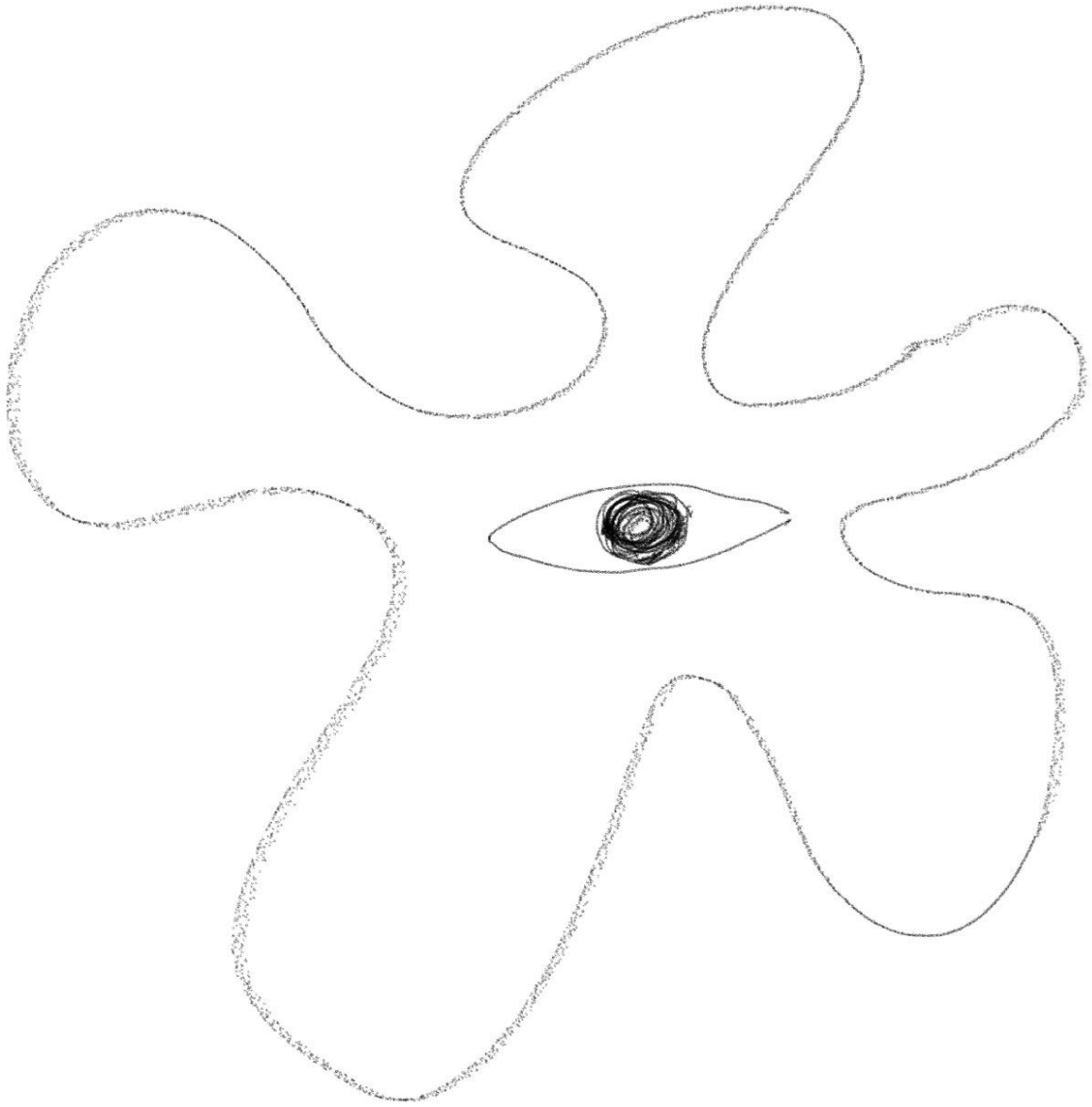
Cognitive Revolution of Buddha

What have we forgotten, and

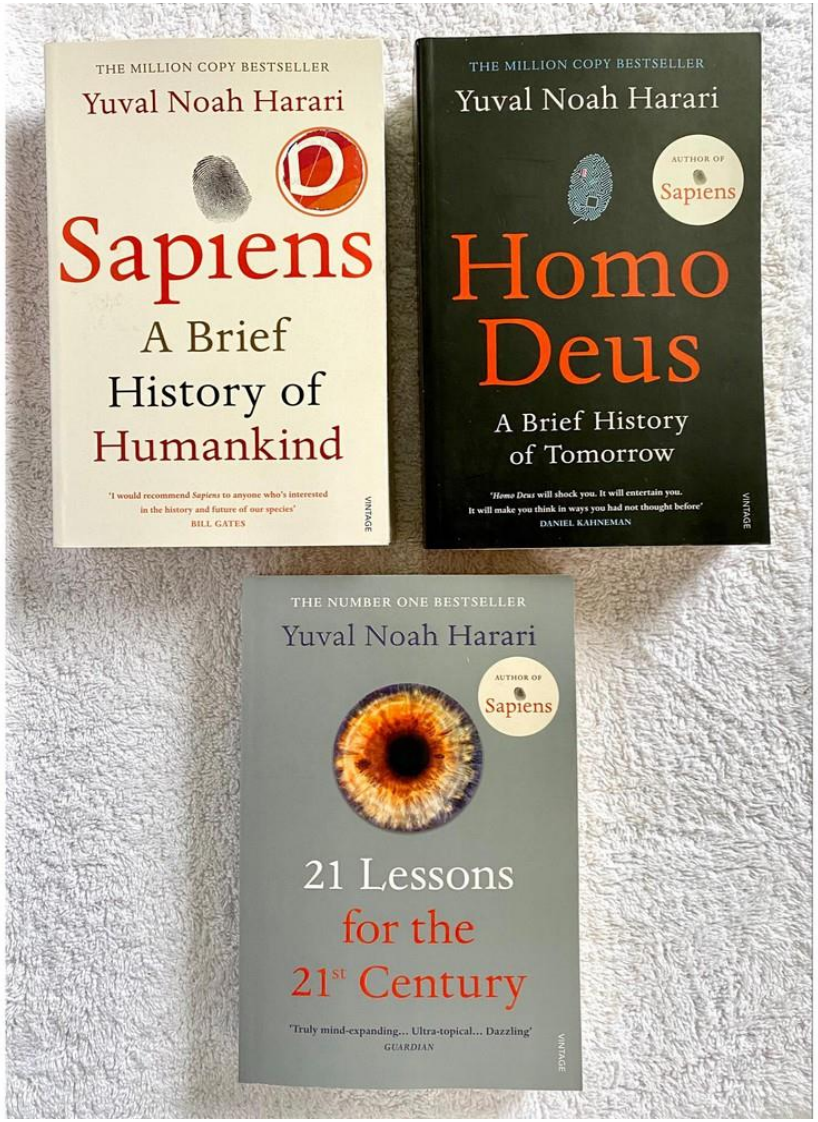
how can we restore it in our life?

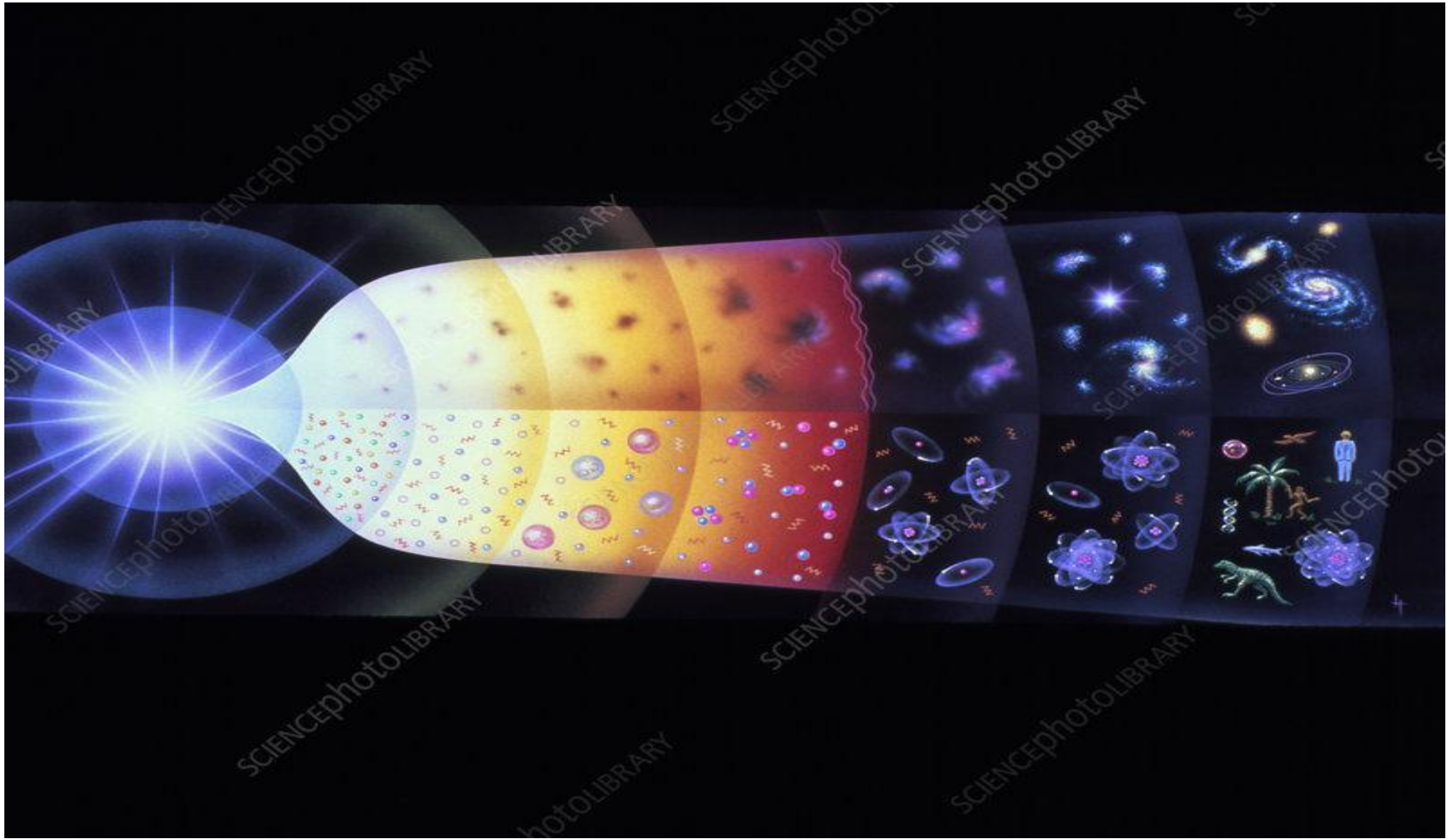
(Dr. PARK, Yonghan,
Korean Academy of
Meditation in Medicine)

Looking back

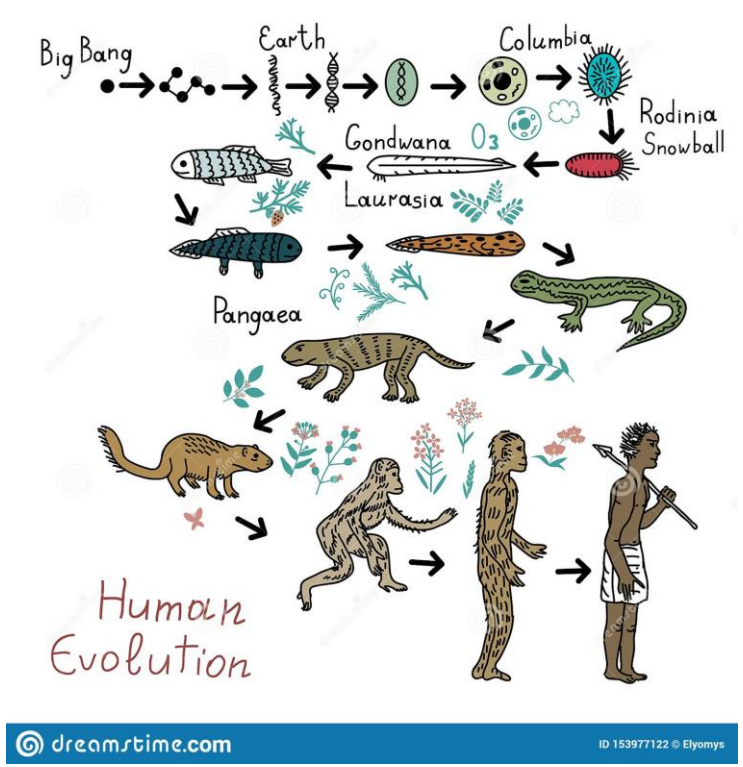


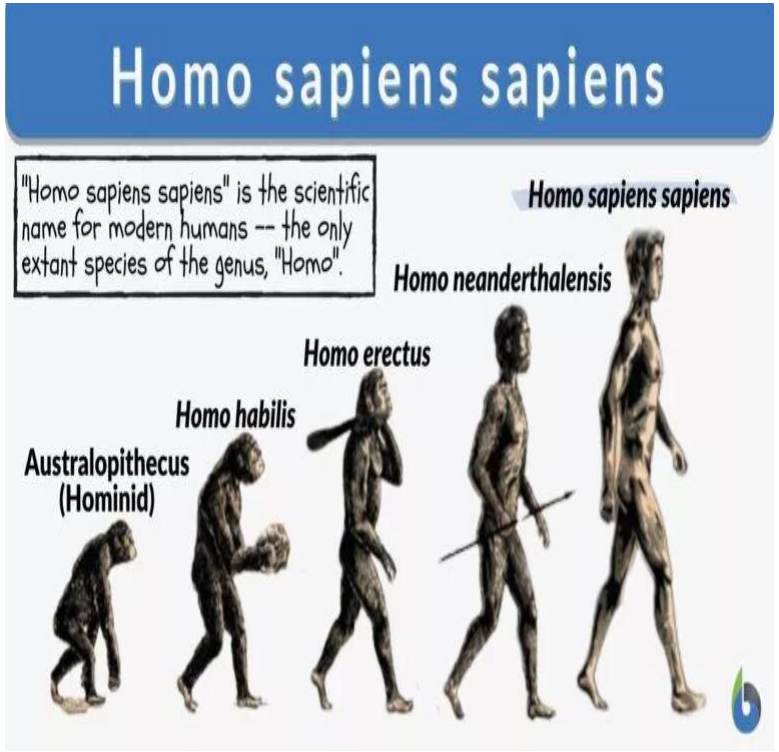
Who am I?

