

# **Indigenous Science**

**RAISING CHILDREN IN CULTURES OF RESPECT**

**BLACK HILLS SEMINARS**

**JULY 30, 2017**

**Martin Brokenleg, EdD**

**Larry K. Brendtro, PhD**

**[cflearning.org/handouts](http://cflearning.org/handouts)**

# To Anna and Noah Brokenleg



Survivors of the Boarding School Experiment  
who helped to keep the culture alive.

# Cultural Trauma

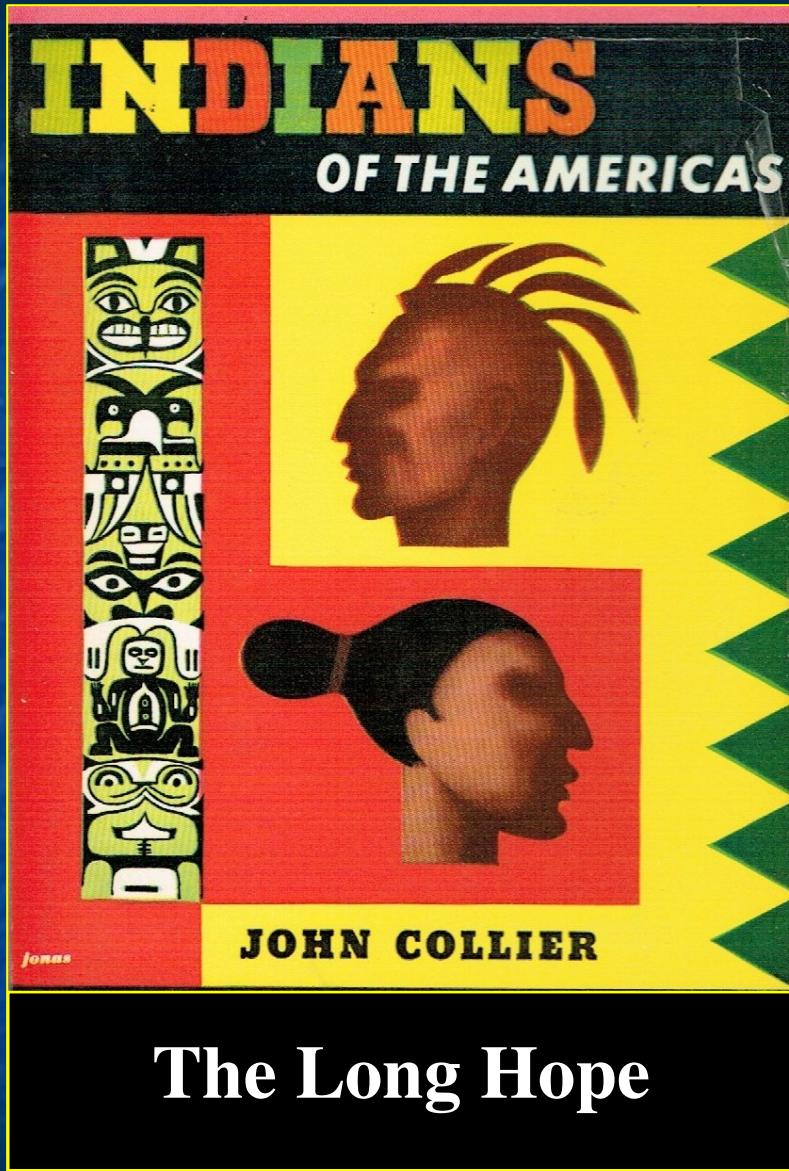


Kill the Indian to save the man.





