Mi’kmaq Elders
Oqwatnuk ... wisdom

Wjipnuk ... newness

Tkisnuk ... unknown

Pkite’snuk ... fullness
... consider:

**FEAR**

One who sees big patterns

Land of Eagle

\[\text{domain of the \ unknown}\]

\[\text{domain of the \ known}\]

“must become PATTERN-able”

(Douglas J. Cardinal)

world renown architect
**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.**

**You 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.**
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
11 LESSONS LEARNED:
We need to learn to ...

1. acknowledge we need each other
2. acknowledge we are on a learning journey
3. learn to “co-learn”
Go into a forest, you see the birch, maple, pine. Look underground and all those trees are holding hands. We as people must do the same.

(late Mi’kmaq Chief, Spiritual Elder, and Healer Charlie Labrador)
Where our co-learning journey has taken us ...

11 LESSONS LEARNED: We need to learn to ...

1. acknowledge we need each other
2. acknowledge we are on a learning journey
3. learn to “co-learn”:
   - simple Integrative Framework
both Indigenous and Western, plus:
• role of me and you in “the knowing”
  - pattern: recognition, transformation, expression
• our common ground
• our differences (and respect them)
• our journey … forward & together

AVOID … simply Western plus
bits and pieces of Indigenous
Where our co-learning journey has taken us …

11 LESSONS LEARNED:
We need to learn to …

1. acknowledge we need each other
2. acknowledge we are on a learning journey
3. learn to “co-learn”:
   - simple Integrative Framework
4. help institutions to help us “legitimize” TK in the minds of youth (and many others)
5. work with “living agendas”
6. use other “organic language”
7. do … in a creative “grow forward” manner
Where our co-learning journey has taken us ...

11 LESSONS LEARNED:
We need to learn to ...

8. think “knowledge gardening” more than knowledge translation or knowledge transfer
9. weave back and forth between our knowledges, our world views, our stories
10. navigate our weaving via awareness of **BIG PATTERNS** (knowledge orientations or maps)
11. make our knowledges, i.e. our stories, **visual**
stories of our interactions with and within nature

Science

Western
stories of our interactions with and within nature

Science

Periodic Table of the Elements
stories of our interactions with and within nature

Science

Indigenous
stories of our interactions with and within nature

Science

Land

Language

Life
Stories of our interactions with and within nature

Science: Integrative Science

Artist
Basma Kavanagh
stories of our interactions with and within nature

Science: Integrative Science

Artist
Basma Kavanagh

Indigenous our knowledges
our world views

Western bringing our stories together
Science: Integrative Science

stories of our interactions with and within nature

Indigenous
Western

bringing our stories together
“Two-Eyed Seeing”
learning to see with the strengths of each & together

Indigenous

Western

Mr. Albert Marshall, Mi’kmaq Elder
Eskasoni First Nation
Two-Eyed Seeing
our world is

interconnective

parts & wholes
Two-Eyed Seeing
our key concepts & actions

- respect
- relationship
- reverence
- reciprocity
- ritual
- repetition
- responsibility

- hypothesis
  (making & testing)
- data collection
- data analysis
- model & theory construction
Two-Eyed Seeing
our language & methodology

vigour
WEAVING

rigour
UN-WEAVING
Towards resonance of understanding within environment

Towards construction of understanding of environment
Go into a forest, you see the birch, maple, pine. Look underground and all those trees are holding hands. We as people must do the same.

(late Mi’kmaq Chief, Spiritual Elder, and Healer Charlie Labrador)
Co-Learning

It is not enough to just value the links between the experiences, disciplines, creativity, and ideas (as in inter & multi disciplinarity) ...

... in trans-disciplinary work ...
... in trans-cultural work ...

... one has to develop methods, strategies, and practices that will transform those links to the real connections.

[adapted from Ron Burnett at http://www.chocuk.net/troupe/isin_onol1.html]
Co-Learning

It is not enough to just value the links between the experiences, disciplines, creativity, and ideas (as in inter & multi disciplinarity) …

… in trans-disciplinary work …
… in trans-cultural work …

… one has to develop methods, strategies, and practices that will transform those links to the real connections.

