

M U N I

M E D

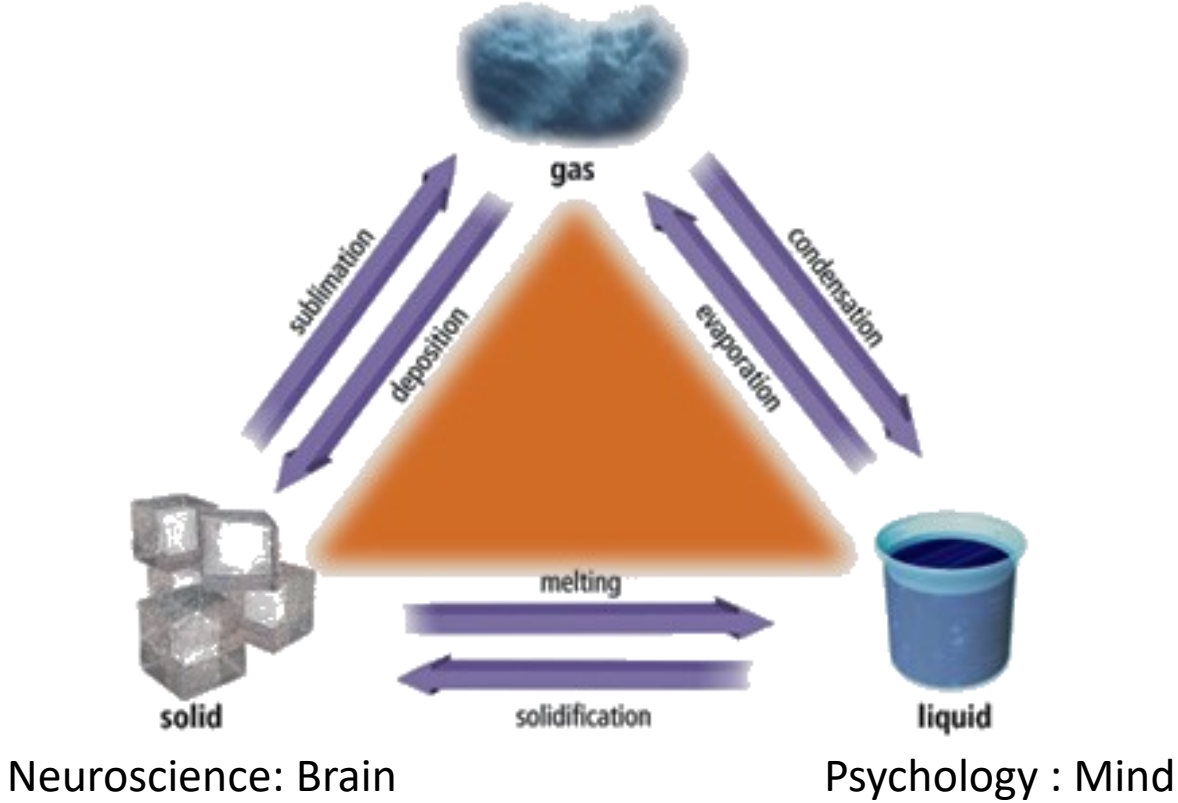
# **The Highest Level of Cerebral Activity I**