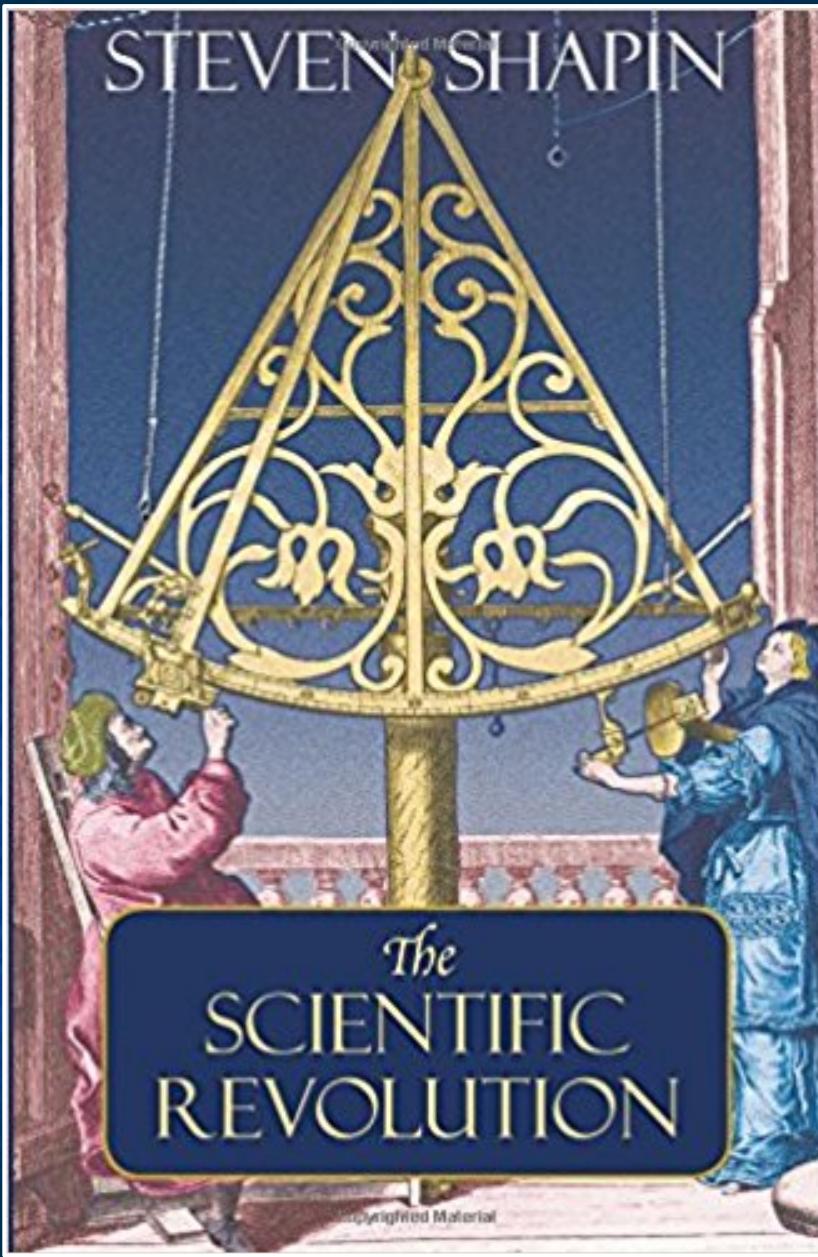
Photos Edward Curtis



## The Long Hope

Sociologist John Collier first believed Native cultures would die out with “civilization” and “progress.” Native people taught him otherwise.

*They had what the world has lost.  
They have it now. What the world  
has lost, the world must have  
again...*



There was no such thing  
as the Scientific  
Revolution, and this is a  
book about it.

Traditional ways of  
knowing were discarded  
as useless.

**Steven Shapin**  
PROFESSOR OF THE  
HISTORY OF SCIENCE,  
HARVARD UNIVERSITY



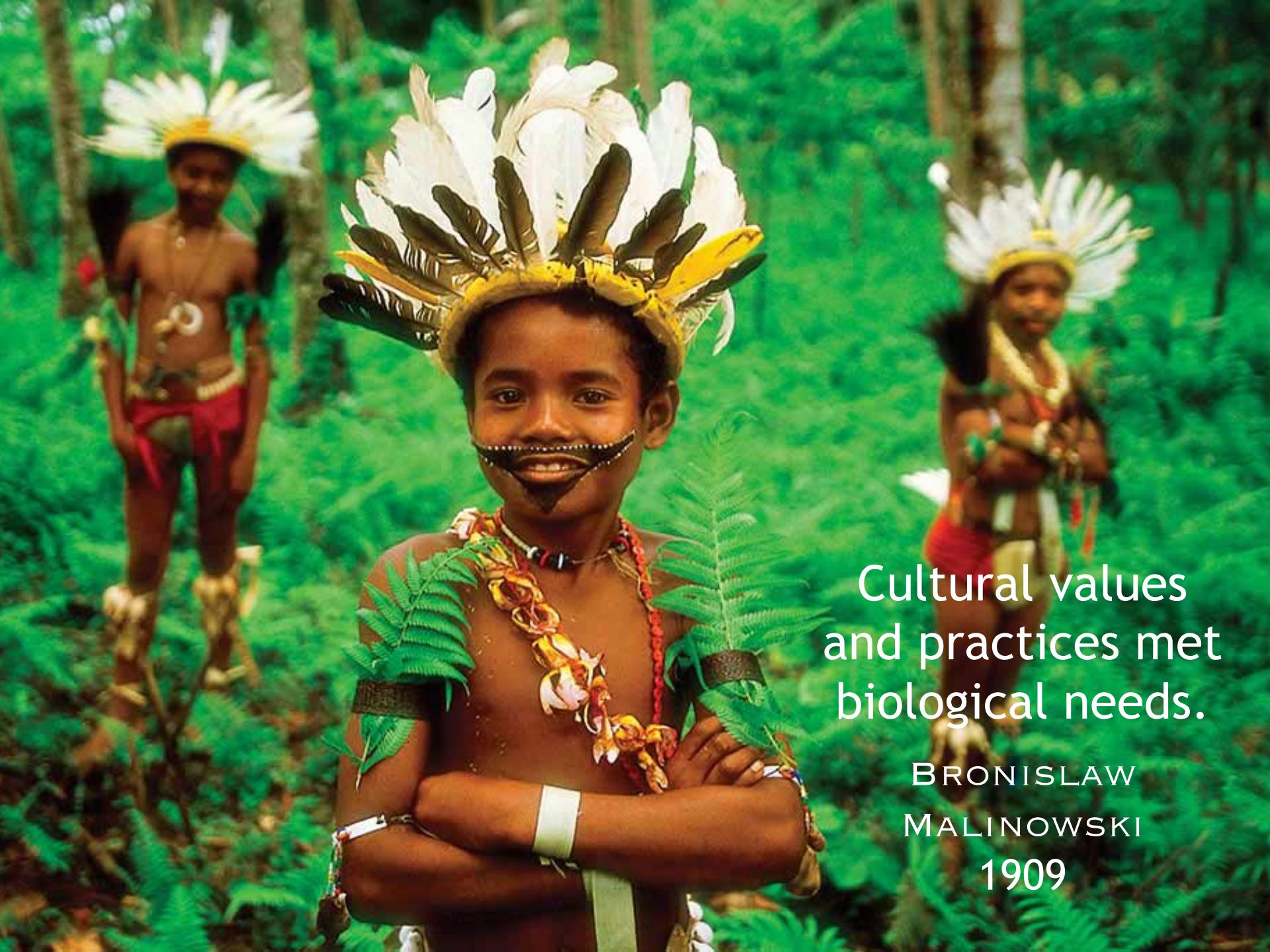
Vast knowledge of human nature predates Western science.

Herbert Vilakazi, Zululand University



The old African men and women, particularly the old women, were consummate child psychologists.

**HERBERT VILAKAZI**  
Zululand University



Cultural values  
and practices met  
biological needs.

