



The Medicine Wheel and Science

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DreamCatching conference

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My high school teachers were excellent

- ❖ I got a solid foundation in a wide range of subjects
- ❖ I was actively encouraged to go to University
- ❖ Scholarships



Post- secondary education:

University of Saskatchewan:

| | |
|-------------------------------|-------------|
| B.A., Chem | 1966 |
| Honors, Biochem | 1968 |
| M.Sc., Biochem | 1970 |
| Ph.D., Biol Psychiatry | 1981 |



Topics of Discussion

- ❖ The Western or mainstream view of Science
- ❖ The Aboriginal view of science
- ❖ The Medicine Wheel
- ❖ Using the Medicine Wheel to analyze science



The Scientific Method

1. The formulation of an hypothesis.
2. The design of the experiments.
3. The testing of the hypothesis. Evidence.
4. The analysis of the data. Proof.
5. The judgment of the hypothesis.
6. The formulation of a conclusion.

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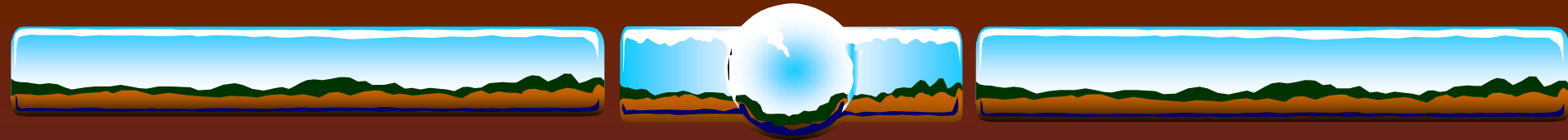
The Sacred Dogma of Western Science

1. The scientific method is infallible and always leads us to the “Truth”.
2. The scientist is objective or neutral. He (she) sees things without any bias.



Subjectivity is inherent in the Scientific Method

- ❖ Formulation of the Conclusion of the experiments involves inductive reasoning.
- ❖ It involves interpretation of data as they apply to the real world – i.e., it is a subjective process.
- ❖ This subjectively reasoned conclusion leads to a new or modified hypothesis – i.e., the conclusion feeds back into step 1 of the scientific method.



1. Hypothesis generation



6. Generalize to a conclusion

2. Design experiment



5. Judge the hypothesis

3. Perform experiments



4. Analyze data





What This Means

- ❖ Western Science is supposed to be all about COLD, HARD Facts – the TRUTH.
- ❖ But facts do not exist in a vacuum.
- ❖ “Numbers don’t lie” – but we do interpret what they mean.
- ❖ Science is not infallible – our tools are not perfect.
- ❖ Scientists are subject to cultural or other biases.



Oops – sometimes we are wrong.

❖ Examples of ‘errors’ in real life science:

Trace amine concentrations in rat brain

Gender differences in math skills

Racial differences in IQ, alcoholism

Trans fats!

❖ Example from the audience?



What is Aboriginal Science?

- ❖ A1. Traditional or Ancestral Knowledge of astronomy, agriculture, medicine – past knowledge
- ❖ A2. Traditional or Ancestral ways of Knowing
 - ❖ The process of gaining knowledge
 - ❖ Observational skills
 - ❖ Oral tradition
 - ❖ Elders
 - ❖ Holistic world view