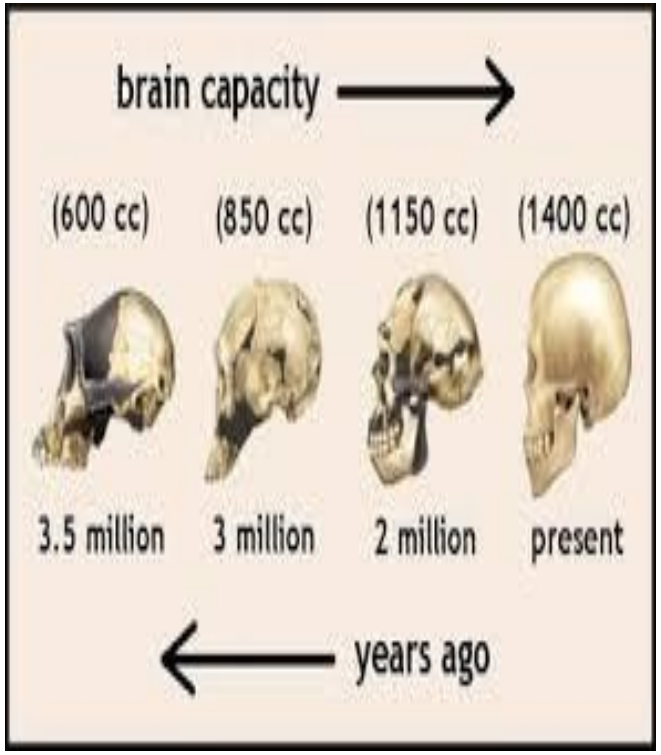

THE MILLION COPY BESTSELLER
Yuval Noah Harari
Sapiens
A Brief History of Humankind
'I would recommend Sapiens to anyone who's interested in the history and future of our species'
BILL GATES
VINTAGE
THE MILLION COPY BESTSELLER
Yuval Noah Harari
AUTHOR OF Sapiens
Homo Deus
A Brief History of Tomorrow
'Homo Deus will shock you. It will entertain you. It will make you think in ways you had not thought before'
DANIEL KAHNEMAN
VINTAGE
THE NUMBER ONE BESTSELLER
Yuval Noah Harari
AUTHOR OF Sapiens
21 Lessons for the 21st Century
'Truly mind-expanding... Ultra-topical... Dazzling'
GUARDIAN
VINTAGE

