

M U N I

M E D

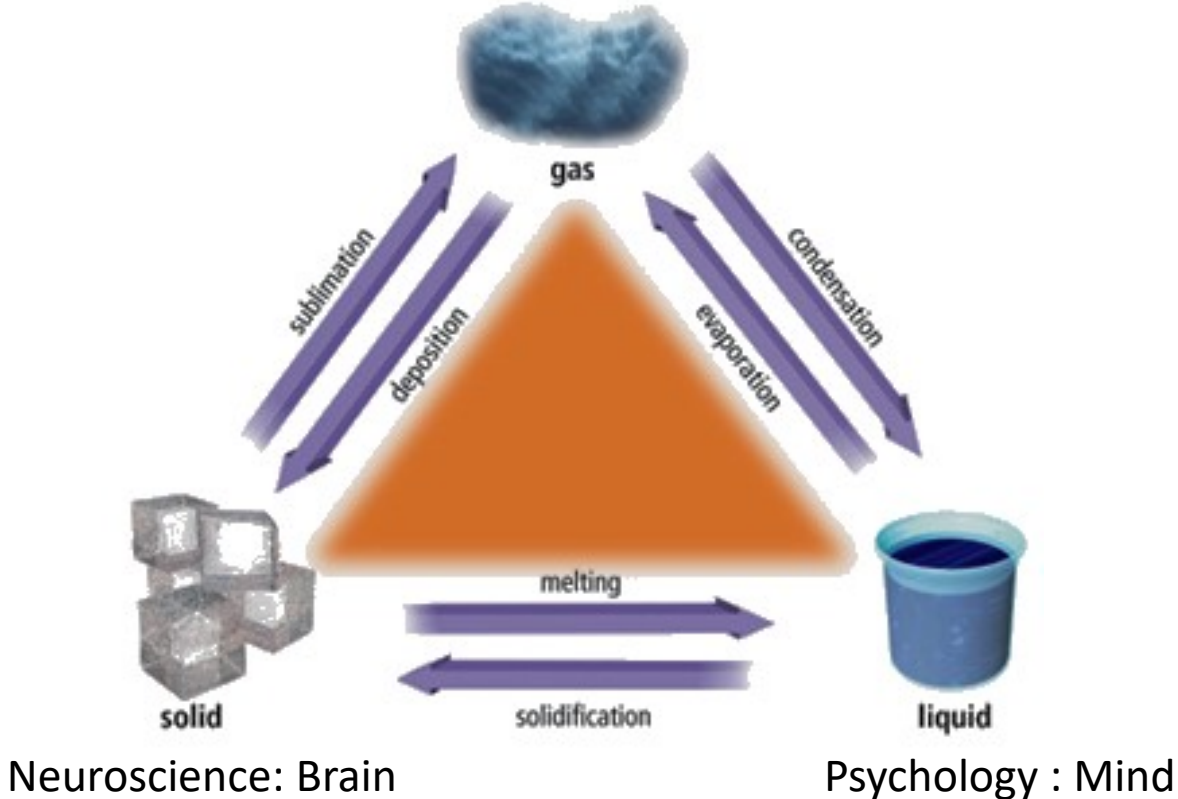
The Highest Level of Cerebral Activity I

Three States of Cognition

Philosophy : Mind behind Mind



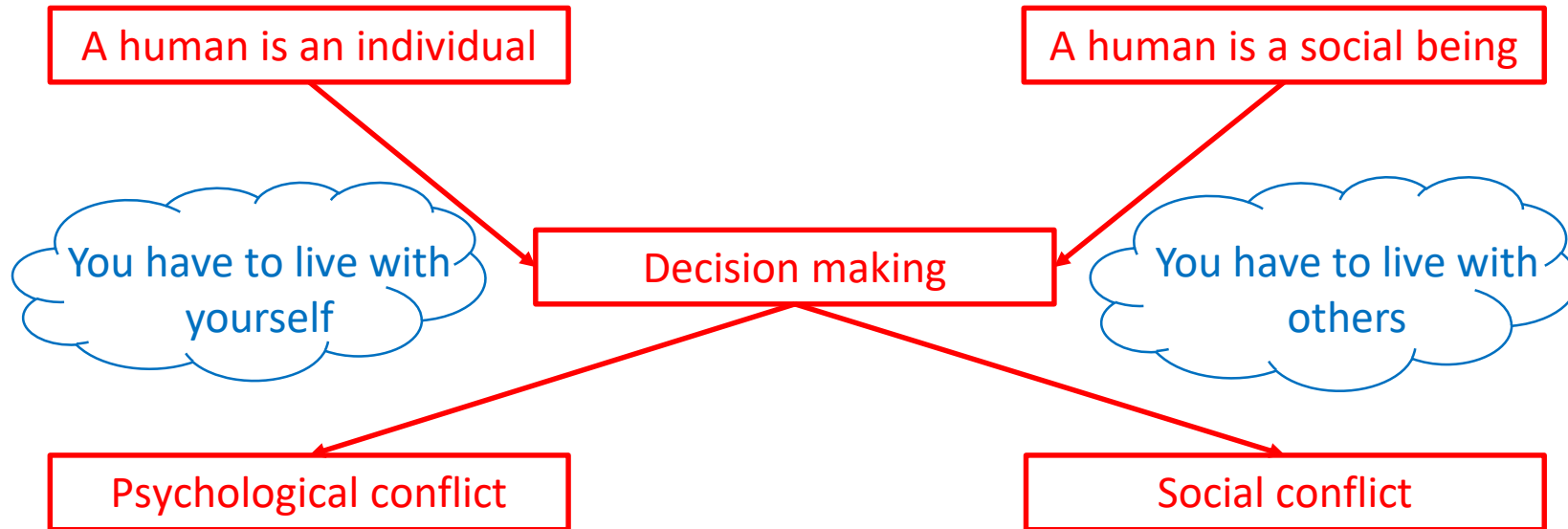
PS Deb



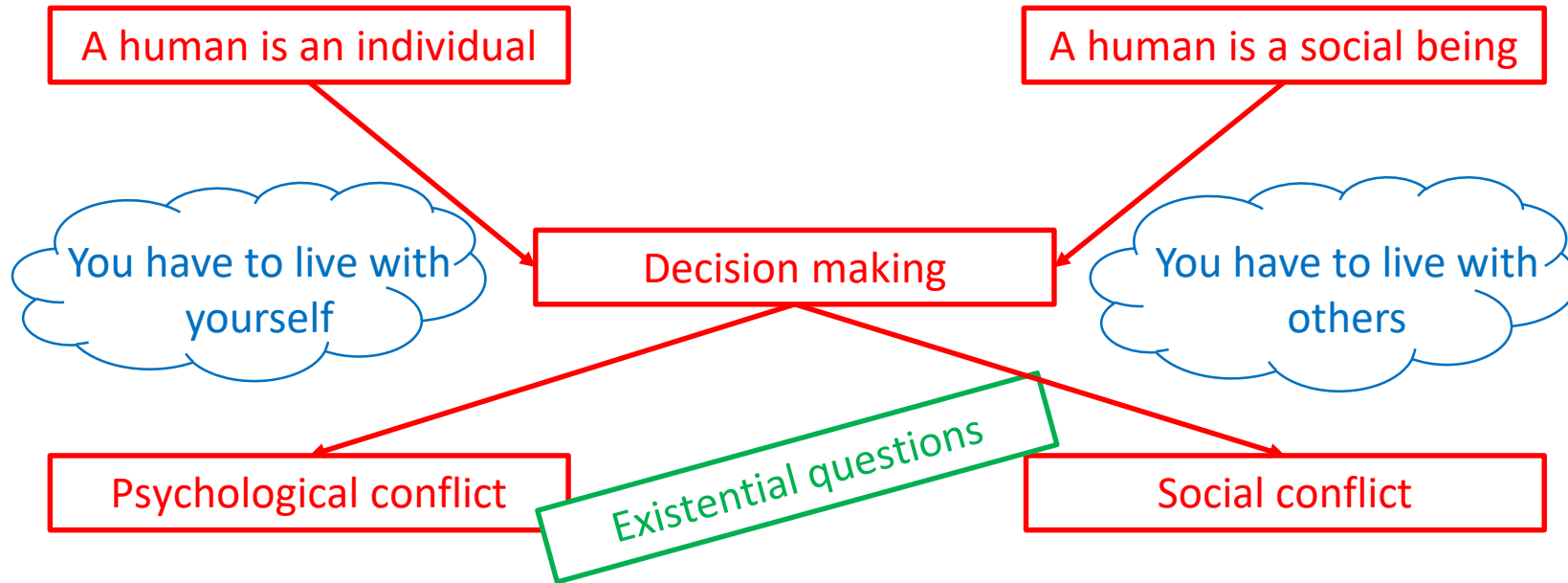
Why?



