

THE CREATIVITY GAP: HOW THE ARTS INSPIRE AN INNOVATIVE SOCIETY

Canadian Conference on the Arts
National Policy Conference 2003;
sponsored by Canada Council for the Arts;
Halifax, NS, 28-29 November 2003

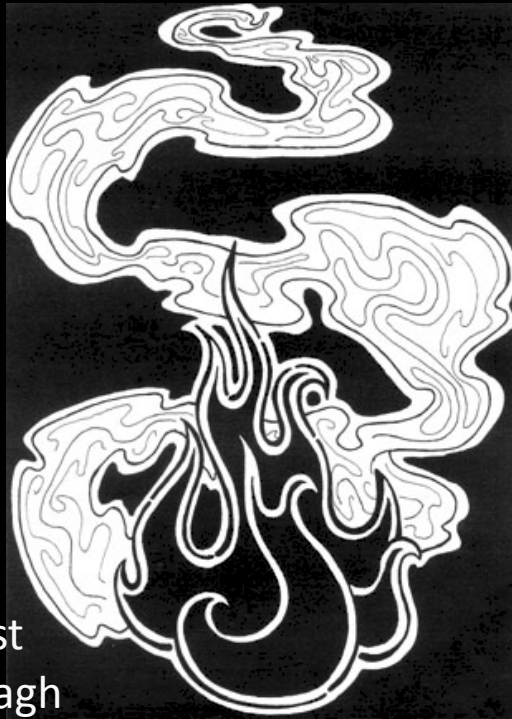


image by artist
Basma Kavanagh

art
within
science
unfolding
science
within
art

Cheryl Bartlett

a presentation by
Canada Research Chair
in Integrative Science
and Professor of Biology

with images
and commentary
by artist

Basma Kavanagh



with assistance
from students

Dina & Stephenie Bernard, Sana Kavanagh, Nadine Lefort



Canada Research
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Social Sciences and Humanities
Research Council of Canada

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sciences humaines du Canada

**Cheryl
Bartlett**

INTRODUCTION

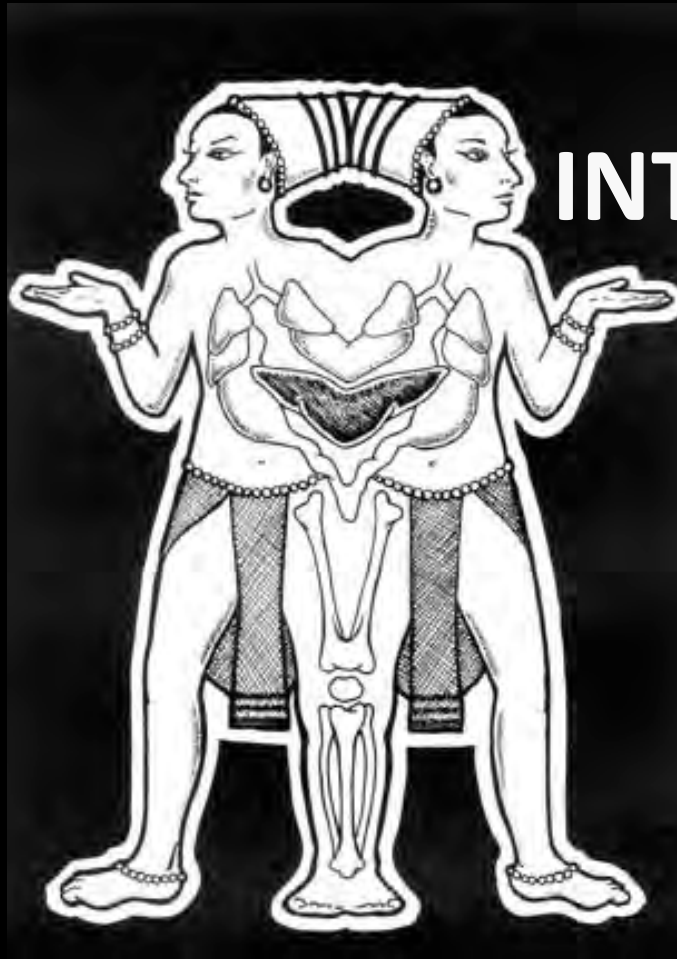
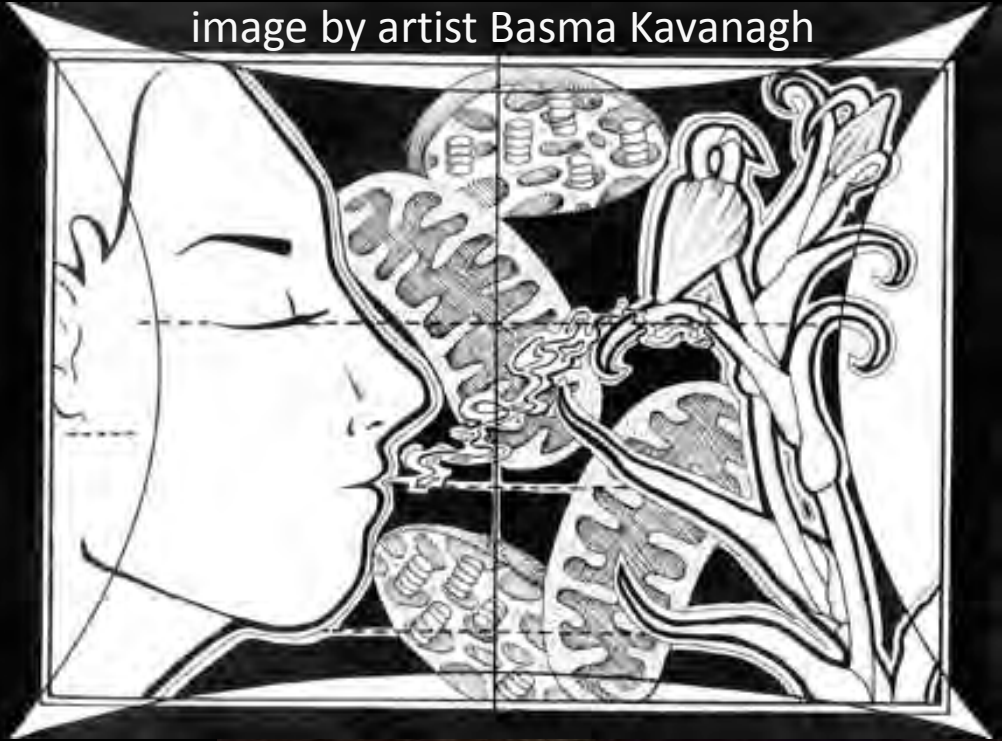


image by artist
Basma Kavanagh

beginnings

image by artist Basma Kavanagh

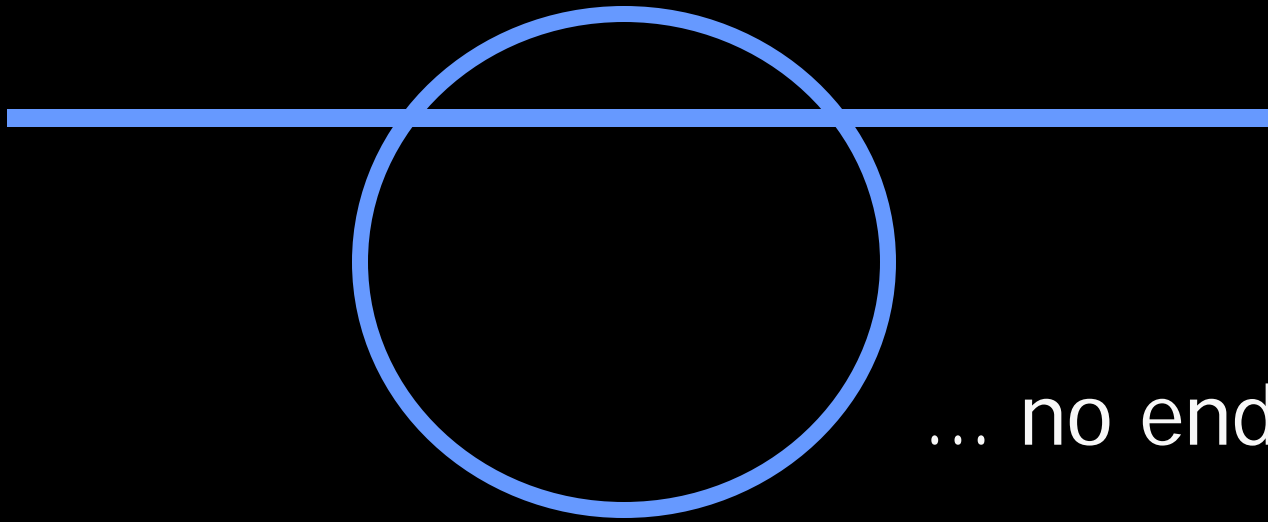


art – science
collaborations



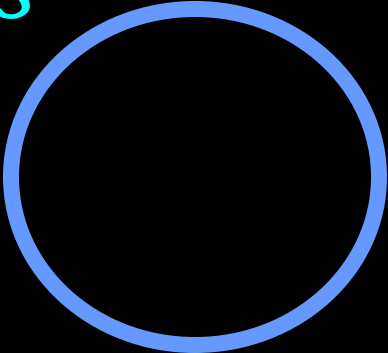
beginnings ...

... next, next, next ...



... no endings.

1st of two major suggestions
re policy for: “no endings”



1

key word: “grow”

not “build”



image by artist Basma Kavanagh

"grow"

focus:

organism

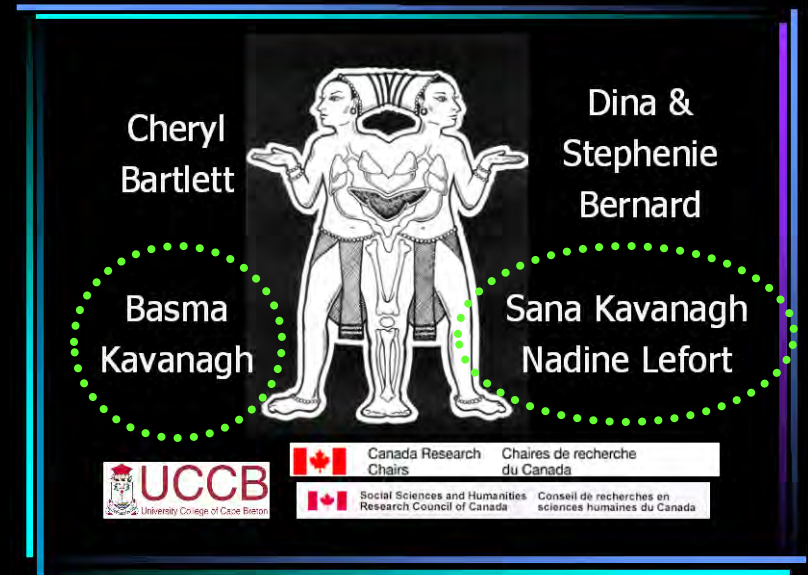
not mechanism

CREATIVITY

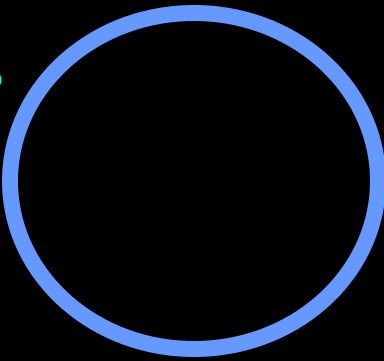
... think “grow” ...
as in a garden

GROWTH

... is from “inner into outer”
... requires “space”
... requires “nourishment”



2nd of two major suggestions
re policy for: “no endings”



2

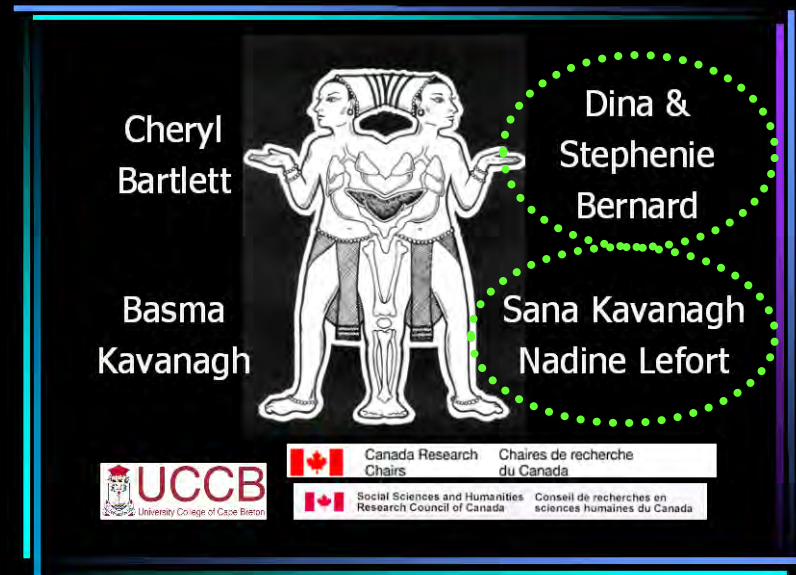
key word: **diversity**, ala Nature
... draw upon **diverse roots**
... use **diverse forms**

not just one way

not just one culture

CREATIVITY

... think “diversity in being” ... as found in Nature and many bio-cultural world views
(*e.g.* FIRST NATIONS)



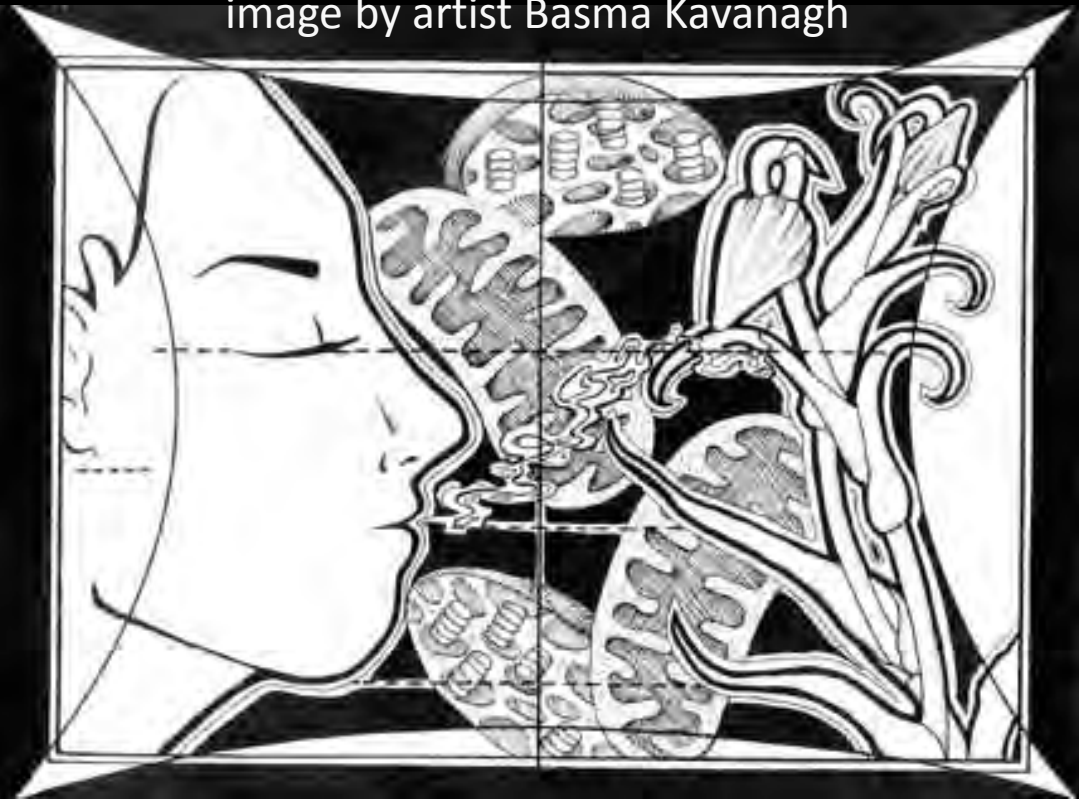
DIVERSIFICATION

... “participatory self” within
“capacity for relationship”
fostering life-long enrichment of
sense of wholeness and interconnectedness

image by artist Basma Kavanagh

beginnings

sniffing
our
potential



1

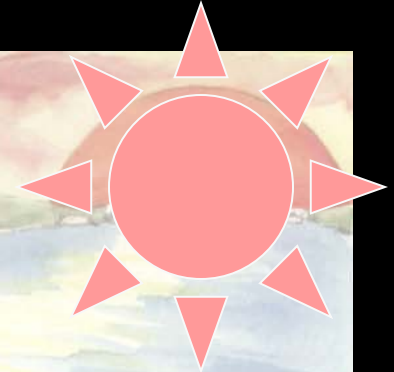
science research

2

science teaching

ENERGY
CONVERSION

Spirit of the East ... brings the
gift of illumination, of newness



beginnings

1

science research

2

science teaching

image by artist
Basma Kavanagh



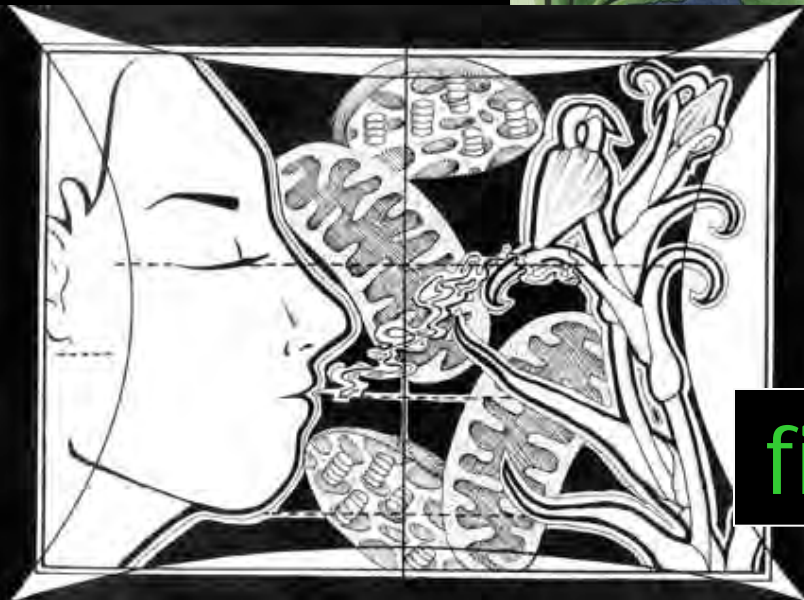
Canada Research
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images by artist
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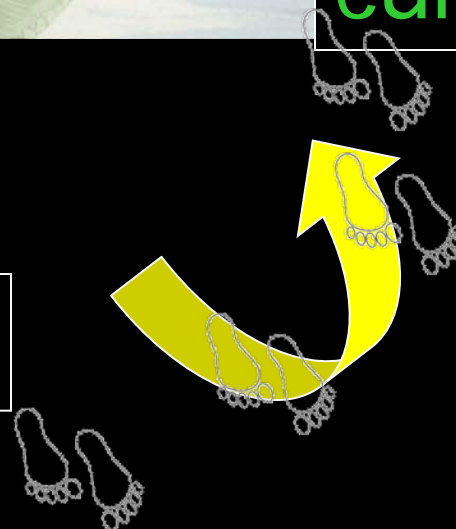


