



CNS 5037
NEUROPHILOSOPHY

Day 3 - Suffering

Agenda for “Suffering” Day

- Readings: 3 “Stories”
- Introduction:
 - Self-Assessment
 - Review of Last Class & This Week’s Readings
 - Thinking Process
 - Thinking Contents
 - Negativity Bias & Possible Solutions (Sticks & Carrots)
- The Development of Separation (Ego)
- The Significance of the PFC
- Dealing with Darts
- Thinking Beyond The Cerebral



Self-Assessment of Day #2

1. Last week we watched a short video of a scientific experiment testing the idea of free will. Which of the following was not true of the experiment?
 - A. It showed a person trying to decide what pair of pants to wear.
 - B. It showed how a person's heart rate changes when they make a wrong decision.
 - C. It showed how a person's brain indicates a choice before the person is consciously aware of it.
 - D. It showed how we are definitely always conscious of the decisions we make.
2. Which of the following is/are not true of human perception?
 - A. We experience reality exactly as it is.
 - B. Our experience of reality is influenced by past beliefs.
 - C. Our experience of reality is dependent on our past experience.
 - D. Our experience of reality is based on how are brain in wired.
3. Which of the following is true of human subjective experience?
 - A. Humans have the same subjective experience.
 - B. There is no such thing.
 - C. We all have different subjective experiences.
 - D. Mine is better than yours.

Self-Assessment of Day #2

4. Which is/are the best description(s) of human thought processes as described in class?

- A. Often based on snap judgments.
- B. We see the whole story before coming to a conclusion.
- C. We impose meaning on the world.
- D. We only think with the right hemisphere.

5. What are some effects that arise due to our natural thinking processes.

- A. We can come to quick solutions with little thought.
- B. We can navigate through life efficiently.
- C. We are prone to bad assumptions and incorrect conclusions.

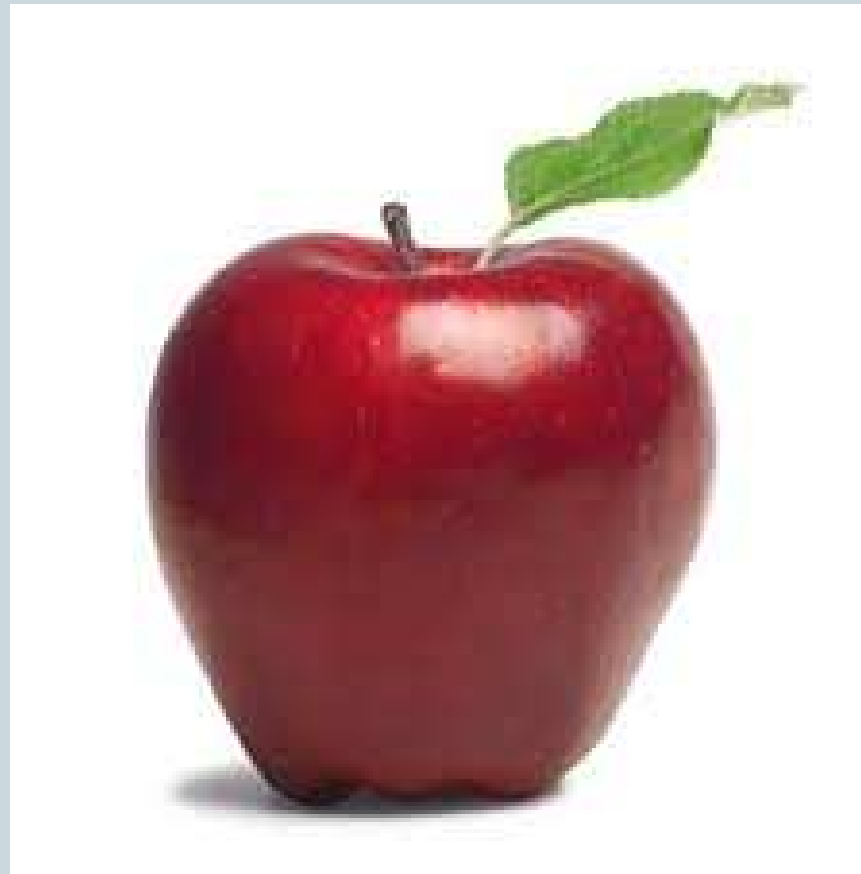
6. There seems to be evidence that points to our innate ability to change our thinking processes and the contents of our thoughts.

- a. True
- b. False

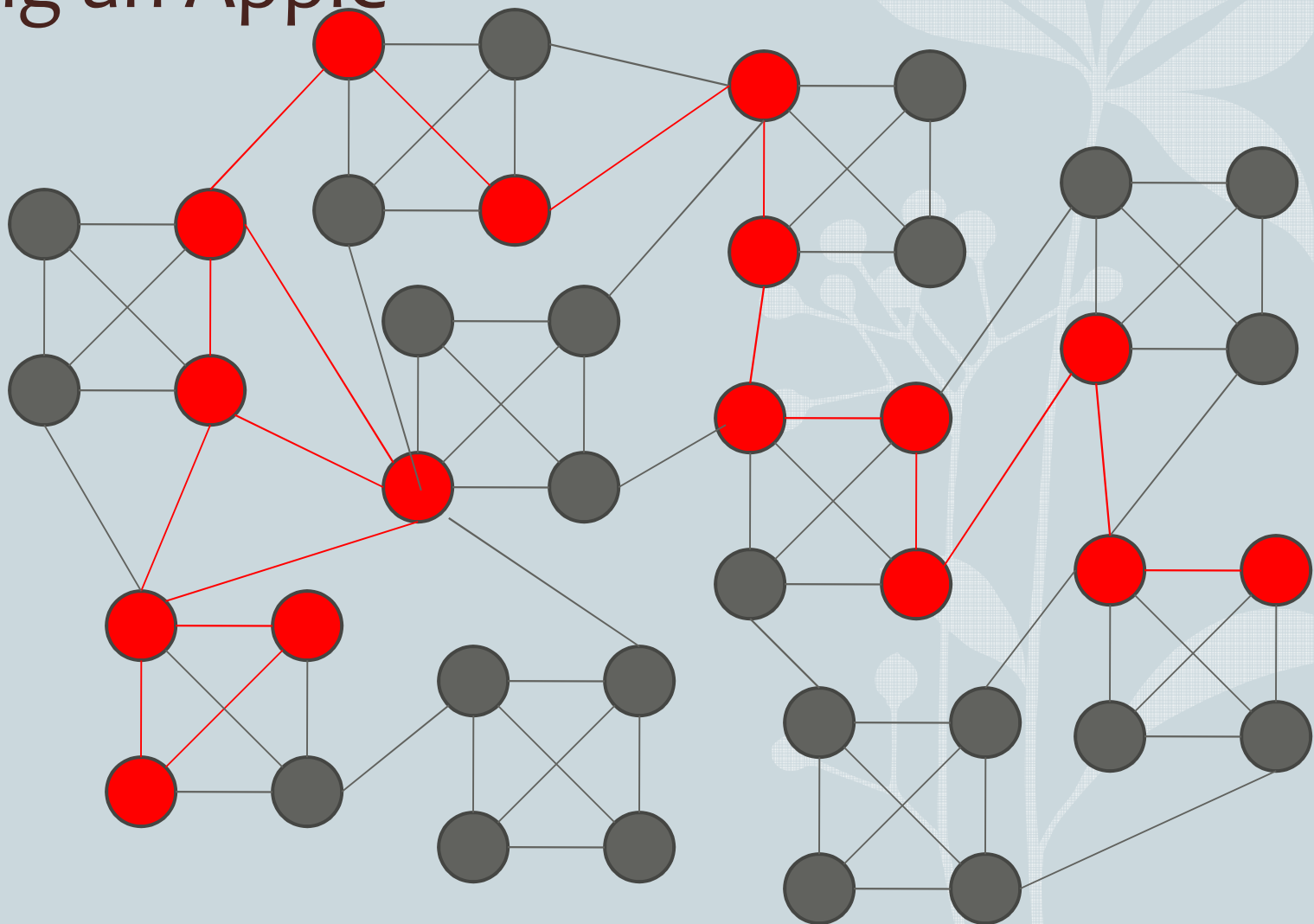
Question to File Away in the Unconscious

- Are emotions and cognitions two separate processes that often conflict with each other, or are they inextricably connected?
- Can we control our emotion?
- Is thinking always rational and emotional irrational?

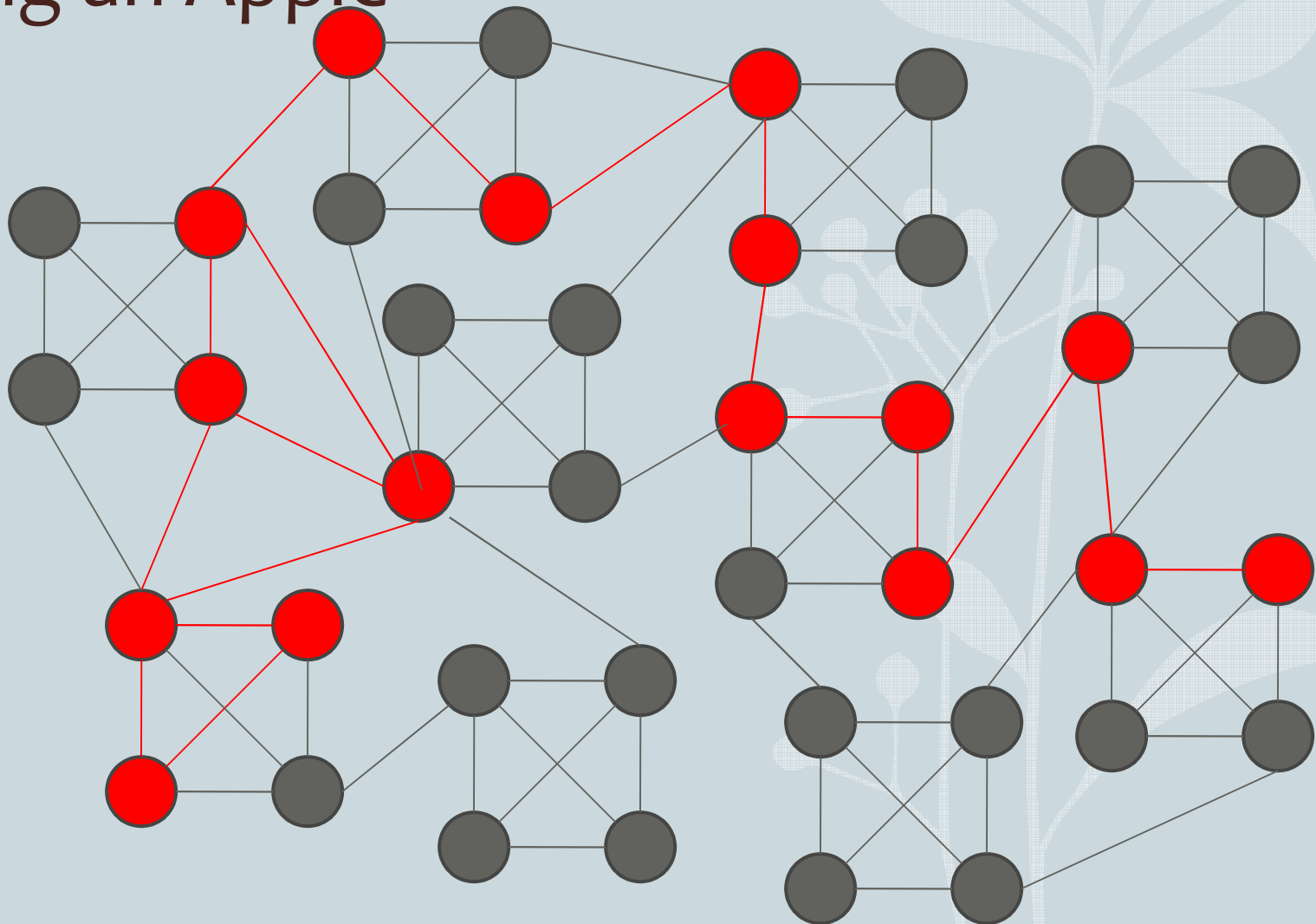
Thinking about Thinking: *Perceiving an Apple*



Seeing an Apple

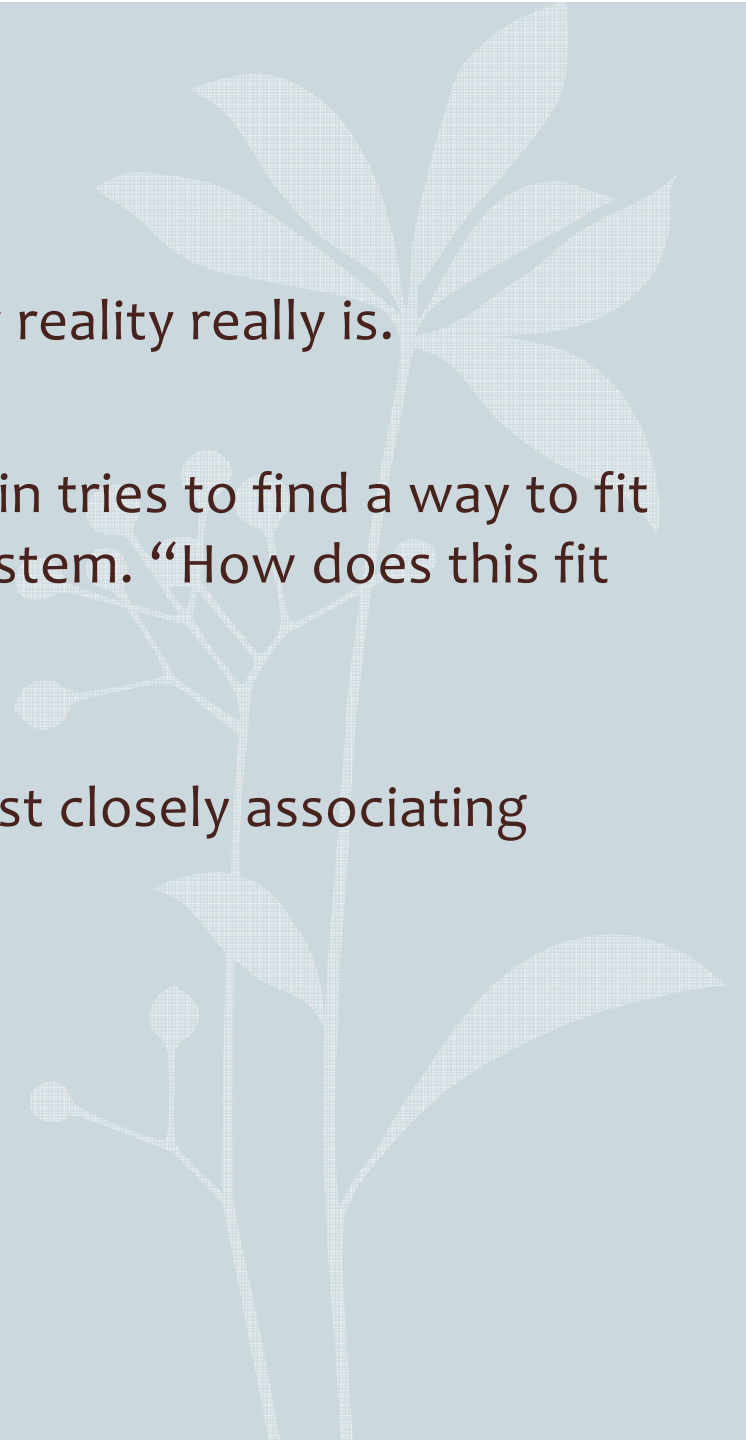


Seeing an Apple



“Making Sense”

- Is not about truth or understanding how reality really is.
- To make sense out of something our brain tries to find a way to fit the new info into our dominant belief system. “How does this fit with what I already know?”
- Neurobiologically → Neural network most closely associating stimuli to context is triggered.



