



AN INTRODUCTION TO GOETHEAN SCIENCE

DR JONATHAN M. CODE

RAU
May
2025



Pari Center

PARI CENTRE - ITALY

LONGING FOR WHOLENESS
What do the Sciences, Arts and Religions share?

Pari, Italy
August 27-September 3, 2024

with **Jonathan Allday**
Jonathan Code
Chamkaur Ghag
Tim Ingold
Alison MacLeod
Andrea McLean
Shantena Augusto
Sabbadini
Joan Walton

Curated and chaired by
John Pickering

Science has made our lives more comfortable, but has it helped us to understand life or embrace death? As it fails to offer what spiritual traditions provide, science must remain open to these other ways of knowing. Drawing from the sciences, arts and healing traditions, we will weave common ground between them, aiming to create an open, participatory dialogue on how we might understand the world as a unified whole.

Information: www.paricenter.com
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<https://paricenter.com/>



SCIENCE, ART, RELIGION (SACRED)

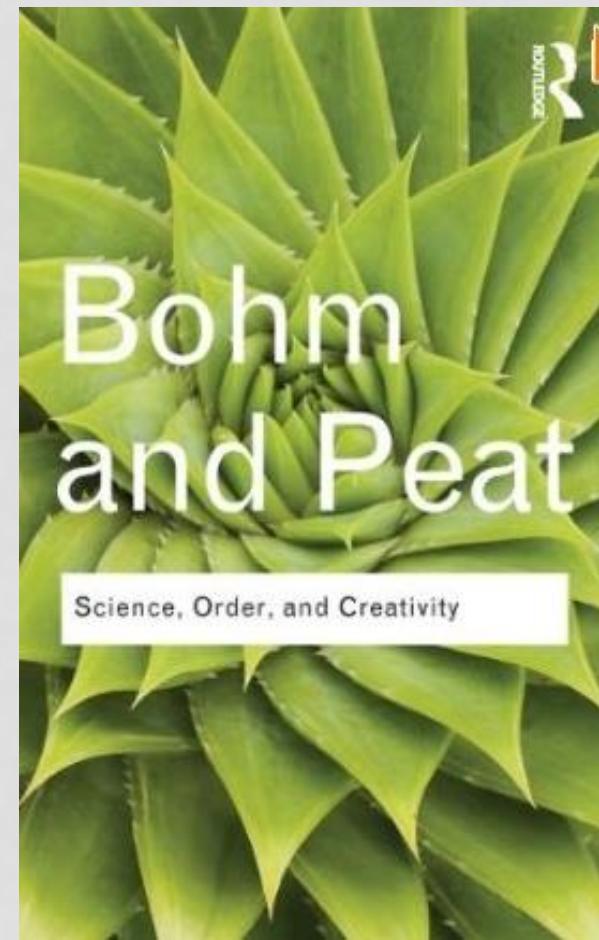
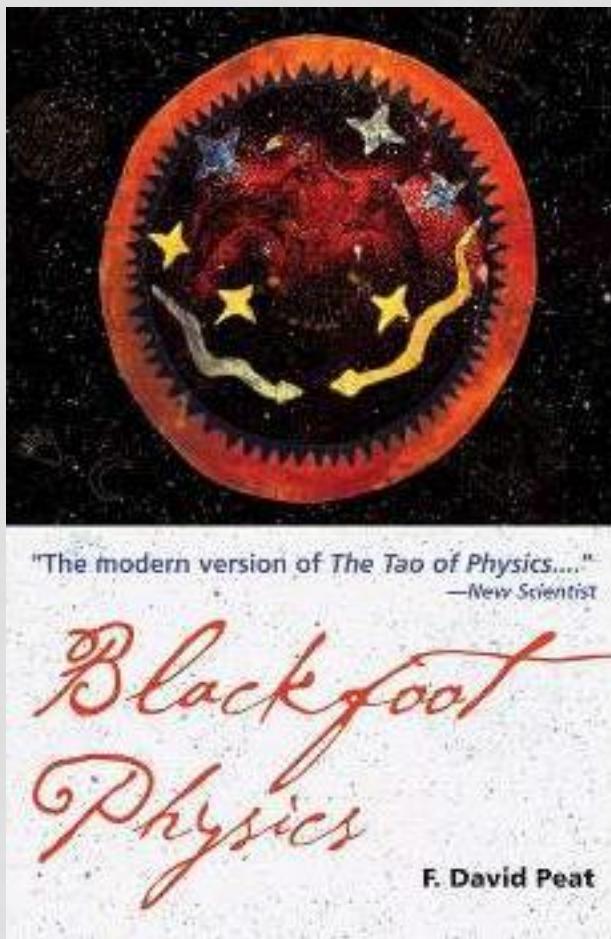
In 1999 Arts Council England invited the physicist and writer F. David Peat to organize a meeting of artists and scientists in London, a meeting that would be highly informal and encourage a creative exchange. The most famous work to emerge from this gathering is Antony Gormley's Quantum Cloud located next to the Millennium Dome in London.

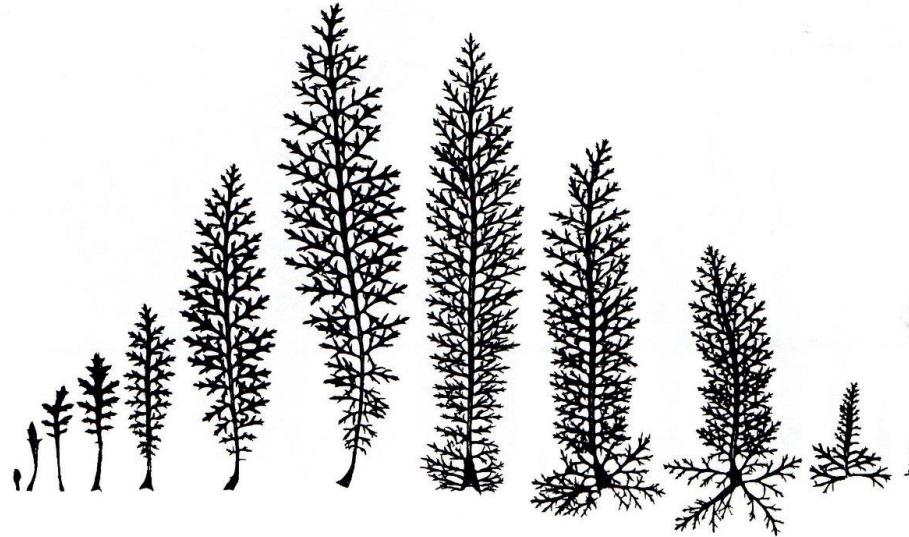
Following the success of the Arts Council meeting, the Gulbenkian Foundation suggested a similar roundtable approach to discuss the role and future of universities. Since the old school house in Pari had recently been restored it was decided to hold the meeting there rather than in London or other major center.



Many participants expressed their distress at the current state of the universities and proposed that alternative structures be created. On the final day several suggested that the Pari meeting should not be a one-off, but should continue as a living center. In this way the Pari Center for New Learning was born.

F.DAVID.PEAT





GOETHE: A SCIENCE AND ART OF BECOMING

DR JONATHAN M. CODE

Pari
2024

ONTOLOGICAL DISCONTINUITY

‘MIND THE GAP’

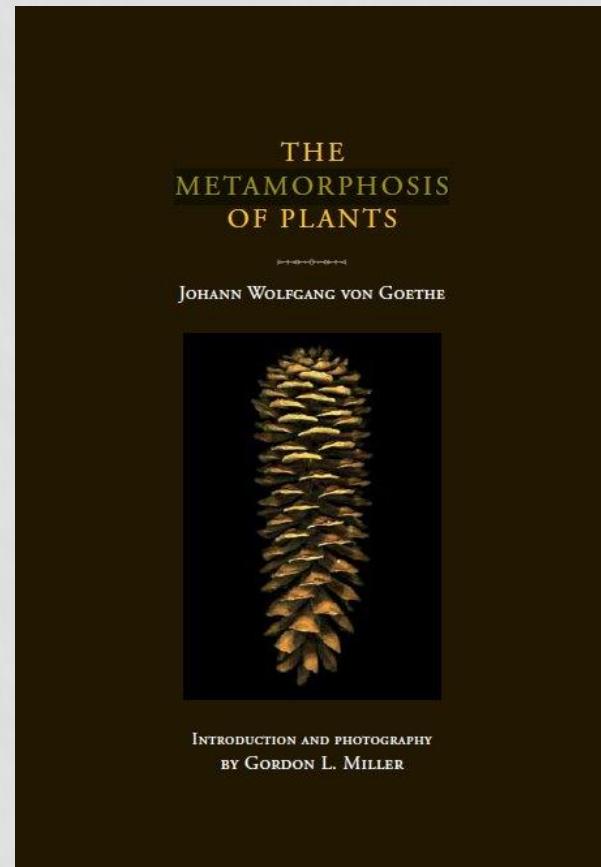
$m + x + y + z$
 $m + x + y$
 $m + x$
 m