Integrative
Science



current

first



first

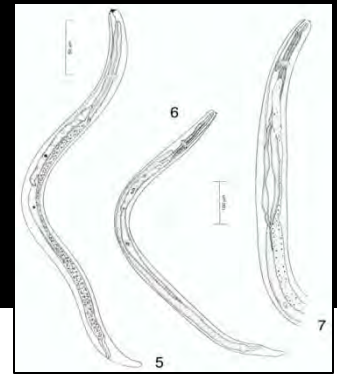
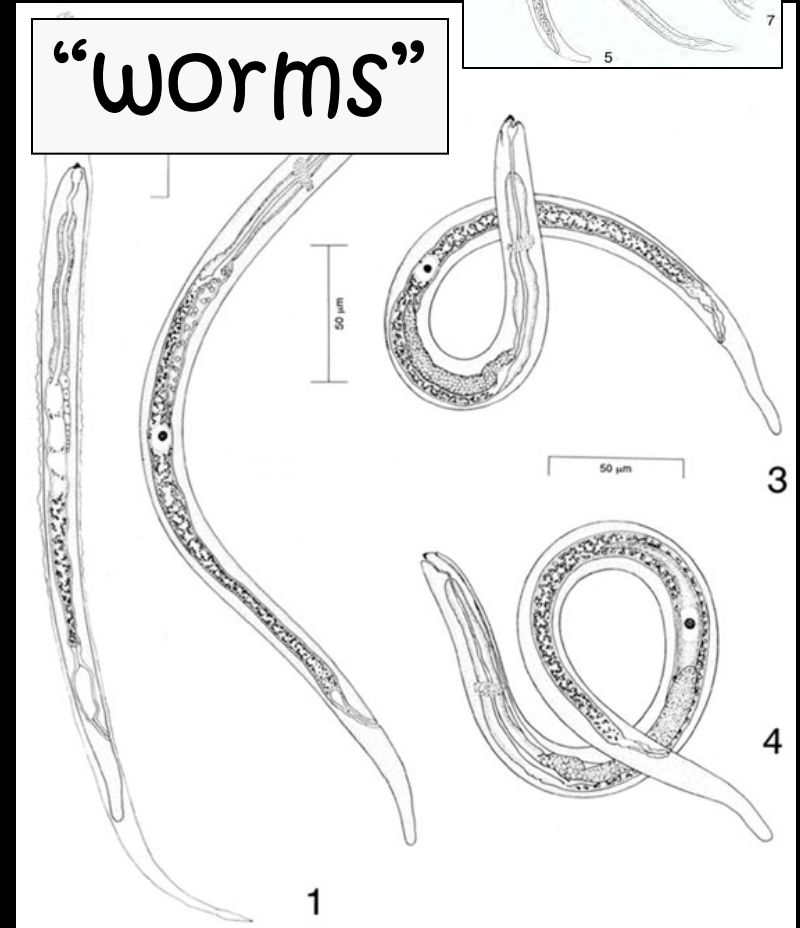
science research ... technical illustrations

- the scientist:
a parasitologist

... studying nematode
parasites found in
the bodies of humans
and wild and domestic
animals

images by artist
Basma Kavanagh

“worms”



after the "first sniff"

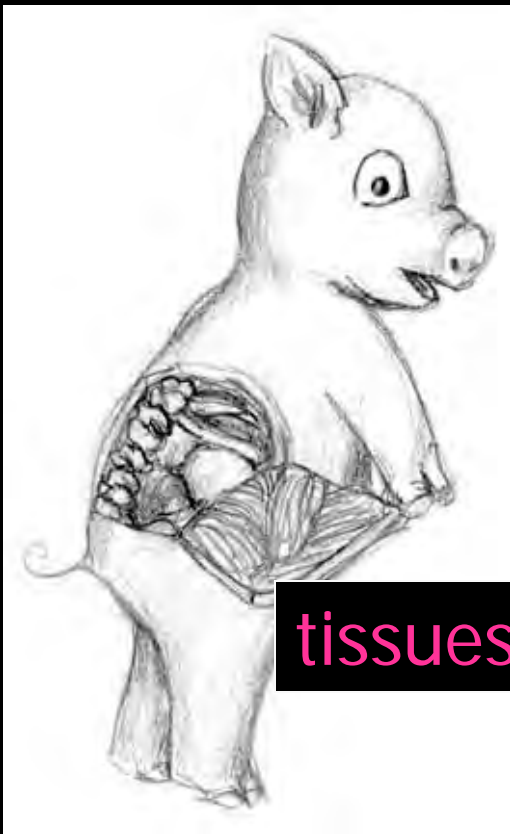
university science
teaching



microscopy

Operation BaCon

... re-inspire the
learning process
(lab topics)



tissues



fermentation

images by artist Basma Kavanagh

science teaching: 1st yr biology

(lecture topics)

organisms

chemical reactions

chemical bonds

DNA

biodiversity

origin of life

energy conversion

energy & matter

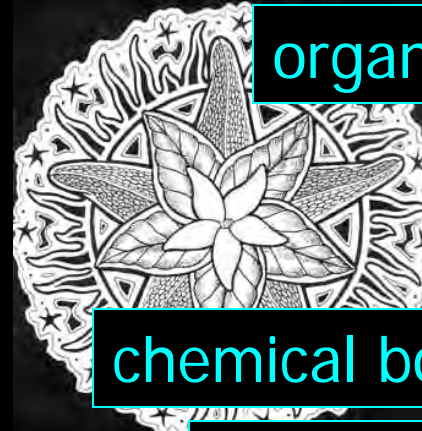
molecules

science teaching (lecture topics)

chemical reactions



organisms

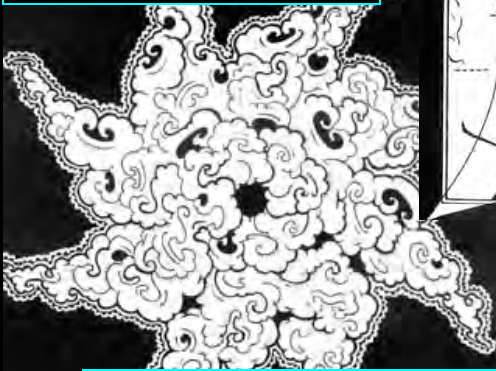


chemical bonds

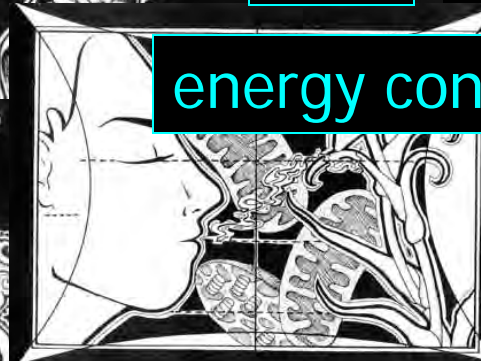
biodiversity



origin of life



energy conversion



energy & matter



molecules



images by artist Basma Kavanagh



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Integrative Science

current

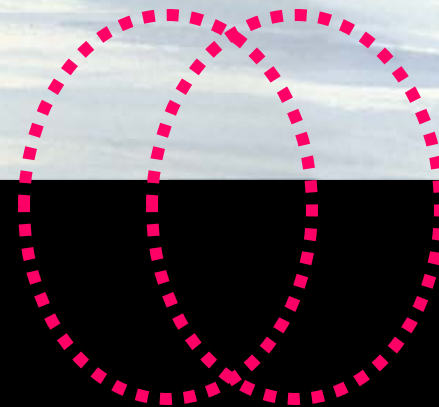
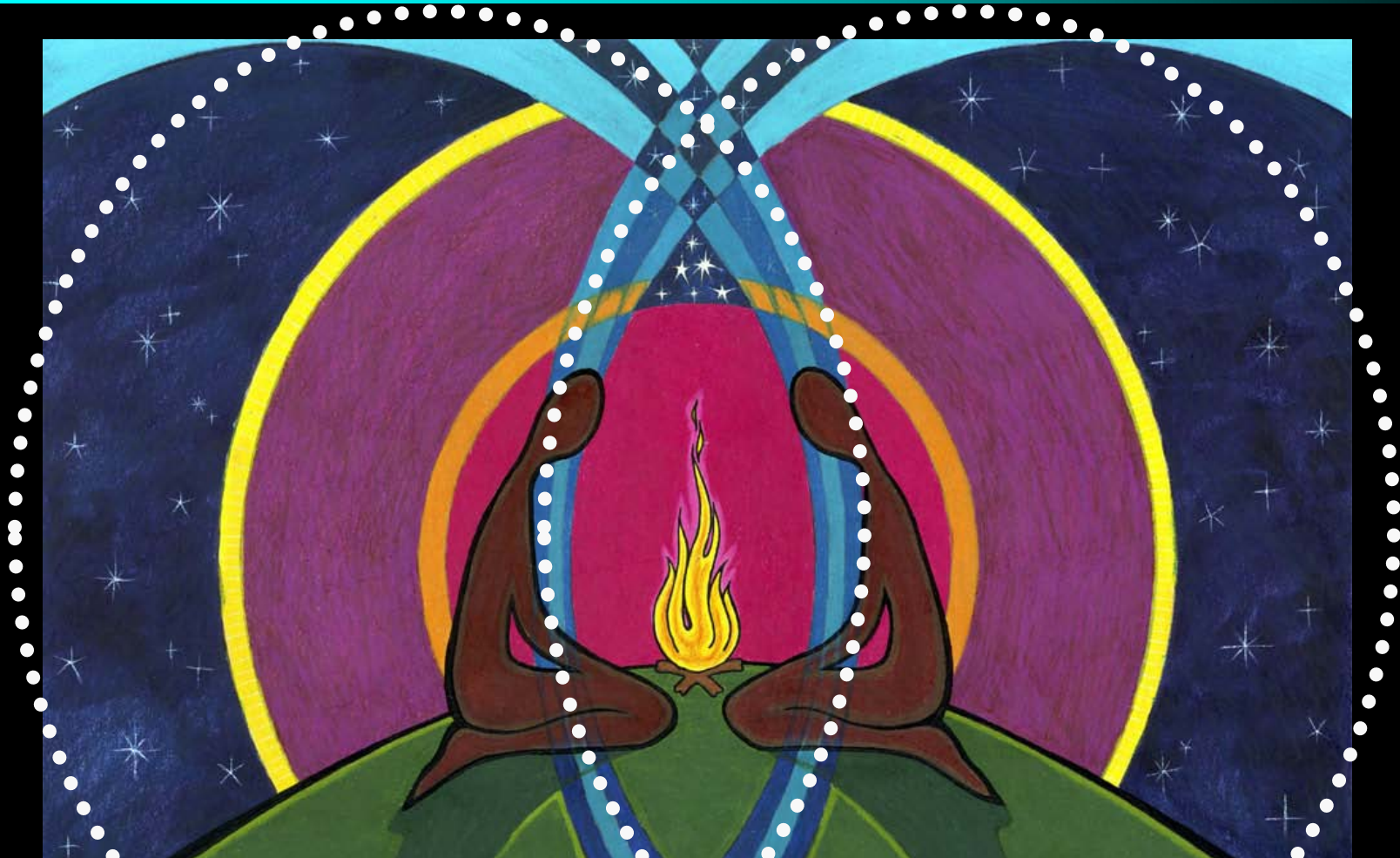


image by artist Basma Kavanagh



“bringing knowledges together”
Aboriginal – Western scientific

image by artist Basma Kavanagh

Why?



relevance of "Integrative Science"



