Think not lightly of good,
saying, "It will not come to me."

Drop by drop is the water pot filled.

Likewise, the wise one,
gathering it little by little,
fills oneself with good.

Dhammapada 9.122

Hardwiring Happiness:

Weaving Love and Inner Peace Into Your Brain and Your Life

New York Insight

October 12, 2013

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WiseBrain.org RickHanson.net

Topics

- Grounding the mind in life
- Self-directed neuroplasticity
- Self-compassion
- Growing inner strengths

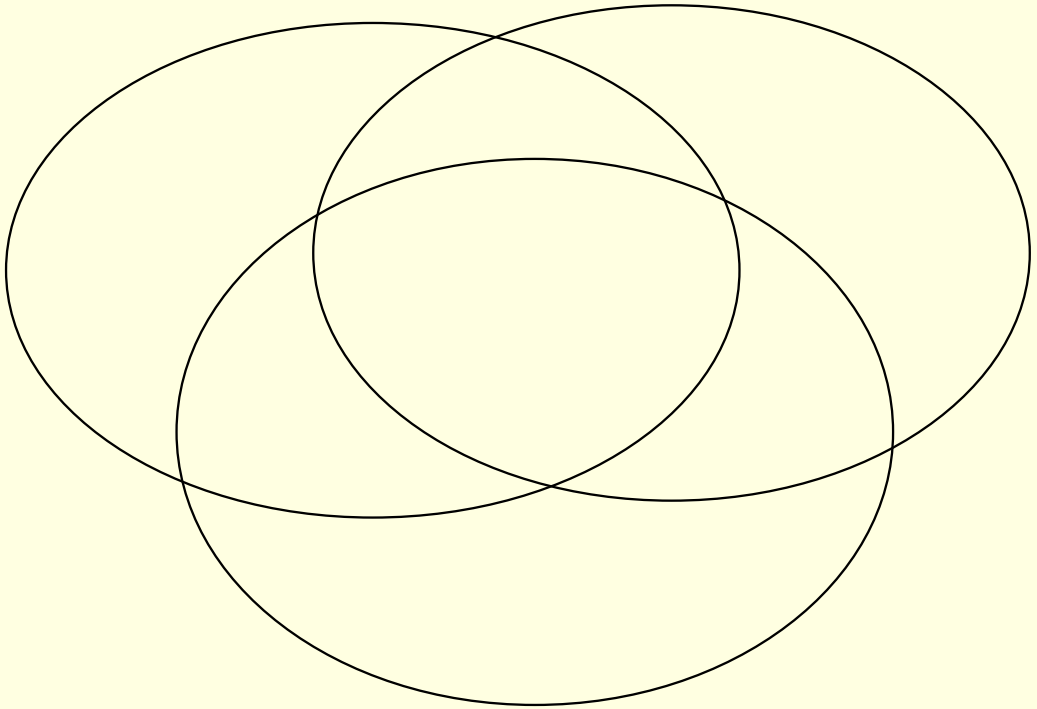
- The evolving brain
- The negativity bias

- Taking in the good
- Healing old pain

- Cultivation and craving

Grounding the Mind in Life

Common - and Fertile - Ground



The Natural Mind

Apart from the hypothetical influence of a transcendental X factor . . .

Awareness and unconsciousness, mindfulness and delusion, and happiness and suffering must be **natural** processes.

Mind is grounded in life.

Naturalizing the Dharma

To “naturalize” something is to place it in the frame of the natural world, to operationalize it in natural terms.

Buddhist practice engages the *mental* causes of suffering and its end. What could be the natural, *neurobiological* (NB) causes of those causes?

What could be a NB operationalization of dukkha, tanha, nirodha, sila, samadhi, panna, and bhavana?