Thinking about Thinking:

#1. *Neural Networks*

Word Patterns

According to research at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself, but the word as a whole.

How is this related to sticks & carrots?

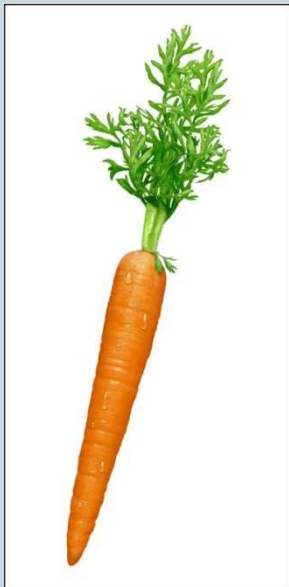


The Negativity Bias



Negativity Bias: Causes in Evolution

- “Sticks” - Predators, natural hazards, social aggression, pain
- “Carrots” - Food, sex, shelter, social support, pleasure
- During evolution, avoiding “sticks” usually had more effects on survival than approaching “carrots.”



This mistake won't kill you.



This mistake will.

Thinking about Thinking: #1. *Neural Networks*

Dark, thin, long, curved



||
•
? ||



A Major Result of the Negativity Bias: Threat Reactivity

- Two mistakes:
 - Thinking there is a tiger in the bushes when there isn't one.
 - Thinking there is no tiger in the bushes when there is one.
- We evolved to make the first mistake a hundred times to avoid making the second mistake even once.
- This evolutionary tendency is intensified by temperament, personal history, culture, and politics.
How?
 - Marketers, politicians, family members, institutions...

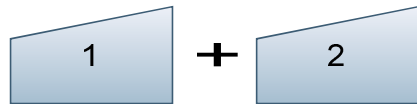
Results of Threat Reactivity

(Personal, Organizational, National)

- Our initial appraisals are mistaken:
 - Overestimating threats
 - Underestimating opportunities
 - Underestimating inner and outer resources
- We update these appraisals with information that confirms them; we ignore, devalue, or alter information that doesn't.
- Thus we end up with views of ourselves, others, and the world that are ignorant, selective, and distorted.
- All because of underlying assumption rooted in safety first (fear) rather than possible reward.

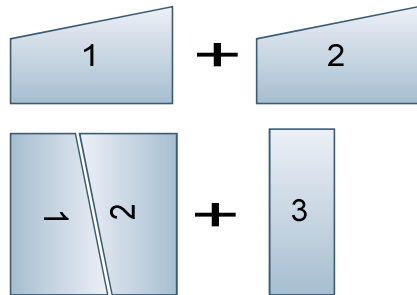
Common Thinking: Origins and Formation of Neural Structures

- Self-organizing system →
 - Linear, sequential thought processes?



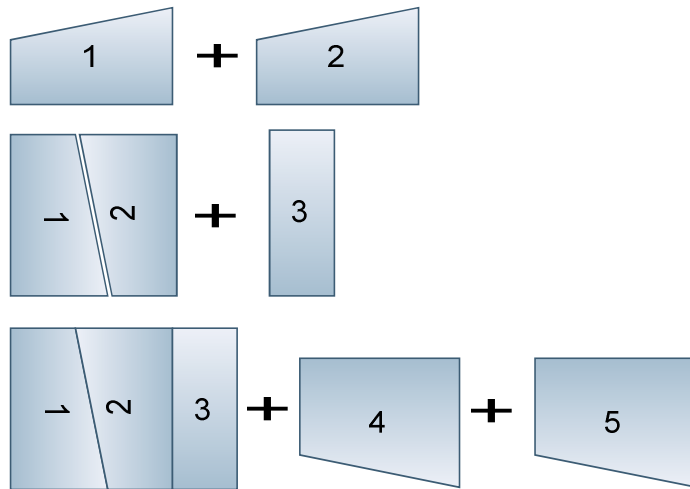
Common Thinking: Origins and Formation of Neural Structures

- Self-organizing system →
 - Linear, sequential thought processes?



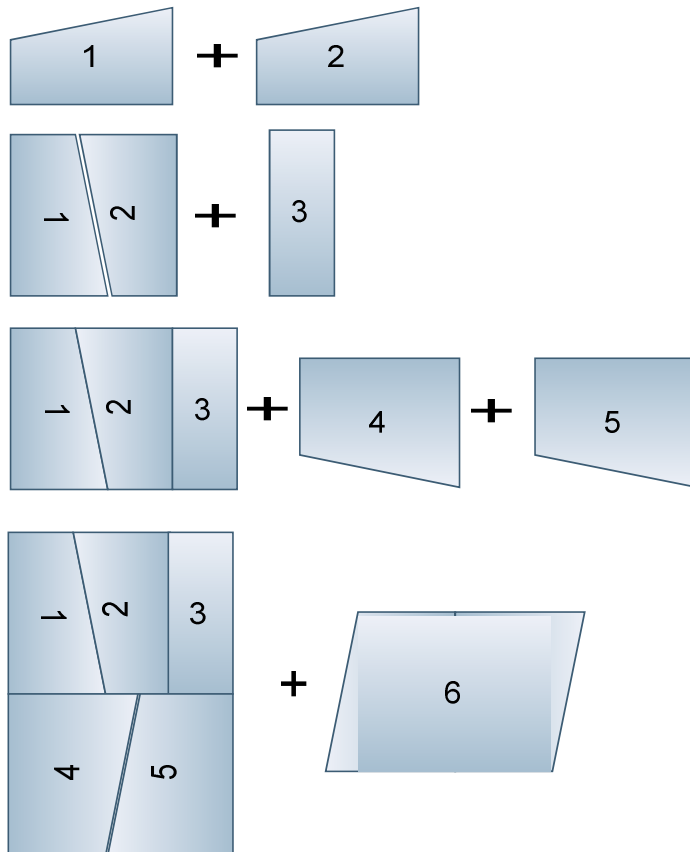
Common Thinking: Origins and Formation of Neural Structures

- Self-organizing system →
 - Linear, sequential thought processes?

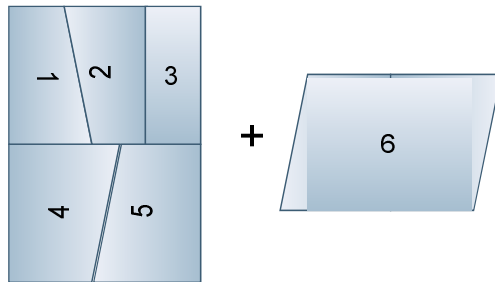
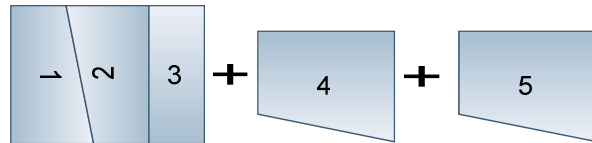
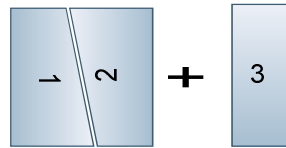
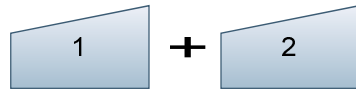


Common Thinking: Origins and Formation of Neural Structures

- Self-organizing system (organizing info) →
 - Linear, sequential thought processes?

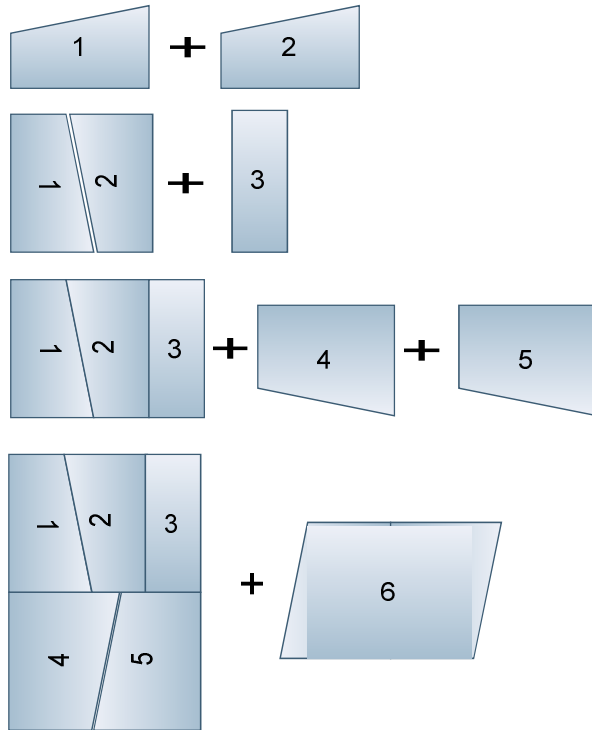


Common Thinking: Origins and Formation of Neural Structures

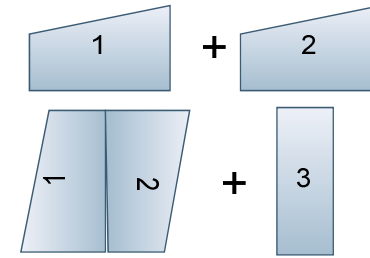


?

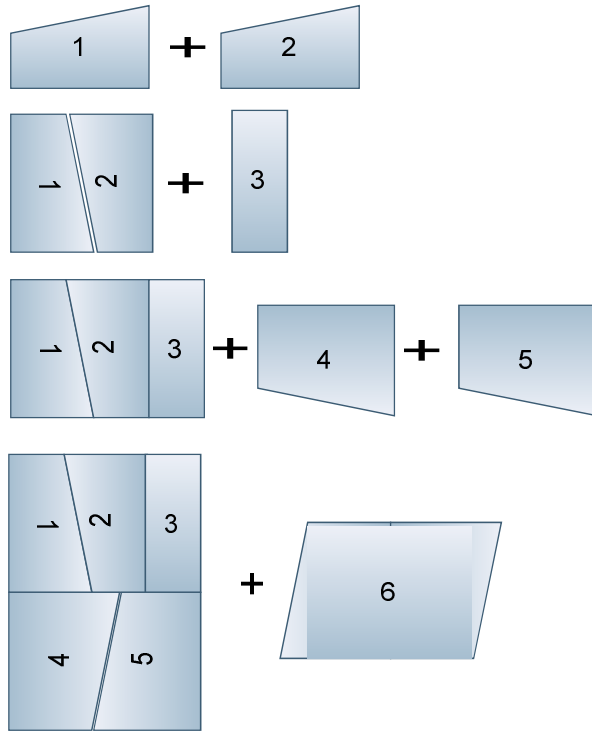
Common Thinking: Origins and Formation of Neural Structures



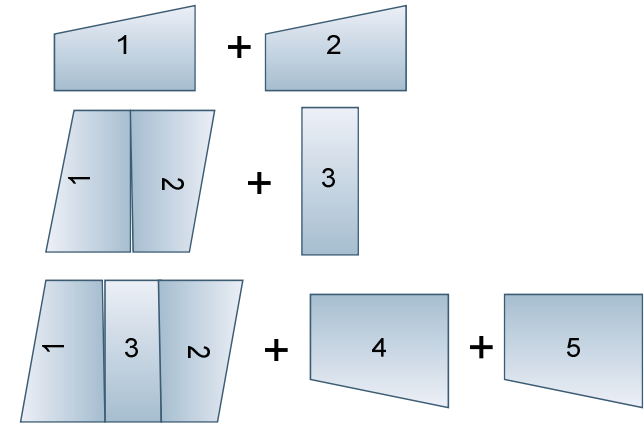
?



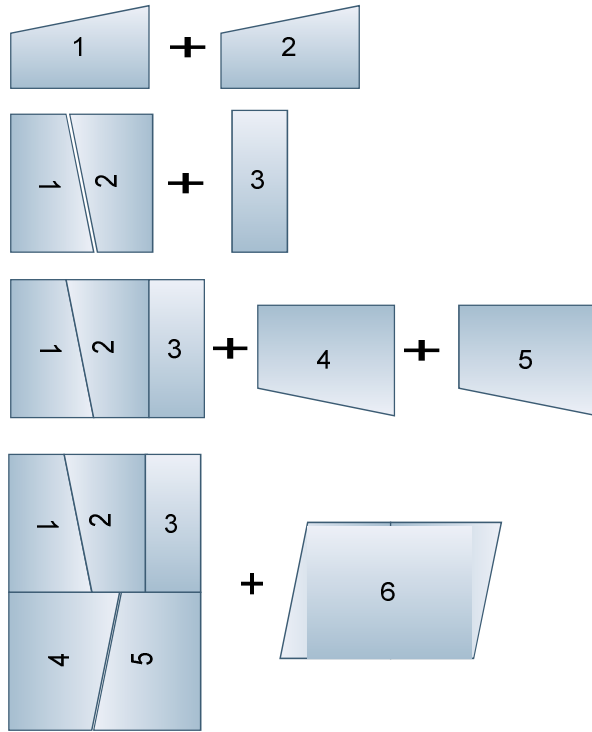
Common Thinking: Origins and Formation of Neural Structures



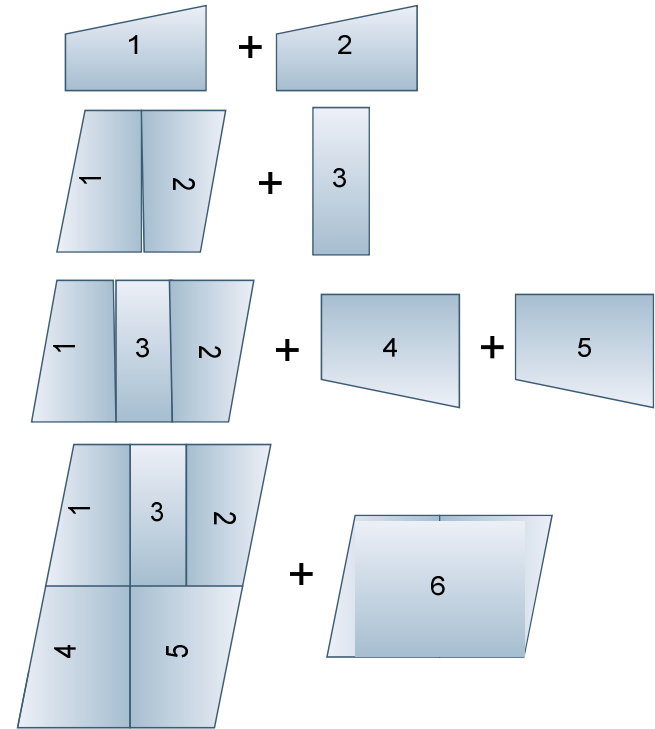
?