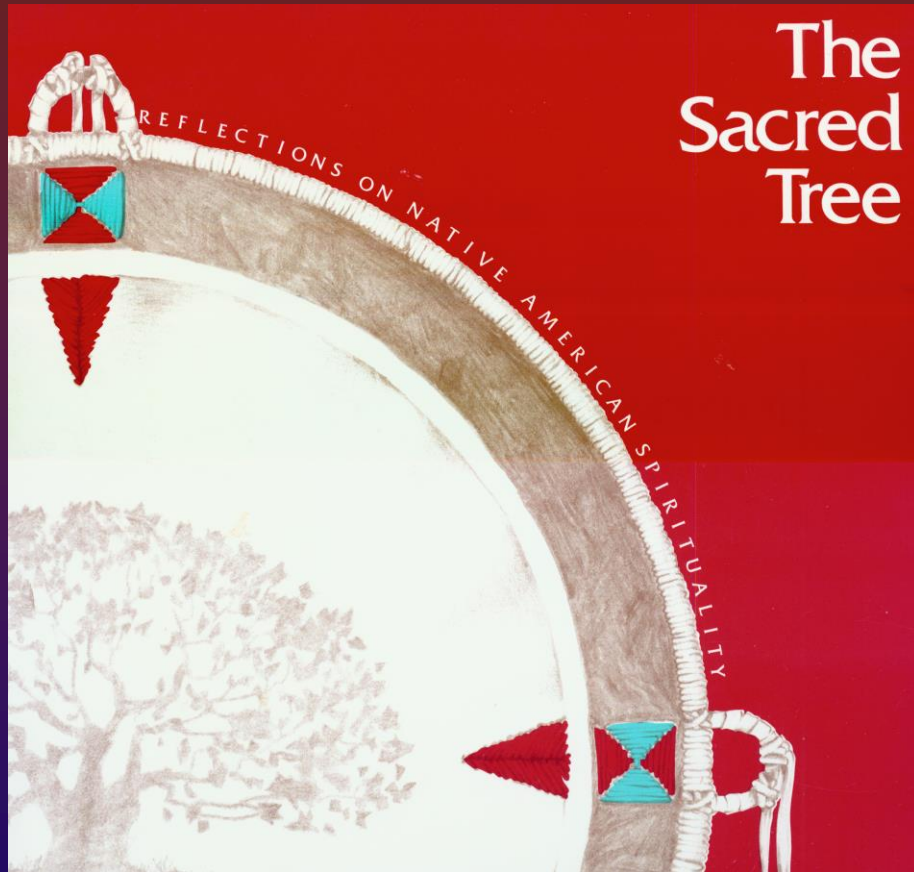
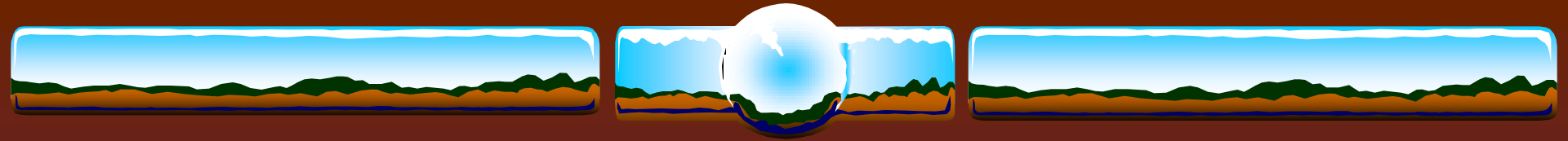
The Medicine Wheel

An ancient Indian symbol used to understand ideas, to show how all things are connected.

The foundation of human development.

Describes the four aspects of all things.

Underlies the concept of Balance.