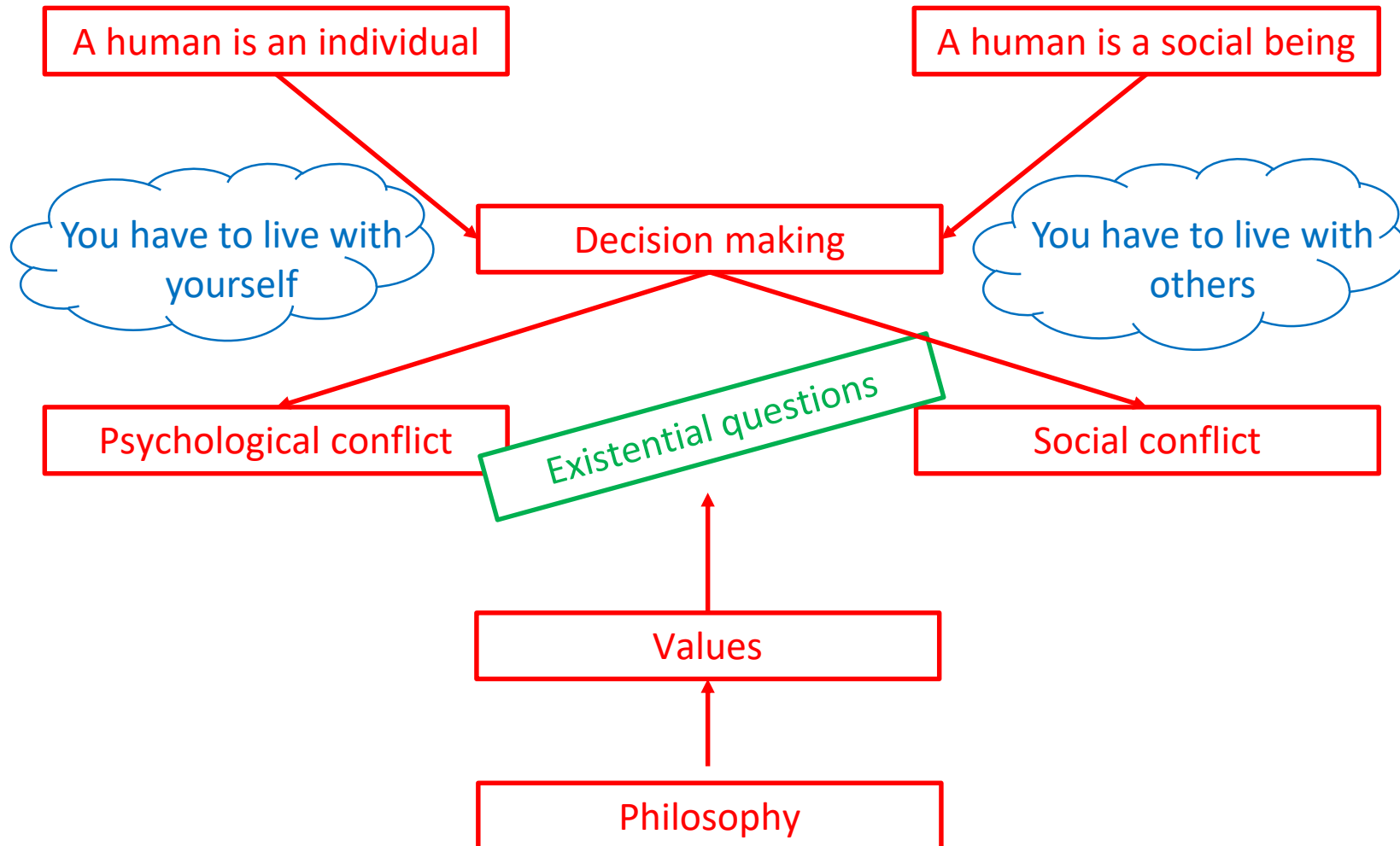
Why?



Why?



Why?



Philosophy

Philosophy of life is a personal philosophy, whose focus is **resolving the existential questions** about the human condition.

Wikipedia

Philosophy

FORMAL PHILOSOPHY

Philosophy is the study of **general and fundamental problems** concerning matters such as existence, knowledge, values, reason, mind, and language.

Wikipedia

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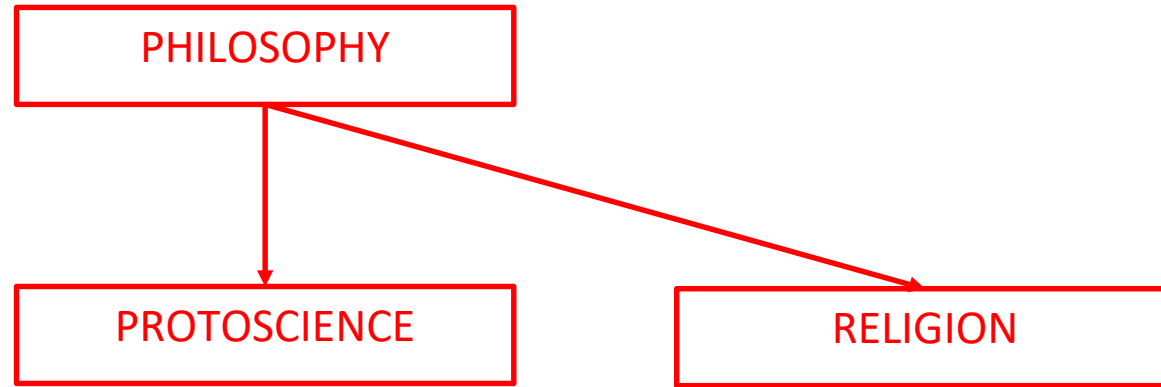
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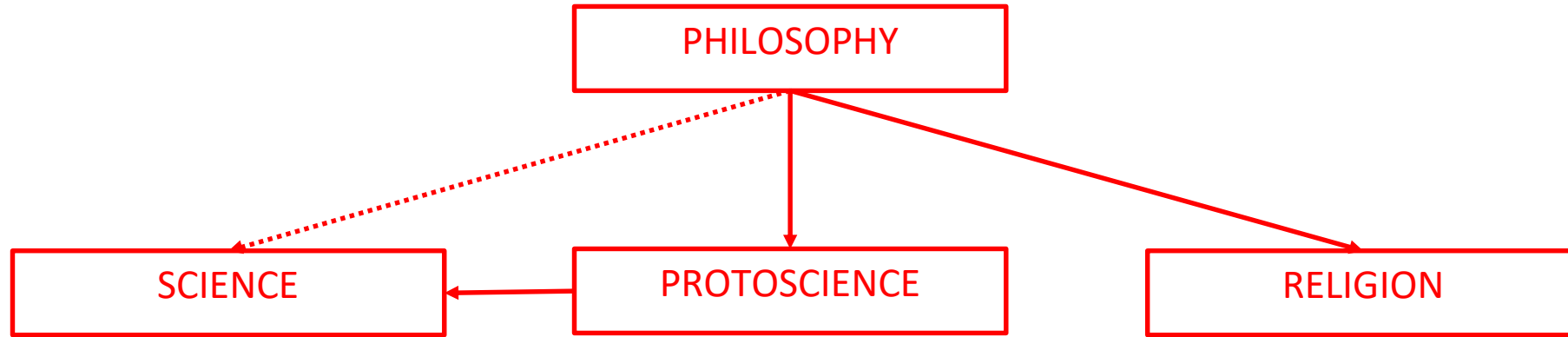
Wikipedia