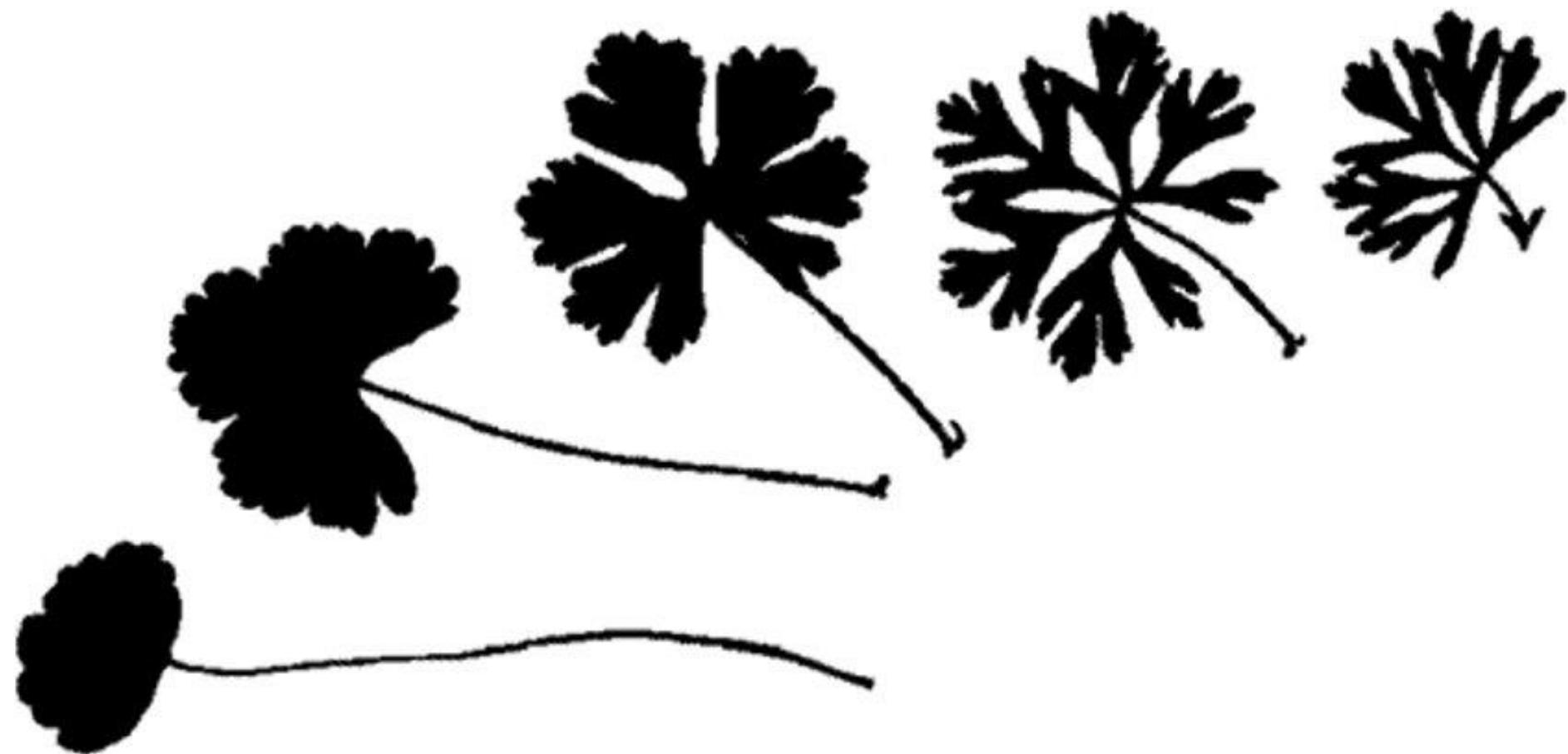


M
 $M - z$
 $M - z - y$
 $M - z - y - x$

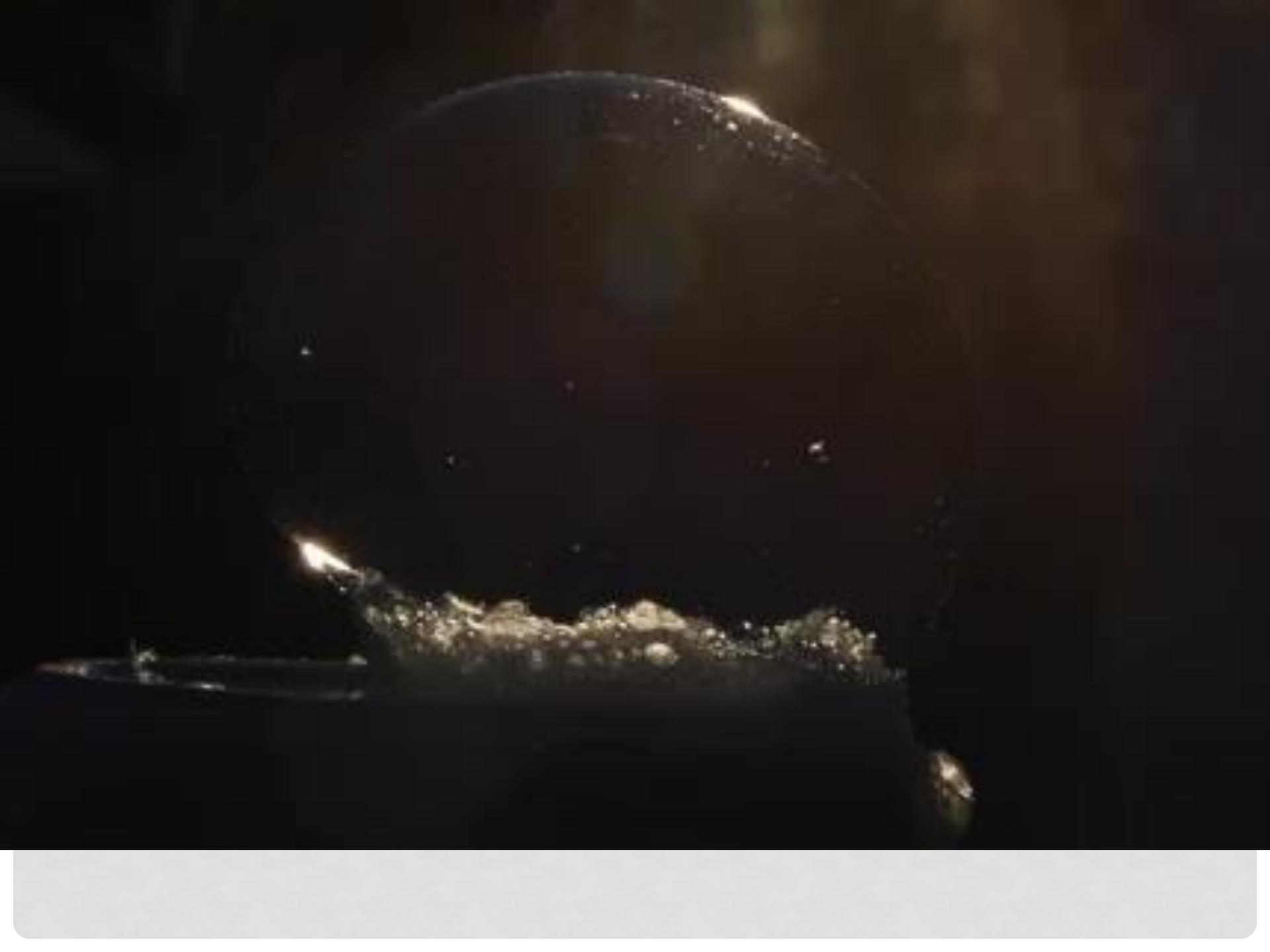
What is a way of knowing *adequate* to cognizing ‘x’ ?

“The extraordinary thing about the modern ‘life sciences’ is that they hardly ever deal with life as such...but devote infinite attention to the study and analysis of the physico-chemical body that is life’s carrier. It may well be that modern science has no method for coming to grips with ‘life as such’. If this is so let it be frankly admitted: there is no excuse for the pretence that life is nothing but physics and chemistry” (Schumacher 2011:29).













GOETHE'S EXACT SENSORIAL IMAGINATION – A DELICATE EMPIRICISM

JONATHAN M. CODE

Pari
2024

Wax botanical models from the Museum in the Pisa Botanical Gardens



























































PARI perspectives – September 2024

Insights Arising from an Encounter with a Wise Teacher While on Pilgrimage

JONATHAN CODE

‘How should I live?’ I ask the Vine

...

I await an answer expectantly
under mottled shade
cast by sinuous, leafy creepers sprawling over rough beams above my head
I wait

...

impatiently

...

anticipating wise counsel measured advice and
firm,
unwavering direction.
a golden grape which ...somehow
found its way into my mouth suddenly explodes
under my bite...

Goethean Science is a **re-configuring** and **re-positioning** of the relationship between the whole and the part, the scientist and the subject/object of science.

In contrast to focusing on the development of an **artificial intelligence** ever more hidden from most users in algorithms, digital code and networks obscure even to some programmers – Goethean science attends to the 'open secrets' accessible to sense observation and strives to develop an **authentic intelligence** attuned to the lifeworld.

Goethean science has commonalities with Traditional Ecological Knowledge. It can be understood as a science adequate (Schumacher) to understanding animacy.

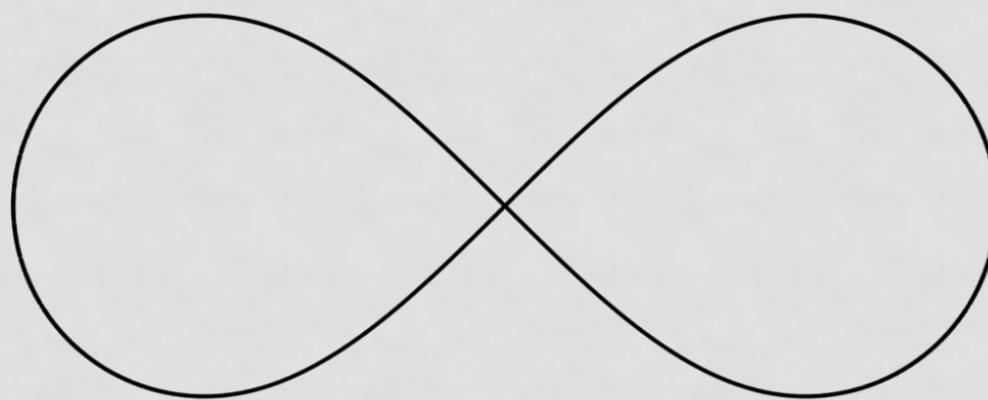
Literature on Goethean Science

'Goethe's Scientific Method: the road not taken' Published as Brook, I. 2023, Ch 13 in Rist, S., Bottazzi, P. & Jacobi, J. (eds) *Critical Sustainability Sciences: Intercultural and emancipatory perspectives*, pp. 198-215. London: Routledge.