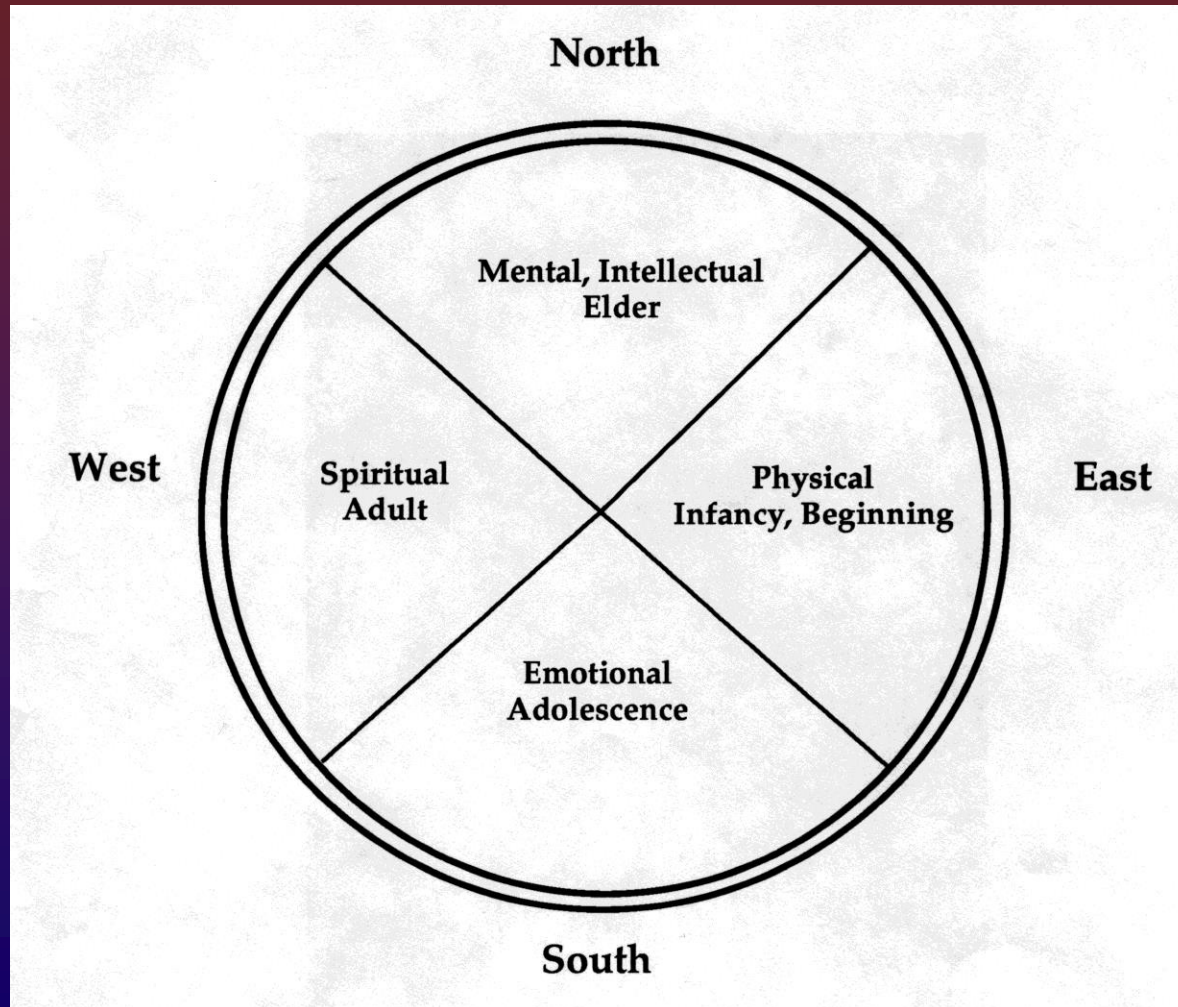


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The Bighorn Medicine Wheel in Wyoming