# Three States of Cognition

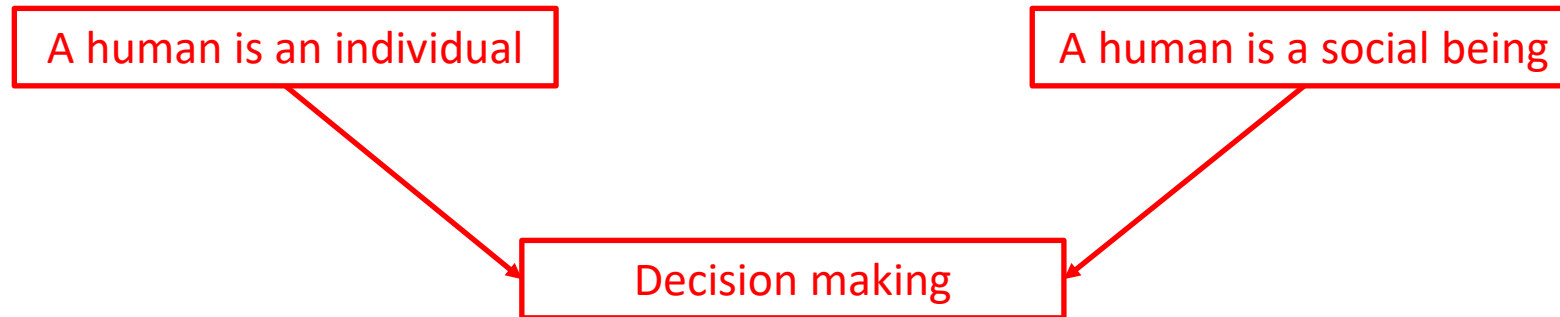
Philosophy : Mind behind Mind



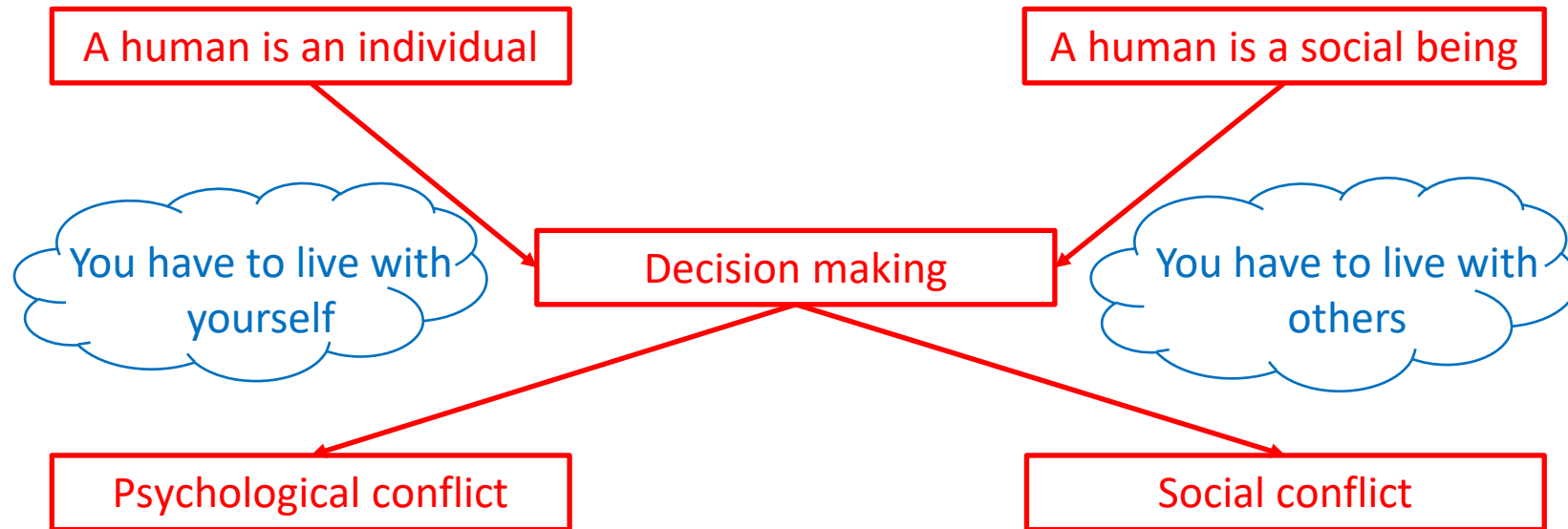
PS Deb



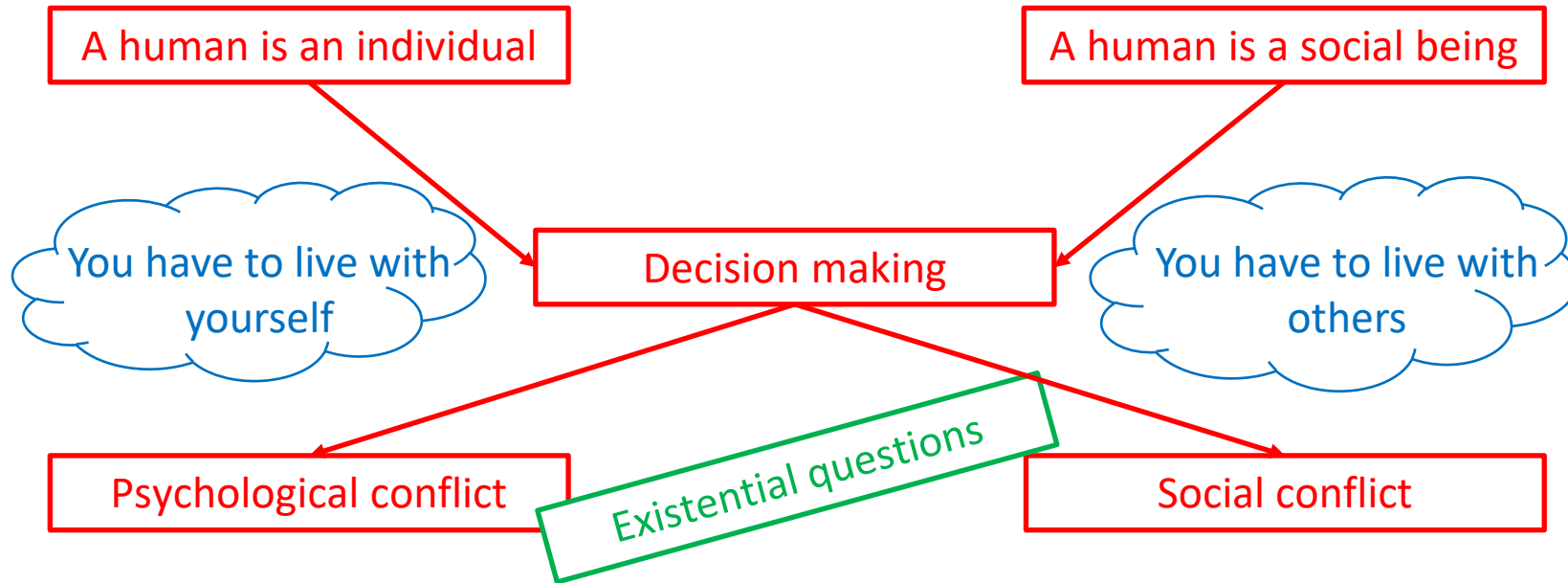
# Why?



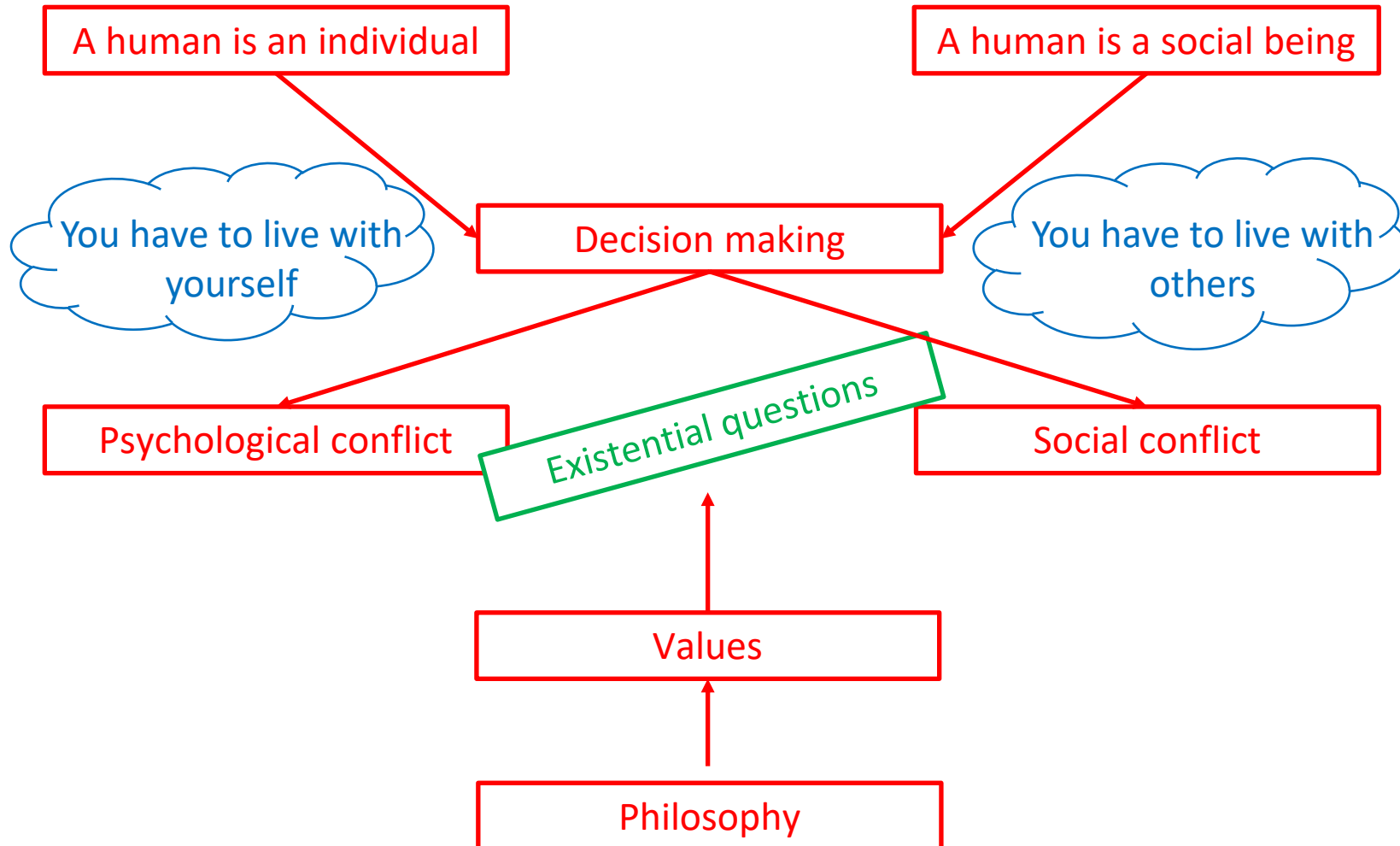
# Why?



# 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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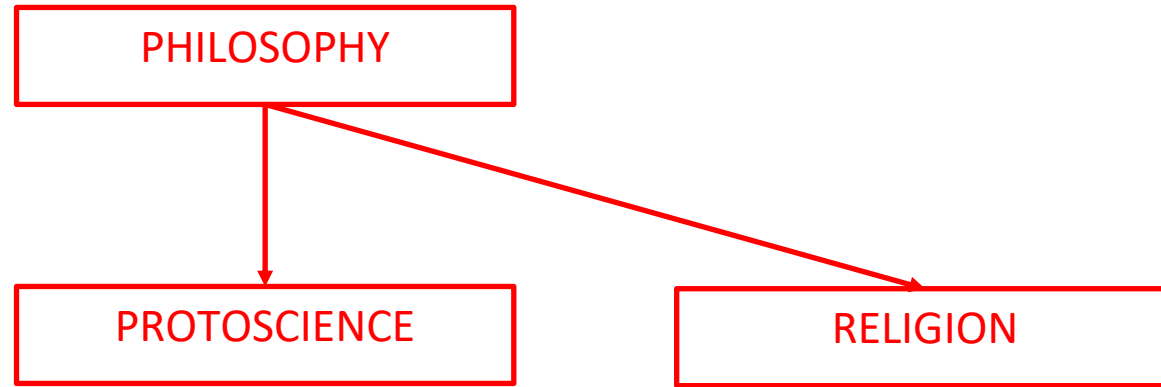
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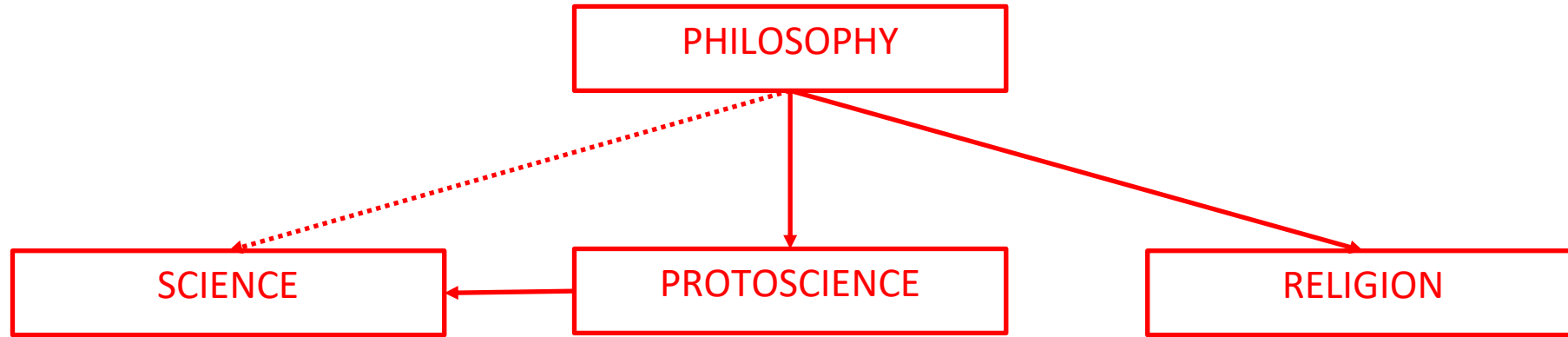
Wikipedia