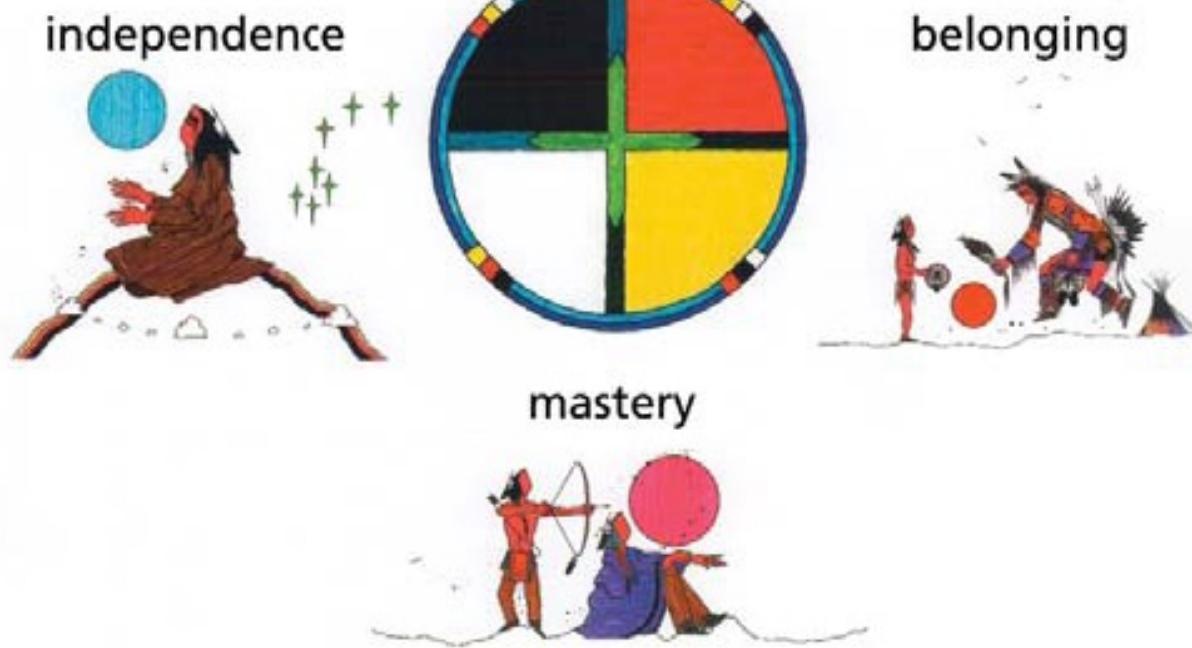
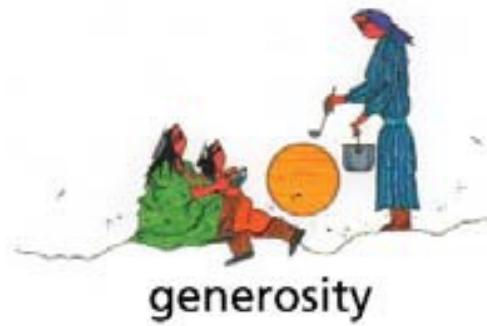
BRONISLAW  
MALINOWSKI  
1909

# Children as Sacred Beings



Western science is detached and “objective” describing *what is* but ignoring *what ought to be*.