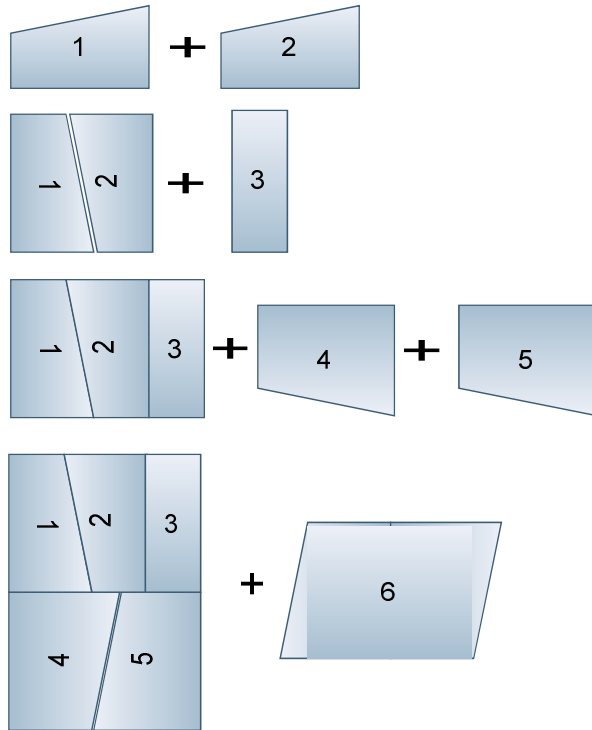
Common Thinking: Origins and Formation of Neural Structures



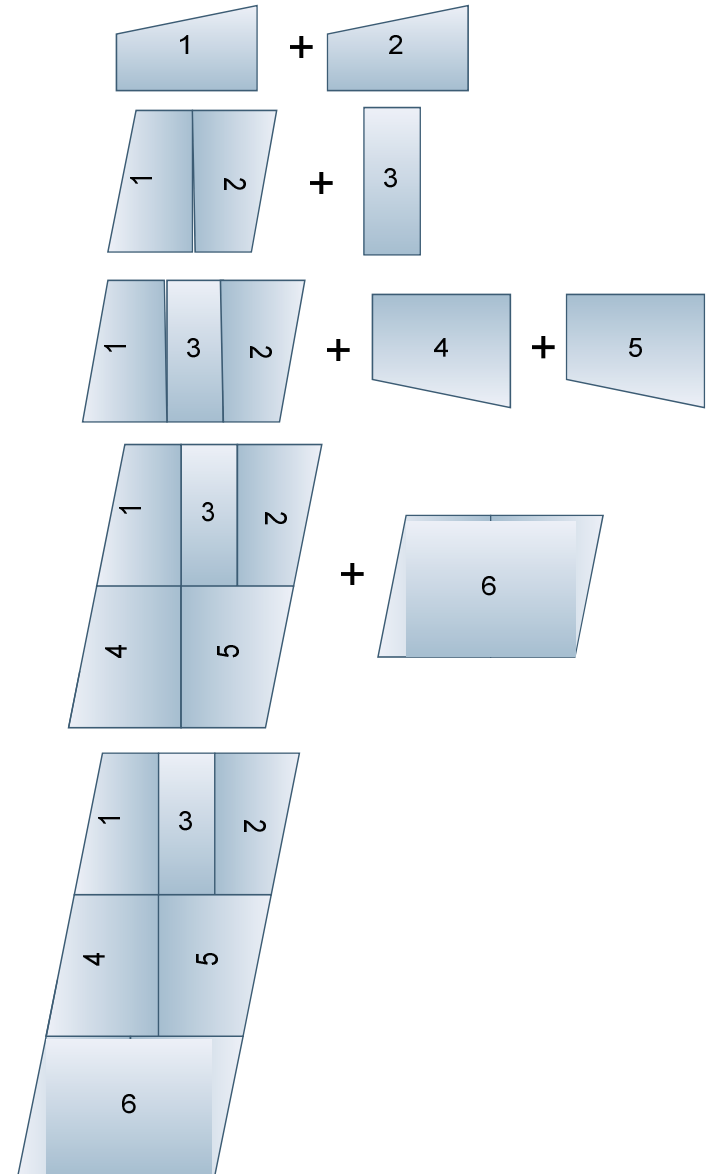
?



Common Thinking: Origins and Formation of Neural Structures



?



Thinking about Thinking:

#1. *Neural Networks*

A man is born in 1990 and dies in 2010.

According to his death certificate, the man died when he was 25 years old.

Is this possible?

This is called reason or “common sense”, although just because it is common doesn’t make it correct.

The wisdom tales are meant to break this form of thinking. Do you see how?

Implications?

- So what does this imply with regard to how we should approach our experience of the world?
- Understand that our world-view is a “best guess” of reality.
- Be open to changing our underlying assumptions.
- Do not cling to our “story” of the world or our “story” of ourselves.
 - This perpetuates our sense of separation from others.
 - This strengthens/feeds the ego.

*Dogma has no political or religious preference.
It's an equal opportunity employer.*

#2. Brain Hemispheres



Brain Hemisphere Questions to Begin

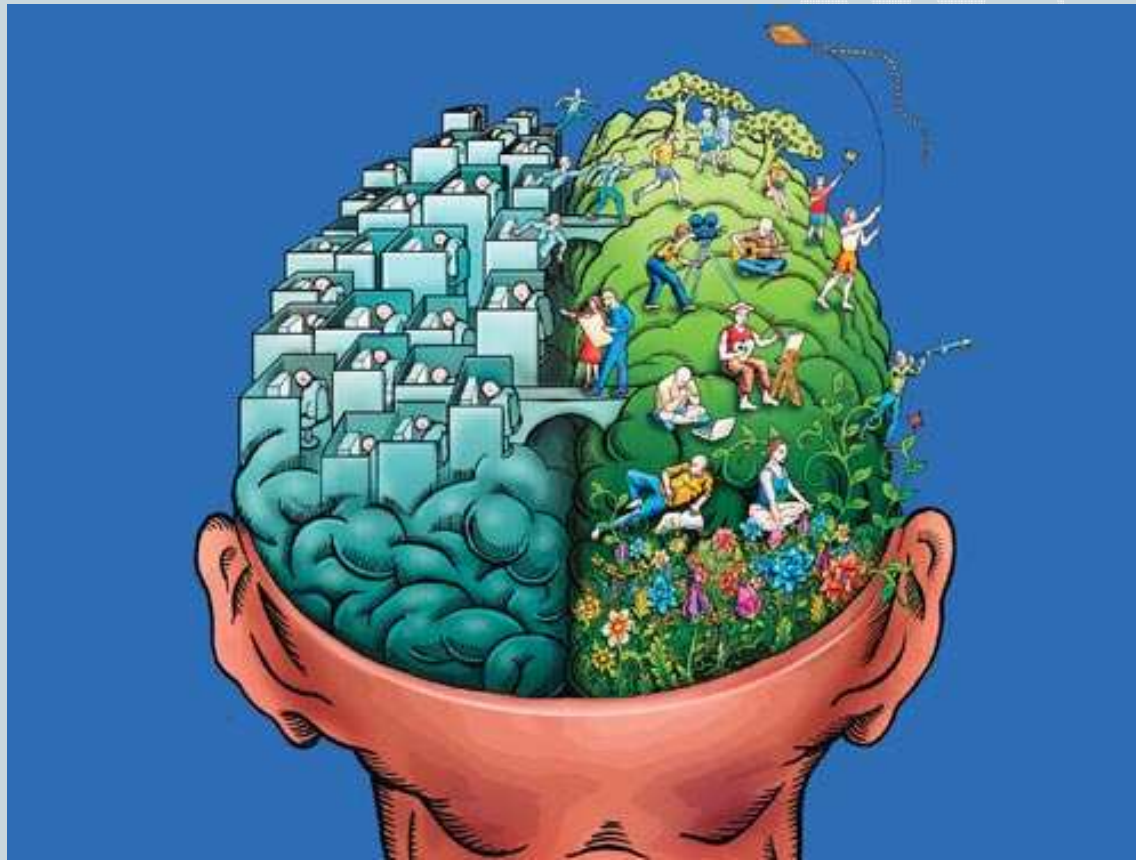
What does this have to do with the following two ideas from Hanson?

- 1) Pg 14: “... what is perhaps the most seductive and subtle challenge to wisdom: the sense of being a self who is separate from and vulnerable to the world.”
- 2) Pg 15: “... every religious tradition—all say essentially the same thing: your fundamental nature is pure, conscious, peaceful, radiant, loving, and wise, and it is joined in mysterious ways with the ultimate underpinnings of reality, by whatever name we give That.”

Thinking about Thinking:

#2. Right/Left Hemisphere Distinction

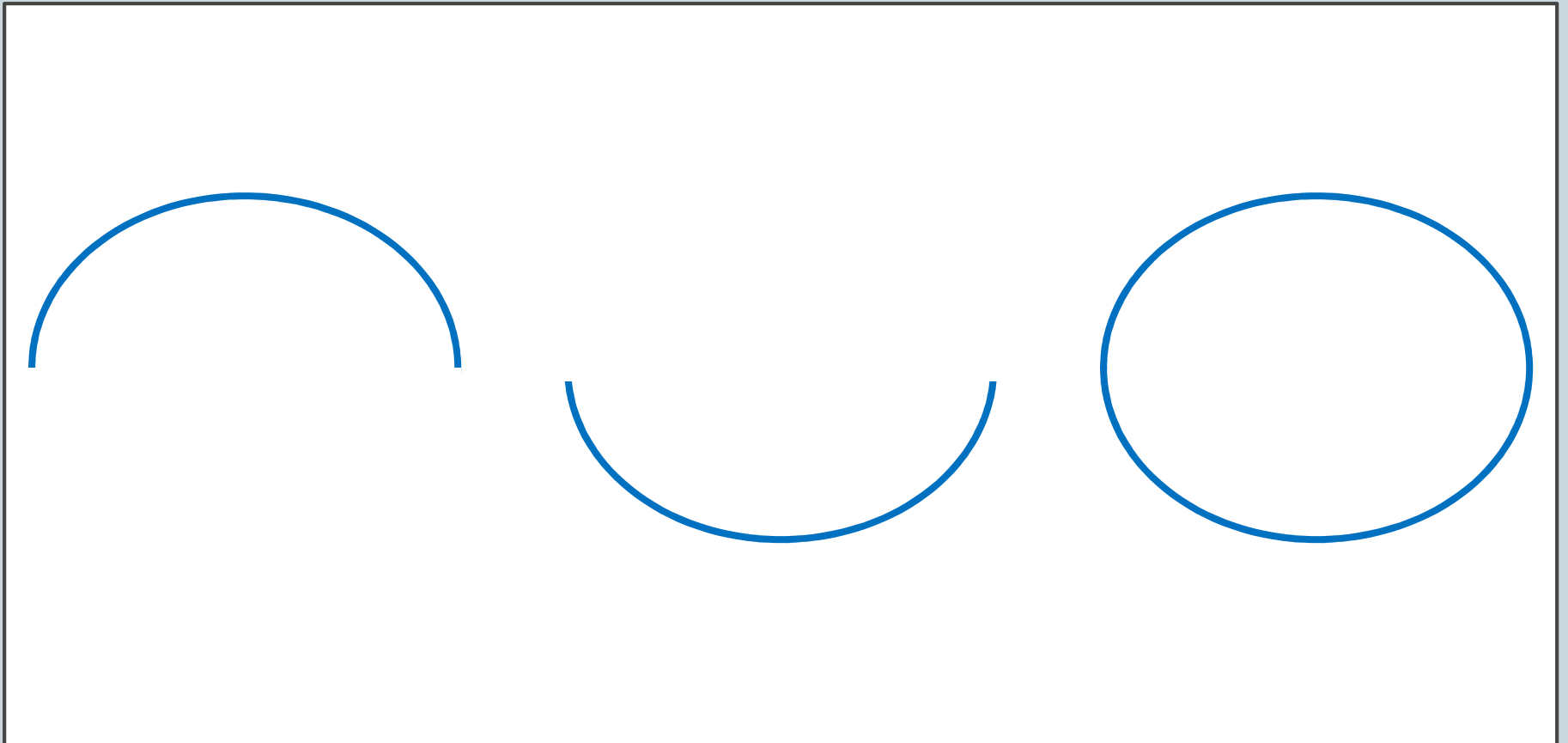
In dyads or triads, discuss what the evidence you will see means for how the two hemispheres operate and what this means for quality of life.



Thinking about Thinking:

#2. Right/Left Hemisphere Distinction

- What do you think this means?
- A person with right hemisphere damage has problems with these:



Thinking about Thinking:

#2. Right/Left Hemisphere Distinction

- What do you think this means?
- A person with right hemisphere damage has problems with these:



Thinking about Thinking: #2. Right/Left Hemisphere Distinction

- What do you think this means?
- A person with right hemisphere damage has problems with these:



“Can you pass the salt shaker?”



“Having a heavy heart.”



