

TWO-EYED SEEING

for

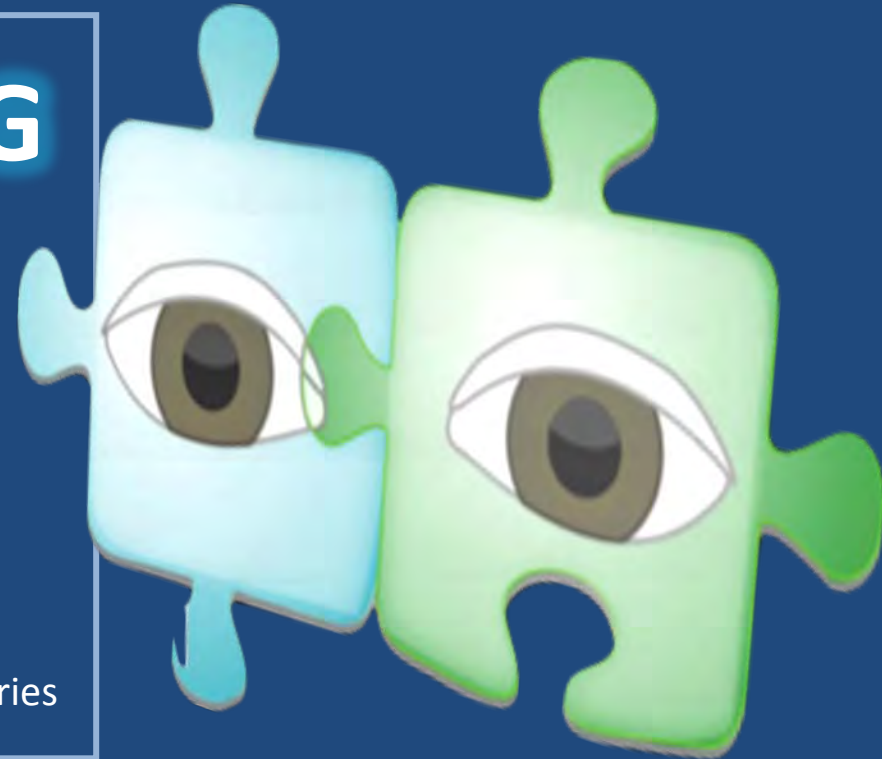


Environmental Sustainability

College of Sustainability, Dalhousie University

23 September 2010

Environment, Sustainability and Society Lecture Series



Albert Marshall¹ and **Cheryl Bartlett²**

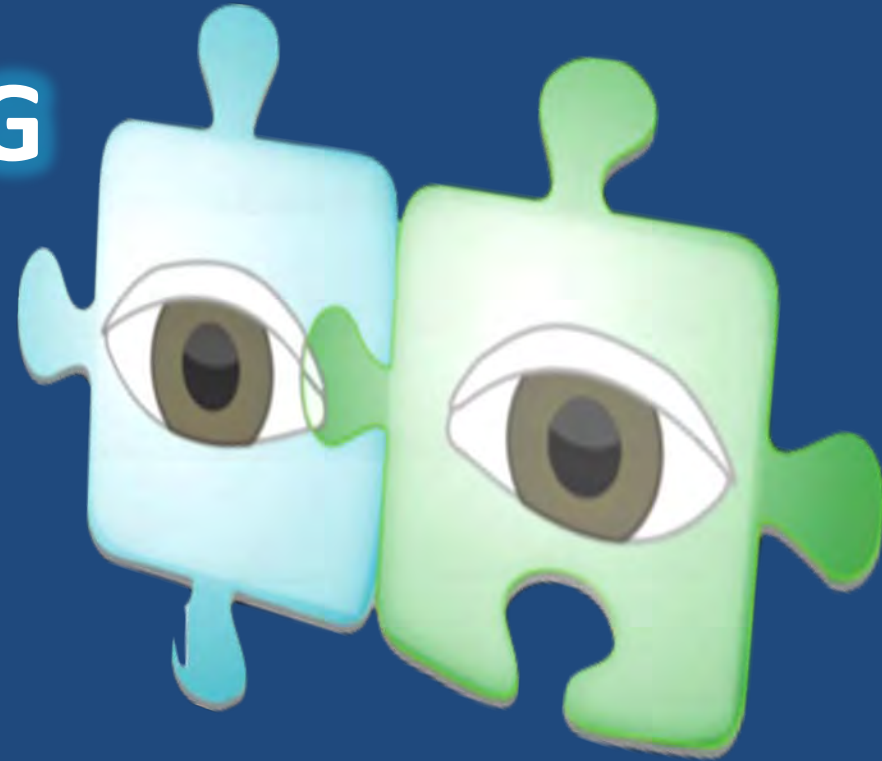
¹ Elder and Honorary Doctor of Letters,
Eskasoni community, Mi'kmaw Nation
albertdmarshall@ns.sympatico.ca

² Canada Research Chair in Integrative Science, Professor of Biology
Cape Breton University
cheryl_bartlett@cbu.ca; www.integrativescience.ca

TWO-EYED SEEING

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 (or 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)



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.



*text 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)*

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



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 Elder Albert Marshall, Mi'kmaw Nation)



Artist Basma Kavanagh



Environment Sustainability Society



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

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



1. **Stories guide** how we value and share the world:

- how we manage environmental resources, and
- how we organize social systems to enable and sustain these actions.

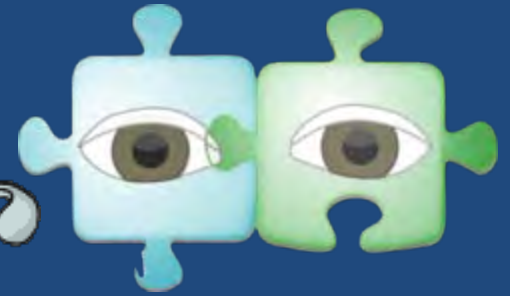
Environment Sustainability Society



2. **Stories persist**, so, although today is a time of vanishing traditional knowledges, there are still stories that tell about practices, ideas, and experiences with potential insights for new ways to think about “environment, sustainability, society”.



Isn't this all
"just philosophy"?

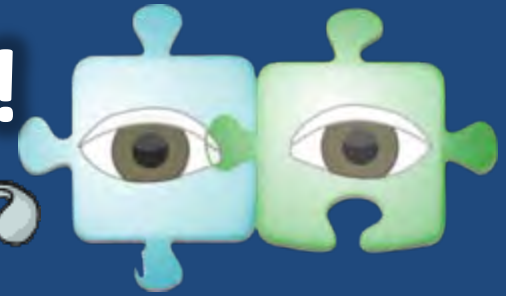


If only we would
spend a few moments
to determine if there
are possibilities for
change ... to hear the
STORIES
from cultures other
than our own.

(words of Elder Albert Marshall)



**It is not all “just philosophy”!
Stories show how we
value and share the world.**



**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)



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

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

in: Ceremony (1997)

by: Leslie Marmon Silko

Storyteller with mixed ancestry,

by her own description:

Laguna Pueblo, Mexican, and white



<http://web.ics.purdue.edu/~njp/Silko.html>



Native Council of Nova Scotia
Mi'kmaq Language Program
Artist: Michael J. Martin



MI'KMA'KI

Native Council of Nova Scotia
Mi'kmaq Language Program
Artist: Michael J. Martin

Stories

Shaw et al. 2010 in Canadian Journal of Earth Sciences



MI'KMA'KI



Native Council of Nova Scotia
Mi'kmaq Language Program
Artist: Michael J. Martin

es





Kluscap, wanting to take a bath, ordered Beaver to build a dam across the mouth of the bay to hold the ocean water so that there would be lots of water for his bath.

with permission of Artist Gerald Gloade, Millbrook First Nation



with permission of Artist Gerald Gloade, Millbrook First Nation



**Beaver did as
Kluscap asked.**

**But Whale was unhappy
because now the water did
not flow as before.**

**“Why has the water
stopped?” Whale cried.**



with permission of Artist Gerald Gloade, Millbrook First Nation



Kluscap hearing him and not wanting Whale to be upset told Beaver to break the dam and release the water. Beaver liked the dam he had made, so he was slow to begin taking it apart.



with permission of Artist Gerald Gloade, Millbrook First Nation



Whale became impatient.

He wanted the water as it was before.

Using his great tail, he started breaking the dam apart.