# Circle of Courage Values





# CIRCLE OF COURAGE

## Porowhita Máia

**GENEROSITY**  
Atawhai

**INDEPENDENCE**  
Mana Motuhake

**BELONGING**  
Whanaungatanga

**MASTERY**  
Tohungatanga





The Resilience Compass

# ADVENTURE

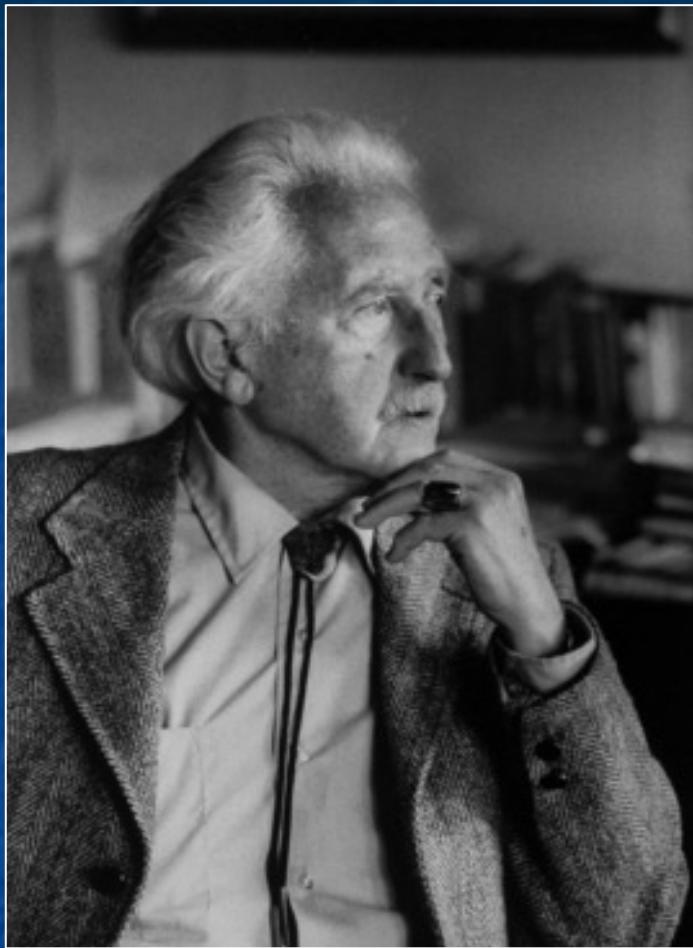
Independence

Generosity

Mastery

Belonging

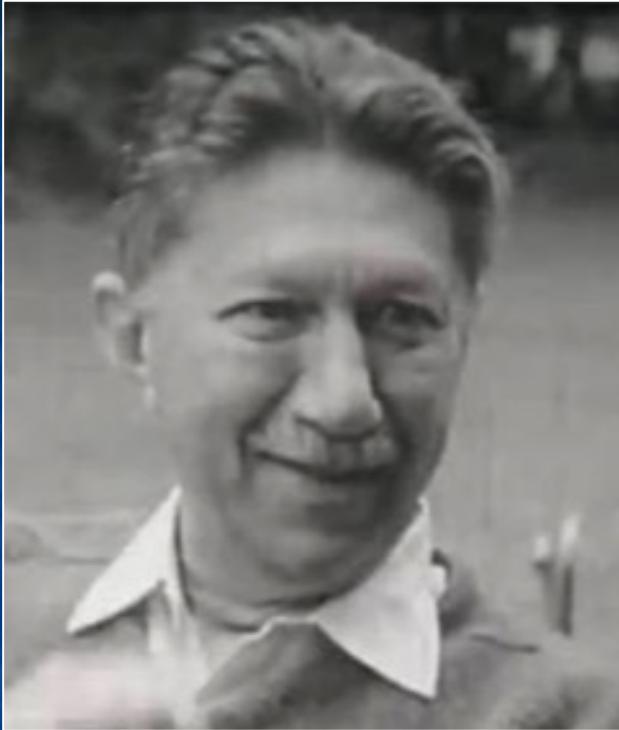
SAFETY



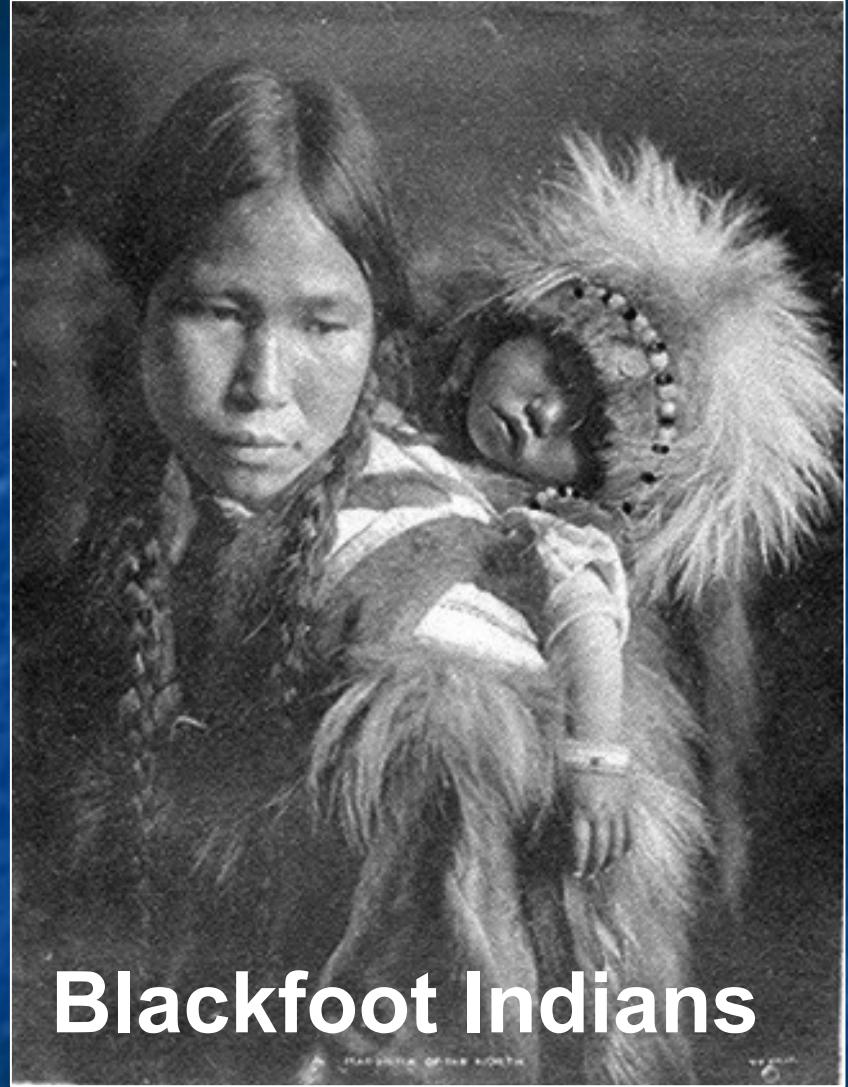
Erik Erikson  
1902-1992



## **Sioux Child Rearing**



Abraham  
Maslow  
1908-1970



**Blackfoot Indians**

*Growing Up in a  
Culture of Respect*

CHILD REARING IN HIGHLAND PERU

Inge Bolin



*From the moment I entered  
their village, I was captivated  
by their respectful behavior,  
self-confident demeanor, and  
astonishing creativity.*

INGE BOLIN  
VANCOUVER ISLAND  
UNIVERSITY



**Belonging:**  
Loneliness is seen as the saddest experience so all are included in circles of respect.



Mastery: Children are eager to learn and master but never flaunt their superiority.



Independence: Children are never harshly punished but take responsibility caring for small children who idolize them.



LA-VIAJERA.COM

Generosity: Teens are assigned important roles in the community like caring for and protecting the Alpaca herds.

# Moccasin Paths: Reclaiming Indigenous Science



Adrienne Brant James  
Mohawk



Tammy Lunday  
Dakota



Native traditions and ceremonies keep life in balance.



Elders used stories to convey knowledge.  
Oral history spanned centuries.