Thinking about Thinking: #2. Right/Left Hemisphere Distinction

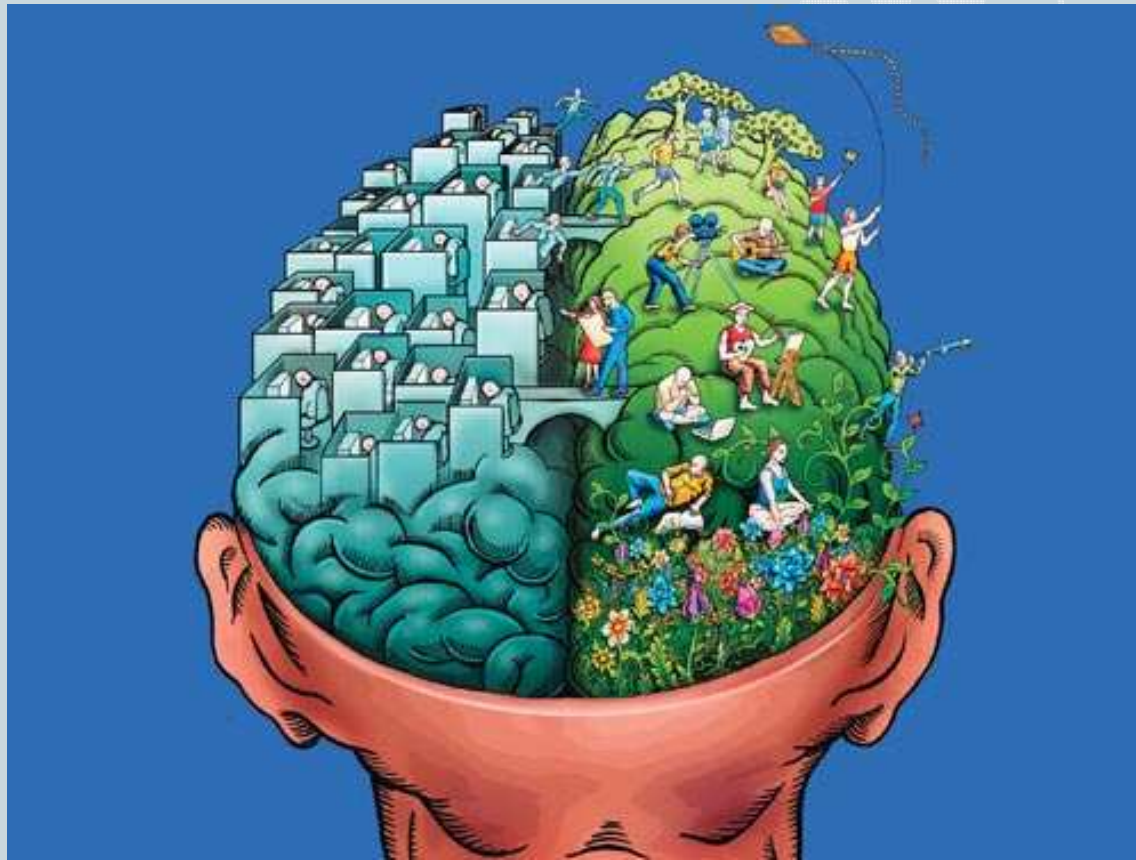
- What do you think this means?
- A person with right hemisphere damage has problems with these:



Thinking about Thinking:

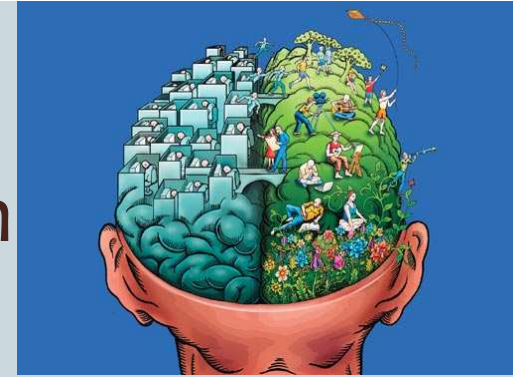
#2. Right/Left Hemisphere Distinction

In dyads or triads, discuss what the evidence you will see means for how the two hemispheres operate and what this means for quality of life.



Thinking about Thinking:

#2. Right/Left Hemisphere Distinction



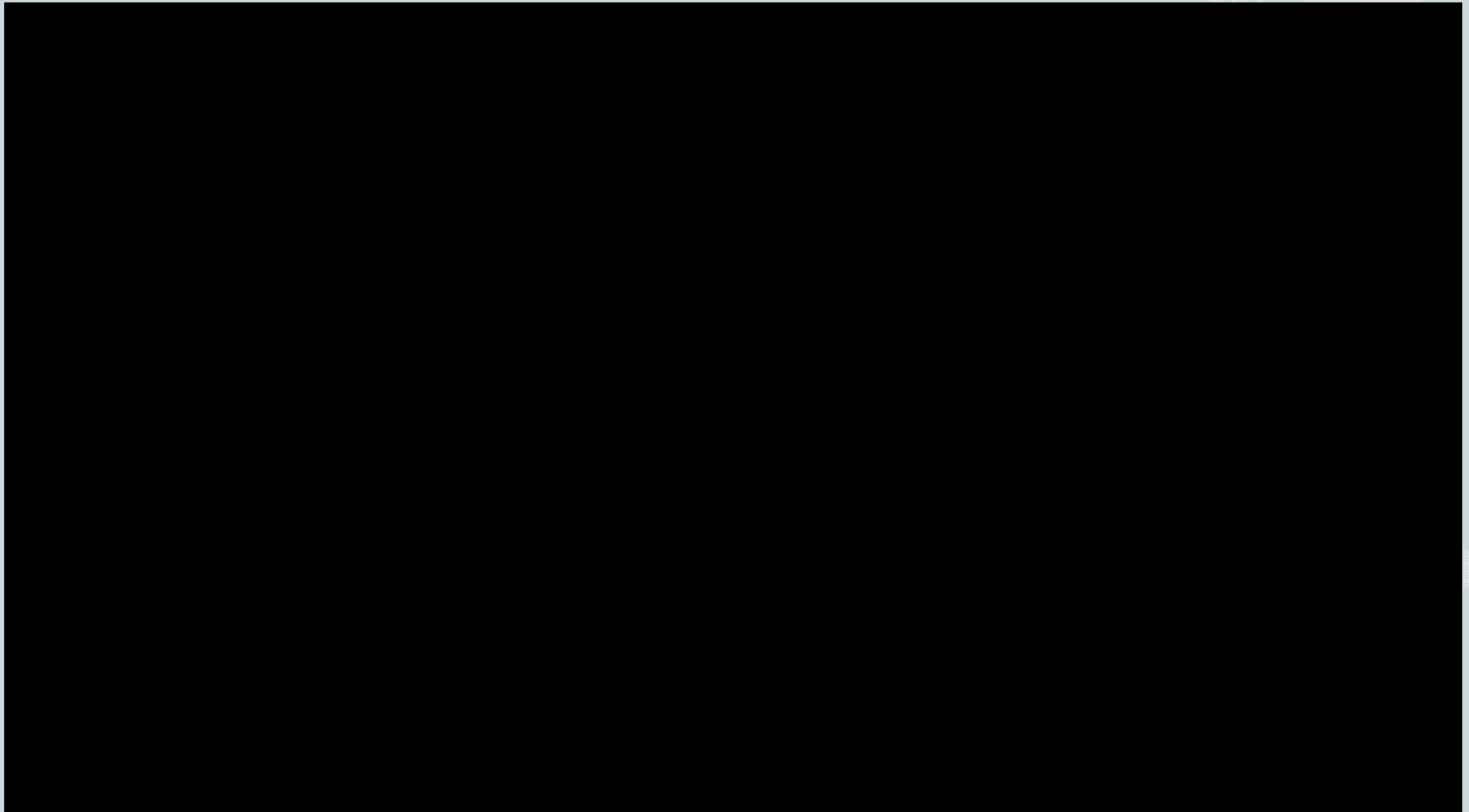
Left Hemisphere – Literal

- Literal.
- One meanings/perspectives at a time.
- Discrete, parts
- Stores learned information.
- Using our skills.
- Less active when we are young, more active the older we get.

Right Hemisphere – Meaningful

- Figurative, Metaphorical
- Holds multiple meanings and multiple perspectives.
- Can image the whole.
- Critical for learning something new
- Learning our skills
- More active when we are young, less active as we get older.

Right/Left Hemispheres:
Can you explain this experience?



Thinking about Thinking: #2. Right to Left Hemisphere Dominance

Blurry to Fine Perception & Discrimination:
Development of the Ego?



Thinking about Thinking: #2. Right to Left Hemisphere Dominance

Blurry to Fine Perception & Discrimination:
Religious Implications?



Brain Hemisphere Questions

- What does this have to do with the following two ideas from Hanson?
- 1) Pg 14: “... what is perhaps the most seductive and subtle challenge to wisdom: the sense of being a self who is separate from and vulnerable to the world.”
- 2) Pg 15: “... every religious tradition—all say essentially the same thing: your fundamental nature is pure, conscious, peaceful, radiant, loving, and wise, and it is joined in mysterious ways with the ultimate underpinnings of reality, by whatever name we give That.”
- **Question:**
 - Why not just choose to enter the right hemisphere? Why not just choose to experience Nirvana? Why not choose Eden?

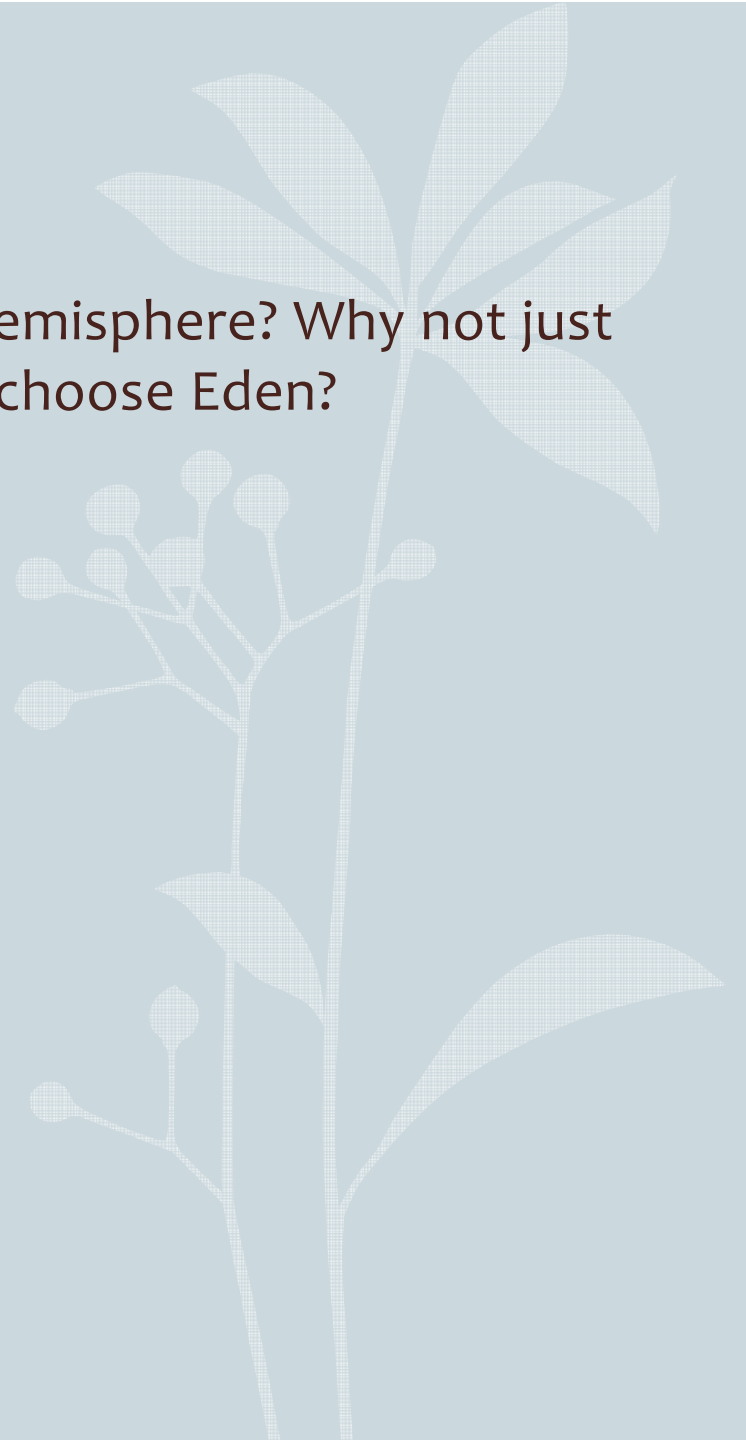
Nirvana & Brain Hemispheres



- Without the right hemisphere, no judgments, no conditioned narrative to perpetuate negative stories.
- Without the right hemisphere no separate story of “me” and “you” or “us” and them”
- But, without the right hemisphere no language, math, learned skills, fine perception, appreciation for differences, decisions may be difficult. Difficulty expressing positive emotions.
- Oddly enough, in most cases, damage to the left hemisphere makes negative emotions more prominent.

Question

- Why not just choose to enter the right hemisphere? Why not just choose to experience Nirvana? Why not choose Eden?



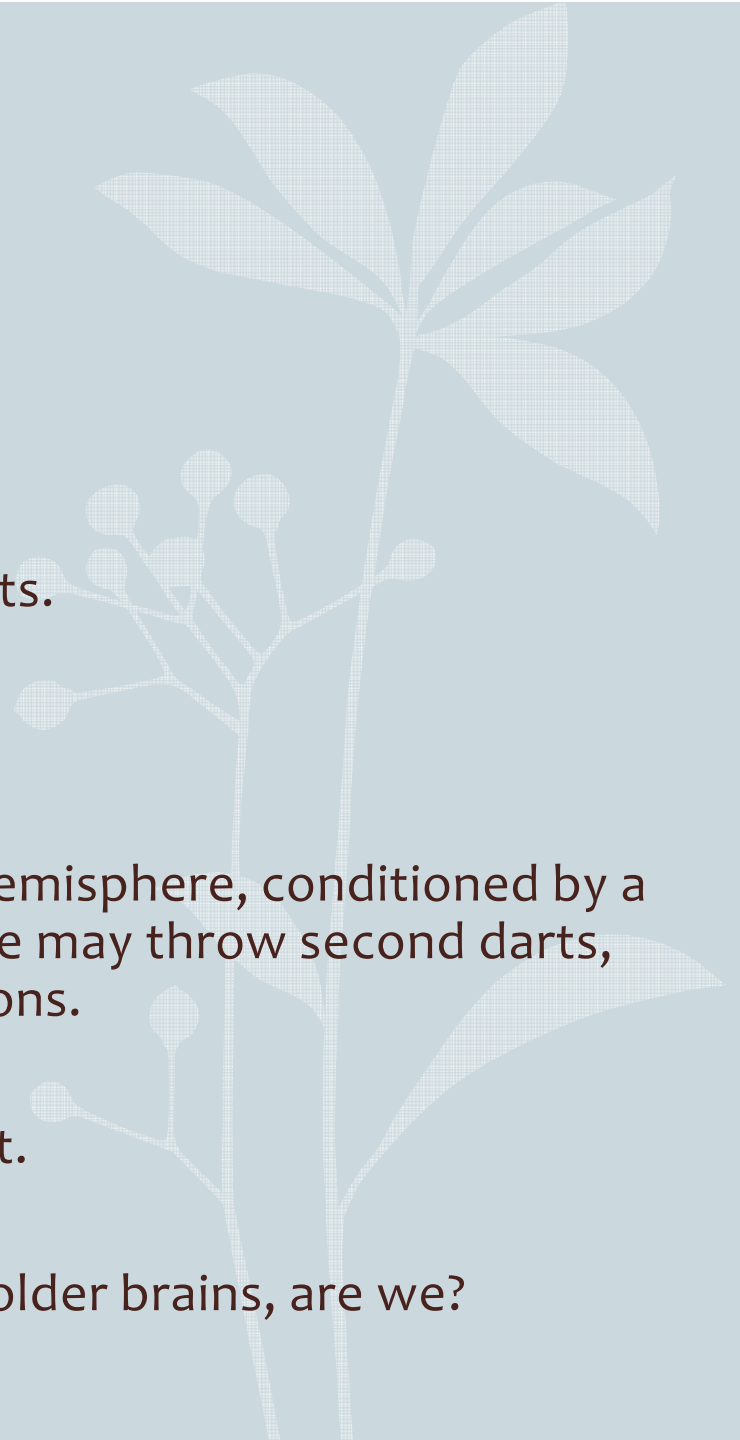
Why not Choose Nirvana?