Ecoliteracy and the trouble with reading: ecoliteracy considered in terms of Goethe's 'delicate empiricism' and the potential for reading in the book of nature, Jonathan M. Code (2019) Environmental Education Research, 25:8, 1267-1280, DOI: 10.1080/13504622.2018.1558438

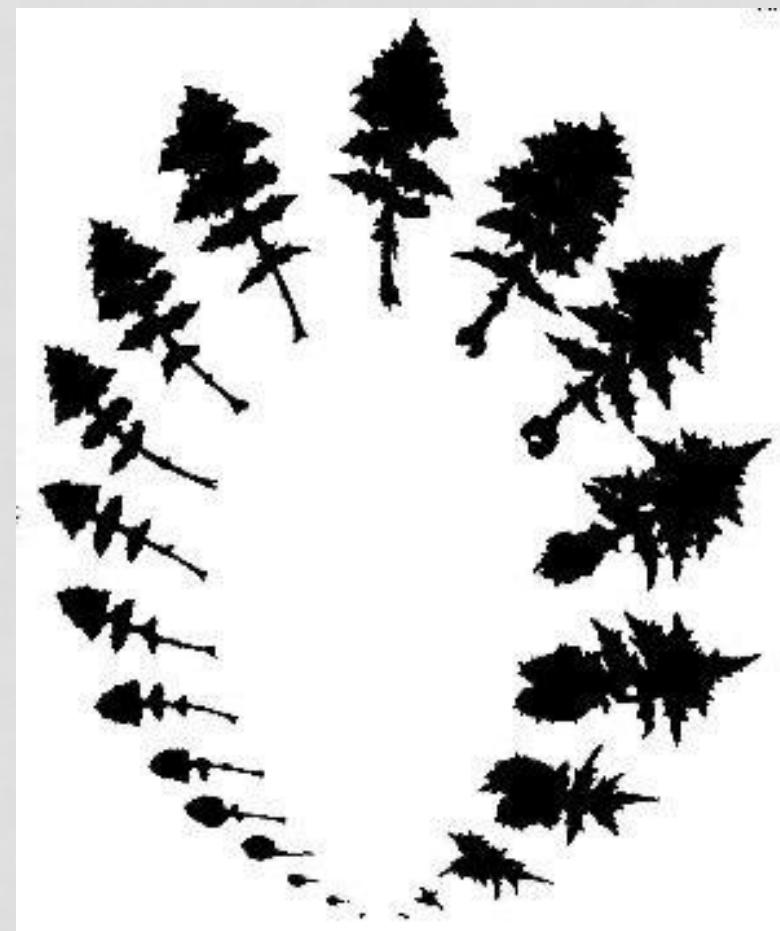
Goethe's Way of Science: A Phenomenology of Nature, Seamon, D. & Zajonc, A. (1998) New York: SUNY press

The Wholeness of Nature, Bortoft, H. (1996) New York: Lindisfarne Press



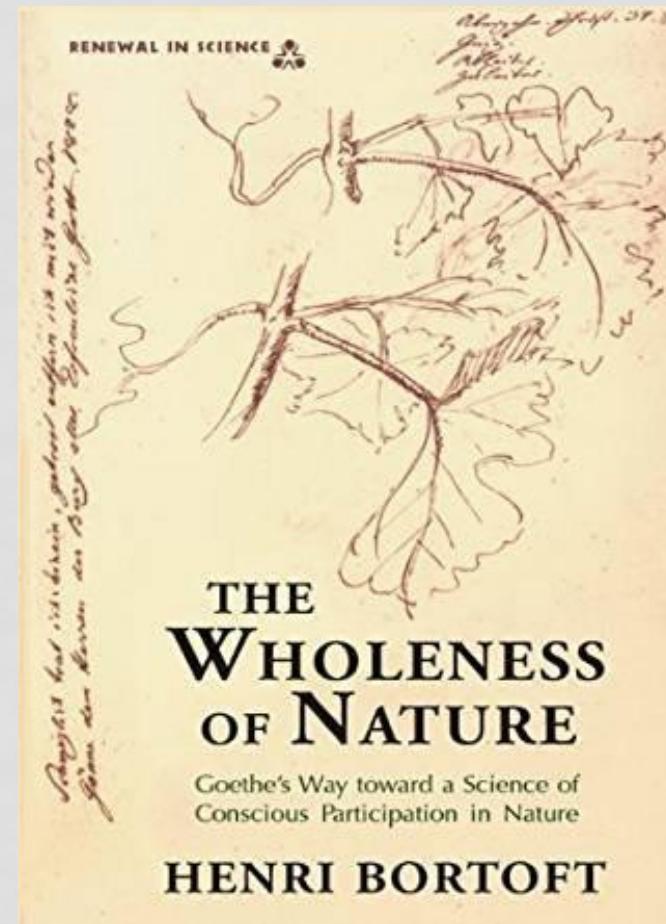
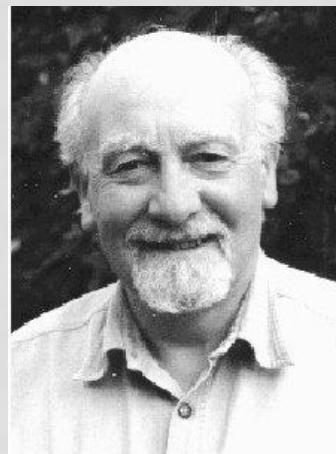
EXACT SENSORIAL IMAGINATION

- An aspect of Goethe's science that seems unusual for the time he was writing was his appreciation of nature as continuously in flux.
- Morphology also suggests the need for a kind of lively apprehending, not only to see the whole form, but to understand it as a whole. The organic, for Goethe, had no fixed form. Thus, the organism seen in everyday consciousness is not the organism as a living thing, to see this we need to bring to it the sense of flux that it is engaging in.
- The plant's creative process is visible and laid out in front of us if we shift our attention from static form to fluid process.



ORGANISING IDEA IN COGNITIVE PERCEPTION

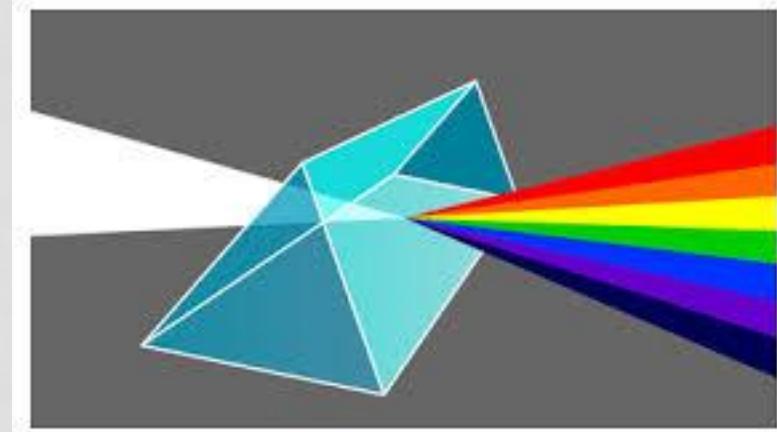
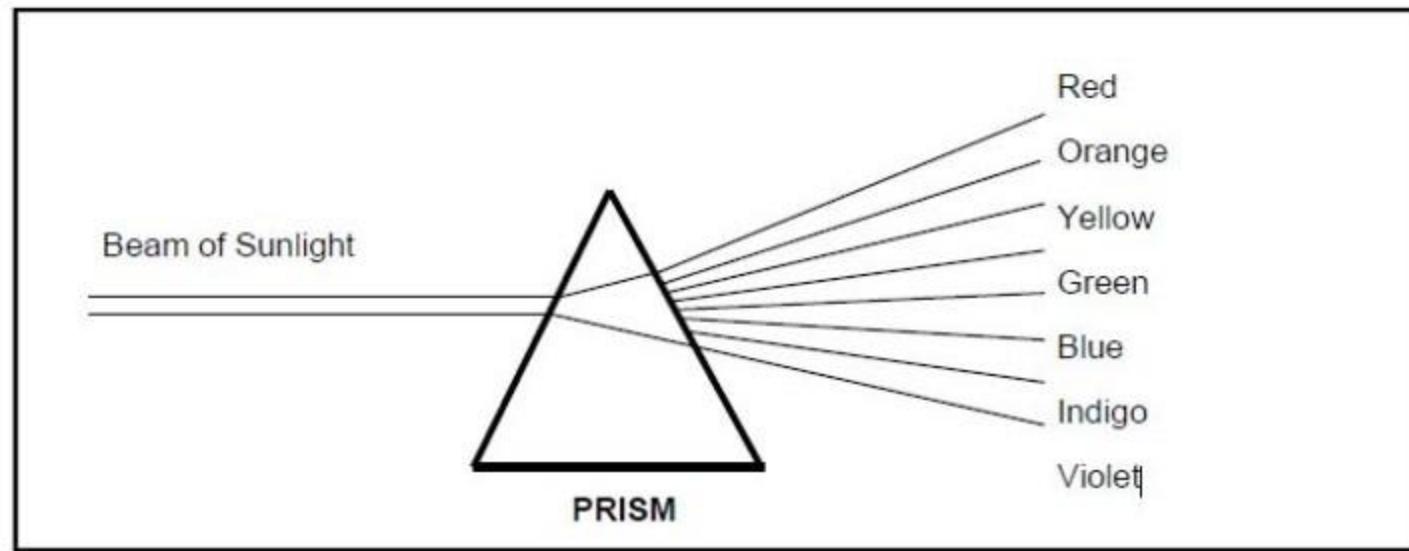
- Our concepts are percept saturated
- Our percepts are concept saturated –
“what we take to be things are actually condensations of *meaning*”.
- “We live in a dimension of mind which is as invisible to us as the air we breathe.”