image by artist Basma Kavanagh

Community

Resource management

Health

Spirituality

Stewardship

Environmental issues

Ecology

Responsibility

Education

POLICY
key word:
grow,
ala Nature

... think:
growth

... employ:
organisms

<http://faculty.uccb.ca/msit>

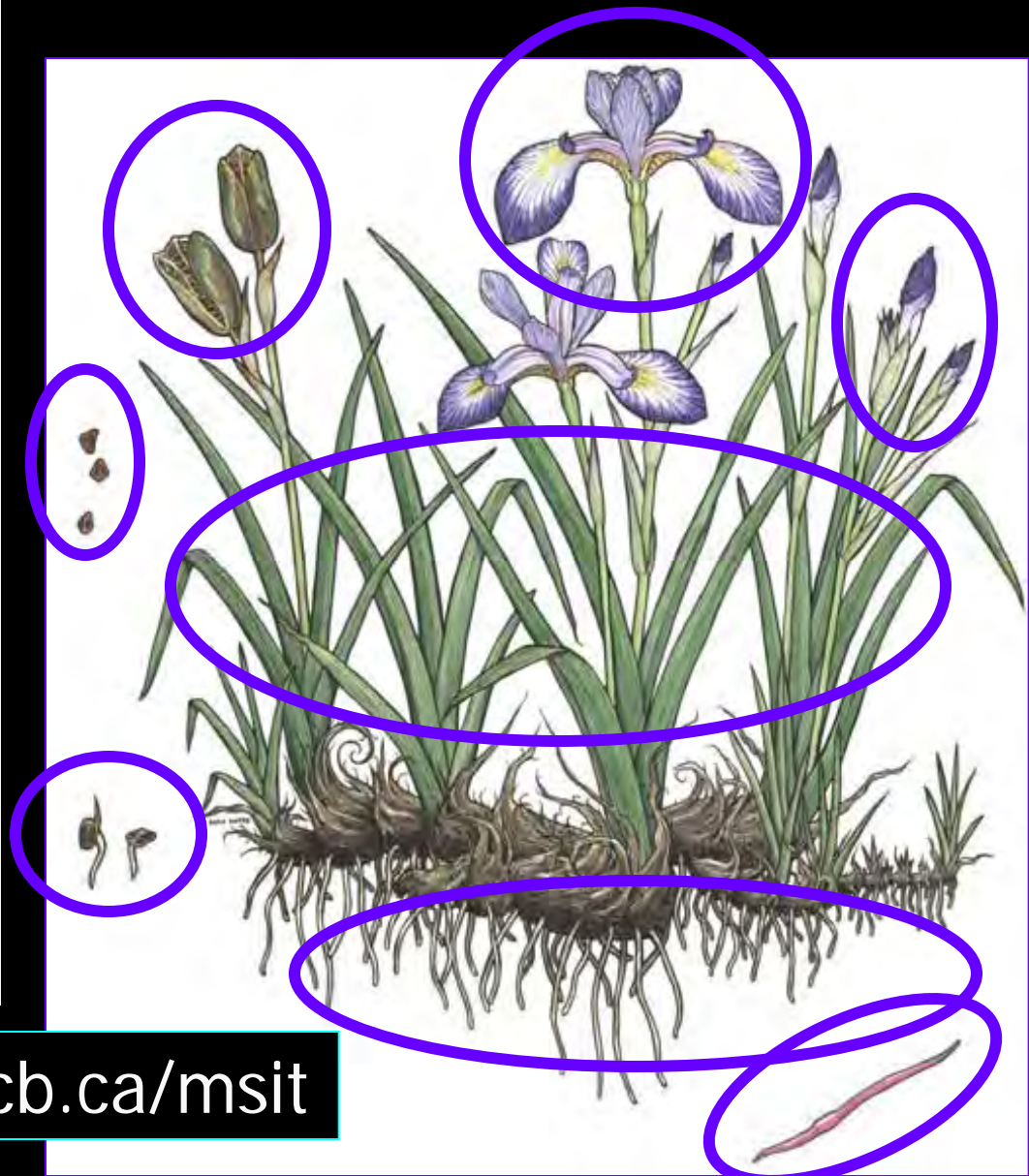


image by artist Basma Kavanagh

POLICY

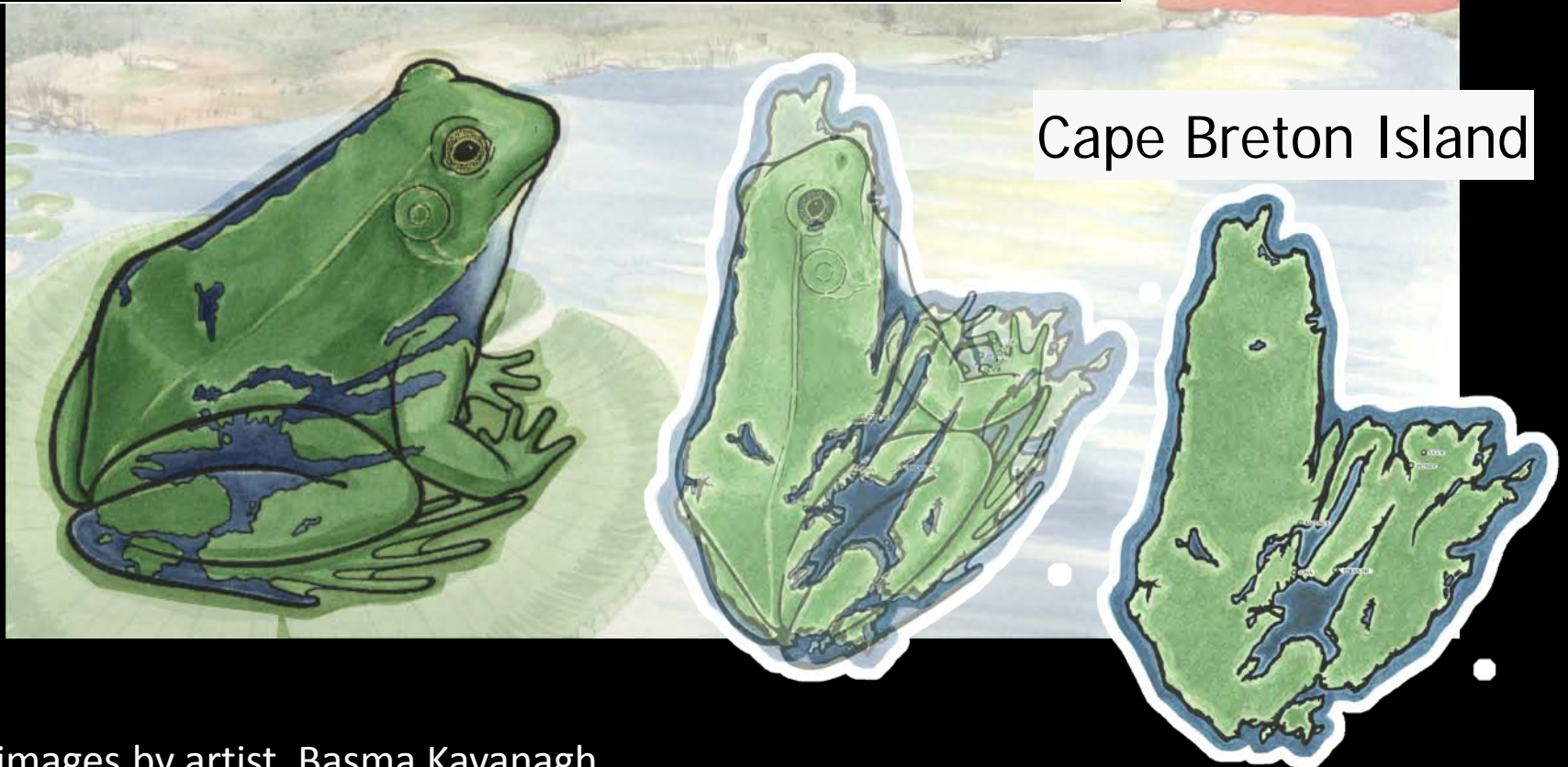
key word: **diversity**, ala Nature

... think: **diverse forms**

... employ: **transformations**

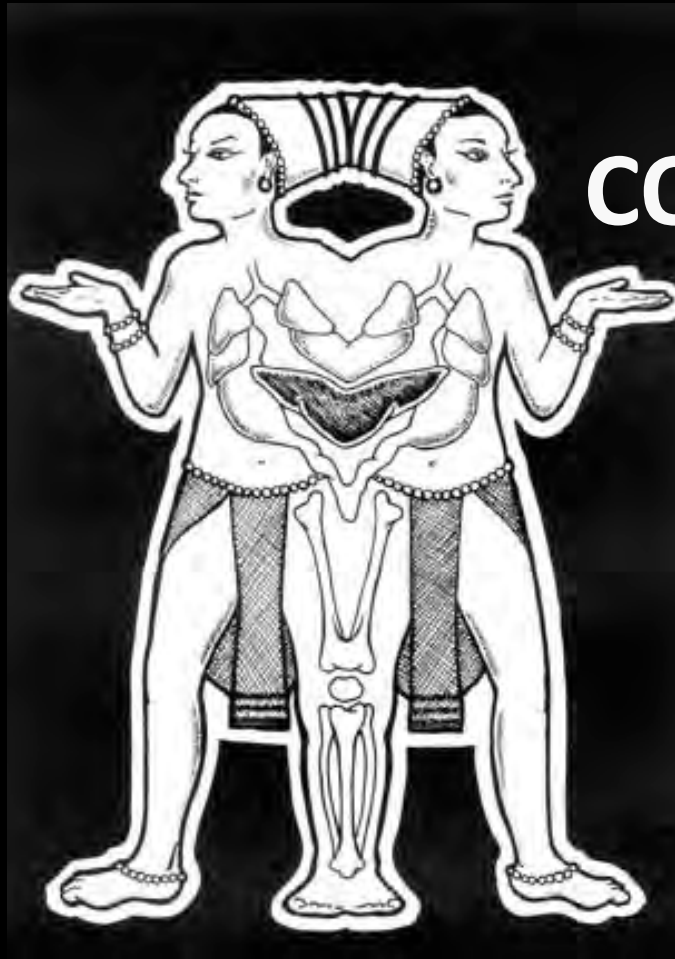


Cape Breton Island



images by artist Basma Kavanagh

**Basma
Kavanagh**



COMMENTARY

image by artist
Basma Kavanagh



Basma

PAINTER
POET
ILLUSTRATOR
ARTISAN

Basma
Kavanagh



Nurturing
Creativity

image by artist Basma Kavanagh



cultivate: to improve, develop, pay attention to,
and cherish

image by artist Basma Kavanagh



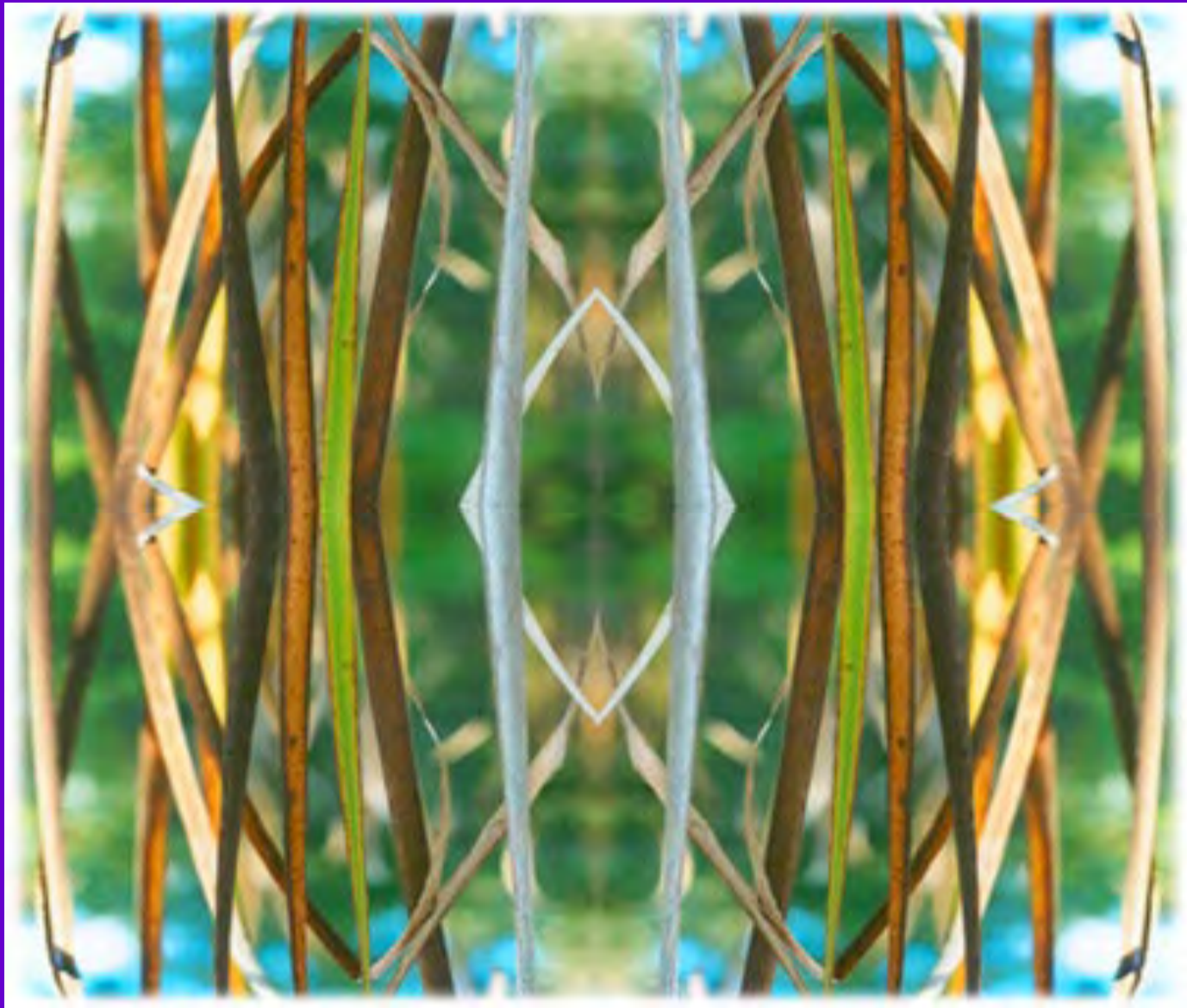
We must “nourish the soul of the instinctual human need to learn and create”. (Gregory Cajete)

image by artist Basma Kavanagh



nourish:
to sustain,
foster,
cherish

image by artist Basma Kavanagh



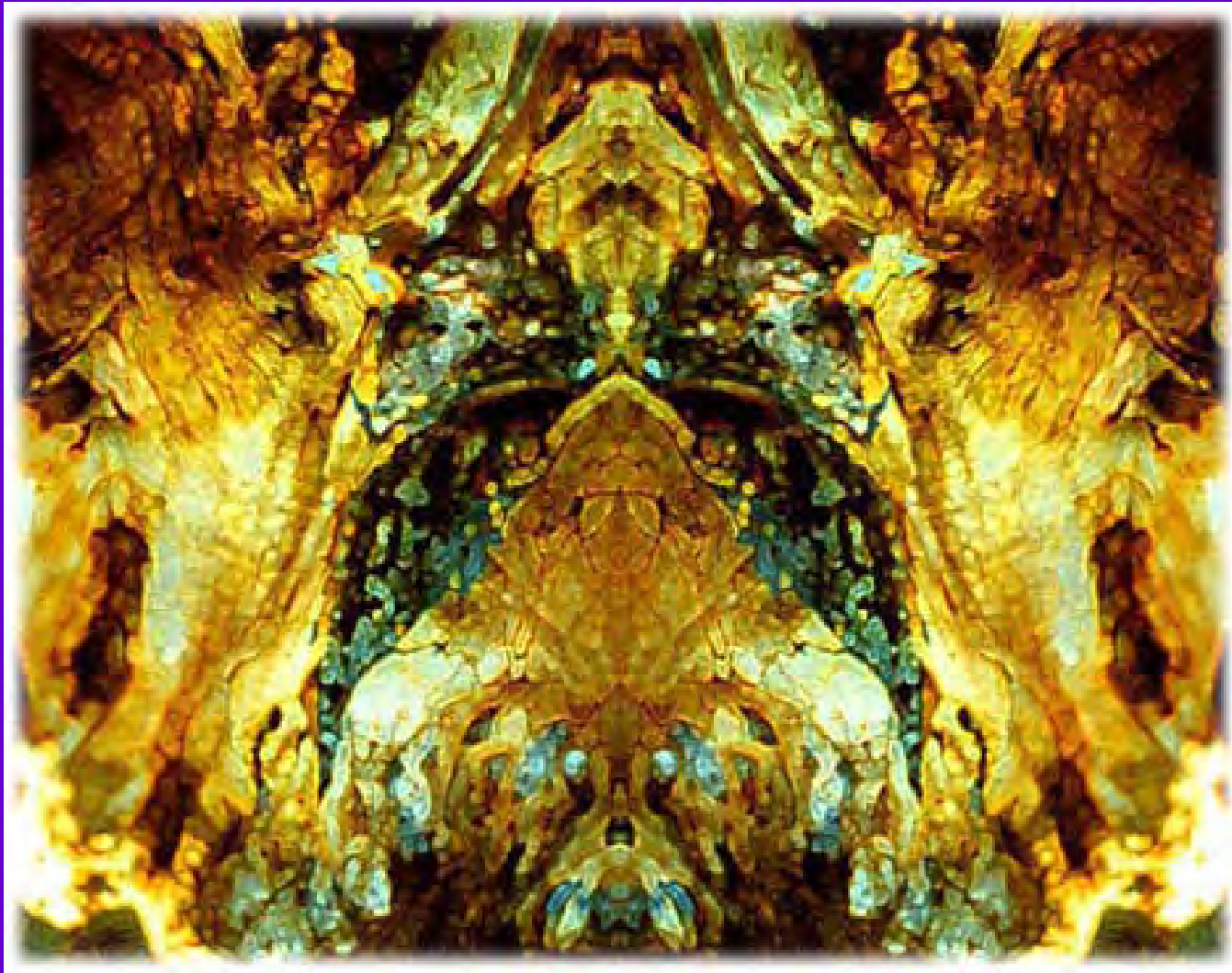
cherish: to hold in one's heart

image by artist Basma Kavanagh

flourish:
to grow
vigorously, to
flower



image by artist Basma Kavanagh



encourage: to embolden, incite, advise,
promote, assist (root Latin *cor* heart)

image by artist Basma Kavanagh



courageous:
brave, fearless
(root Latin *cor*
heart)



enthusiasm: ardent zeal (from the Greek meaning possessed by a god, *Theos*)

image by artist Basma Kavanagh



inspiration: drawing in of breath,
divine influence

image by artist Basma Kavanagh



inspirit: to put
life into, to
animate,
to encourage

image by artist Basma Kavanagh

creativity: the act
of putting life into
an object or action,
and by such action
inspiring others to
the same



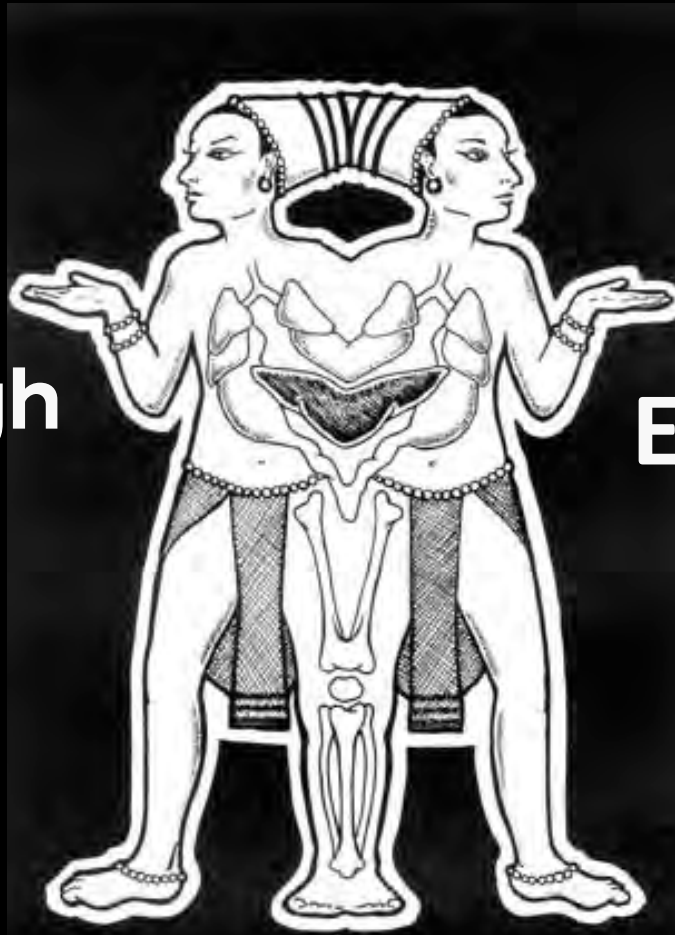
image by artist Basma Kavanagh



Creativity is a
living thing.

image by artist Basma Kavanagh

**Sana
Kavanagh**
and
**Nadine
Lefort**



**MORE
EXPLANATION**

image by artist
Basma Kavanagh

Nadine & Sana

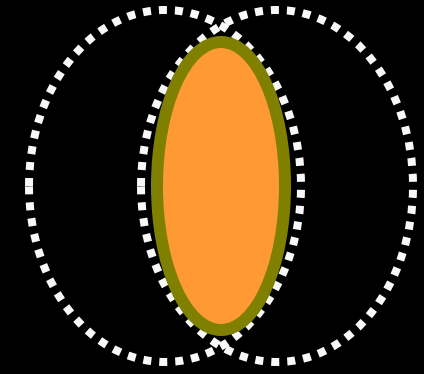


Research
Assistants

Integrative
Science



**Mother
Earth**



PATTERNS

common ground

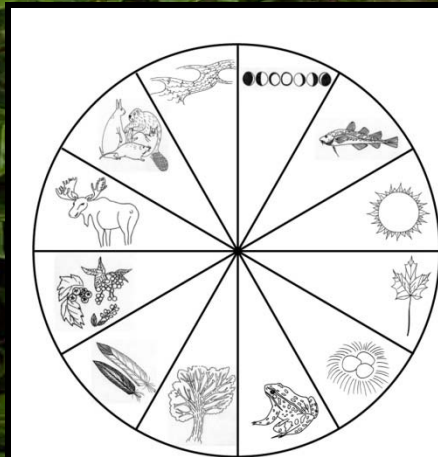
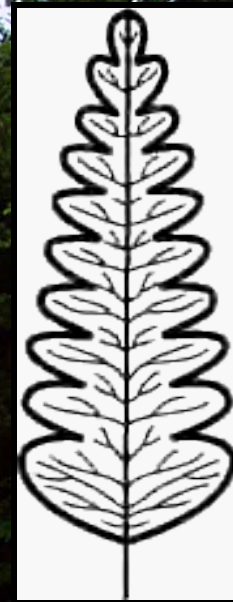
PATTERN RECOGNITION

Both knowledge systems are ultimately based on observations of the **environment** and both result from the same intellectual process of creating order out of disorder.

