



CNS 5037

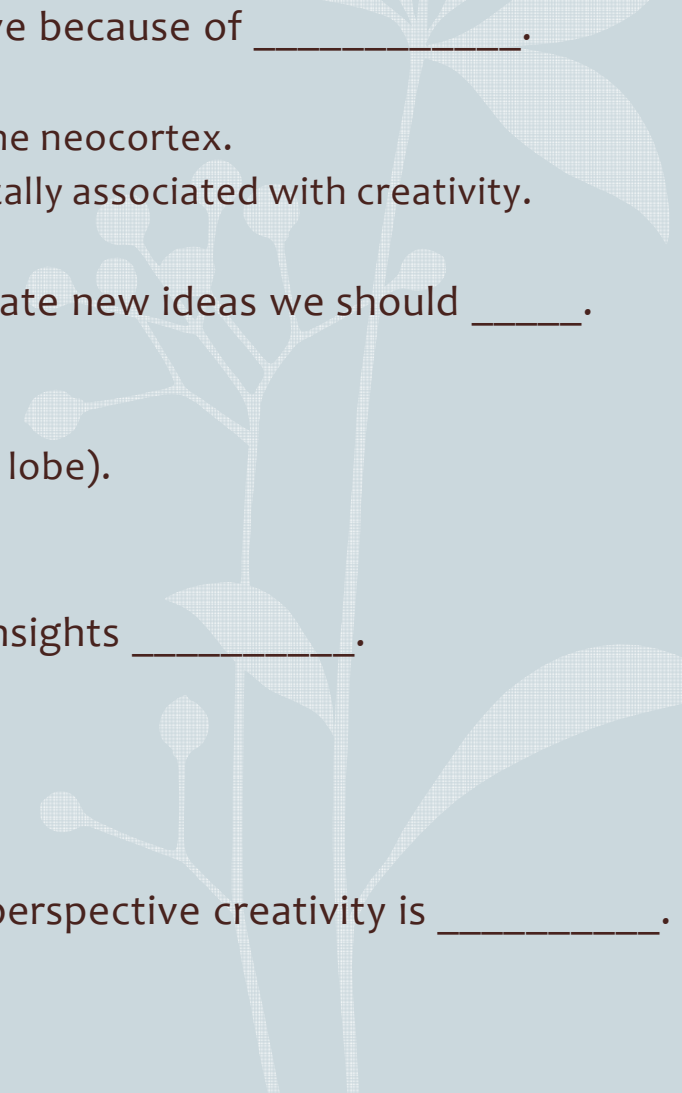
NEUROPHILOSOPHY

**Day - Empathy, Love, and the
Social Brain**

Final Project Discussion

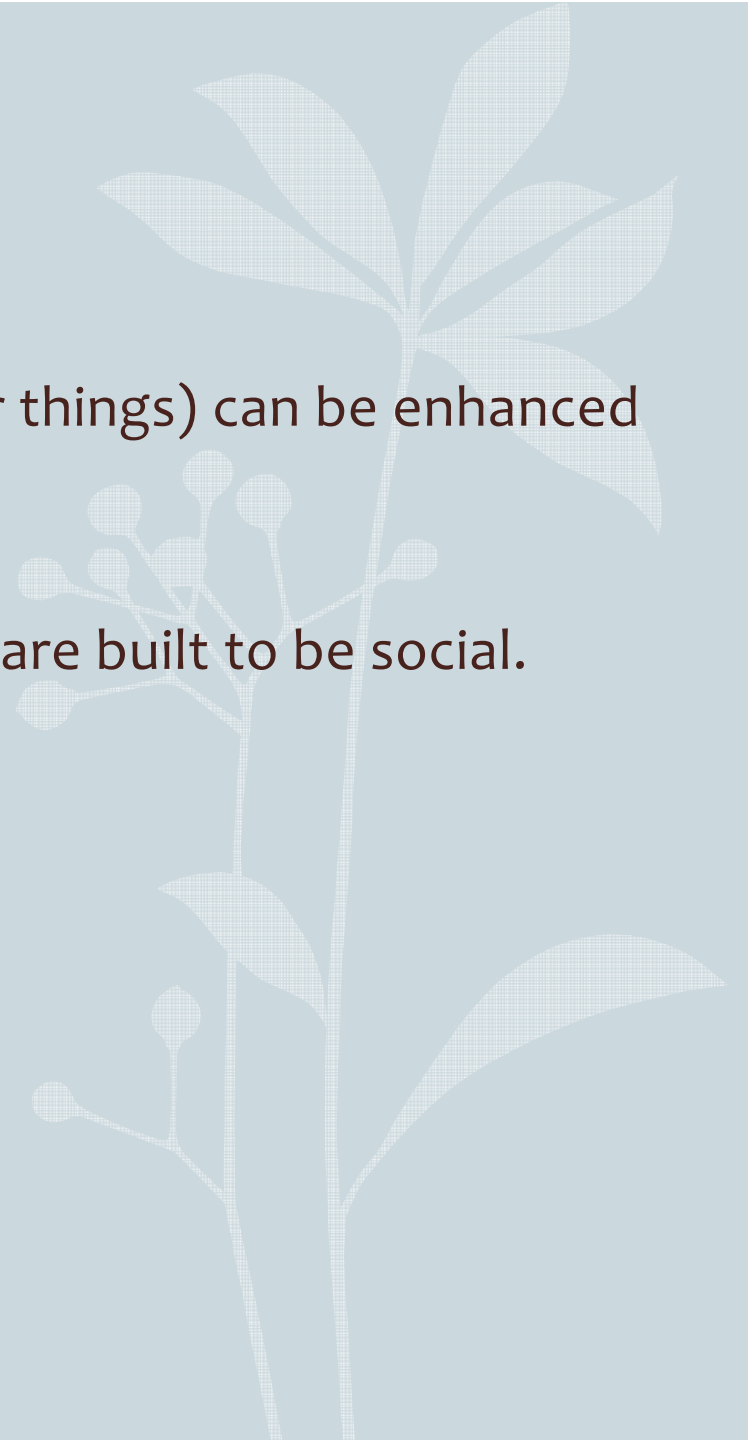
- Purpose:
 1. Exploration of a neurophilosophical question:
 - “What does our understanding of the brain and nervous system mean for the nature of _____ (the soul, ancestral wisdom, dreams, archetypal psychology, etc...)_____?”
 2. Reflect on implications this question has on consciousness transformation.
 3. Reflect on what personal significance this may have on your life.
- Presentations: Everyone will be given 7-10 minutes to somehow present...
 - What you researched,
 - How you performed your research,
 - And insights you gained through the research.
- Proposal (due 11/18) - An email with a paragraph that includes....
 - The neurophilosophical question(s) you hope to explore.
 - A brief description of how this question(s) are relevant to your personal life.


Self-Assessment of Day #3

1. It appears that we have an innate ability to be creative because of _____.
 - A. Neuroplasticity.
 - B. The division of labor apparent in the hemispheres of the neocortex.
 - C. Neurotransmitters that have been found to be specifically associated with creativity.
 2. Based on studies discussed in class, to actively generate new ideas we should _____.
 - A. Lessen the activity of the right hemisphere.
 - B. Increase the activity of the amygdala.
 - C. Lessen the activity of the left prefrontal cortex (fontal lobe).
 - D. Remove the corpus callosum.
 3. Research seems to indicate that flashes of creative insights _____.
 - A. More easily come when we are relaxed.
 - B. Require focused attention.
 - C. Require defocused attention.
 4. Last week we discussed that from a neuroscientific perspective creativity is _____.
 - A. Only a function of the right hemisphere.
 - B. A skill that only a few people possess.
 - C. The activation of unique neural activations patterns.
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Creativity & Collaboration

- For creativity, survival (and many other things) can be enhanced through cooperation.
- For various reasons it appears humans are built to be social.

