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The Beasts in Our Brain

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Recommended Citation

Greenberg, Neil. The Beasts in Our Brain. Presentation at the Knoxville Art Gallery, Knoxville, TN, October 5, 2007.

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THE BEASTS in our BRAIN

**ART GALLERY of
KNOXVILLE !**

9PM

Friday, October 5, 2007

Neil Greenberg

Department of Ecology and Evolutionary Biology

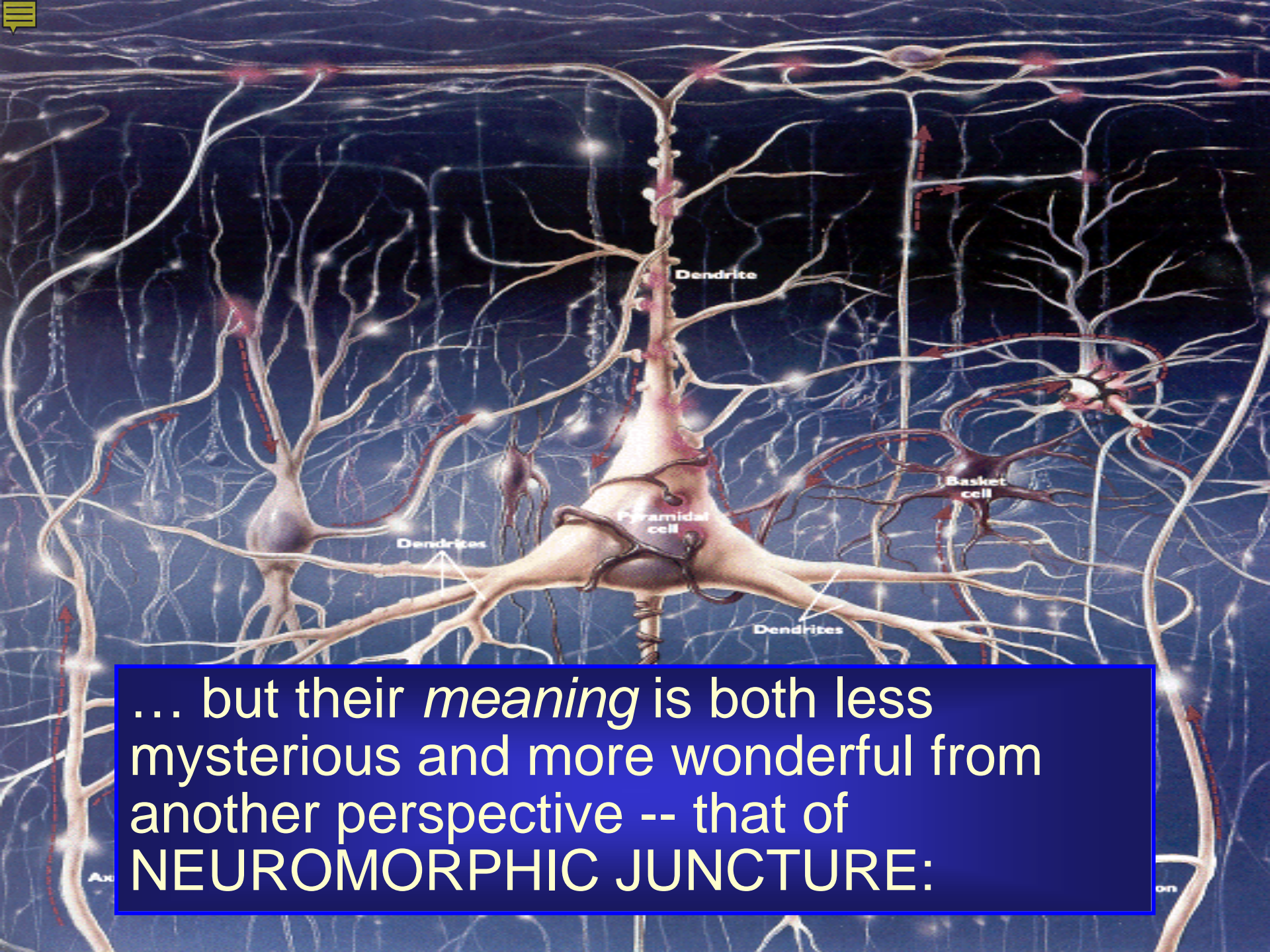
University of Tennessee



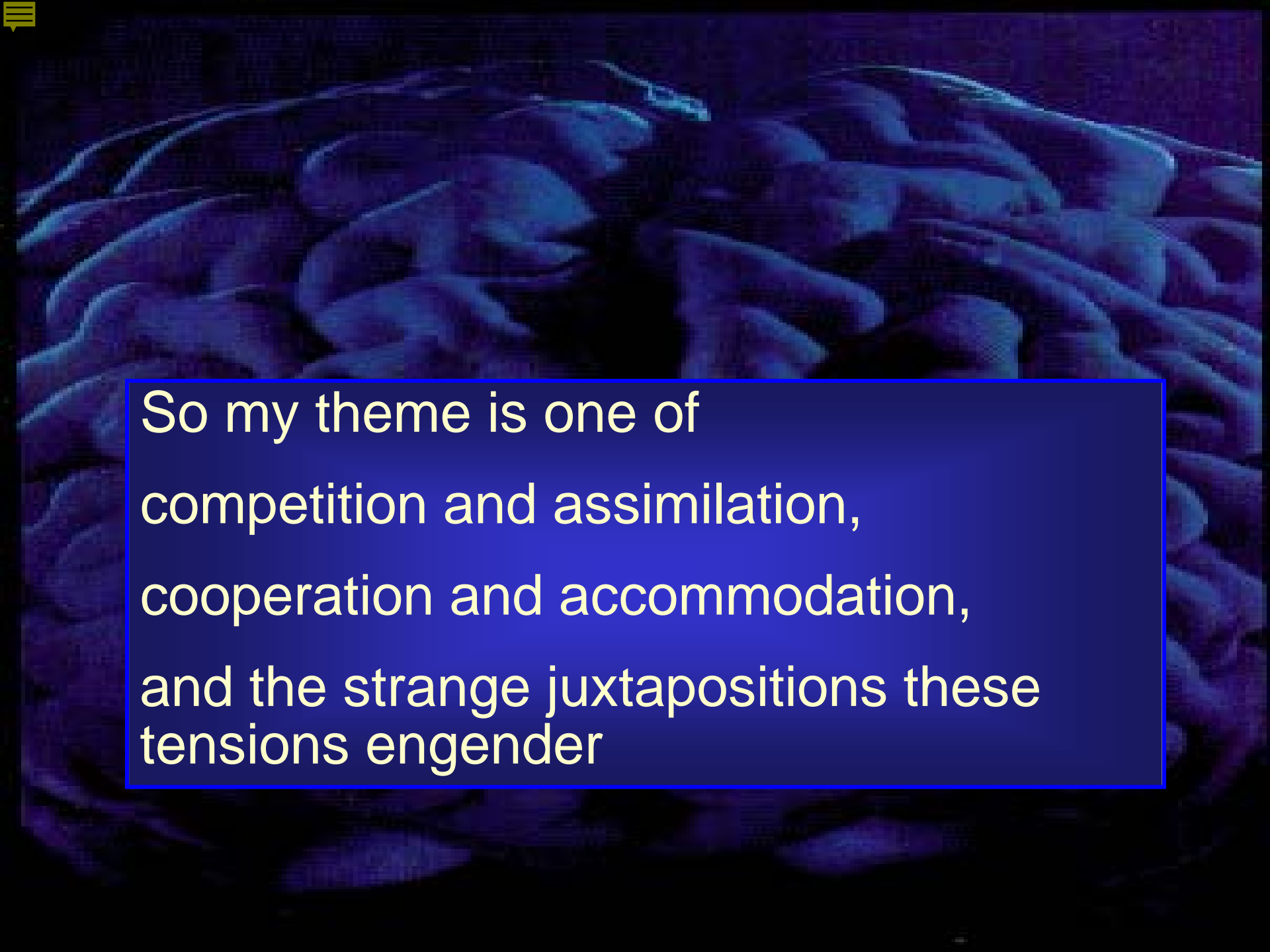
Zoomorphic Junctions

presents you with improbable combinations of creatures

... but their *meaning* is both less mysterious and more wonderful from another perspective -- that of **NEUROMORPHIC JUNCTURE:**