From “The Sacred Earth, Courtney Milne

From: **Dyck LE , Native Studies Review 11: 89-102 (1996)**





East Door – Physical Aspect

The Initial Training Phase of Science

Learning the language of science

the methods

the Tools, Hands-on science

Observation



South Door - Emotional

The Emotionally “Appealing” Phase of Science

Living and loving science

Science as fun

Defending your findings

Becoming hooked on science



North door - Mental

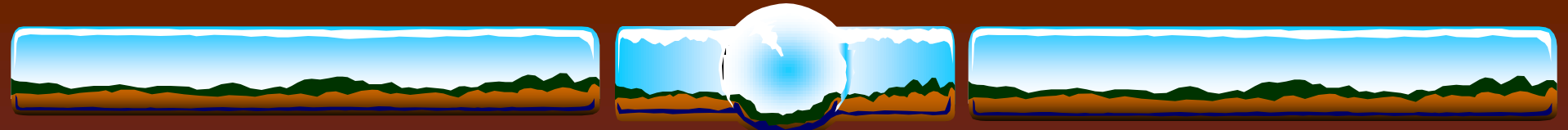
The Wisdom Aspect of Science

Learning the current state of knowledge

Contributing new knowledge via
research activities

Developing wisdom via experience

Doing collaborative science



West door - Spiritual

The Intuitive or Creative Aspect of Science

Is not thought to be part of science

Using “Inner” wisdom

Gut hunches, intuition

Night-time dreams

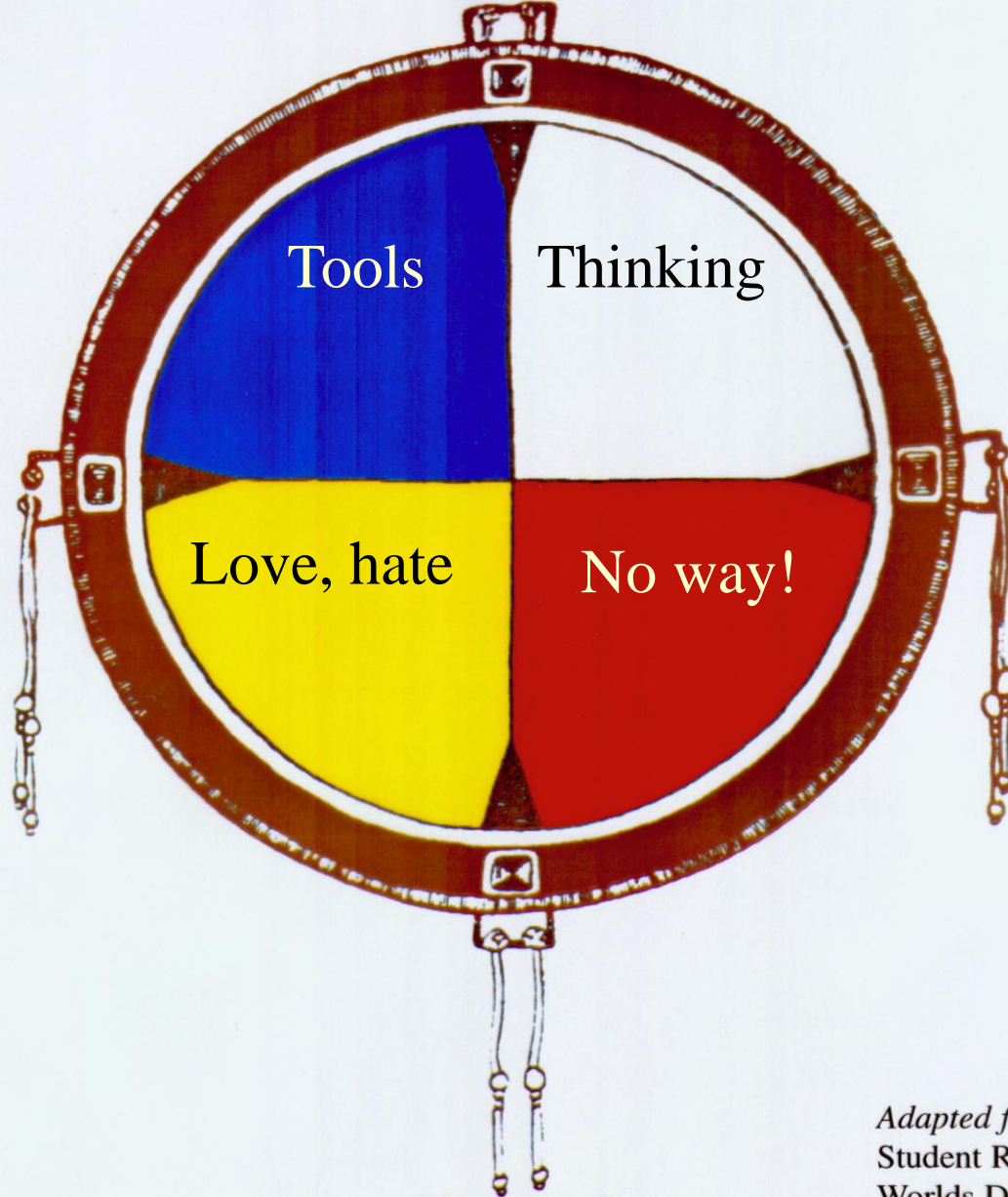
Spiritual insight

Consideration of ethical & moral issues

North
Mental

West
Physical

East
Spiritual



Emotional
South

Adapted from Unity in Diversity
Student Readings, 1998, Four