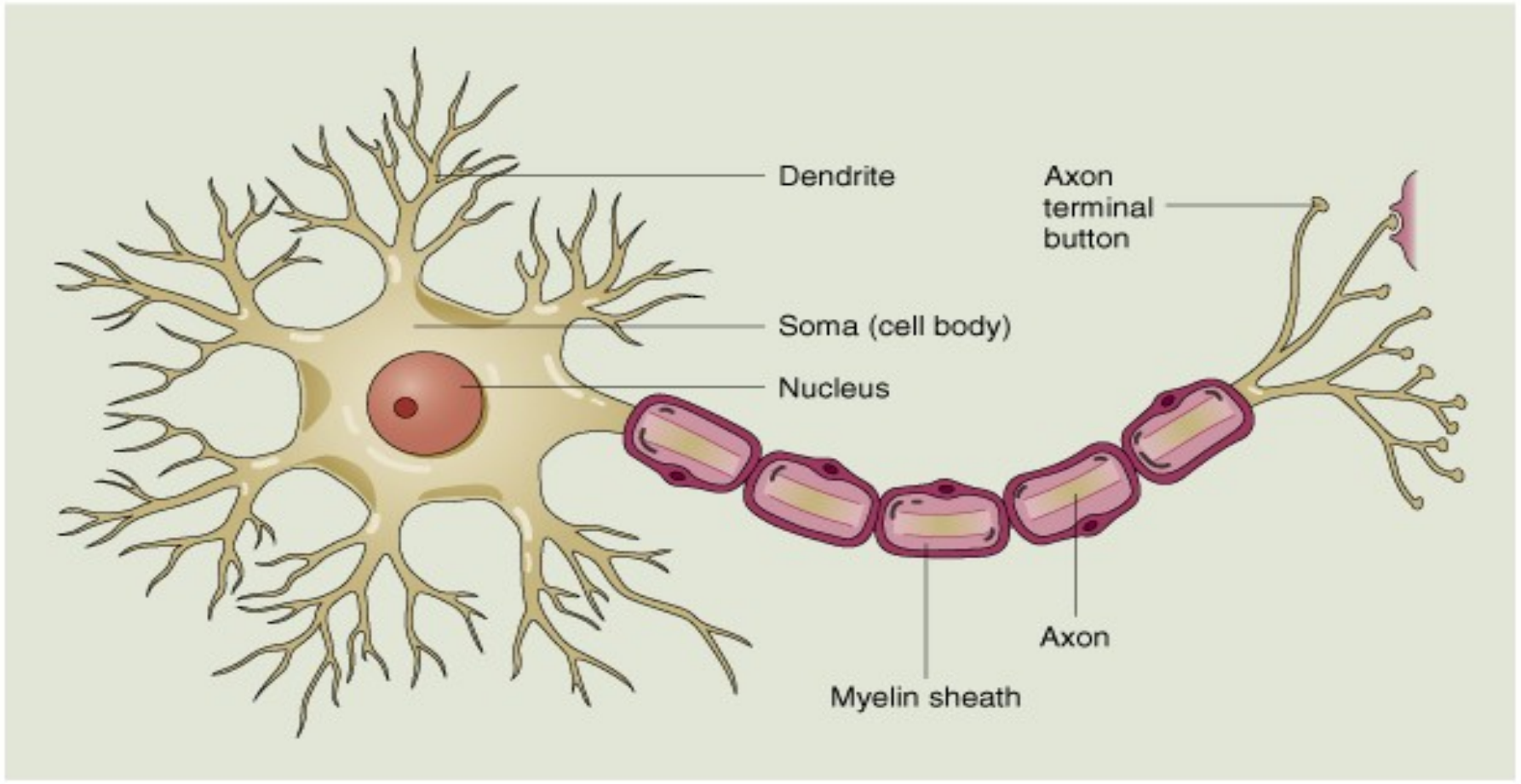
It is ironic that a practice that is so much about coming into the body can be reluctant to engage the full implications of what embodiment in life means.

Demo or die.

The Media Lab, MIT

Self-Directed Neuroplasticity

A Neuron



Your Brain: The Technical Specs

- **Size:**
  - 3 pounds of tofu-like tissue
  - 1.1 trillion brain cells
  - ~ 100 billion “gray matter" neurons

- **Activity:**
  - Always on 24/7/365 - Instant access to information on demand
  - 20-25% of blood flow, oxygen, and glucose

- **Speed:**
  - Neurons firing around 5 to 50 times a second (or faster)
  - Signals crossing your brain in a tenth of a second

- **Connectivity:**
  - Typical neuron makes ~ 5000 connections with other neurons:

  ~ 500 trillion synapses

All cells have specialized functions. Brain cells have particular ways of processing information and communicating with each other. Nerve cells form complete circuits that carry and transform information.