The dam broke with a mighty slap of Whale's tail . And it caused water to flow back and forth with such force that it continues so until this day.

with permission of Artist Gerald Gloade, Millbrook First Nation



with permission of Artist Gerald Gloade, Millbrook First Nation



2010 ARTICLE in:
Canadian
Journal of
Earth Sciences
47(8):
1079–1091

Catastrophic tidal expansion in the Bay of Fundy, Canada

by: John Shaw, Carl L. Amos,
David A. Greenberg,
Charles T. O'Reilly, D. Russell Parrott,
and Eric Patton



with permission of Artist Gerald Gloade, Millbrook First Nation



We argue that the catastrophic breakdown of the barrier is related in the legend, showing that Aboriginal peoples observed the rapid environmental changes and preserved an oral record for 3400 years.

*last sentence in ABSTRACT for:
Shaw et al. 2010*

Table 1: Radiocarbon dates

Location	Age (radiocarbon years BP)	Lab No.	Material	Elevation (metres geodetic datum)	References
Kingsport	2905±220	GX-6811	SMP	-0.5000	Scott and Greenberg 1983
Kingsport	4430±235	GX-6810	SMP	-3.6000	Scott and Greenberg 1983
Beausejour	1335±130	GX-8141	SMP	3.6000	Scott and Greenberg 1983
Beausejour	2185±145	GX-8142	SMP	1.5000	Scott and Greenberg 1983
Beausejour	2620±145	GX-8143	SMP	-0.3000	Scott and Greenberg 1983
Beausejour	3800±160	GX-8145	SMP	-5.6000	Scott and Greenberg 1983
Mary's Point	2225±160	GX-8146	SMP	2.5000	Scott and Greenberg 1983
Mary's Point	3130±180	GX-8147	SMP	0.7000	Scott and Greenberg 1983
Mary's Point	3240±160	GX-8148	SMP	-0.2000	Scott and Greenberg 1983
Mary's Point	3640±180	GX-8145	SMP	-4.0000	Scott and Greenberg 1983
Aulac	2500±60	Beta-65696	SMP	1.7000	This paper
Aulac	2100±60	Beta-65695	SMP	1.8300	This paper
Aulac	1240±60	Beta-74550	SMP	4.3500	This paper
Aulac	720±60	Beta-74551	SMP	7.5000	This paper



We argue that the catastrophic breakdown of the barrier is related in the legend, showing that Aboriginal peoples observed the rapid environmental changes and preserved an oral record for 3400 years.

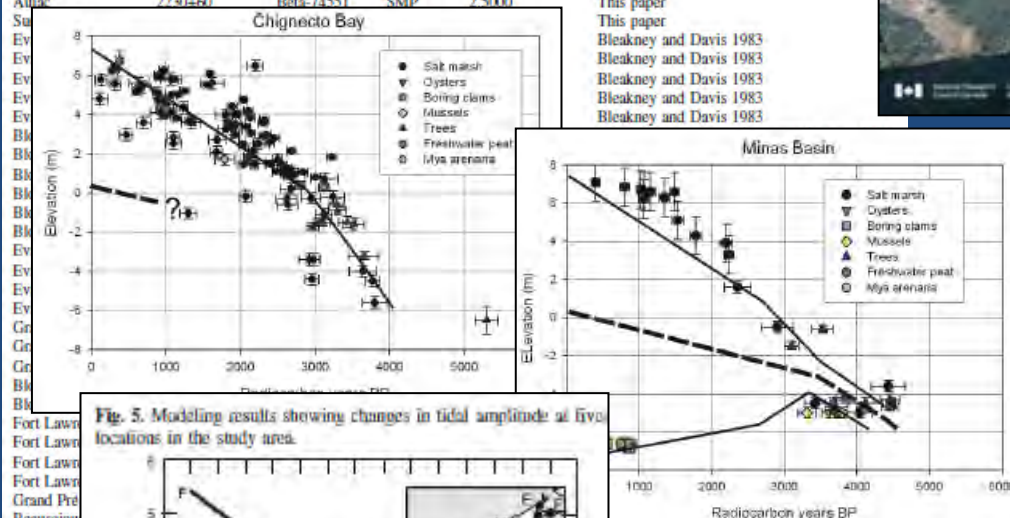


Fig. 5. Modeling results showing changes in tidal amplitude at five locations in the study area.

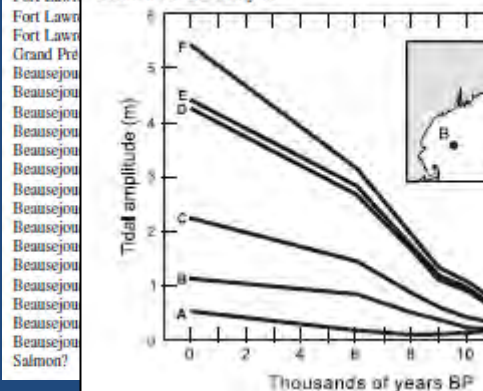
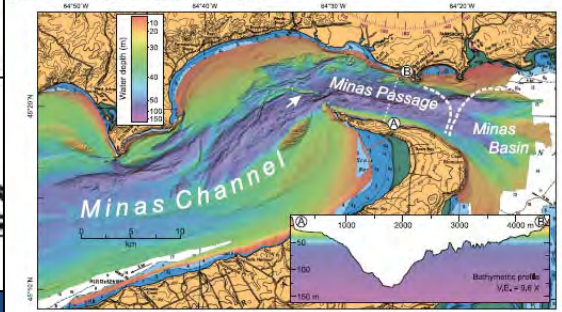


Fig. 6. Top: Physiography of Minas Passage based on multibeam bathymetry; bottom: interpretation. White arrow on top image indicates position of a bedrock ridge extending northwest from Cape Split.



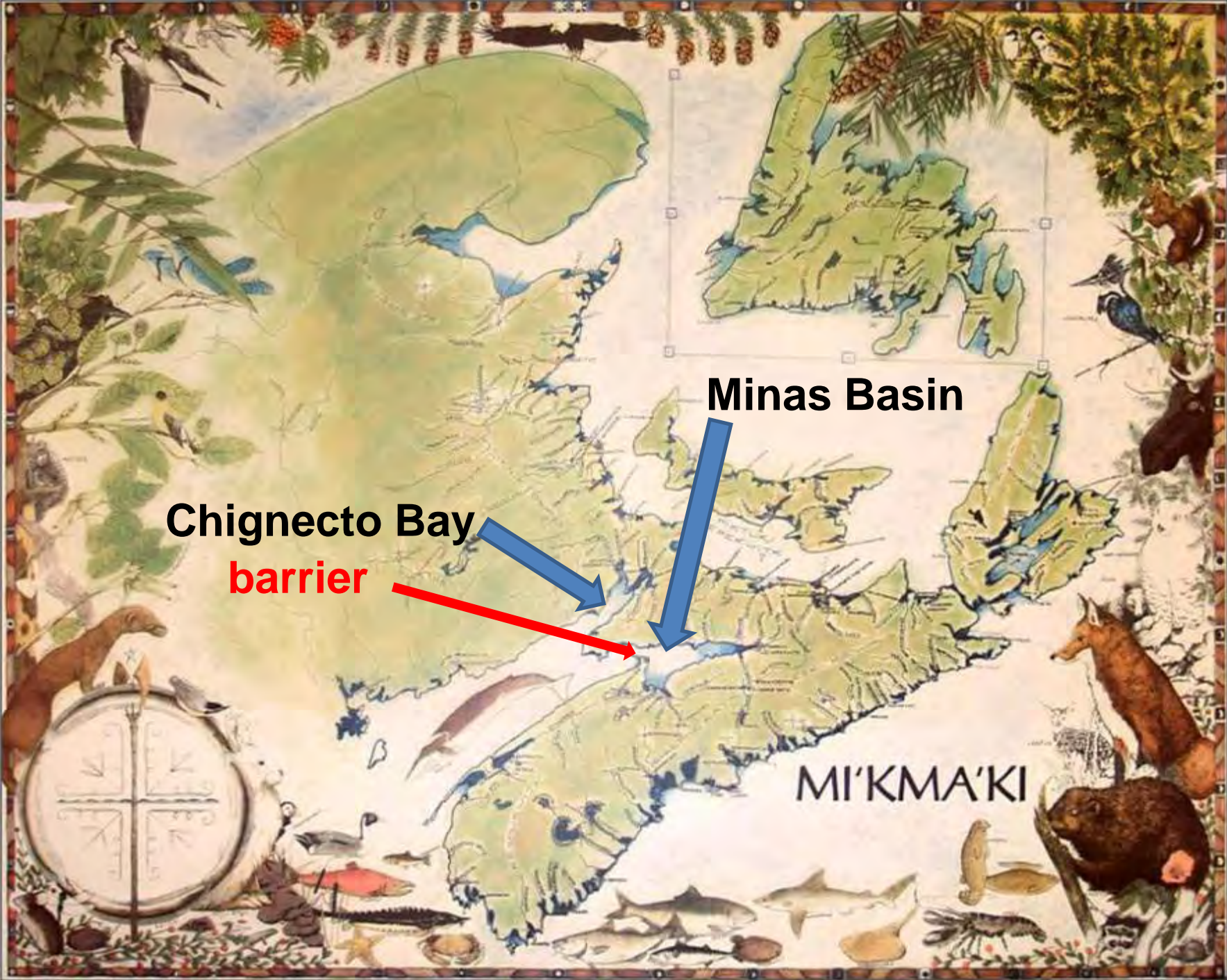
last sentence in ABSTRACT for:
Shaw et al. 2010