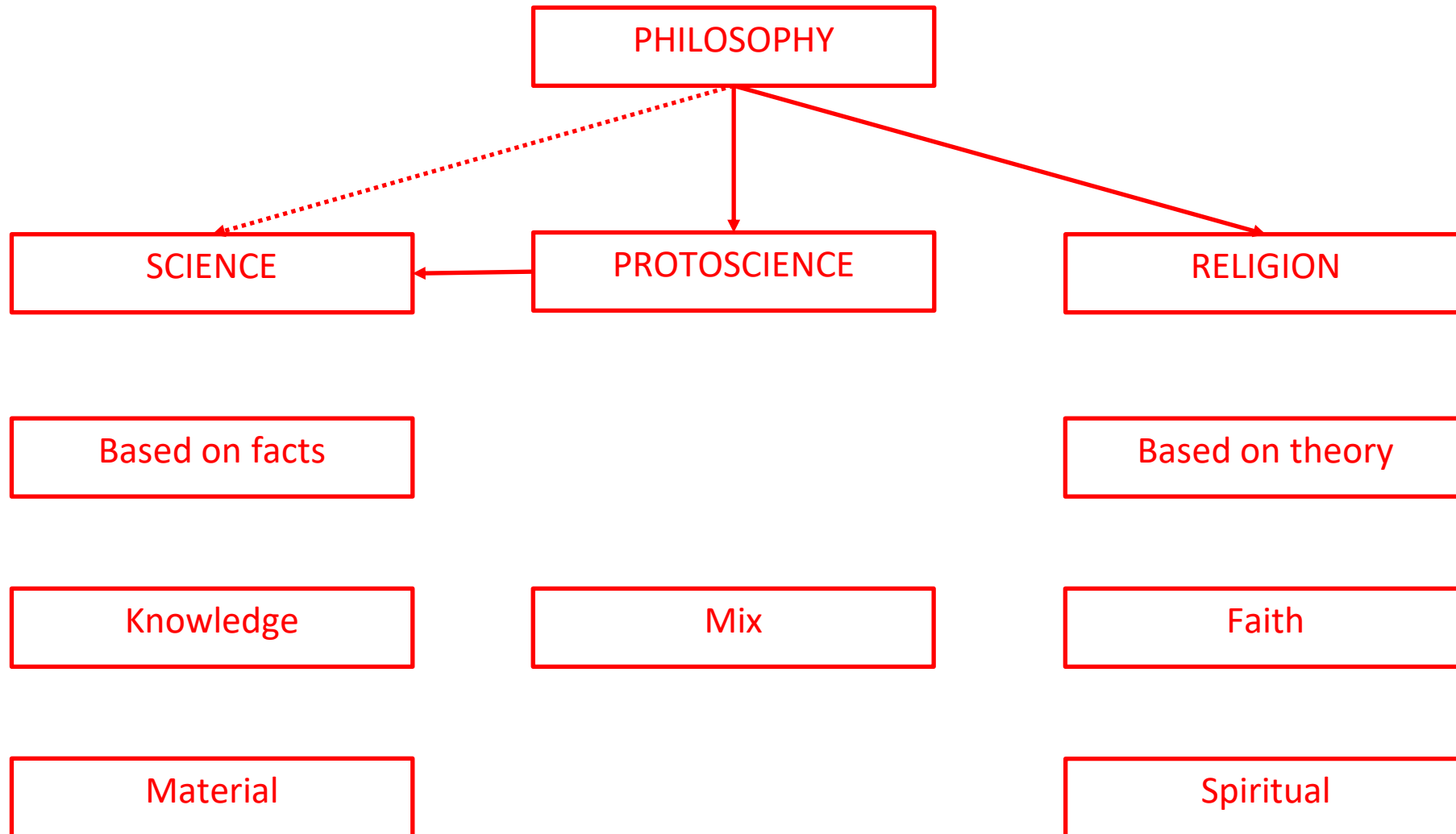
## COLLECTIVE CONSCIOUSNESS

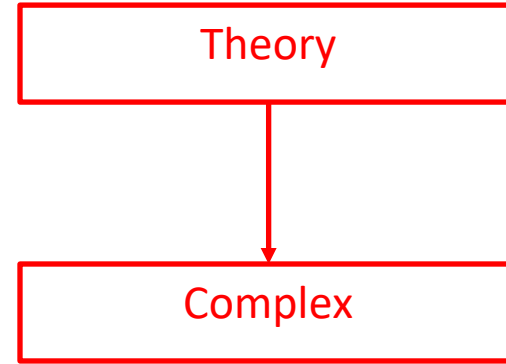
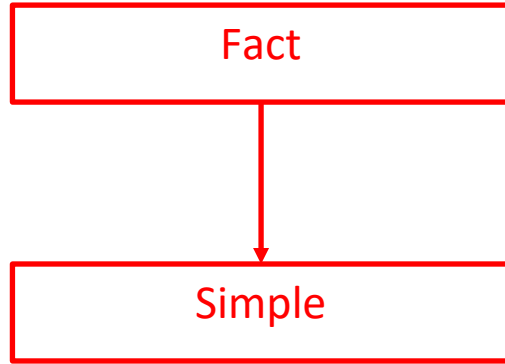
**Collective consciousness** or collective consciousness is the **set of shared beliefs, ideas and moral attitudes** which operate as a **unifying force within society.**