Work and Commerce Flourished



Cahokia 1100 AD



Cahokia Metropolitan Trade Center  
Population rivaled London and Paris



## The Great Law of Peace: The Iroquois Confederacy

Cohen, 1942. *Handbook of Federal Indian Law*. Ann Arbor, MI: University of Michigan.

# Then Came Columbus



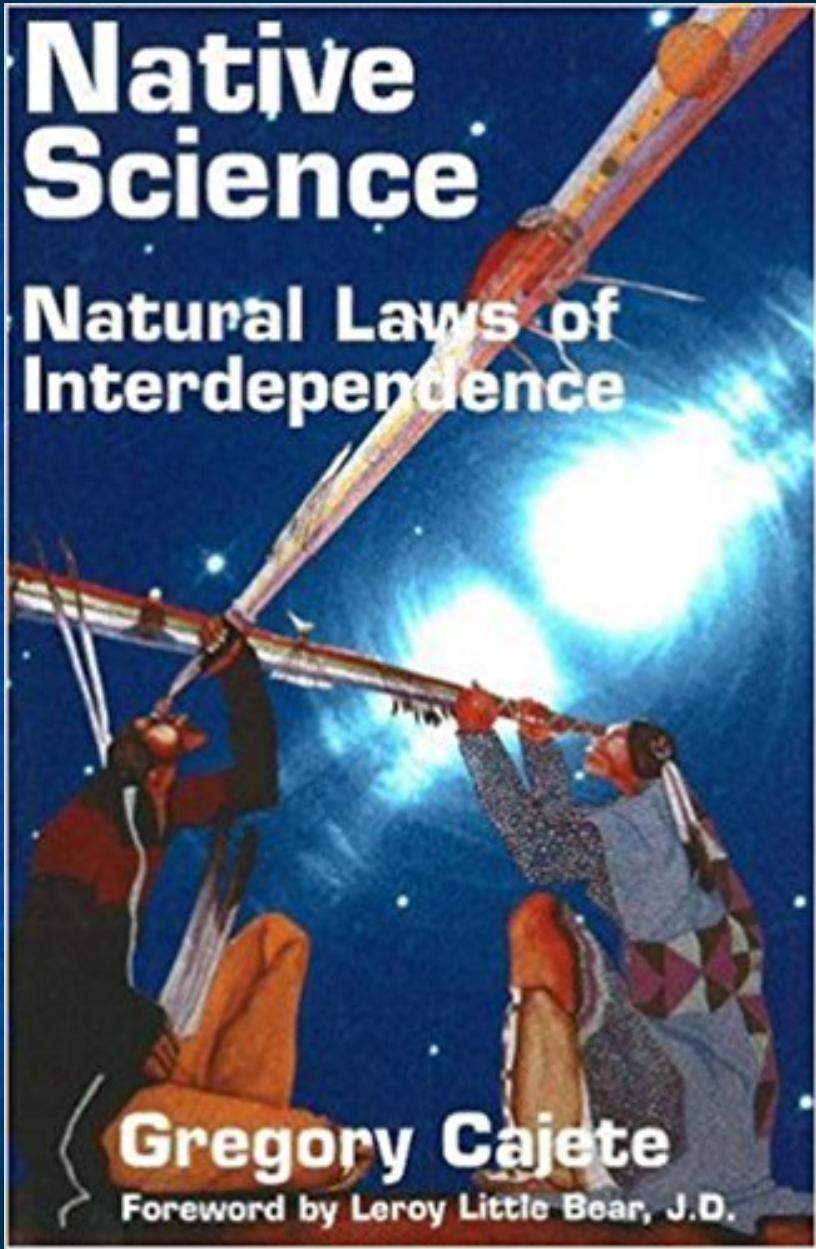
# Myth of Manifest Destiny



“God intended for civilized Europeans to control savages of the Americas.”



# Many Trails of Tears



Indigenous science studies everything in terms of relationships.

Indigenous people were able to live for millennia in harmony with nature.

# THE CHALICE & THE BLADE

OUR HISTORY, OUR FUTURE



"The most important book since  
*Darwin's Origin of Species*."  
— ASHLEY MONTAGU