PATTERN

recognize / make / break
express / use / transform

CREATIVITY



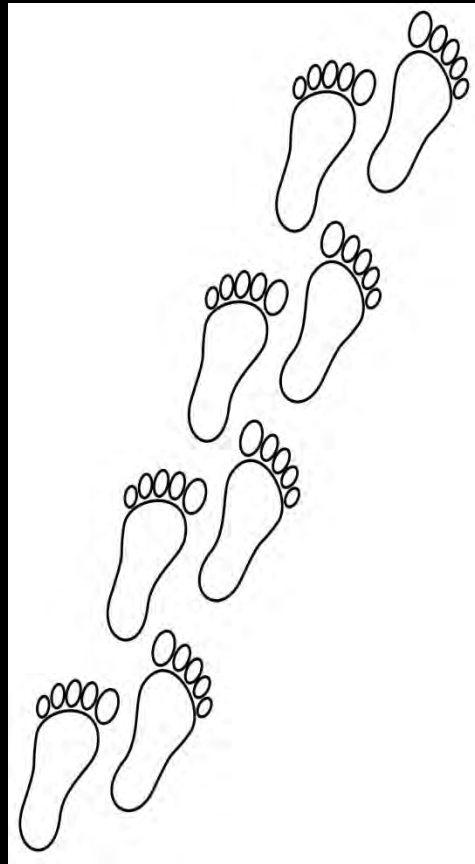
PATTERN

conceptual framework

natural



ideal



abstract



Place

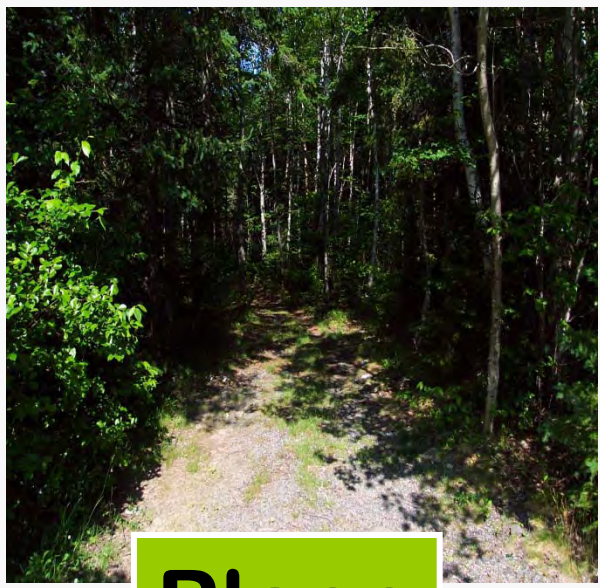
PATTERN

conceptual framework

natural

ideal

abstract



Place

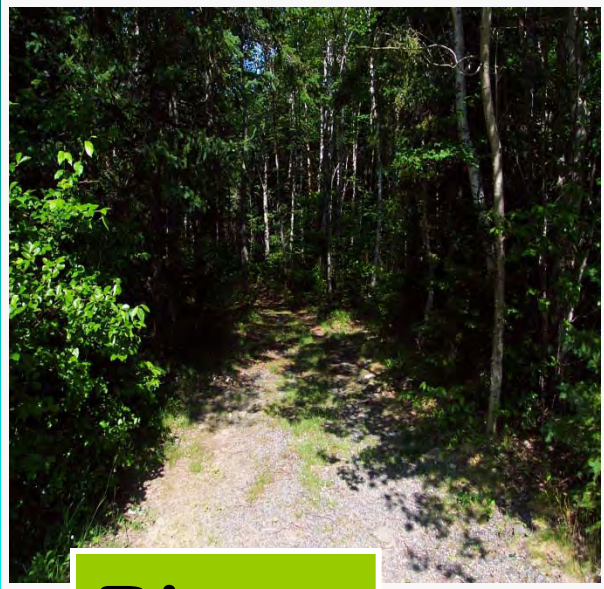


$45^{\circ}48' - 47^{\circ}13'$
 $59^{\circ}42' - 61^{\circ}57'$

PATTERN

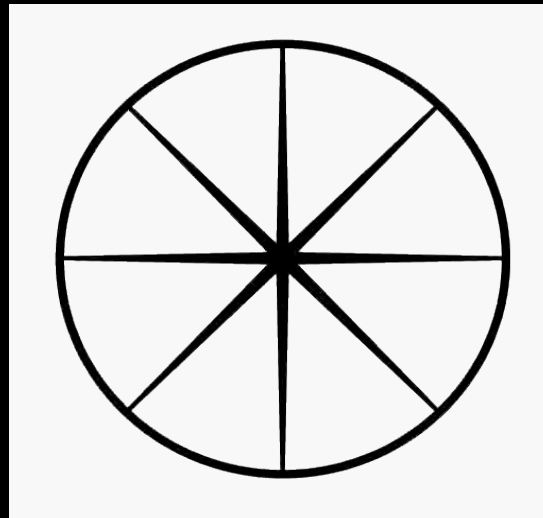
conceptual framework

natural



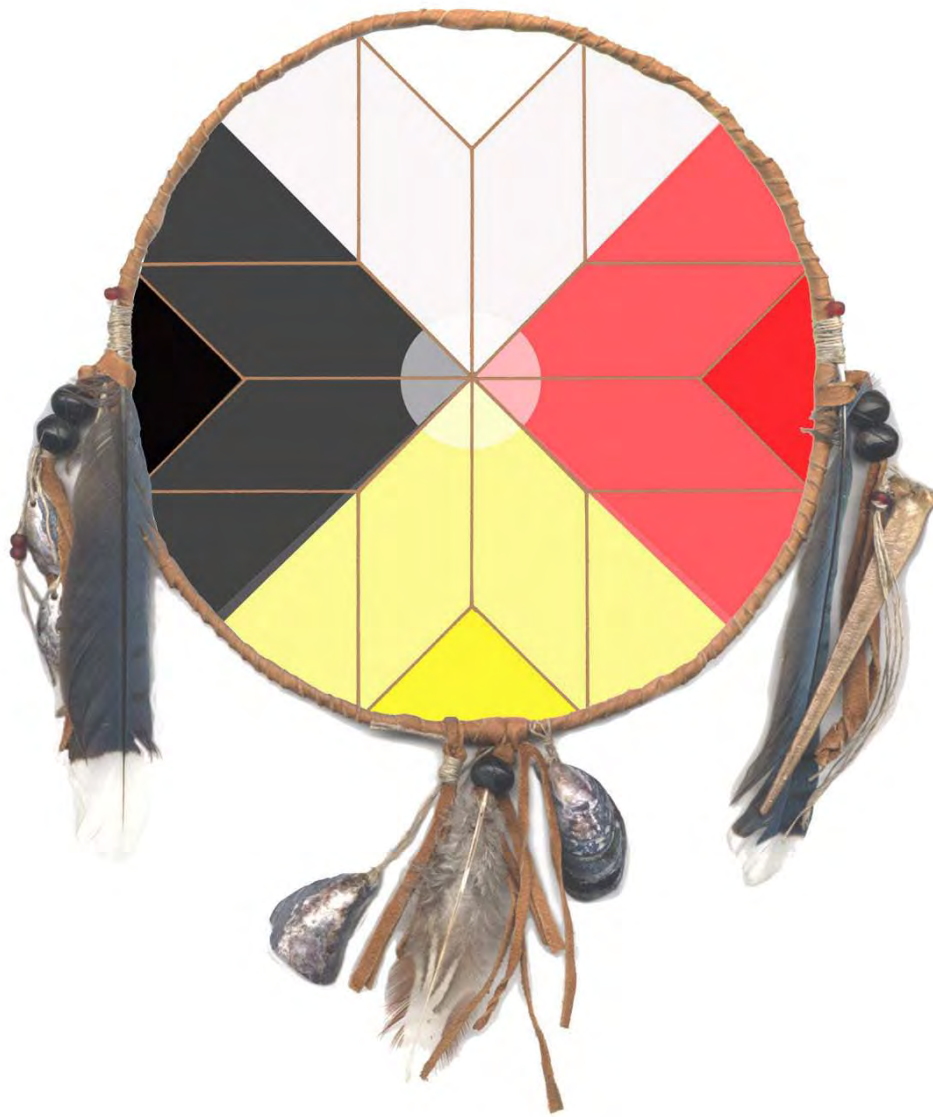
Place

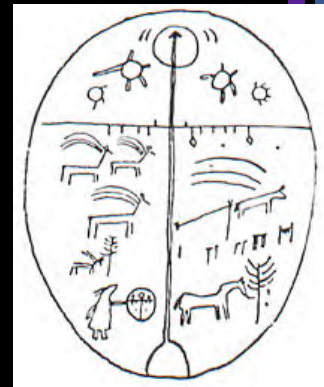
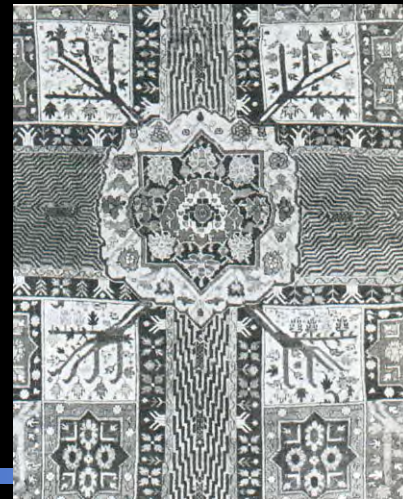
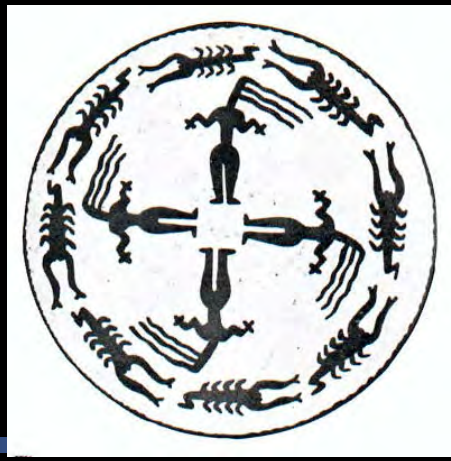
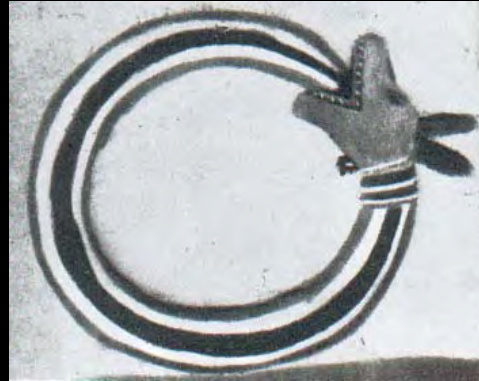
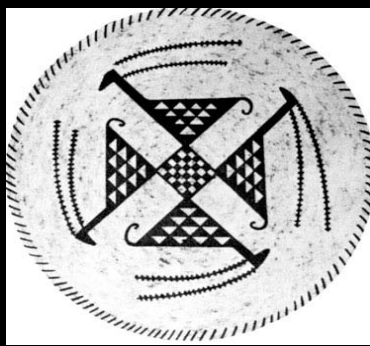
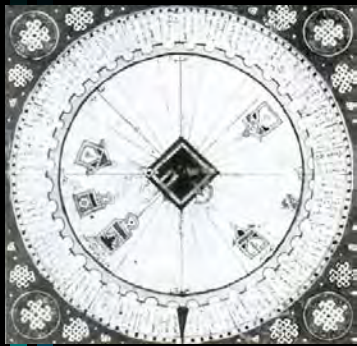
ideal

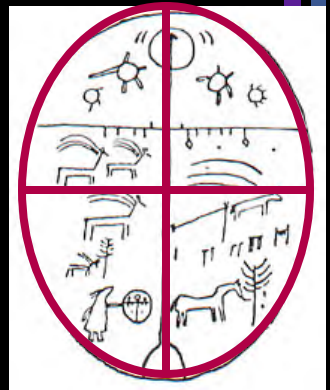
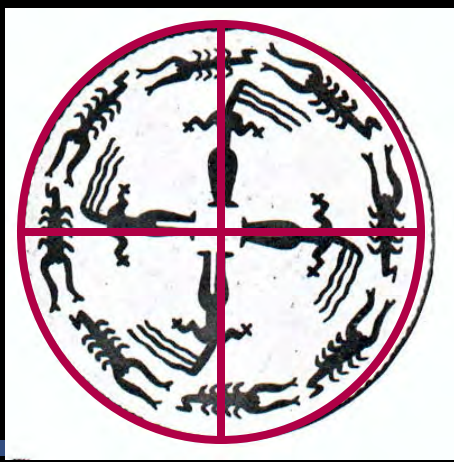
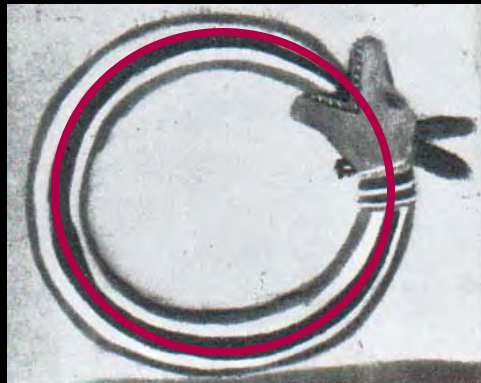
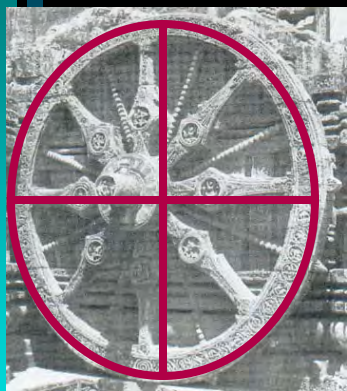
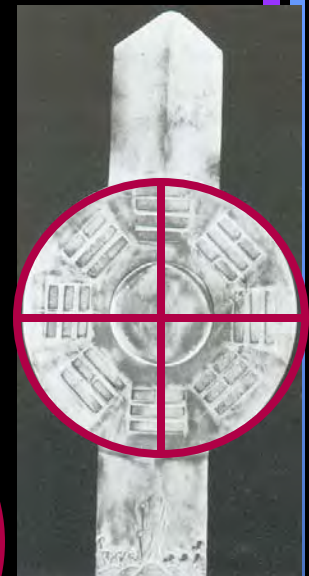