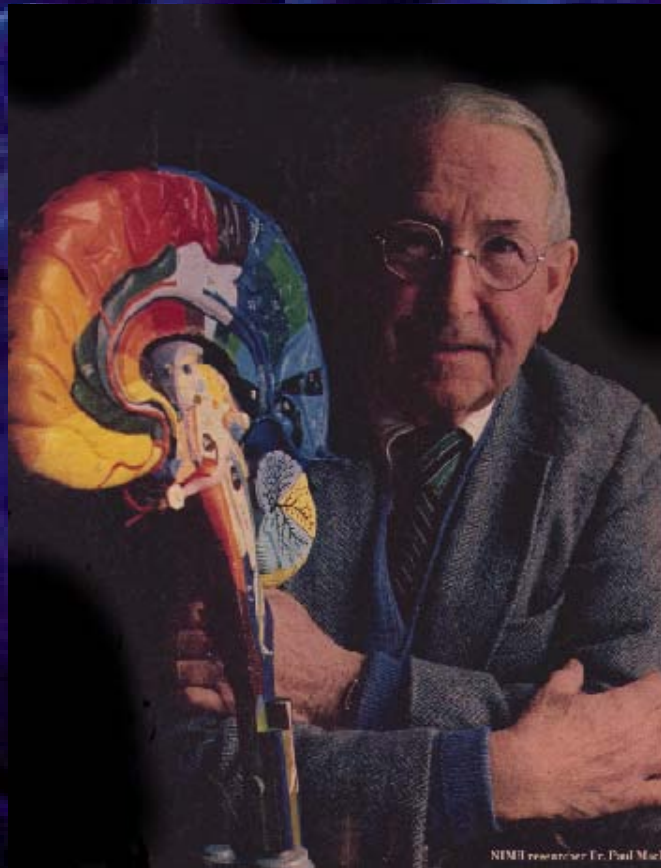
... but their *meaning* is both less mysterious and more wonderful from another perspective -- that of **NEUROMORPHIC JUNCTURE:**



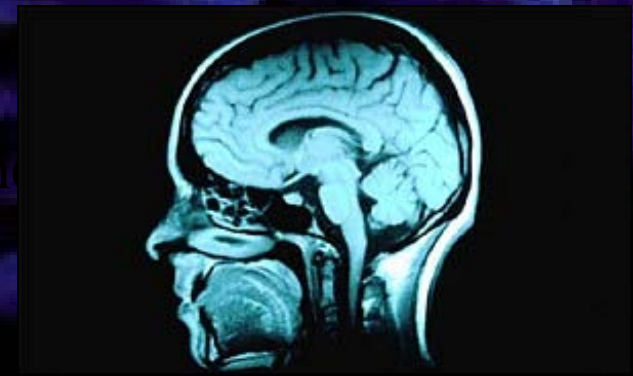
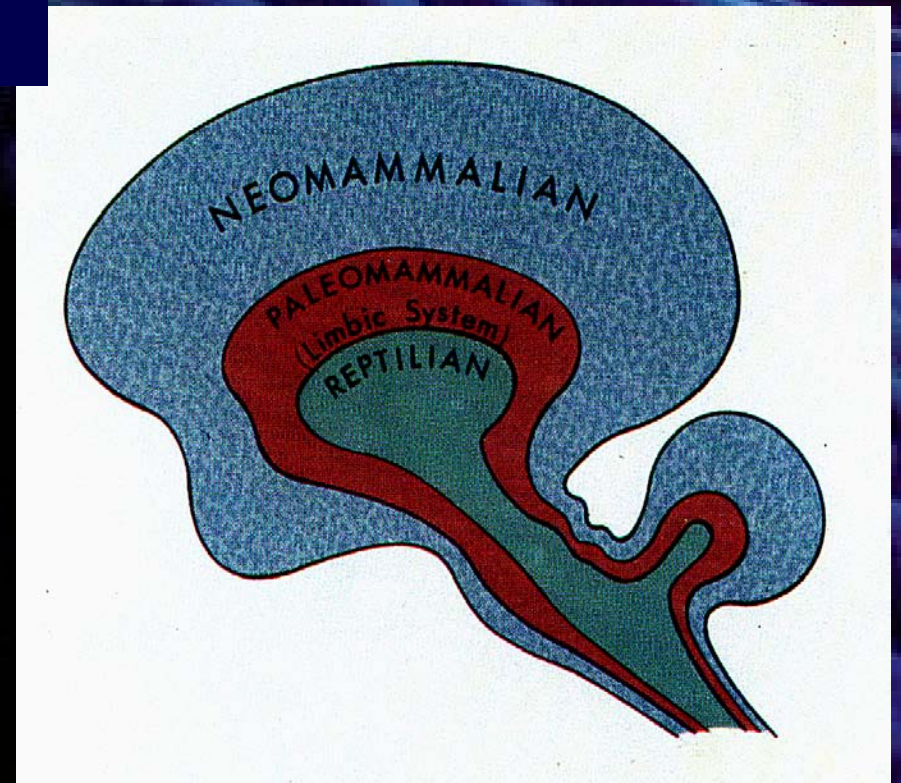
So my theme is one of
competition and assimilation,
cooperation and accommodation,
and the strange juxtapositions these
tensions engender