RIANE EISLER

Author of *Sacred Pleasure*

Dominator and  
Partnership  
Cultures

## POWER

### Dominator Cultures

#### **Egocentrism**

Individualism overrides community well-being

#### **Winning**

Competing *against* instead of *with*—egoistic motivation

#### **Intimidation**

Using power and rank to rule and exploit others

#### **Privilege**

Pursuing the “good life” in greed and materialism

## RESPECT

### Partnership Cultures

#### **Belonging**

Joining in a community of mutual support

#### **Mastery**

Cooperating with others to learn and achieve

#### **Independence**

Respecting each person’s right to personal power

#### **Generosity**

Showing empathy and concern for others

# Intergenerational Trauma: Understanding Native Inherited Pain

Indiancountrymedianetwork.com

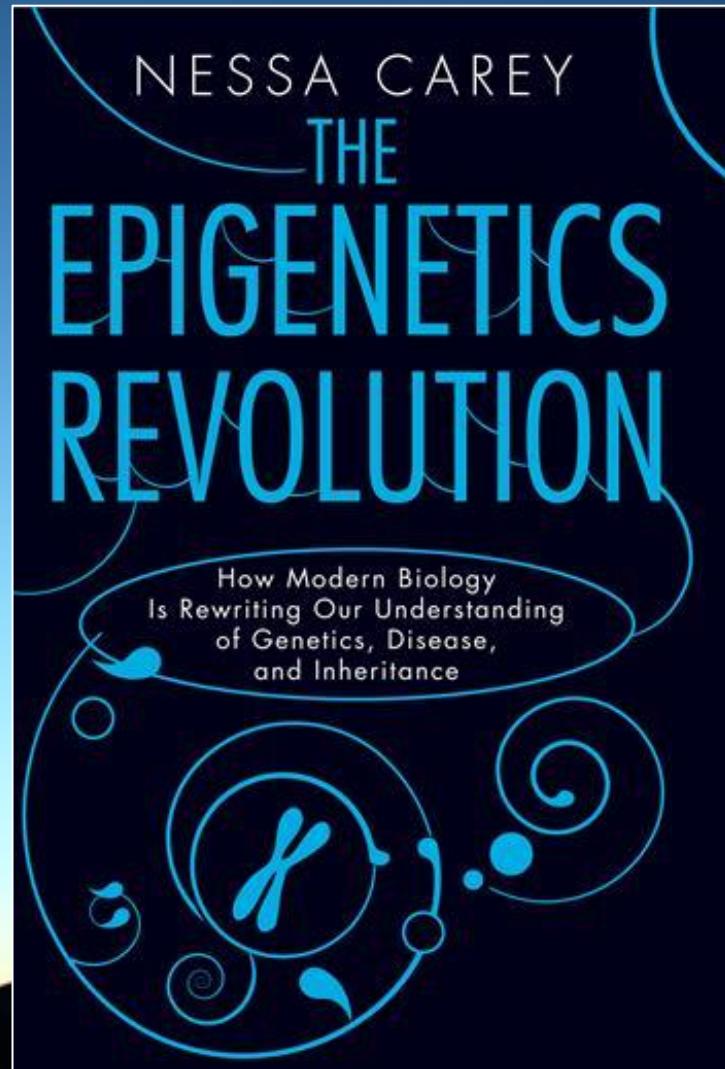
Trauma experienced by earlier generations can influence the structure of our genes, making them more likely to “switch on” negative responses to stress and trauma.

*“Native healers, medicine people and elders have always known this and it is common knowledge in Native oral traditions.”*



Lee Bitsoi, Navajo, PhD  
Genetics Researcher Harvard University

*Epi* is Greek  
for *on top of*.





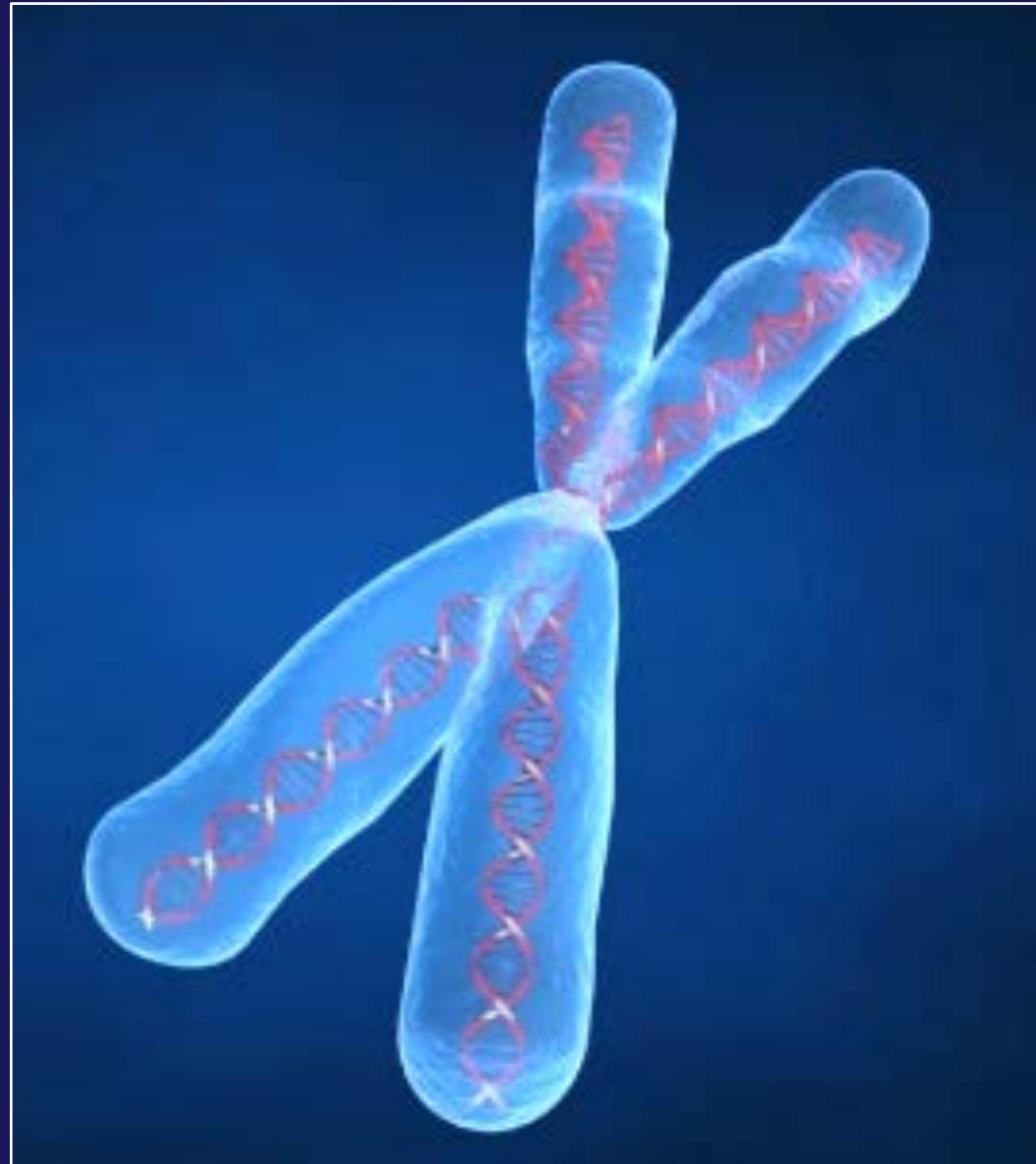
Humans have highly  
resilient brains.

And, 84% of our genes  
affect the brain.