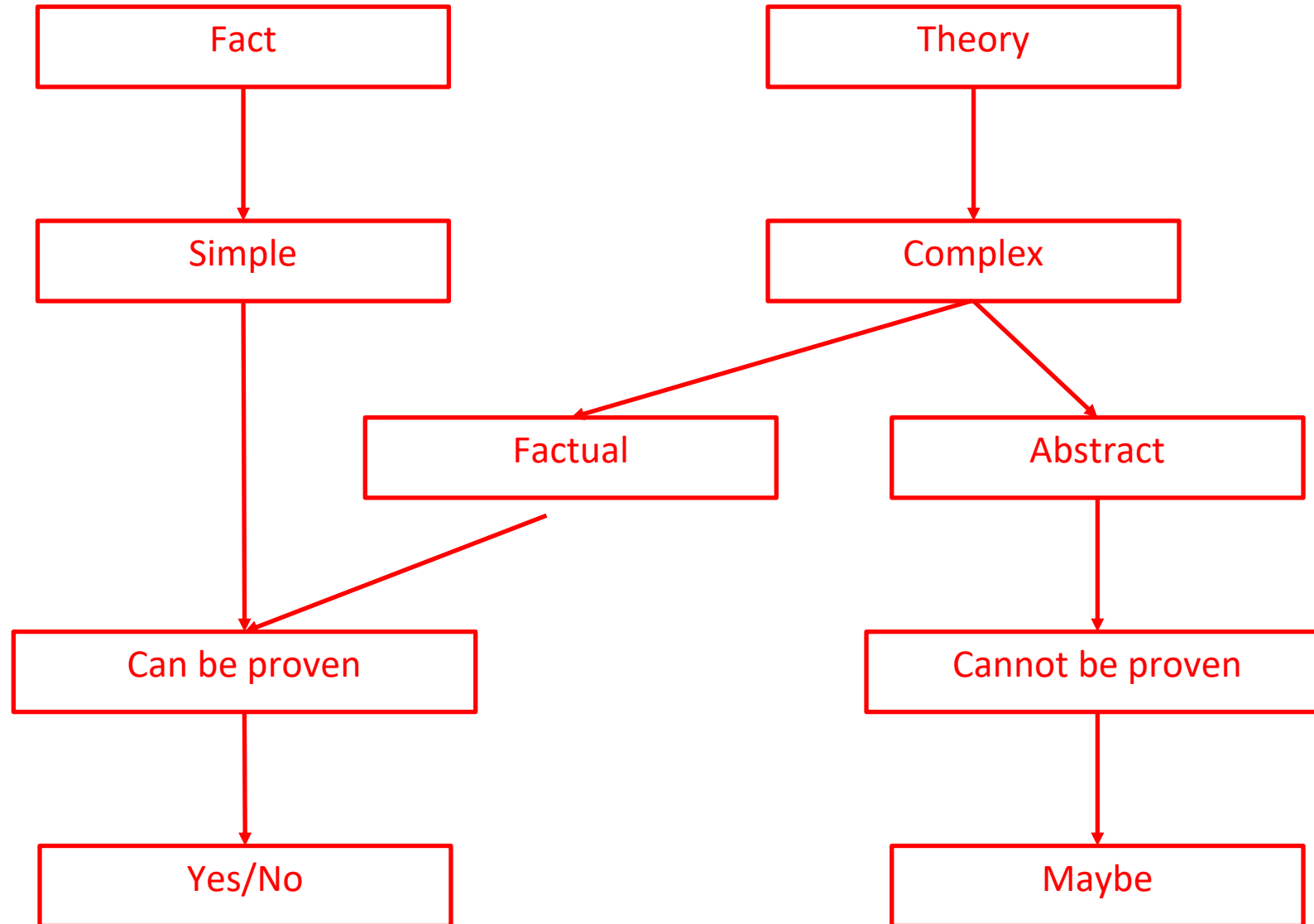
Wikipedia

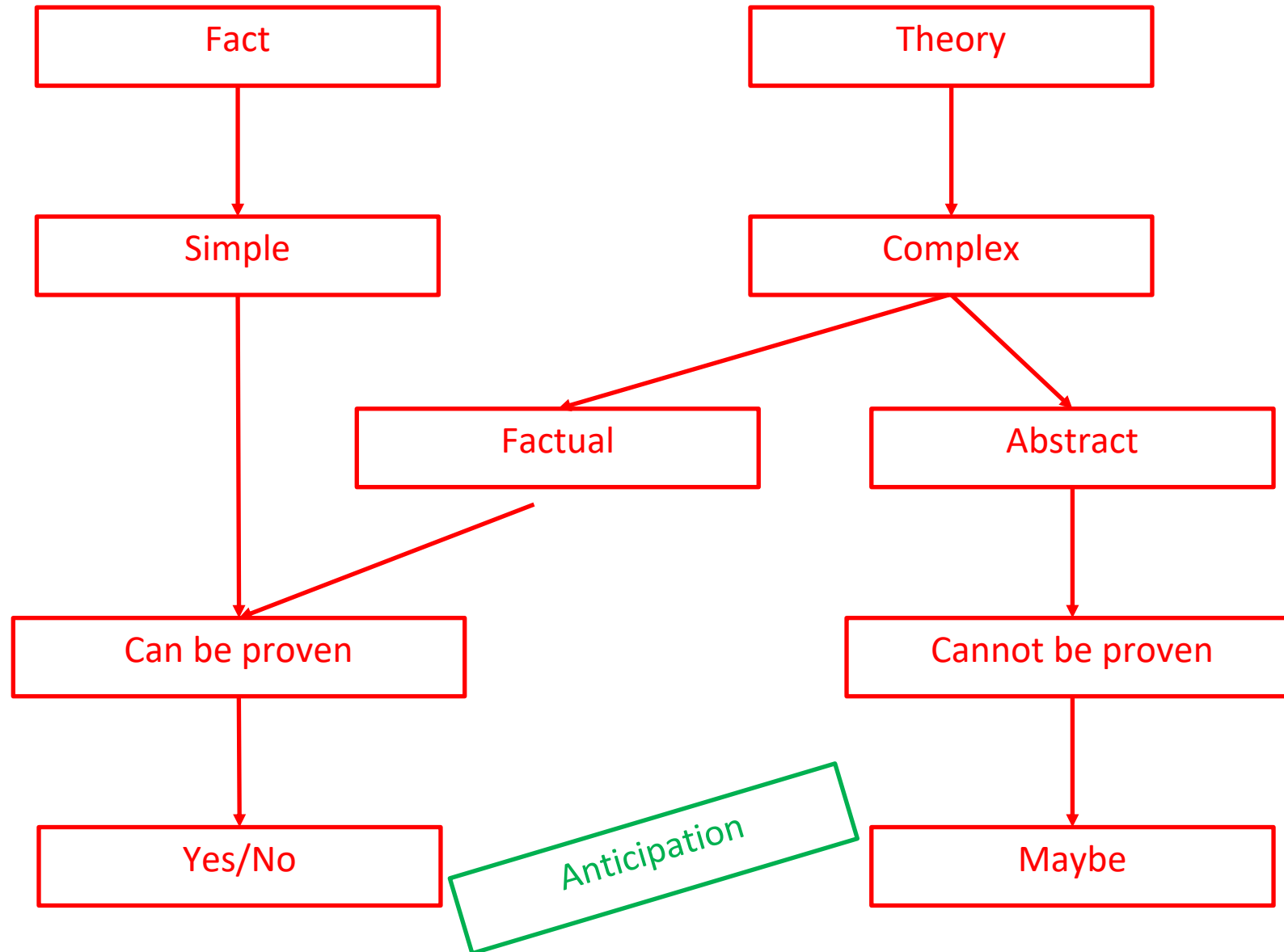






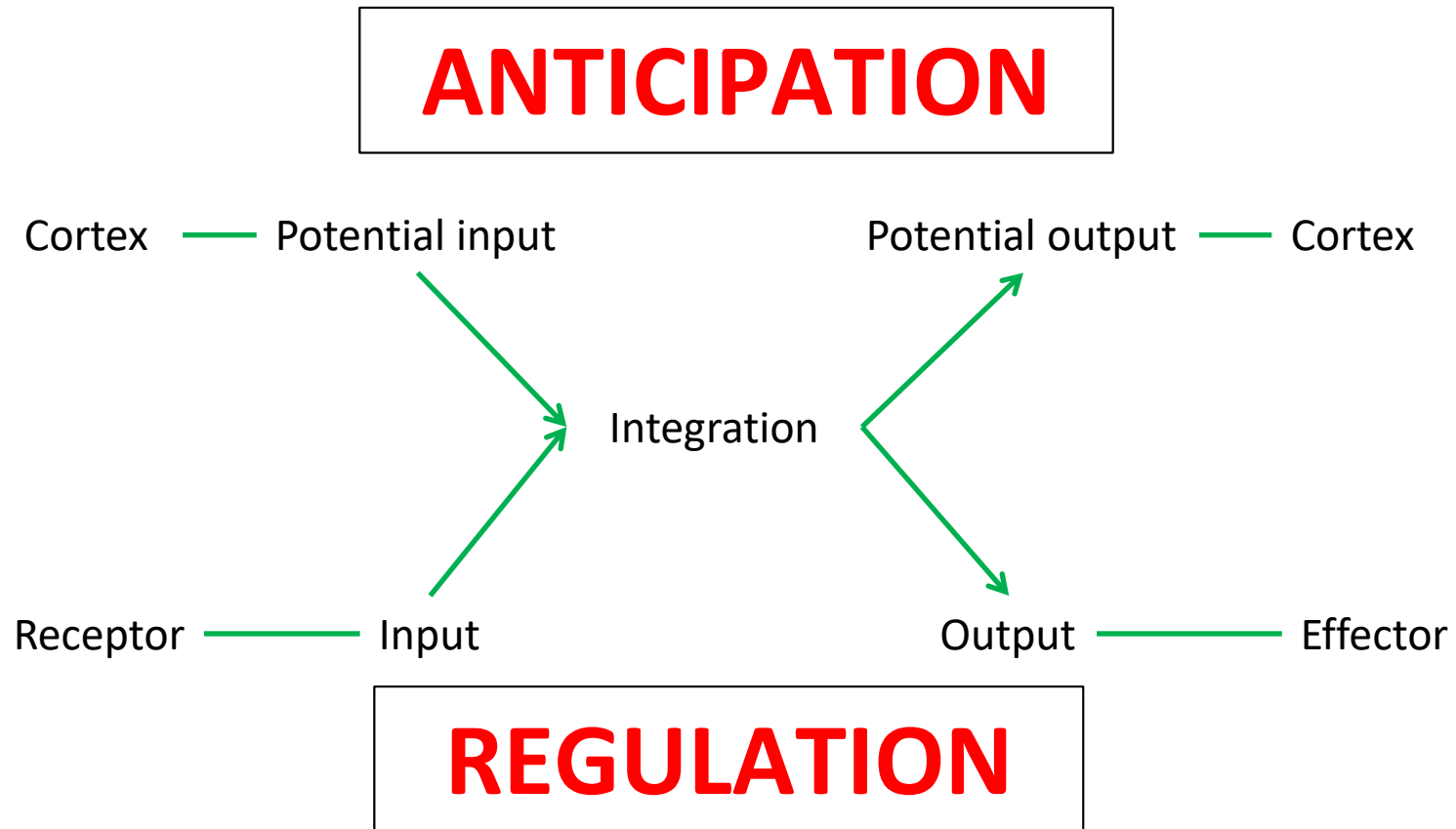








# The role of nervous system

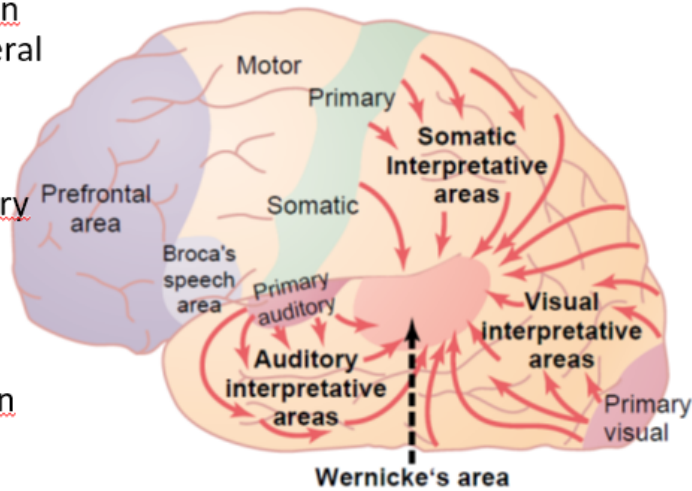


# Complementary ways of thinking

## 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



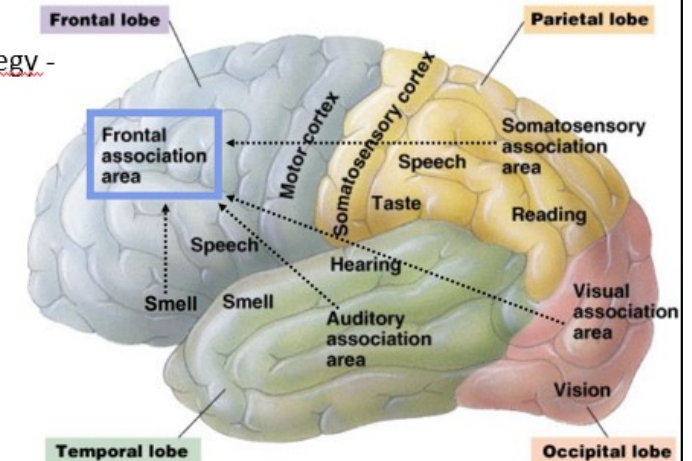
<http://www.slideshare.net/drpsdeb/presentations>