abstract

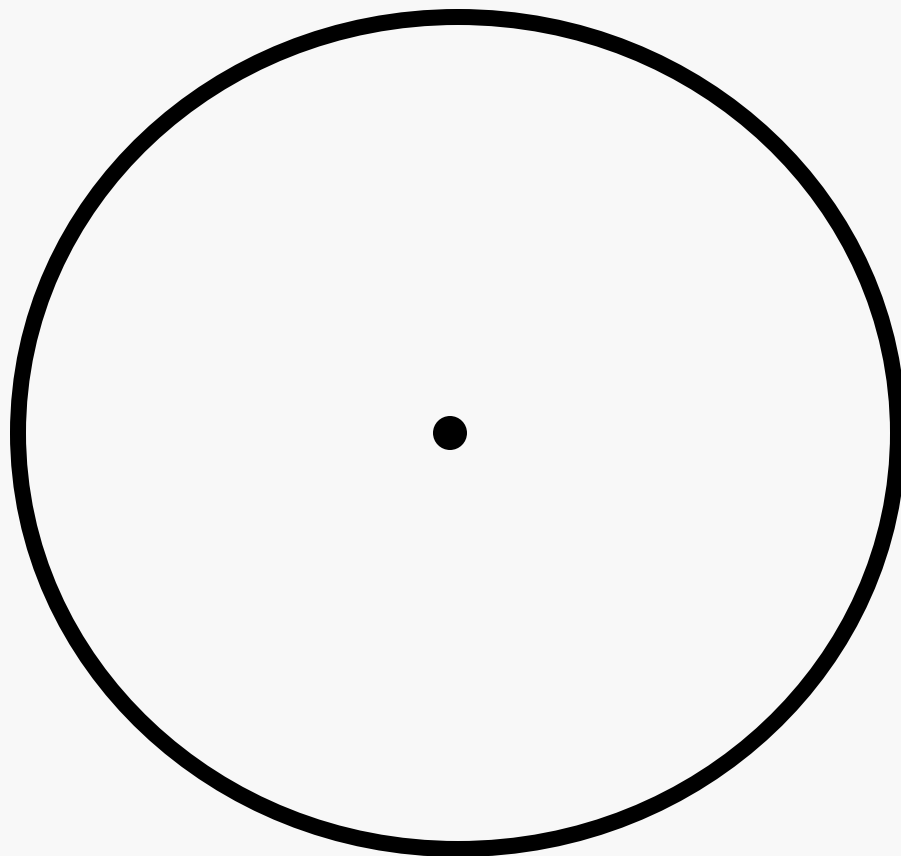




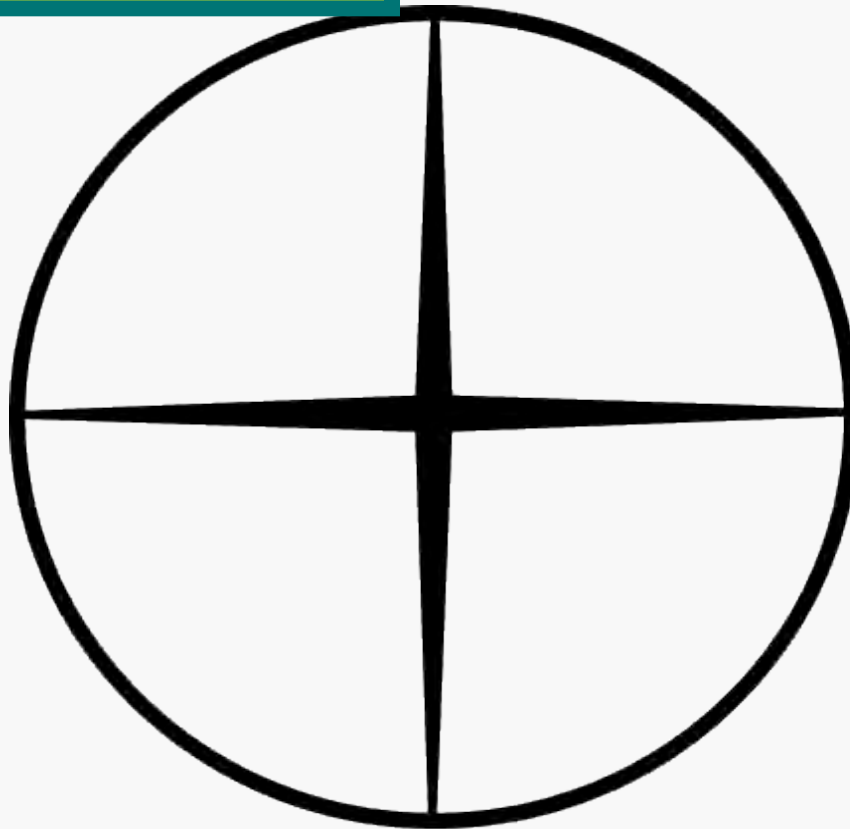




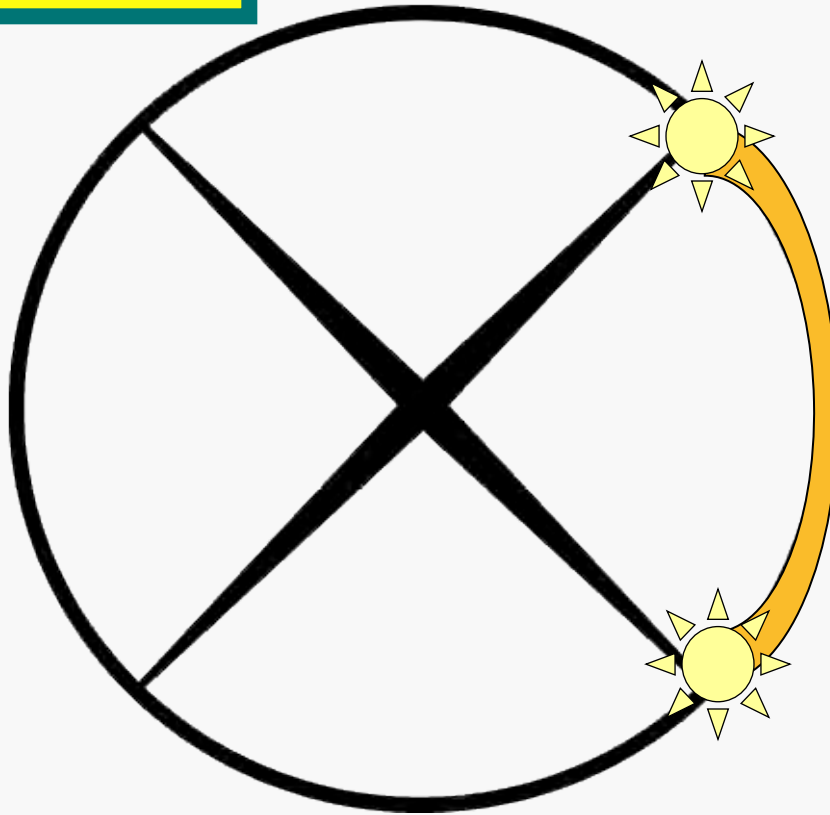
Personal



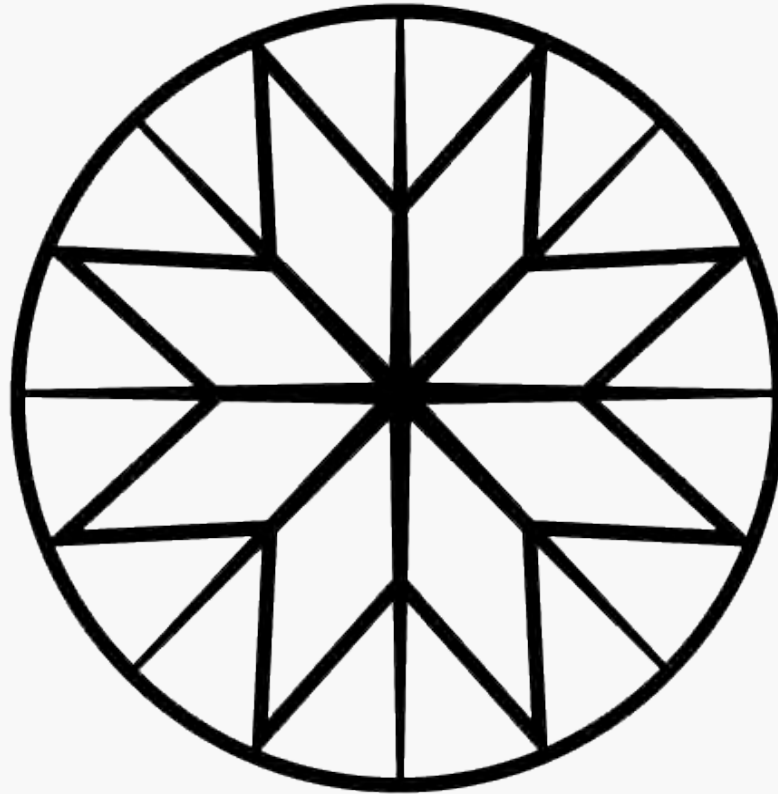
Directional



Temporal



Cultural







winter

spring

autumn

summer



cognitive

spiritual

physical

emotional



guiding

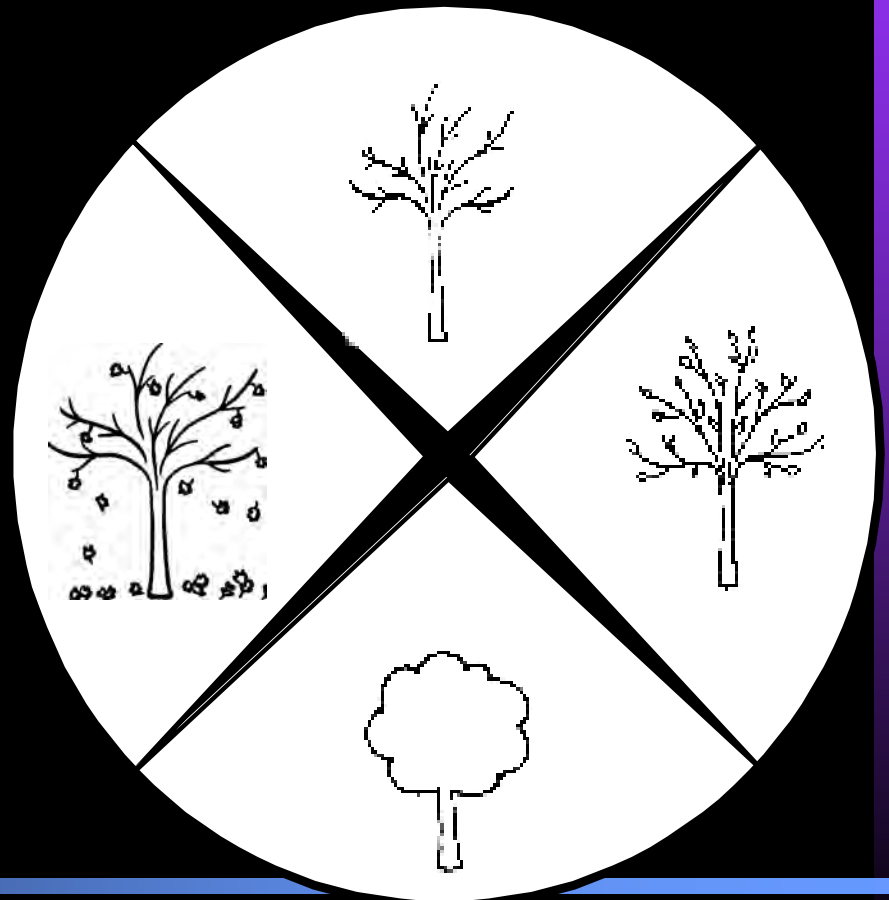
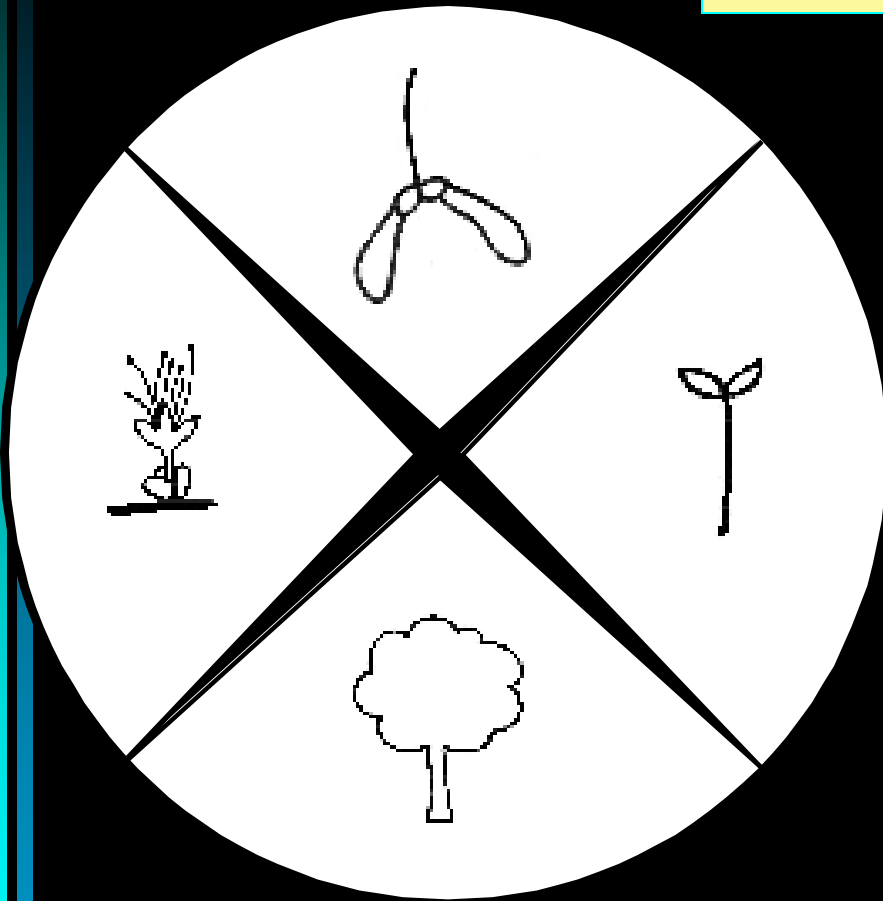
playing

protecting

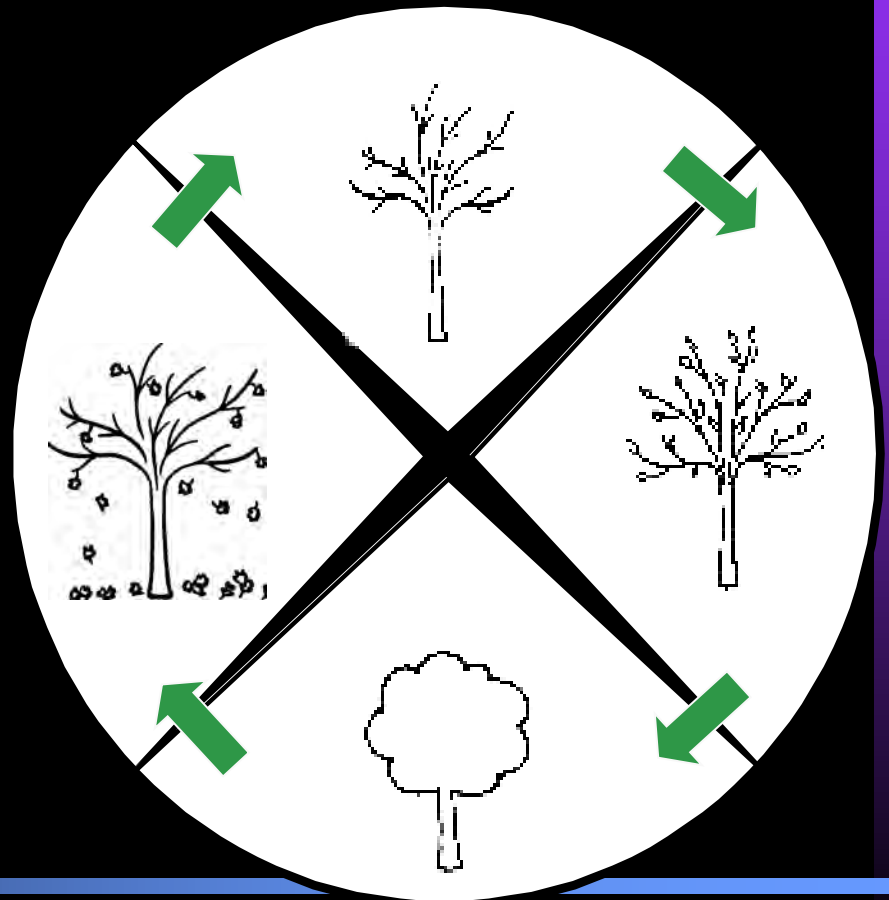
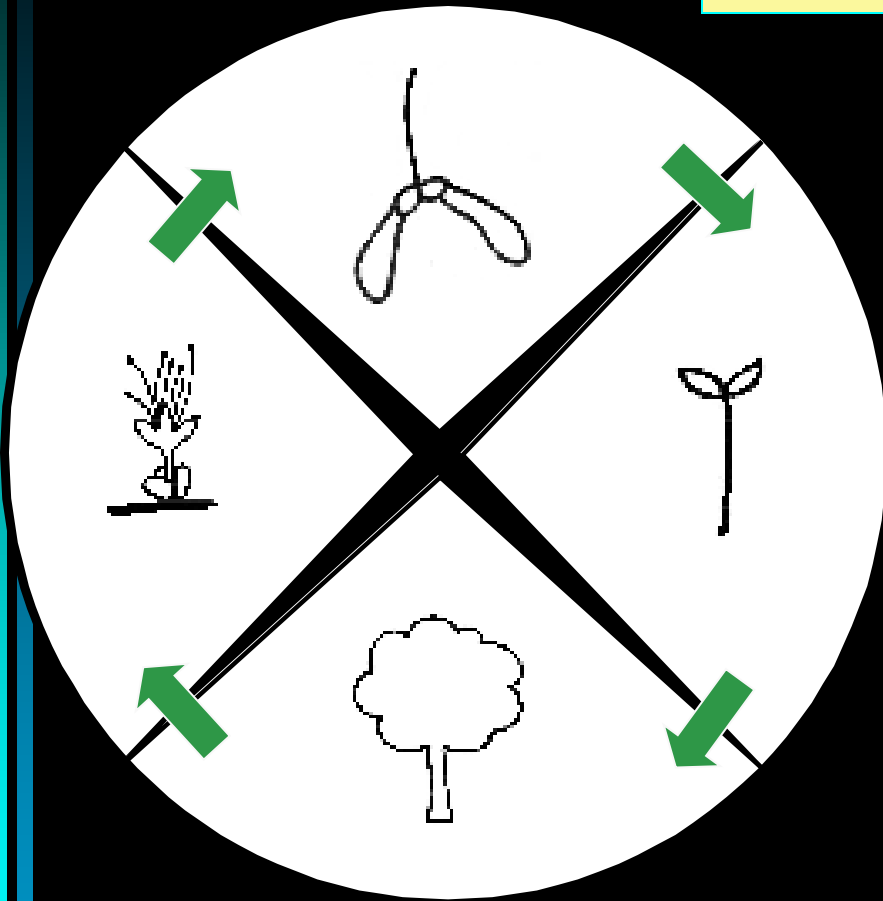
learning