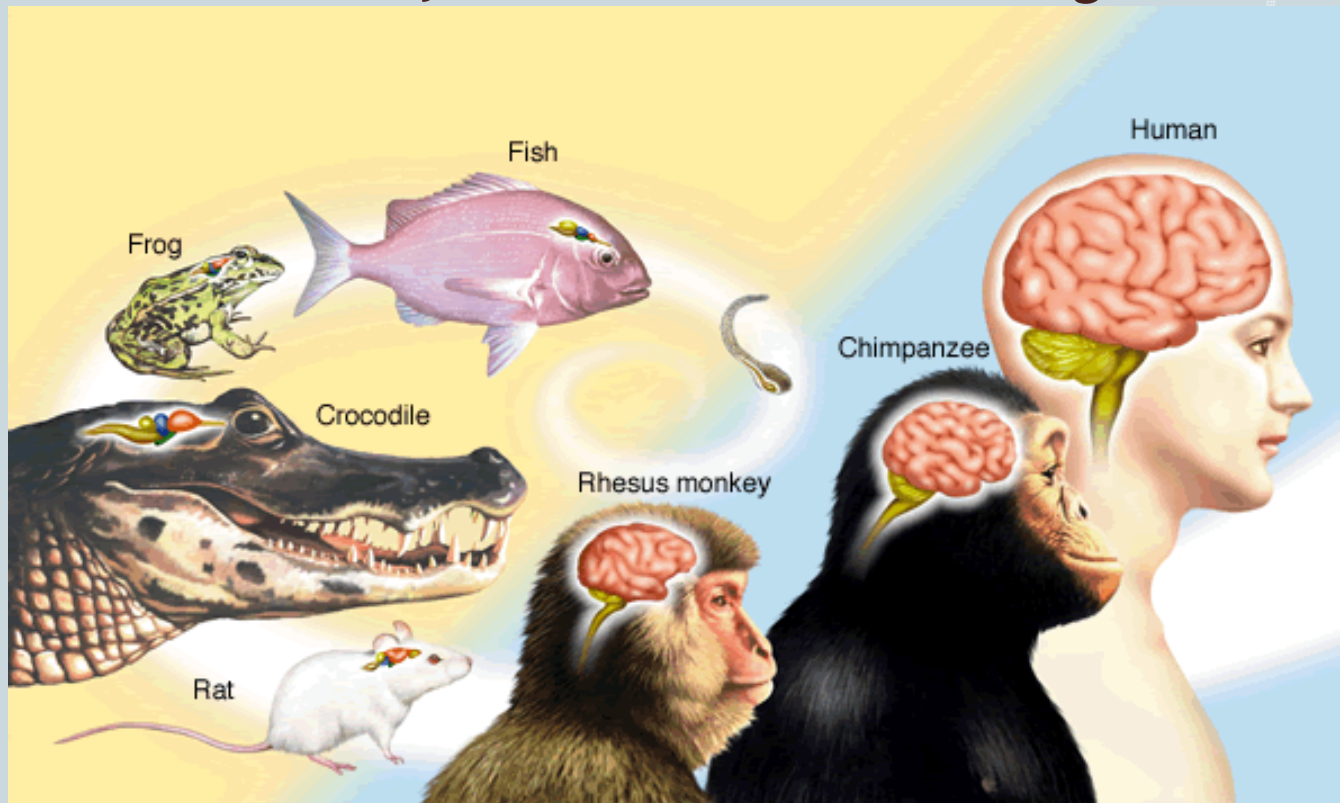




The Argument for the Social Brain and What This Means for Developing a more Compassionate Society

1. Social Bonding: Brain Size Matters

Scientists often point to our brain size at what makes us human,
but why is it that our brain is so large?



Why do mammals and birds have bigger brains (in proportion to rest of the body) than do reptiles and fish?