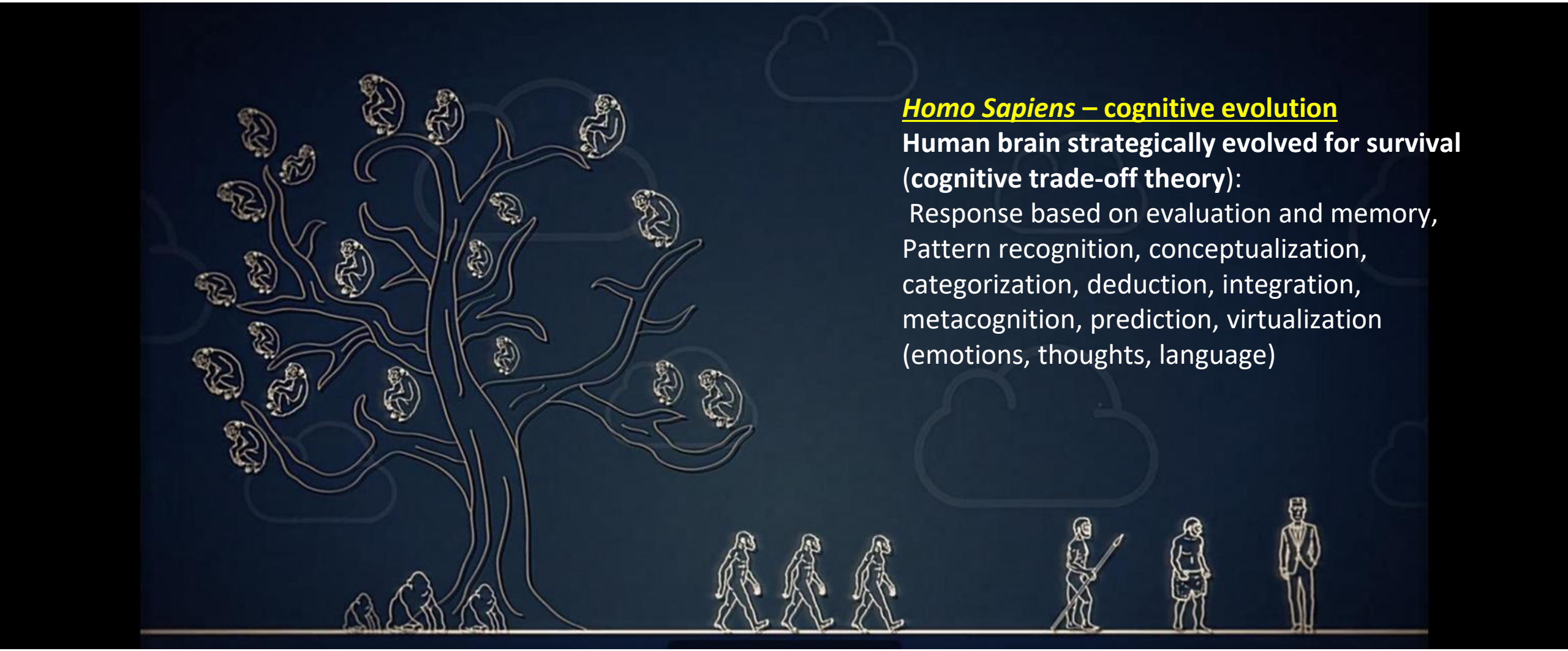


Cognitive revolution





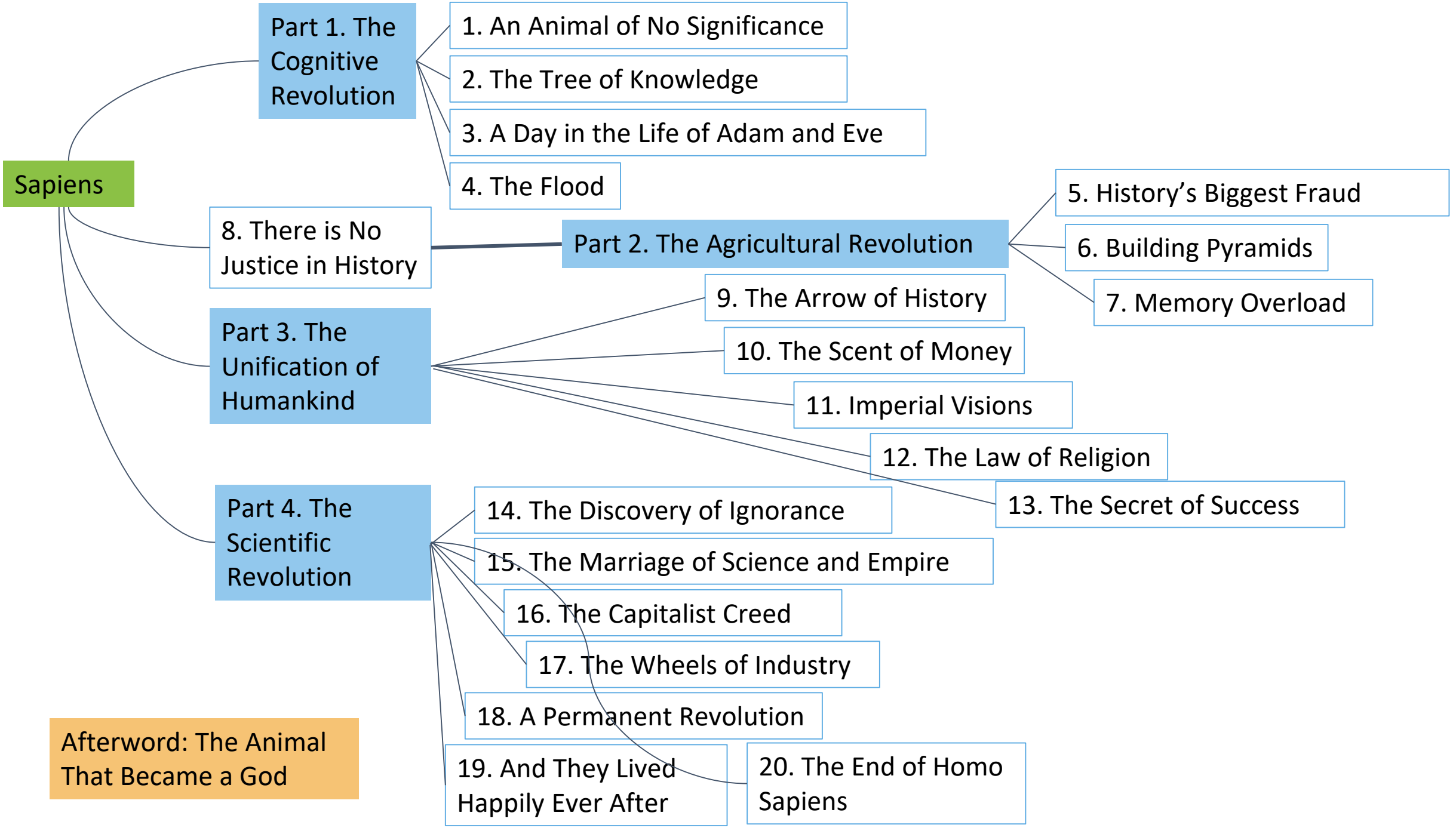


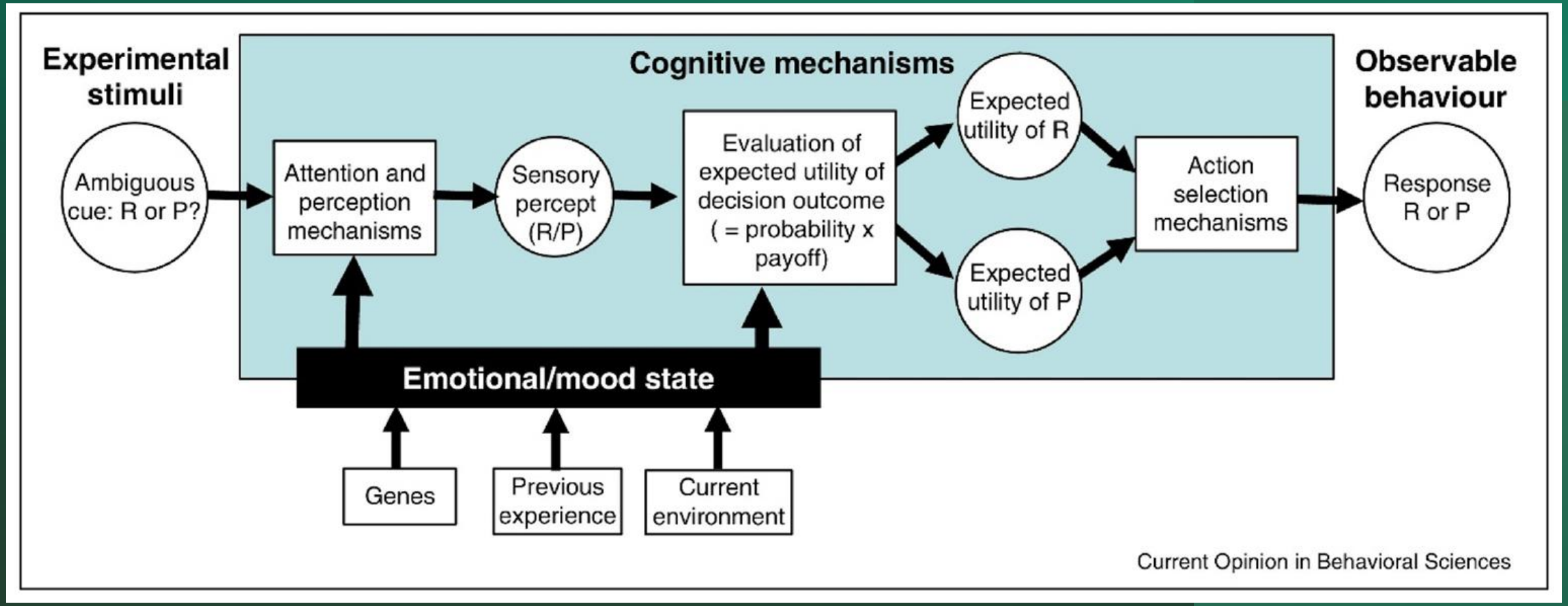


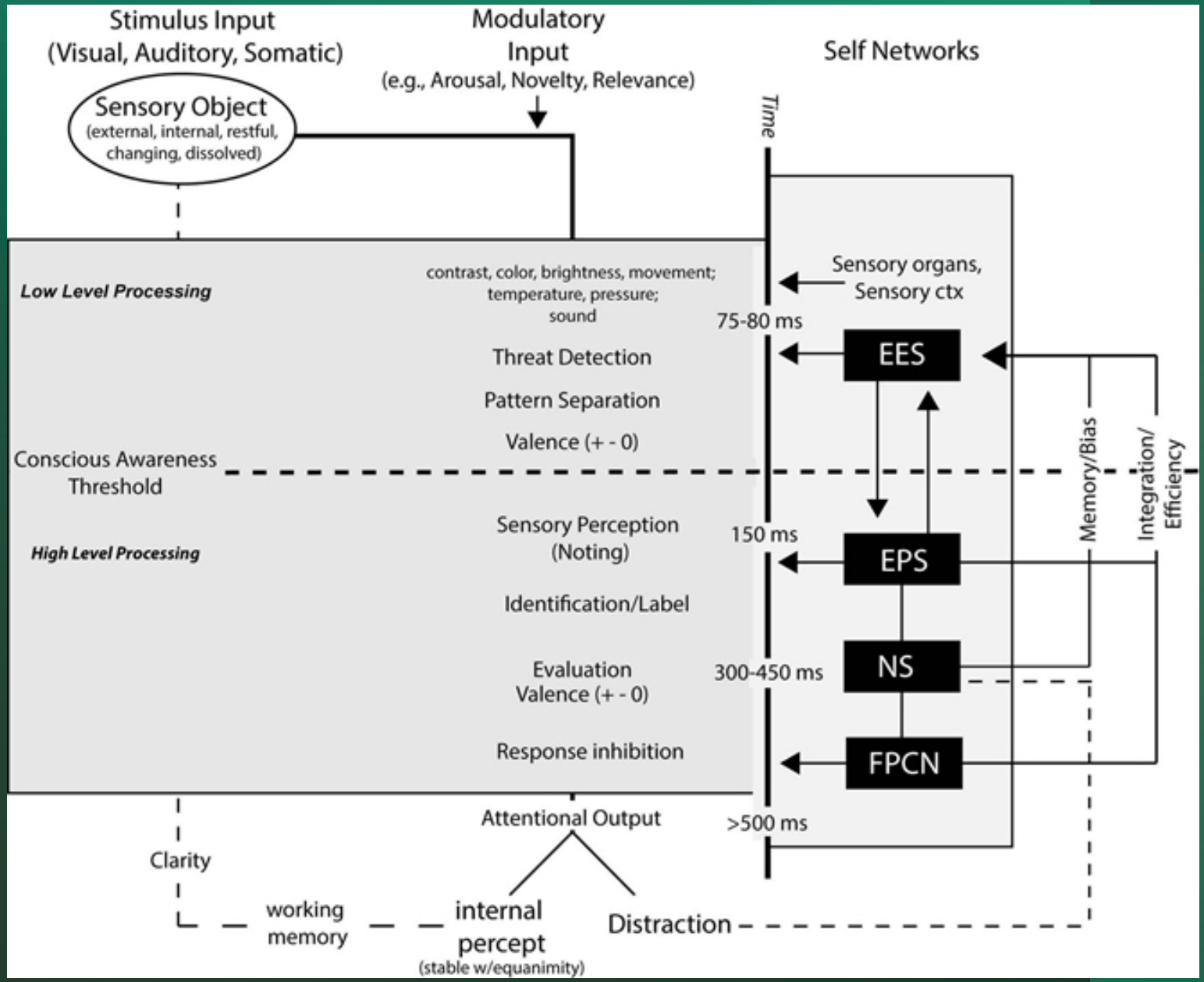
***Homo Sapiens* – cognitive evolution**

Human brain strategically evolved for survival (**cognitive trade-off theory**):

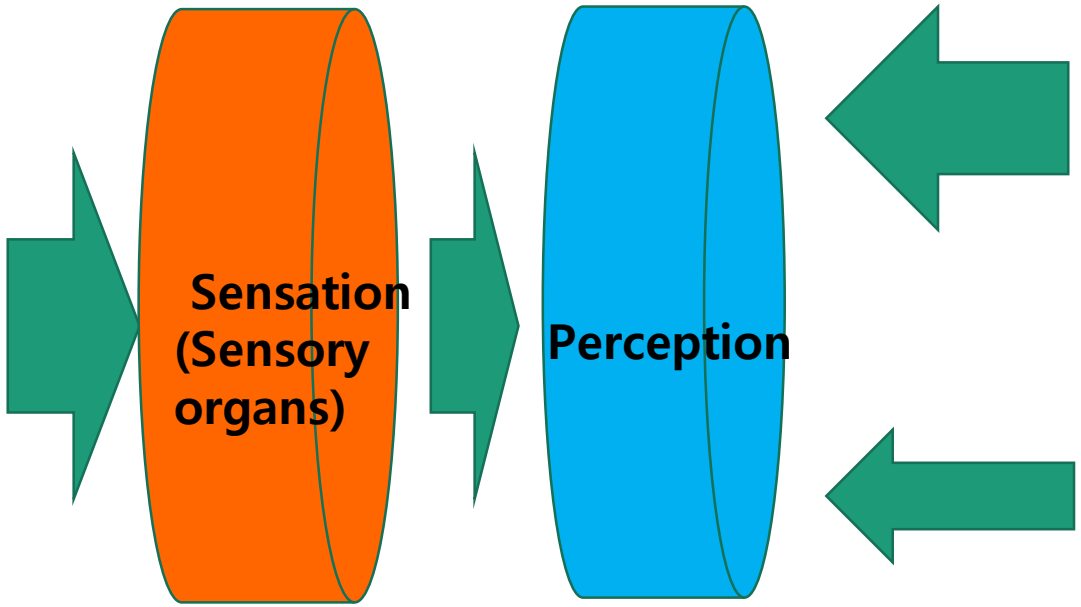
Response based on evaluation and memory, Pattern recognition, conceptualization, categorization, deduction, integration, metacognition, prediction, virtualization (emotions, thoughts, language)


Sapiens
Part 1. The Cognitive Revolution
1. An Animal of No Significance
2. The Tree of Knowledge
3. A Day in the Life of Adam and Eve
4. The Flood
8. There is No Justice in History
Part 2. The Agricultural Revolution
5. History's Biggest Fraud
6. Building Pyramids
7. Memory Overload
Part 3. The Unification of Humankind
9. The Arrow of History
10. The Scent of Money
11. Imperial Visions
12. The Law of Religion
13. The Secret of Success
Part 4. The Scientific Revolution
14. The Discovery of Ignorance
15. The Marriage of Science and Empire
16. The Capitalist Creed
17. The Wheels of Industry
18. A Permanent Revolution
19. And They Lived Happily Ever After
20. The End of Homo Sapiens
Afterword: The Animal That Became a God


Experimental stimuli
Cognitive mechanisms
Observable behaviour
Ambiguous cue: R or P?
Attention and perception mechanisms
Sensory percept (R/P)
Evaluation of expected utility of decision outcome (= probability x payoff)
Expected utility of R
Expected utility of P
Action selection mechanisms
Response R or P
Emotional/mood state
Genes
Previous experience
Current environment
Current Opinion in Behavioral Sciences


Stimulus Input
(Visual, Auditory, Somatic)
Modulatory
Input
(e.g., Arousal, Novelty, Relevance)
Self Networks
Sensory Object
(external, internal, restful,
changing, dissolved)
Time
Low Level Processing
contrast, color, brightness, movement;
temperature, pressure;
sound
Sensory organs,
Sensory ctx
75-80 ms
Threat Detection
EES
Pattern Separation
Valence (+ - 0)
Conscious Awareness
Threshold
Memory/Bias
Integration/
Efficiency
Sensory Perception
(Noting)
150 ms
High Level Processing
EPS
Identification/Label
Evaluation
Valence (+ - 0)
300-450 ms
NS
Response inhibition
FPCN
Attentional Output
>500 ms
Clarity
working
memory
internal
percept
(stable w/equanimity)
Distraction

General Cognitive Process



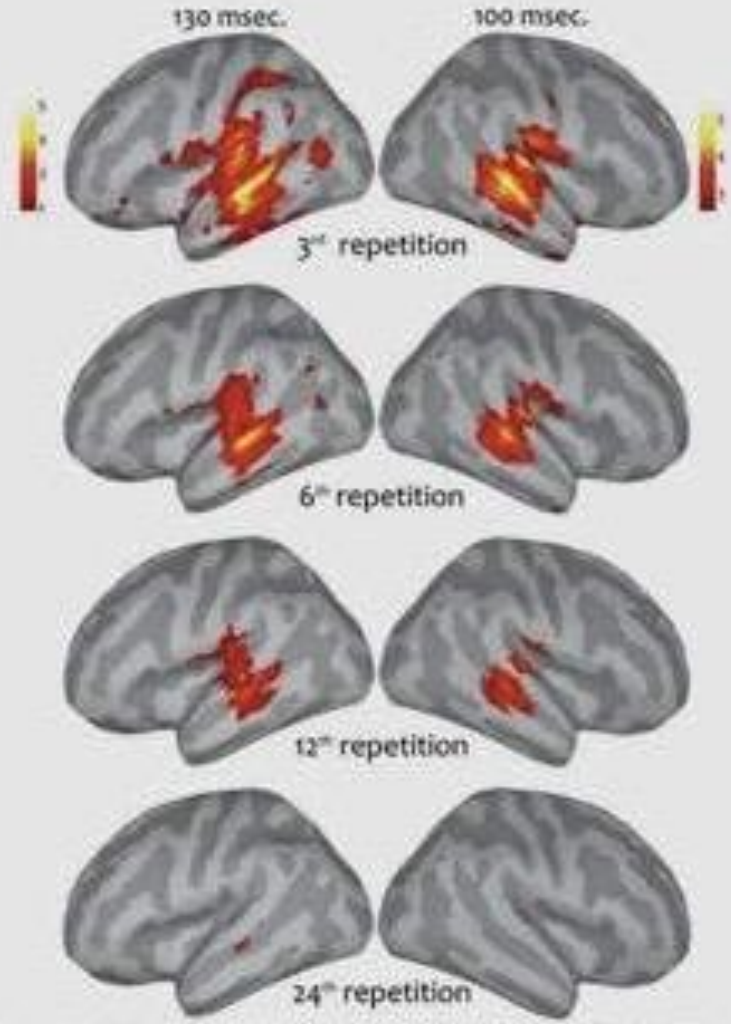
Propositional working memory

- Concept, symbol, value, categorization
- **Evolved for survival, compared to the long-term memory**
- **Conceptualized "sense of self"**
- Separate from sensation; virtual, interpretation, prediction
- **Future/past oriented**, ruminate, travel to fixed thoughts, discontent, suffering, VR, matrix, DMN
- Doing mode

Implicative working memory

- Focus on the experience and circumstances vs. analysis
- Intuitive, aligned with nature
- Aligned with sensory perceptions
- **Related to the experience of here and now**
- Being mode