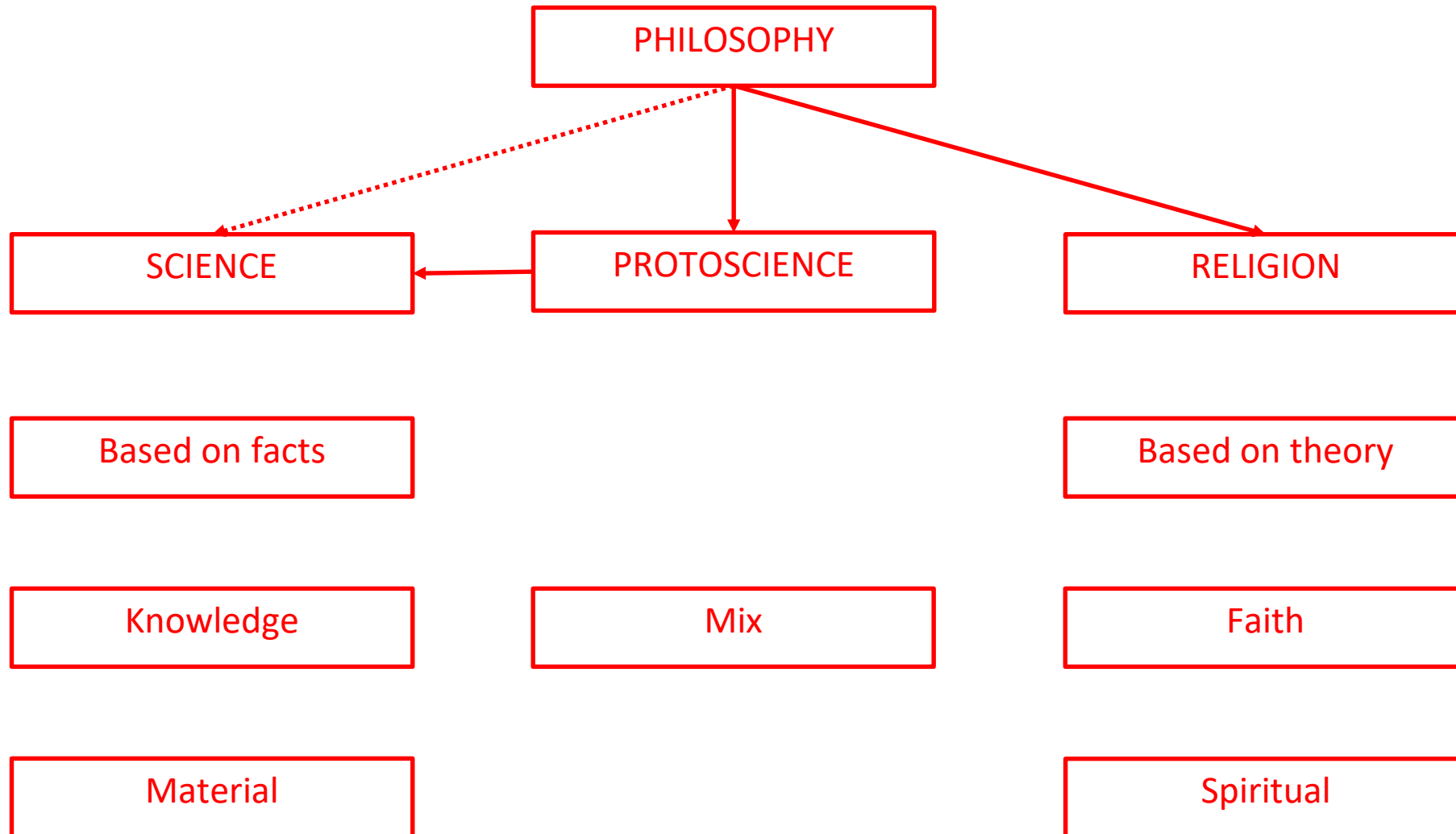
COLLECTIVE CONSCIOUSNESS

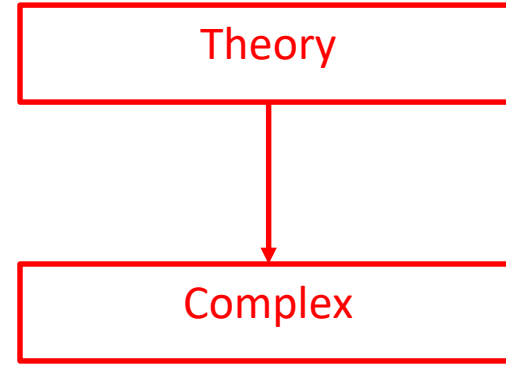
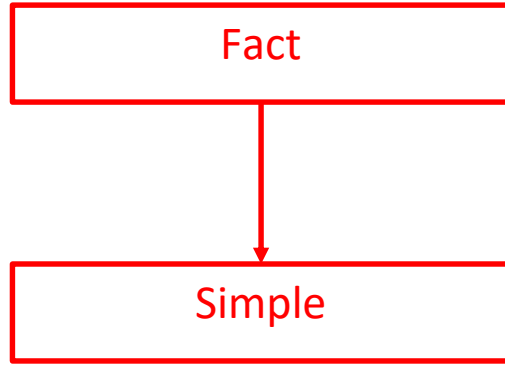
Collective consciousness or collective consciousness is the **set of shared beliefs, ideas and moral attitudes** which operate as a **unifying force within society.**