Darts in Action:

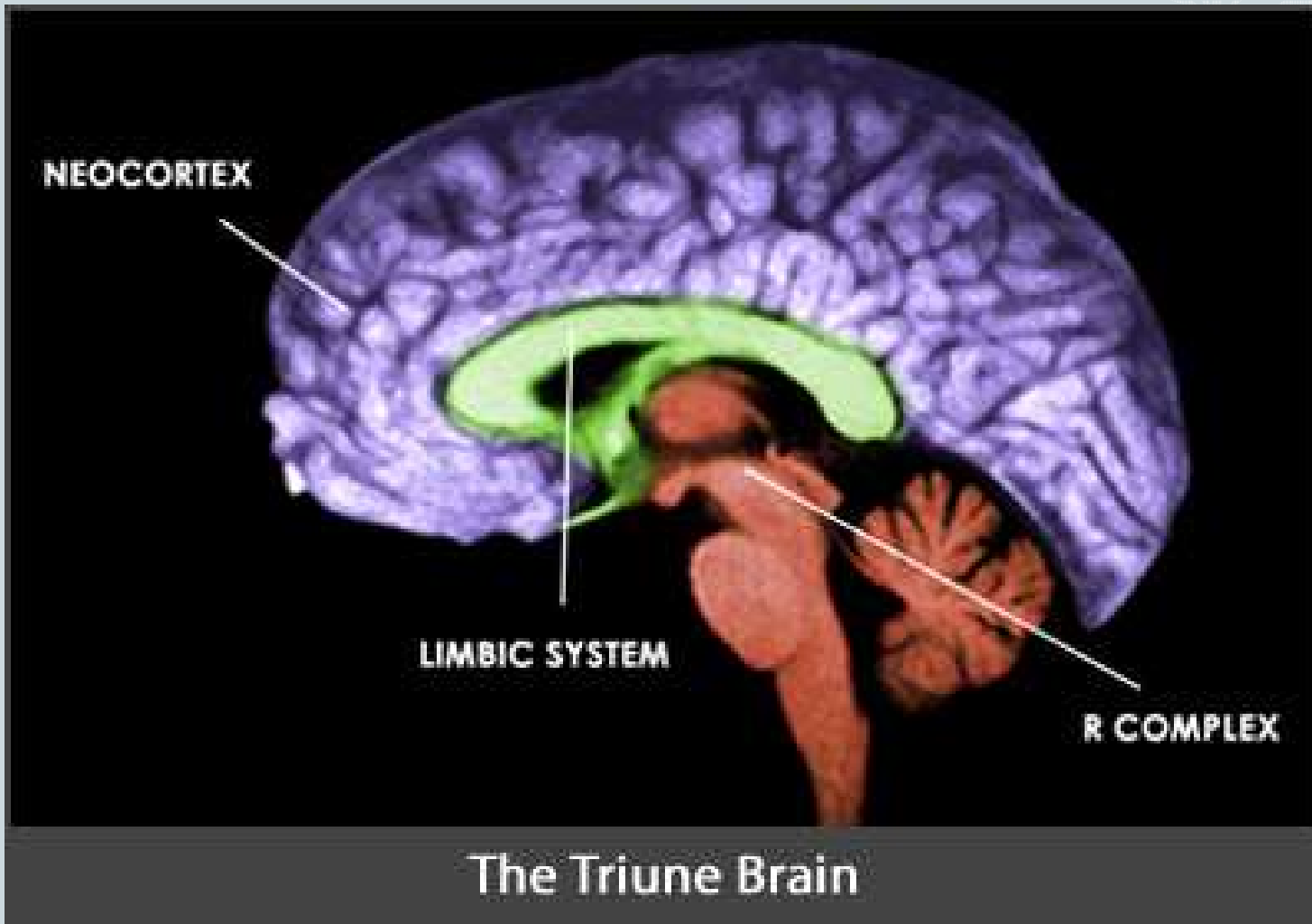
1. We experience the world with its first darts.
2. Negative emotions may then occur.
3. Then our dominant networks in the left hemisphere, conditioned by a Negativity Bias, may get activated. And we may throw second darts, fanning the flames of our negative emotions.

Both #2 & #3 occur unconsciously, out of habit.

But we aren't just slaves to our unconscious, older brains, are we?

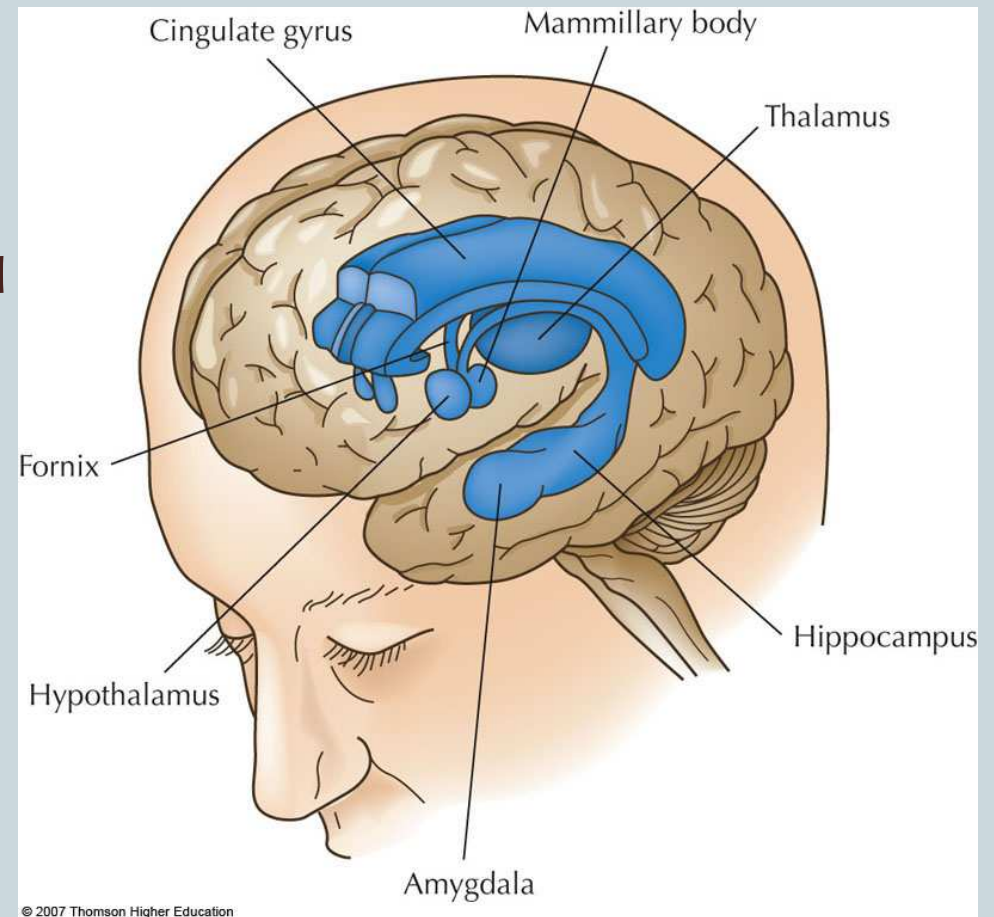


Triune Brain Revisited

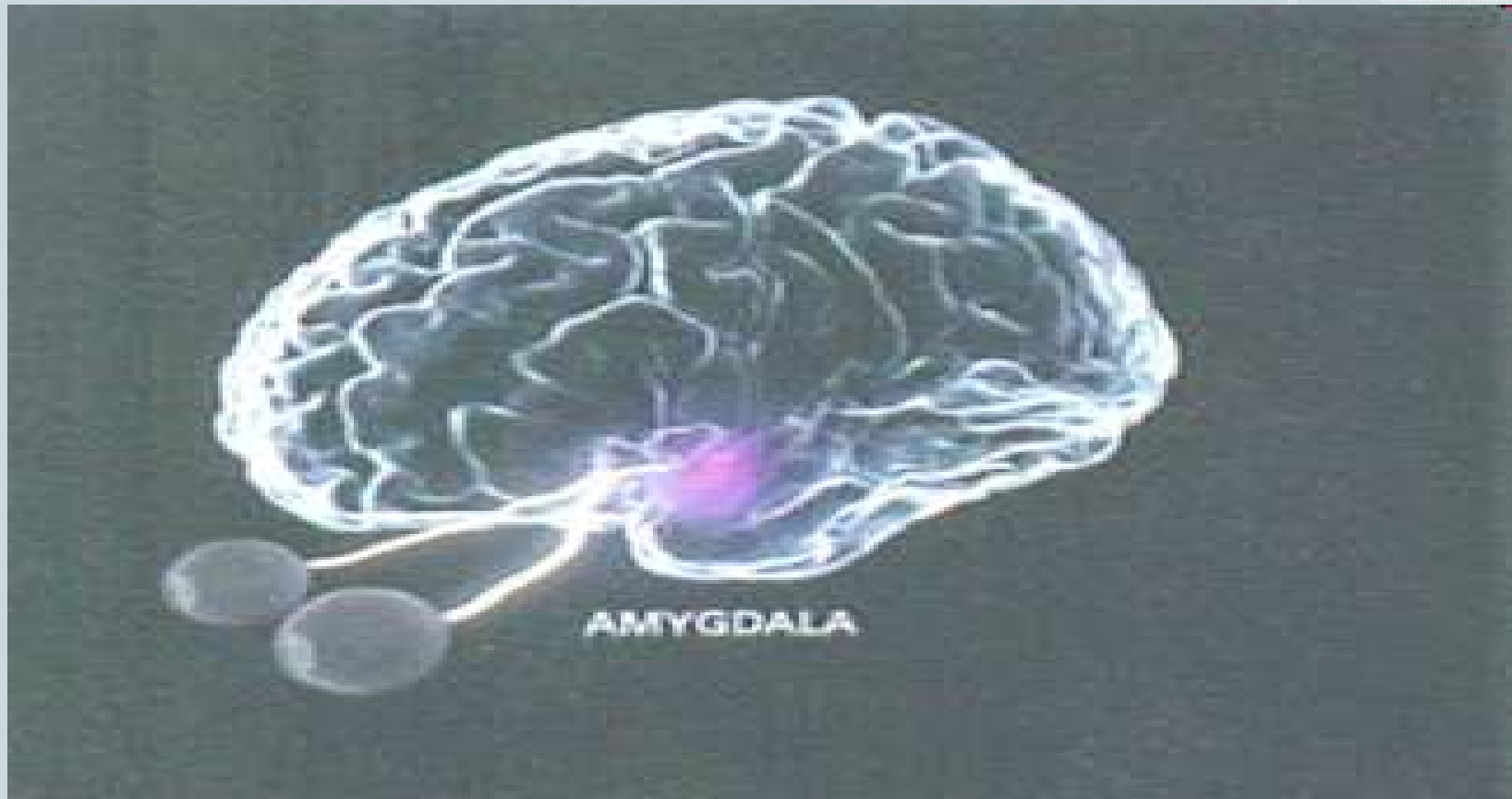


Limbic System (subcortical)

- Thalamus:
 - sensory switchboard to cortex;
- Hypothalamus:
 - Regulates emotional behaviors and motives (e.g., sex, hunger, rage, hormone release)
- Hippocampus:
 - Critical for memory formation.
- Amygdala:
 - Determines if stimuli should be approached or feared



Amygdala



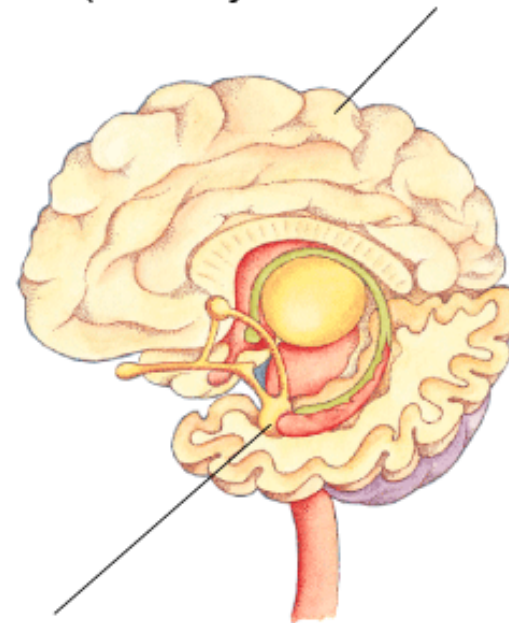
The brain and emotion

The amygdala

Responsible for assessing threat

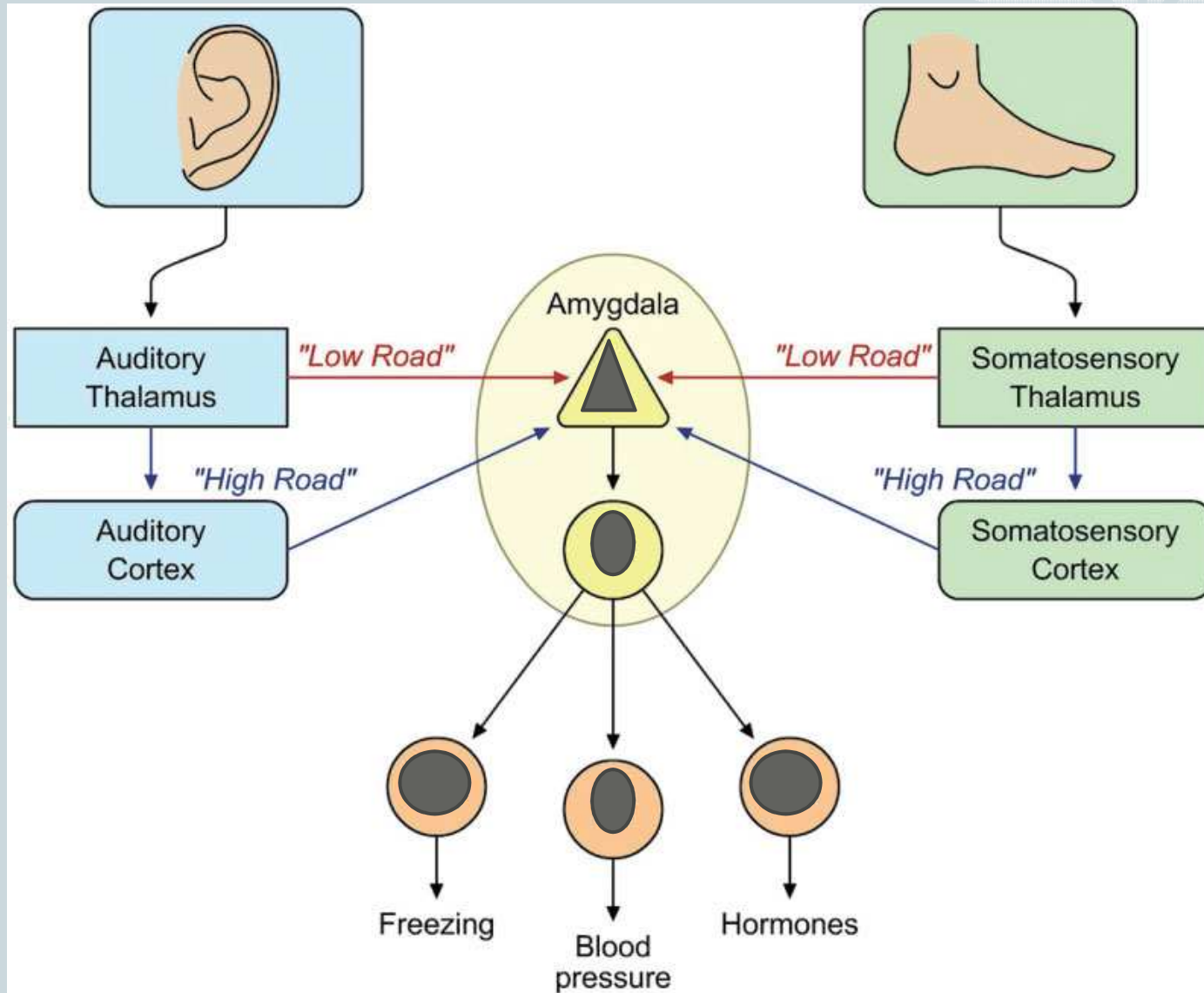
Damage to the amygdala results in abnormality in processing fear.

