
Paper Tiger Paranoia

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Topics

- **Three Evolving Neural Systems: Avoid, Approach, Attach**
- **The Negativity Bias and Threat Reactivity**
- **How to Wake from the “Paranoid Trance”**



The Evolving Brain

Evolution

- ~ 4+ billion years of earth
- 3.5 billion years of life
- 650 million years of multi-celled organisms
- 600 million years of nervous system
- ~ 80 million years of mammals
- ~ 60 million years of primates
- ~ 6 million years ago: last common ancestor with chimpanzees, our closest relative among the “great apes” (gorillas, orangutans, chimpanzees, bonobos, humans)
- 2.5 million years of tool-making (starting with brains 1/3 our size)
- ~ 150,000 years of *homo sapiens*
- ~ 50,000 years of modern humans
- ~ 5000 years of blue eyes

Three Stages of Brain Evolution

■ Reptilian:

- Brainstem, cerebellum, hypothalamus
- Reactive and reflexive
- “Avoiding”

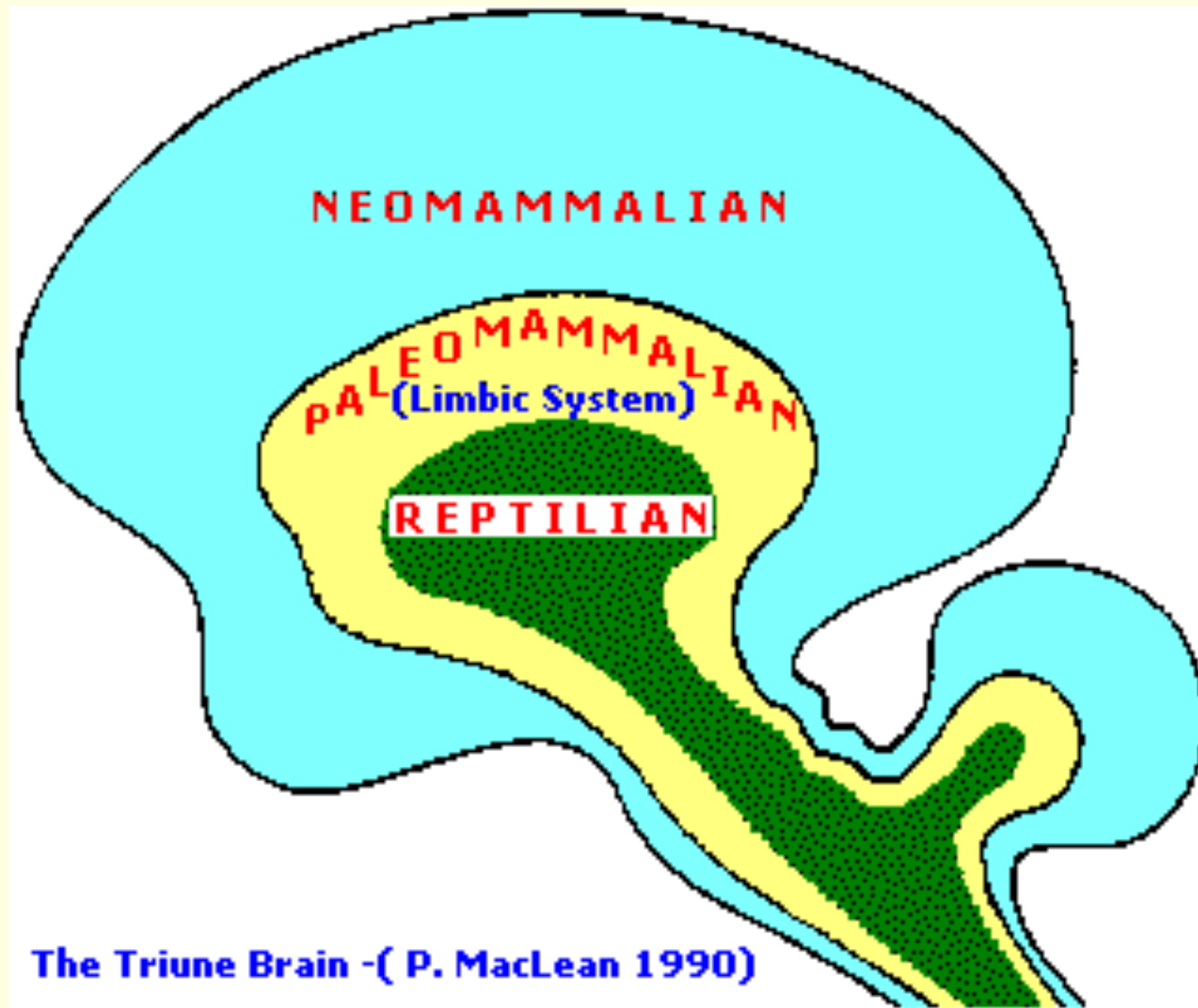
■ Mammalian:

- Limbic system, cingulate, early cortex
- Memory, emotion, social behavior
- “Approaching”

■ Human:

- Massive cerebral cortex
- Abstract thought, language, cooperative planning, empathy
- “Attaching”

The Evolving Brain



Three Goal-Directed Systems Evolved in the Brain

- **Avoid** “sticks,” threats, penalties, pain
- **Approach** “carrots,” opportunities, rewards, pleasure
- **Attach** to “us,” proximity, bonds, feeling close
- Although the three branches of the vagus nerve loosely map to the three systems, the essence of each is its aim, not its neuropsychology.
- Each system can draw on the other two for its ends.