1. Social Bonding: Brain Size Matters



1. Social Bonding: Brain Size Matters

The earlier needs to do more: plan, communicate, cooperate, and negotiate with one and other for... *Selecting a good mate.*



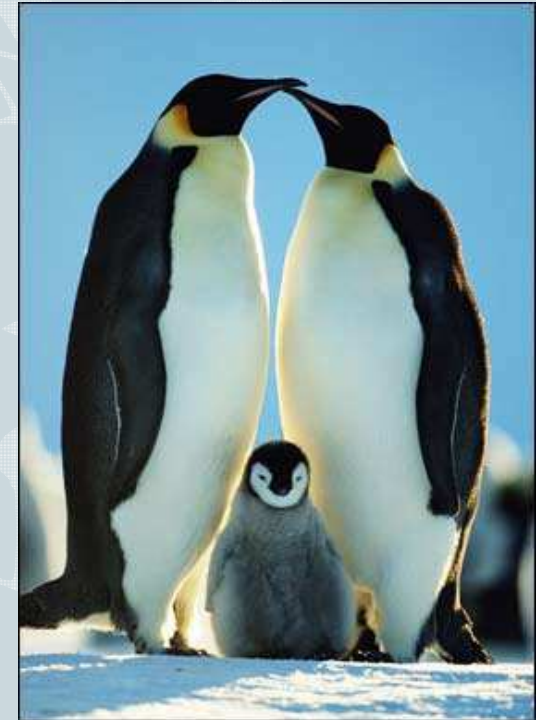
1. Social Bonding: Brain Size Matters

The earlier needs to do more: plan, communicate, cooperate, and negotiate with one and other for... [Sharing food.](#)



1. Social Bonding: Brain Size Matters

The earlier needs to do more: plan, communicate, cooperate, and negotiate with one and other for... **Keeping young alive.**



1. Social Bonding: Brain Size Matters

MAIN THEORY:

Social capabilities have been a primary driver of brain evolution.



We notice...

- Reptiles and fish **avoid** and **approach**.
- Mammals and birds **attach** as well - especially primates and humans.

We also see...

- The more social the primate species, the bigger the cortex.

As a result...

- A social brain needs to do more. So larger brain.
- But a growing brain needed a longer childhood, which required greater pair bonding and band cohesion.