2. The cerebral cortex generates a more complete picture; it can override signals sent by the amygdala ("It's only Mike in a down coat").



1. The amygdala scrutinizes information for its emotional importance ("It's a bear! Be afraid! Run!").

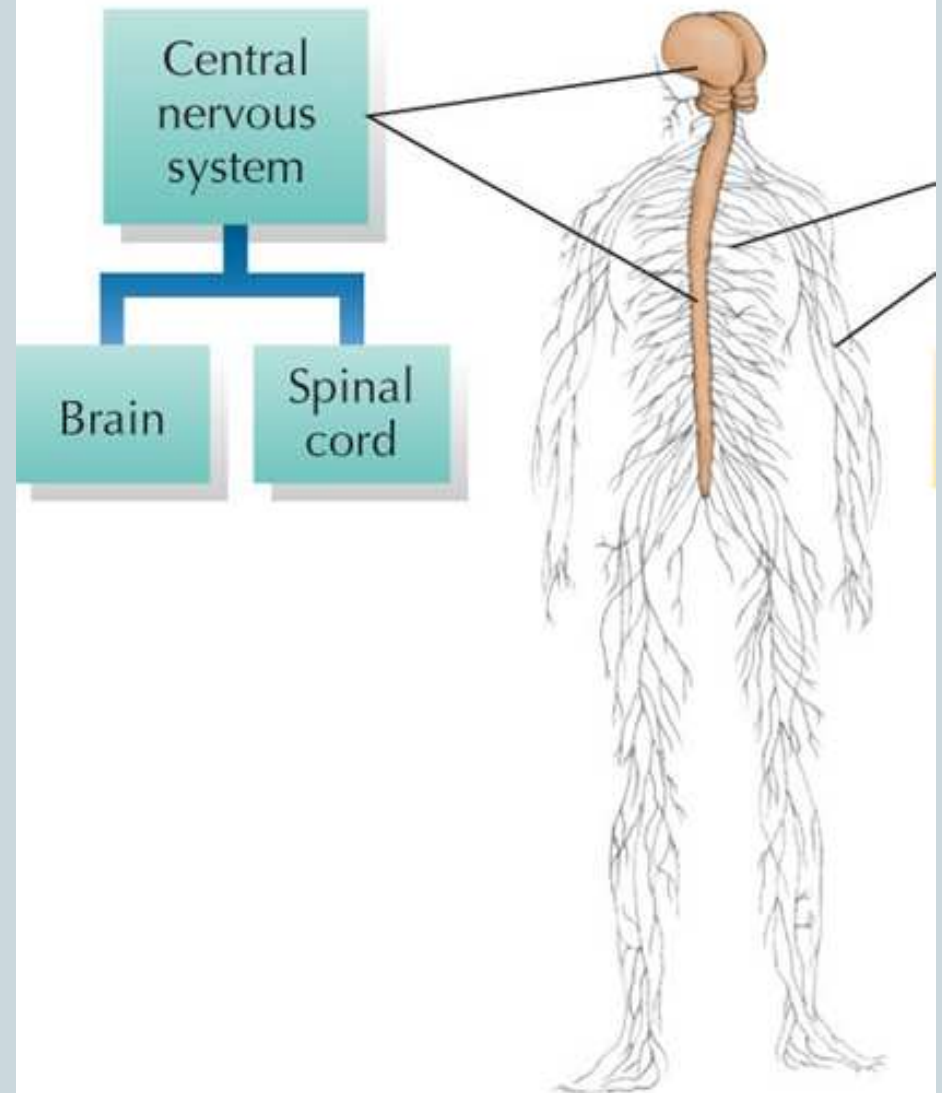
The Fear System (Panksepp)



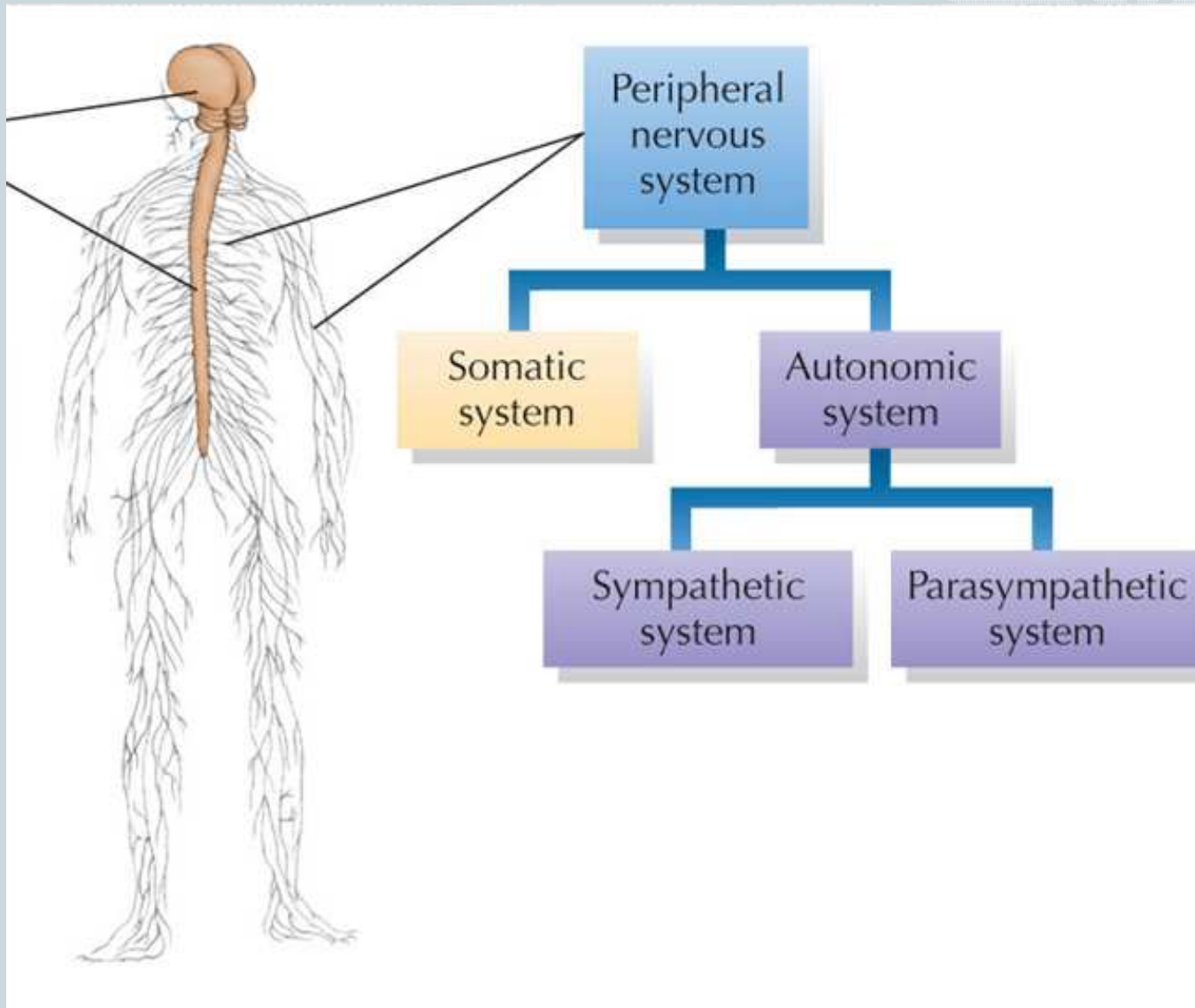
The Nervous System



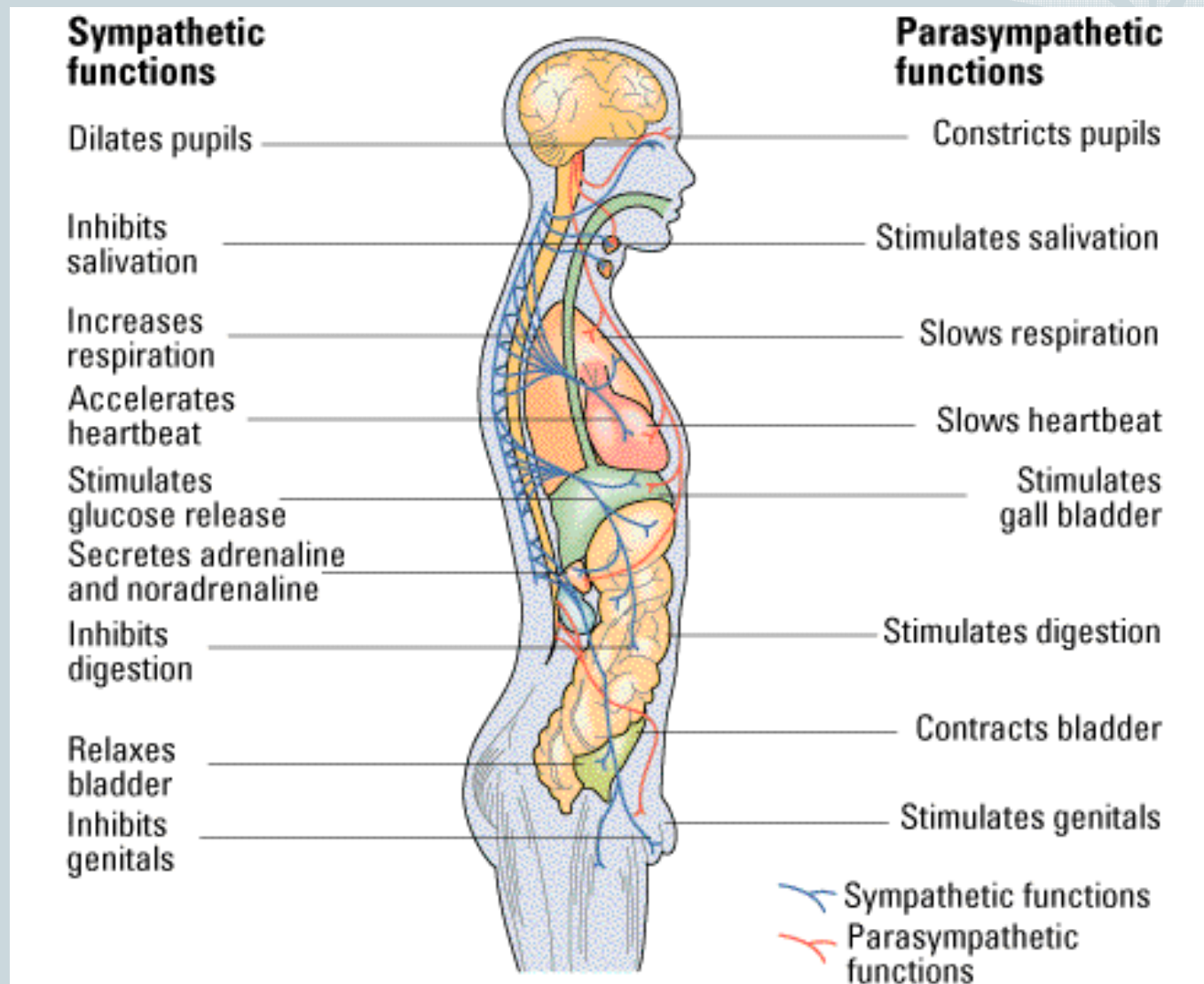
ADAM



The Nervous System



The autonomic nervous system



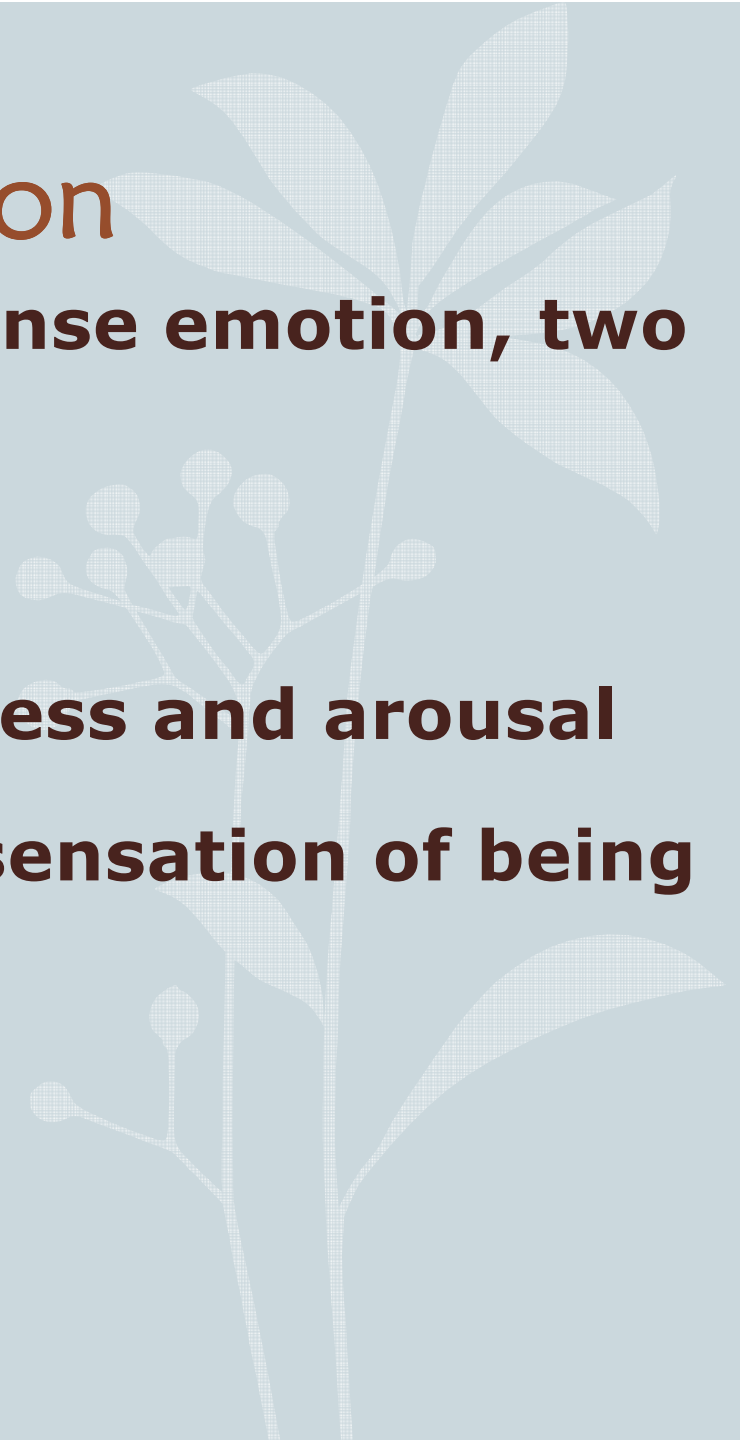
Hormones and emotion

When experiencing an intense emotion, two hormones are released.