A comment about
neuromorphology

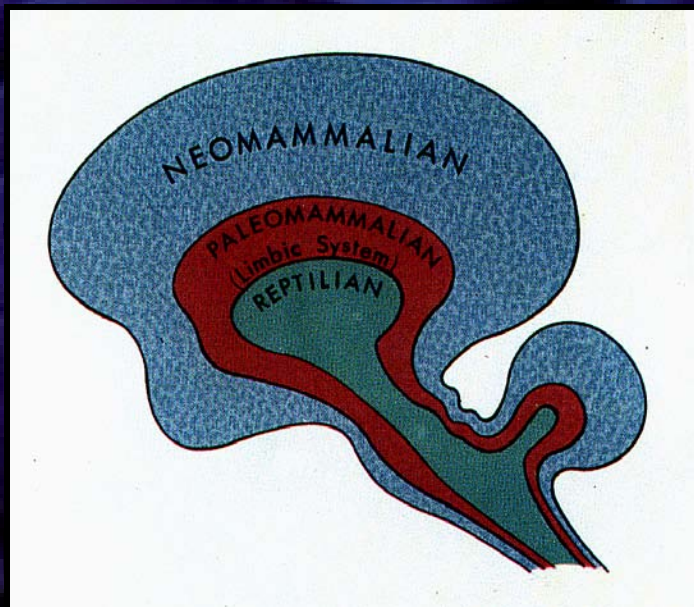
Paul D. MacLean's TRIUNE BRAIN



NIMH researcher Dr. Paul MacL



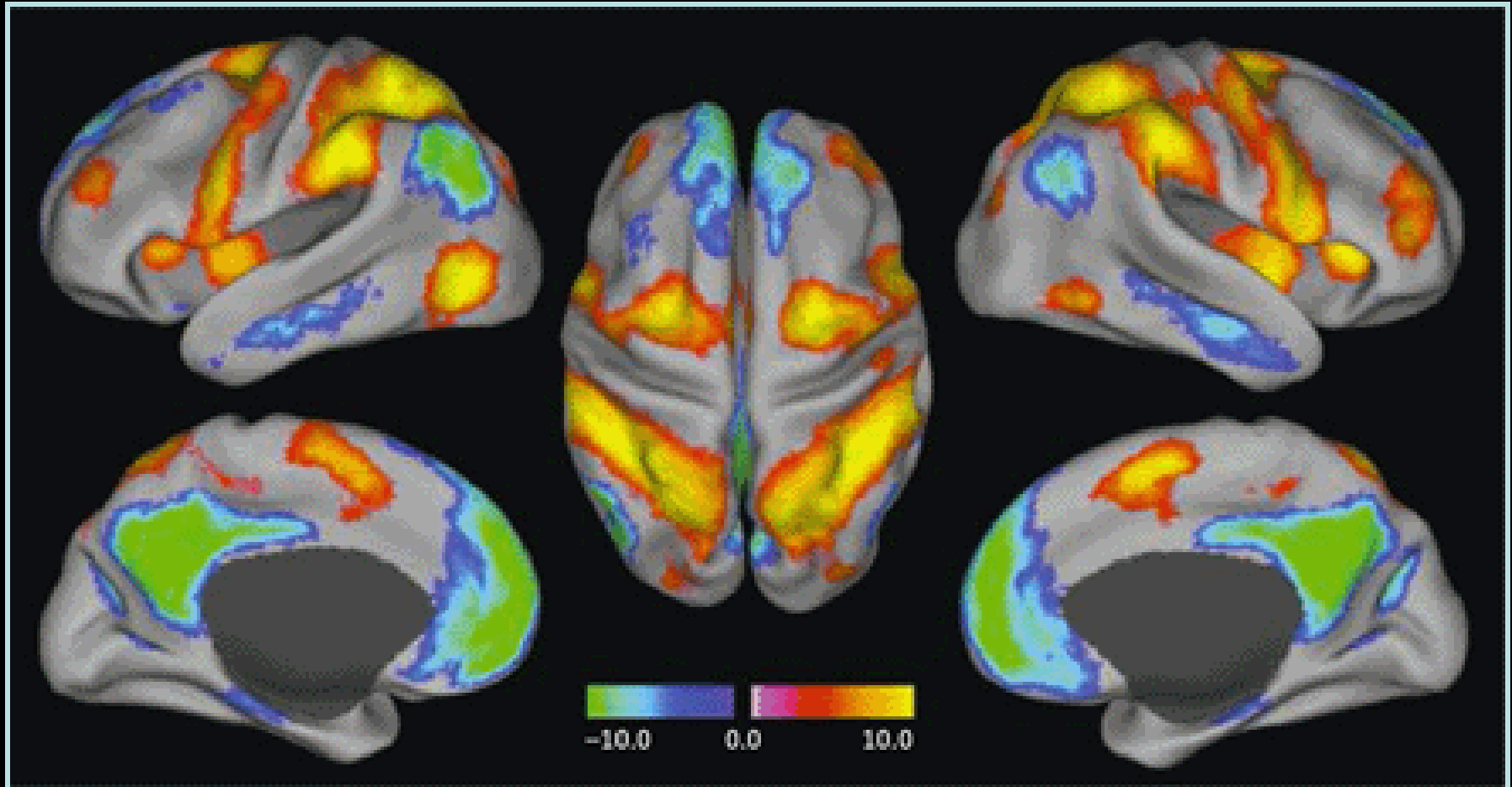
The Triune Brain



Paul D. MacLean's (1968) "*triune*" view of the mammalian brain called attention to the modular substrate of behavior.

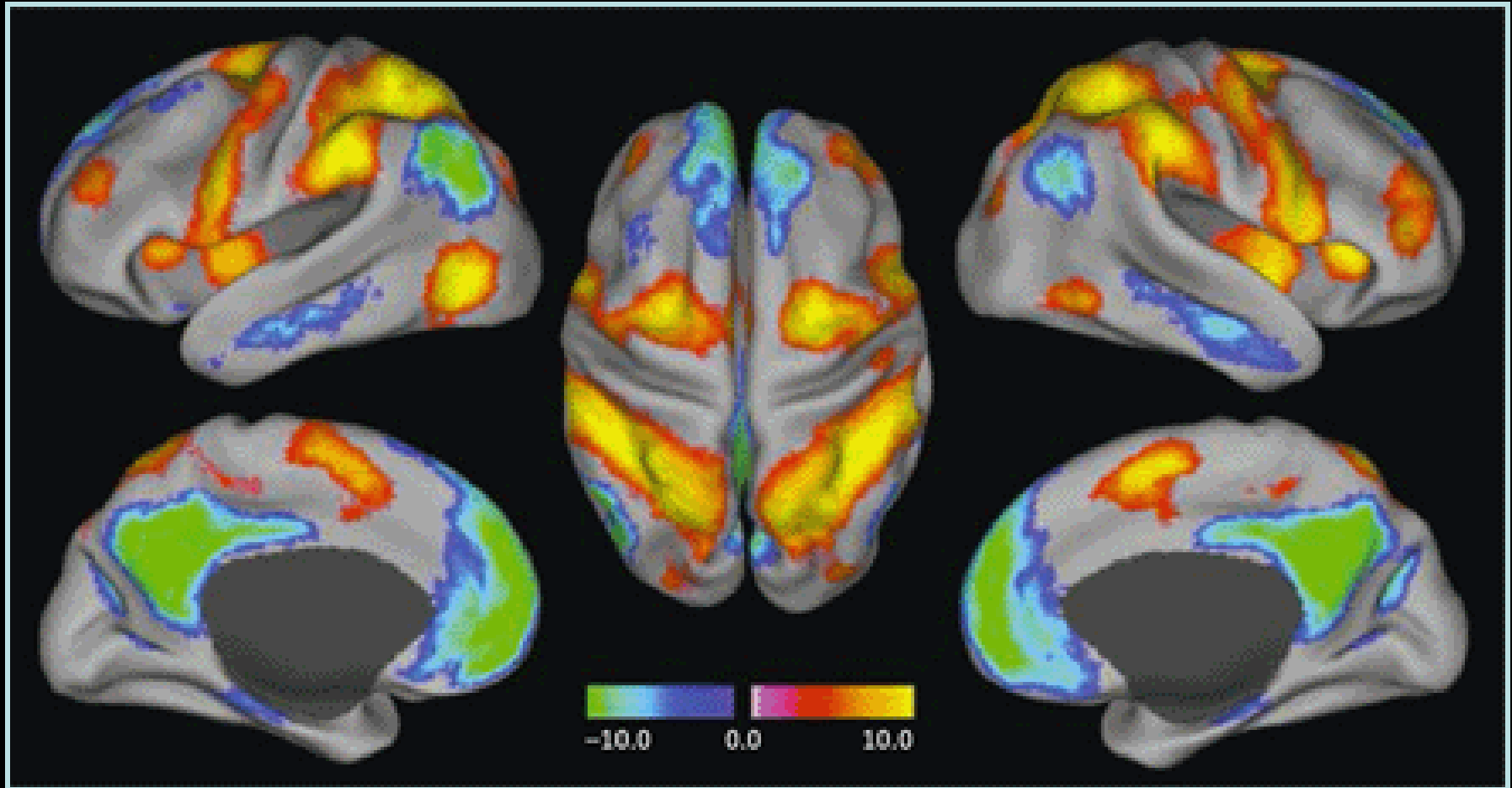
- Surrounding the "**reptilian**" **basal ganglia** --controlling habit-
- we find . . .
- The "**paleomammalian**" **limbic system** -- substrate of our passions-- embraced by the cingulate gyrus.
- The "**neomammalian**" **brain based in the neocortex** then coordinates inner and outer representations with projections of the future consequences of alternative actions --foresight.