1. Social Bonding: Brain Size Matters



1. Social Bonding: Brain Size Matters



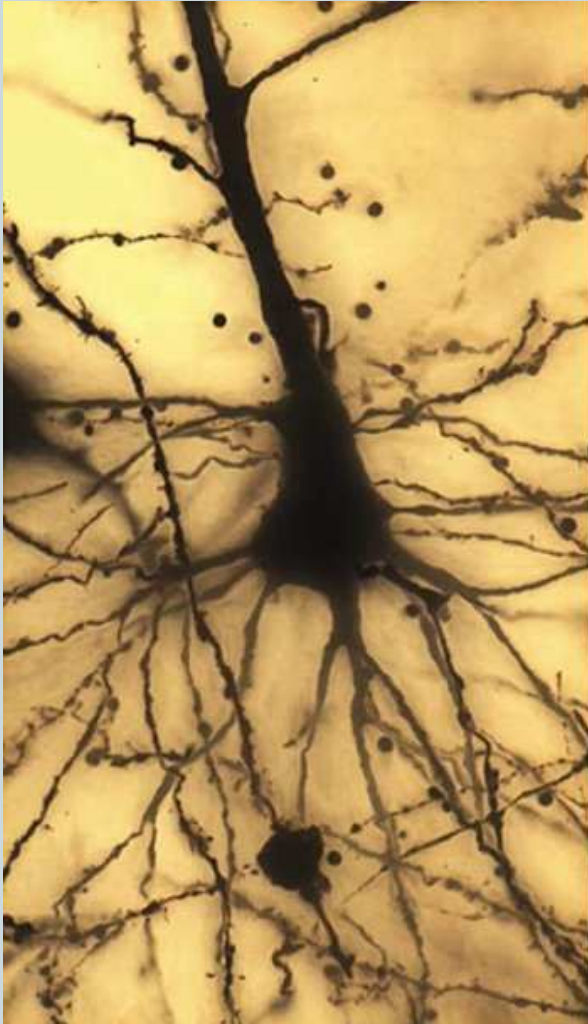
1. Social Bonding: Brain Size Matters



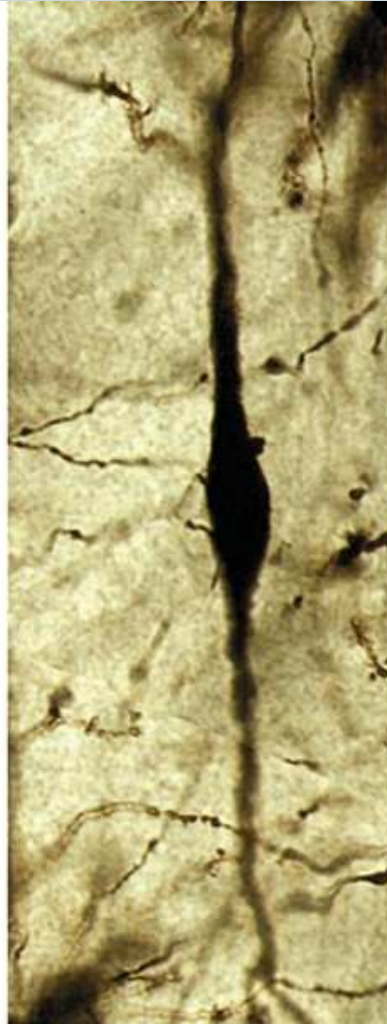
1. Social Bonding: Brain Size Matters



1. Social Bonding: Special Neurons – Spindle Cells



Typical Neuron



Spindle Cell

What's the Difference?

- Larger than other neurons – sends signals faster, across more of the brain.
- Found specifically in “social” brain areas
- What other animal has them?
 - Only Great Apes. (Why is this interesting?)
 - No other primate.

1. Social Bonding: Special Hormones - Oxytocin

Love and Attachment

THEORY: Our evolutionary ancestors were those that found ways to continue the species by forming strong social bonds keeping “us” together.

- Explains why losing love feels bad.
- Explains why love feels so good.
 - Release of chemicals like dopamine, but maybe more potent is **oxytocin**.

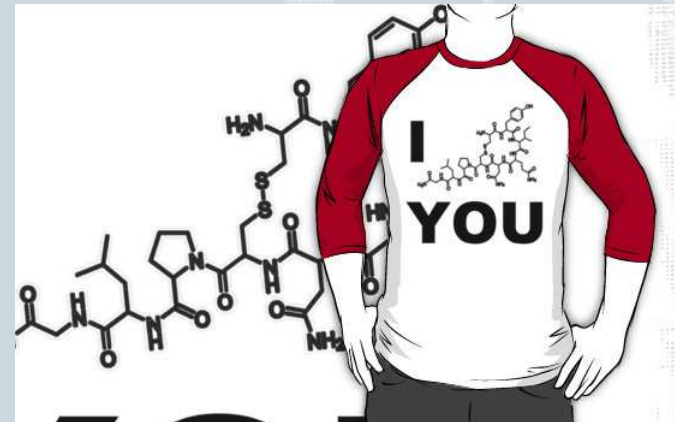
1. Social Bonding:
Special Hormones - Oxytocin

Mindfulness Exercise



1. Social Bonding: Special Hormones - Oxytocin

Amongst other things, scientist will point out that during such an experience your body produced a hormone called **oxytocin**.



- Produced by both men and women, but more in women.
- Greatly produced during the period around childbirth, particularly lactation period.
 - Theory: helps mother's form strong bonds with child
- Produced in various forms of social connection and intimacy.
 - The "cuddle hormone"

1. Social Bonding: Special Hormones - Oxytocin

Paul Zak

Neuroeconomics Study

- 1.5+ hrs of prepping, lots of instructions, arm jabbed with a needle to get four tubes of blood drawn, sitting in hard, uncomfortable chairs.
- Participants get \$10.
- “Would you like to give some of your \$10 to another participant you can’t see and have not met?”
- “Whatever you give up get’s tripled for the other.”
- The other person is notified and is asked: “You’ve been sent this x amount of money. Would you like to keep it all or send some amount back?”