ABSTRACT: Tidal models for Canada — site of the highest tide — show that tidal amplification Holocene and by ca. 5000 BP almost 80% of the present range. consisting of 146 sea-level index observations appear to contradict Aggregated relative sea-level data and Minas Basin show that rapid



the Bay of Fundy, recorded modern began in the early the range was Empirical data points and other model results. for Chignecto Bay tidal expansion

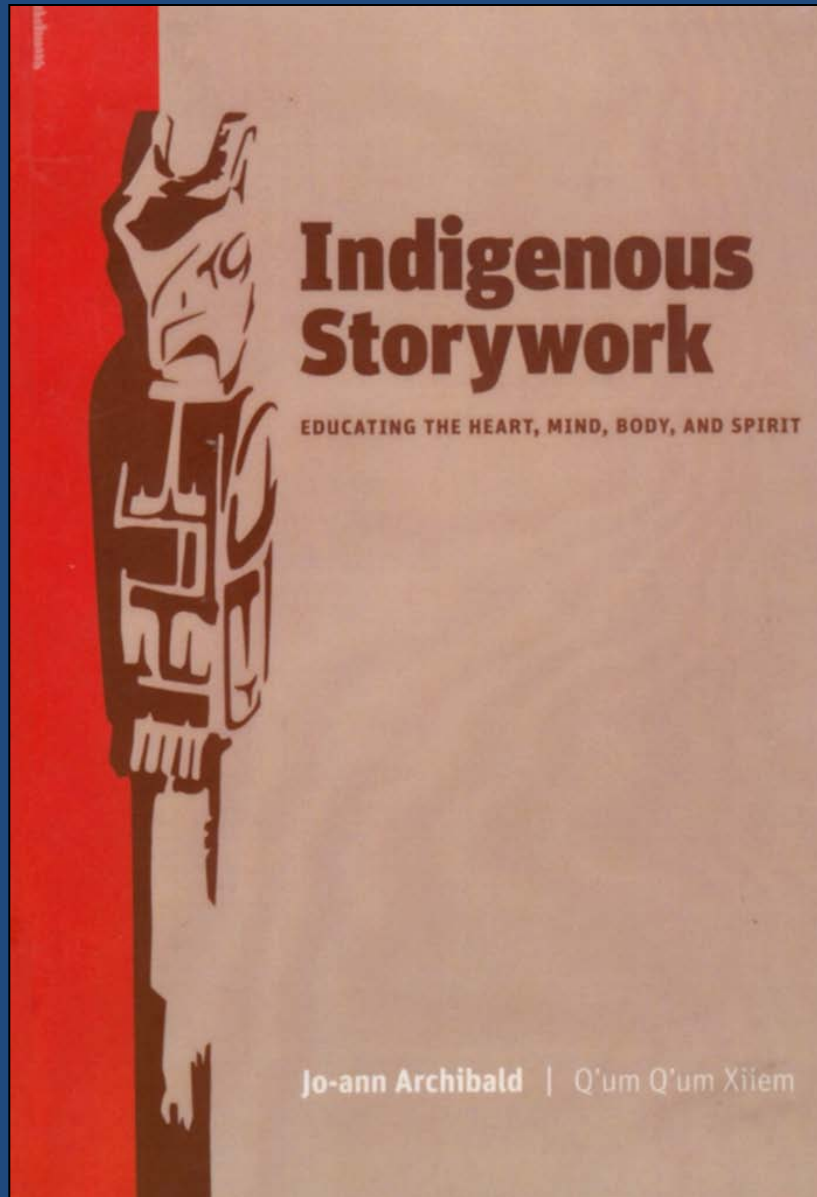
began ca. 3400 BP. However, if we separate these two geographically separate data sets, evidence for this rapid late-Holocene tidal expansion is confined to Minas Basin. We explain this singularity by positing a barrier at the mouth of Minas Basin, at the Minas Passage, that delayed tidal expansion. With the rapid breakdown of this barrier and near-instantaneous tidal expansion, water temperature dropped, tidal currents and turbidity increased, and the form of the inner estuary was changed from lagoonal–mesotidal to macrotidal. **We argue that the catastrophic breakdown of the barrier is related in the aboriginal legend of Glooscap, showing that aboriginal peoples observed the rapid environmental changes and preserved an oral record for 3400 years.** (ABSTRACT from: Shaw et al. 2010)



Chignecto Bay
barrier

Minas Basin

MI'KMA'KI



Indigenous
Oral
Stories
nourish knowledge systems
and
are knowledge systems.

Seven Principles of Indigenous Storywork

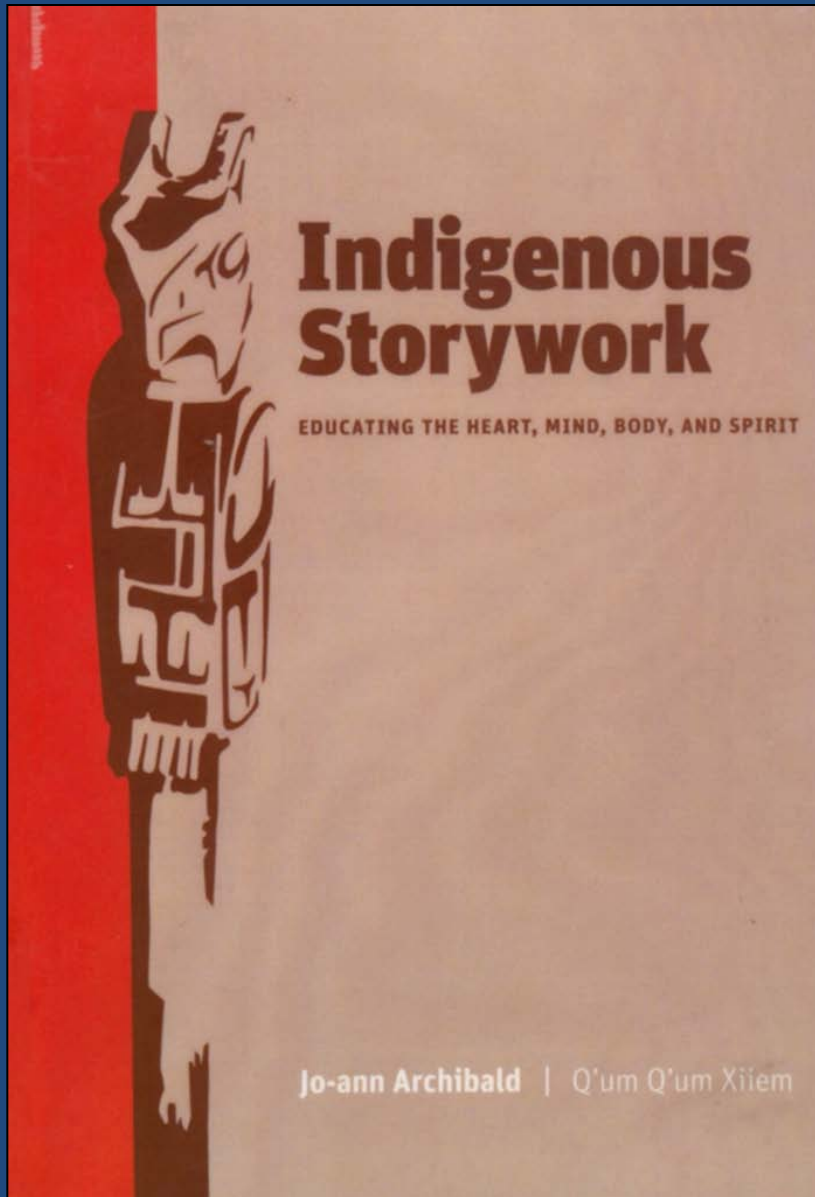
Respect, Responsibility,
Reciprocity, Reverence,
Holism, Interrelatedness,
Synergy

from: Jo-ann Archibald (2008), *Indigenous Storywork*, UBC Press

Indigenous Oral Stories

two types:

- 1. how things
came to be**
- 2. peoples'
experiences**



from: Jo-ann Archibald (2008), *Indigenous Storywork*, UBC Press

Stories

Elder Albert Marshall
Mi'kmaw Nation

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



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

(words of Elder Albert Marshall)



Artist Basma Kavanagh



Elder Albert Marshall
Mi'kmaw Nation

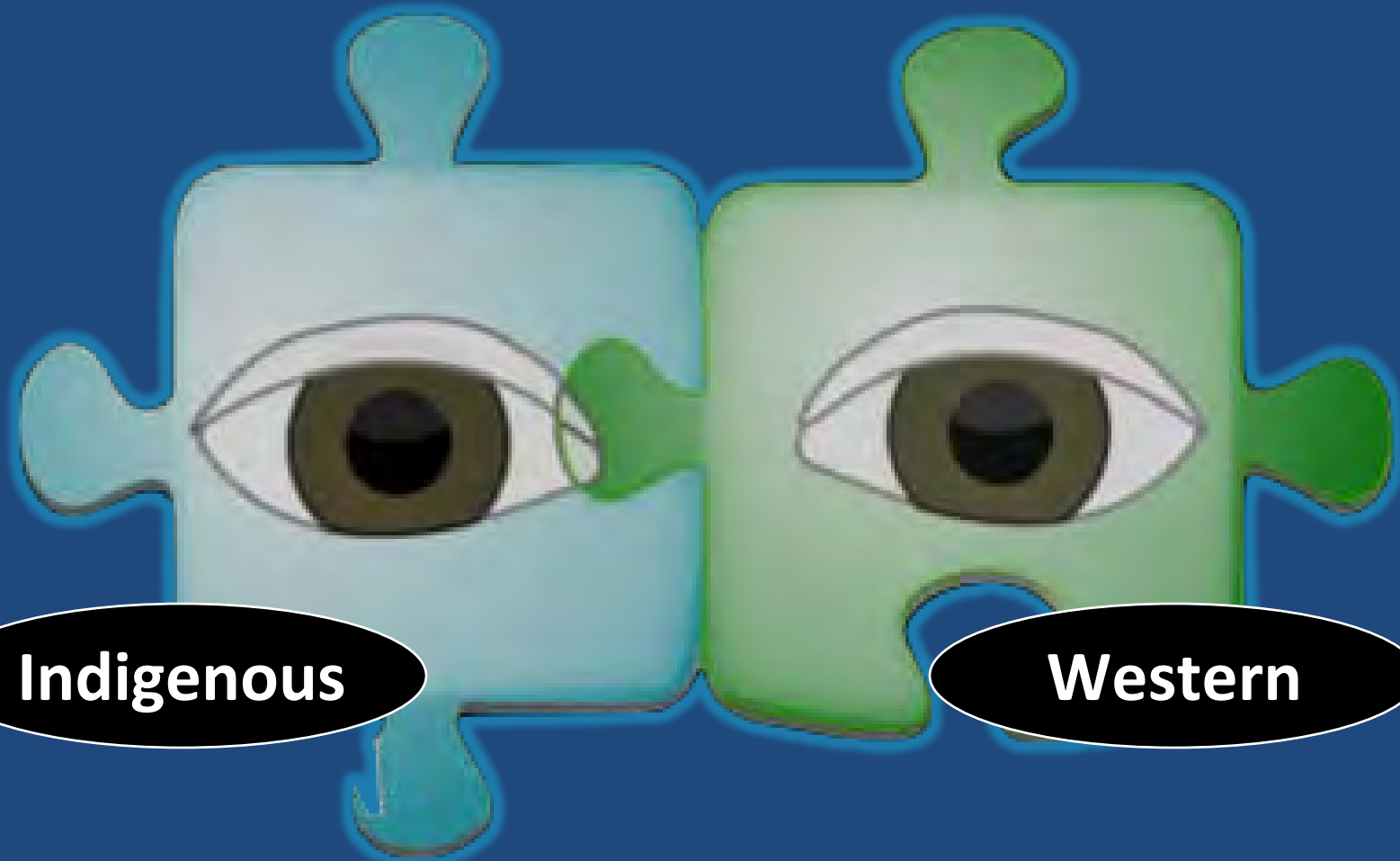


**The foundational basis for any
relationship is
an exchange of stories.**

(words of Elder Albert Marshall)



Etuaptmumk – Two-Eyed Seeing



Indigenous

Western



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.



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



Artist Basma Kavanagh

**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 ...**

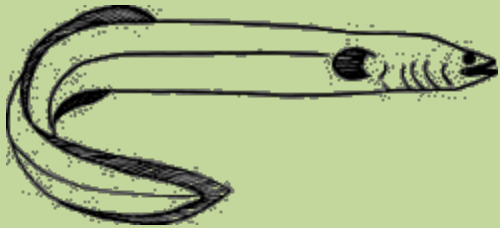


**Ples
(Passenger Pigeon)**

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>

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



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.**



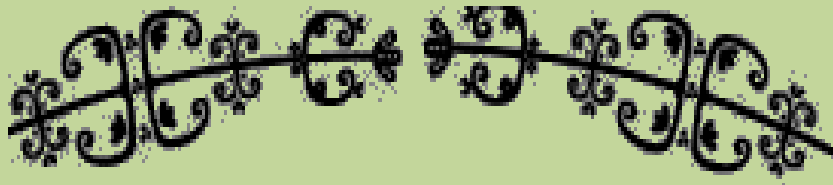
**The onus is on the person
to look at our natural
world with two
perspectives.**

**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.**

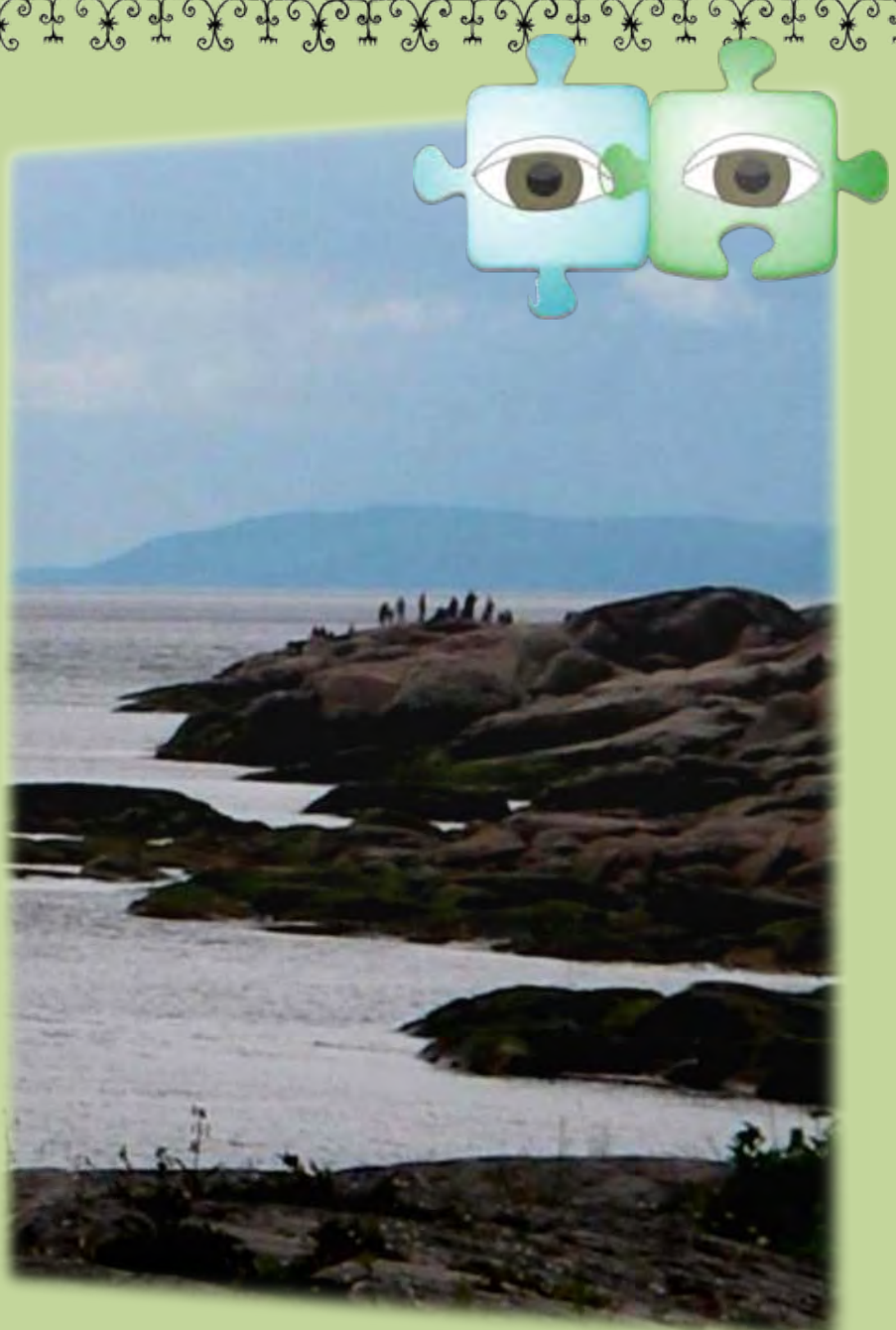


Our Mi'kmaw culture is
still very much alive ...
and we can extract
those principles of how
one can sustain
oneself without
compromising abilities
for the future.