John Teasdale, 2012

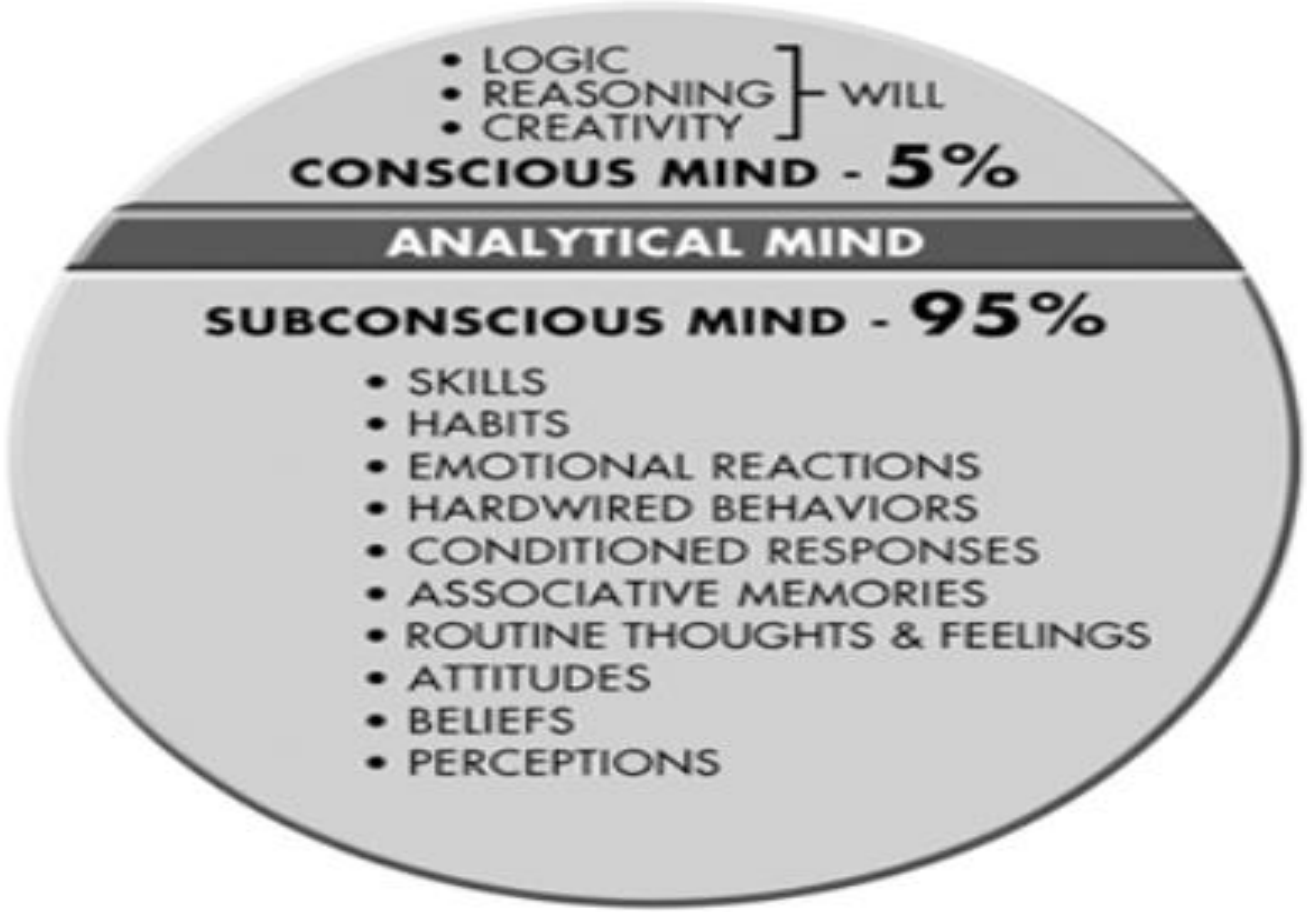


MEG-derived (dSPM) brain sources at the time-interval of the N1m component at 130 msec. (left hemisphere) and 100 msec. (right hemisphere). Neural activity located in auditory areas shows a suppression of activity when the same stimulus is repeatedly presented (3rd, 6th, 12th, and 24th).

Repetition suppression in action.[2]

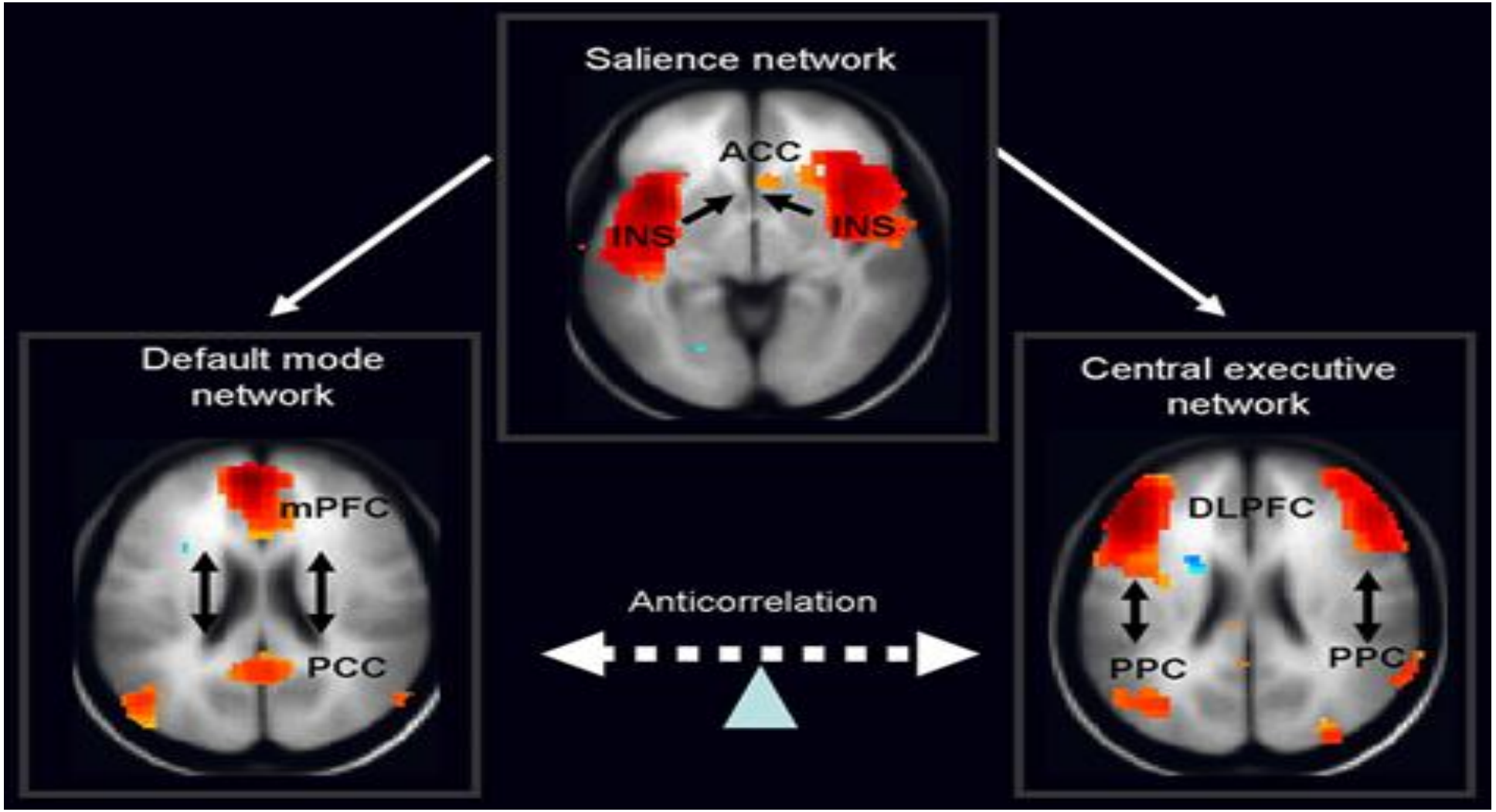
THE MIND

FIGURE 6.4



This is an overview of the conscious mind, the analytical mind, and the subconscious mind.

Triple network model




REUTERS


天道
人間道
餓鬼道
畜生道
修羅道
地獄道

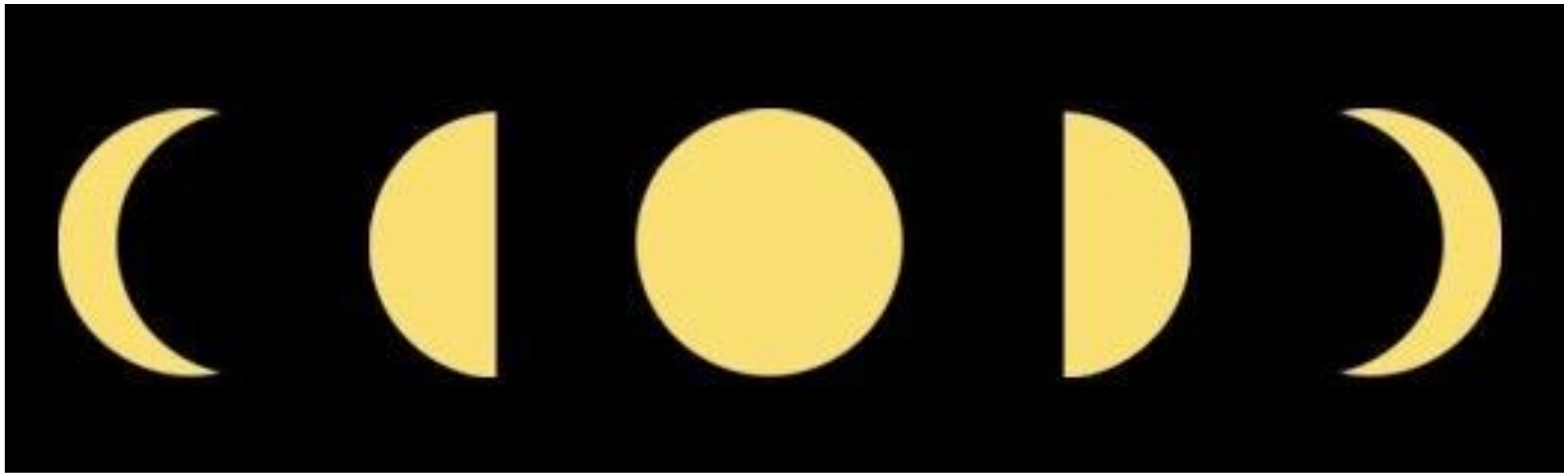
明鏡之水

一魚濁水

A single fish can muddy the water.

Suffering

- **Psychological pain**, the second arrow (simulation to solve problem)
- Cognitive fusion, overgeneralization, fixation, auto-prediction and interpretation,
- **The root cause: attachment** – ignorant of impermanence, no-self and suffering- ignorant of one's own cognitive process
- **Imbalance between propositional/implicative working memories** – present < past, future (presence<matrix), Being mode < Doing mode , sensory perceptions < desire, emotion, thoughts
- Virtual reality, matrix, augmented reality
- Four Noble Truth



1 2 3 4 5

Self-portrait

Why is it difficult to know oneself?

- **Blind spots: cognitive fusion, identification, centration**
- **Self conformity : defense mechanism, belief, faith, temperament, culture**
- **Nature of self: conditioned arising, inter-dependent, complex system**
- **Reaction to the object: external > internal (limitations of simultaneous attention)**
- **Living on auto-pilot**
- **Need to have intuition and insight based on keen observation and full experiences, rather than thinking.**
- **Specific training and education**

Metacognition

- Mental process of observing, discovering, regulating and evaluating one's own cognition
- Cognition about cognition
- Conscious of others' conscious process
- Higher level cognition
- Integrating; insight into the whole

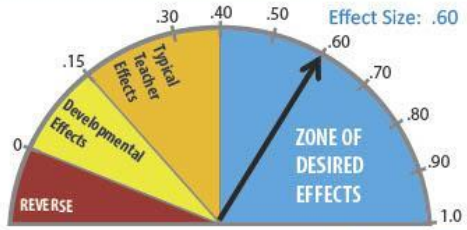
Metacognition

What is Metacognition?

- Awareness of one's own actions and their effects
- Posing internal questions to find information and meaning
- Developing mental maps, pictures, or plans
- Monitoring plans throughout a process and revising plans when they do not work
- Self-evaluating a completed plan

(Costa, 2008)

The Research



(Hattie, 2017)

When students are metacognitive they understand...

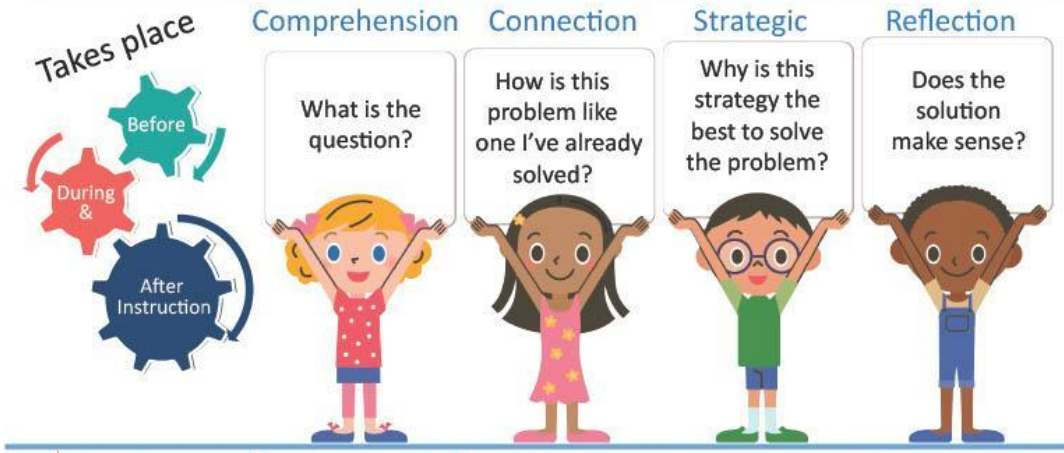
(Nokes & Dole, 2004)

Impact of Metacognition

- Facilitates active rather than passive learners
- Gives students a greater awareness of their learning
- Promotes "deep learning"
- Makes students aware of their own thinking

(McElwee, 2009)