- Epinephrine
- Norepinephrine

Results in increased alertness and arousal

At high levels, can create sensation of being out of control emotionally



The Experience of Stress

How stress can affect your mind: Intellectual Symptoms:

- Memory problems.
- Difficulty making decisions.
- Inability to concentrate.
- Confusion.
- Seeing only the negative.
- Repetitive or racing thoughts.
- Poor judgment.
- Loss of objectivity.



The Experience of Stress

How stress can make you feel: Emotional Symptoms

- Desire to escape or run away.
- Moody and hypersensitive.
- Restlessness and anxiety.
- Depression.
- Anger and resentment.
- Easily irritated and “on edge”.
- Sense of being overwhelmed.
- Lack of confidence.
- Apathy.
- Urge to laugh or cry at inappropriate times.



Review: How thoughts create emotions

Perceptions and attributions are involved in emotions.

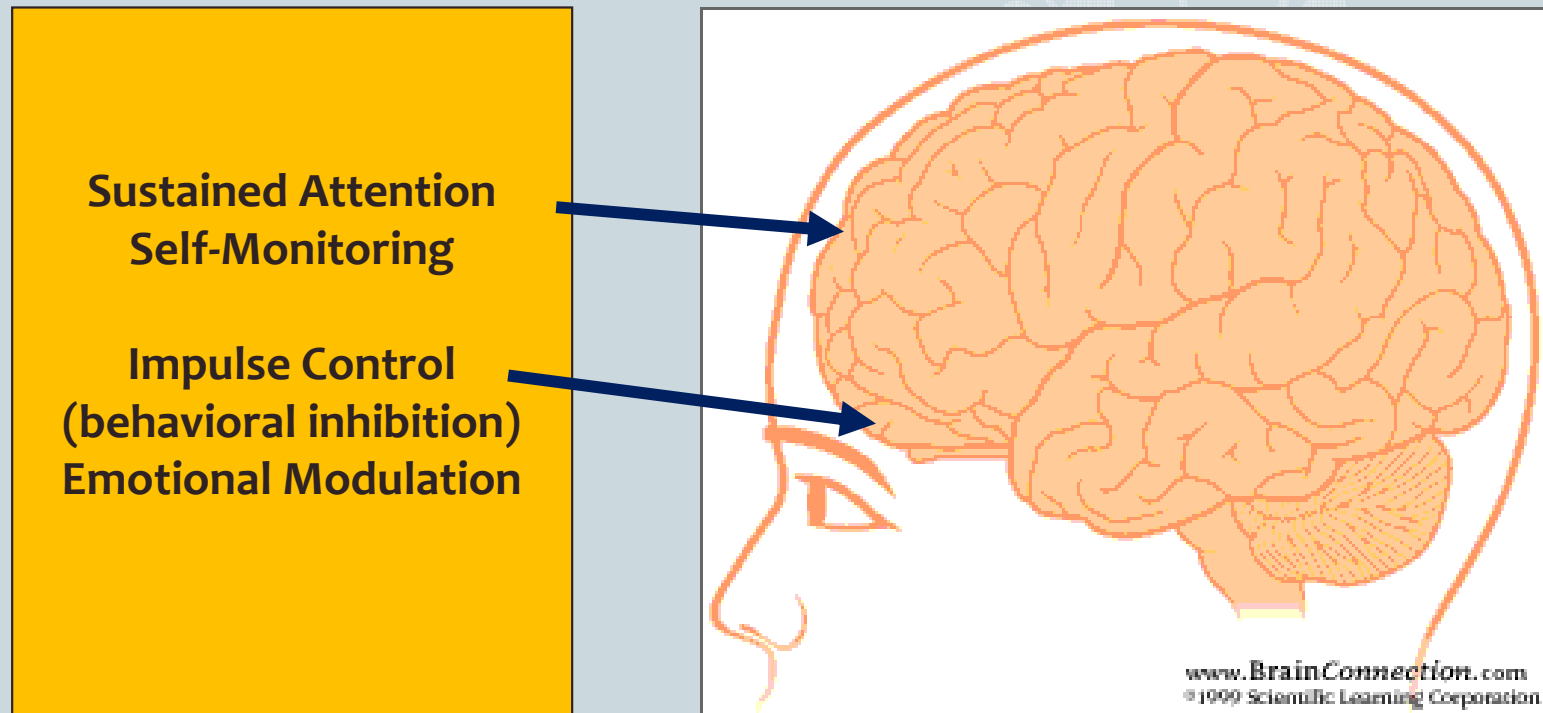
How one reacts to an event depends on how he/she explains it.

For example, how one reacts to being ignored or winning the silver instead of the gold medal

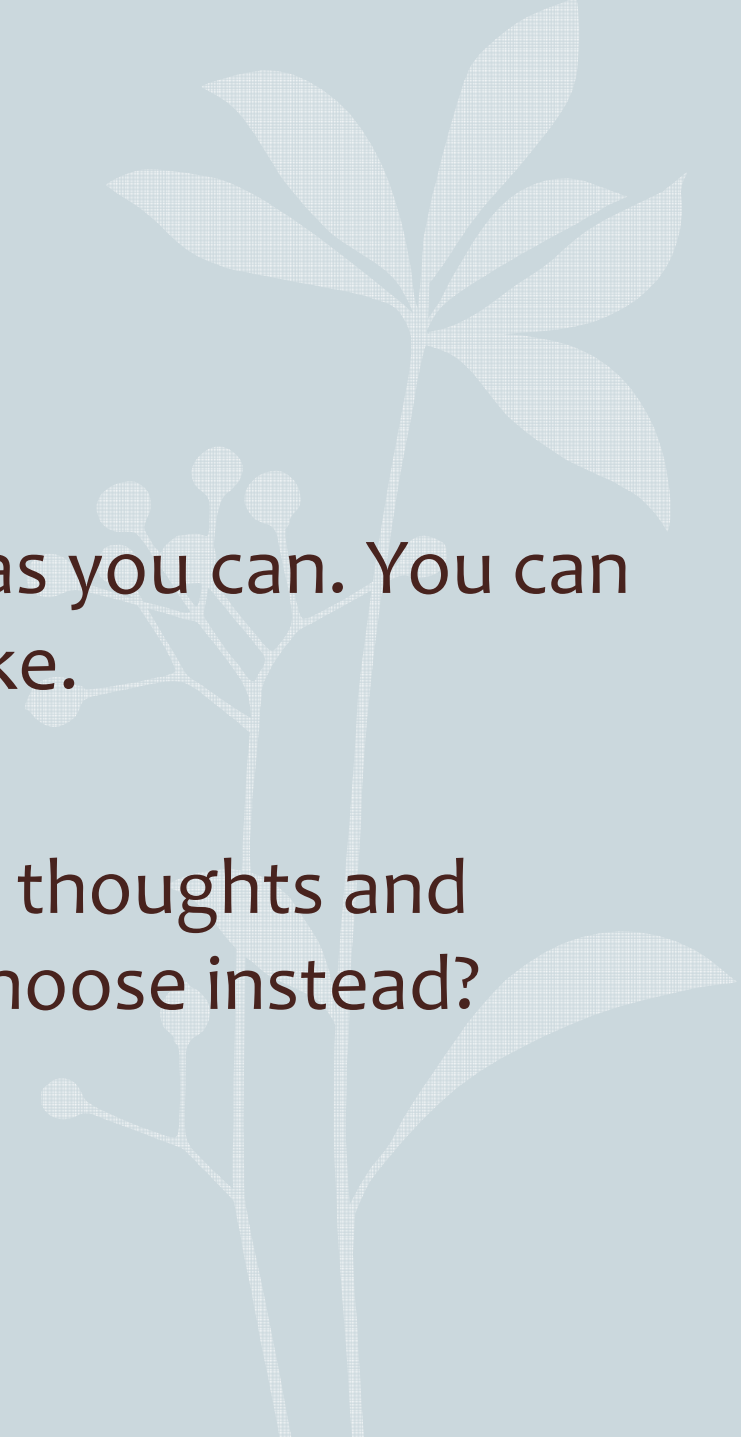
Philosophy of life is also influential.

#3. Prefrontal Cortex (PFC)

Need to exercise control over older, strong, emotional and instinctual brain of the subcortex.



Second Darts Exercise

- Groups of 3-4:
 - 1) List as many second darts as you can. You can begin with first darts if you like.
 - 2) Then, are there alternative thoughts and perceptions that you could choose instead?
- 

Question:

- In the teenage brain, the amygdala used more in decision making than frontal lobes. The frontal lobe develops over time. So, what does this imply for how we live our lives?
 - Practice overcoming subcortical impulses.

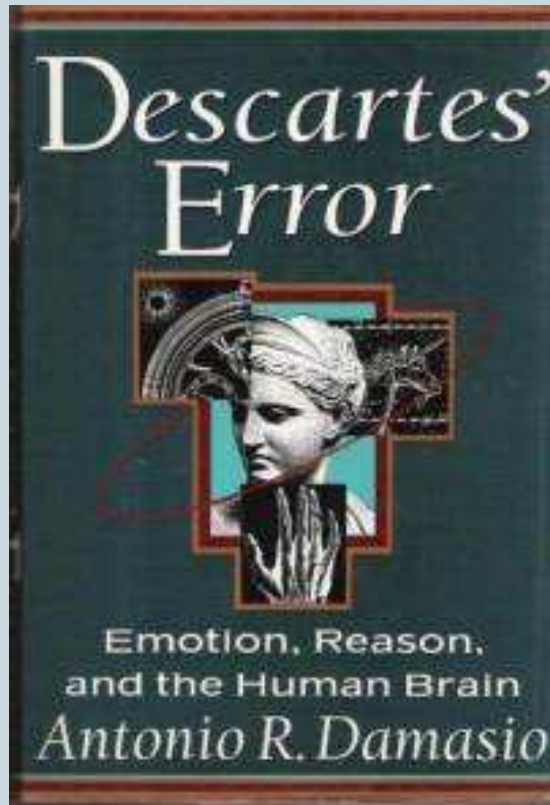


Thinking Beyond the Cerebral Cortex

Thinking (cognition) is not simply a cerebral matter.

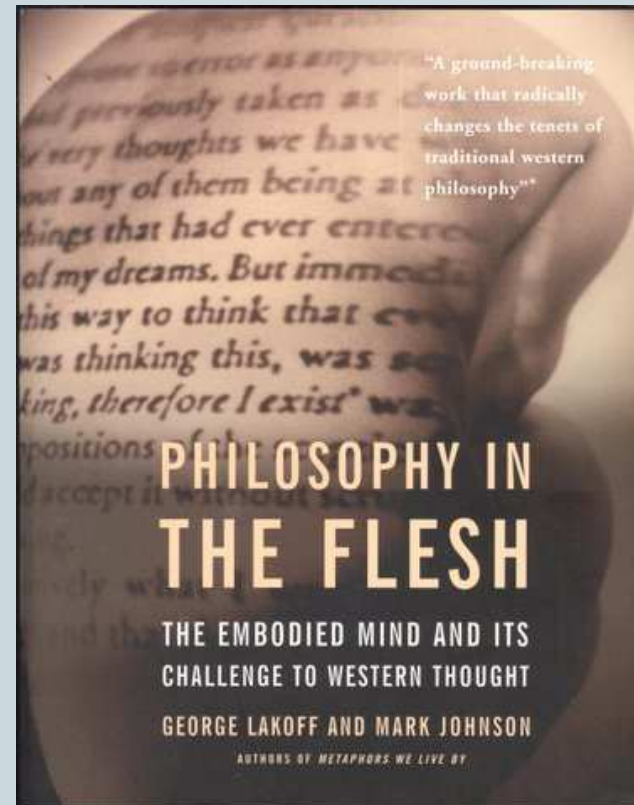
Antonio Damasio (Neurologist)

Emotions play a key role in our decision making.



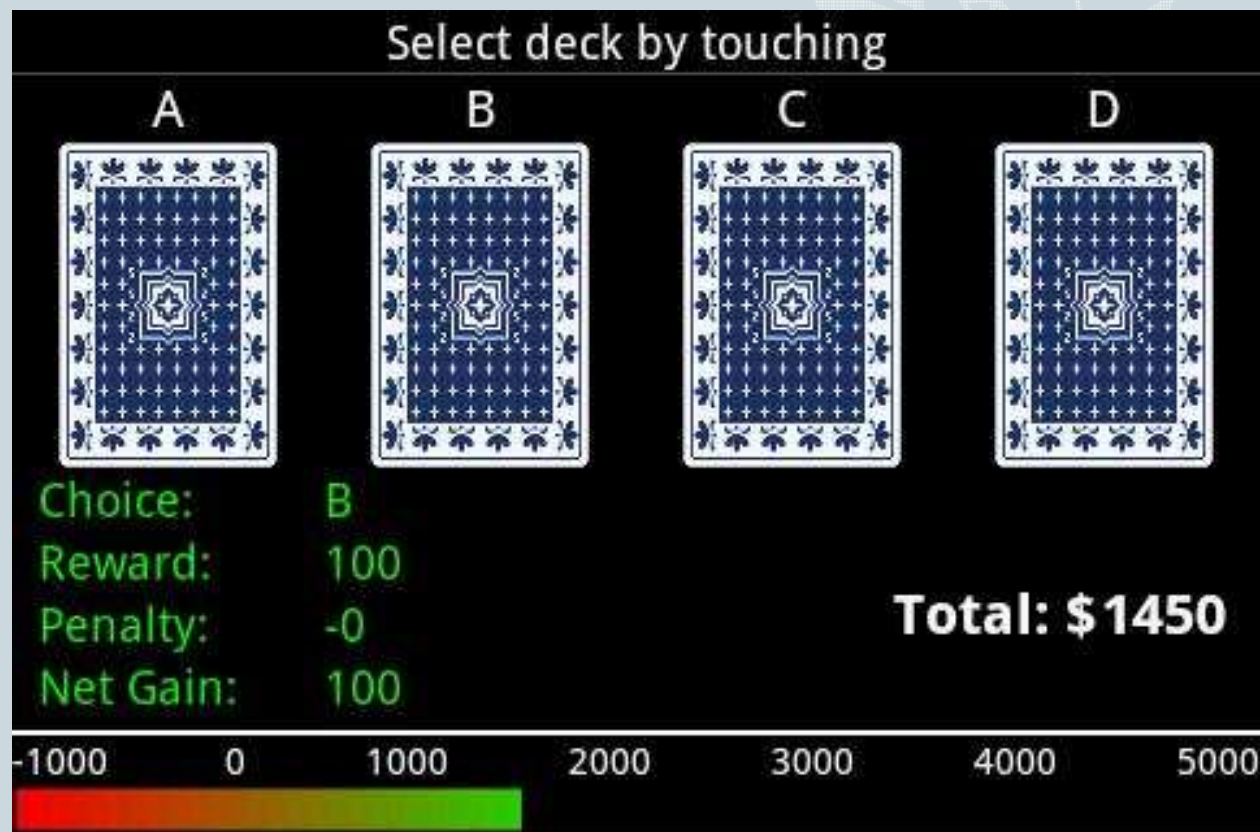
George Lakoff (Philosopher/Linguist)

All cognition, reasoning, is embodied.