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.



MI'KMAW LANGUAGE

Our 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) sespıte'tmnej = worry about what you do
... *action is guided*



Netukulimk

All Our Relations

“sustaining ourselves”

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



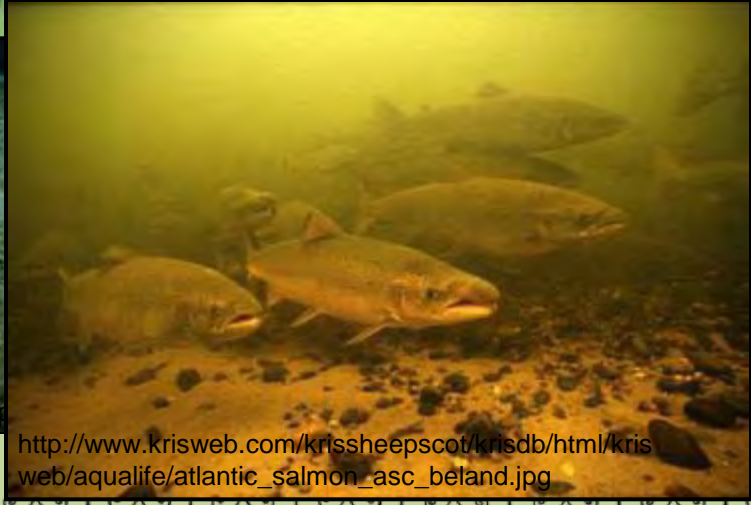
<http://myanimalblog.files.wordpress.com/2008/03/g-bull-moose.jpg>



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



http://images.enature.com/fishes/fishes_1/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

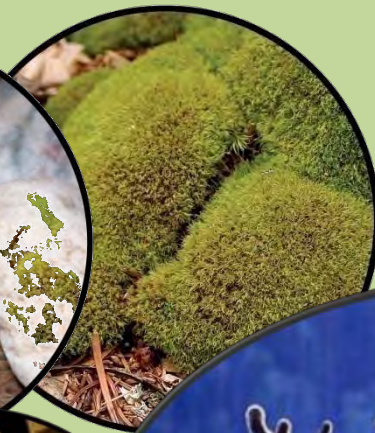


<http://blog.silive.com/weather/2007/09/red-maple-tree.jpg>



... 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.



MI'KMAW TRADITIONAL KNOWLEDGE

Mi'kma'kik: today



**Elder
Murdena
Marshall**



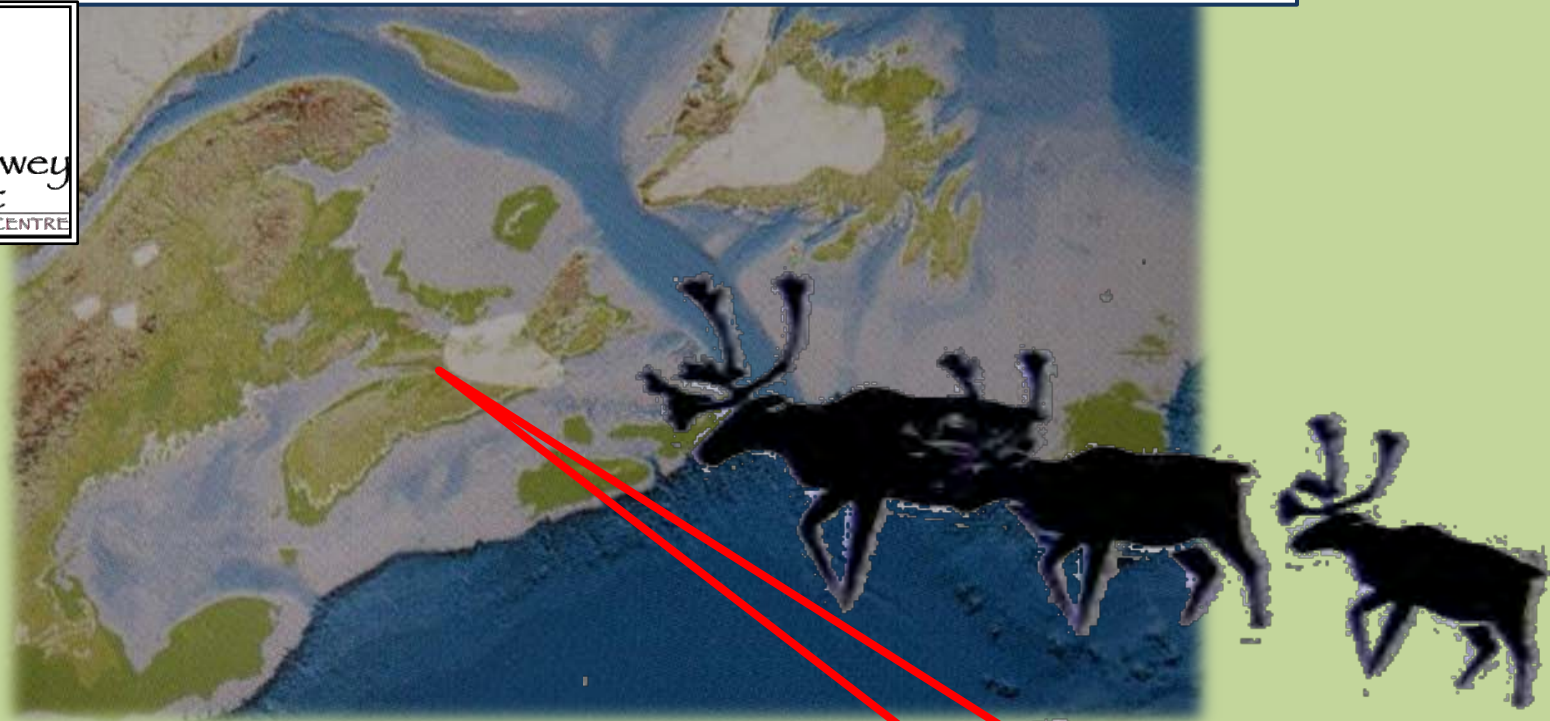
**Traditional Knowledge
was never meant to be
static and stay
in the past.**

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

words of: Elder Murdena Marshall,
Eskasoni community, Mi'kmaq Nation

**Lnu'k with holistic knowledge
have been in "this place" a long time.**

Mi'kma'kik: 11,000 years ago



**Lnu'k (people) lived at the Debert site
between 11,000 and 10,000 years ago.**

**Lnu'k with holistic knowledge
have been in “this place” a long time.**

Mi'kma'kik: 11,000 years ago



Artwork by Dozay Christmas; Mi'kmawey Debert Interpretive Trail Signage

Environment – People – Sustainability



Information Source: Signage on Mi'kmawey Debert Interpretive Trail

Environment – People – Sustainability

18,000 years ago



Extent of ice at its peak 18,000 years ago. The glacier was over a kilometre thick!

Environment – People – Sustainability

13,000 years ago



Extent of ice 13,000 years ago. There is very little land on which to live.

Environment – People – Sustainability

12,000 years ago



Extent of ice 12,000 years ago. The large continental ice sheet retreated, leaving localized areas of glaciation.

Environment – People – Sustainability

11,000 years ago



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

Environment – People – Sustainability

9,000 years ago



Sea level was at its lowest 9,000 years ago largely due to land bouncing back from the weight of the glaciers.

Environment – People – Sustainability

6,000 years ago



By 6,000 years ago the shoreline was much as we see it today.

MI'KMAW TRADITIONAL KNOWLEDGE

Mi'kma'kik: today



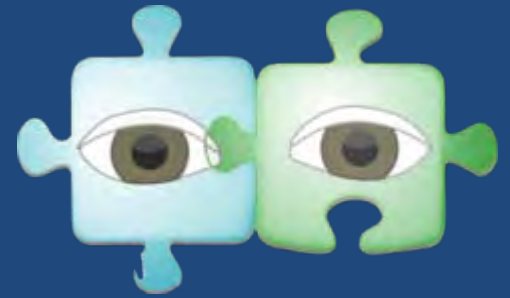
**Elder
Murdena
Marshall**

**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 communities.**

words of: Elder Murdena Marshall,
Eskasoni community, Mi'kmaw Nation

Let us find ways to
share our stories.