It's a jungle in there !



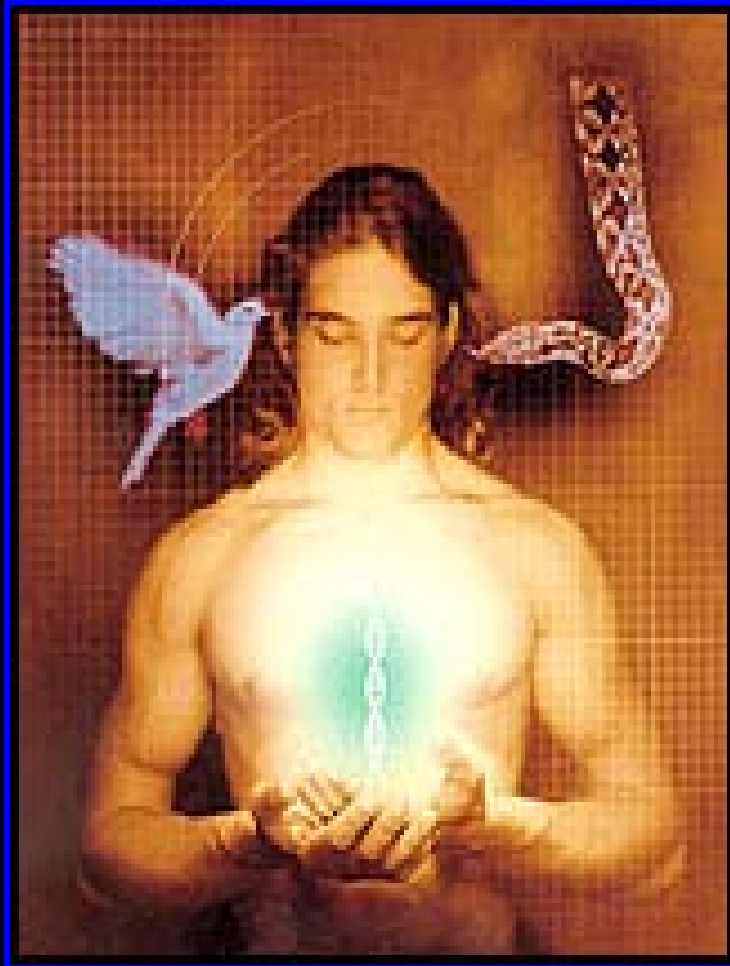
**The brain is 2% of body weight but 20% of energy consumption.
When stimulated, the increase in activity is very small.**

If not “nature red in tooth and claw”



It IS serious competition between neural modules to control behavior all in the interest in maximizing fitness – the individual’s self-actualization

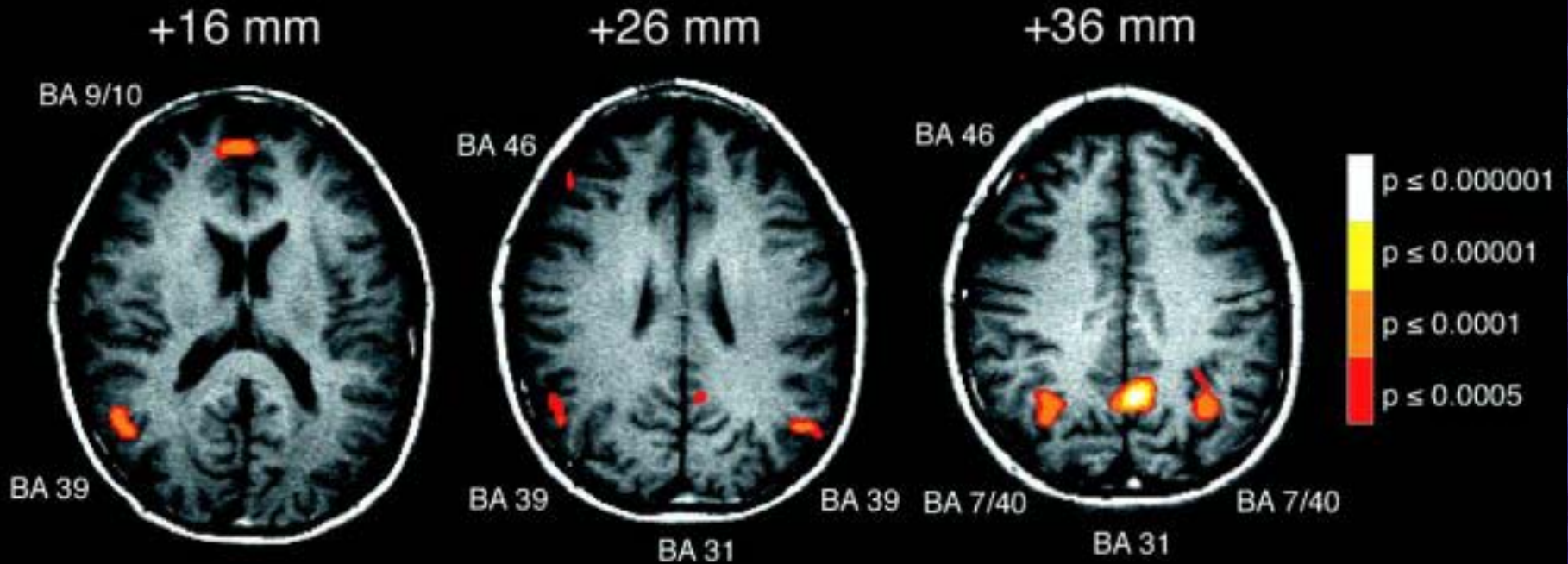
CONFLICT is EVERYWHERE



The brain is therefore an ever-emerging community of modules, each dedicated to a specific function, often in conflict.