Worlds Development Project.



- ❖ OOPS! We reversed the E and W doors of the Medicine wheel!
- ❖ The E door should be spiritual,
- ❖ and the W door should be physical.



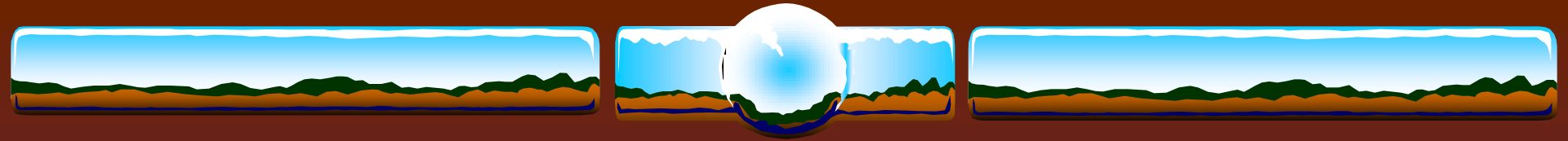
OOPS!

We've actually entered the MW backwards –
using the W door instead of the E door!

So ... the way we begin to teach or learn
science is like a breech birth into science!

Because we enter through the West (physical)
door instead of the East (spiritual) door.

We do not even acknowledge the East
(spiritual) door in Western science!



The Eastern door, the spiritual aspect of science is missing.

To address this oversight we can:

Build on those things that inspire our target audience (students, etc).

Build on the inner spark, the inner drive or motivation of our target group.



The Medicine Wheel and Recruitment into Science

- ❖ Identify strategies to attract Women, Aboriginals, and others into the study of Science
- ❖ We seek the “First and Best” – the N door (mental)
- ❖ but do we seek the Inspired and the Imaginator
- the E door (spiritual)?