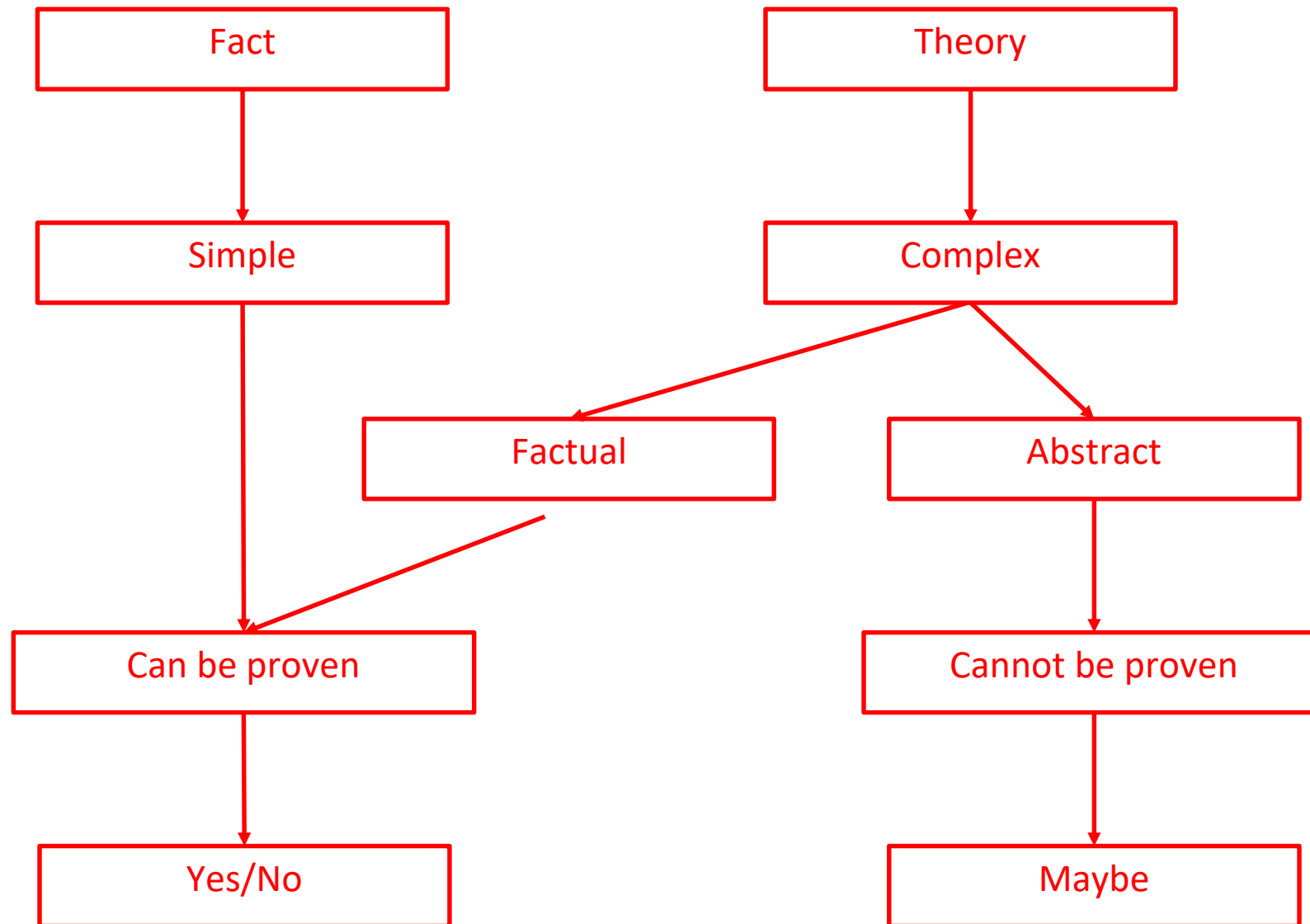
Wikipedia

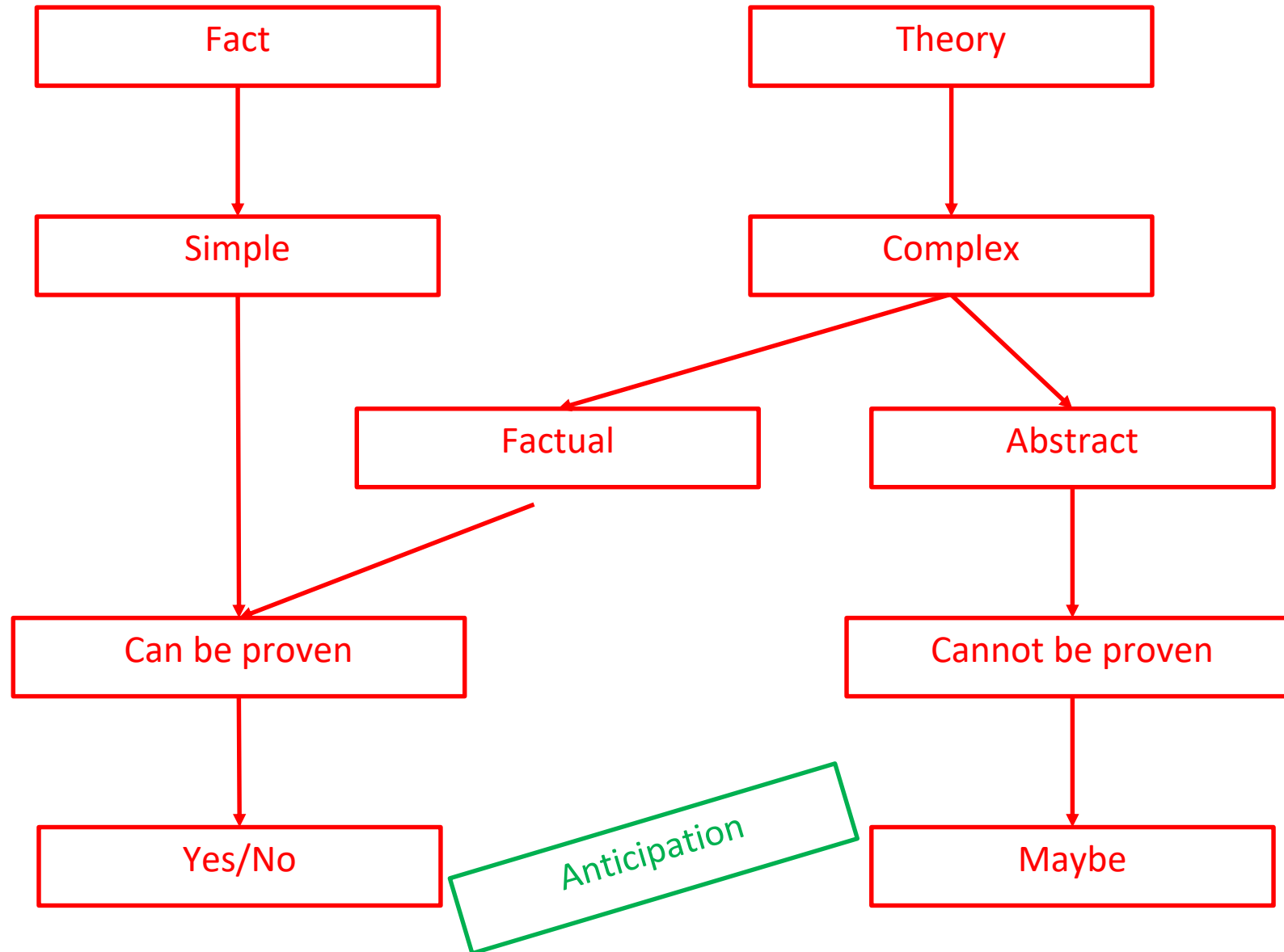




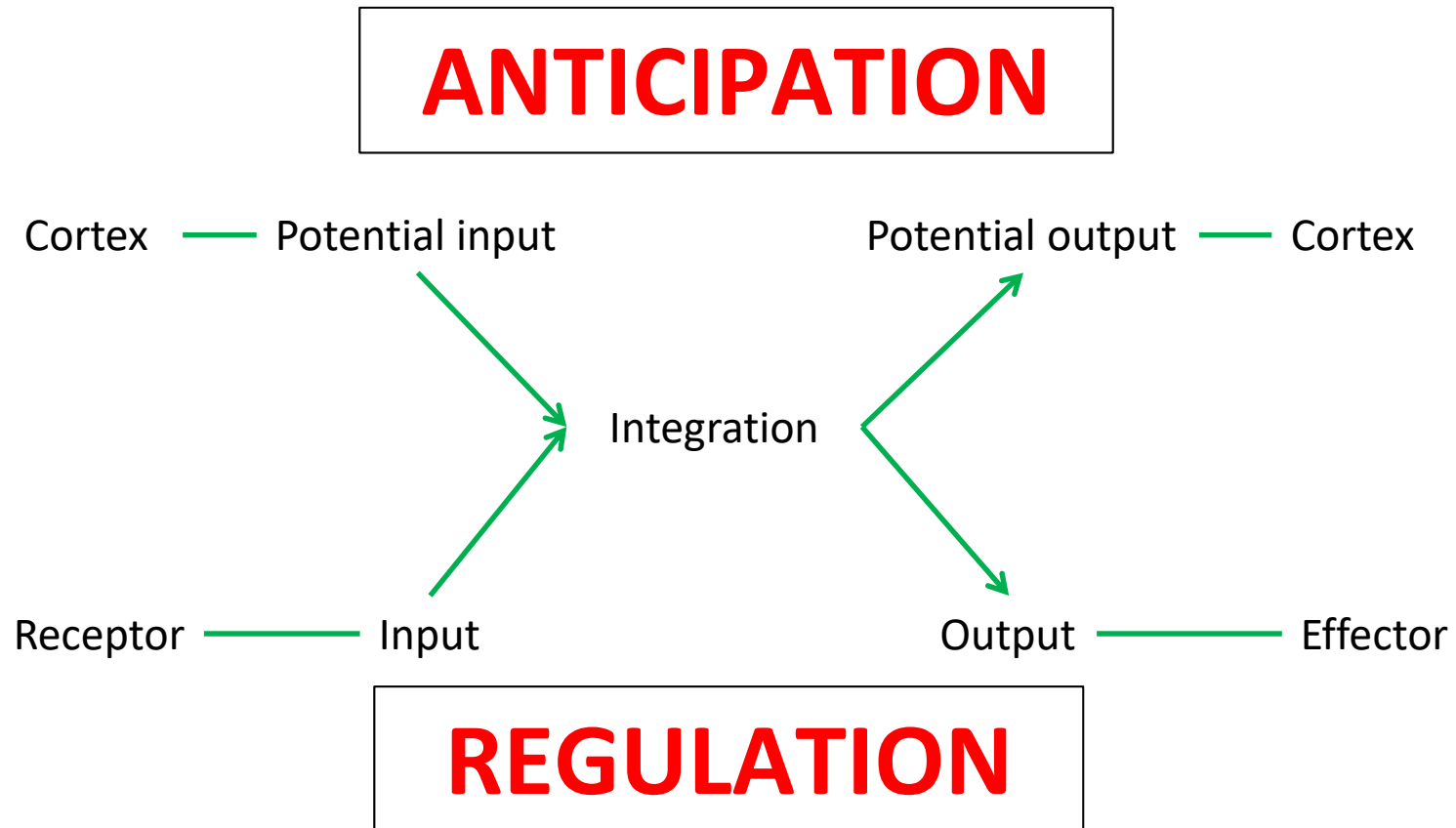








The role of nervous system

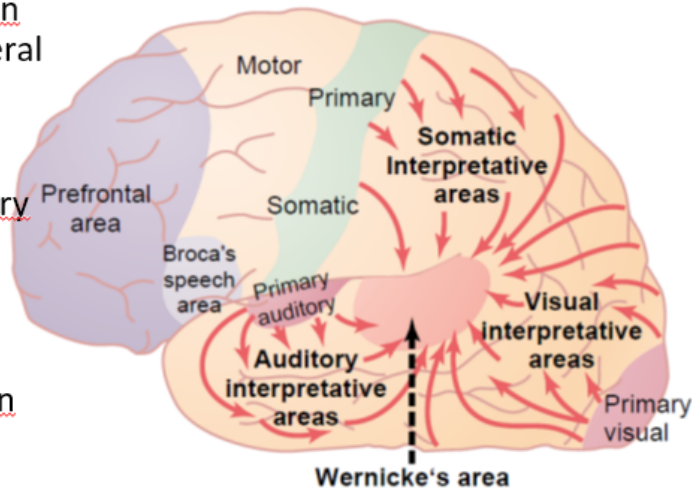


Complementary ways of thinking

Parieto-occipito-temporal association area

Analytical functions

- Linking and interpretation of information from several sensory modalities
- Visual – acoustic – sensory analysis
- Object recognition and categorization
- Language comprehension
- Attention



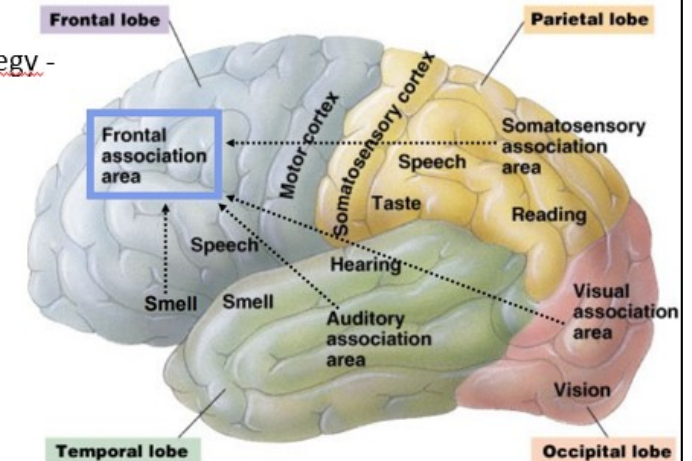
<http://www.slideshare.net/drpsdeb/presentations>

**Analysis
Categorization**

Frontal association area

Executive functions

- Motor/non-motor planning/organization - strategy - anticipation
- Thinking – mental models processing
- Attention – „information filtering“
- Behavioral control
 - Facilitation of „wanted“
 - Inhibition of „unwanted“