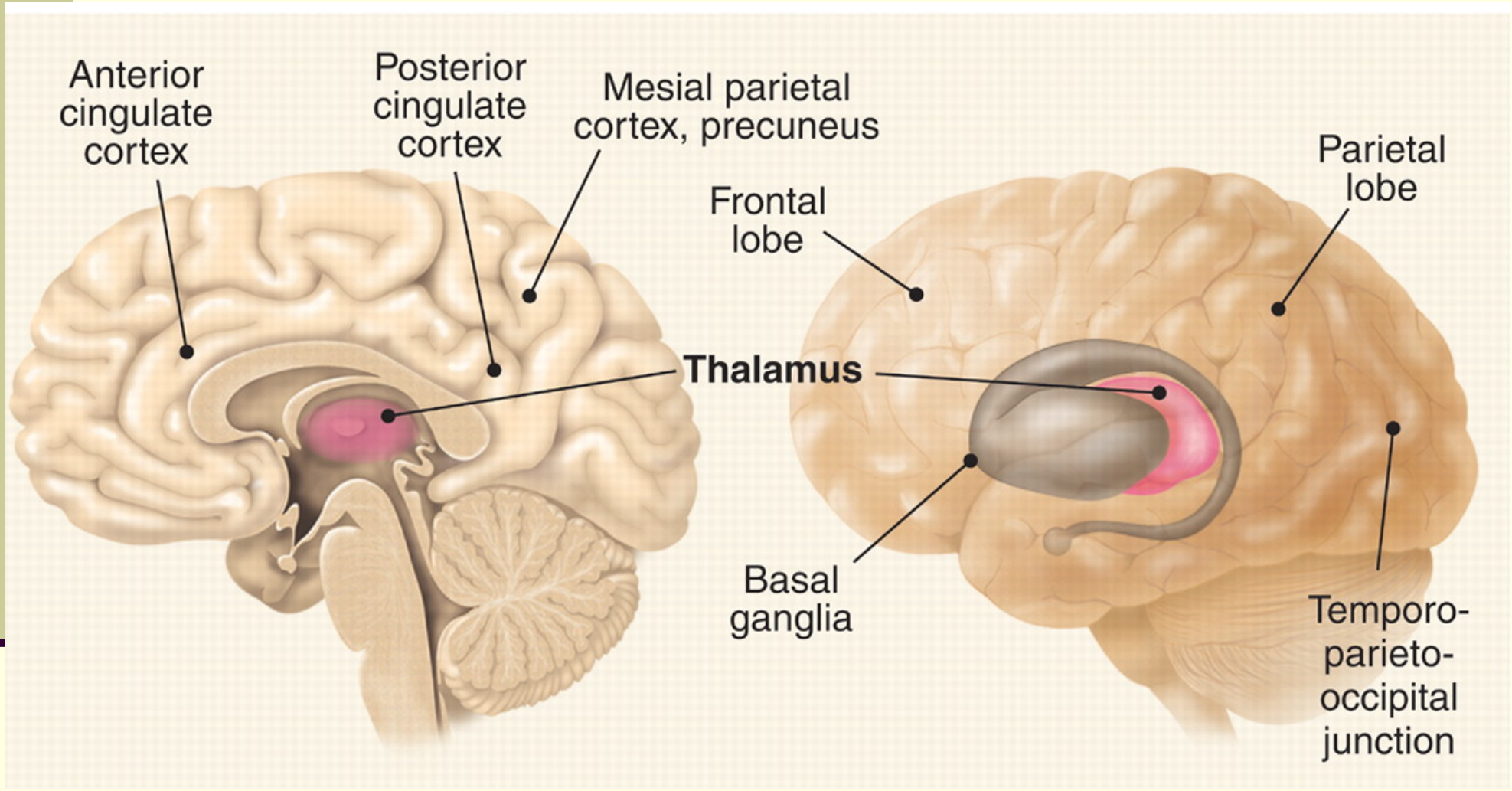
Electrical signaling represents the language of mind, the means whereby nerve cells, the building blocks of the brain, communicate with one another over great distances. Nerve cells generate electricity as a means of producing messages.

All animals have some form of mental life that reflects the architecture of their nervous system.

Eric R. Kandel, 2006

Mental activity entails underlying neural activity.

