



Where love of learning never gets old

Science and Belief

Physics and Society

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"The Righteous Mind" by Jonathon Haidt Vintage Press 2013

"Thinking, Fast ... Slow" by Daniel Kahnman Farrar, Straus and Giroux

"The Influential Mind" by Tali Sharot Henry Holt

Thought

Evolution: *Continuation of the species*
Continuation of the individual

Innate: Genetic - structure of the brain (initial connection)

Learned: Data obtained thru senses and experience
- rewiring of brain (memory)

Development of *“Paradigm”* (descriptive model of change)

Our interpretation and understanding of the external (real) world
Obtained by organizing input together with previous experience.

Use paradigm as a guide to our interaction with reality

Human Brain

Brain stem

Collects all the sensory input

Hippocampus

Very quick response with some memory

Limited number - limited time

emotional

Cortex

2/3 at birth

New experience is put into long term memory

Trigger conscious thought (data from memory)

New results to memory – some multiplexing

Continuous rewiring of neurons

Motivation

fundamental

Seek pleasure (endorphine...)

Pleasure – eating enough, sex, being warm

Avoid pain, discomfort

evolved

Emotional pleasure

Happiness

Satisfaction

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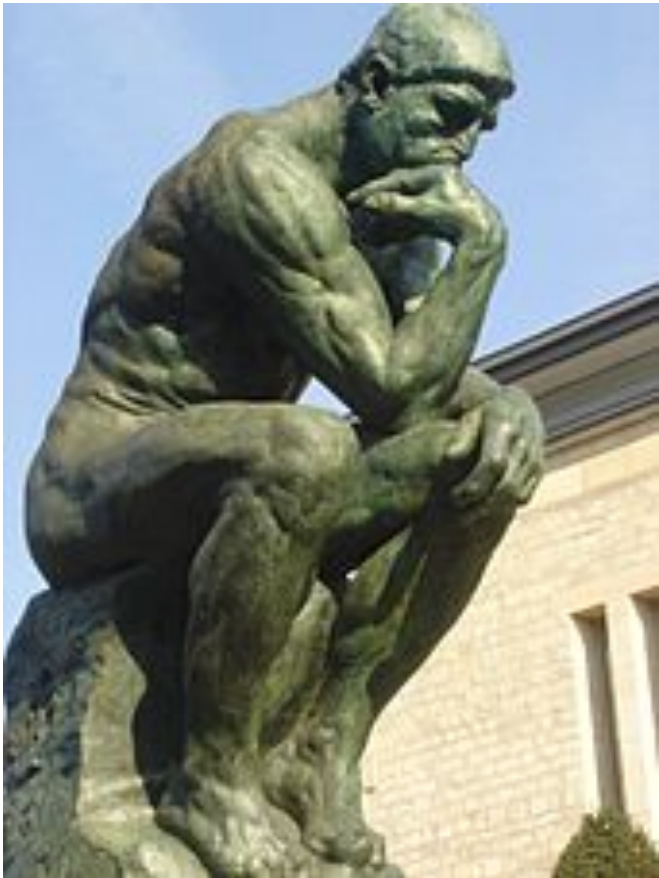
Physical pain

Psychic pain

Emotional pain

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Complexity



No mind/body separation – it is all physical.
That is why it can go wrong (mental illness)

Overlap between conscious and unconscious
Difficult to parse (*Freud*: id, ego, superego, unconscious)

Paradigm incorporates data received **AND** experience
So *all* individuals are *different*
(even with same genes)

If the physical part is damaged
mental will not be normal

Purpose of the “Paradigm”

Choose action (or inaction) based on our understanding of the future resultant situation and

Determine whether it would be *advantageous* (good) or *disadvantageous* (bad) for us (or the species)

No certainty!!

Odds of good , bad or neutral

Assign the blame

Rules

We *observe* that the physical universe is *always* changing
Change according to *rules* (not arbitrary)

- goals*
- understand the *rules* of reality (physical universe)
 - identify *cause and effect* (connected by the rules) → *time*

“Scientific method”

- ✓ Note the present situation
- ✓ Use paradigm to predict the consequences of an action or inaction
- ✓ Then act (experiment)
- ✓ Observe – is the result as predicted?
- ✓ *Yes* – move to next test
- ✓ *No* - modify or adapt paradigm to correct

Truth



“Do you swear to tell the truth, the whole truth, and nothing but the truth, even though nobody has any idea what that is anymore?”