Evolution of Approaching and Avoiding

- Crucial functions: approach what promotes survival and avoid what threatens it
 - Motile protozoa will move toward a sucrose gradient and away from a toxic one.
 - Animals approach food, mates, and shelter; they freeze around, flee from, or resist predators and natural hazards.
 - Social animals approach caregivers, allies, and higher social status; they fight rivals, avoid or appease “alphas,” and resist lower status.

- Signals and rewards:
 - Pleasure and pain; “hedonic tone”
 - Emotion: a very sophisticated development
 - The role of anticipation, expectations (often unconscious)

Love and the Brain

- Social capabilities have been a primary driver of brain evolution.
- Reptiles and fish avoid and approach. Mammals and birds *attach* as well - especially primates and humans.
- Mammals and birds have bigger brains than reptiles and fish.
- The more social the primate species, the bigger the cortex.
- Since the first hominids began making tools ~ 2.5 million years ago, the brain has tripled in size, much of its build-out devoted to social functions (e.g., cooperative planning, empathy, language). The growing brain needed a longer childhood, which required greater pair bonding and band cohesion.

Home Base of the Human Brain

When not threatened, ill, in pain, hungry, upset, or chemically disturbed, most people settle into being:

- **Calm** (the Avoid system)
- **Contented** (the Approach system)
- **Caring** (the Attach system)
- **Creative** - synergy of all three systems

This is the brain in its *responsive-restorative* mode. ¹⁰

Benefits of Responsive-Restorative Mode (1)

- Positive emotions:
 - Emotions organize the brain as a whole, so positive ones have far-reaching benefits.
 - Promote exploratory, “approach” behaviors
 - Lift mood; increase optimism, resilience
 - Counteract trauma
 - Stronger immune system; less stress-reactive cardiovascular

- Positive cognitions (perspectives, attitudes)
 - Opportunity focus
 - Optimism

Benefits of Responsive-Restorative Mode (2)

- Promotes prosocial behaviors:
 - Experiencing safety decreases aggression.
 - Experiencing sufficiency decreases envy.
 - Experiencing connection decreases jealousy.
 - We're more generous when our own cup runneth over.

The good life, as I conceive it, is a happy life.

I do not mean that if you are good you will be happy;

I mean that if you are happy you will be good.

Bertrand Russell

Benefits of Responsive-Restorative Mode (3)

- Positive cycles:
 - Optimism leads to success and more optimism.
 - People who feel liked act in likable ways.

- Recovery from “mobilizations” for survival:
 - Refueling after depleting outpourings
 - Restoring equilibrium to perturbed systems
 - Metabolizing/detoxing stress hormones, cytokines, etc.
 - Reconciling after separations and conflicts
 - Reinterpreting negative events in a positive frame

But To Cope with Urgent Needs, We Leave Home . . .

With activations of the three systems:

- **Avoid:** When we are threatened or harmed
- **Approach:** When we can't attain important goals
- **Attach:** When we feel isolated, disconnected, unseen, unappreciated, unloved

This is the brain in its ***reactive*** mode of functioning
- a kind of inner homelessness.

The urgency of survival needs have made the *reactive* mode very powerful in the rapidity, intensity, and inflexibility of its activations.

A key component of the reactive mode is a bias toward scanning for, reacting to, storing, and retrieving negative stimuli: *the negativity bias*.



The Negativity Bias and Threat Reactivity

Negativity Bias: Causes in Evolution

- “Sticks” - Predators, natural hazards, social aggression, pain (physical and psychological)
- “Carrots” - Food, sex, shelter, social support, pleasure (physical and psychological)
- In our evolutionary history, “sticks” usually had more impact on survival than “carrots.”
 - Urgency - Usually, sticks must be dealt with immediately, while carrots allow a longer approach.
 - Impact - Sticks usually determine mortality, carrots not; if you fail to get a carrot today, you’ll likely have a chance at a carrot tomorrow; but if you fail to avoid a stick today - whap - no more carrots forever.

With the negativity bias, the Avoid system hijacks the Approach and Attach systems, inhibiting them or using them for its ends.

Negativity Bias:

Physiology and Neuropsychology

- Physiology:
 - Greater bodily arousal to negative stimuli
 - Pain is produced anywhere; pleasure is circumscribed.
- Neuropsychology:
 - Separate, low-level systems for negative and positive stimuli
 - Right hemisphere specialized for negative stimuli
 - Greater brainwave responses to negative stimuli
 - ~ 65% of amygdala sifts for negative stimuli
 - The amygdala-hippocampus system flags negative experiences prominently in memory: *like Velcro for negative experiences but Teflon for positive ones.*
 - More negative “basic” emotions than positive ones

Negativity Bias: Attention, Processing, and Learning

- Negative stimuli command more attention.
 - They're less common and thus more informative.
 - They're perceived more easily and quickly.
 - Reaction times are faster for angry faces than happy ones.
 - Empathy is elicited more for negative experiences.
- Negative stimuli are processed more deeply.
- In nature: multiple chances to learn how to approach rewards, but no chance for trial-and-error learning about dangers.
 - Learning based on punishments is generally faster.
 - Strong dislikes are acquired more quickly than strong likes.