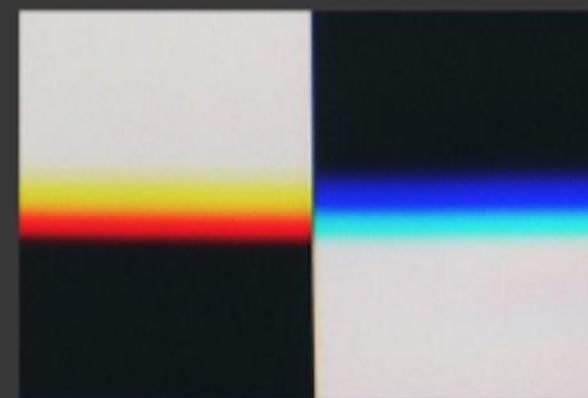


NEWTON - COLOR



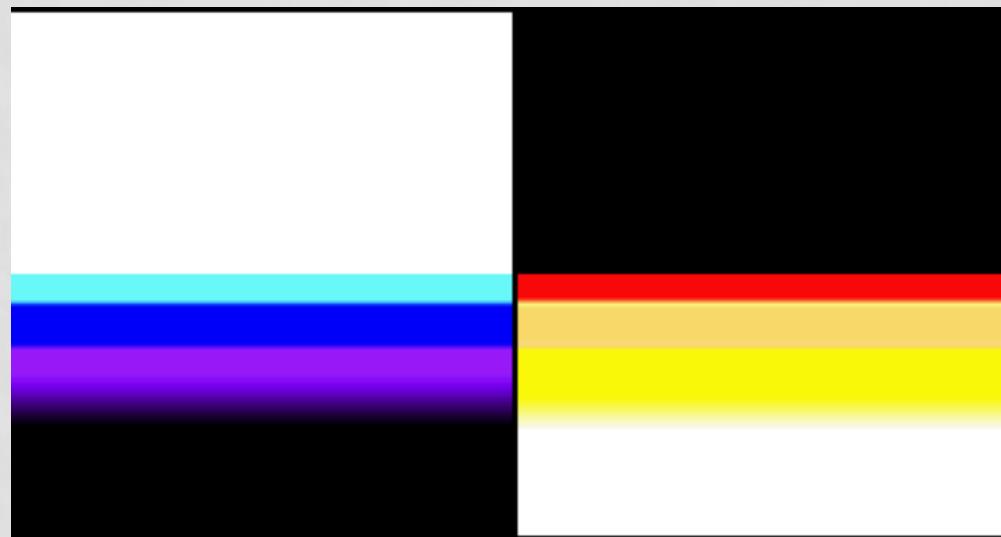
BROOK: THE ROAD NOT TAKEN

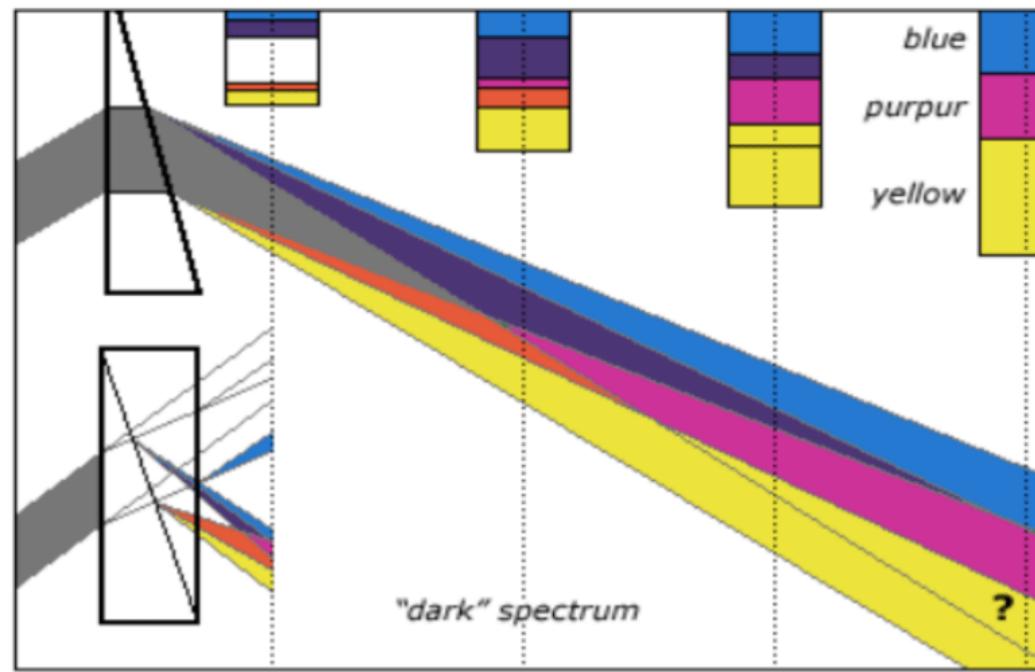
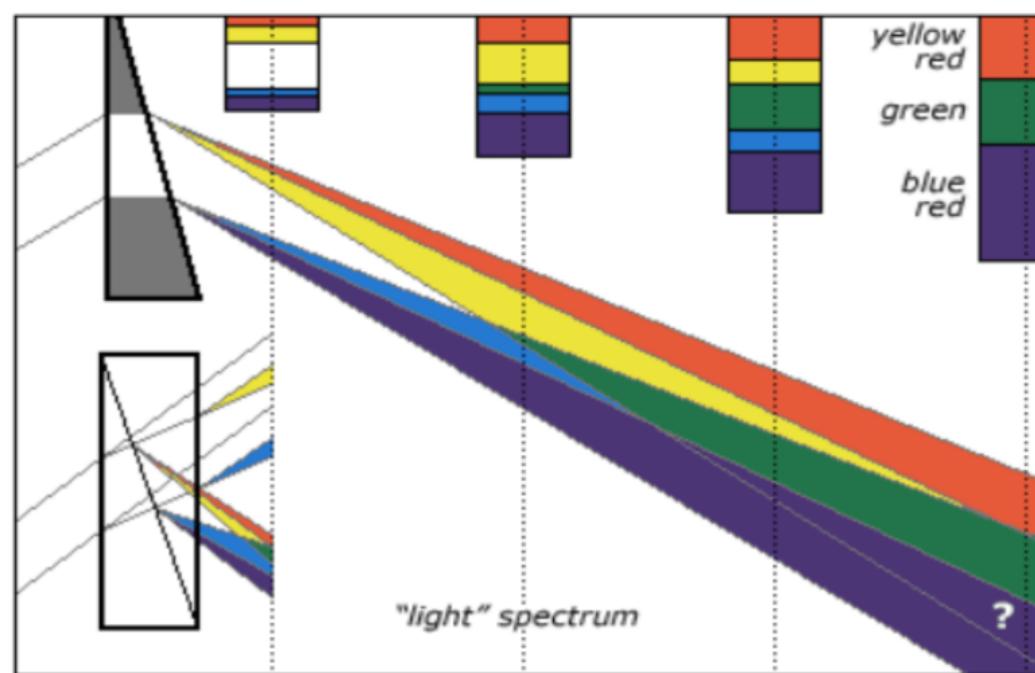
- ..he [Newton] accomplished a significant transformation of the Baconian method and placed the new concept of the **crucial experiment** at the centre of natural philosophy, at the centre of science...Newton's Letter, though quasi- Baconian in appearance, proceeds more positively than negatively in that it judges what is wrong from the perspective of what the theory requires; also the phenomena are selected to test the theories, rather than to provide a comprehensive array.
(Sepper 1988: 134)
- The way in which Newton had distanced the scientist from the phenomena as they arise —in their interacting multiplicity— was the mainstay of Goethe's extended attack on Newtonian optics. To isolate a single complex experiment in order to prove a theory was for Goethe poor science.



COLOR

Yellow is a light which has been dampened by darkness; Blue is a darkness weakened by light.







Time sequence of the setting sun

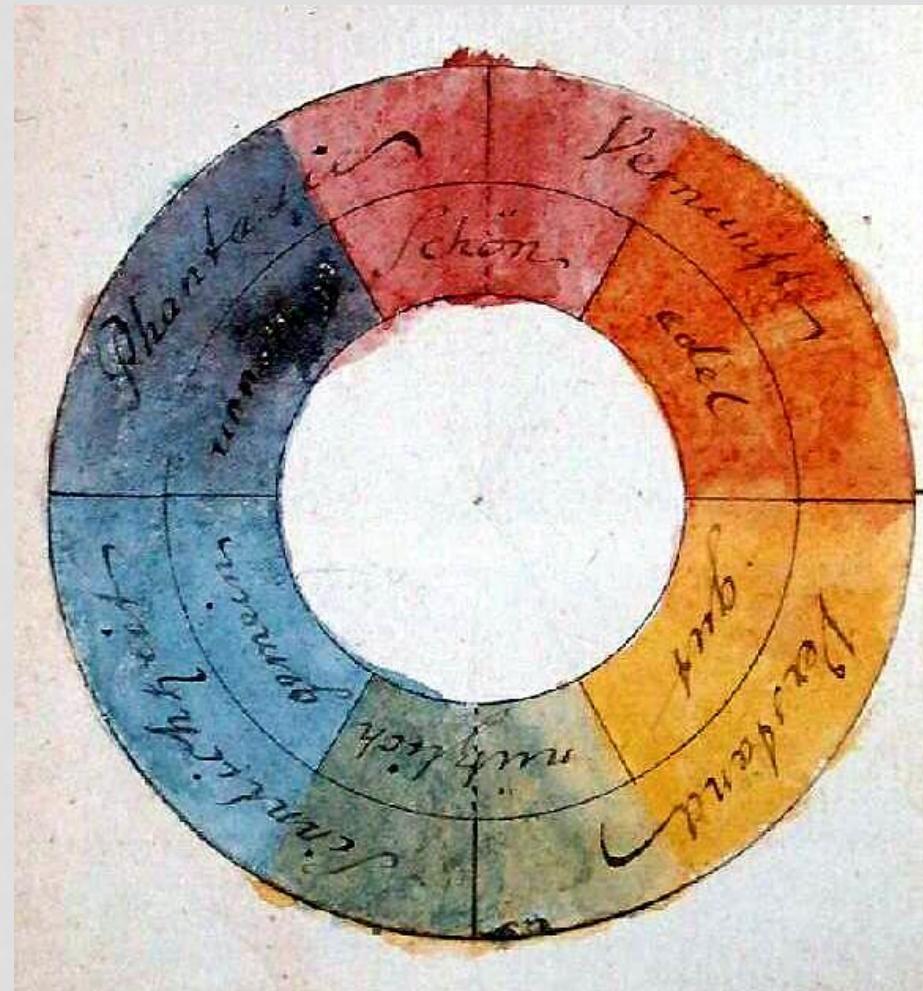


The earth's rising shadow

COLOR - POLARITY

Modern natural science sees darkness as a complete nothingness. According to this view, the light which streams into a dark space has no resistance from the darkness to overcome. Goethe pictures to himself that light and darkness relate to each other like the north and south pole of a magnet. The darkness can weaken the light in its working power. Conversely, the light can limit the energy of the darkness. In both cases color arises.

— Rudolf Steiner, 1897[19]





UNDERSTANDING MAMMALS THREE-IN-ONE

JONATHAN M. CODE

RAU
2025

ONTOLOGICAL DISCONTINUITY

‘MIND THE GAP’

$m + x + y + z$
 $m + x + y$
 $m + x$
 m



M
M - z
M - z - y
M - z - y - x

BECOMING OTHER

- The means to improvement was the exercise of looking at, and building a relationship with, nature. He seemed to invoke a cycle of looking at nature, examining oneself, looking at nature again and so on. The procedure then becomes a spiral of enhancing capabilities through experience and closer and closer relationship with the aspect of nature studied. For Goethe, this was the activity of science, he said: 'Insofar as he makes use of his healthy senses, man himself is the most exact scientific instrument possible' (Goethe, 1995: 331). That sense of having to live into, to merge with, the thing studied comes through in his writing.