**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>

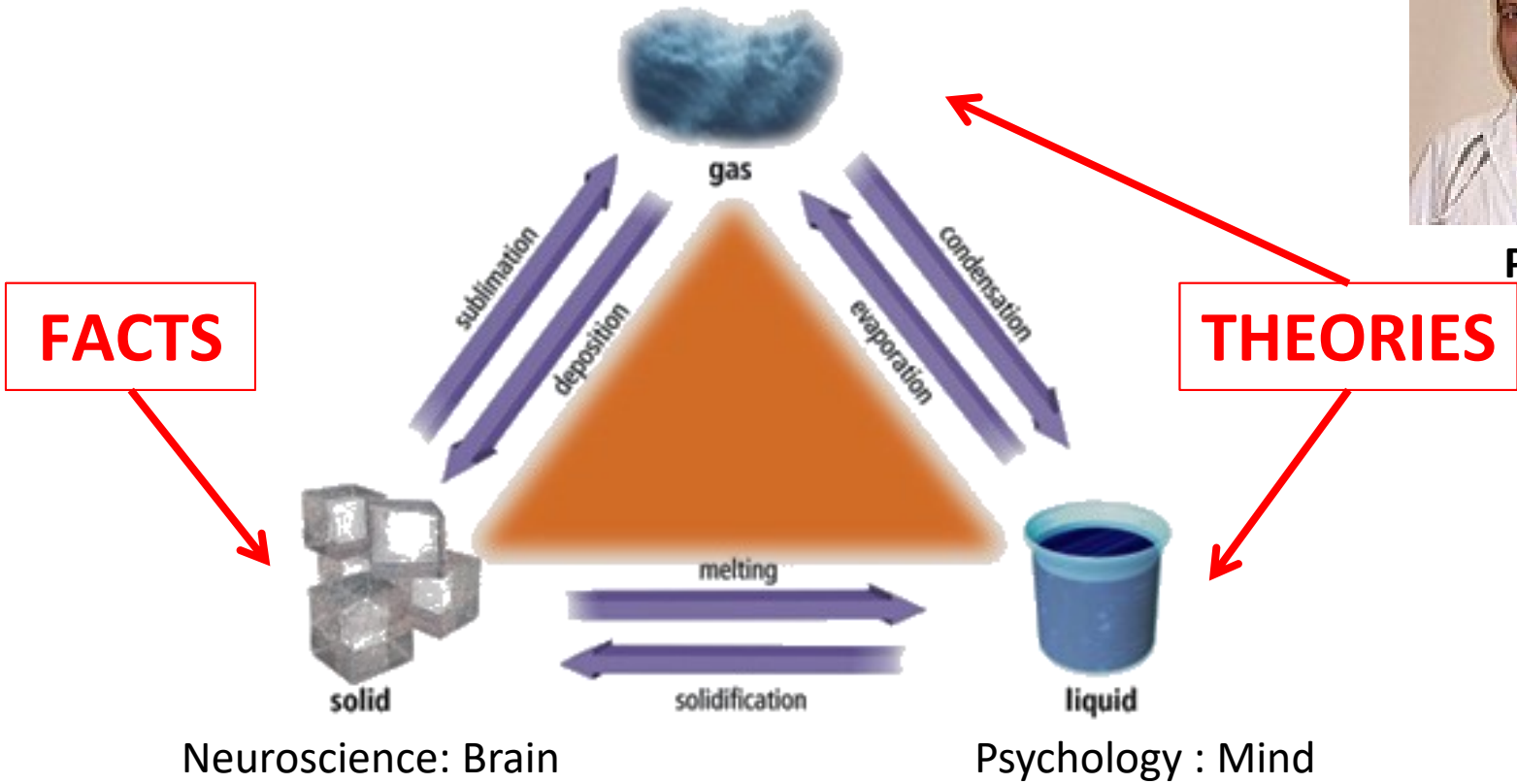
**Anticipation  
Expectation**

# Three States of Cognition

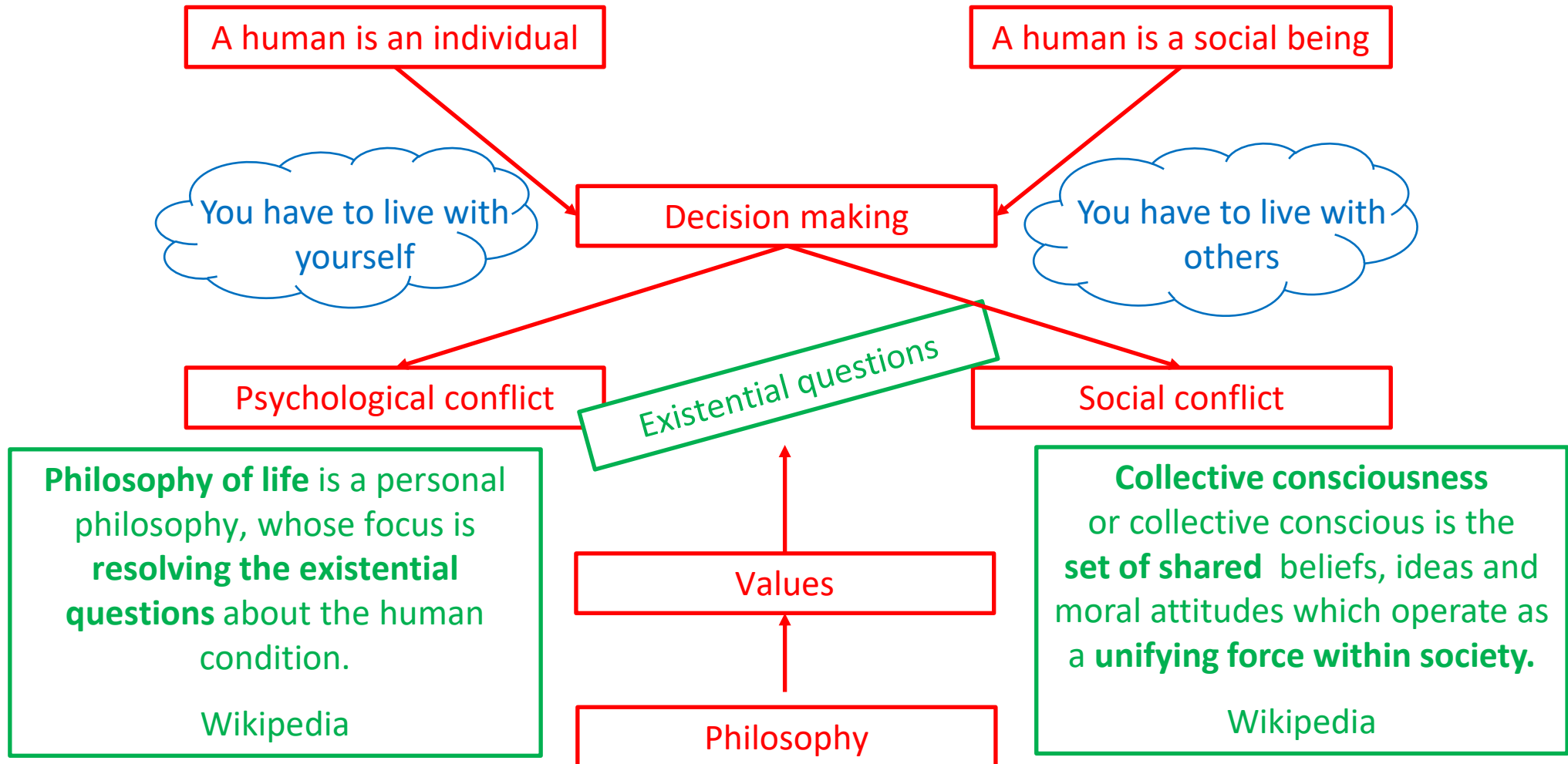
Philosophy : Mind behind Mind



PS Deb



# 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

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

Wikipedia

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

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Cultural level

- Creativity
- Knowledge and technique are needed

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## Three levels of life in society