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)



Integrative Science



Indigenous

Western

Artist
Basma Kavanagh

Integrative Science Stories

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



... about our interactions with and within nature

... assembled and transmitted as

STORIES

*that draw upon our
diverse human pattern smarts*



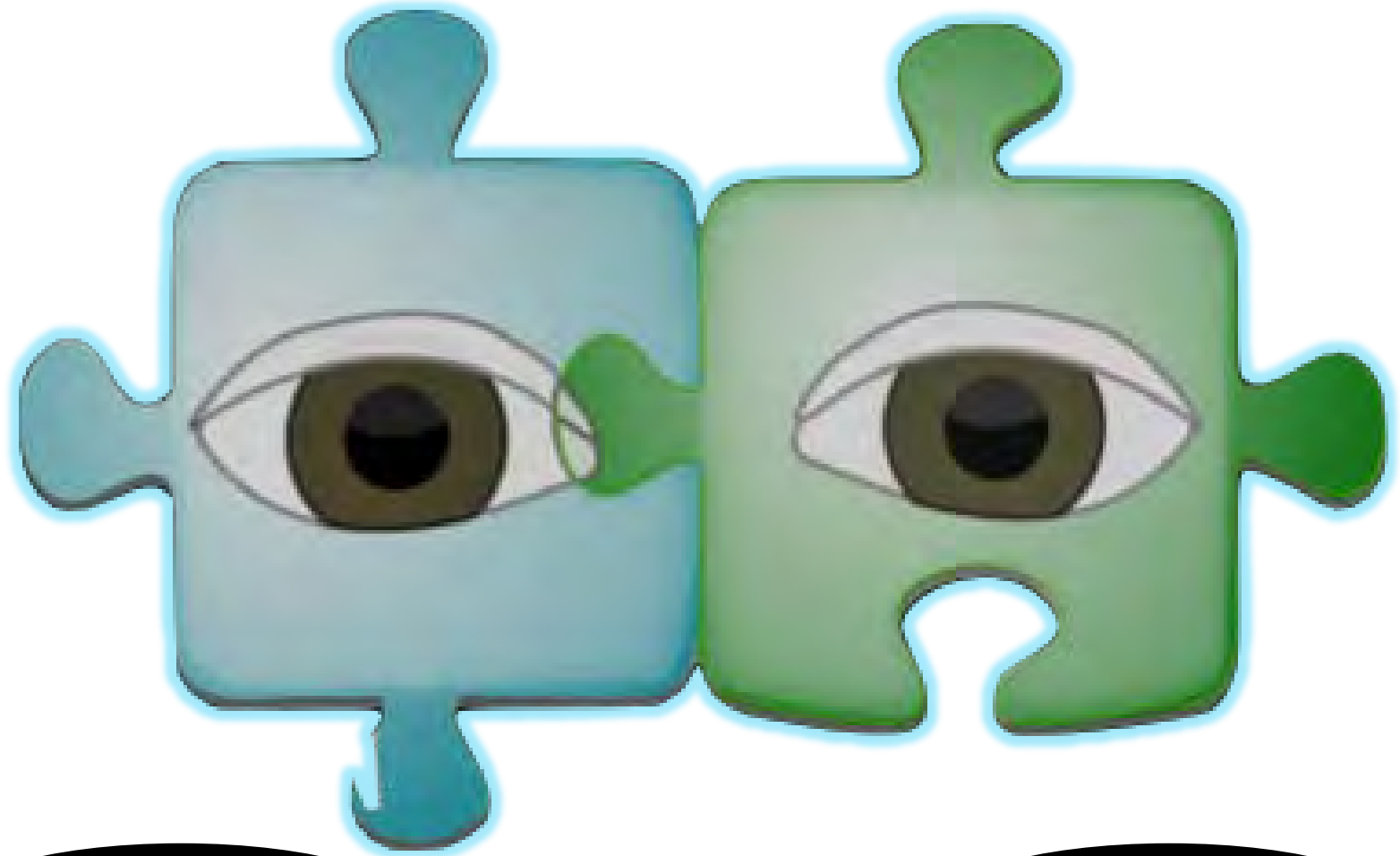
Integrative Science Stories

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



*Indigenous and Western
science stories
are based in observations
of the natural world.*





Indigenous

Western



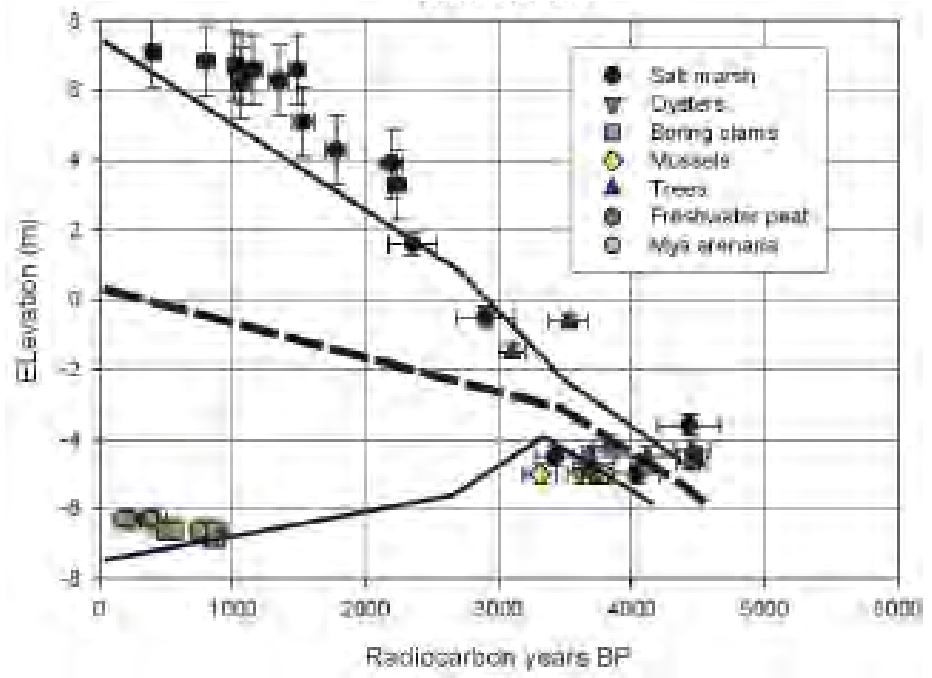
with permission of Artist Gerald Gloade



Indigenous

NRC Press Research Journals
Shaw et al. 2010; CJES 47: 1086

Fig. 4. Palaeoindicator data from Minas Basin.



Western

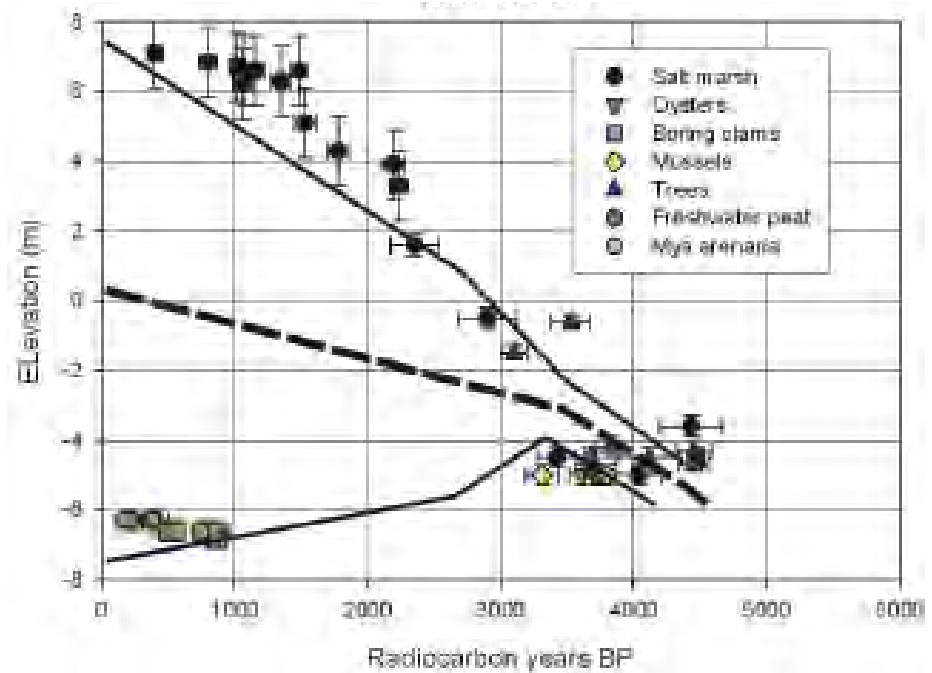


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NRC Press Research Journals
Shaw et al. 2010; CJES 47: 1086