Four Types of Self-Addressed Metacognitive Questions

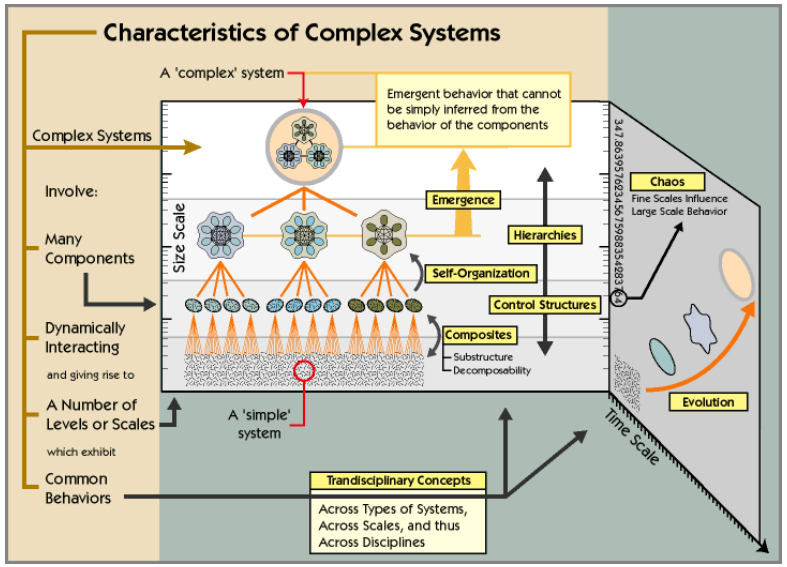


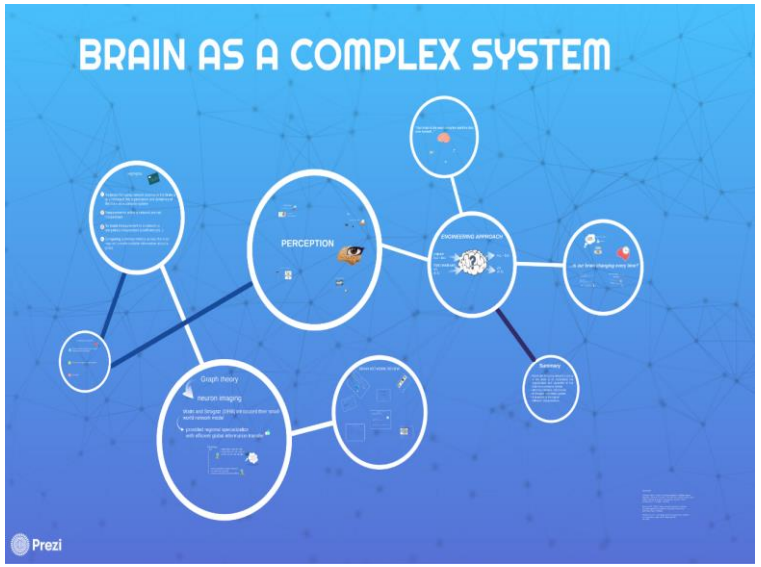
Missouri Department of Elementary & Secondary Education
MO EDU-SAIL Educational Systems and Instruction for Learning
Effective teaching and learning for ALL students
Missouri Model Districts (MMD)/District Continuous Improvement (DCI)
NAU Northern Arizona University Institute for Human Development

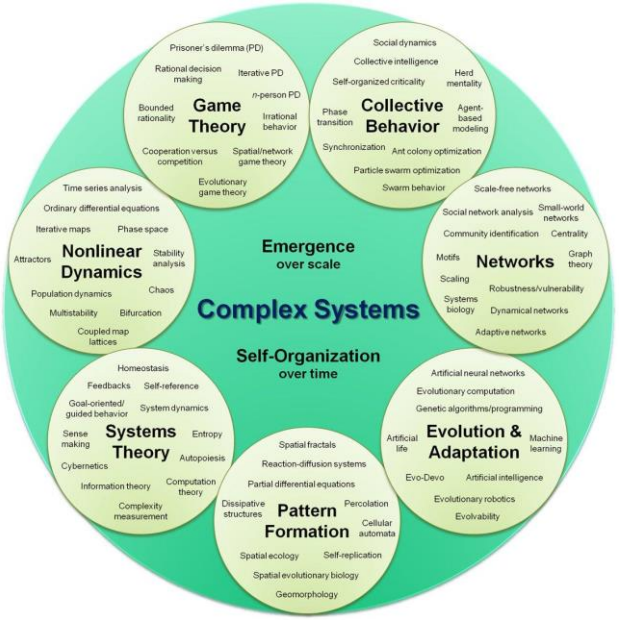
The contents of this presentation were developed under a grant from the US Department of Education to the Missouri Department of Elementary and Secondary Education (#H323A120018, #H323A170020). However, these contents do not necessarily represent the policy of the US Department of Education, and you should not assume endorsement by the Federal Government.

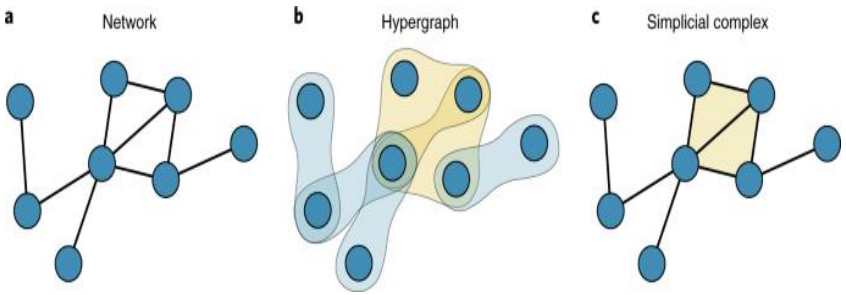
Complex system

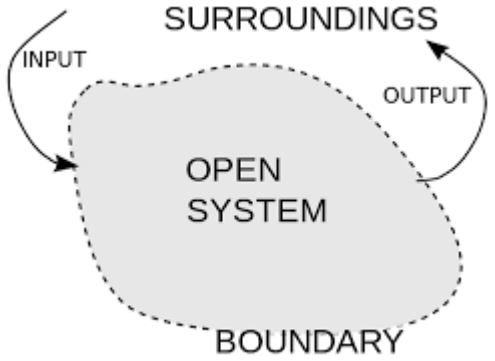
- A system composed of many components which may interact with each other and be on feedback loops whose collective behaviors are intrinsically distinctive from their constituent parts and the individual interactions between them.
- Must be addressed as whole, not the sum of its parts.
- Conducive to emergence


Characteristics of Complex Systems
A 'complex' system
Emergent behavior that cannot be simply inferred from the behavior of the components
Complex Systems
Involve:
Many Components
Dynamically Interacting
and giving rise to
A Number of Levels or Scales
which exhibit
Common Behaviors
Emergence
Hierarchies
Self-Organization
Control Structures
Composites
Substructure
Decomposability
Size Scale
A 'simple' system
Chaos
Fine Scales Influence Large Scale Behavior
Evolution
Time Scale
Tradisciplinary Concepts
Across Types of Systems, Across Scales, and thus Across Disciplines


BRAIN AS A COMPLEX SYSTEM
PERCEPTION
Prezi

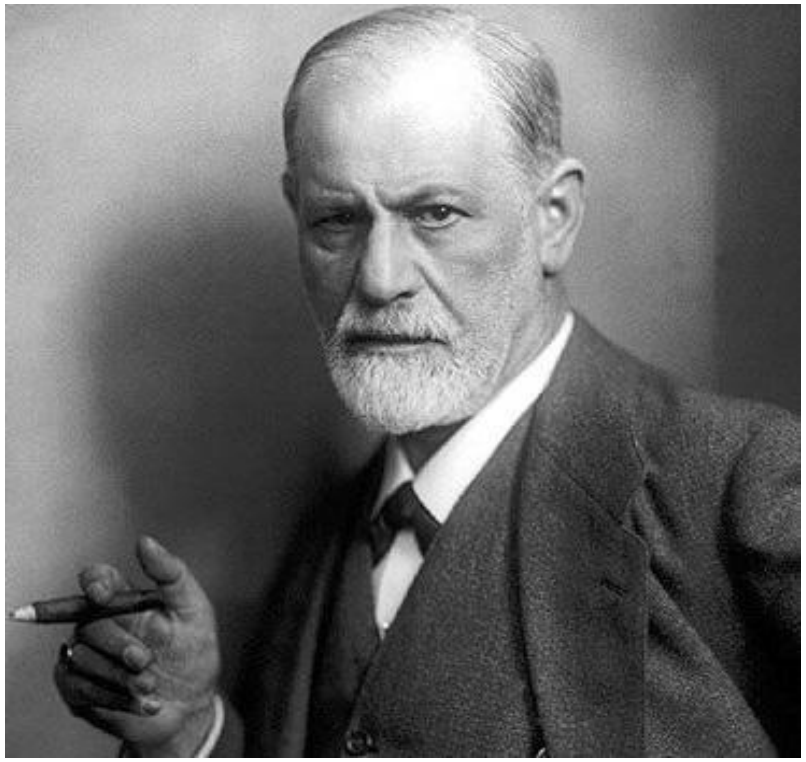

Game Theory
Collective Behavior
Nonlinear Dynamics
Networks
Complex Systems
Emergence over scale
Self-Organization over time
Systems Theory
Evolution & Adaptation
Pattern Formation