[adapted from Ron Burnett at http://www.chocuk.net/troupe/isin_onol1.html]
Co-Learning
Science: stories ... ... humans with and within Nature

Science education
Indigenous

Science research

Science applications

Science outreach to youth and community

Western
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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.
East (sunrise) … measurement of the time of sunrise … for each new day over the course of one full year.
PATTERN CONCEPTUAL FRAMEWORK

outer   inner   outer
PATTERN CONCEPTUAL FRAMEWORK

outer

inner
PATTERN CONCEPTUAL FRAMEWORK

outer  inner  outer
PATTERN CONCEPTUAL FRAMEWORK

outer  inner  outer
PATTERN CONCEPTUAL FRAMEWORK

... in honour of “Juno”, the Roman’s Queen of the Gods
PATTERN CONCEPTUAL FRAMEWORK

outer  inner  outer

[Diagram showing a conceptual framework with images and elements labeled with various names and symbols, such as animals, natural elements, and cultural terms.]
“sept” = 7 in Latin … was 7th month when a 10 month year was used … although now is 9th month in a 12 month year.
PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

Attu’tuejualu

millefolium

Yarrow

1000

Old English
PATTERN CONCEPTUAL FRAMEWORK

outer

inner

outer

Mtèskmwaqsil

Fiddlehead fern
what our “pattern seeing” (re)generates

subject-subject

subject - object

cognito-centric & detached

eco-reflexive & participatory

connectedness

disconnectedness

what we “see” as: HUMAN

cognitional
physical
spiritual
emotional

neocortex
limbic
cerebellum
brain stem

heart-brain
what we “see” as: HUMAN HEALTH

Artist: Rod Restoule
from: Into the Daylight;
C. Morrisseau, 1998
what we “see” as: MOTHER-CHILD

from:
Mi’kmaq Family & Children’s Services
“must become PATTERN-able”  
(Douglas J. Cardinal)  
world renown architect
Both Indigenous and Western scientific knowledges are based on observations of the environment.
Both Indigenous and Western scientific knowledges result from the same intellectual process of creating order out of disorder.
stories of our interactions with and within nature

PATTERN
• recognition
• transformation
• expression

• various pattern smarts
• various ways to connect the dots
• variety in our stories
“pattern smarts”

multiple intelligences theory

(H. Gardner, Harvard Univ.)

- numbers (logical-mathematical)
- language (linguistic)
- music (musical)
- body (body-kinesthetic)
- spatial (spatial)
- other people (interpersonal)
- self (intrapersonal)
- naturalist (naturalist)
- spiritual / existential *

sanctioned world view or methodology

“VALUE”
“pattern smarts”

Medicine Wheel: lived relationships
“pattern smarts”

Medicine Wheel: lived relationships
co-learning our way to expanding wholeness through restoration of relationships with the land

Artist: Rod Restoule
from: Into the Daylight; C. Morrisseau, 1998
Go into a forest, you see the birch, maple, pine. Look underground and all those trees are holding hands. We as people must do the same.

(late Mi’kmaq Chief, Spiritual Elder, and Healer Charlie Labrador)
Co-Learning

Go into a forest, you see the birch, maple, pine. Look underground and all those trees are holding hands. We as people must do the same.

(late Mi’kmaq Chief, Spiritual Elder, and Healer Charlie Labrador)
Holarchy
- Visible Matter in the Universe -

- 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)
The Collective: Its Parts (example = the living cell)

- RNA molecule
- Chloroplast
- Membrane channel
- Nuclear pore
- Nucleus membrane
- Cell membrane
- DNA molecule within nucleus
- Ribosome
- Mitochondrion
- Phagolysosome
- Protein molecule
- Endoplasmic Reticulum
- Golgi Apparatus
- Cytoskeleton
The Collective: Its Functions

Murdena Marshall’s TK metaphor

- Information transfer for production of informed workers for Collective (knowledge transmission)
- Energy reception for Collective
- Gateway to Collective (connectiveness to rest of Creation)
- Gateway to deep Traditional Information
- Boundary on deep Traditional Information
- Boundary of Collective (general Traditional Information)
- Deep Traditional Information storage for Collective (Spirituality of Creation)
- Production of informed workers for Collective
- Energy production for Collective (relationship with Creation)
- Recycling of materials within Collective
- Informed worker for Collective
- Communication channels throughout Collective
- Assembly site for materials used inside or outside Collective
- Infra-structure support for Collective (population of Aboriginal People)
Wela’liiq
Thank you