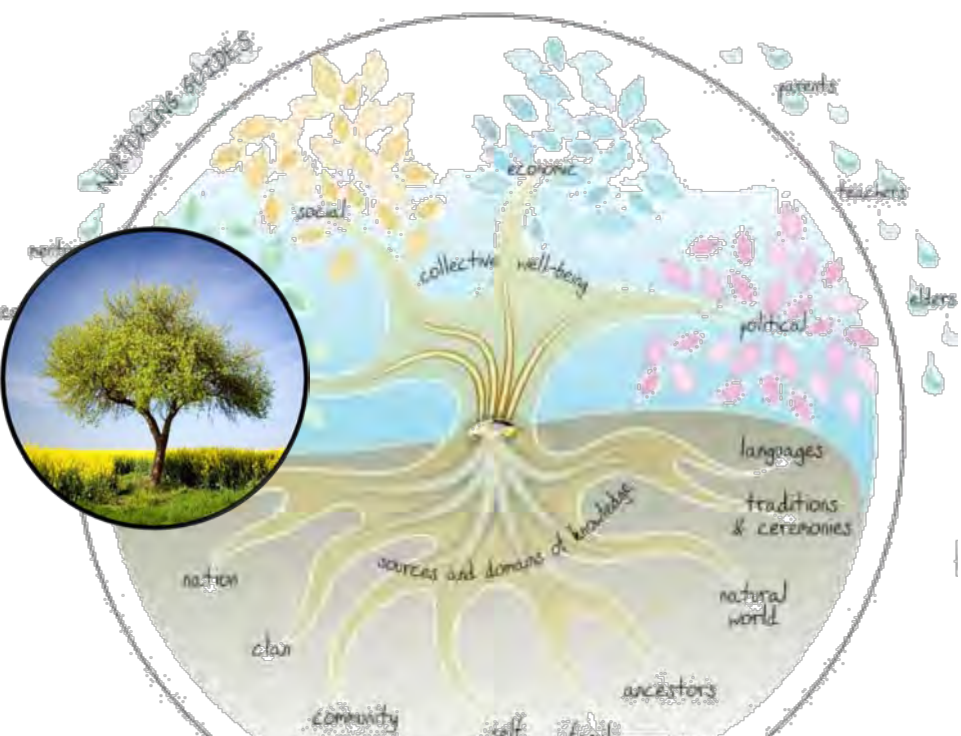


Fig. 4. Palaeoindicator data from Minas Basin.

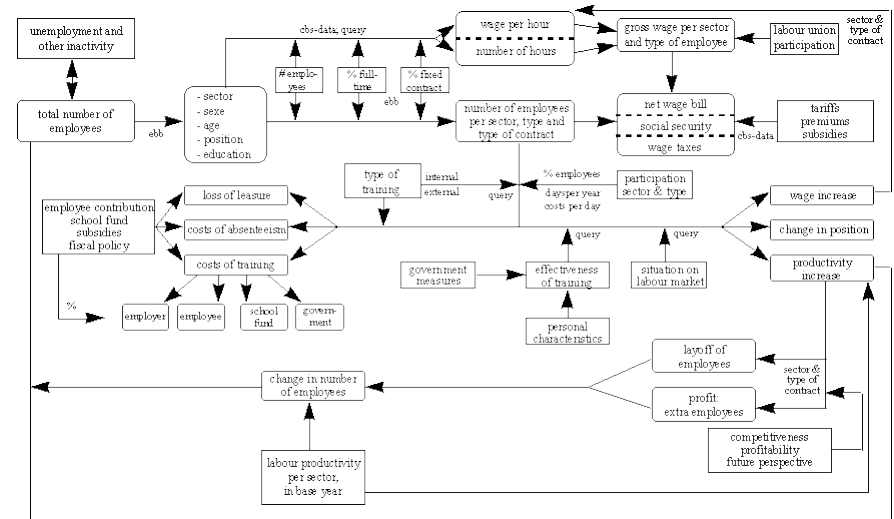


**towards resonance of
understanding within environment**

**towards construction of
understanding of environment**



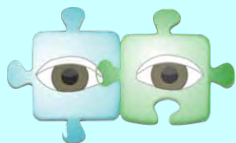
from: CCL Aboriginal Learning Knowledge Centre (www.ccl-cca.ca/CCL)



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

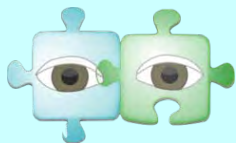
BIG UNDERSTANDING ... IN WORDS

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

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

**towards resonance of
understanding within environment**

**towards construction of
understanding of environment**



TWO-EYED SEEING

learning to see with the strengths of each & together

OUR OVERALL KNOWLEDGE OBJECTIVES

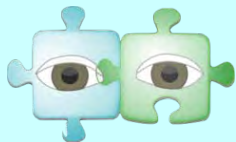
BIG QUESTION

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



**This is not “just philosophy”!
Rather, it is what shapes our stories
as to how we value and share the world.**





TWO-EYED SEEING

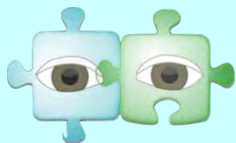
learning to see with the strengths of each & together

OUR WORLD

BIG 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 WORLD

BIG UNDERSTANDING ... IN WORDS

interconnective

beings ...
interconnective
and animate:

*spirit +
energy + matter*

with

CONSTANT CHANGE

within balance and wholeness

parts & wholes

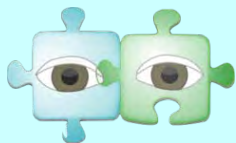
objects ...
comprised of parts and
wholes characterized by
systems and emergences:

energy + matter

with

EVOLUTION

with systems and emergences



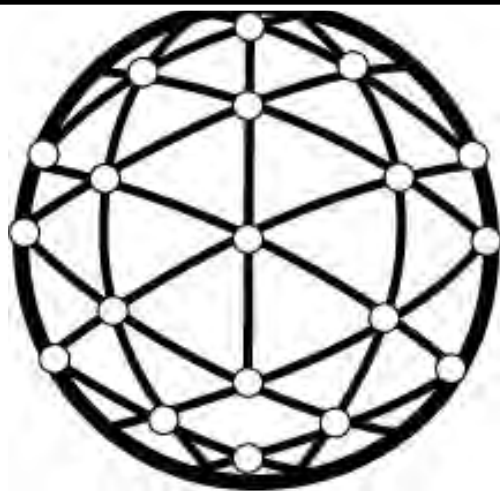
TWO-EYED SEEING

learning to see with the strengths of each & together

OUR WORLD

BIG UNDERSTANDING ... IN VISUALS

interconnective



CONSTANT CHANGE
within balance and wholeness

parts & wholes

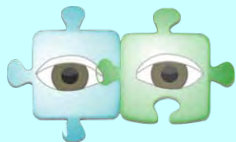


EVOLUTION
with systems and emergences

**This is not “just philosophy”!
Rather, it is what shapes our stories
as to how we value and share the world.**



Artist Basma Kavanagh



TWO-EYED SEEING

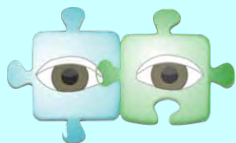
learning to see with the strengths of each & together