<https://www.slideshare.net/thelawofscience/cns-13256395>

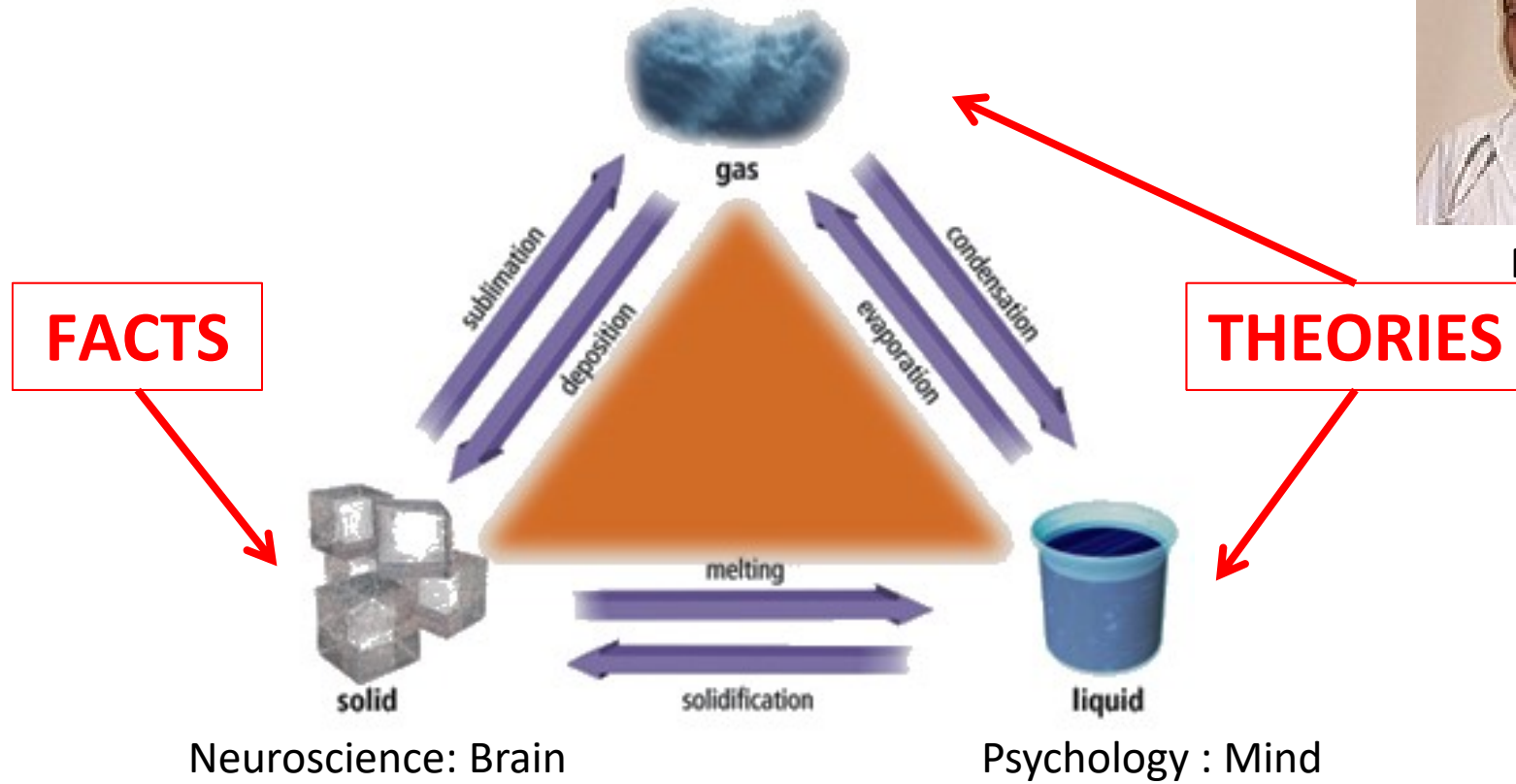
**Anticipation
Expectation**

Three States of Cognition

Philosophy : Mind behind Mind



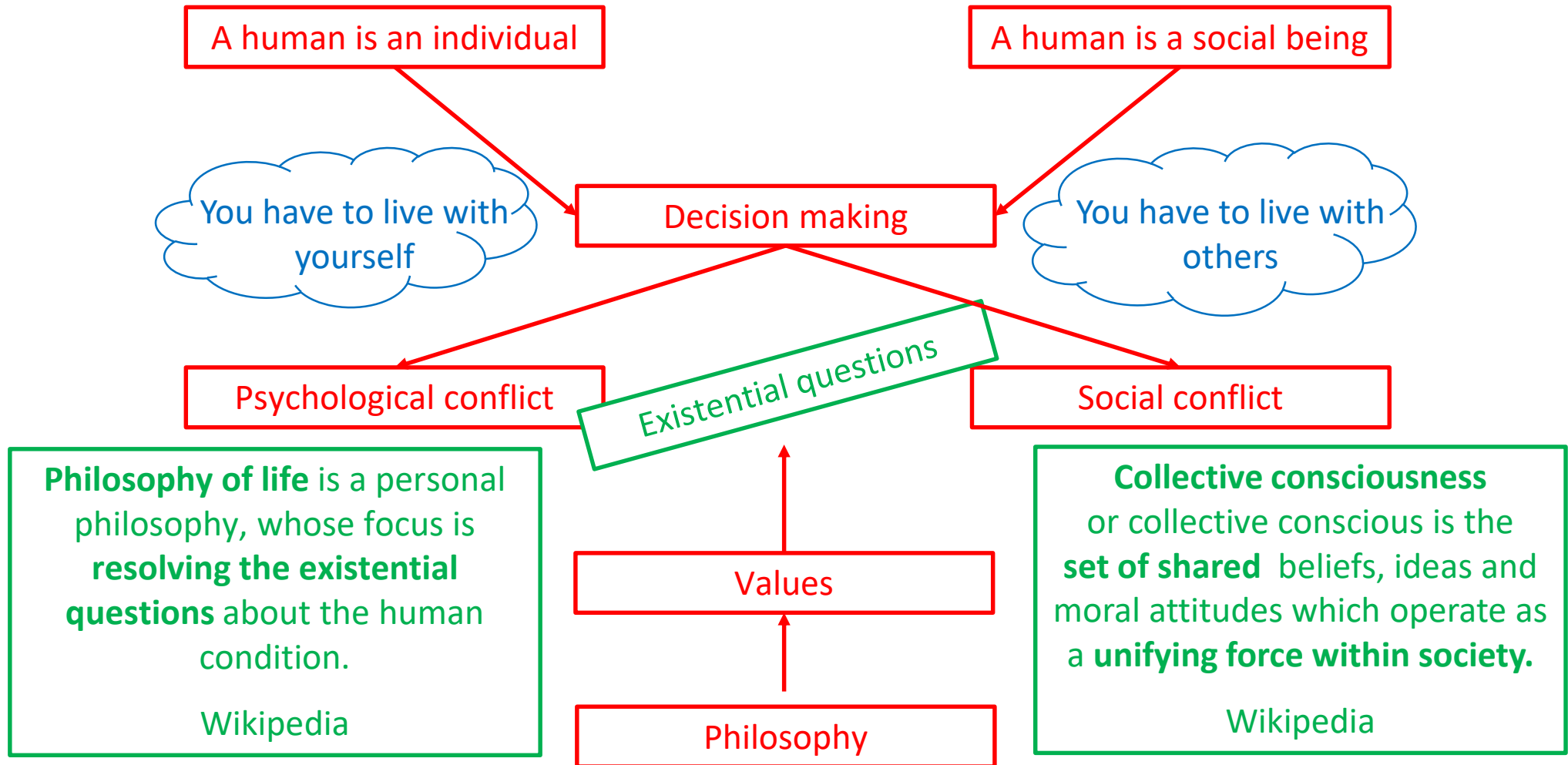
PS Deb



Neuroscience: Brain

Psychology : Mind

Why?



Why?

A human is an individual

A human is a social being

You have to live with yourself

You have to die

You have to live with others

Psychological conflict

Existential questions

Social conflict

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Values

Collective consciousness or collective conscious is the **set of shared** beliefs, ideas and moral attitudes which operate as a **unifying force within society**.

Wikipedia

Philosophy

Jan Sokol

<http://www.jansokol.cz/2014/03/civilizace-kultura-a-nabozenstvi/>

Three levels of life in society

Civilization level

- Everyday activities, user
- „Manual“ is sufficient, imitation

Jan Sokol

<http://www.jansokol.cz/2014/03/civilizace-kultura-a-nabozenstvi/>

Three levels of life in society

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Cultural level

- Creativity
- Knowledge and technique are needed

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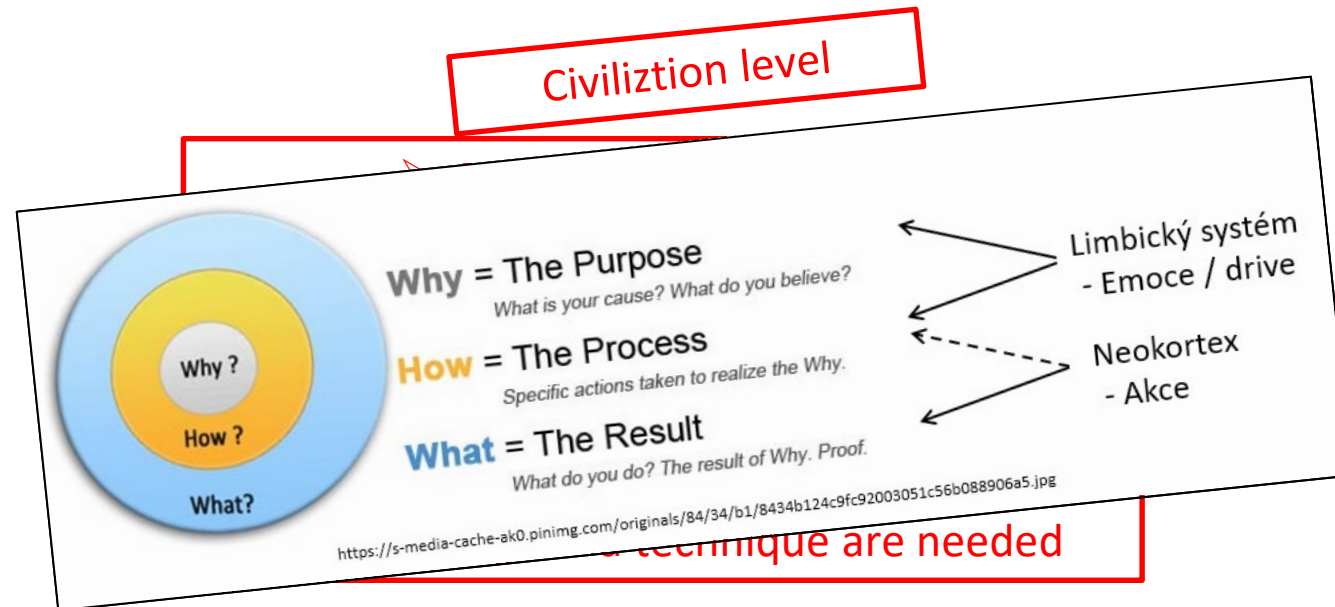
Religious level

- Inspiration of creativity
- Awareness of meaning is needed

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Three levels of life in society



- Inspiration of creativity
- Awareness of meaning is needed

Culture

– the sum of knowledge

- ✓ Material
- ✓ Spiritual



<https://cdn.nexternal.com/tjb/images/FC-11.jpg>



<https://s-media-cache-ak0.pinimg.com/564x/9a/86/da/9a86da32052973bb085dc1511d4b7102.jpg>



<http://previews.123rf.com/images/dja65/dja651107/dja65110700341/10025966-Stone-age-axe-Stock-Photo-tools-ancient-stone.jpg>



[http://www.thebushcraftstore.co.uk/ekmps/shops/bduimportsitd/images/condor-greenland-pattern-axe-\[2\]-12105-p.jpg](http://www.thebushcraftstore.co.uk/ekmps/shops/bduimportsitd/images/condor-greenland-pattern-axe-[2]-12105-p.jpg)