a
Network
b
Hypergraph
c
Simplicial complex


SURROUNDINGS
INPUT
OUTPUT
OPEN SYSTEM
BOUNDARY

Observer of self

Freud



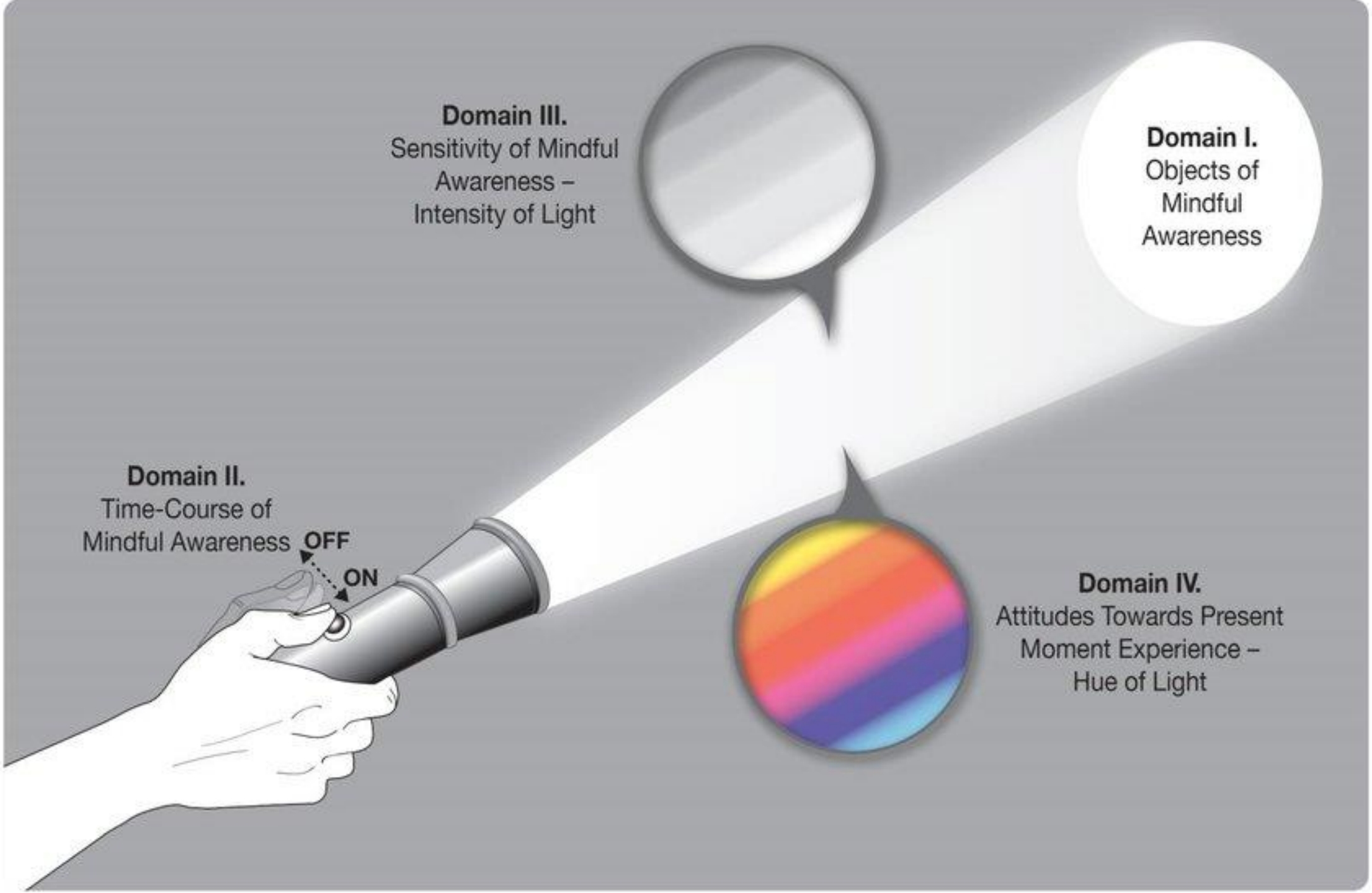
Buddha

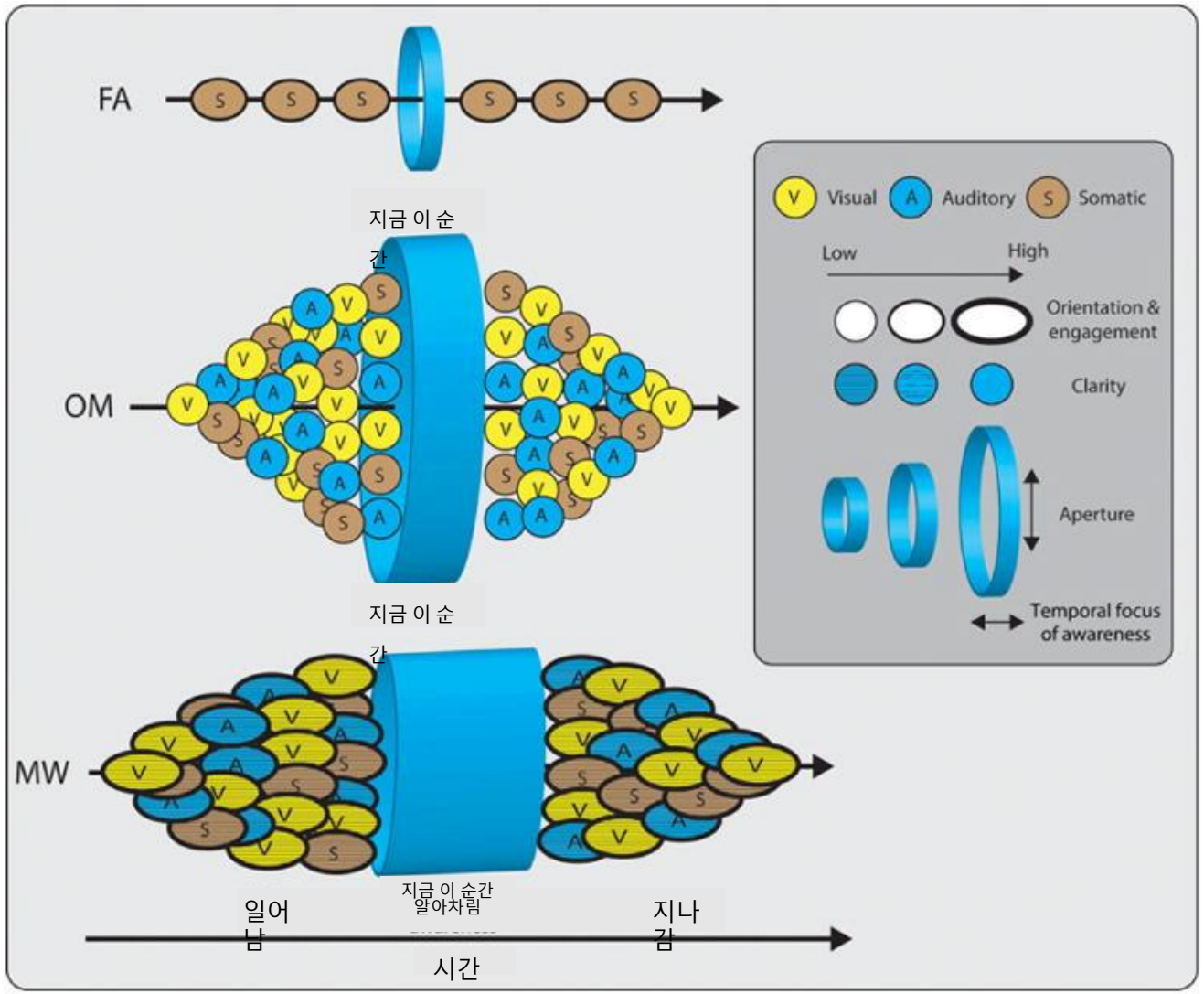
Stop, Then Can See

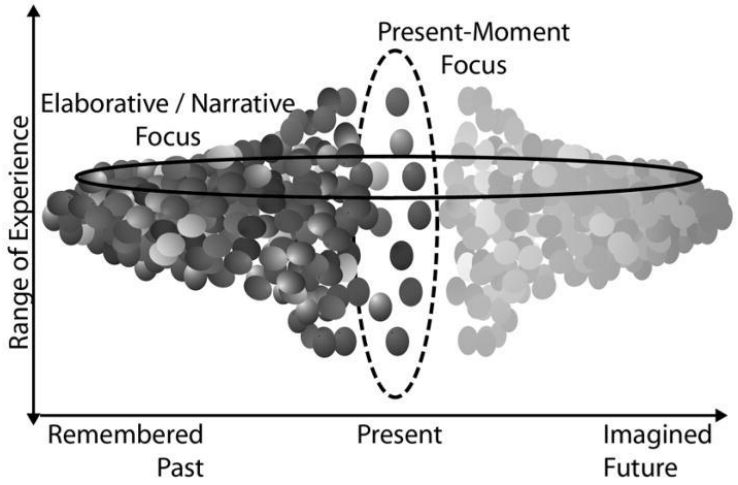
Mindfulness

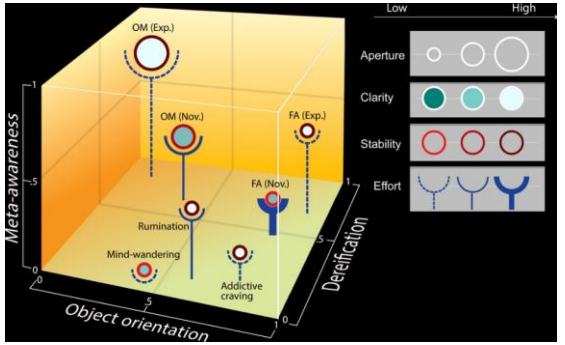
- **Originated from the ancient pali word SATI**
- Paying attention to what is happening here and now.
- meta-attention, meta-awareness

- By cultivating of mindfulness, the mind is deliberately kept at the level of ***bare attention***, *a* ***detached observation*** *of what is happening within us and around us* ***in the present moment (비판단적 순수주의,직접 경험)***


Domain III.
Sensitivity of Mindful Awareness – Intensity of Light
Domain I.
Objects of Mindful Awareness
Domain II.
Time-Course of Mindful Awareness
OFF
ON
Domain IV.
Attitudes Towards Present Moment Experience – Hue of Light

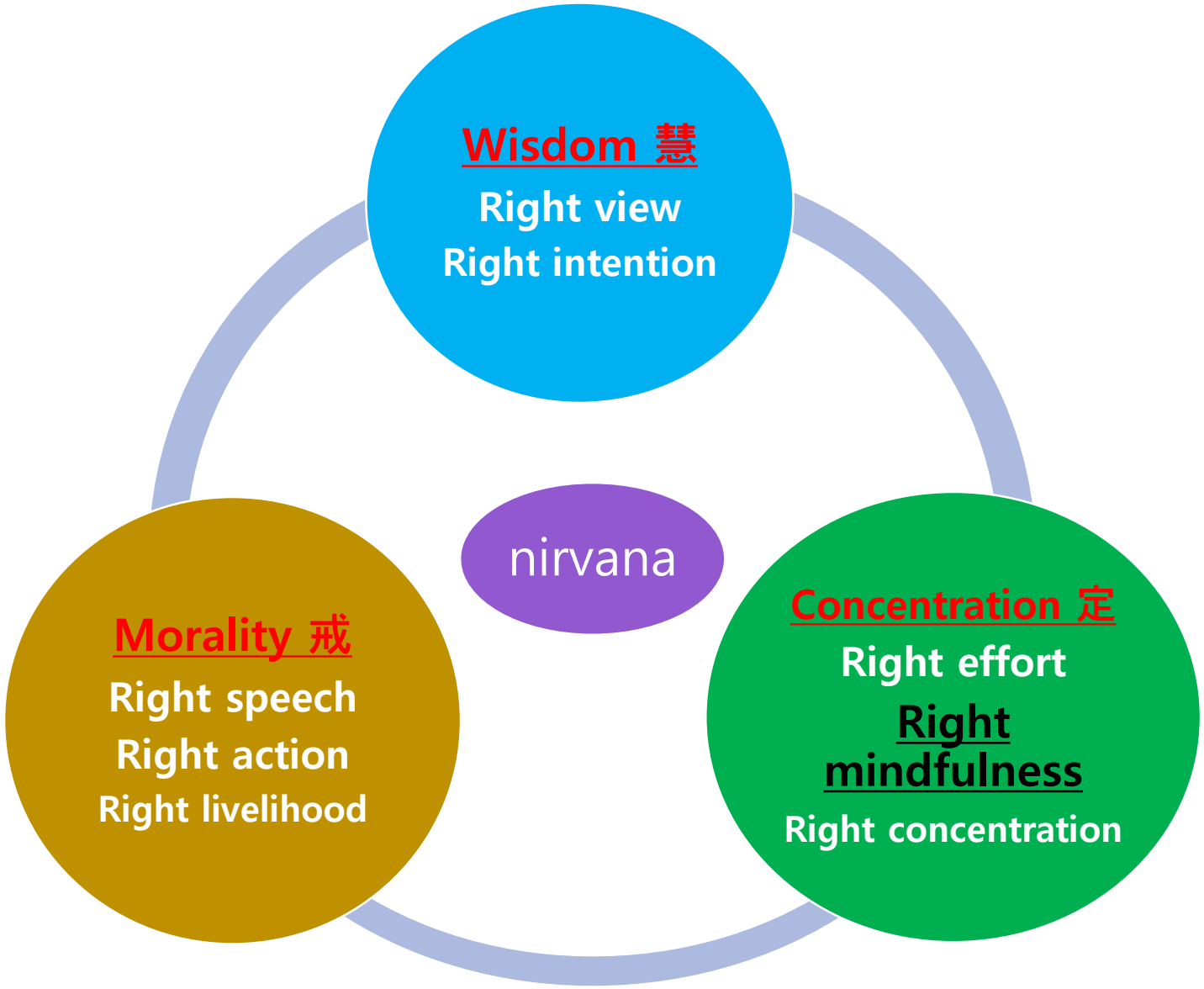

FA
지금 이 순간
OM
지금 이 순간
MW
지금 이 순간
알아차림
일어남
지나감
시간
V Visual
A Auditory
S Somatic
Low
High
Orientation & engagement
Clarity
Aperture
Temporal focus of awareness


Present-Moment Focus
Elaborative / Narrative Focus
Range of Experience
Remembered Past
Present
Imagined Future


Low
High
OM (Exp.)
OM (Nov.)
FA (Exp.)
FA (Nov.)
Rumination
Mind-wandering
Addictive craving
Meta-awareness
Object orientation
Dereification
Aperture
Clarity
Stability
Effort

The Noble Eightfold Path (八正道)

(Threefold training/ 三學 /戒,定,慧)



The Noble Eightfold Path (八正道)
(Threefold training 三學)

1. WISDOM

1) Right view (正見) : **4 Noble Truth**

2) Right intention (正思惟) : Cultivate the right intention in mind so that aversion, greed or the intent to harm others would not arise.

2. MORALITY

3) Right speech (正言): No lie, slander, hurtful speech, gossip

4) Right action(正業) : No killing, theft, sexual misconduct

5) Right livelihood(正命): A way of making a living that does no harm to others

3. CONCENTRATION

6) Right effort(正精進) : unwholesome⬇, wholesome⬆

7) Right mindfulness (正念) : **4 Bases of mindfulness**

8) Right concentration (正定) : 4 *dhyanas*

SEP (SATI-POWER ENHANCEMENT PROGRAM)

- **SEP – CORE**
  1. Sitting SEP
  2. Walking SEP

대한명상의학회
Korean Academy of Meditation in Medicine

- **SEP - EXTENSION**
  1. Self-awareness with loving
  2. Compassion meditation
  3. Mindful-relation exercise
  4. Daily mindfulness exercise
  5. Connecting five senses to heart