Negativity Bias: Consequences (1)

- Negative beats positive head to head:
 - “Endowment effect,” “prospect function,” “loss aversion”:
People will do more to avoid a loss than to acquire a gain.
 - Immorality contaminates more than morality elevates.
 - “Pariahs” contaminate more than “saints” elevate.
- Negative beats positive in combination:
 - Negative information about a person shapes opinions most.
 - It takes five positive interactions to undo a negative one.
 - It’s easy to create learned helplessness, but hard to undo.
 - In health, parenting, and relationships, absence of negative generally matters more than presence of positive.

Negativity Bias: Consequences (2)

- Negative is more differentiated:
 - There are more words for negative experiences.
- Negative is more alarming than positive is reassuring:
 - Negativity of negative stimuli grows faster with approach in time or space than positivity of positive stimuli.
- Negative vicious cycles:
 - Minimal inhibitory feedback on cortisol
 - Negative social behaviors produce confirming feedback.
- Individual differences in negativity bias: vulnerabilities for reactivity, stress, anxiety, anger, and depression ²²

Negativity Bias: Complications

- Positive events are more common, but negative events are more urgent; our ancestors evolved to handle both.
- When mildly negative and positive stimuli come together, we tend to regard their gestalt as mildly positive. Negative stimuli dominate positive stimuli when both are intense.
- Compensatory processes tilt personal memories in a positive direction over time (so the more time that's passed, the more positive the memory).
- There's a positivity bias for positive stimuli that are rare (e.g., heroic acts, exceptional ability).

A Major Aspect 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 thousand times to avoid making the second mistake even once.
- This evolutionary tendency is intensified by temperament, personal history, culture, and politics.
- Threat reactivity affects individuals, couples, families, organizations, nations, and the world as a whole.

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.


Costs of Threat Reactivity

(Personal, Organizational, National)

- Feeling threatened feels bad, and triggers stress consequences.
- We over-invest in threat protection.
- The boy who cried tiger: flooding with paper tigers makes it harder to see the real ones.
- Acting while feeling threatened leads to over-reactions, makes others feel threatened, and creates vicious cycles.
- The Approach system is inhibited, so we don't pursue opportunities, play small, or give up too soon.
- In the Attach system, we bond tighter to "us," with more fear and anger toward "them."

Besides its impacts at the personal and organizational level, threat reactivity is a major source of prejudice, oppression, and war.

Reducing threat reactivity is a key way to make this world a better place.



Waking from the “Paranoid Trance”

There's already a large research or clinical literature on fear, anxiety disorders, and treatment.

What are the keys for addressing “paper tiger paranoia?”

Mindfulness of Threats and Fear

- Mindfulness of the negativity bias itself:
 - Primes recognition of threat reactivity in general
 - Fuels correcting of cognitive errors
- Mindfulness alerts us to specific assumptions or exaggerations of threat.
- Through mindfulness, we disidentify from threat appraisals and the reactive cascade.
- Mindfulness draws us into a centered place that feels relatively strong and safe.

Parasympathetic Activation

- Parasympathetic inhibits sympathetic and hormonal arousal.
- Attitude: Regard stressful activation as an affliction.
- Methods for stimulating the parasympathetic nervous system:
 - Big exhalation
 - Relaxing the tongue
 - Relaxing the body
 - Fiddling the lips
- Get in the habit of rapidly activating a damping cascade when the body gets aroused.
- Regard bodily activation as just another compounded, “meaningless,” and impermanent phenomenon; don’t react to it.

Feeling Cared About

- As we evolved, we increasingly turned to and relied on others to feel safer and less threatened.
 - Exile from the band was a death sentence in the Serengeti.
 - Attachment behaviors: relying on the secure base
 - The well-documented power of social support to buffer stress and aid recovery from painful experiences

- Methods:
 - Recognize it's kind to others to feel cared about yourself.
 - Look for occasions to feel cared about and take them in.
 - Deliberately bring to mind the experience of being cared about in challenging situations.
 - Be caring yourself.

Dispute Fearful Thoughts

- Systematically target:
 - Overestimates of threats
 - Underestimates of opportunities
 - Underestimates of inner and outer resources

- Know what your own particular predilections are toward threat reactivity.

- Do well-chosen experiments in which you challenge a particular threat appraisal and risk a dreaded experiment; when the experiment goes well, really take in the results.

“Taking the Fruit as the Path”

Gladness

Love

Peace

Great Books

See www.RickHanson.net for other great books.

- Austin, J. 2009. *Selfless Insight: Zen and the Meditative Transformations of Consciousness*. MIT Press.
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See www.RickHanson.net for other scientific papers.

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