Wolfgang Schad

Understanding Mammals

Threefoldness and Diversity

Volume 1



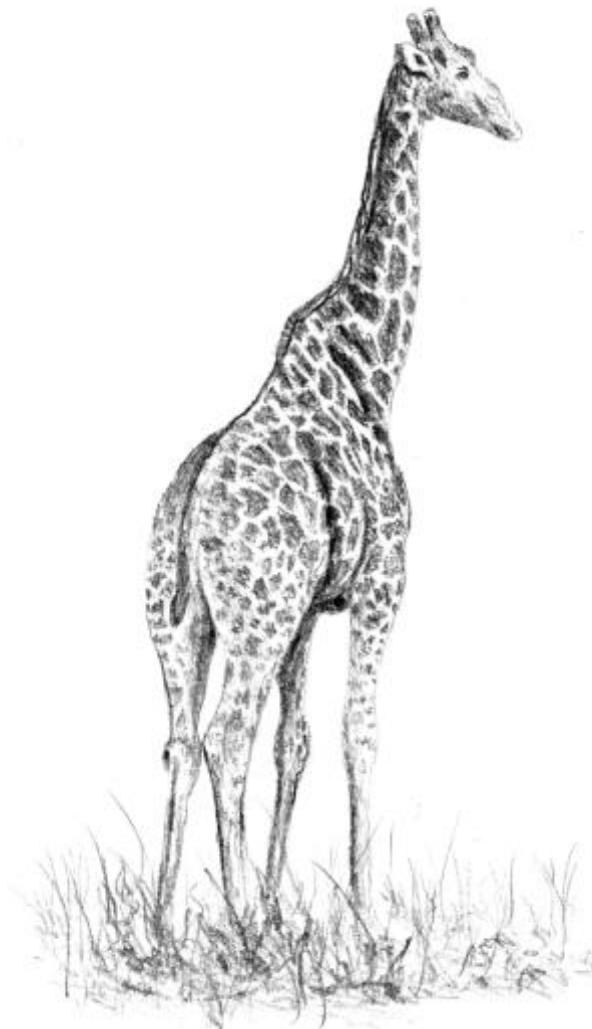
Wolfgang Schad

Understanding Mammals

Threefoldness and Diversity

Volume 2





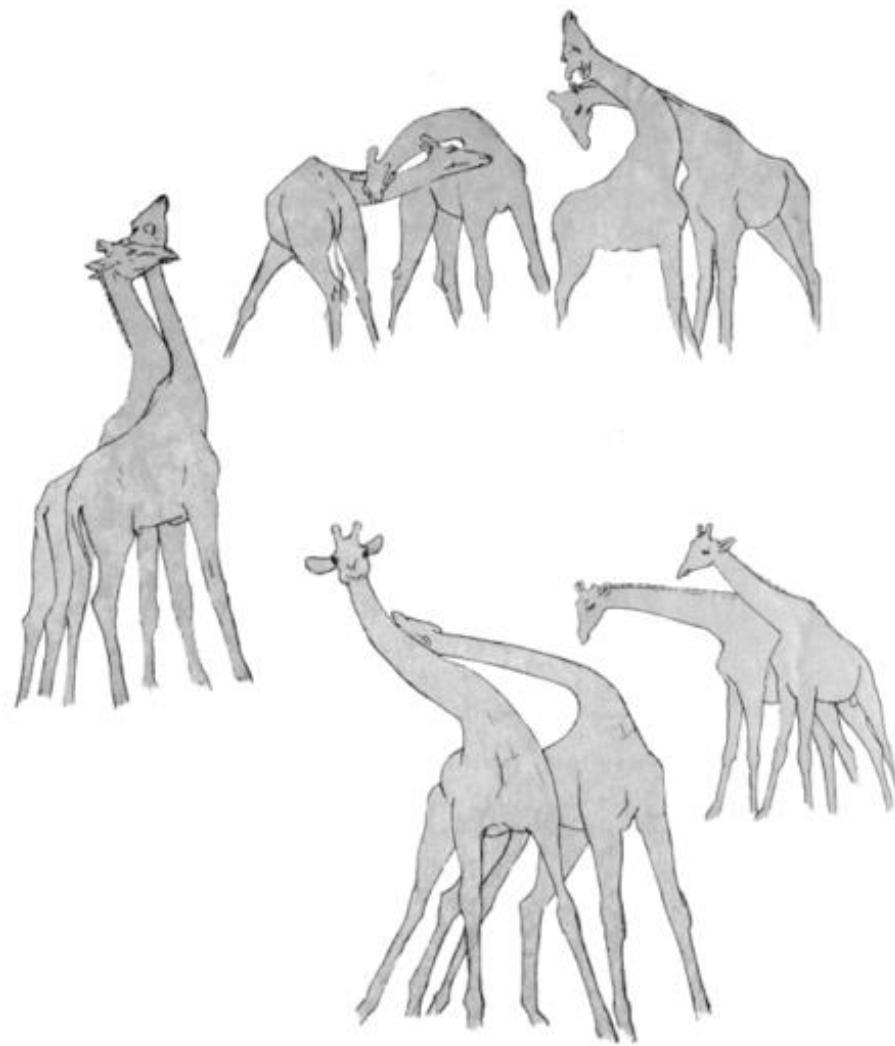
The Giraffe's Long Neck

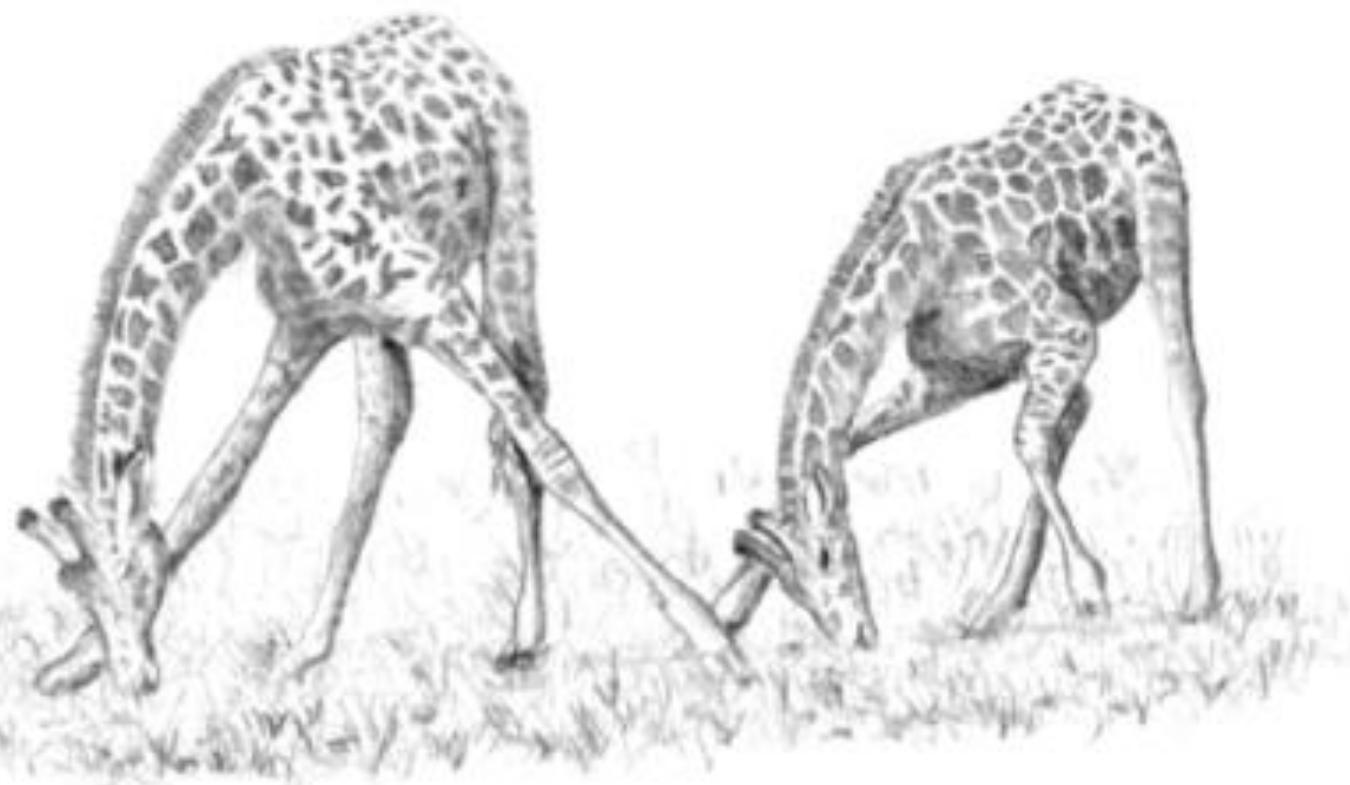
From Evolutionary Fable to Whole Organism



CRAIG HOLDREGE

NATURE INSTITUTE
PERSPECTIVES





- All the explanations of the evolution of the giraffe's long legs and long neck are unsatisfying. Each of the scientists sees problems in other explanations, but remains within the same explanatory framework when putting forward his own hypothesis. No one sees the necessity for stepping outside the framework and looking at the difficulties of the overall approach. In each case the scientist abstracts individual features (long neck, long legs, large surface area) and considers them in isolation from the rest of the organism. The individual feature is then placed into relation to one purported causal factor in the environment (drought, heat, predator avoidance, male competition). The link of individual feature to environmental factor is supposed to explain the evolution of that feature.