SATI PRACTICE

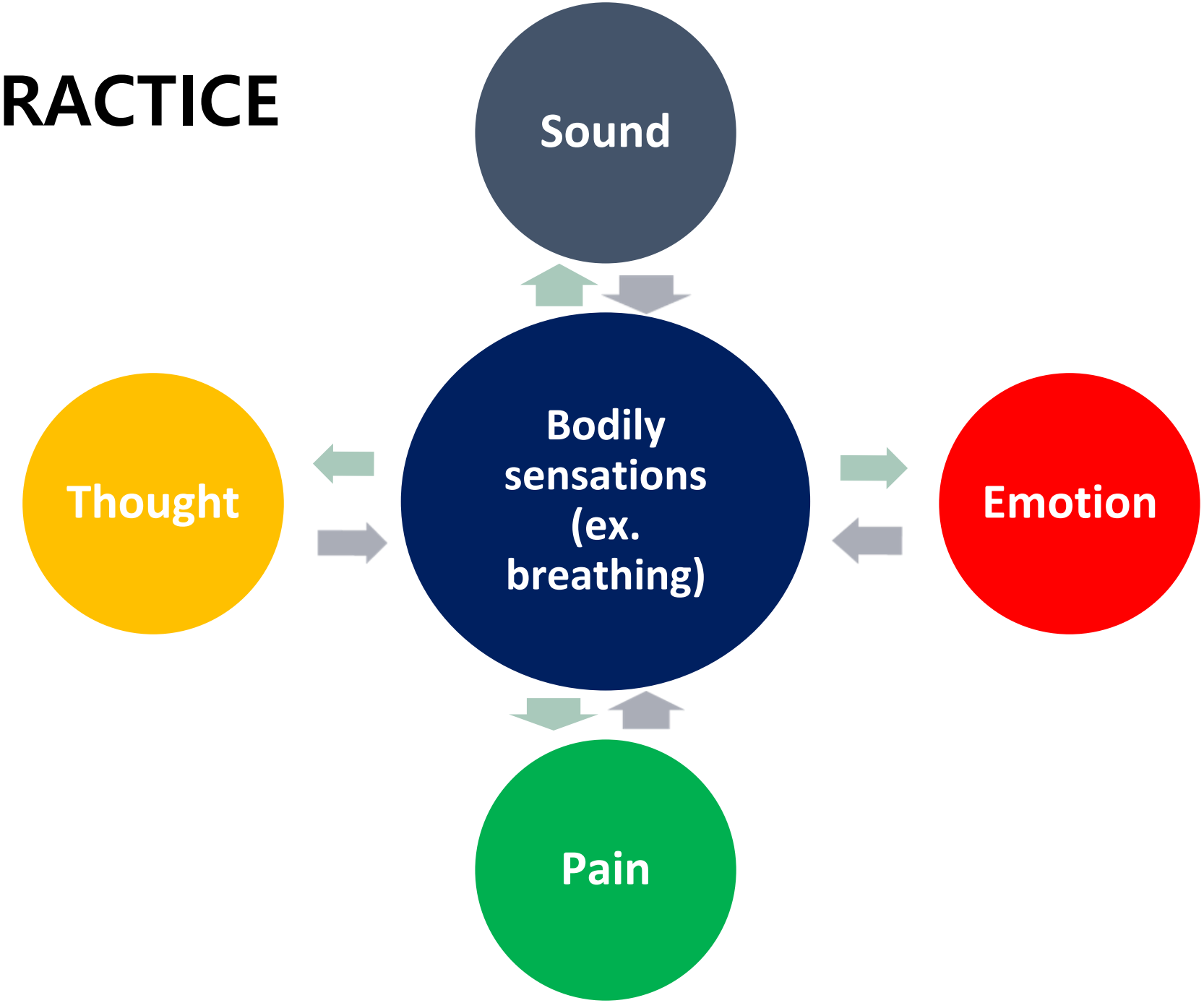
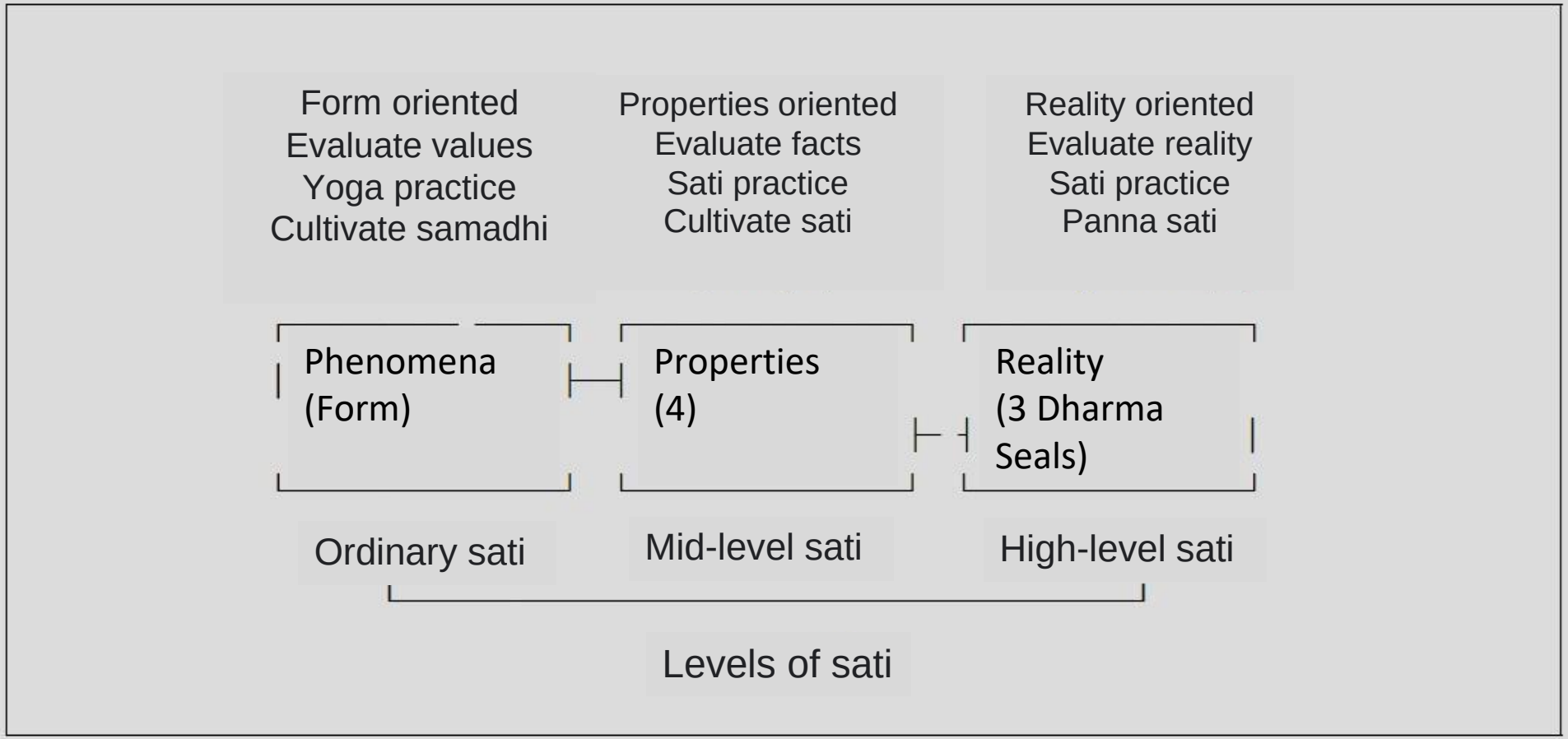


Table. Levels of Sati



1st STEP

- Left foot
- Right foot

2nd STEP

- Lift
- Put down

3rd STEP

- Lift
- Forward
- Put down

6th STEP

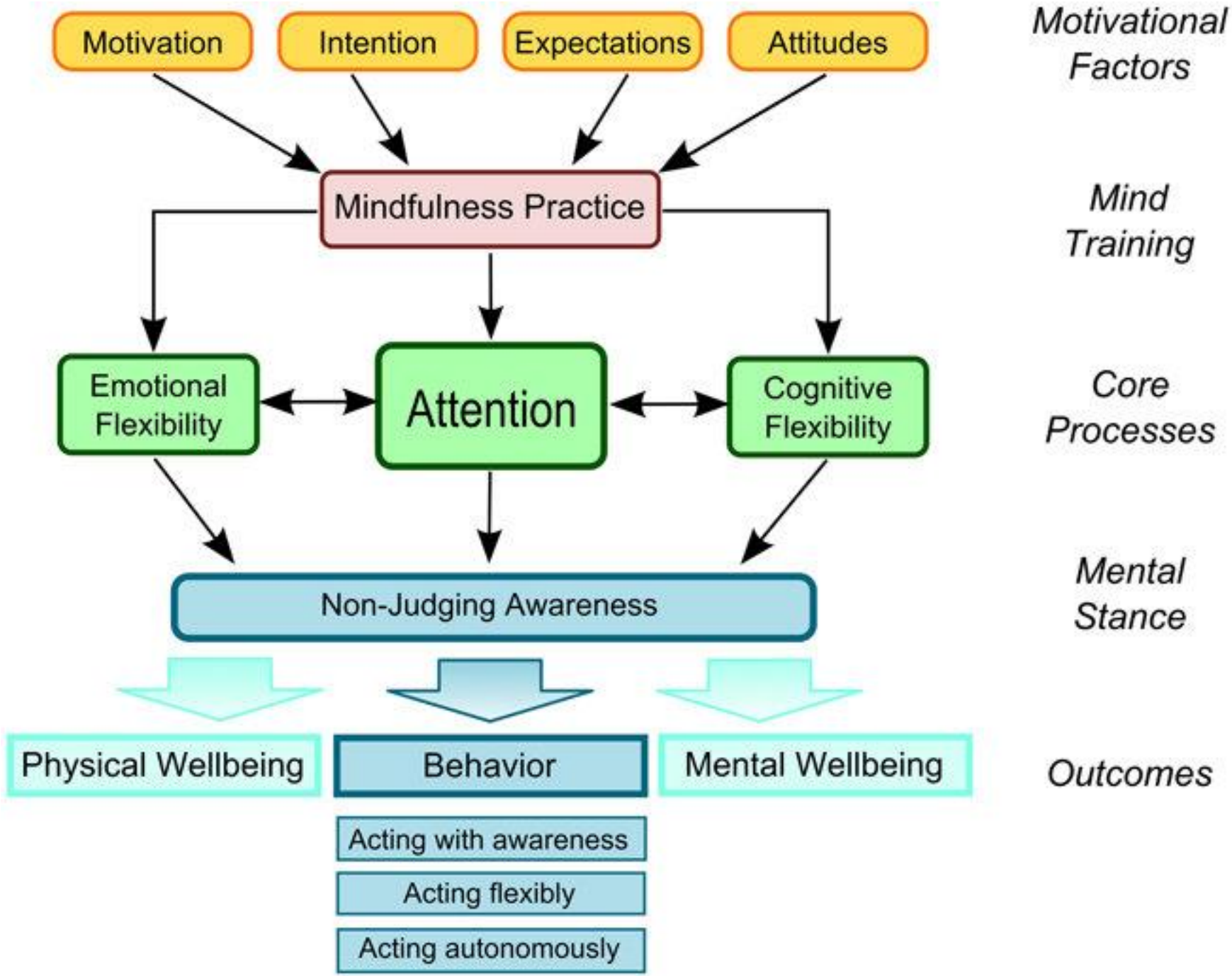
- Intention to lift
- Lifting
- Intention to go forward
- Intention to put down
- Put down

Process of self analysis in mindfulness practice

- **Increasing power to observe the self** more in detail **step by step**
- **Changing judgment about objects :**

  *ex) **Valuable judgment-> realistic judgement -> real***
- **Weakening attachment & chain reaction to objects :**

  *ex) **Cognitive defusion, decentralization, disidentification, decategorization, deconceptualization, deconstruction -> no self in phenomenon -> living in no self state moment to moment***
- **Interdependent interaction in relation**
- **SATI** is **self-awareness**


Motivation
Intention
Expectations
Attitudes
Motivational Factors
Mindfulness Practice
Mind Training
Emotional Flexibility
Attention
Cognitive Flexibility
Core Processes
Non-Judging Awareness
Mental Stance
Physical Wellbeing
Behavior
Mental Wellbeing
Outcomes
Acting with awareness
Acting flexibly
Acting autonomously

Mindfulness Training

Focused Attention

- Utilizes the breath as an anchor to cultivate the development of sustained attention, while acting as an objective observer of all other autogenous material.
- Goal is to stabilize the habitual, reflexive patterns of the wandering mind.
- Requires training in constant attentional goal maintenance.

Open Monitoring

- Meditation technique that extends mindful observation beyond the breath to an entire array of autogenous experiences.
- Typically builds upon focused attention skills and can become habitually pervasive through-out everyday experiences with long-term practices.

Behavioral

Cognitive Control

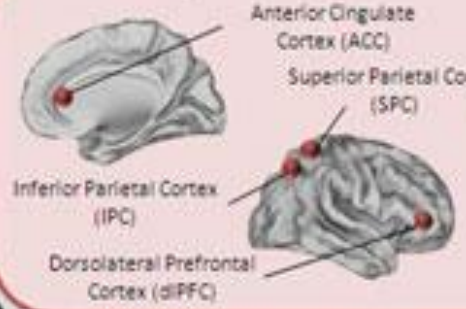
- Mindfulness training enhances the executive control component of attention, suggesting greater top-down control and reduced distractor interference (Tang et al., 2007).
- Expert meditators show higher levels of cognitive flexibility and executive control in comparison to novices (Chan & Wollacot, 2007).
- Mindfulness is associated with an improvement in the orienting component of attention in novices, but the alerting sub-system in experts (Jha et al., 2007).

Emotional Control

- Mindfulness disposition and meditation practice is associated with a reduction in stress, mood disturbance, and negative affect (Brown & Ryan, 2003).
- Mindfulness is associated with increased ability to differentiate emotion (Hill & Updegraff, 2012), enhanced behavioral self-regulation (Lykins & Baer, 2009), and reduced reaction to transitory thoughts and physical sensations (Ramel et al., 2004).
- Mindfulness practice decreases symptoms of depression and anxiety, such as ruminative thinking (Deyo et al., 2009).