Using the Medicine Wheel to attract students into Science

Doing science to make a difference or to help people

N

Encourage natural curiosity

W

Hands-on sciences

Science with a purpose

Science is fascinating

E

Science and inspiration and imagination

Science is fun

S

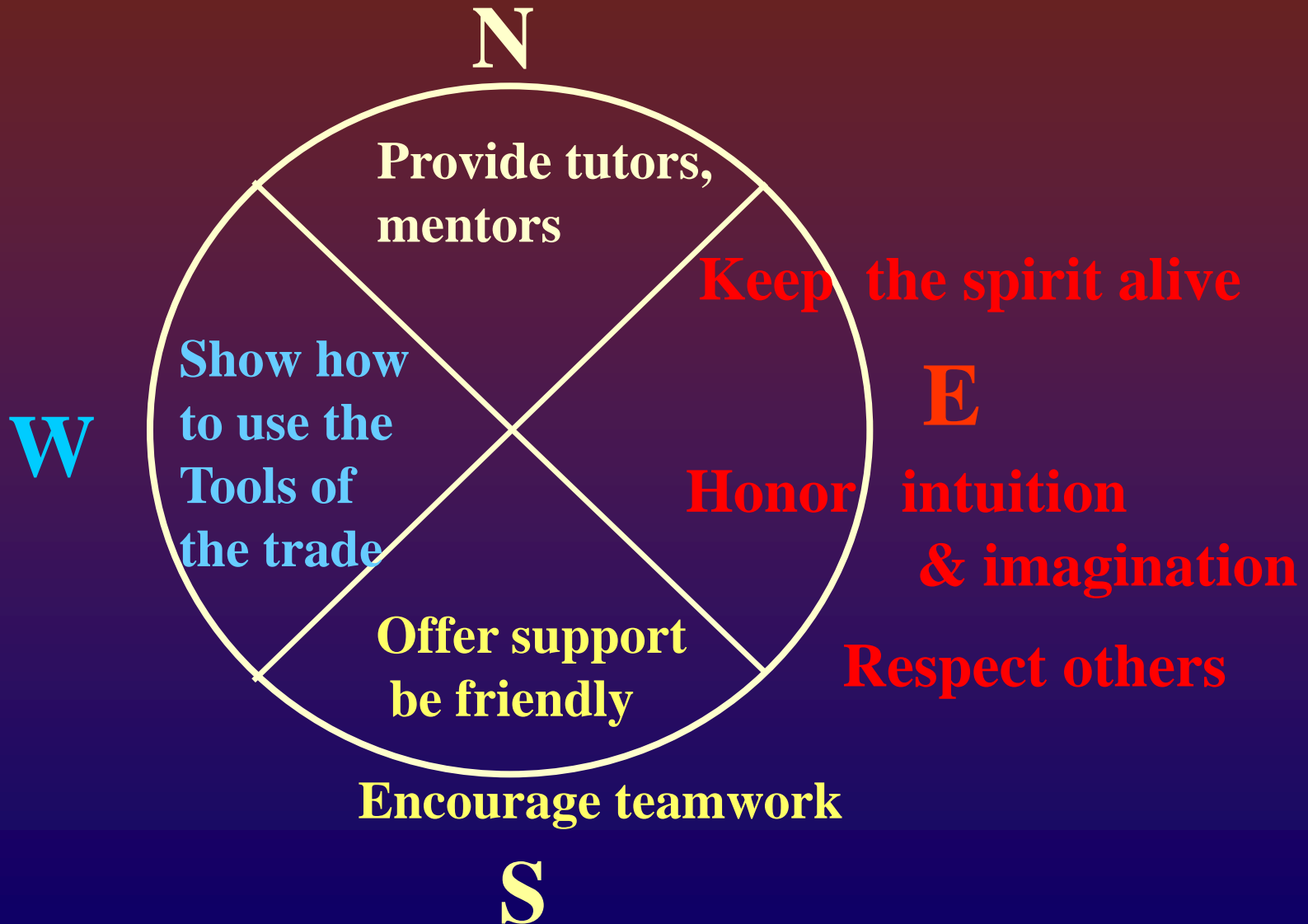


The Medicine Wheel can identify Obstacles in Science





The Medicine Wheel & Finding Solutions to Obstacles





Retention of Women and Aboriginals in Science

The Medicine Wheel can identify obstacles or challenges in the four aspects of science.

Once the obstacles or hoops are known, strategies to get around them can be developed.

Do the HOOP DANCE!

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Something to consider

Being a scientist is more than being an expert –
we are more than a fountain of knowledge.

We want to be creative, to be innovators –
To go beyond the boundaries of conventional
knowledge, maybe we need to honor the unconventional -
the ideas or hunches that are hard to explain logically and
could be called intuitive, spiritual knowledge.



Summary

The Medicine Wheel can be used as an analytical tool.

Doing so, shows that Western Science is unbalanced; there is no Eastern door or Spiritual aspect in science.

Including the Spiritual aspect in the way we teach science and in the way we recruit students may improve recruitment of women and Aboriginals and may increase their retention.