<https://en.wikipedia.org/wiki/File:Mary16thC.jpg>



<https://www.wikiart.org/en/leonardo-da-vinci/the-madonna-of-the-carnation>



<https://pixels.com/featured/1-madonna-and-child-peter-paul-rubens.html>

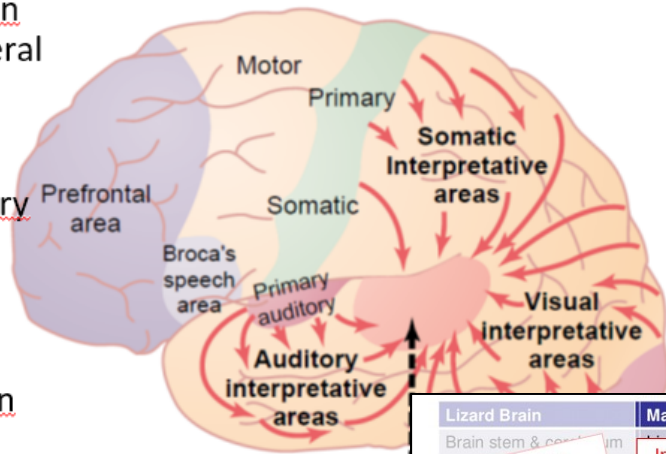


<https://www.wikiart.org/en/m-h-maxy/madonna>

Complementary ways of thinking

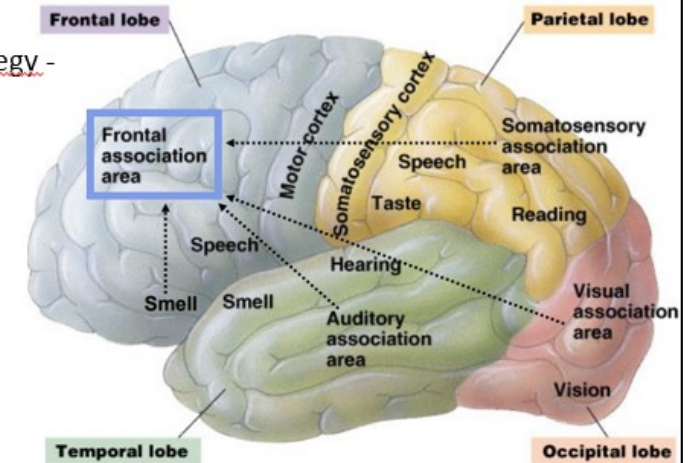
Parieto-occipito-temporal association area

- Linking and interpretation of information from several sensory modalities
- Visual – acoustic – sensory analysis
- Object recognition and categorization
- Language comprehension
- Attention

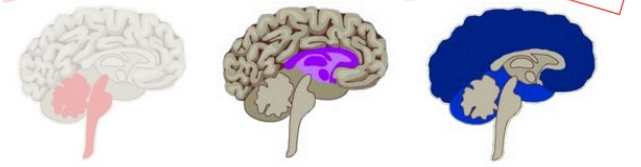


Frontal association area

- Motor/non-motor planning/organization - strategy - anticipation
- Thinking – mental models processing
- Attention – „information filtering“



Lizard Brain	Mammal Brain	Human Brain
Brain stem & cerebellum	Integration of inner and outer information	Neocortex
Fixed programs	DRIVE	Programs on demand
Uniform ACTION	Decisions	Unique ACTION
Economy		Performance



The Triune Brain in Evolution, Paul MacLean, 1960

**Analysis
Categorization**

**Anticipation
Expectation**

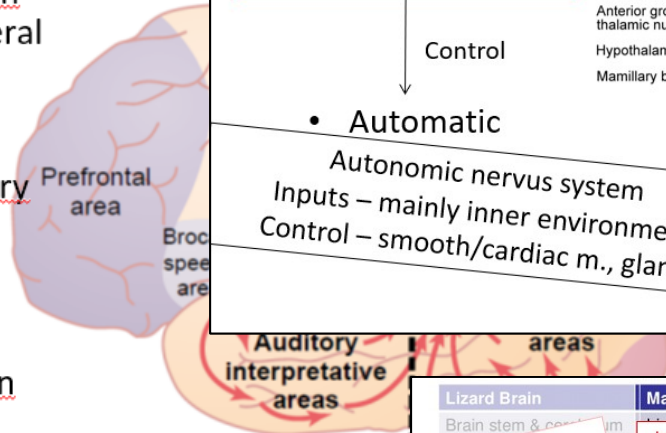
Drive

Comp

inking

Parieto-occipito-tempora

- Linking and interpretation of information from several sensory modalities
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- Attention



Concept of the limbic system

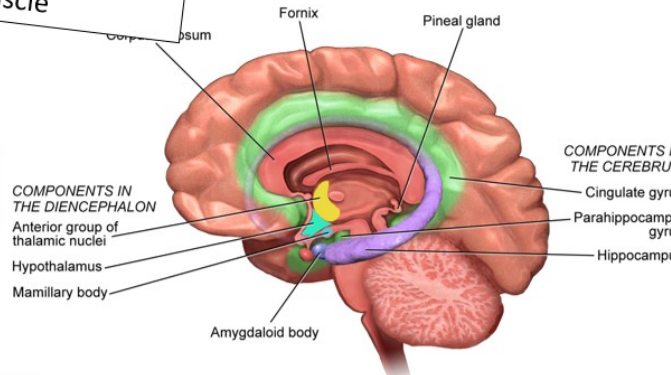
Somatic nervous system
Inputs – mainly from outer environment
Control – skeletal muscle

- Voluntary

Limbic system

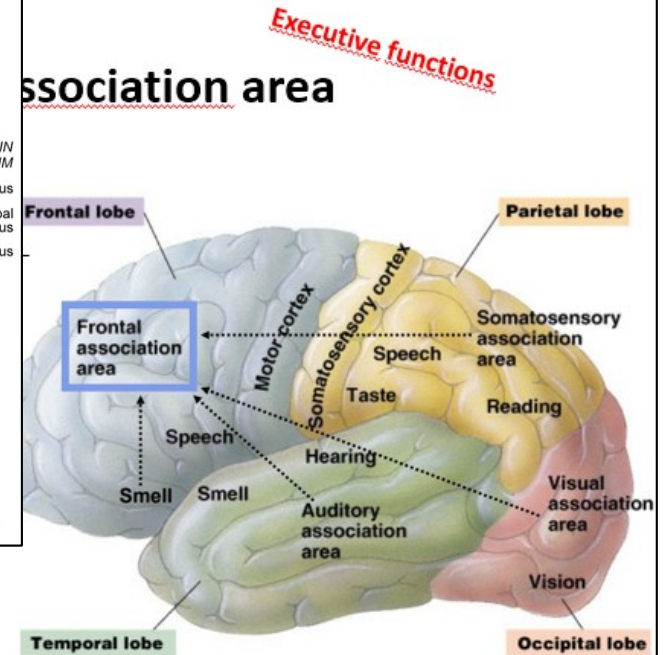
- Automatic

Autonomic nervous system
Inputs – mainly inner environment
Control – smooth/cardiac m., glands



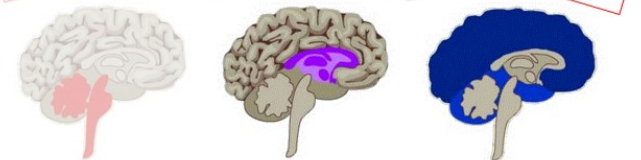
https://upload.wikimedia.org/wikipedia/commons/d/d1/Blausen_0614_LimbicSystem.png

Association area



<https://www.slideshare.net/thelawofscience/cns-13256395>

Lizard Brain	Mammal Brain	Human Brain
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**Analysis
Categorization**

**Anticipation
Expectation**

Drive

Limbic system and neocortex

Instinctive behavior

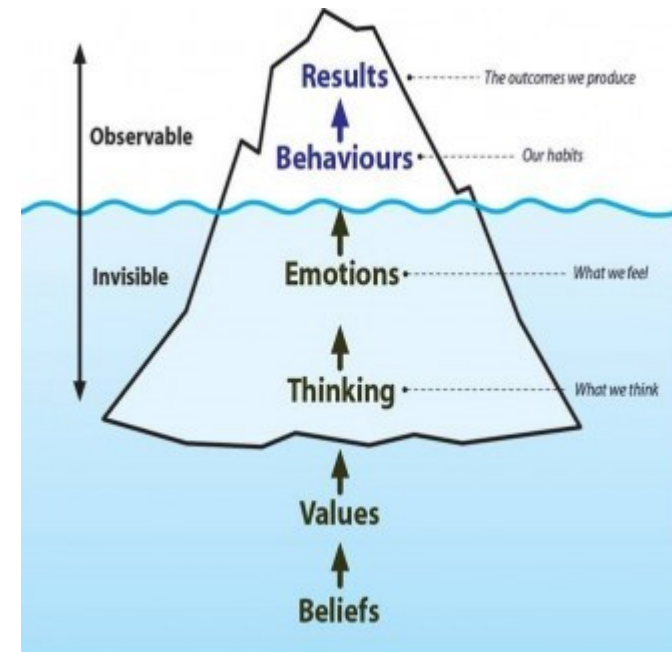
- Limbic system
- ✓ I see a nice thing, so why not to steal it?