LIFE & SEASONAL CYCLES



LIFE & SEASONAL CYCLES



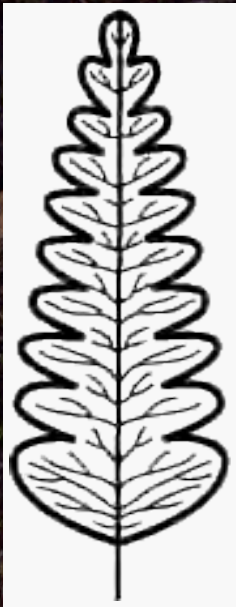












Frond

Pinnule

Blade

Sporangia

Stipe

Rachis

Costa

Spore

Costule

Pinna

image by
Sana Kavanagh

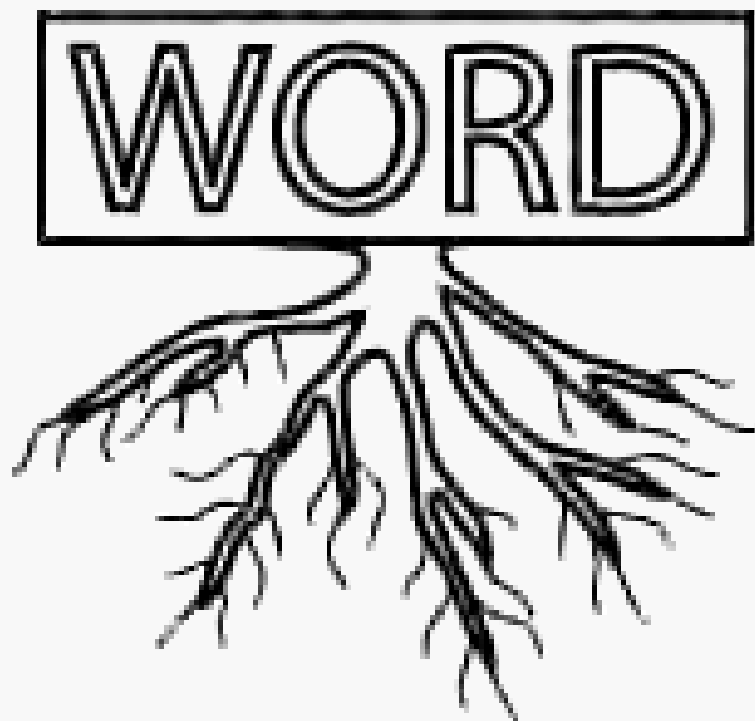


image by
Sana Kavanagh

Metaphorical

Cultural

WORD

Personal

Symbolic

Visual

image by
Sana Kavanagh

pinna

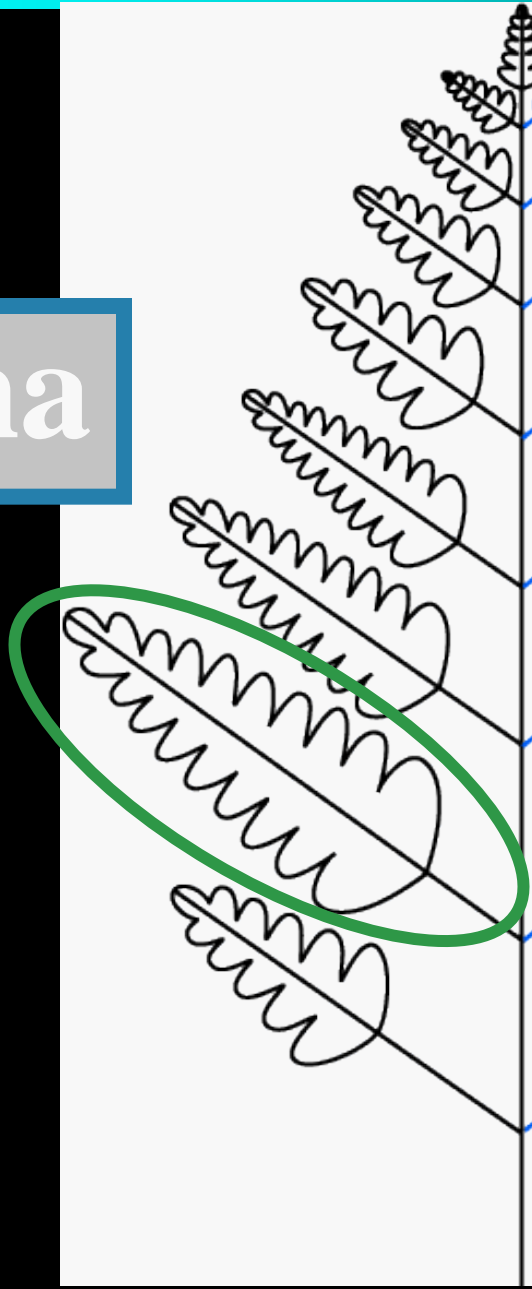


image by
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wing

pinna

wing

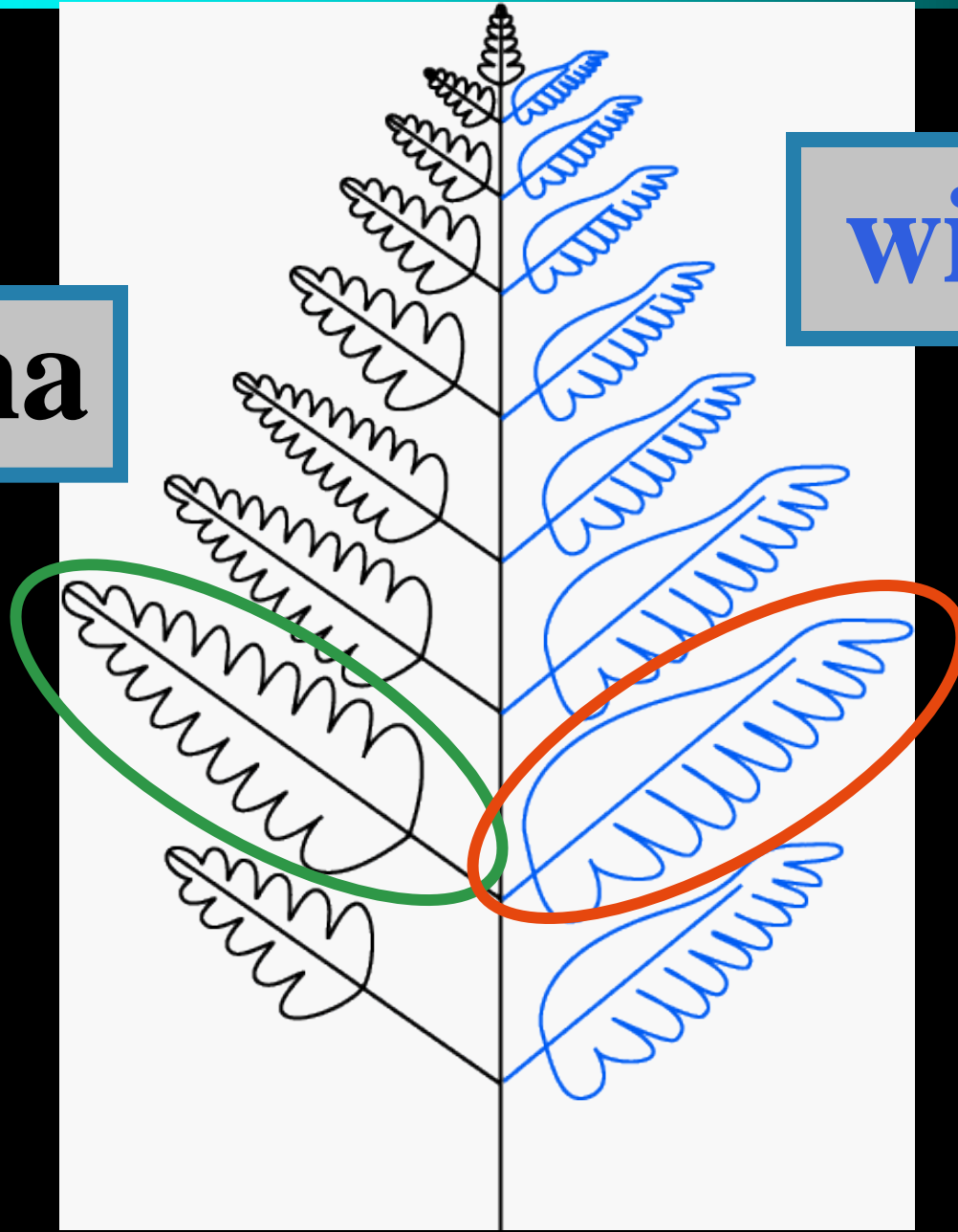
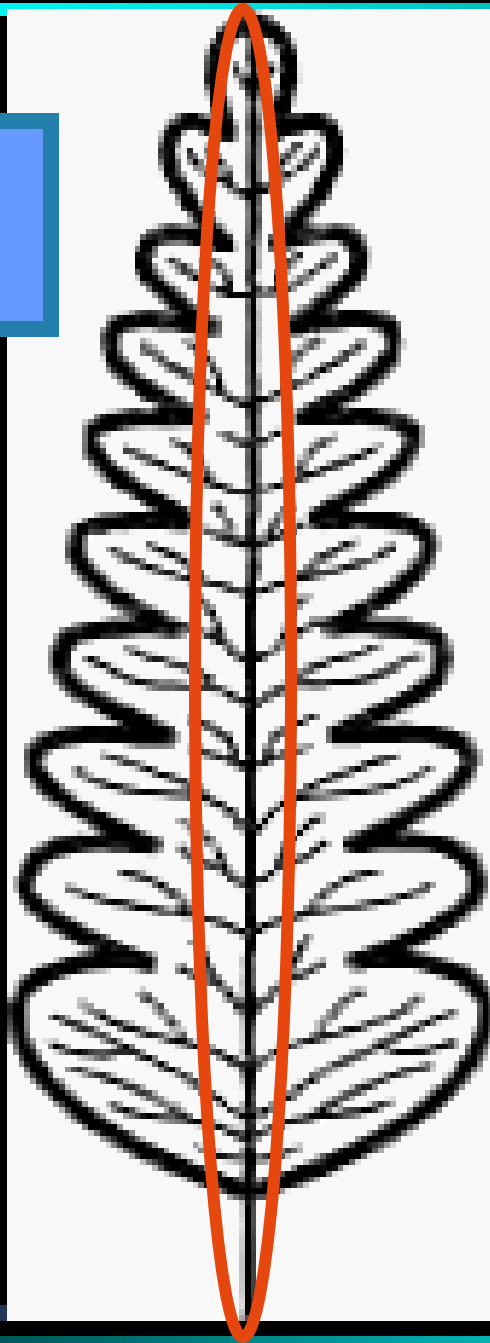
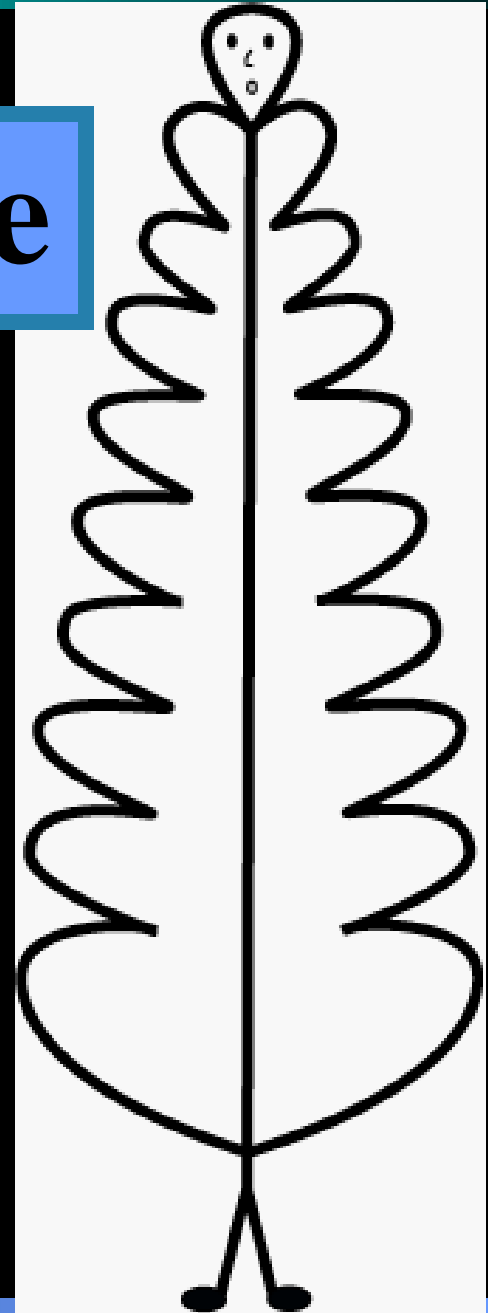