### Civilization level

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

### Cultural level

- Creativity
- Knowledge and technique are needed

### Religious level

- Inspiration of creativity
- Awareness of meaning is needed



# Jan Sokol

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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>

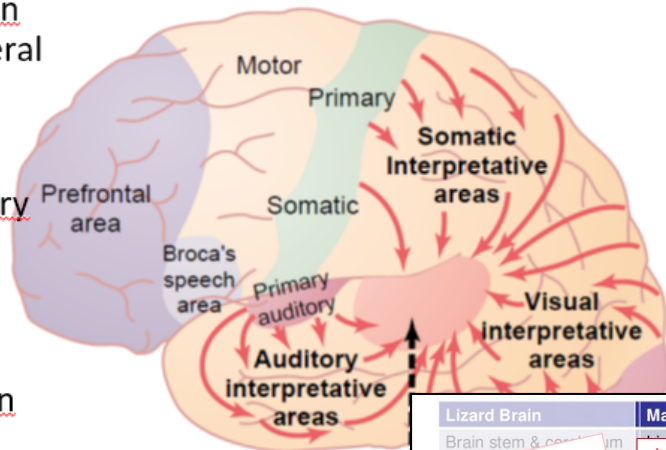


<https://www.wikiart.org/en/m-h-maxy/madonna>

# Complementary ways of thinking

## Parieto-occipito-temporal association area

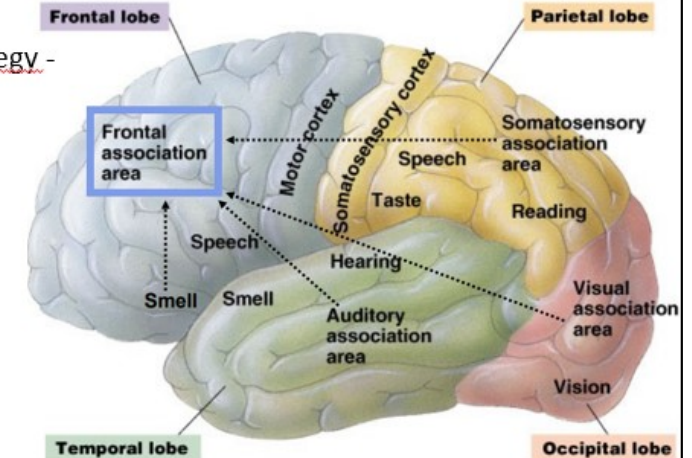
- Linking and interpretation of information from several sensory modalities
- Visual – acoustic – sensory analysis
- Object recognition and categorization
- Language comprehension
- Attention



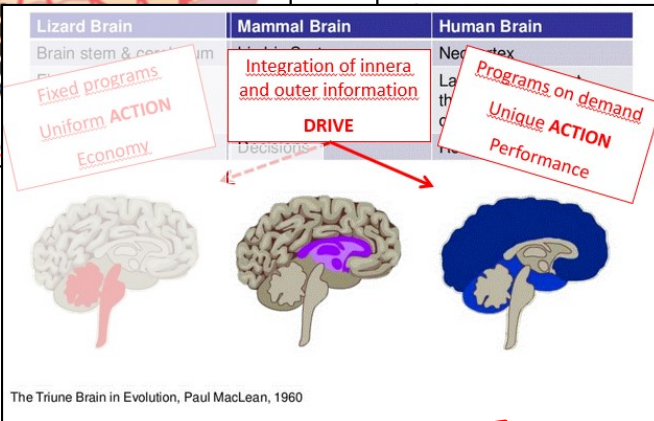
*Analytical functions*

## Frontal association area

- Motor/non-motor planning/organization - strategy - anticipation
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*Executive functions*



The Triune Brain in Evolution, Paul MacLean, 1960

**Analysis  
Categorization**

**Anticipation  
Expectation**

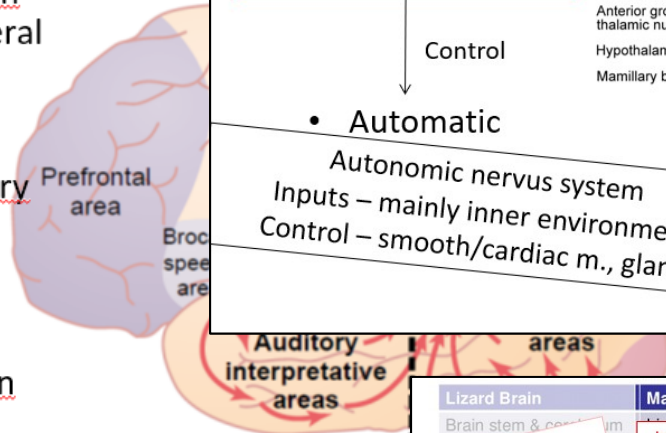
**Drive**

# Comp

# inking

## Parieto-occipito-tempora

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



## Concept of the limbic system

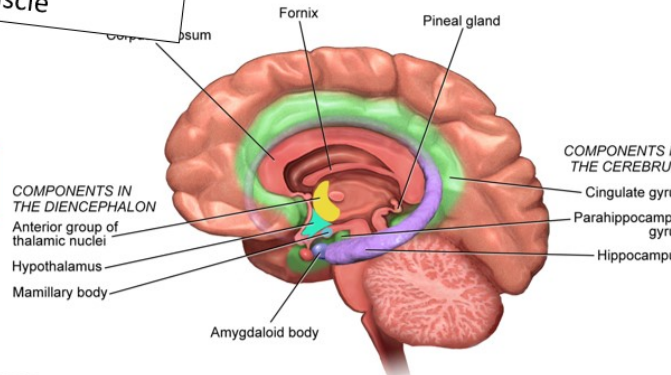
Somatic nervous system  
Inputs – mainly from outer environment  
Control – skeletal muscle

- Voluntary

### Limbic system

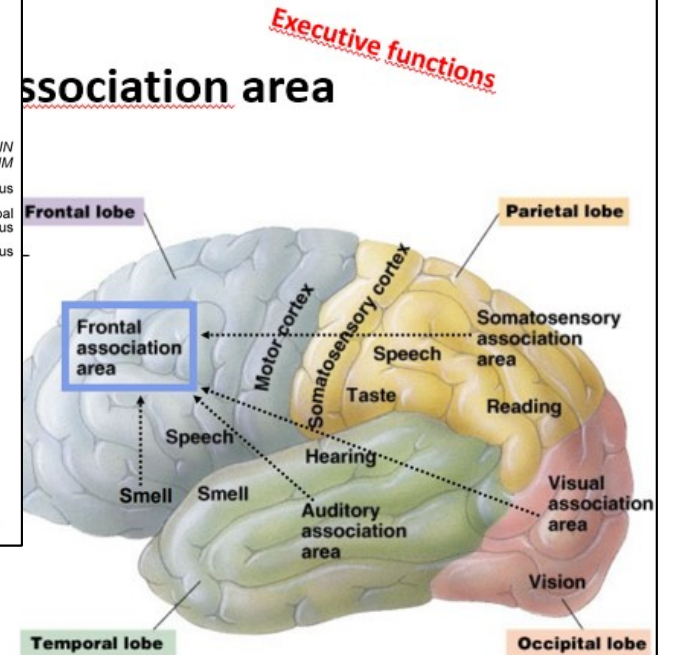
- Automatic

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



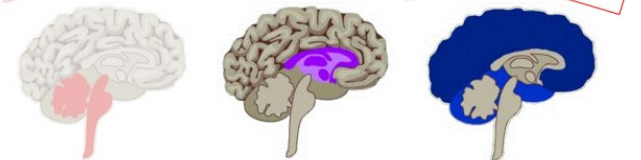
[https://upload.wikimedia.org/wikipedia/commons/d/d1/Blausen\\_0614\\_LimbicSystem.png](https://upload.wikimedia.org/wikipedia/commons/d/d1/Blausen_0614_LimbicSystem.png)

## Association area



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

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



Analysis  
Categorization

Anticipation  
Expectation

Drive

# Limbic system and neocortex

## Instinctive behavior

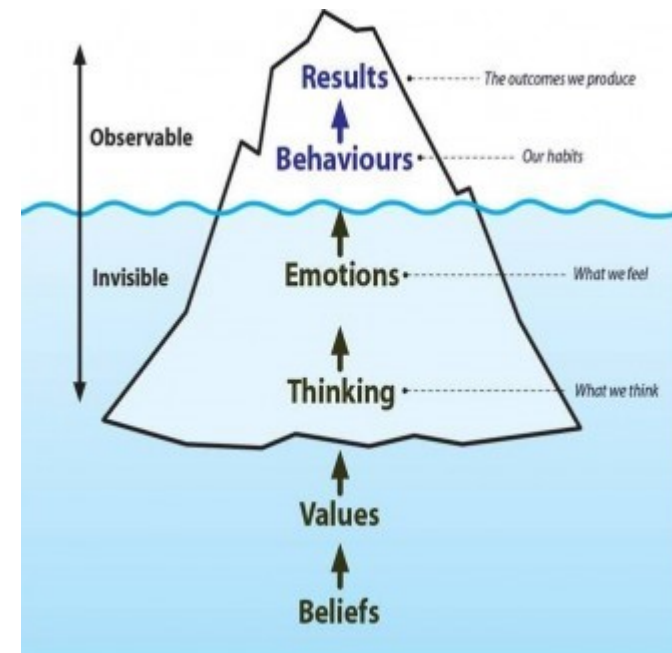
- Limbic system
- ✓ I see a nice thing, so why not to steal it?