Socially enforced behavior

- Legal behavior
- Neocortex – limbic system
- ✓ Theft is a crime, and punishment may come

Moral behavior

- Legitimate behavior
- Limbic system
- ✓ Stealing is a bad thing



<http://www.coaching.net.nz/wp-content/uploads/2013/06/iceberg-for-blog-from-j-e1371521135440.jpg>

Limbic system and neocortex

Instinctive behavior

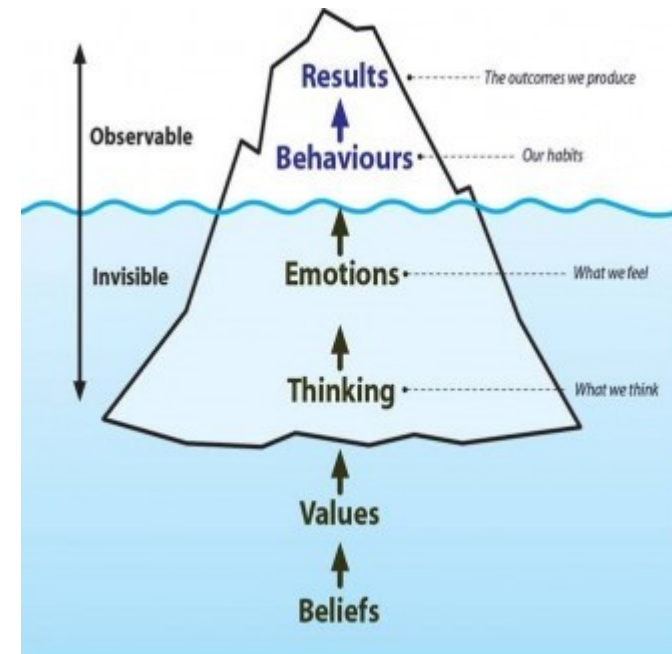
- Limbic system
- ✓ I see a nice thing, so why not to steal it?

Socially enforced behavior

- Legal behavior
- **Fear of punishment** (Limbic system)
- ✓ Stealing is a crime, and punishment may come

Moral behavior

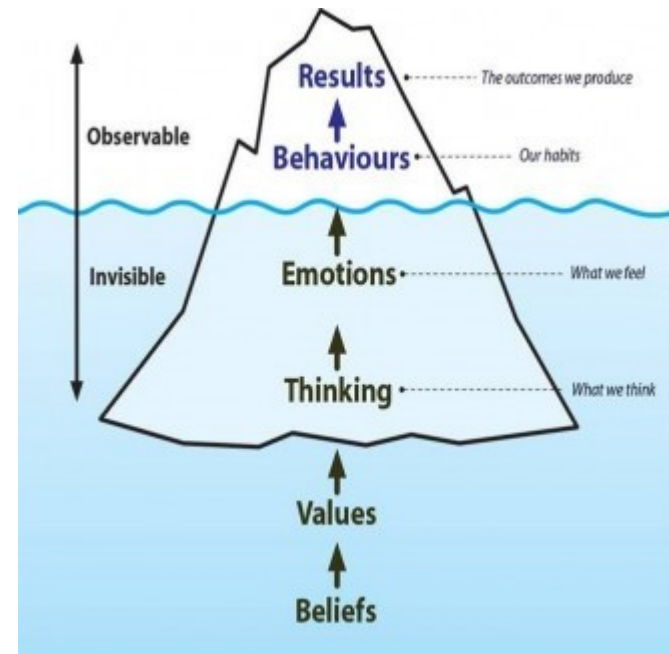
- Legal behavior
- **Moral stance** (Neocortex)
- ✓ Stealing is a bad thing



<http://www.coaching.net.nz/wp-content/uploads/2013/06/iceberg-for-blog-from-j-e1371521135440.jpg>

Limbic system and neocortex

Information
NEOCORTEX
VS
Complex information
NEOCORTEX/limbic system
VS
Values/Philosophy/Faith
Neocortex/LIMBIC SYSTEM



<http://www.coaching.net.nz/wp-content/uploads/2013/06/iceberg-for-blog-from-j-e1371521135440.jpg>

Cognitive maps

Type of **mental representation** which serves an individual to acquire, code, store, recall, and decode information about the **relative locations and attributes** of phenomena in their everyday or metaphorical spatial environment.

Wikipedia

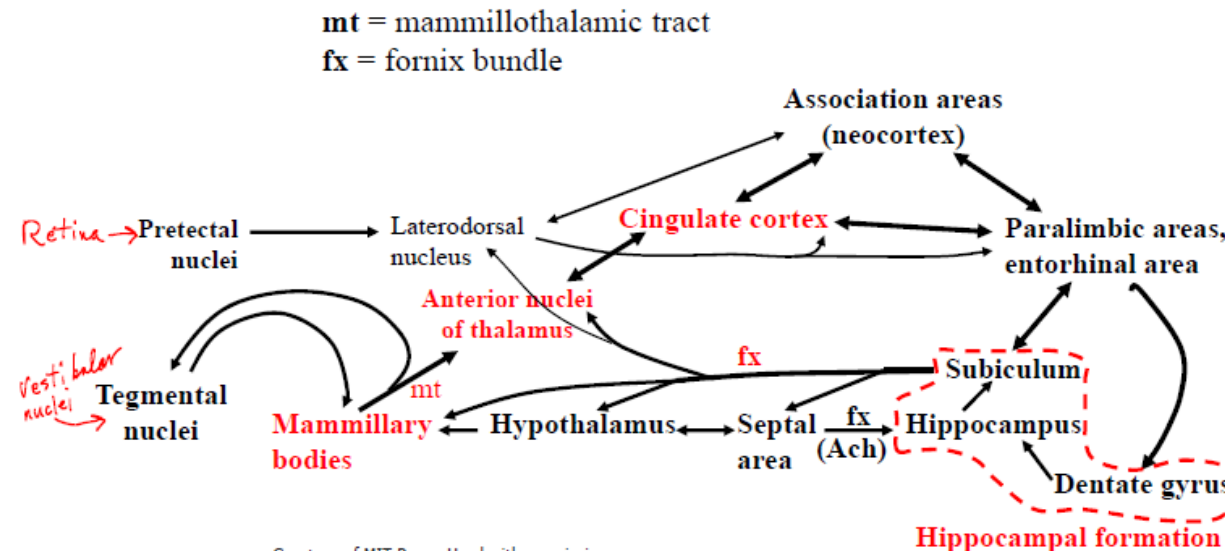
- Origins of endbrain: Structures underlying olfaction
- Two major links between olfactory system and the motor systems of the midbrain

✓ Object oriented
✓ Implicite

- 1) Through the ventral endbrain, which became corpus striatum and basal forebrain (including much of the septal area)
 - Outputs to hypothalamus, (epithalamus, subthalamus), midbrain
 - These outputs affected locomotion and orienting movements
 - The links were plastic, so habits were formed according to rewarding effects mediated, e.g., by taste effects.

✓ Location oriented
✓ Explicite

- 2) Through the medial part of the dorsal endbrain, which became medial pallium—the hippocampal formation
 - Outputs to ventral striatum, hypothalamus, epithalamus
 - The links were plastic, but the “habits” formed were different: The association of place with good or bad consequences of approach.



Courtesy of MIT Press. Used with permission.
Schneider, G. E. Brain Structure and its Origins: In the Development and in Evolution of Behavior and the Mind. MIT Press, 2014. ISBN: 9780262026734.

http://www.slideshare.net/drsunilsuthar/neurobiology-of-emotion



Prof. Gerald Schneider

MUNI
MED

Learning and memory

- Connections of striatum and hippocampus are plastic
- Plasticity is a base of learning
- Learning is a forming of long- term memory

- Declarative memory (explicit)
- Based on hippocampus
- Explicit information is stored and later recollected
- „Construction of the maps (relationships)“ – spatial or abstract

- Procedural memory (implicit)
- Based on striatum
- Habitual learning – motor skills, but also social habits
- „Construction of the algorithms“

Location oriented:
Where am I and what
has happened here?

Object oriented:
Can I eat it and how
to eat it?

**Cognitive map
term definition**

Edward C. Tolman

1948



https://en.wikipedia.org/wiki/Edward_C._Tolman

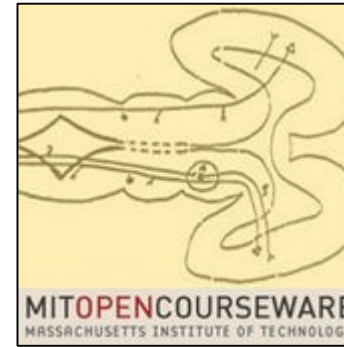
**Anatomical
correlate?**

Gerald Schneider



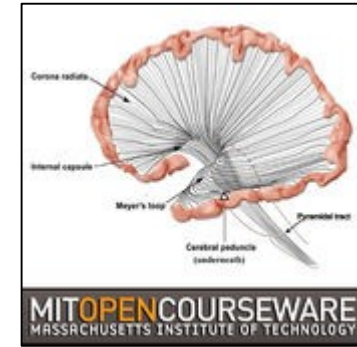
O'Keefe and Nadel
'70s
And others

2009

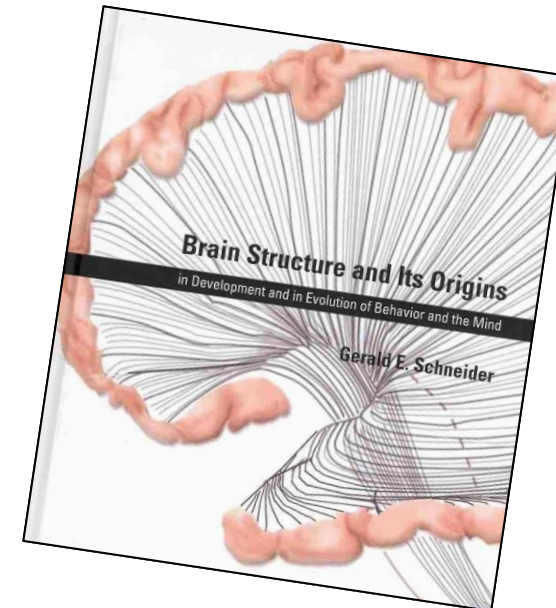


<https://itunes.apple.com/us/podcast/brain-structure-and-its-origins-2009/id385157530?mt=2>

2014



<https://itunes.apple.com/us/podcast/brain-structure-and-its-origins-2014/id944293984?mt=2>



2014

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Type of **mental representation** which serves an individual to acquire, code, store, recall, and decode information about the **relative locations and attributes** of phenomena in their everyday or metaphorical spatial environment.