Sites that show more activity during moral-personal dilemma

Medial frontal gyrus (BA 9/10)

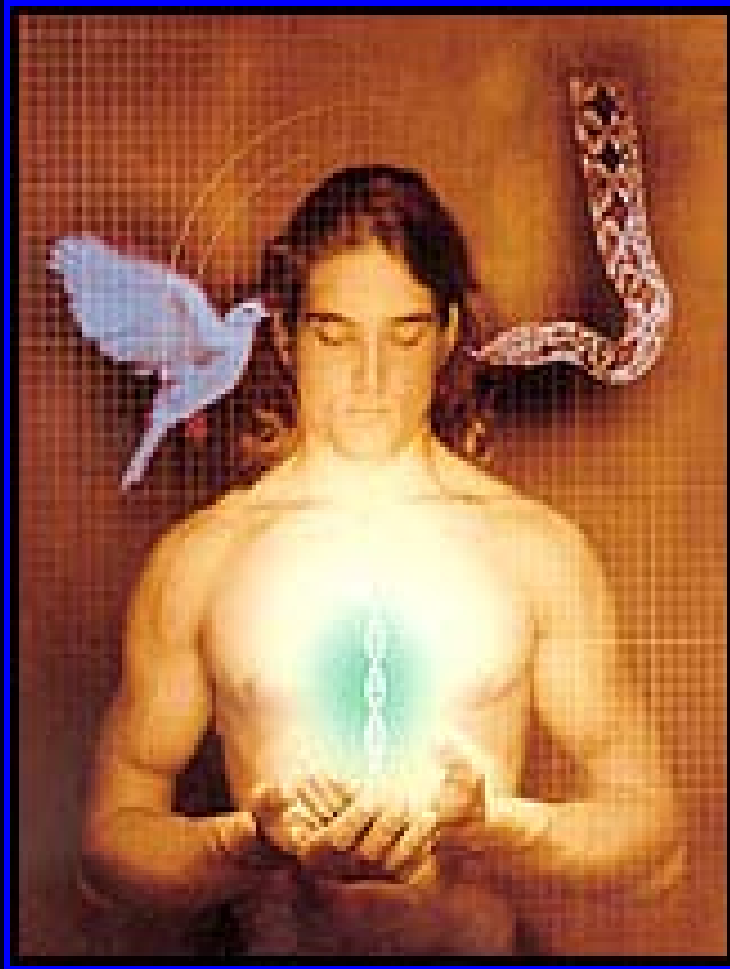


Posterior cingulate ctx

Angular gyrus (BA 7/40)

1. train yard
2. foot bridge
3. non moral

CONFLICT is not CATASTROPHE



Conflict “is our call to evolve. It challenges us to look beyond our current views to an expanded reality.”

EM Forster

A NEGOTIATED PEACE, A “POLITICAL SOLUTION”

Our ancestors (bless them) are always there, reflected in our instincts and impulses, held in check by our thin veil of prefrontal cortex ... seething energy suppressed by the hopeful “organ of civilization.” (Luria)


We are in uneasy alliance with these barely domesticated beasts within... we “reason” with them...

BUT how can you *reason* with “instincts ... eternally hostile and detrimental to reason ...

whatever belongs to the sphere of sensuousness, pleasure, impulse has the connotation of being antagonistic to reason

... something that has to be subjugated, constrained.”

Marcuse, *Eros and Instinct*, 1955:145



**Most of them are seen
as beasts ... like
ancestral creatures
ruled by raw instinct
and rabid self-interest**

**Pitted in a “war of all
against all”** (Hobbes)



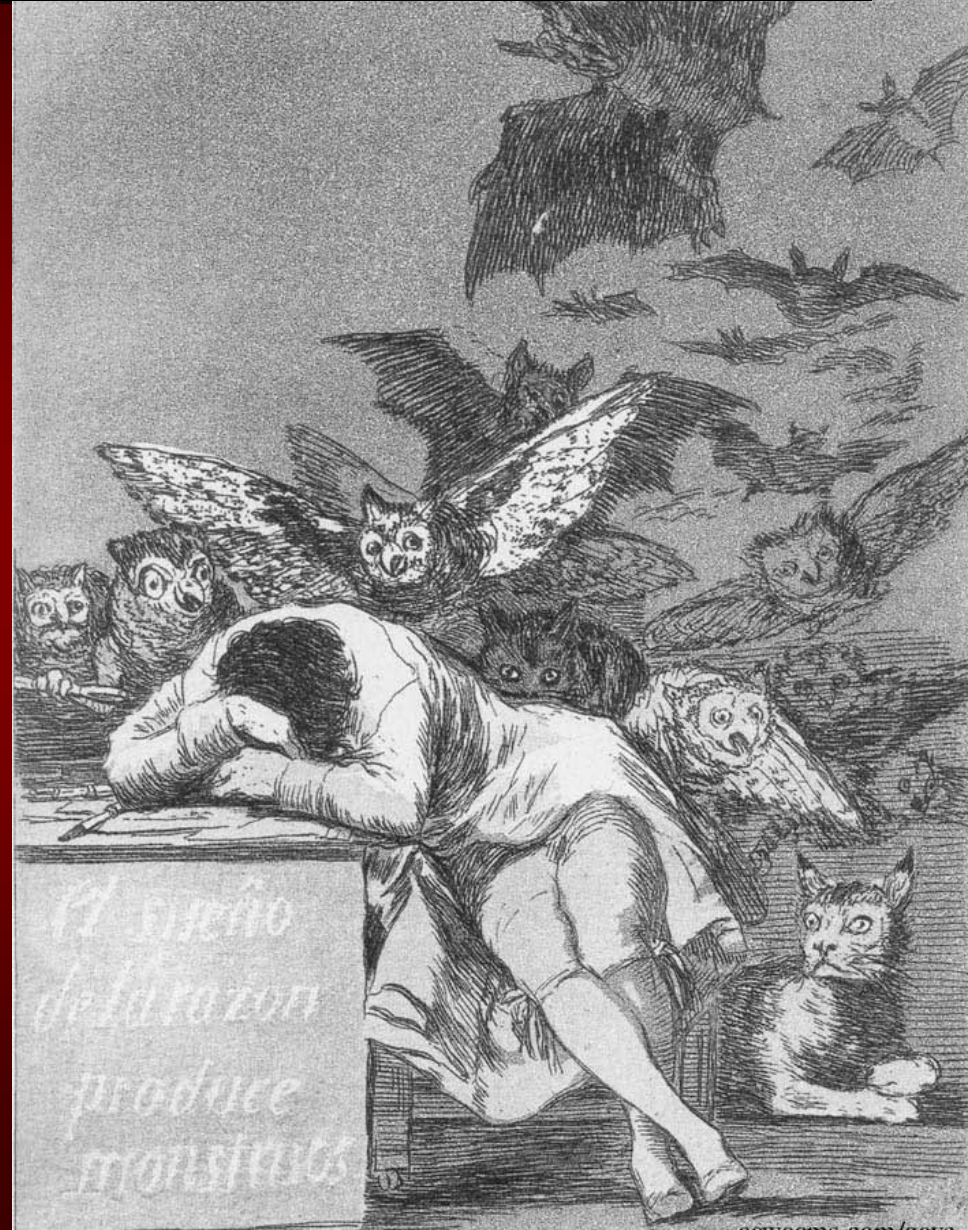
"We are conscious of an animal in us which awakens in proportion as our higher nature slumbers"