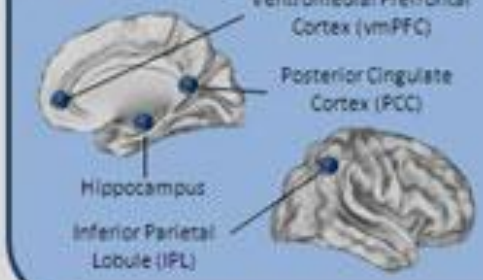
Neural

Cognitive Control



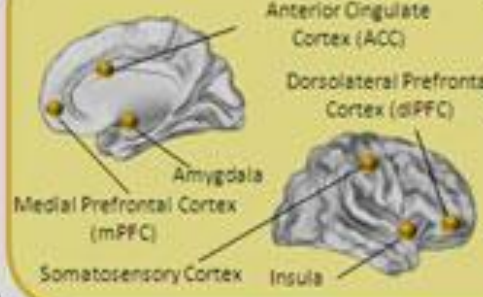
- Top-down control of attentional processes during meditation requires engagement of the dlPFC and ACC (Brefczynski-Lewis et al., 2007).
- Shifting attention from mind-wandering back to focused attention meditation is associated with activation of the dlPFC, IPC and SPC (Hasenkamp et al., 2012).
- MBSR intervention leads to increased dlPFC recruitment during cognitive control of emotional tasks (Allen et al., 2012)

Default Mode Network

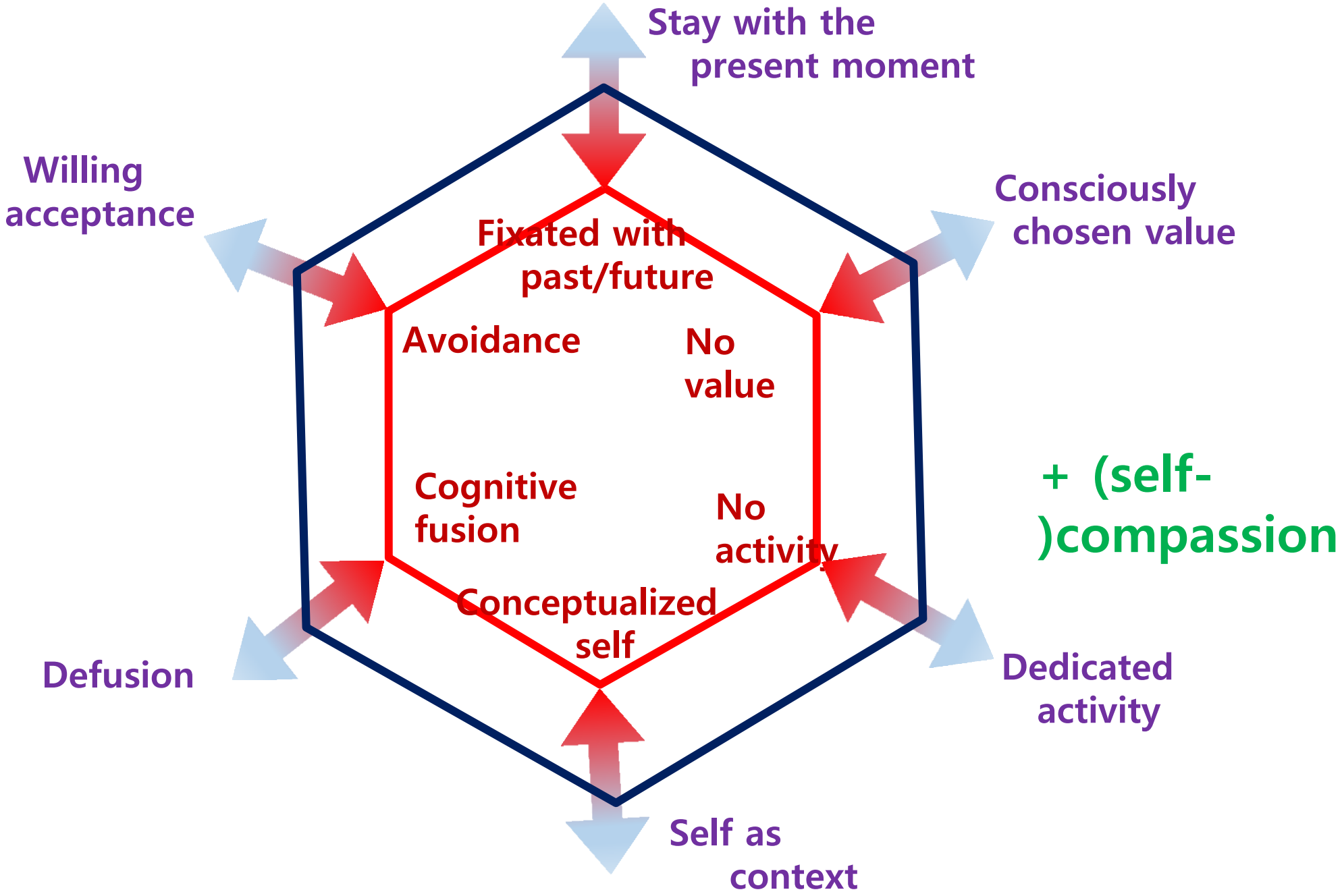


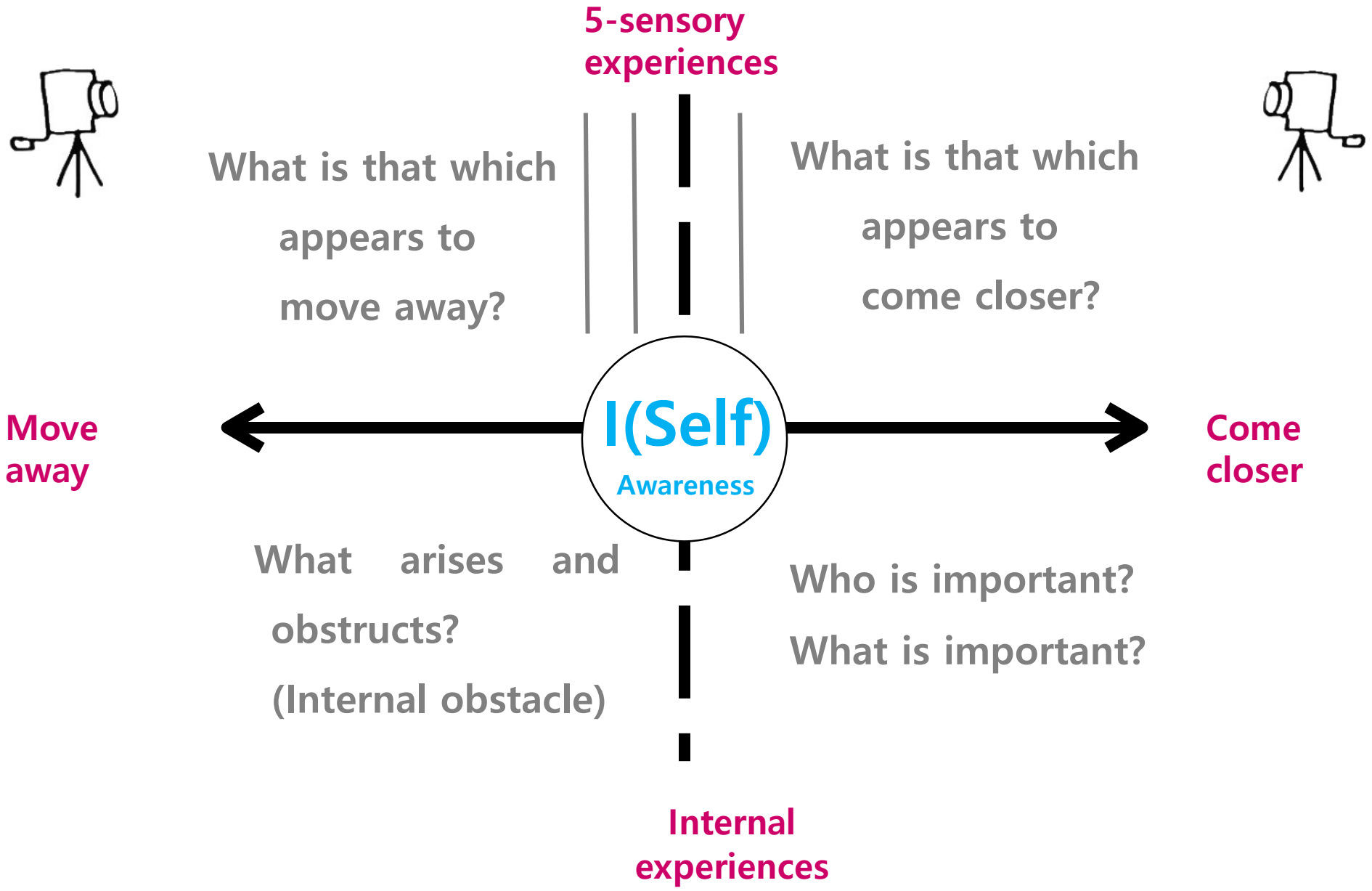
- Meditation practice involves:
  - Engagement of DMN regions (mPFC, PCC, IPL and hippocampal complex) during mind-wandering (Hasenkamp et al., 2011).
  - Suppression of DMN regions during meditation (Brewer et al., 2011).
  - Reduced activation in self-referential processing areas (mPFC and PCC) during emotional processing in expert meditators (Taylor et al., 2011).

Emotional Control



- Novice meditators engage top-down control regions (dlPFC, mPFC) and reduced amygdala activity during emotional processing (Taylor et al., 2011).
- Expert meditators engage bottom-up control regions (insula, somatosensory cortex) and suppress activity in the dlPFC during pain reduction (Gard et al., 2012).
- Mindfulness training increases recruitment of the insula, ACC, and mPFC during negative valence processing (Allen et al., 2012).


Stay with the present moment
Consciously chosen value
Dedicated activity
Self as context
Defusion
Willing acceptance
Fixated with past/future
Avoidance
No value
Cognitive fusion
No activity
Conceptualized self
+ (self-)compassion


5-sensory experiences
What is that which appears to move away?
What is that which appears to come closer?
Move away
I(Self)
Awareness
Come closer
What arises and obstructs? (Internal obstacle)
Who is important? What is important?
Internal experiences

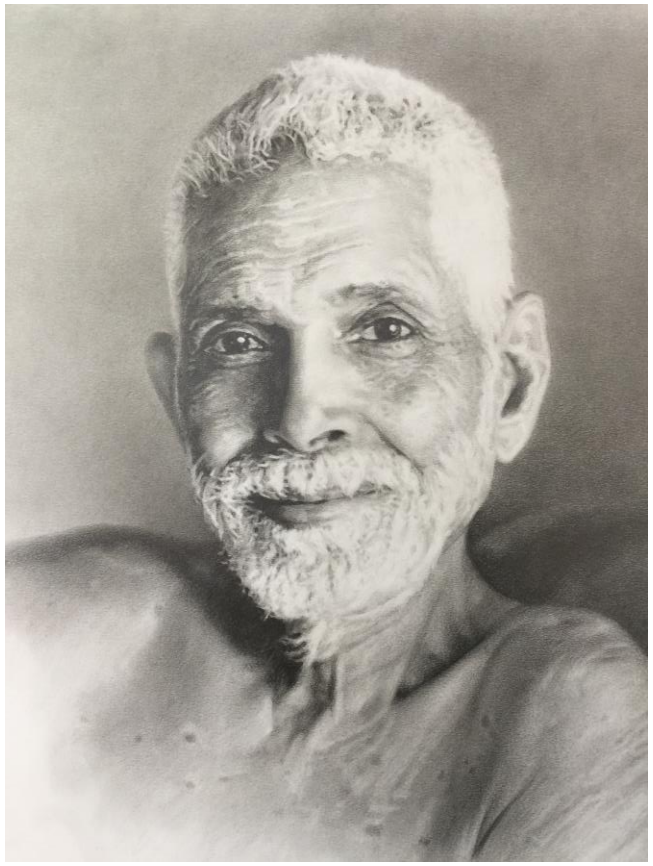
Effects of mindfulness

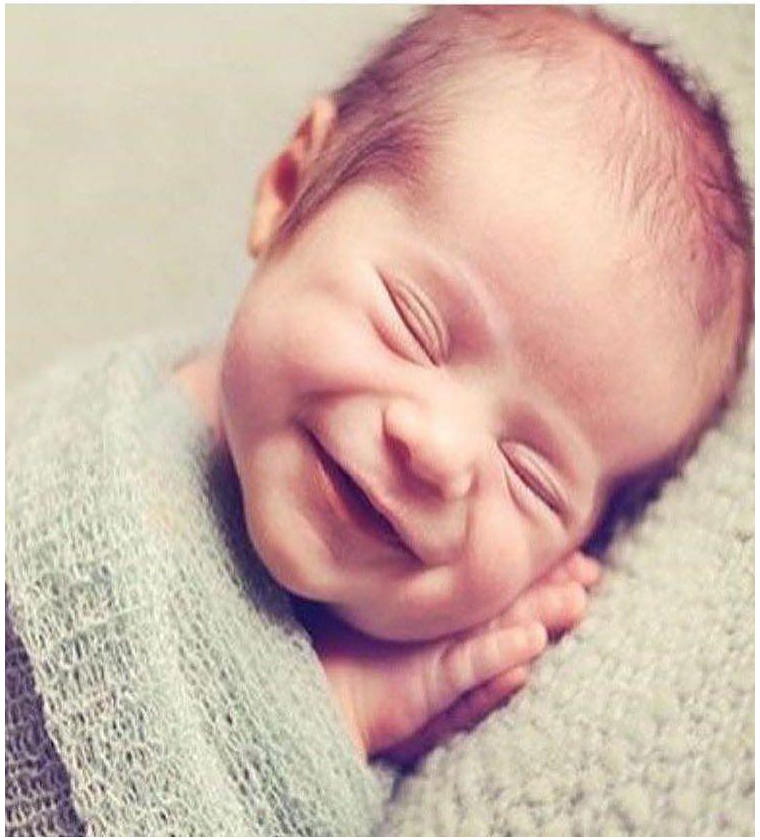
Presence	**Acceptance**	**Awareness**	**Emotional regulation**
Empathy and understanding (Listen and communicate)	Compassion and loving-kindness	**Self management**	**Connection and wholeness (Heal and recover)**

Life of God


Savoring and
gratitude

How do they look?





I, psychiatrist is awakened

One's awakening is everybody's awakening

That's the reason why we are here

Thank you very much !