OUR KEY CONCEPTS and ACTIONS

BIG 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

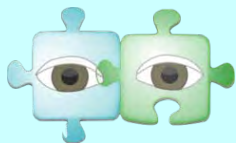
OUR KEY CONCEPTS and ACTIONS

BIG UNDERSTANDING ... IN WORDS

- 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 KEY CONCEPTS and ACTIONS

BIG UNDERSTANDING ... IN VISUALS

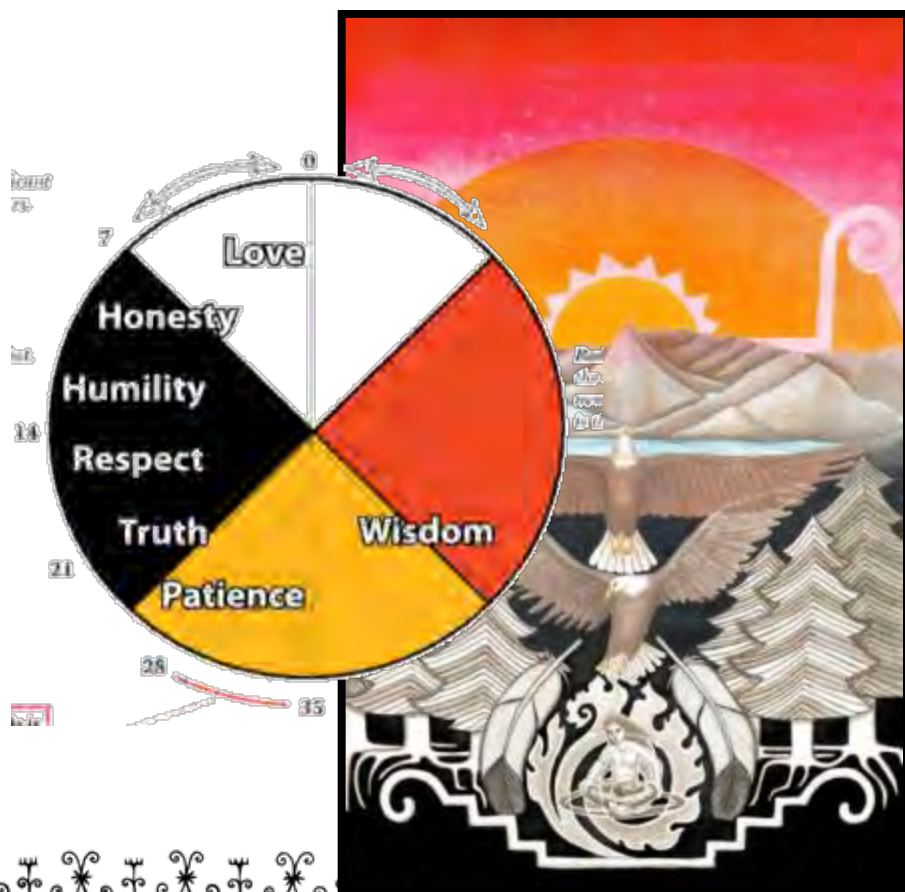
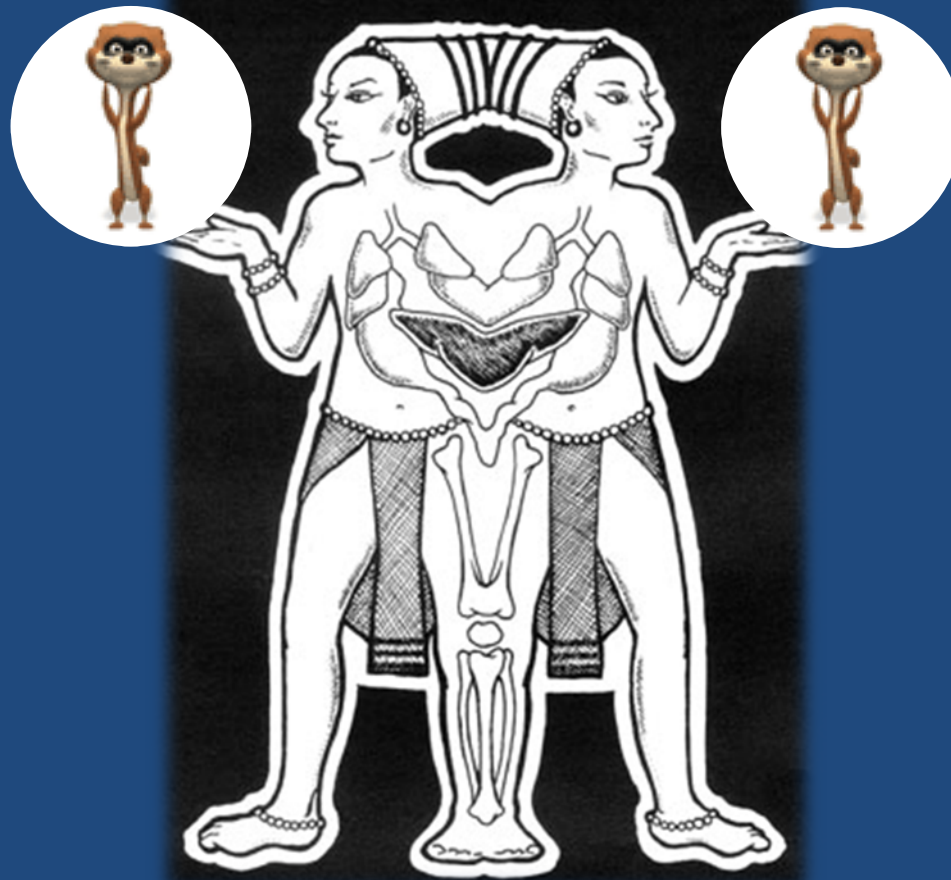


photo credit: NRC

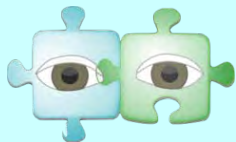
Artist Basma Kavanagh

**This is not “just philosophy”!
Rather, it is what shapes our stories
as to how we value and share the world.**



Artist
Basma
Kavanagh





TWO-EYED SEEING

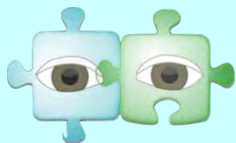
learning to see with the strengths of each & together

OUR LANGUAGES and METHODOLOGIES

BIG 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

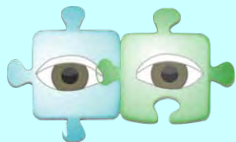
OUR LANGUAGES and METHODOLOGIES

BIG UNDERSTANDING ... IN WORDS

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 LANGUAGES and METHODOLOGIES

BIG UNDERSTANDING ... IN WORDS

Life
Love
Land

Math
&
Instruments

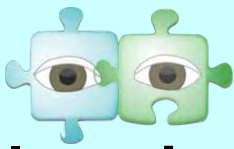
vigour

rigour

WEAVING

UN-WEAVING





TWO-EYED SEEING

learning to see with the strengths of each & together

OUR LANGUAGES and METHODOLOGIES

BIG UNDERSTANDING ... IN VISUALS



Life
Love
Land

vigour

WEAVING



Math
&
Instruments

rigour

UN-WEAVING



**This is not “just philosophy”!
Rather, it is what shapes our stories
as to how we value and share the world.**





An abstract painting featuring wavy, layered bands of color in shades of brown, green, and purple, creating a textured, organic appearance. The text is overlaid on this background.

Wela'liog
Thank you

artist Basma Kavanagh
<http://www.basmakavanagh.blogspot.com>



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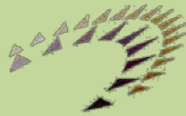
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IAPH



Thank you / Wela'liog

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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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partners and funding agencies
is gratefully acknowledged.**

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THURSDAY EVENING PUBLIC LECTURES

Environment, Sustainability and Society Thursday (ESS) Evening Lecture Series

New Location for 2010-11 for all lectures unless otherwise noted...

Ondaatje Hall, Marion McCain Arts and Social Sciences Building

6135 University Ave., Halifax, NS

All lectures begin at 7:00 pm in Ondaatje Hall unless otherwise noted.

Thursday, Dec. 2

Stephen Kelly, Dalhousie University

Info Glow: Visualizing Sustainability

co-sponsored by the Dalhousie Art Gallery

Thursday, Nov. 25, To be announced

Thursday, Nov. 18

Film & discussion: *Sharkwater* (2006)

with Hal Whitehead, Department of Biology, Dalhousie University

Thursday, Nov. 4

Hans Schreier, University of British Columbia, Vancouver BC

Water and the Future of Life on Earth

Thursday, Oct. 28

Jeff Moore, JustUs! Coffee Roasters, Wolfville NS

JustUs! Trade and Justice

Thursday, Oct. 21

Alan MacEachern, University of Western Ontario, London

The 1825 Miramichi Fire, and an Introduction to Environmental History

Thursday, Oct. 14, 7:00 p.m.

Film & panel: ***The Corporation (2003)***

Dalhousie panelists: James Baker, Management; Richard Devlin, Law;

Meinhard Doelle, Law (moderator)

Thursday, Oct. 7

Marcel Maessen, HRM Solid Waste Resources

Not a "Waste" Time: Your garbage and you

Thursday, Sept. 30

Sarah Elton, Toronto Locavore

Bringing politics to the table (co-hosted by DSU Green Week)

Thursday, Sept. 23

Albert Marshall & Cheryl Bartlett – ***Two-Eyed Seeing***

Thursday, Sept. 16

Kaiulani Lee, Maine - *A Sense of Wonder (life of Rachel Carson)*

For a listing of past lectures, please visit our archives pages.

[Fall 2009 ESS Lectures page](#) and the [Winter 2010 ESS Lectures page](#).