“If the evolution of the giraffe had progressed as Darwin envisioned, one would expect to find fossils of many intermediate stages of animals with successively longer necks and legs between the giraffe ancestor—a small deer- or antelope-like animal that perhaps resembled the okapi—and the fully evolved giraffe. But this is not the case.” (Holdrege, 2005)

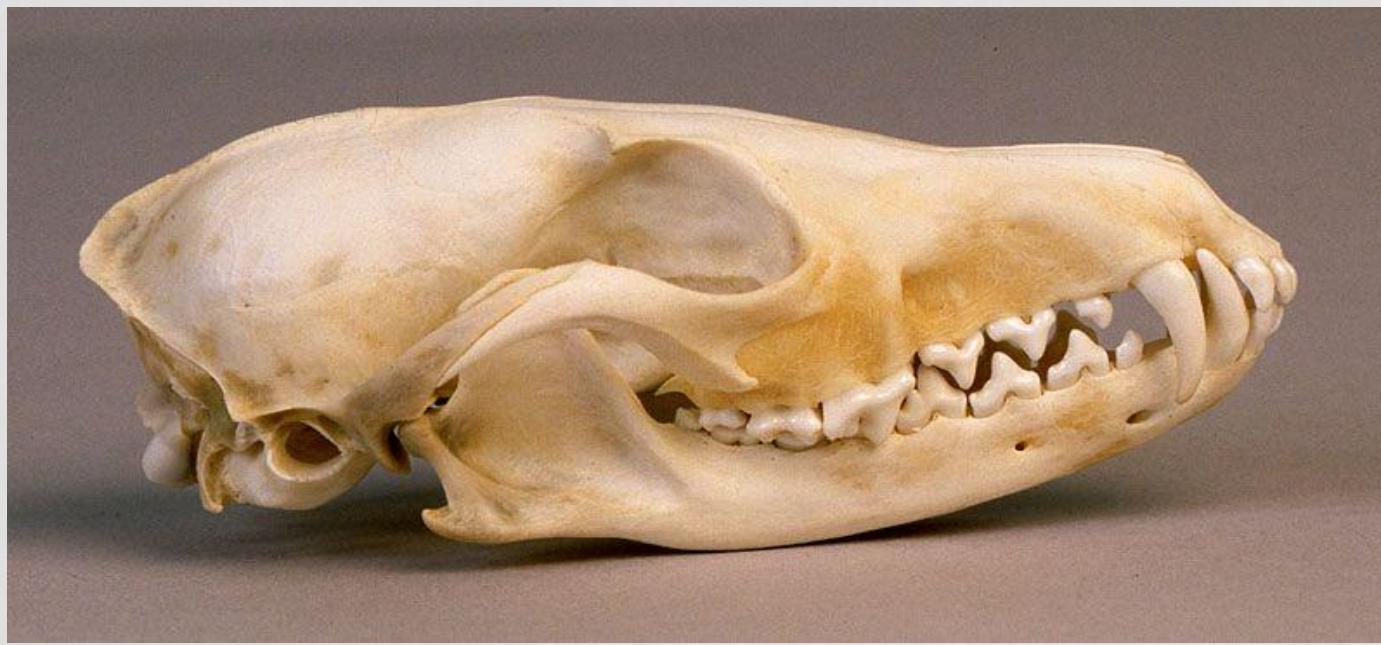


















10 cm

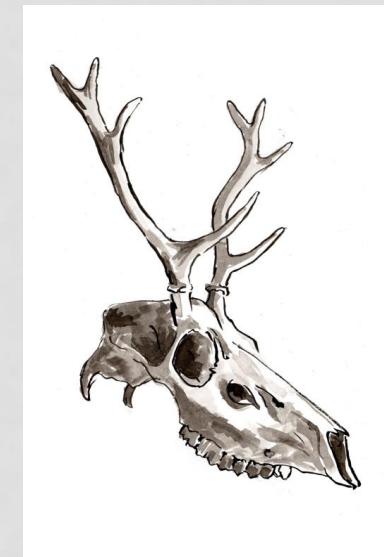


skullbase.info



PRINCIPLES OF THREEFOLD FORM

- To discover an expression of threefoldness within the mammals we begin by observing their teeth (dentition). A mammal's teeth can reveal much about the structure of its jaw, the form of its skull, and even its ecology.



NERVE SENSE



Rodents – specialized incisors

Nerve sense system emphasized



RHYTHMIC

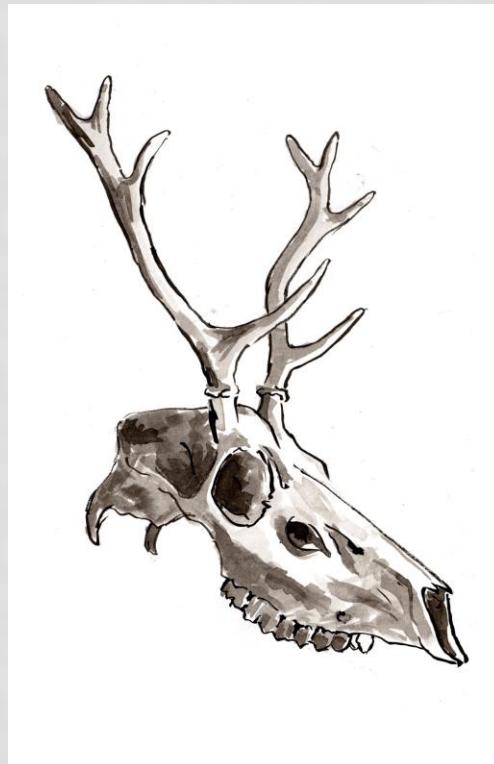


Carnivores – specialized canines

Rhythmic system emphasized



METABOLIC



Ungulates – specialized molars

Metabolic system emphasized



THREEFOLD MAMMAL

3-fold system	Nerve-sense	Rhythmic	Metabolic-limb
Nutrition Source	Rich foods, fats, starch	Body substance, protein	Difficult to assimilate, cellulose
Teeth	Incisors	Canines	Molars
Body Size	Small	Medium	Large
Coloration	Contrasting, dark above, light below	Transitional, stripes and spots	Inverted, light above, dark below
Example	Rodent Mouse	Carnivore Dog, cat	Ungulate Cow, horse





Marmot



Lion



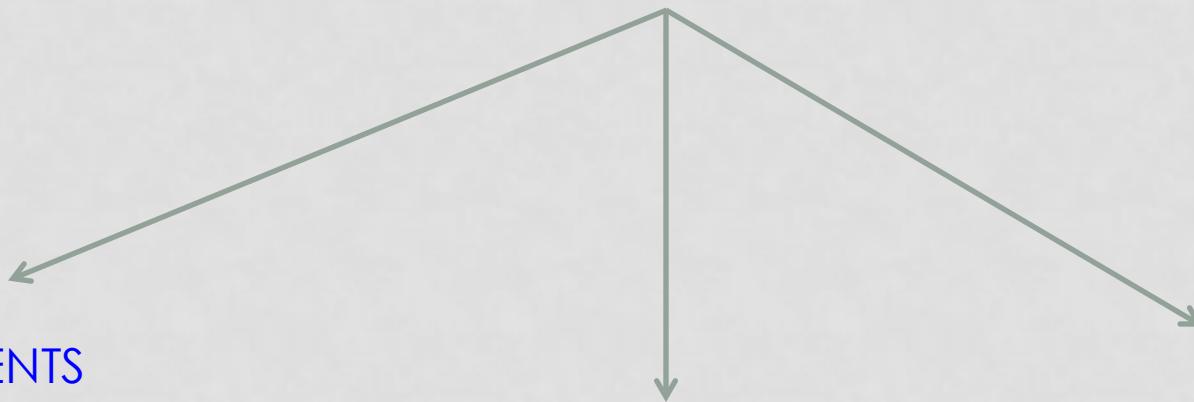
Cow



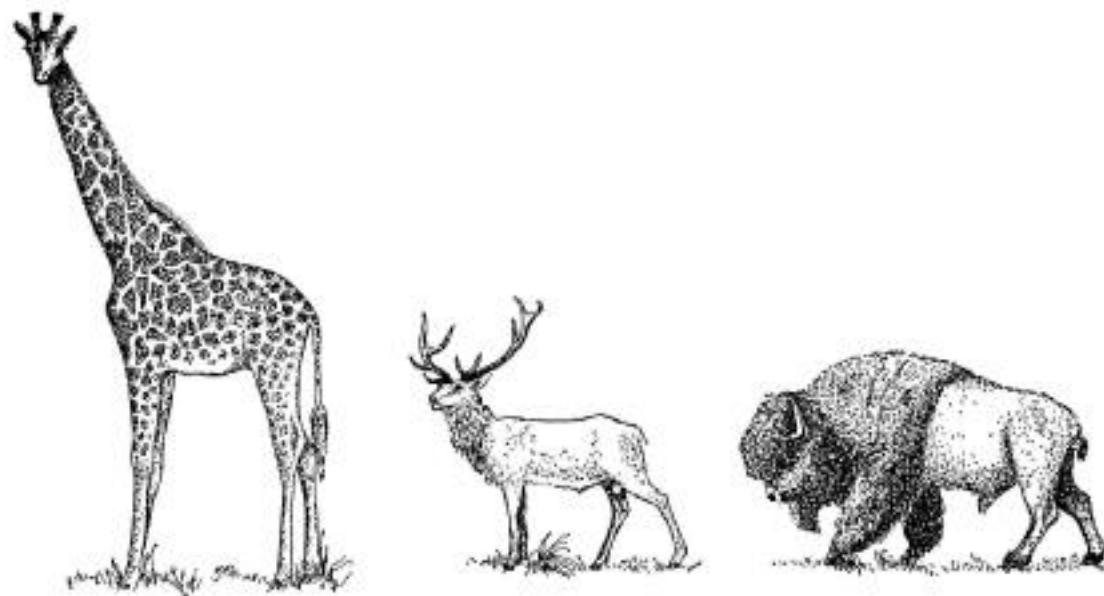
Man

Human morphology maintains a delicate balance among qualities that appear in one-sided development in the various other mammals