Chromosomes contain 20,000 genes.

But only 5% of the chromosome is made of genes.

The rest was called “junk DNA.”





But “Junk DNA” actually contains four million *epigenetic switches* that can turn genes on and off.

# Neglectful Mothering



# Nurturing Mothering



MICHAEL MEANEY  
McGill University



**REACTIVE**

Fearful  
Avoidant  
Dysregulated



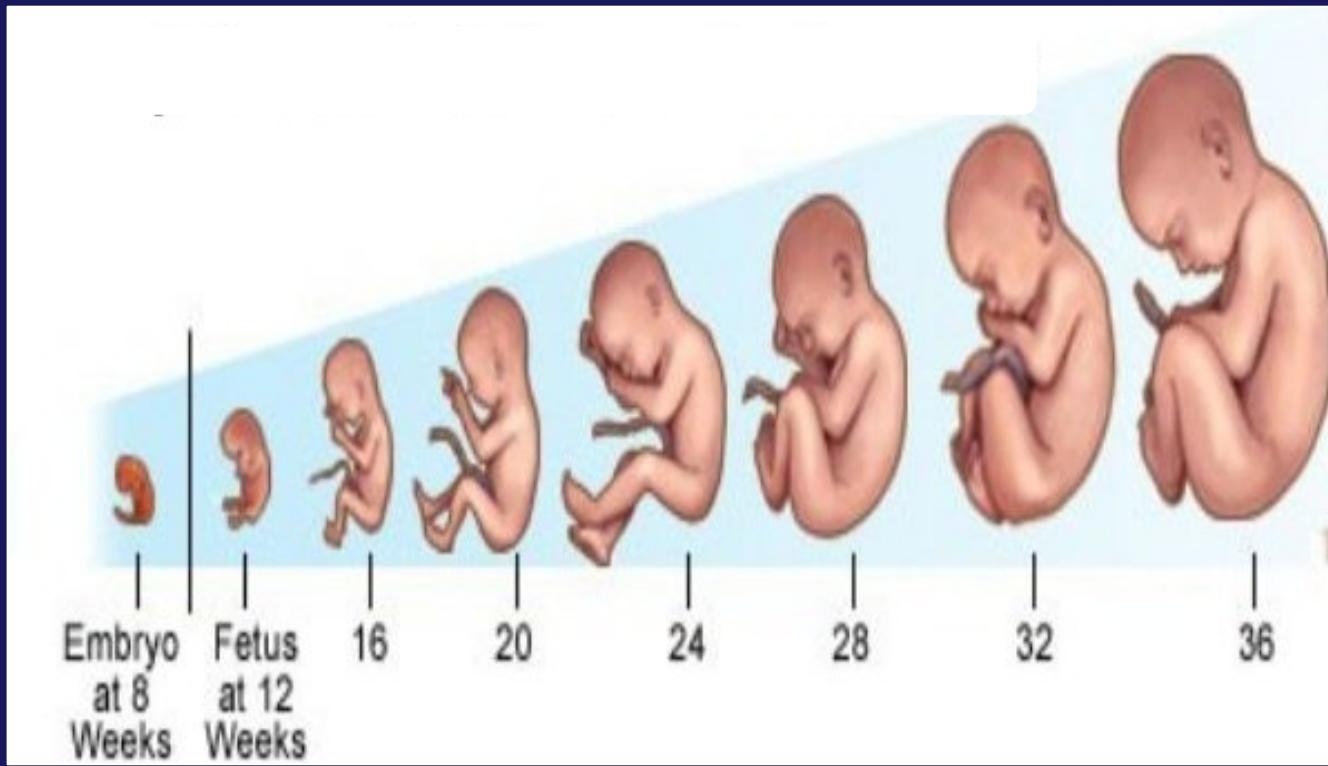
**RESILIENT**

Social  
Curious  
Intelligent

Bisphenol A



Mother and daughter—which is which?



Epigenetics is most potent during the fetal stage when an average of 250,000 new neurons are created each minute throughout pregnancy.



# Fetal Epigenetics

Diet

Drugs

Poverty

Smoking

Pollution

Cultural Trauma



Cultural and racial trauma can affect up  
to four generations.  
(Kuzawa & Sweet, 2009)



# Epigenetics and Aboriginal Health

Obesity

Diabetes

Hypertension

Kidney Disease

Heart Problems

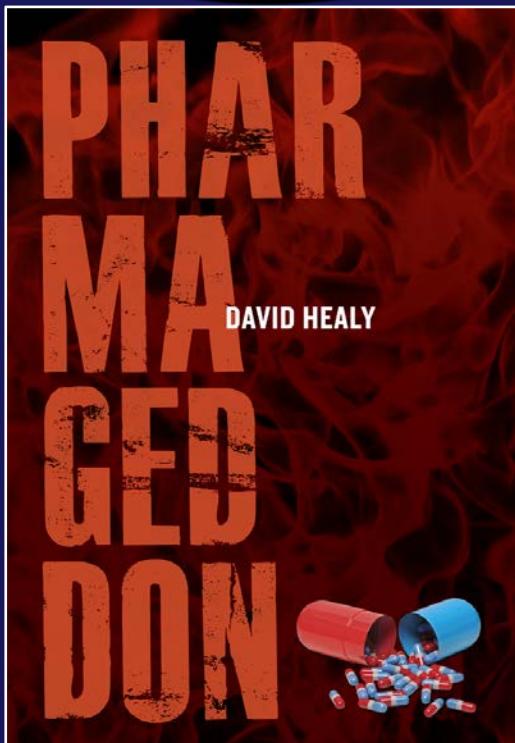
Reduced Life Span



83,000 substances are not natural in human history.  
Exposure can affect health and growth and is related  
to autism, aggressiveness, and learning problems.