Key Brain Areas for Consciousness

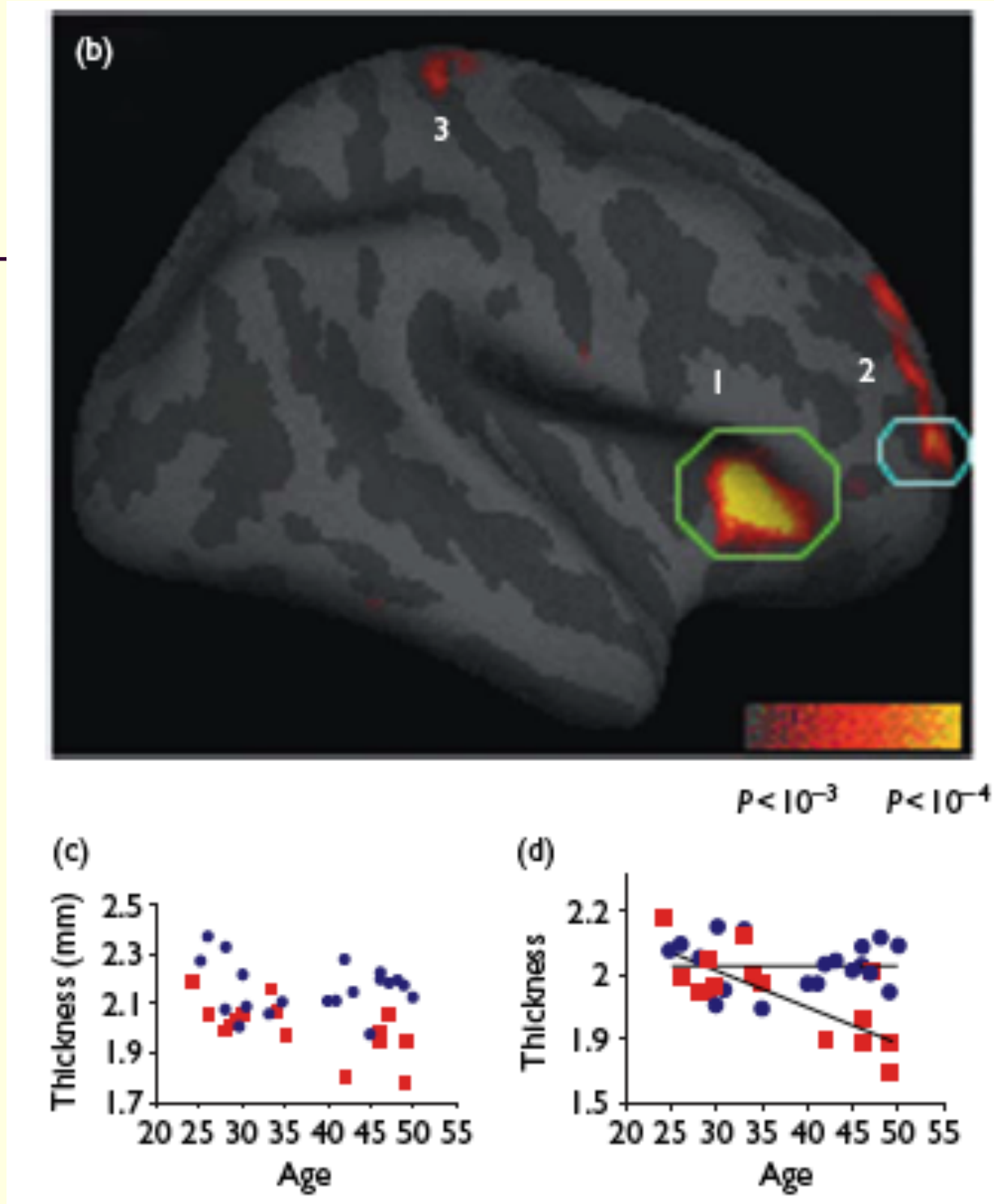


(adapted from) M. T. Alkire et al., Science 322, 876-880 (2008)

Repeated mental activity entails repeated neural activity.

Repeated neural activity builds neural structure.

Lazar, et al. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport*, 16, 1893-1897.



The Activation/Installation Positive Cycle

States are temporary, traits are enduring.

Activated mental states are the basis for installed neural traits.

Positive traits foster positive states.

Activated states --> Installed traits --> Reactivated states --> Reinforced traits

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

The root of compassion is compassion for oneself.

Pema Chodron

Self-Compassion

Wishing Yourself Well

- Compassion is the wish that a being not suffer, combined with sympathetic concern. Self-compassion simply applies that to oneself. It is not self-pity, complaining, or wallowing in pain.

- Studies show that self-compassion buffers stress and increases resilience and self-worth.

- But self-compassion is hard for many people, due to feelings of unworthiness, self-criticism, or "internalized oppression." To encourage the neural substrates of self-compassion:
  - Get the sense of being cared about by someone else.
  - Bring to mind someone you naturally feel compassion for
  - Sink into the experience of compassion in your body
  - Then shift the compassion to yourself, perhaps with phrases like: "May I not suffer. May the pain of this moment pass."

“Anthem”

Ring the bells that still can ring
Forget your perfect offering
There is a crack in everything
That’s how the light gets in
That’s how the light gets in