## 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

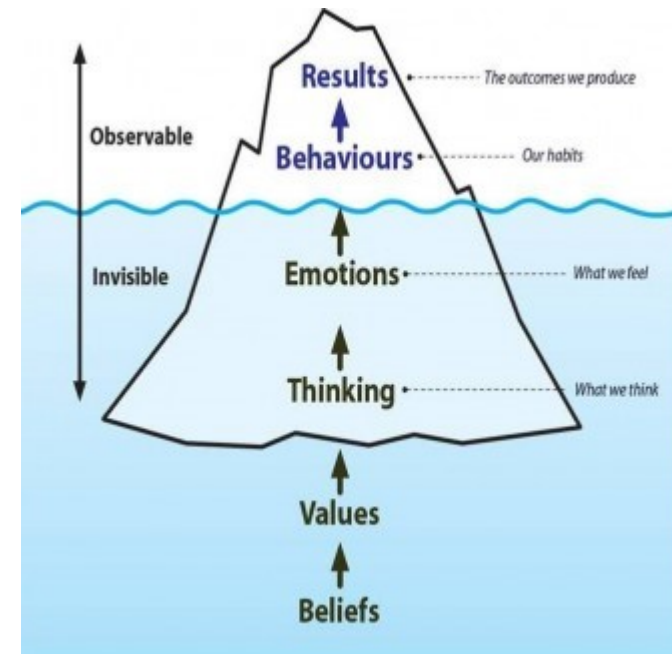
- Limbic system
- ✓ I see a nice thing, so why not to steal it?

## Socially enforced behavior

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

## Moral behavior

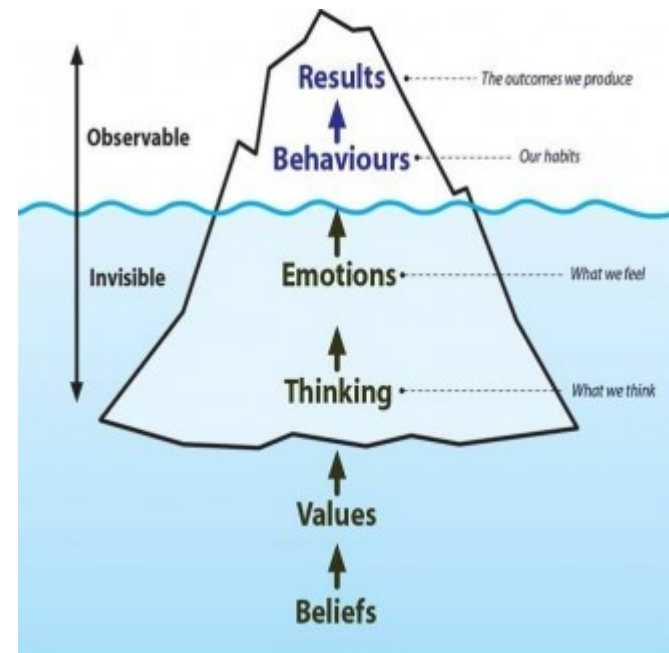
- Legal behavior
- **Moral stance** (Neocortex)
- ✓ Stealing is a bad thing



<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

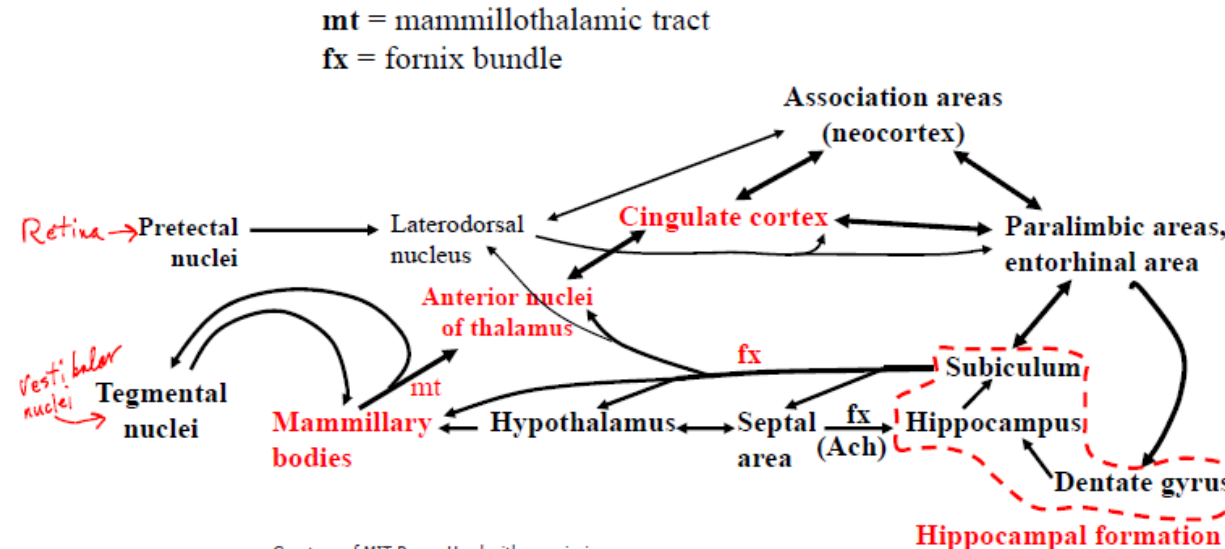
✓ Location oriented  
✓ Explcite

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.

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/drsumilsuthar/neurobiology-of-emotion



Prof. Gerald Schneider

# 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](https://en.wikipedia.org/wiki/Edward_C._Tolman)

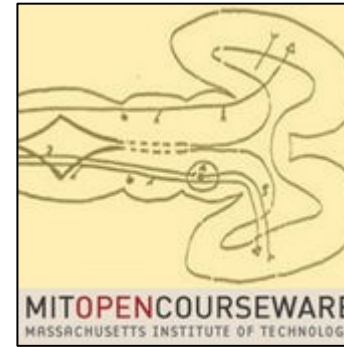
**Anatomical  
correlate?**

Gerald Schneider



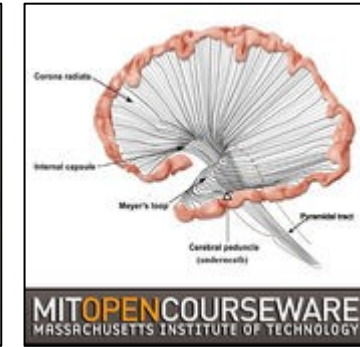
O'Keefe and Nadel  
'70s  
And others

2009

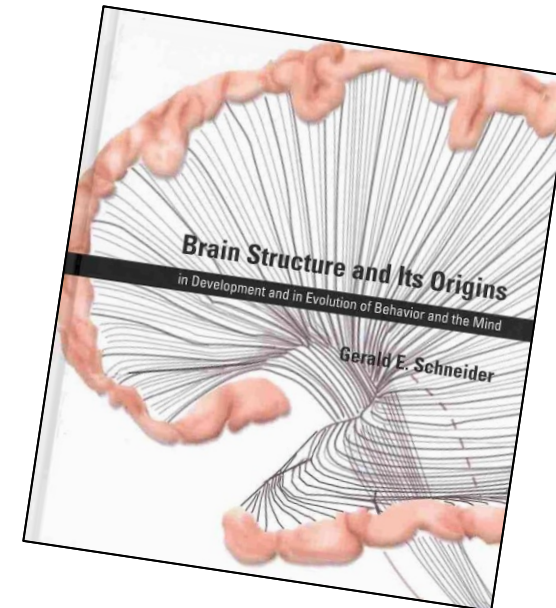


<https://itunes.apple.com/us/podcast/brain-structure-and-its-origins-2009/id385157530?mt=2>