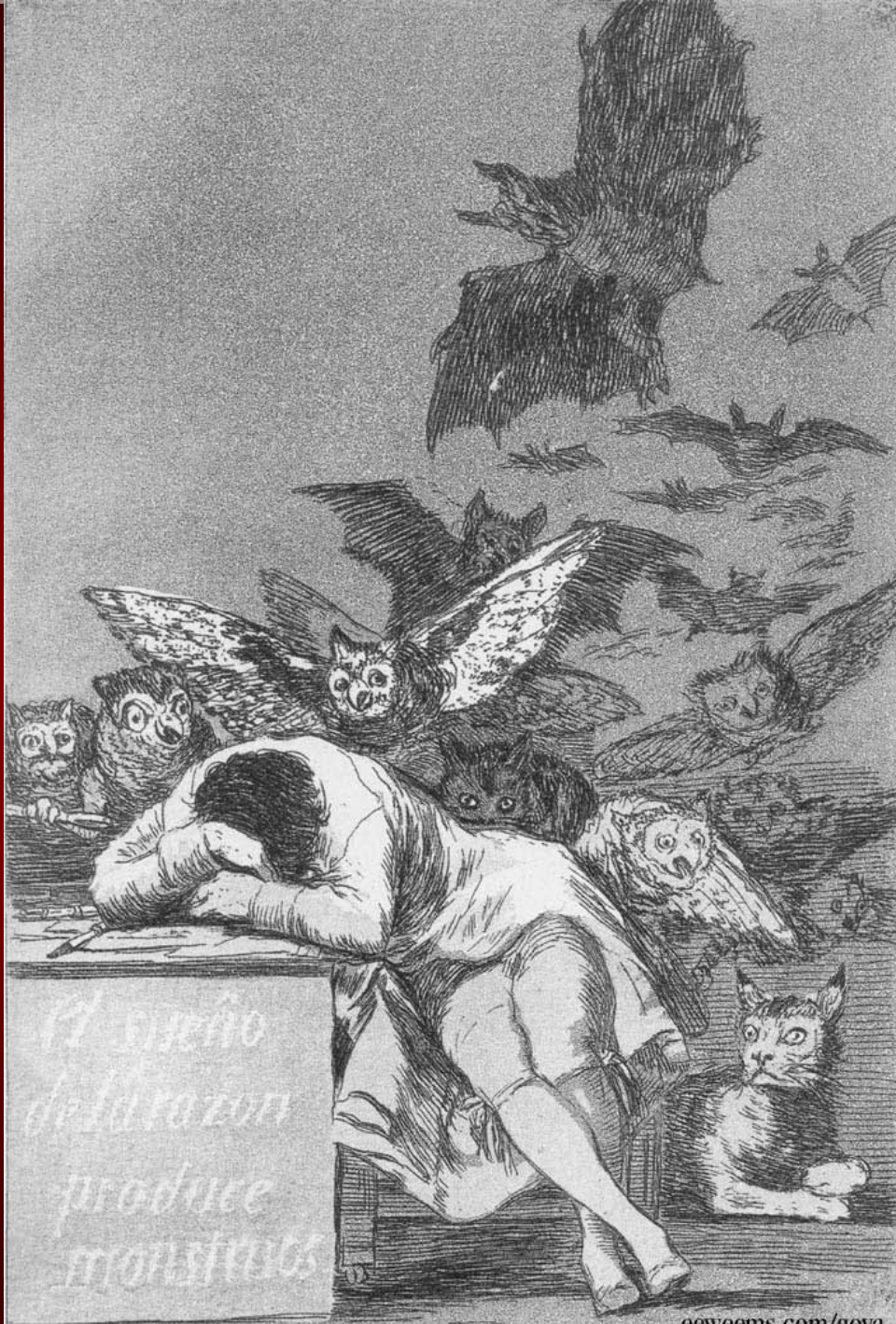
(Henry David Thoreau in *Walden*)

Perhaps we are right to fear the beast

The Sleep of Reason Produces Monsters

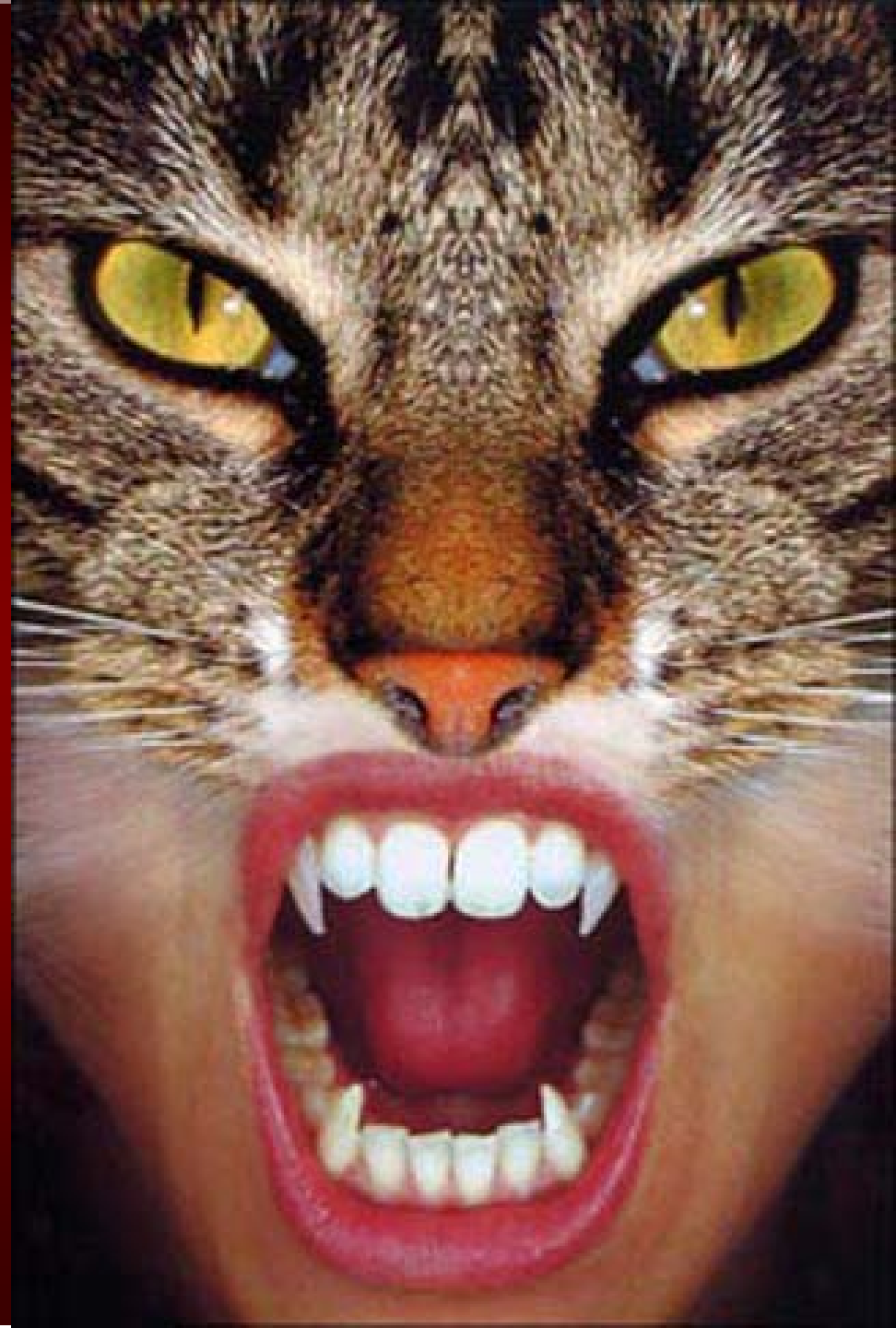
Goya, *Capricos*, Plate 43 (1799)





"When the gentler part of the soul slumbers and the control of Reason is withdrawn . . . the Wild Beast in us . . . becomes rampant."