Wikipedia

Later generalized to refer to a kind of **semantic network** **representing** an individual's personal **knowledge or schemas**.

Wikipedia

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- ✓ Complex
- ✓ Unique
- ✓ Egocentric, but multiple points of view

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Cognitive maps

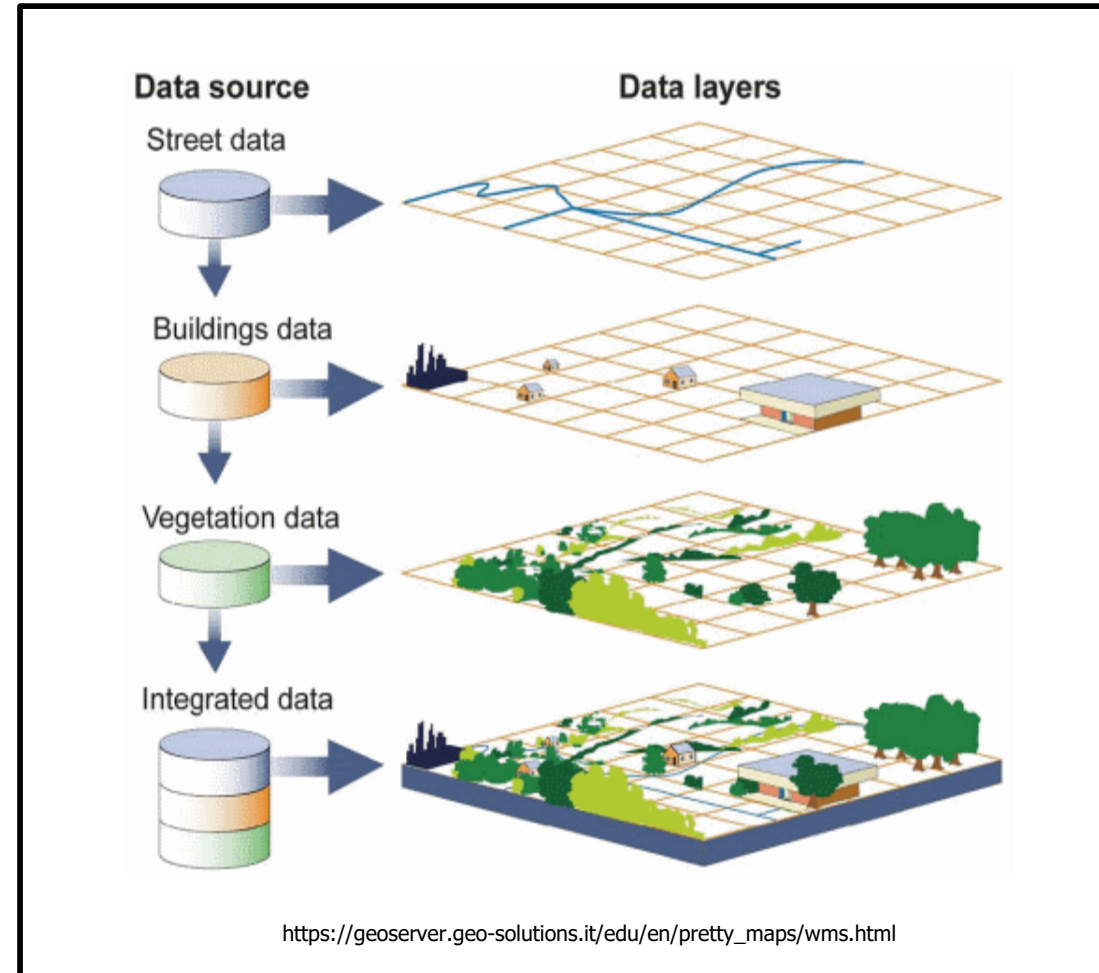
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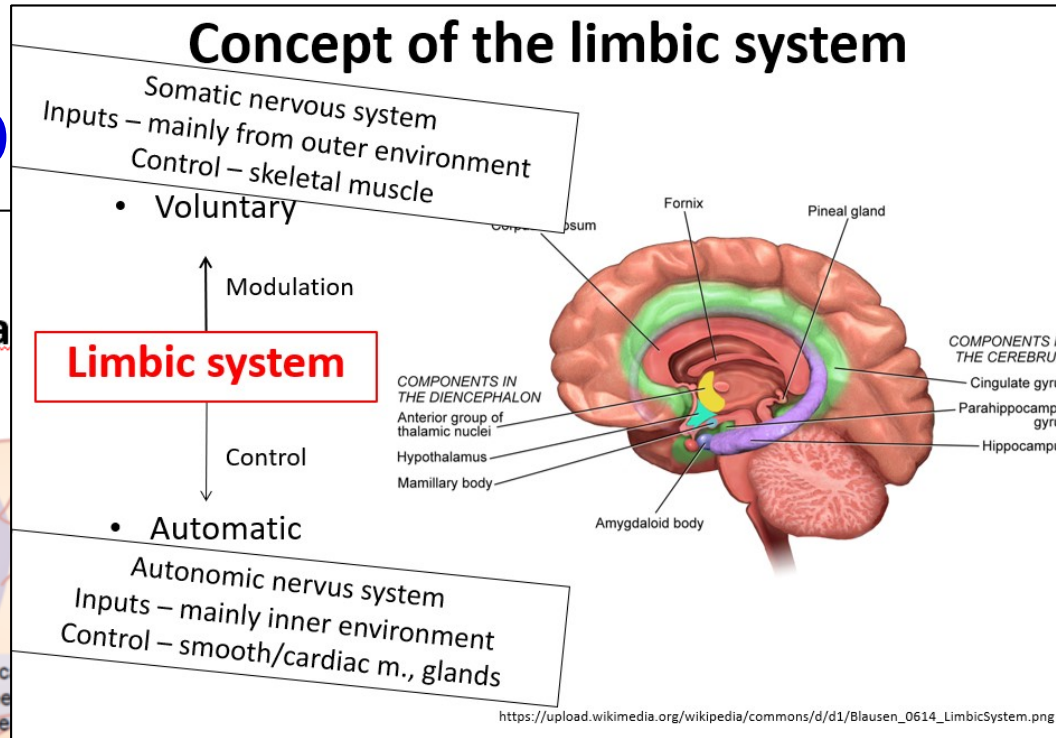
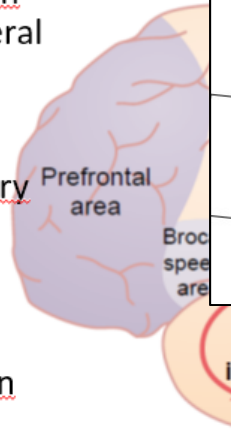


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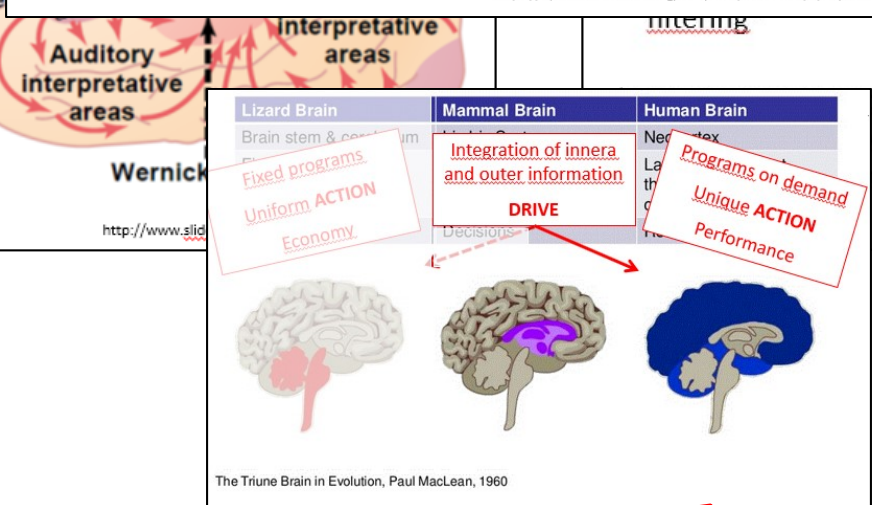
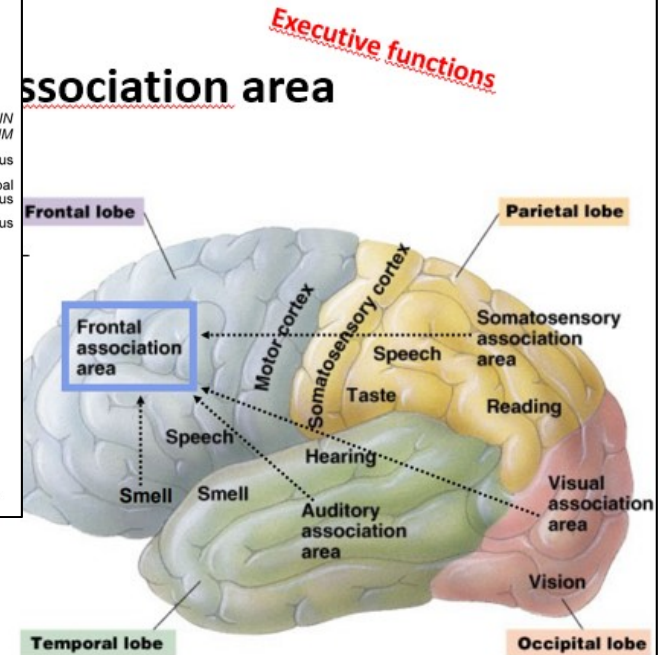
inking

Parieto-occipito-tempora

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Association area



**Analysis
Categorization**

**Anticipation
Expectation**

Drive

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