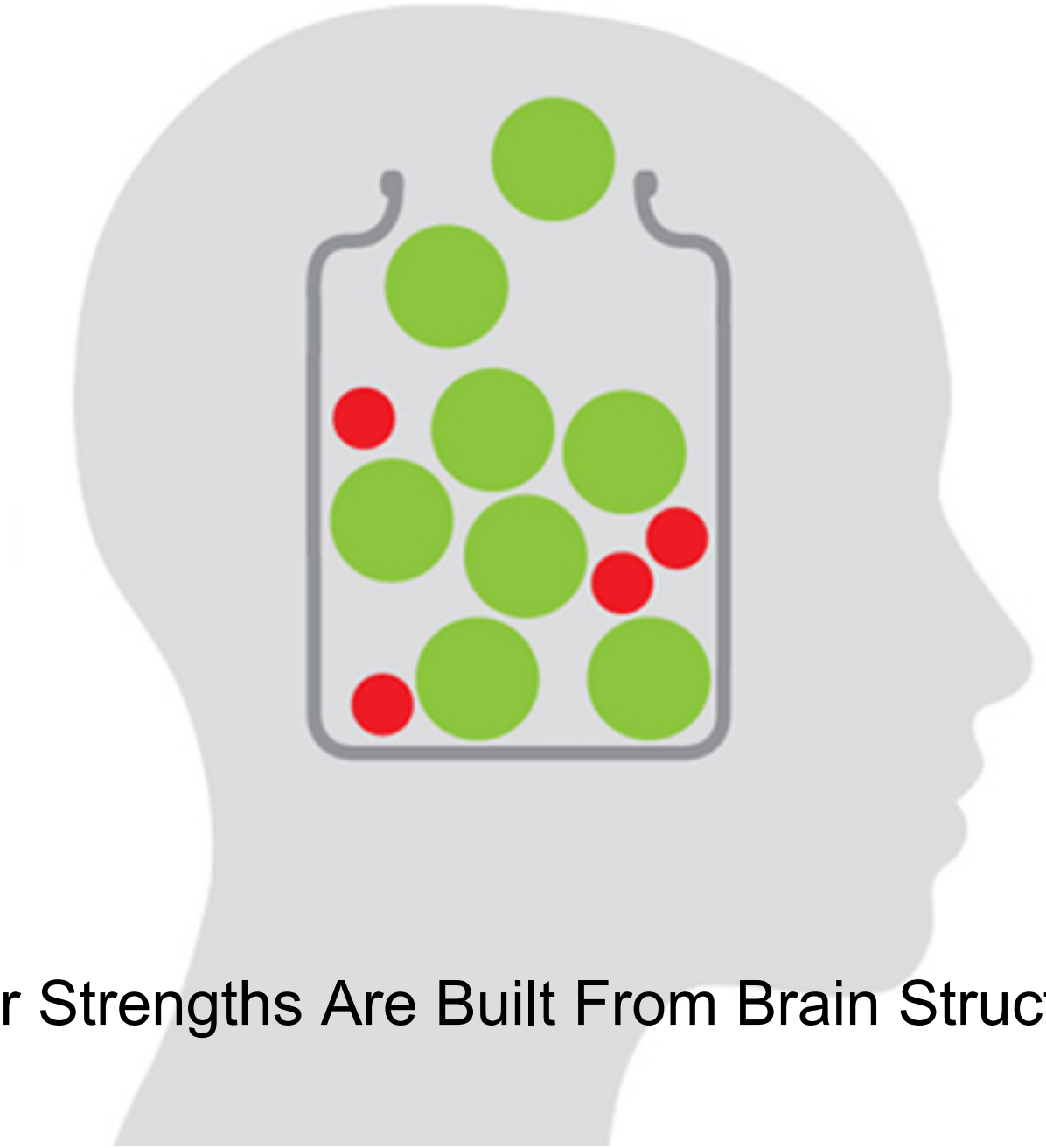
Leonard Cohen

Growing Inner Strengths


Two wolves in the heart

Inner Strengths Include

- **Virtues** (e.g., patience, energy, generosity, restraint)
- **Executive functions** (e.g., meta-cognition)
- **Attitudes** (e.g., optimism, openness, confidence)
- **Capabilities** (e.g., mindfulness, emotional intelligence, resilience)
- **Positive emotions** (e.g., gratitude, self-compassion)
- **Approach orientation** (e.g., curiosity, exploration)



Inner Strengths Are Built From Brain Structure

The Causes of Inner Strengths

How *do we grow the neural traits of inner strengths?*

Inner strengths come mainly from positive experiences. Positive traits come from positive states.

You develop mindfulness by repeatedly being mindful; you develop compassion by repeatedly feeling compassionate; etc.

The brain is like a VCR or DVR, not an iPod: you must play the song to record it - you must experience the strength to install it in your brain.

Cultivation in Context

- Three ways to engage the mind:
  - Be with it. Decrease negative. Increase positive.
  - The garden: Observe. Pull weeds. Plant flowers.
  - Let be. Let go. Let in.
  - Mindfulness present in all three ways to engage mind
- While “being with” is primary, it’s often isolated and privileged in mindfulness-based practices.
- Skillful means for decreasing the negative and increasing the positive have developed over 2500 years. Why not use them?