GRANDJEAN & LANDRIGAN

*Each capsule contains your medication plus a treatment for each of its side effects.*



These drugs do not just have the action we are told about but often have much greater effects throughout the body.

DAVID HEALY  
University of Cardiff, UK

# Epigenetics and Lifestyles

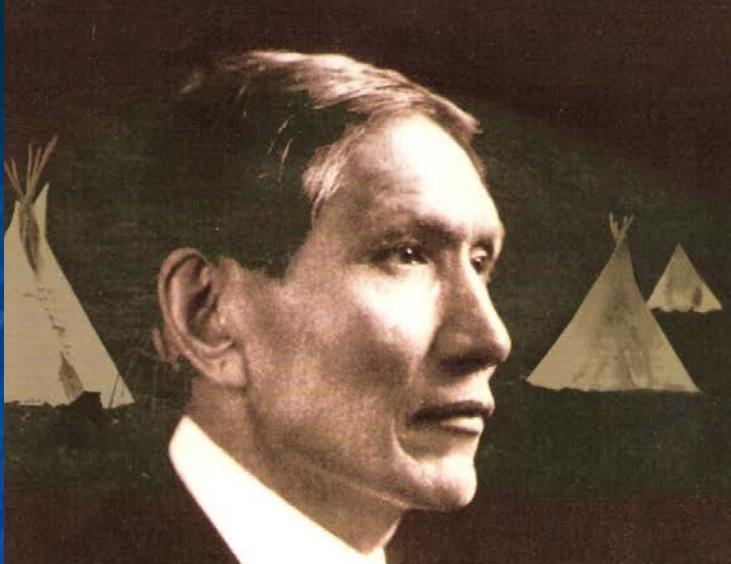


# The Good News: Genes are Not Destiny



Epigenetic problems are potentially reversible.

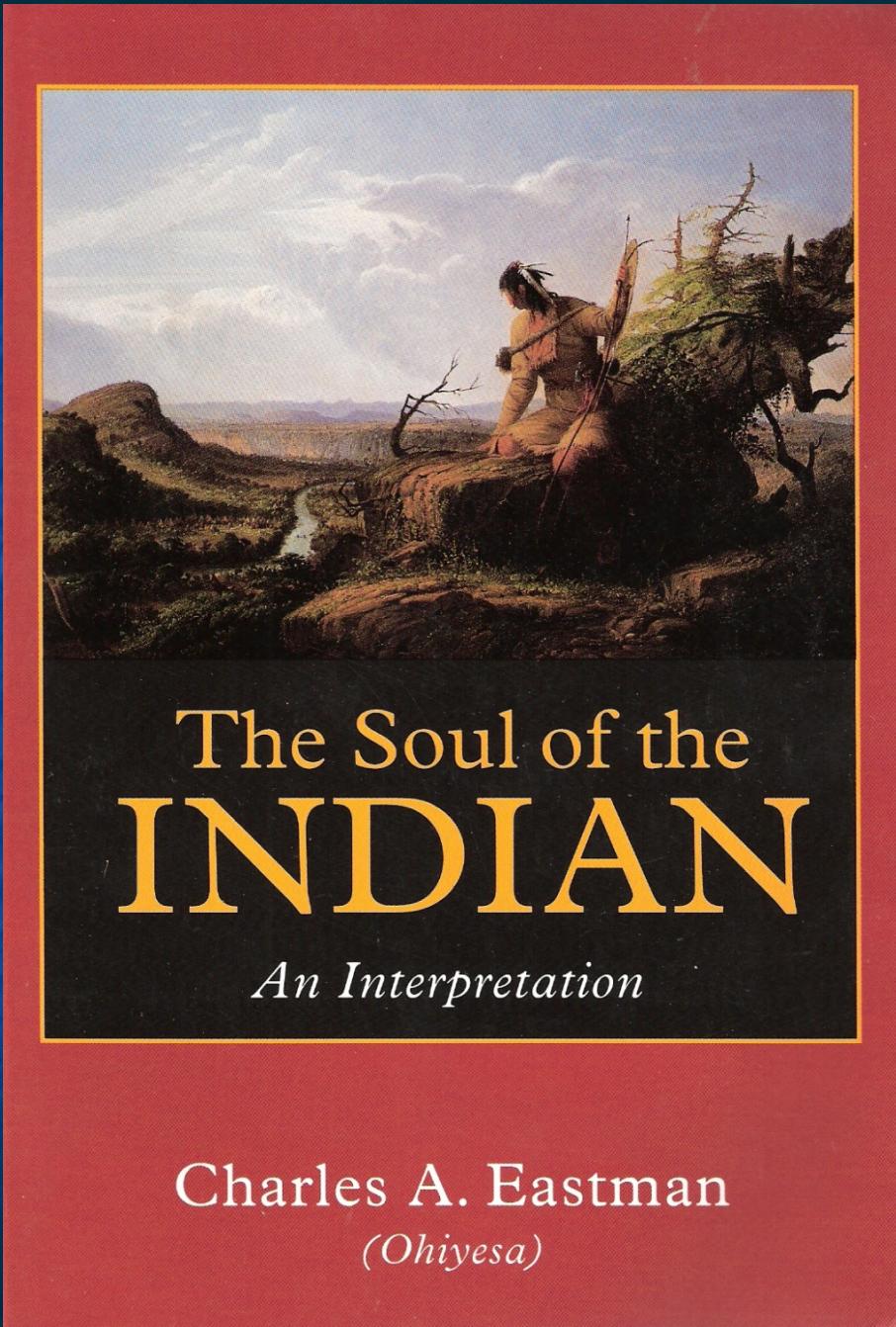
Meeting needs builds resilient brains.



The old are dedicated to  
the service of the young,  
as their teachers and  
advisors, and the young  
in turn regard them with  
love and reverence.

**OHIYESA**  
**1858-1939**

Charles Eastman, 1911, pp 23-24.



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