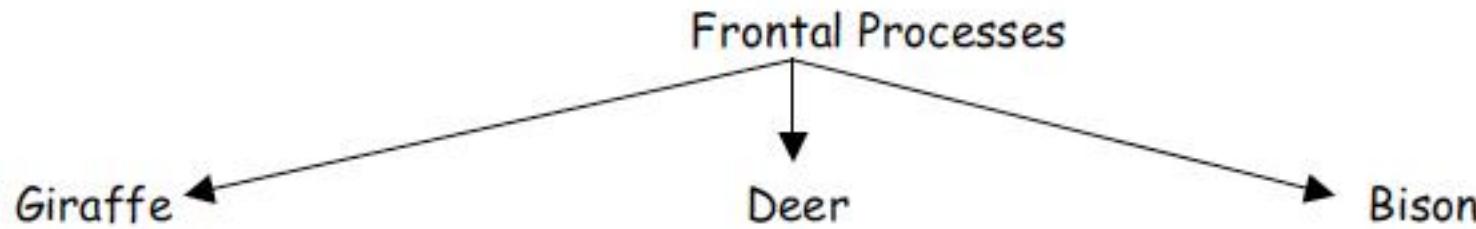
3 FOLD – MAMMAL

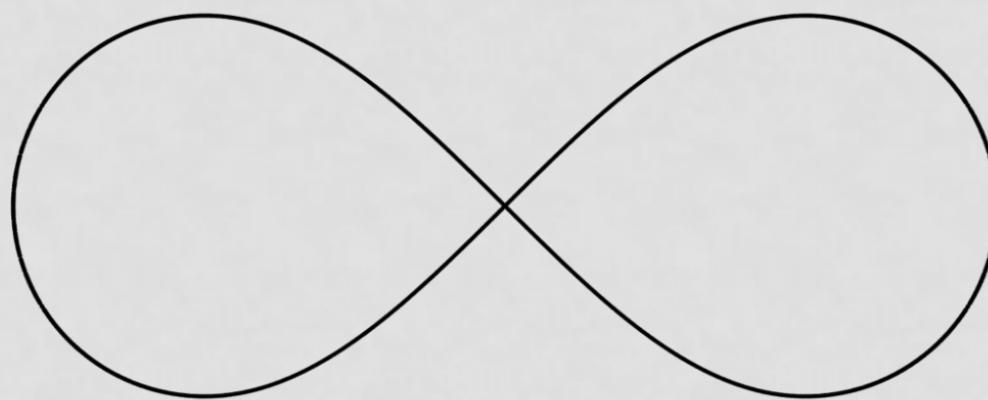


PECORANS - ADVANCED RUMINATING STOMACHS AND HEAD PROTRUBERANCES



Differences in anterior form, the giraffe, stag and bison. Source: Shad.

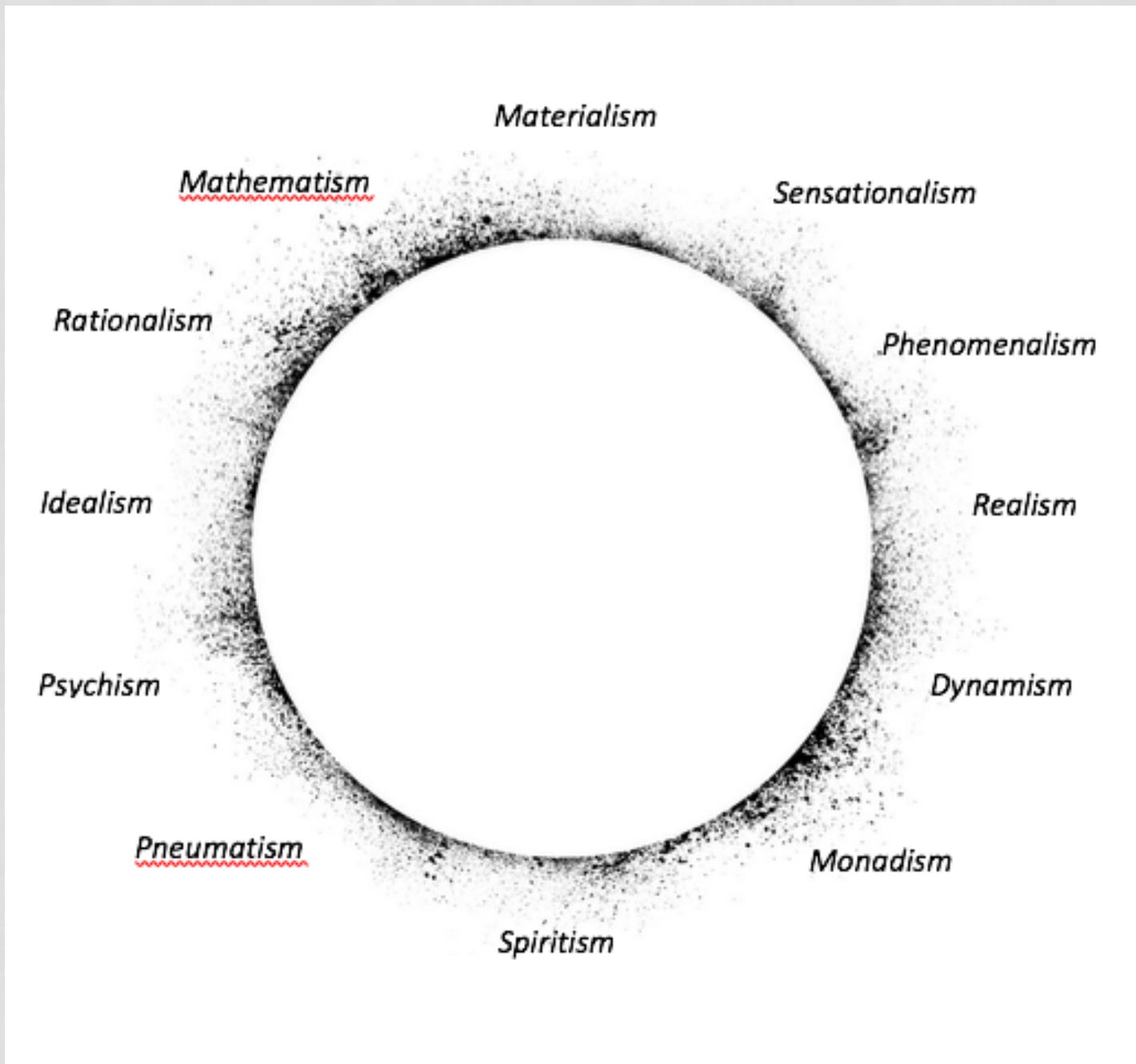


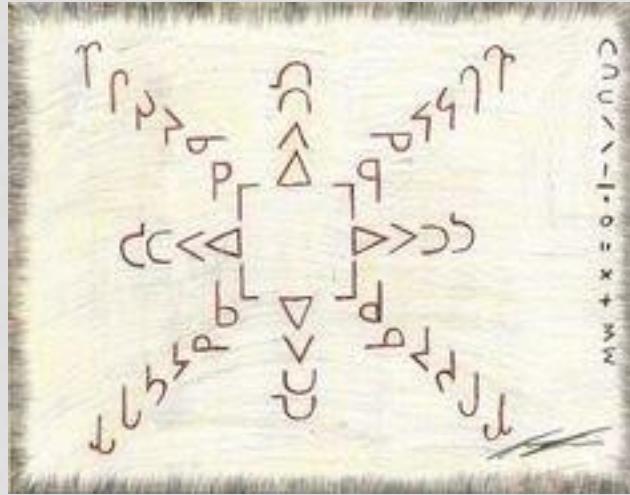


ONTOLOGICAL DISCONTINUITY

JONATHAN M. CODE

Pari
2024





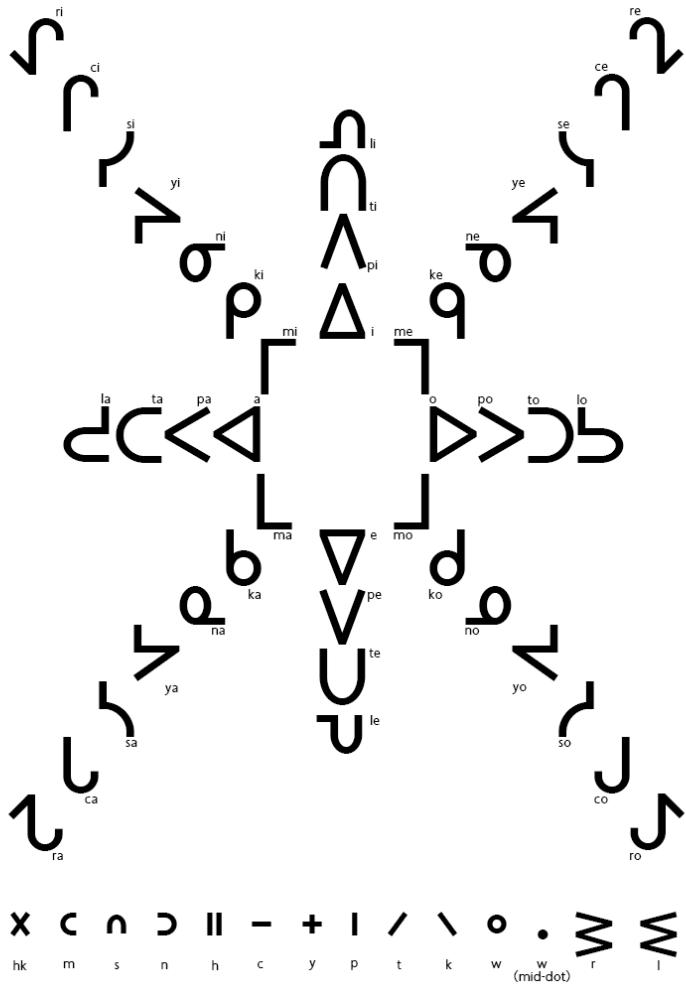
IMAGINATION & ANIMACY

JONATHAN M. CODE

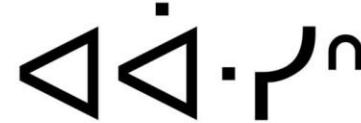
Pari
2024

NEHIYAW

nehiyawewin syllabic (spirit markers) star chart



awasis



‘CHILD’

A sacred gift on loan from Creation,
for you to raise on behalf of
Creation.

MÎKAWISOWIN 'A GIFTING OR GIVING'

- A good hunter was in tune with and respectful of the animal he was after and sometimes the animal would be known to take pity and offer itself to a hunter. This concept is known as mîkawisowin 'a gifting or giving'. When I was a child there were hunters who were so tuned in they could dream the animal they were hunting and know exactly where to find them. This is also a form of mîkawisowin.