*What would you do?
What do you think most people do?*

1. Social Bonding: Special Hormones - Oxytocin

- Most neuroeconomists believe transfer from the 1st to 2nd is a measure of **trust**.
- The more that is sent the more “trusting” the first person is. Why?
- Most believe transfer from the 2nd to 1st first is a measure of the 2nd person’s **trustworthiness**. Why? Can it be anything else?
- Understandable why the first would transfer money (possibility of more money in return).
 - **90% transferred.**
- But why would the second person ever do it? Why not just keep it?
 - **95% returned some of it.**
- The more money that was received usually led to more oxytocin being produced.
- The more oxytocin that was produced, the more money was returned.



What does this imply about oxytocin?

1. Social Bonding: Special Hormones - Oxytocin

Paul Zak

Believed it is the “moral” molecule.
So, next study tries to establish a causal function.

- Next study had a similar setup, but now they injected oxytocin (and a placebo, depending on the group) via nasal inhaler.
 - Larger % of people transferred their money.
 - Doubled the amount of people who sent ALL of their money.
 - What does this say?
- In other studies, using the nasal inhaler method, increased the amounts people gave to charity.
 - Studies were similar with other methods of increasing oxytocin.

What does this imply about oxytocin?

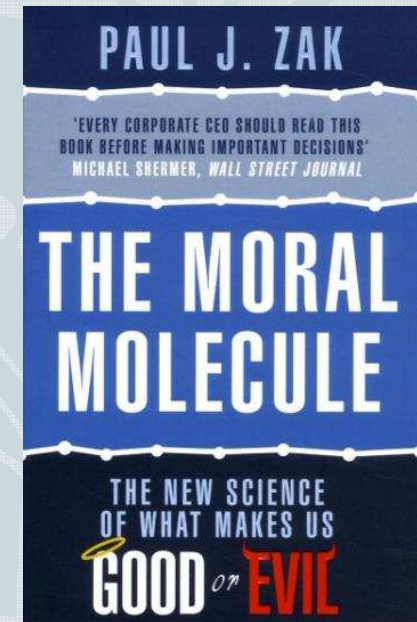


PHOTO: PAUL J. RICHARDS/RFP/GETTY IMAGES

1. Social Bonding: Special Hormones - Oxytocin

Summary

- Creates trust, promote social bonding, and foster compassion.
- Activates “tend-and-befriend” behaviors during stress.
- But it’s a shy molecule... Baseline level is just about zero.

Doesn't seem like something we should produce more of?

3. The Social Bonding Brain: Special Hormones - Oxytocin

Inhibited by...

- Improper nurturing while young
- High stress
- Testosterone

It is stimulated by...

- Physical contact (especially skin to skin)
- Moving together harmoniously (e.g., dancing)
- Warm feelings of rapport or love; devotion
- Imagination of the above
- Orgasm

What might this mean for us?

*What are the implications for society, education
politics, etc...*



1. Social Bonding: Special Hormones - Oxytocin



2011 Amsterdam Life Boat Study

- People felt closer to others... but more likely to discriminate against people who weren't like them.

Lie Study

- More likely to lie to be nice.
- More likely to lie if it benefited “their” group.

What's the key issue here?

2. Hanson: Us and Them – The Two Wolves

What does Hanson Refer to as “The Two Wolves”?

- Core evolutionary strategy: within-group cooperation, and between-group aggression.
- Both capacities and tendencies are hard-wired into our brains, ready for activation. And there is individual variation.
- **What are the “Two Wolves” in your heart?**
 - Love: sees a vast circle in which all beings are “us.”
 - Hate: sees a small circle of “us,” even only the self.