SPIRIT ROCK MEDITATION CENTER

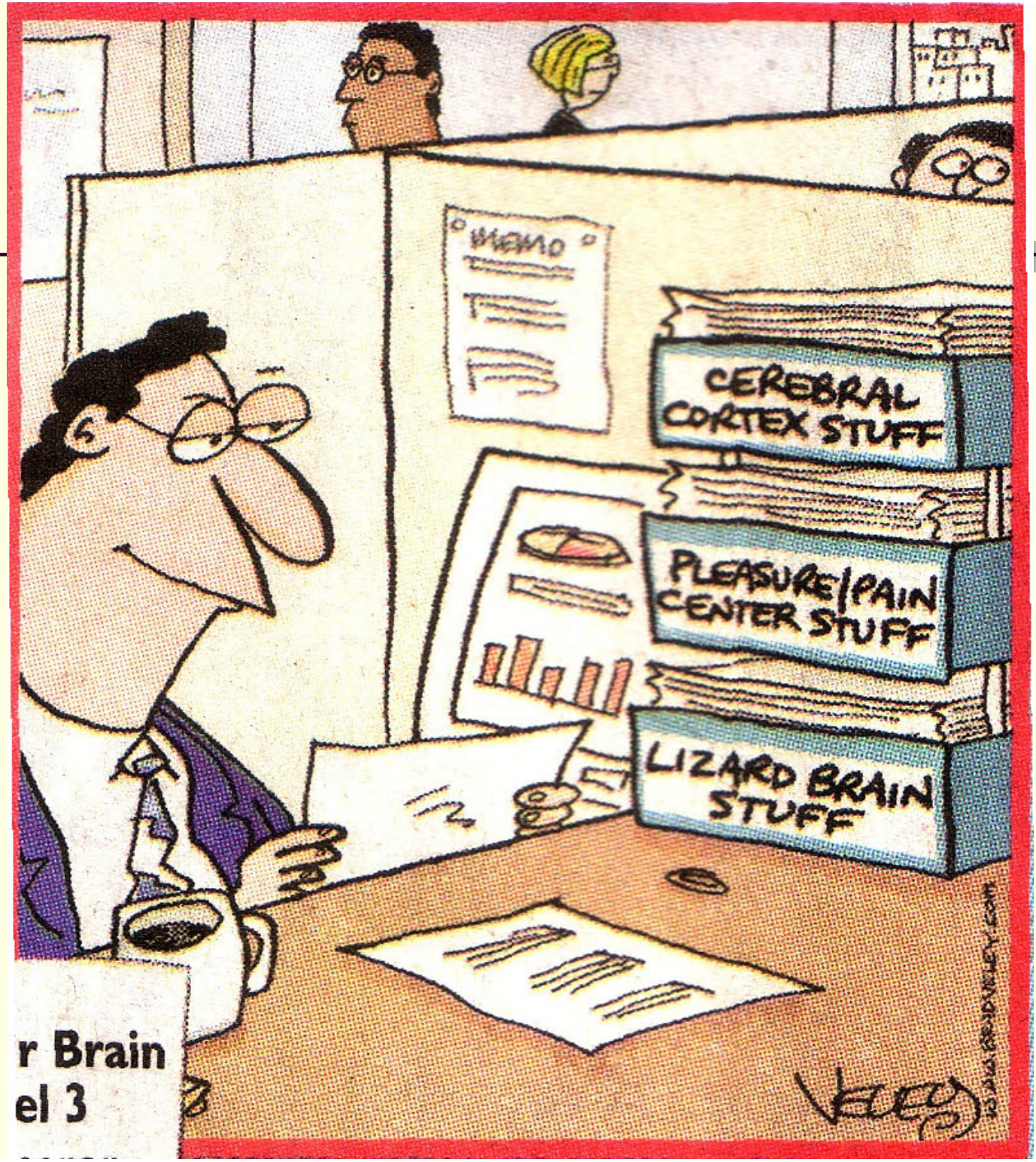
Join us for
Cultivating Inner Strength - Monastic Daylong [Dana - No Fee Day]
with Ayya Anandabodhi
and Ayya Santacitta
on
Sunday, July 8
from 9:30 am - 5 pm.