Î KIMOWANIHKÎTWÂW

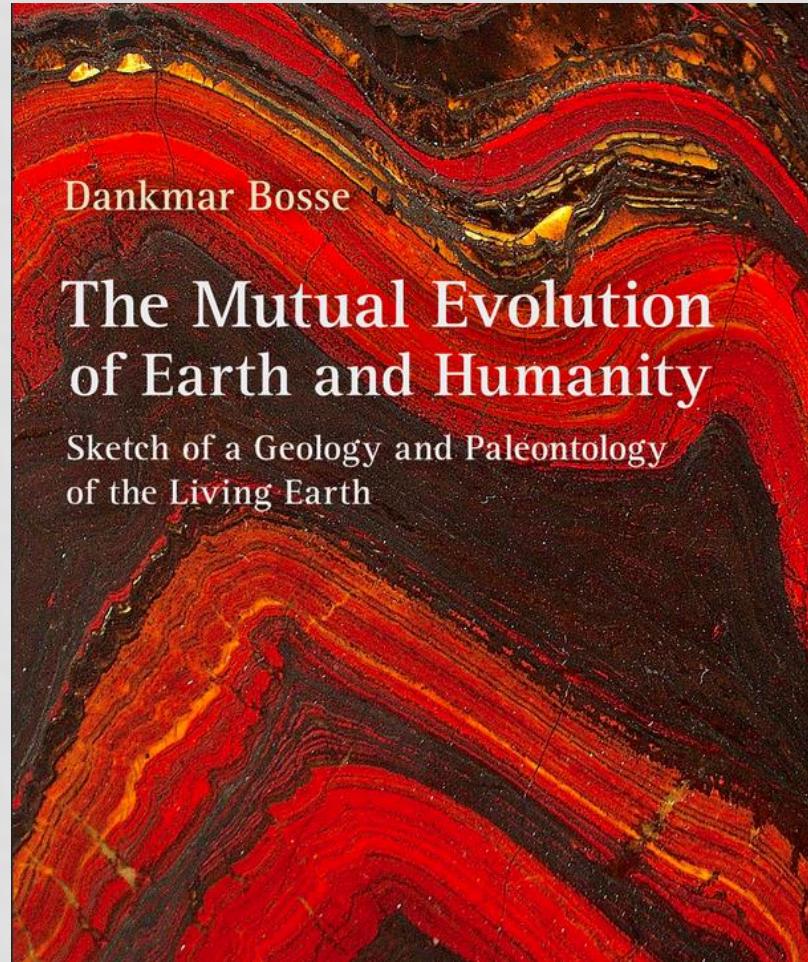
- “In September just before the moose--rutting season, it is always known to rain. People in my community understood this autumn rain to be caused by the Bull Moose in order to help them loosen the summer velvet from their antlers and prepare for battle. We understand the phrase î kimowanihkîtwâw ‘they are rainmaking’ to apply specifically to moose at that time of year. “

NÂKATOHKÎWIN

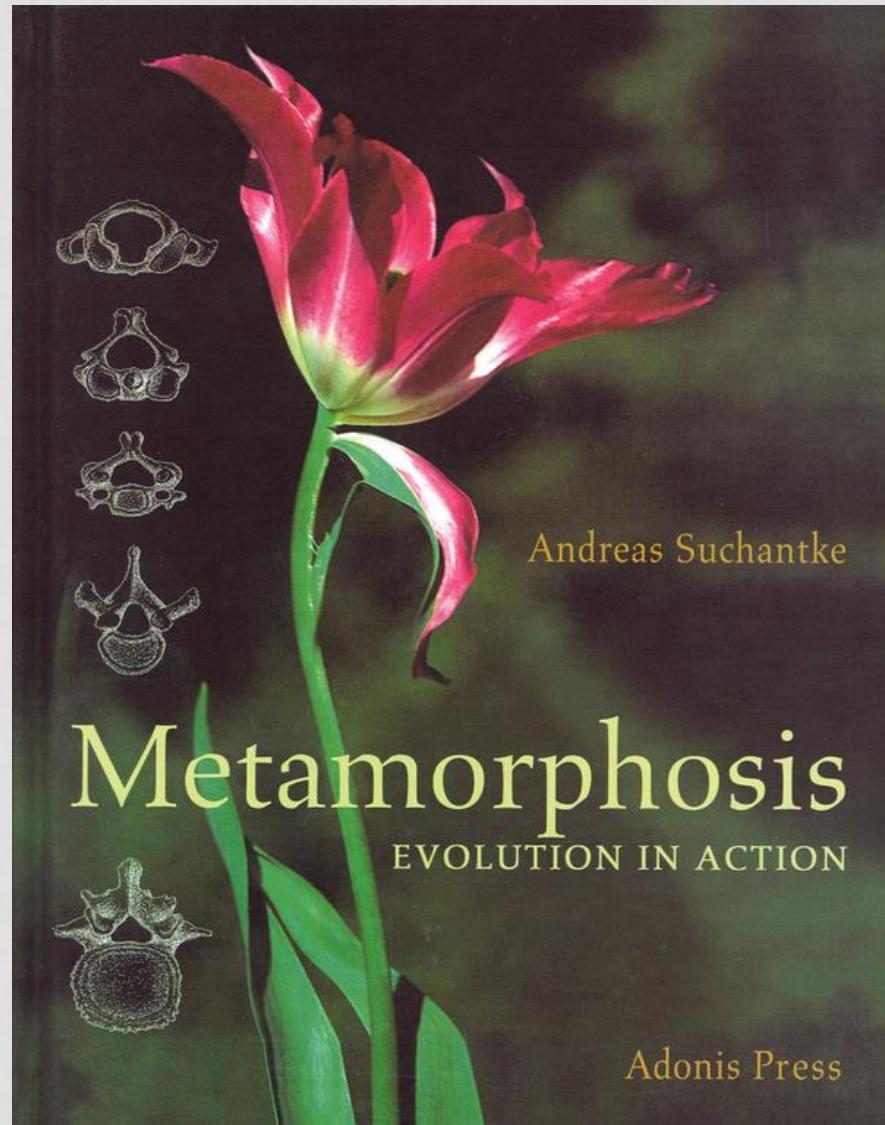
- The men would split up and head out to track and stalk game and return with fresh kills. As kids we were expected to help with everything and observe and absorb as much as possible. These concepts are known as **nâkatohkîwin** ‘paying absolute attention with all of our senses and intuitions’ and **ahkamîmowin** ‘a rapid focused use of the mind’

Nâkatohkîwin is yet another concept that had no direct English equivalent. It is recognition of the importance of intuition and the spiritual side to our minds that is always present. This concept represents more than listening with the ears but listening also with our minds, heart and spirit.

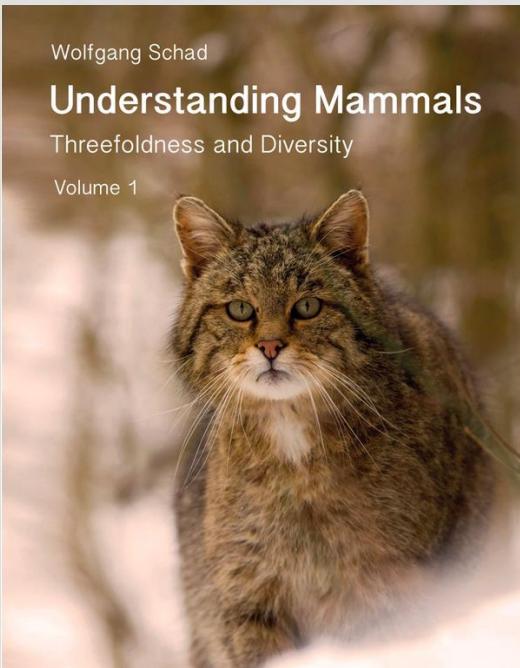
CONTEMPORARY STUDIES INTEGRATING GOEATHEAN APPROACHES



Geology



Botany and other Morphological Studies

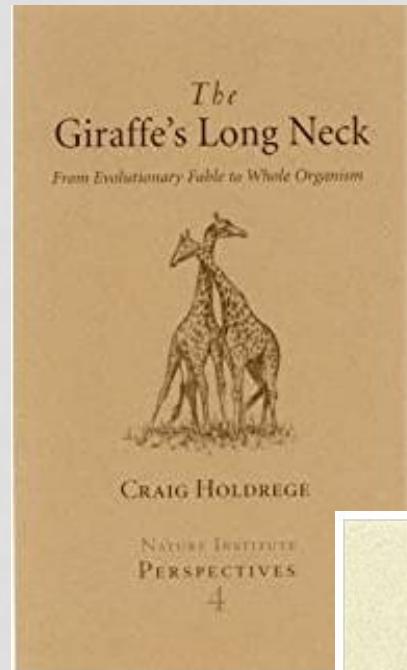


Wolfgang Schad

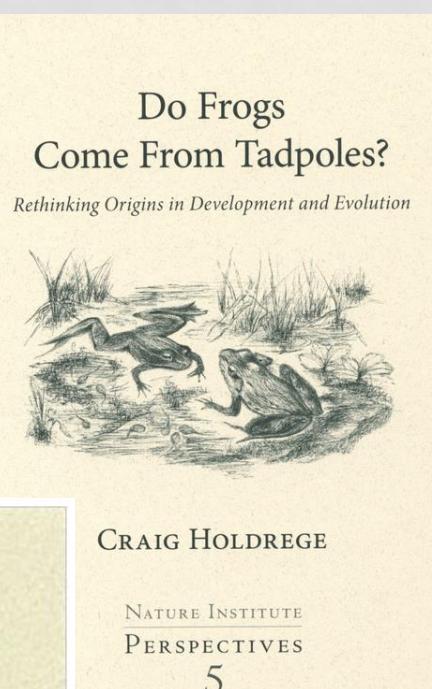
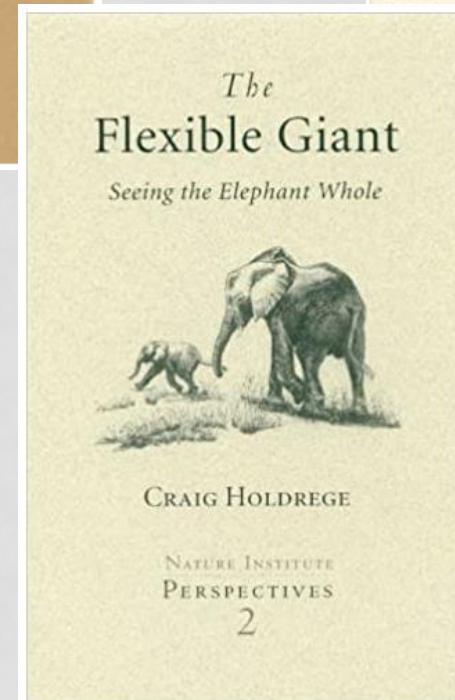
Understanding Mammals

Threefoldness and Diversity

Volume 1



Mammals – Biology



Functional Morphology

*The Dynamic Wholeness
of the Human Organism*



Johannes W. Rohen

Human Morphology