image by
Sana Kavanagh

rachis

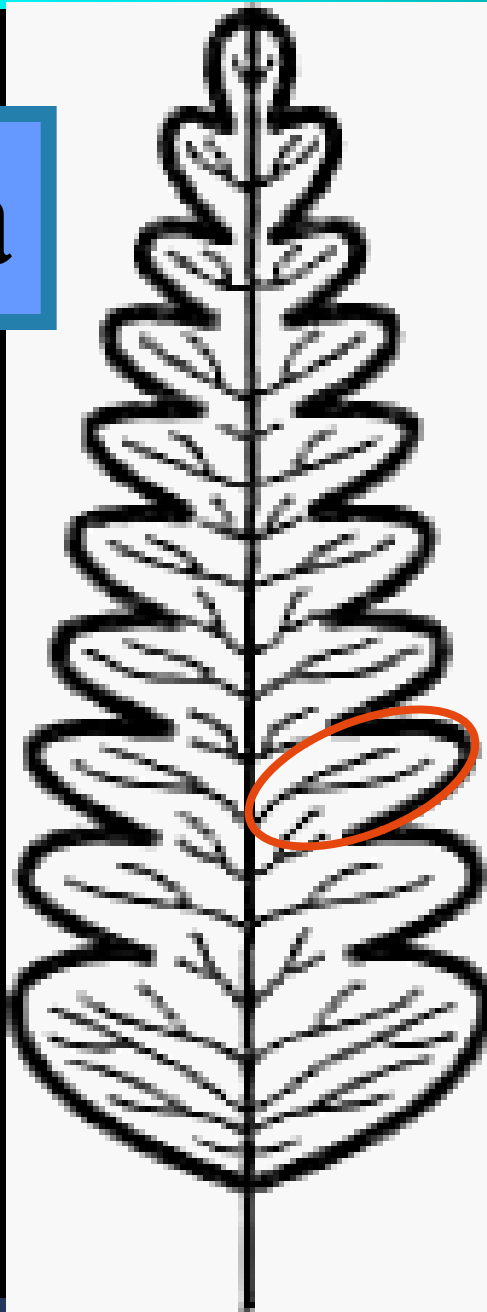


spine



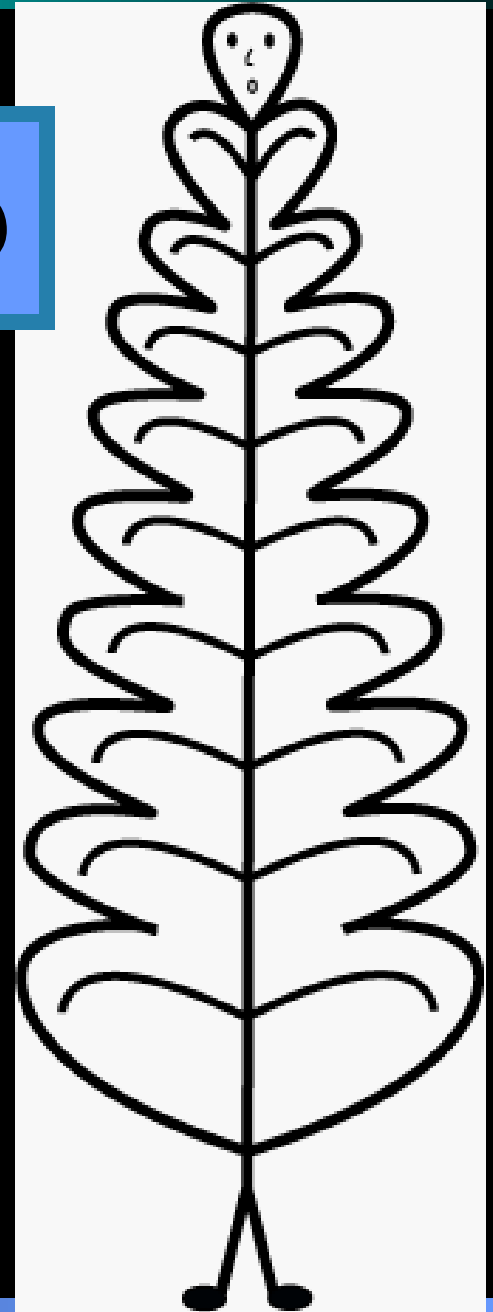
images by
Sana Kavanagh

costa



images by
Sana Kavanagh

rib

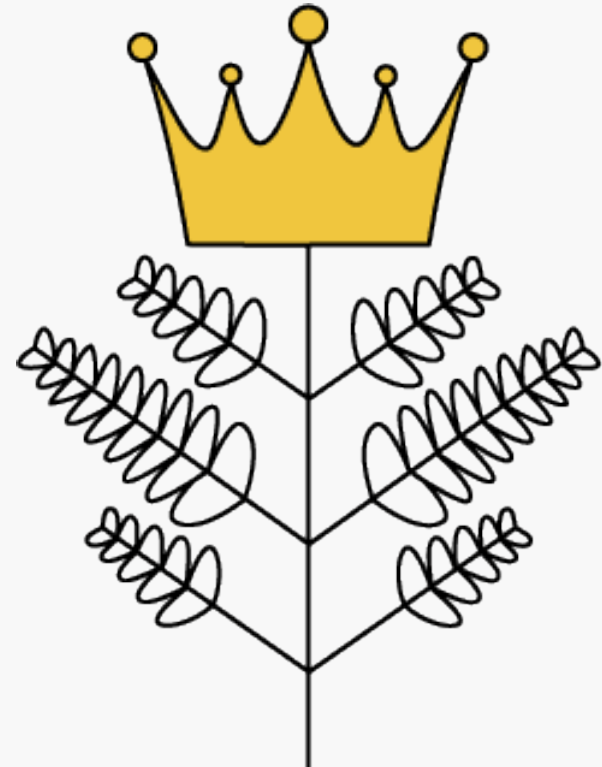


Royal fern

Osmunda regalis



image by
Sana Kavanagh

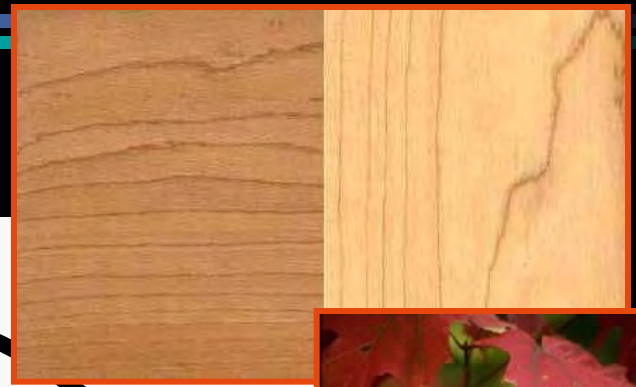
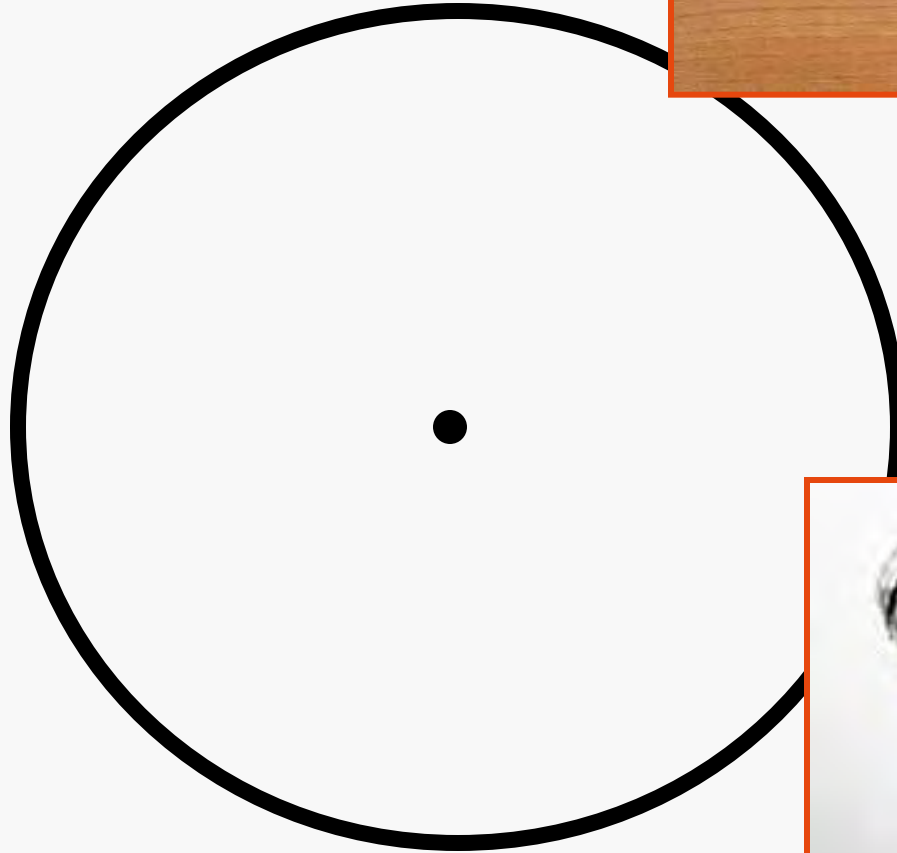




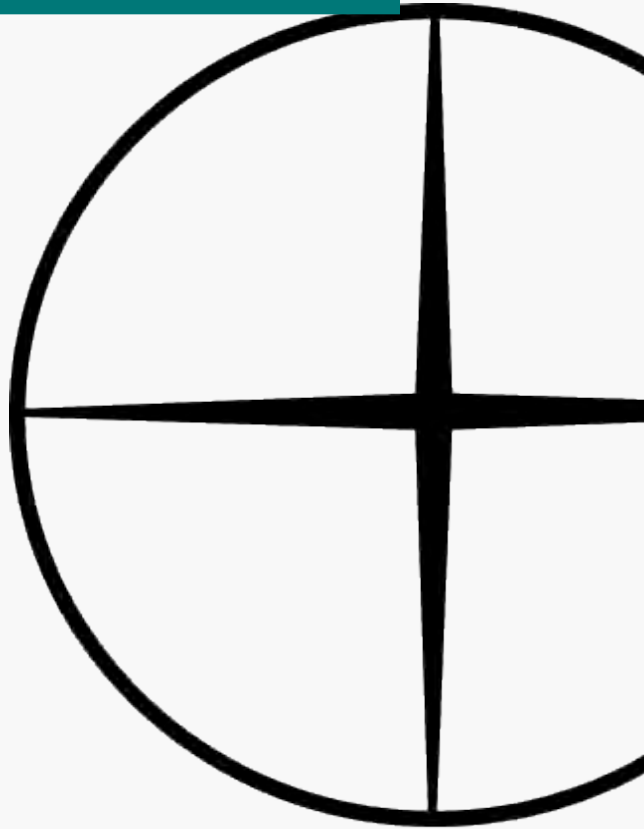
Siwkewikus

Maple Sugar Time

Personal



Directional



Temporal



Cultural

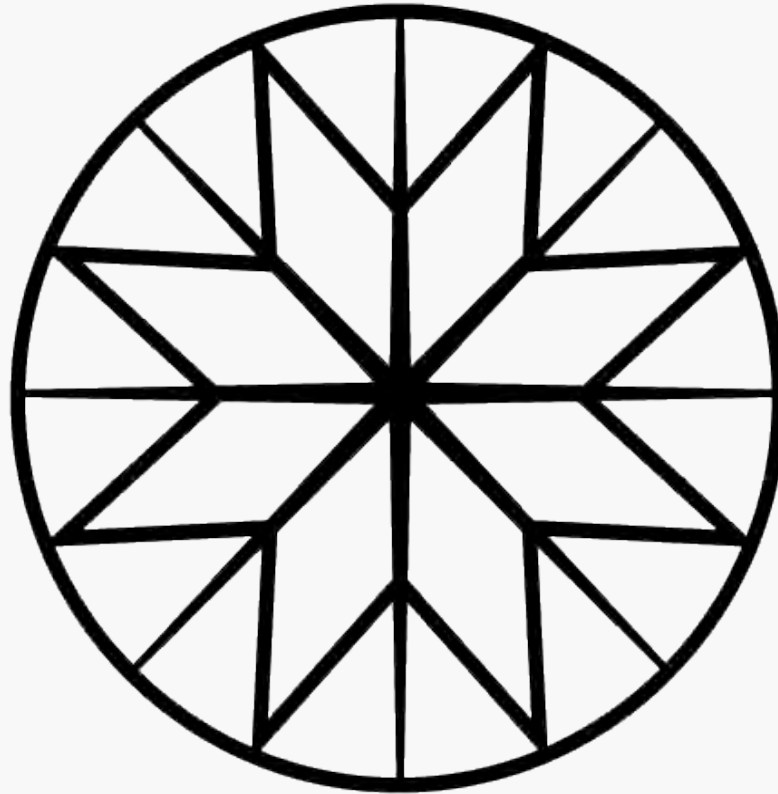


image by
Sana Kavanagh

Cultural

Siwkewikus

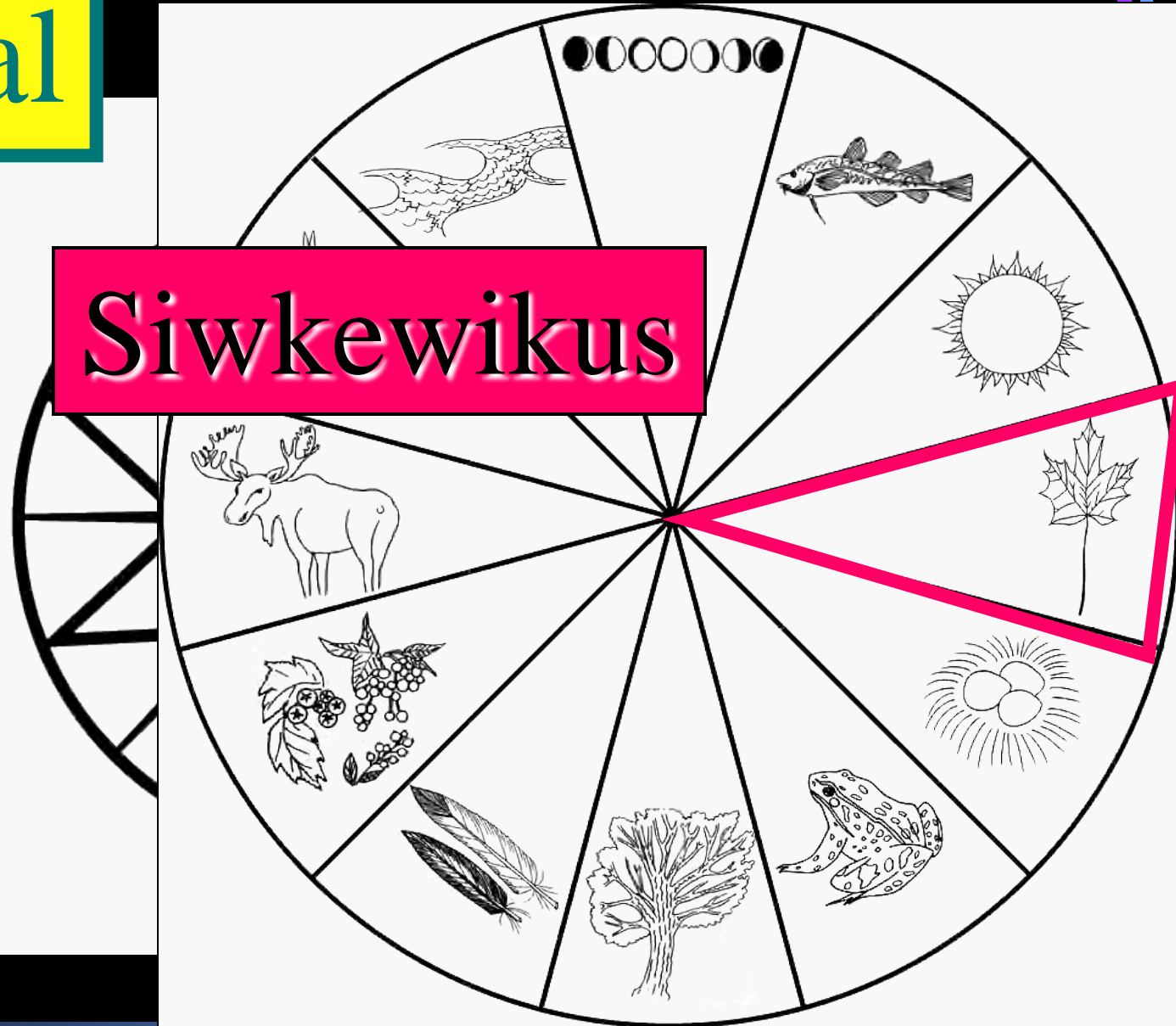
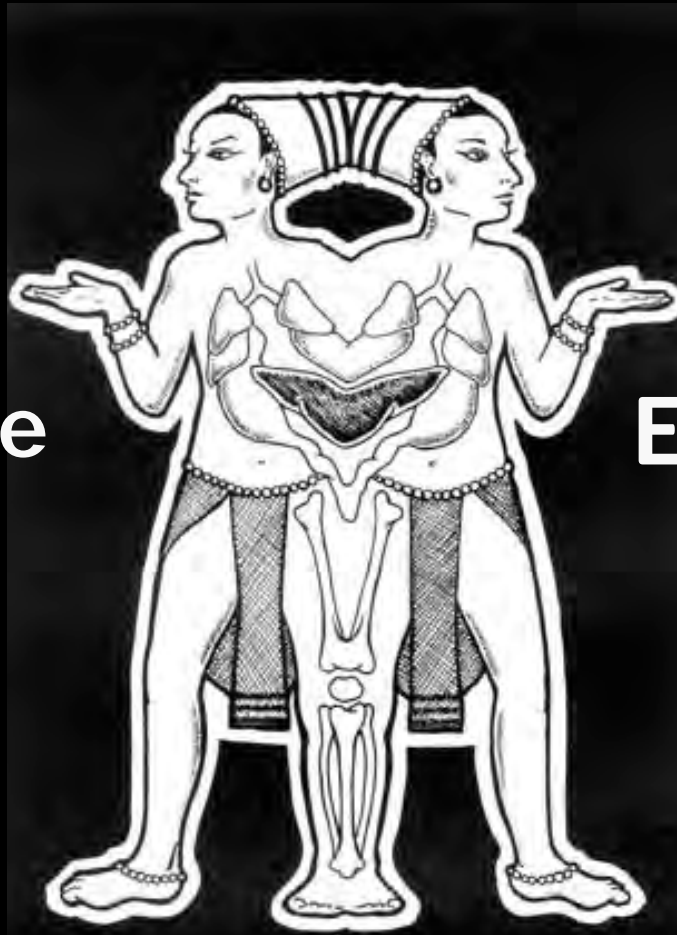


image by
Sana Kavanagh

**Dina
&
Stephenie
Bernard**



**MORE
EXPLANATION**

image by artist
Basma Kavanagh



Dina &
Stephenie

4th yr students
Integrative
Science

ideal

abstract

ideal

natural

*layering
of
patterns*

← ADD

Medicine Wheel Representations

N

(Cognitive)



E

(Spiritual)