“Which one will you feed?”

– What is meant by this?

Hanson: Us and Them – The Two Wolves



What could we do to “feed the wolf” of love?

From a neuroscientific standpoint, how can we actively participate in our own neural programming to be more compassionate?

Hanson: Us and Them – The Two Wolves

How can we Feed the Wolf of Love?

- Focus on similarities between “us” and “them.”
- Consider others as young children.
- Notice good things about neutral or unpleasant people.
- Bring to mind the sense of someone who cares about you.
- Keep extending out the sense of “us” to include everyone.
- Consider others as your mother or dear friend in a past life.
- Have restraint about over-identifying with “us”
- Reflect on the suffering of so many people in the world.
- Self-generate feelings of kindness and love.
- **Develop Self-Compassion**

2. Hanson: Us and Them – The Two Wolves

Hanson

The wolf of hate is part of who we are and that to deny is “**a kind of ignorance—which is the root of suffering– to deny the aggression in our genetic endowment.**”

What do you think of his assertion?

Claims this brings about self-compassion....

2. Hanson: Us and Them – The Two Wolves Universal Compassion

Feeding the Wolf of Love

*Is Universal Compassion
possible?*

*Or will we always be bound to
treating some “others” as “not-us”.*



**"Until he extends his circle of compassion
to include all living things, man will not himself
find peace."**

A. Schweitzer

MC

2. Hanson: Us and Them – The Two Wolves How Big can our Circle Be?



3. Enlarging our Circle with Empathy

Empathy

- It is sensing, feeling, and understanding how it is for the other person. In effect, you simulate his or her inner world.
- It involves (sometimes subtly) all of these elements:
 - *Emotional attunement* – Feeling how another feels.
 - *Thinking/Conceptual understanding* – “Theory of Mind”
 - *Bodily resonance* – Internal simulation of action

But is true empathy really possible?

To philosopher's it's the problem of qualia.

But a new **system of neurons** may provide an answer...

3. Enlarging our Circle with Empathy

Have you ever involuntarily flinched at another's misfortune?



This has baffled scientists for years. *How can we have such an instantaneous reaction to an event we do not experience ourselves?*

3. Enlarging our Circle with Empathy: Mirror Neurons - I

- When I reach for a pen or drink water, a set of neurons called “motor command neurons” are activated to physically pick it up.
- What’s interesting is that when I see somebody else do the same action, a subset of these neurons still activates!!
- It’s as if I’m also participating in the actions of another!
 - Important for mimicking in infants and toddlers.

Some say important for the culture and development of civilizations!

Why?

3. Enlarging our Circle with Empathy: Mirror Neurons - I

V S Ramachandran

Neuroscientist

“mirror neurons will do for psychology what DNA did for biology: they will provide a unifying framework and help explain a host of mental abilities that have hitherto remained mysterious and inaccessible to experiments.”

