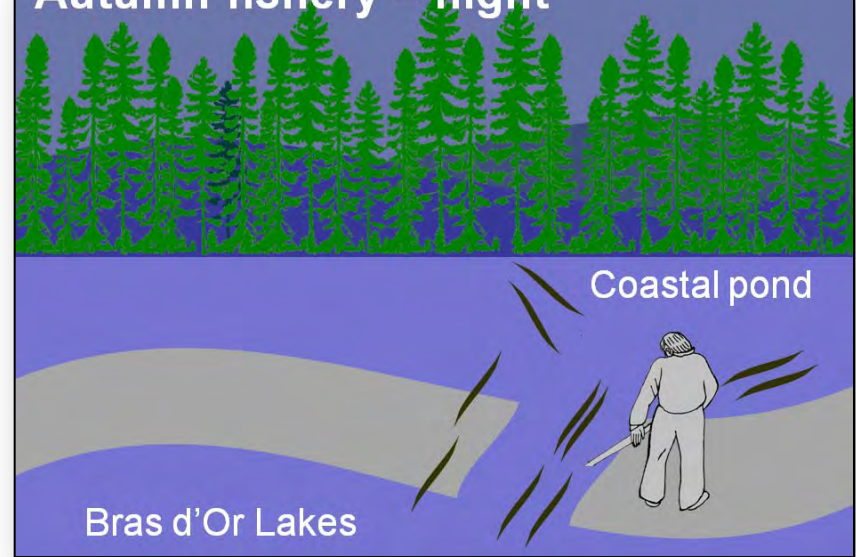
from: Master's thesis research "Mi'kmaw traditional knowledge of eels" by Sana Kavanagh

Netukulimk: holistic concept

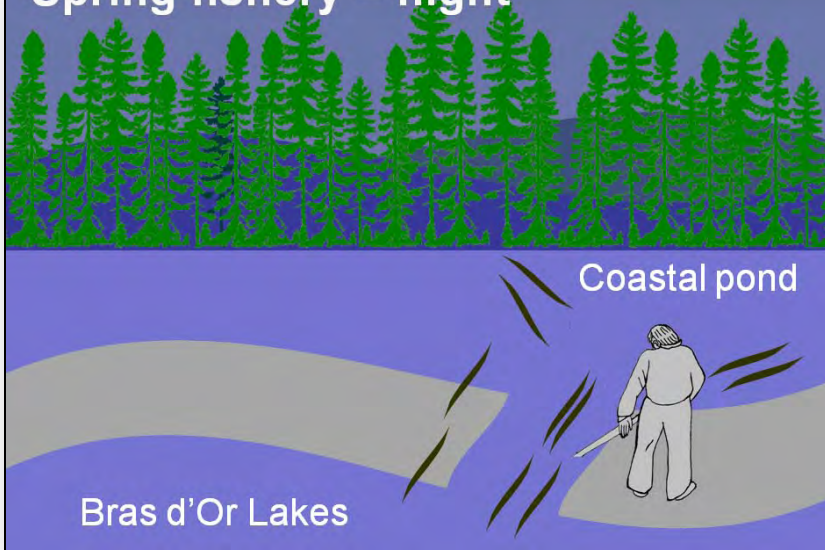
Winter fishery – day



Autumn fishery – night



Spring fishery – night



Summer fishery – night



Netukulimk: holistic concept

Co-existence

“When we look at Creator, if it was meant for me to know everything that I needed to get along, then I would only be one person in the world. Instead, each person is given a skill and develops those skills.”

Interdependence

“If some person is struggling, apply your skills to compensate for that person. Some days I’m down and out ... the community will not let me go hungry.”

Community Spirit

“The sense of community is constantly triggered ... [you’re] fine tuning your skills to live in balance and harmony with others. It’s a sense of community enmeshed in total being.”



Albert Marshall

Mi'kmaw Elder, Eskasoni FN

Netukulimk teaches you.

from: Master's thesis research "Mi'kmaw traditional knowledge of eels" by Sana Kavanagh



**Our stories show how we
value and share the world.**

**We need to learn to listen to stories
from cultures other than our own.**





Wela'lioq
Thank you



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du Canada

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Canada



Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

CAPE BRETON
UNIVERSITY



Canada Foundation
for Innovation
Fondation canadienne
pour l'innovation



Membertou
Elementary

IAPH



Thank you / Wela'liog

CIHR IRSC

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



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

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