2014



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



2014

# 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

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

Wikipedia

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Wikipedia

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

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Wikipedia

# Cognitive maps

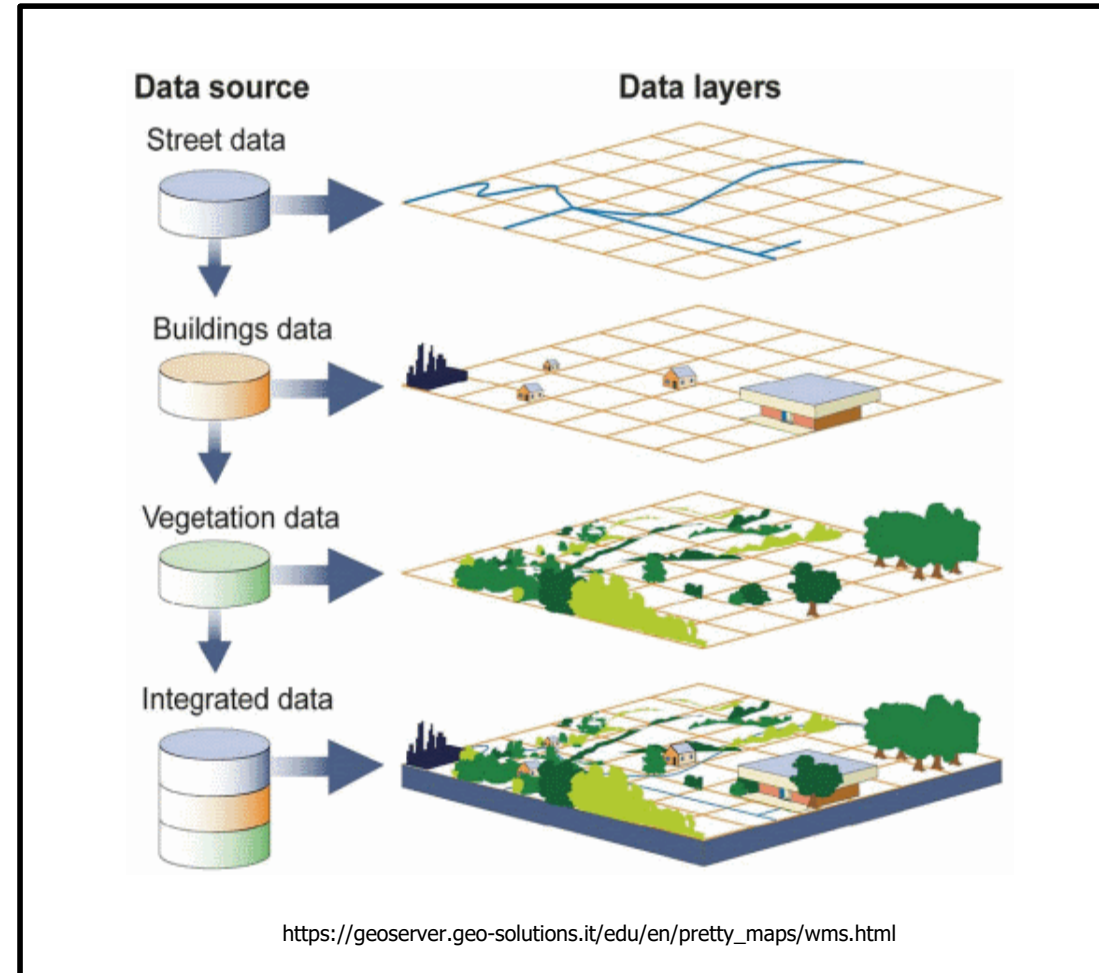
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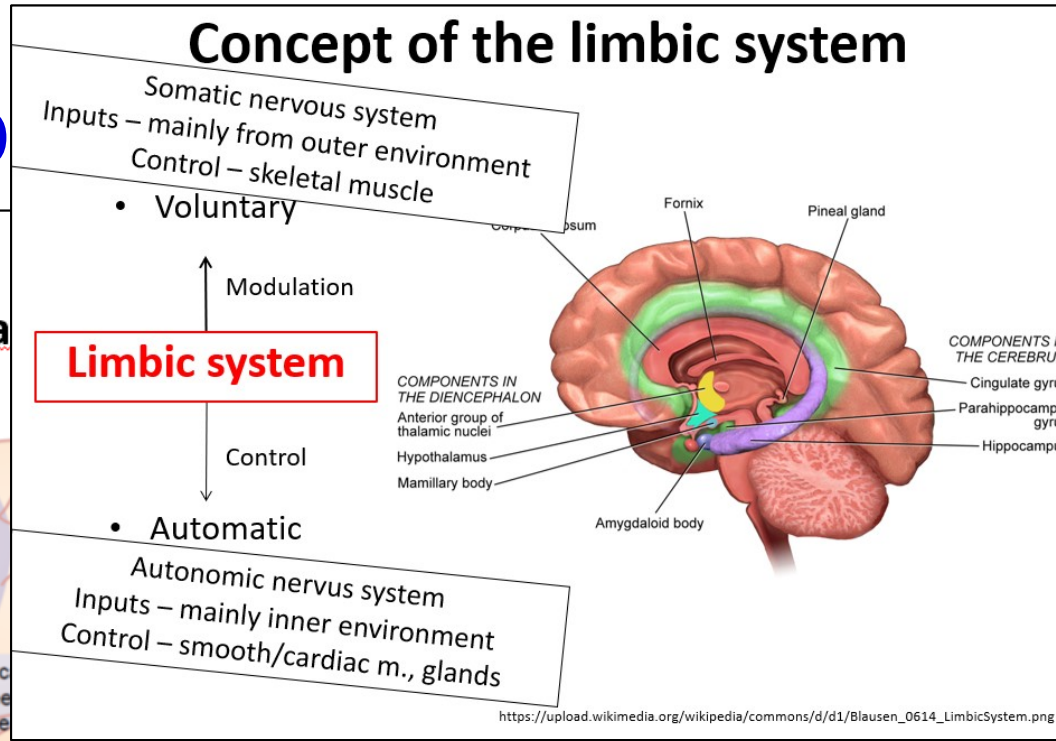
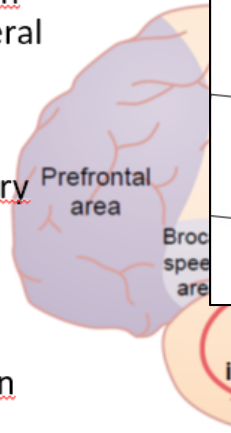


# Comp

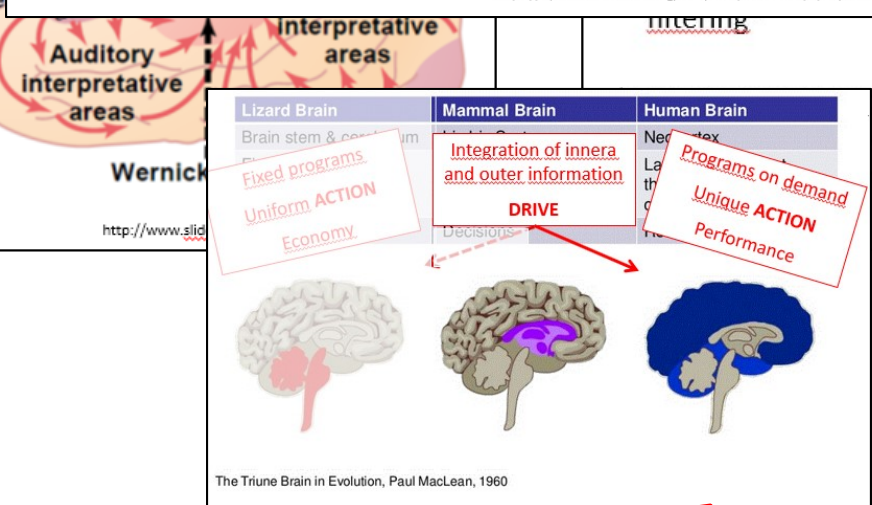
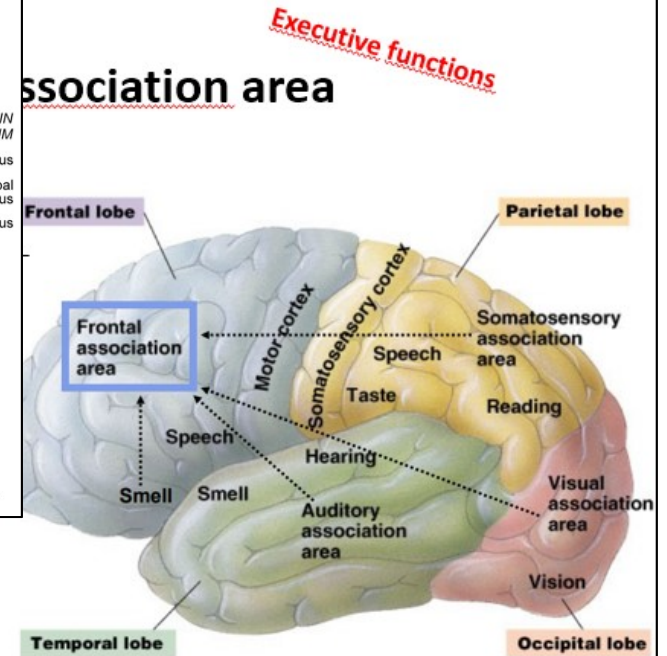
# inking

## Parieto-occipito-tempora

- Linking and interpretation of information from several sensory modalities
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## Association area



**Analysis  
Categorization**

**Anticipation  
Expectation**

**Drive**

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