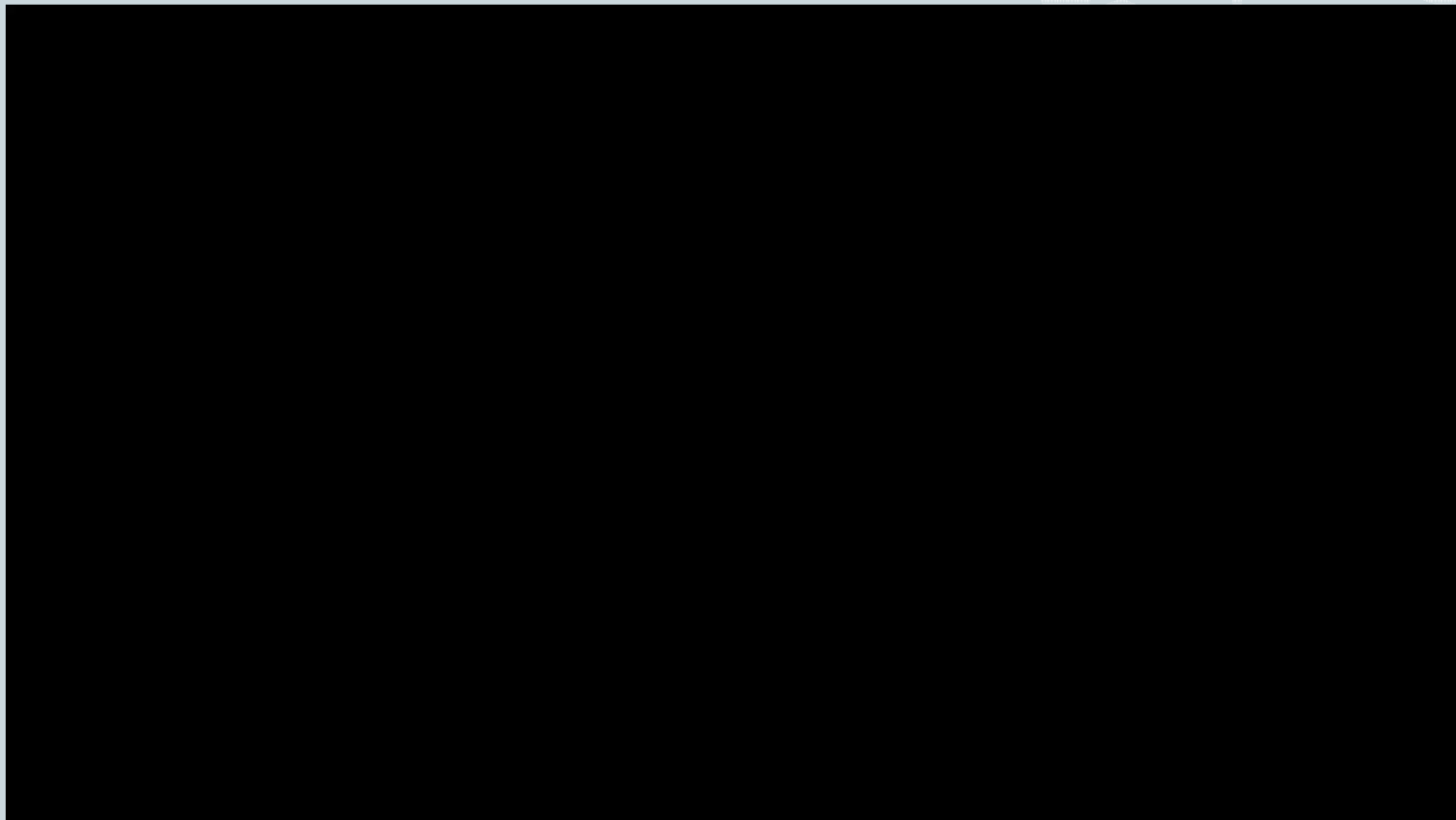
This is a bold statement. Why?

What did DNA do for biology?

3. Enlarging our Circle with Empathy: Mirror Neurons - I

What is the video implying about the importance of mirror neurons?

0 – 13:55 https://www.youtube.com/watch?v=HVLnZWHLg_M



3. Enlarging our Circle with Empathy: Mirror Neurons - II

- When I get touched, neurons in the somatosensory system activate
- What's interesting is that when I see somebody else get touched, a subset of these neurons also activates!!



- It's as if I'm literally having the experience that another is having!

3. Enlarging our Circle with Empathy: Mirror Neurons - II

Questions:

- Are we hard-wired to perceive the mind of another being?
- If we are built for empathy, why does it seem like we are not always empathetic?
- How can you relate this to global issues: sustainability, geopolitical conflict, etc...?

Jeremy Rifkin (Social & Economic Theorist)

Believes this means what we need then is a more Empathic Civilization.

And all else will follow...

3. Enlarging our Circle with Empathy: Mirror Neurons & The Empathic Civilization

Jeremey Rifkin

<https://www.youtube.com/watch?v=l7AWnfFRc7g>