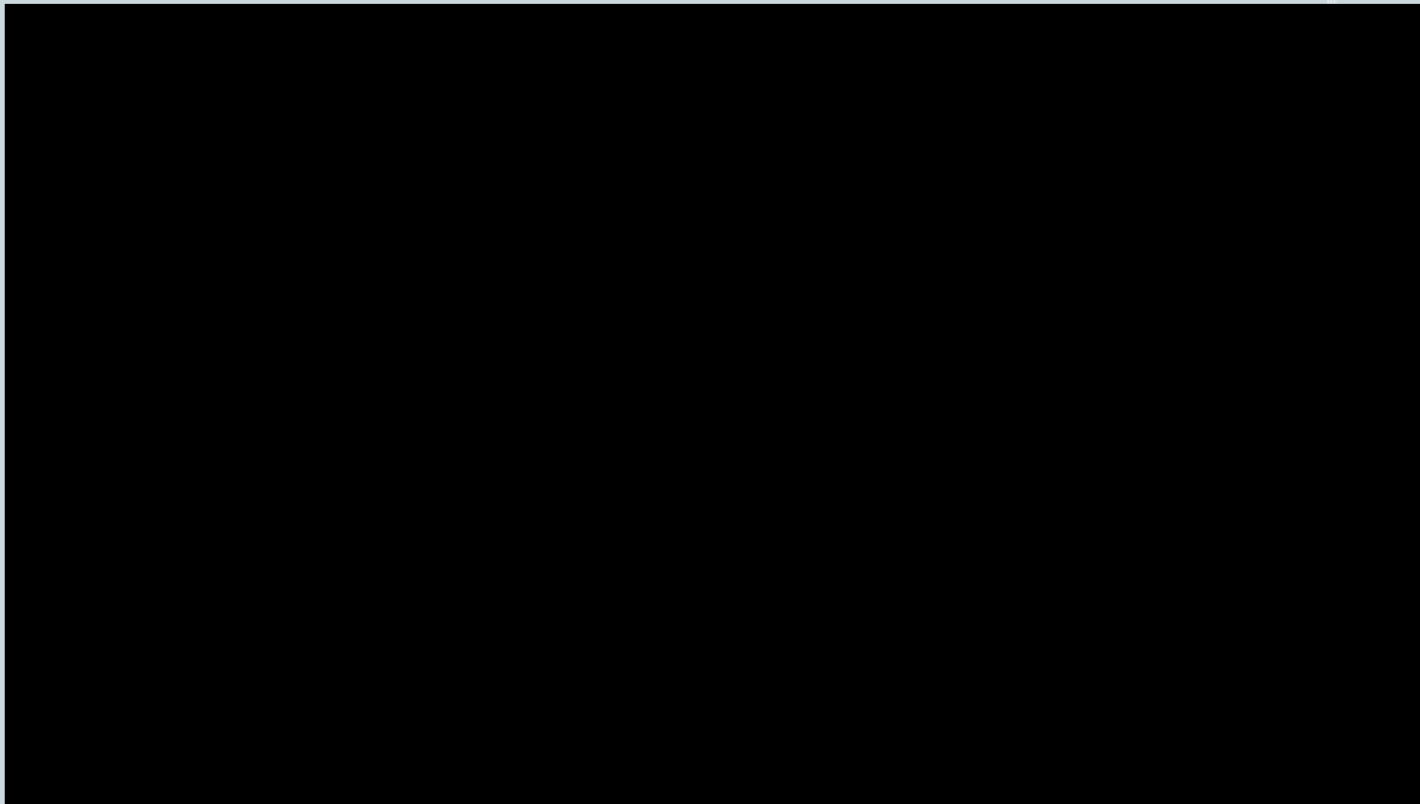
Damasio: Iowa Gambling Task (play?)

- Results:
 - Unconscious measurements show higher stress levels over “bad” decks after 10 trials. Person tends towards “good” decks after 40-50 trials, even though they have no conscious reasoning to do so.



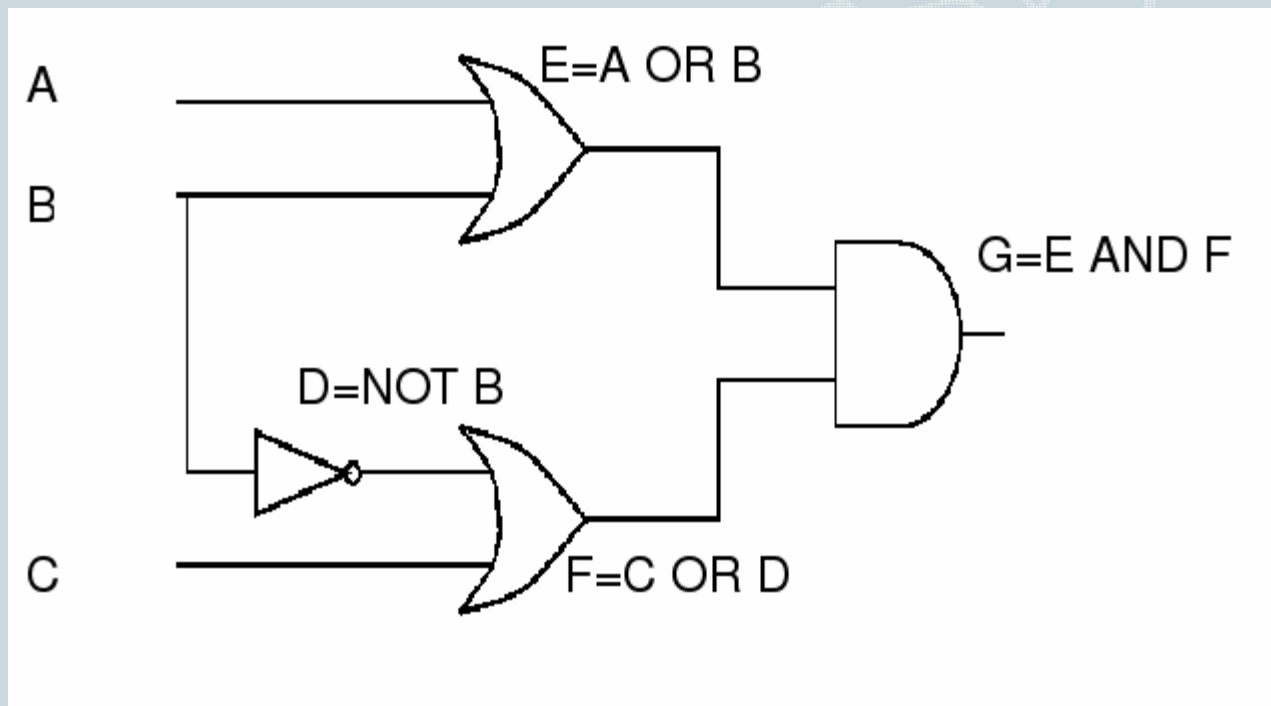
Damasio: Emotions & Decision Making

- Question: Is it possible to make decisions without emotions?

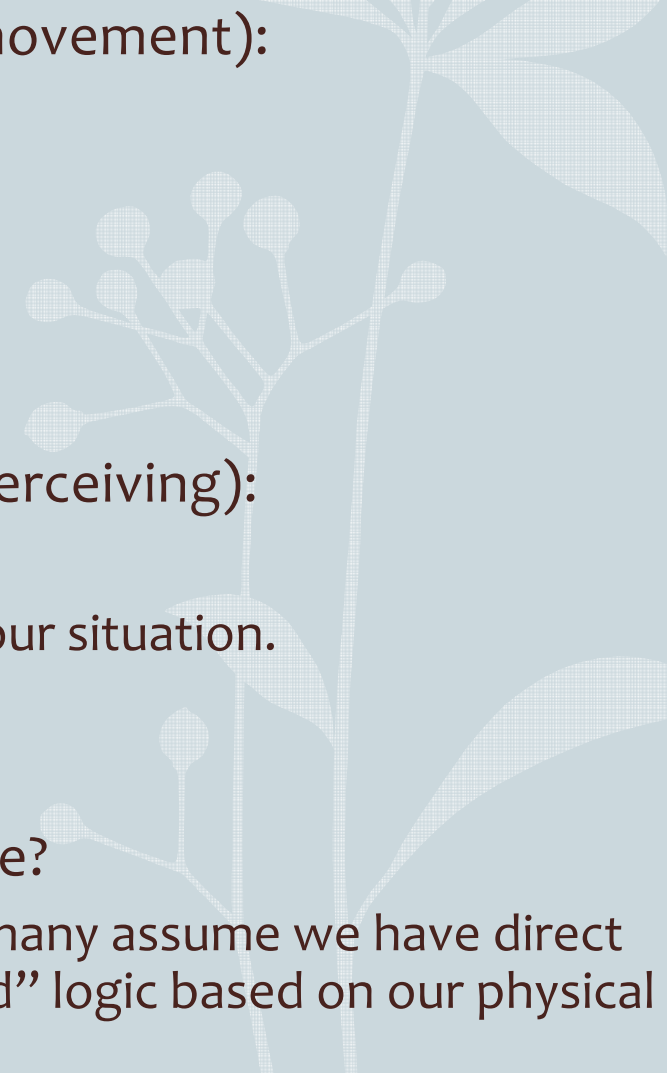


Lakoff: Reasoning is Embodied

- “Reason” isn’t disembodied, objective approach to truth.
- Our rationality is greatly influenced by our bodies in large part via an extensive system of metaphorical thought.



Lakoff: Reasoning is Embodied

- Embodied Metaphors for Thinking (as movement):
 - My mind is “wandering.”
 - How did you “reach that conclusion?”
 - I’m “stuck” or “lost”
 - I’ve “found” my answer
 - Embodied Metaphors for Thinking (as perceiving):
 - I “see” what you are saying.
 - New facts are “coming to light” regarding our situation.
 - You’ll “get the picture” sooner or later.
 - Question: Why is this important to notice?
 - Because when we think with logic/reason, many assume we have direct path to truth. But our logic is an “embodied” logic based on our physical experience of the world.
- 

Lakoff: Reasoning is Embodied

- More Evidence from Studies:
 - Participants holding warm as opposed to cold cups of coffee were more likely to judge a person as trustworthy after only a brief interaction.



- Unfamiliar Currencies: Those who held heavier clipboards judged currencies to be more valuable.



Embodied Cognition & Implications

- George Lakoff:
 - Our logic is embodied. What may seem rationally possible or impossible, true or false, may be the result of a “embodied” metaphor for reality, not reality itself.
- If we want to think consciously, we often use words and embodied reason to think through a scenario.

But if our words are just fingers pointing to the moon, we must be aware of the limitations of thinking with our fingers.



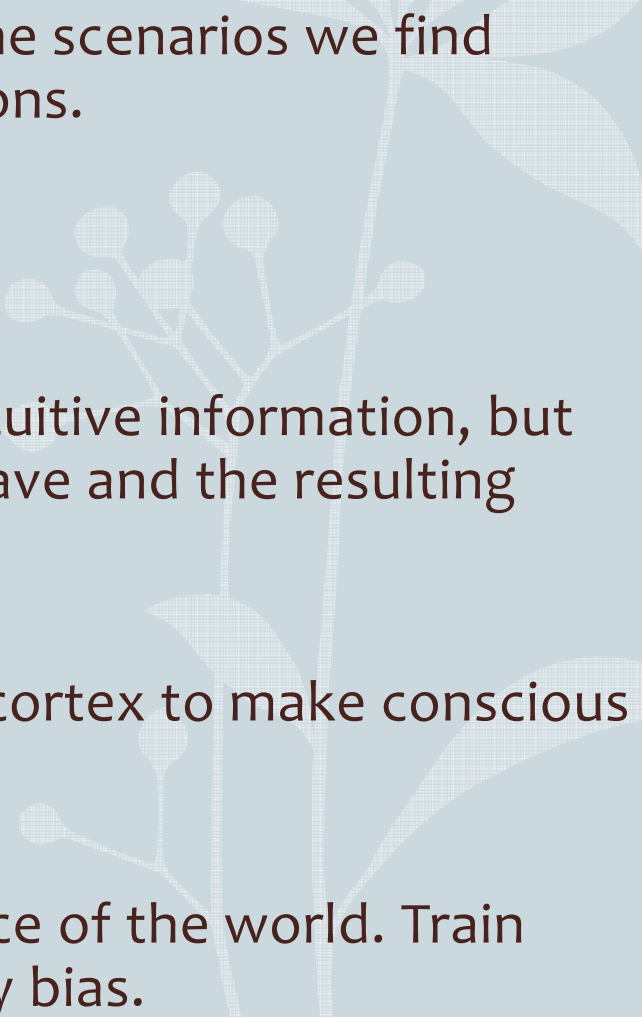


Functions of the Prefrontal Cortex

- Regulation of body systems
- Attuning to others
- Balancing emotions
- Modulating fear
- Responding flexibly
- Exhibiting insight and empathy
- Paying attention to the body's wisdom
- Morality



Embodied Perception & Thinking

- Our “understanding” of the world and the scenarios we find ourselves in are influenced by our emotions.
 - This can be good and bad.
 - To make use of the good, be aware of intuitive information, but take responsibility for the feelings you have and the resulting behavior.
 - To limit the bad, exercise the prefrontal cortex to make conscious responses.
 - Be an active participant in your experience of the world. Train yourself in ways to balance the negativity bias.
- 

The Power of Conscious Self-awareness

- Attention is like a spotlight, illuminating what it rests upon.
- Because neuroplasticity is heightened for what's in the field of focused awareness, attention is also like a vacuum cleaner, sucking its contents into the brain.
- Directing attention skillfully is therefore a fundamental way to shape the brain - and one's life over time.

*The education of attention
would be an education par excellence.*

William James