W

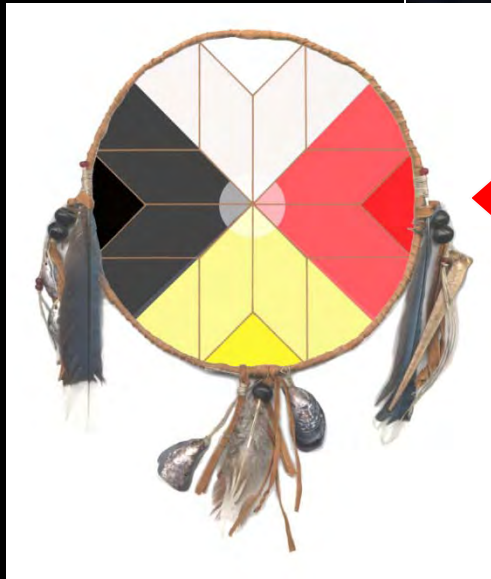
(Physical)

S

(Emotional)

natural
ideal
abstract
ideal
natural
(*layering*)

ADD



in the **patterns** of the animals
... lessons for humans

Chipmunk



- shows love and care for the young who remain with parents for a month or so
- shows happiness during spring and autumn by active, energetic racing through woodlands and gardens

Squirrel



- shows courage by approaching humans and examining them while coming down trees
- shows courage when leaping several meters from tree to tree to new locations

Beaver



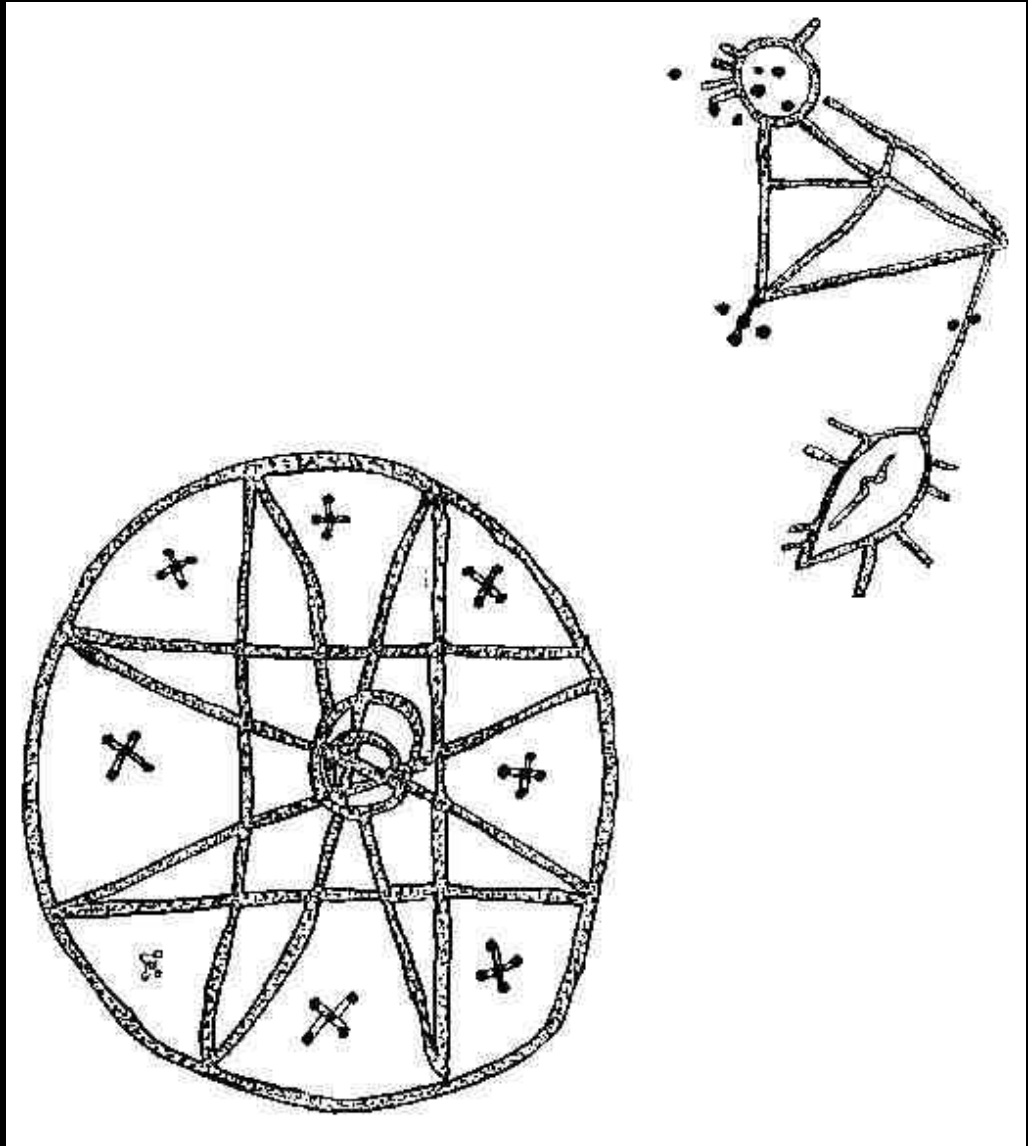
- shows uncritical acceptance when moving families, pairs, or singles to new locations
- shows leadership skills when the young leave the family after two years and start a new colony in a different location

patterns
in the
night
sky

Mi'kmaq
Star
Knowledge



Mi'kmaq Star Map



Milky Way

7 Hunters

Skitekmuj Awti

Bear's Den

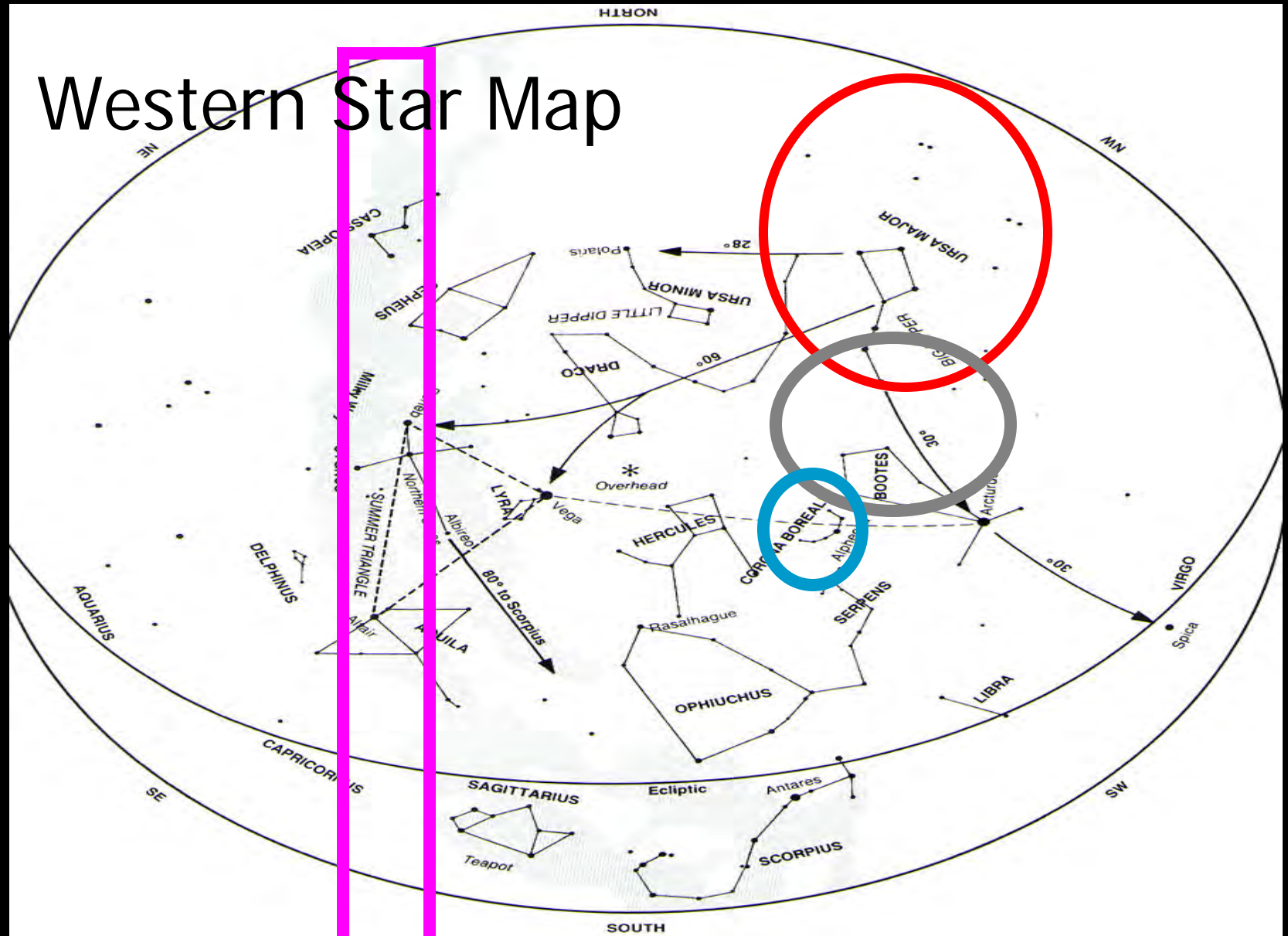
Bootes

Ursa Major

Bear

Ursa Major

Western Star Map

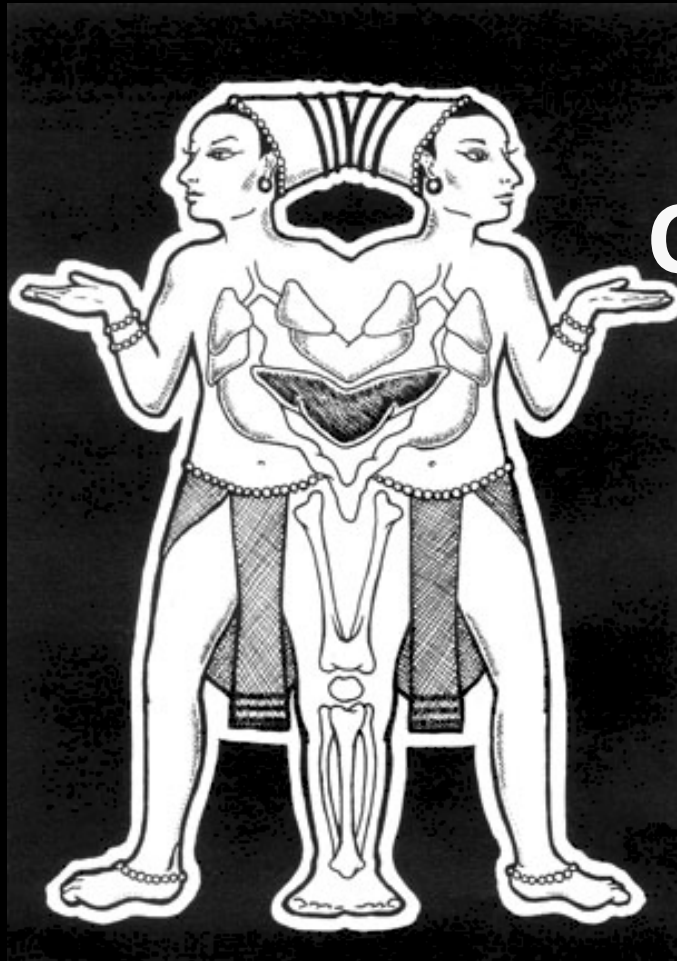


Mi'kmaq Star Husband Legend

- Stars were a big part of Mi'kmaq Storytelling.
- This is a petroglyph, as are the eight-pointed star and crab shown earlier.



**Cheryl
Bartlett**

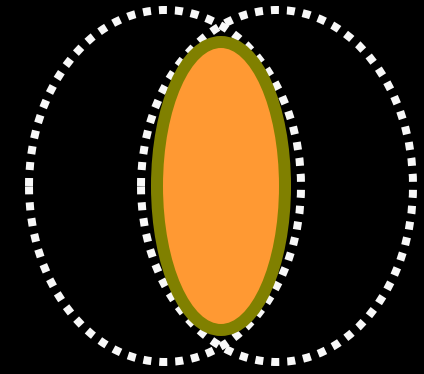


CONCLUSION

image by artist
Basma Kavanagh



**Mother
Earth**



PATTERNS

common ground

PATTERN RECOGNITION

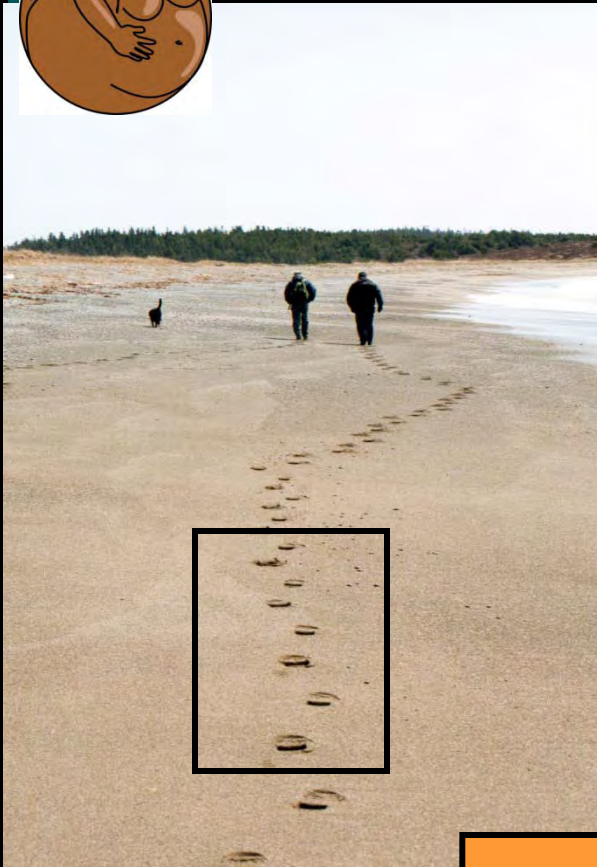
Both knowledge systems are ultimately based on observations of the **environment** and both result from the same intellectual process of creating order out of disorder.

PATTERN

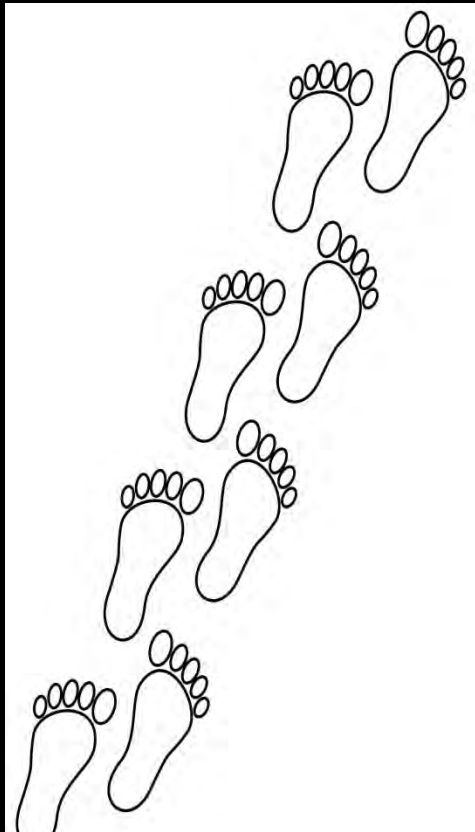
conceptual framework



natural



ideal



abstract



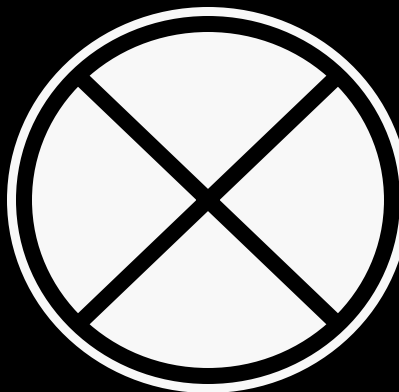
recognize / make / break
express / use / transform



PATTERN



natural



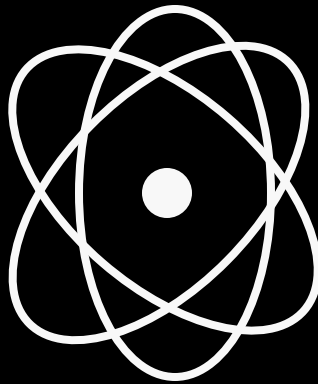
ideal



abstract



PATTERN



natural

ideal

abstract

The periodic table is a grid of elements, each represented by a colored box containing its symbol, atomic number, and name. The elements are arranged in rows and columns based on their chemical and physical properties. The table includes elements from Hydrogen (H) to Oganesson (Og), with some elements marked as 'Unk' (Unknown) or 'Unl' (Unlabeled).

Setford, Steve. 1996. Science Facts. Firefly Books Ltd., Willowdale, ON. (pp. 36-37)

“expression smarts” for **PATTERN**



- numbers
- language

recognize / make / break
express / use / transform

-
- music
 - body
 - spatial
 - other people
 - self
 - naturalist

-
- spiritual

**expression
tied to
cultural
value**



value Earth

respectful & participatory
interconnectedness

masterful
prediction & control

all my relations pattern

mathematical pattern

expression tied to
cultural value

abstract pattern

ideal pattern



Mother
Earth



natural pattern

PATTERN



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Chairs

Chaires de recherche
du Canada

acknowledgements



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INSTITUTE ON INNOVATION & SOCIETY



Thank you Wela'lioq



image by
Basma Kavanagh