(Photo by Ed Ritger)

The Evolving Brain

Biological 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
- 200 million years of mammals
- 60 million years of primates
- 6 million years ago: last common ancestor with chimpanzees (the “great apes” include gorillas, orangutans, chimpanzees, bonobos, and humans)
- 2.5 million years of tool-making
- 150,000 years of *homo sapiens*


MEMO
CEREBRAL CORTEX STUFF
PLEASURE/PAIN CENTER STUFF
LIZARD BRAIN STUFF
r Brain
el 3

"With all due respects, I find your disparaging remarks about the 'reptilian brain' unnecessary"

Three Motivational and Self-Regulatory Systems

- **Avoid Harms:**
  - Predators, natural hazards, aggression, pain
  - Primary need, tends to trump all others
- **Approach Rewards:**
  - Food, shelter, mating, pleasure
  - Mammals: rich emotions and sustained pursuit
- **Attach to Others:**
  - Bonding, language, empathy, cooperation, love
  - Taps older Avoiding and Approaching networks

Each system can draw on the other two for its ends.

The Homeostatic Home Base

When not disturbed by threat, loss, or rejection [no felt deficit of safety, satisfaction, and connection]

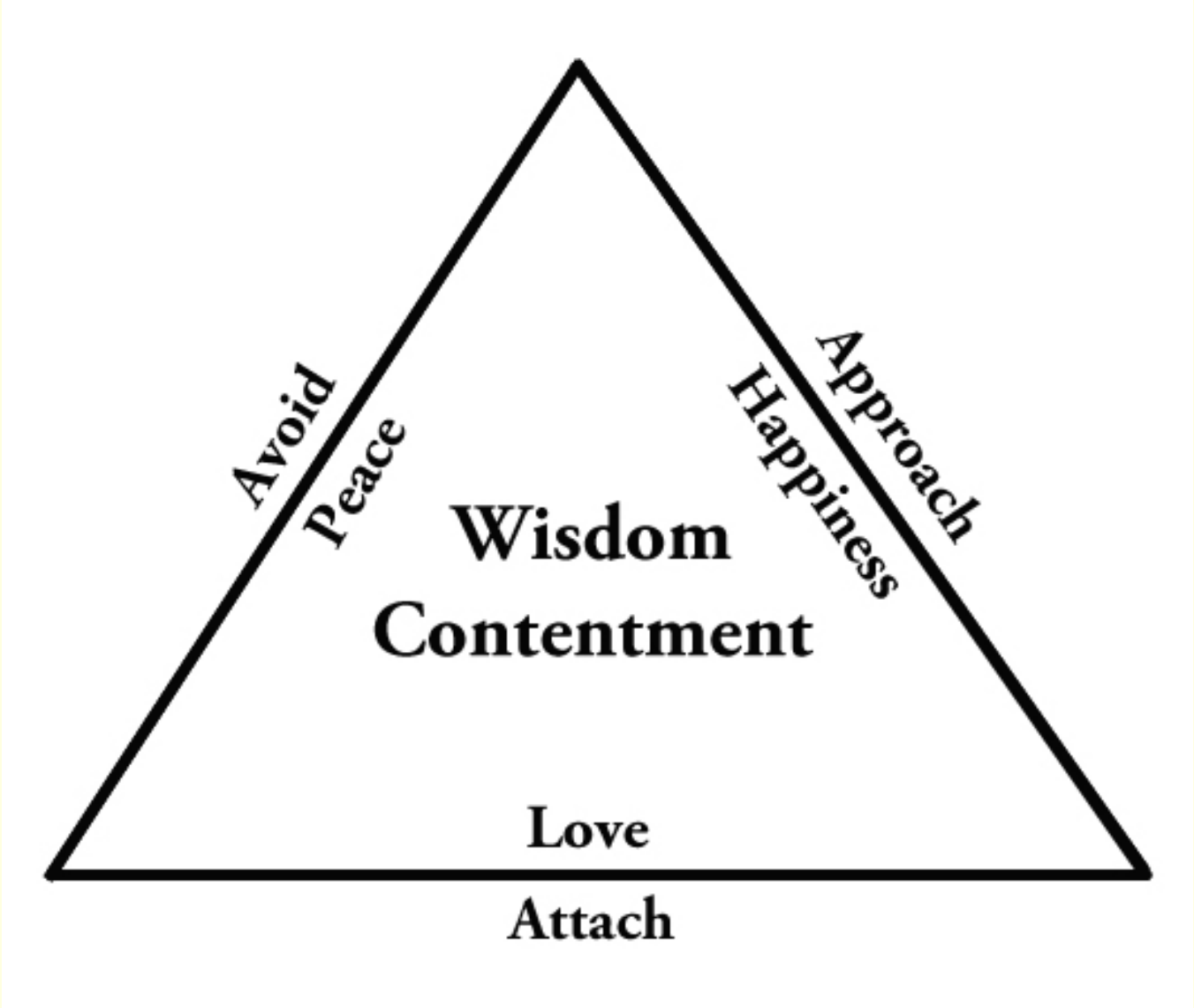
The body defaults to a sustainable equilibrium of refueling, repairing, and pleasant abiding.