(Plato, The Republic)



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www.monsterkid.com

A comment
about critters

“In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear.

They are not brethren, they are not underlings, **they are other nations,**

caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the earth.”

(Henry Beston, *The Outermost House*)

So then this is a
story about us
and “the others”

But the OTHERS *are* US

**We are the heirs to a legacy
millions of years old**

**... the sacred protein strand
that once belonged to our
ancestors has been
passed to us at
incalculable cost ...**

**but it is more than their
chemical memory that stirs
within us.**



BRAIN EVOLUTION

excavating the paleopsychology of our species:


"The Brain of Man has not abandoned it's ancient animal foundations, it has built upon them But it has also reconstructed them as the shifting earth beneath dictates

. . . . We have done the best possible in the landscape in which we have found ourselves with the raw materials we have inherited."

(Prolegomena to a Study of Mind, 1973, ch. 42)

THE BEAS





We do what we can
to tame them ...
to make
accommodations...





But we will never be
wholly free ...

Nor would we want
to be ...



This may be the dream...



Edward Hicks, *The Peaceable Kingdom* 1834



Some cooperative relationships are predictable ...





**But this is the
reality ...**

**Time to hide your
eyes ...**



**At least
sometimes ...**







©Tanja Askani



Do we *assimilate* our
competitors or
accommodate them

Usually, peace comes about because battles cannot be won ... WHERE VICTORY COSTS MORE THAN DEFEAT...

CEREBRAL MODULES are no different

Organs, tissues, cells ... all are constrained by limitations on resources needed for growth and function: blood, oxygen ... specific building blocks of critical molecules.

The paths through our brain, from senses to actions, depend on these resources

Suppression of Reason

tyranny of the urgent

... the domain of the instincts ... is highly programmed to enable rapid responses to cope with the most urgent needs ... and unrestrained by reason ...

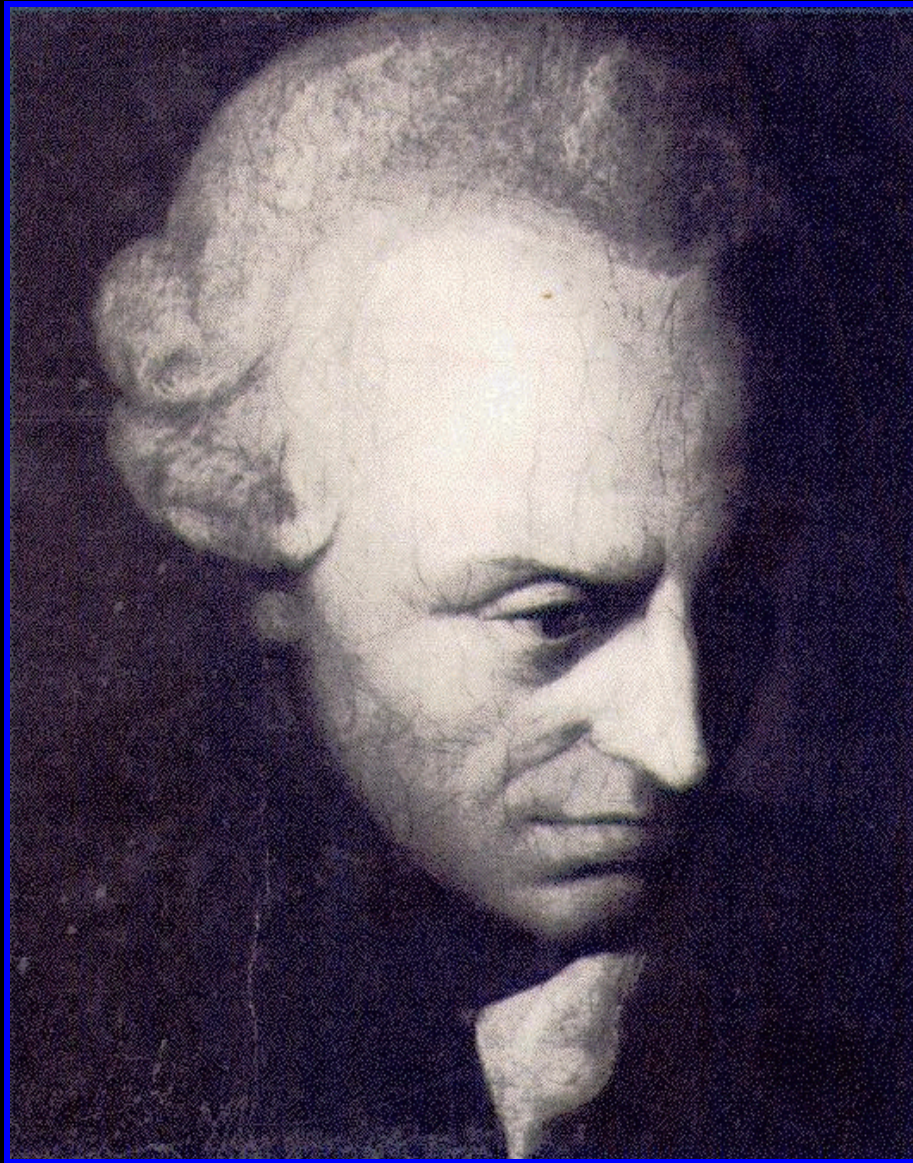
Conscious behavior takes a toll in resources and during mortal emergencies it is something that has to be subjugated, constrained.



**WE ARE CALLED TO RESOLVE
THIS CONFLICT**

**WE CANNOT, but the ATTEMPT
contributes to FITNESS**

**FOR EXAMPLE, Jacob's dream of
free exchange between "higher and
lower referential processes..."**



Immanuel Kant

**"The senses cannot
think.**

**The understanding
cannot see."**

Critique of Pure Reason





Sphinx



Lucifer



Chimera



POVS TEHRVVS KATIONI VEST ARCHEV



PALEOPSYCHOLOGY

“Is there anything truer than truth?”
Asked Kazantzakis,

“Yes, Legend.”

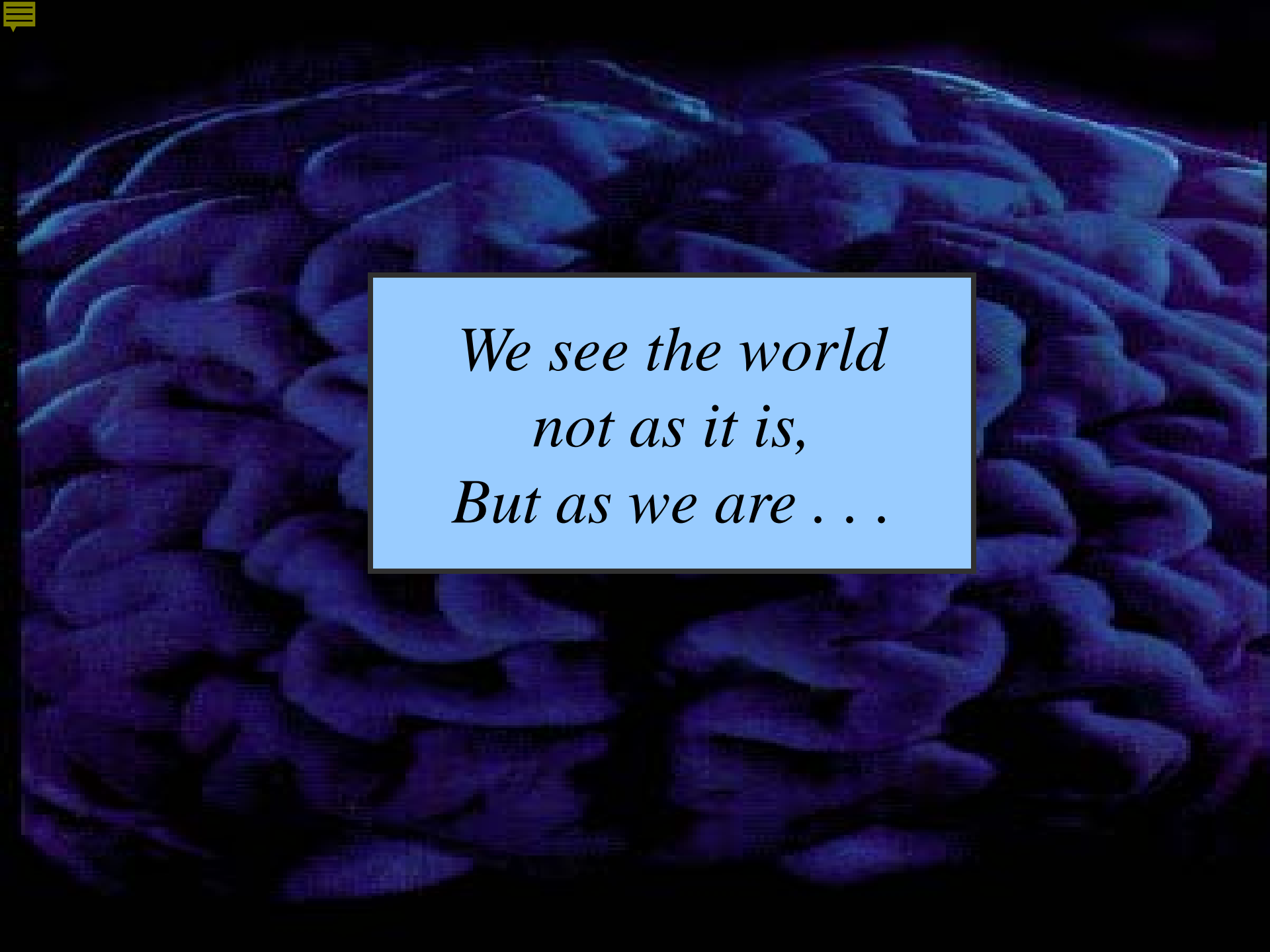


קבלה

*We see the world
not as it is,
But as we are . . .*

(Talmud)





*We see the world
not as it is,
But as we are . . .*



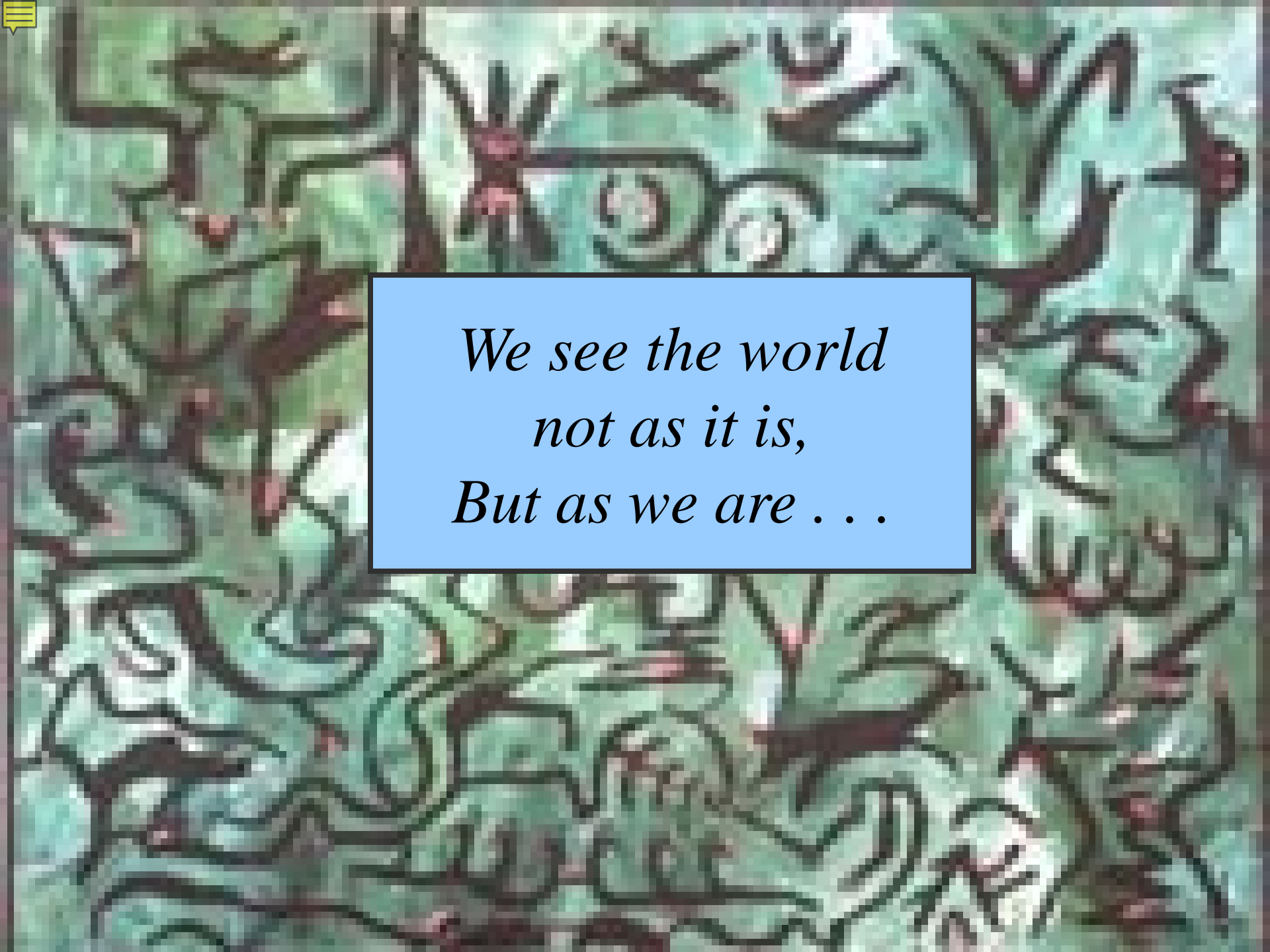
*We see the world
not as it is,
But as we are . . .*

Dendrites

Axon

Axon

Axon



*We see the world
not as it is,
But as we are . . .*



*We see the world
not as it is,
But as we are . . .*

So finally, what can we say of myth?



(Sallust said it for all of us)

**These things never were,
but always are.**



"Our life is an apprenticeship to the truth that around every circle another can be drawn; that there is no end in nature, but every end is a beginning, and under every deep a lower deep opens"

--Ralph Waldo Emerson