The mind defaults to a sustainable equilibrium of:

- **Peace** (the Avoiding system)
- **Contentment** (the Approaching system)
- **Love** (the Attaching system)

This is the brain in its homeostatic ***Responsive,*** *minimal craving* mode.

The Responsive Mode



Coming Home, Staying Home

Positive experiences of core needs met - the felt sense of safety, satisfaction, and connection - activate Responsive mode.

Activated Responsive states can become installed Responsive traits. Responsive traits foster Responsive states.

Responsive states and traits enable us to stay Responsive with challenges.

Neurobiological Basis of Craving

When disturbed by threat, loss, or rejection [deficit of safety, satisfaction, or connection]:

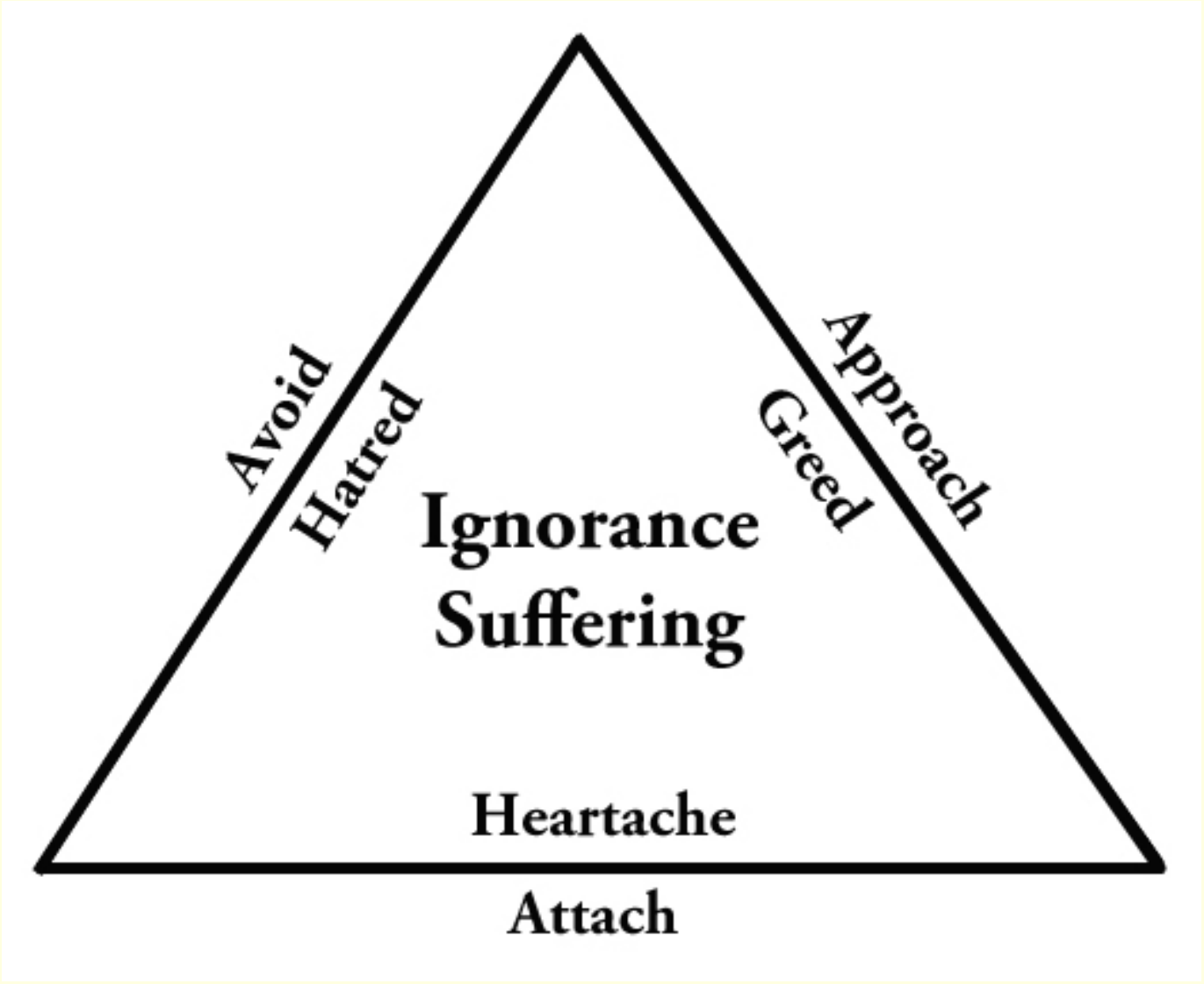
The body fires up into the stress response; outputs exceed inputs; long-term building is deferred.

The mind fires up into:

- **Hatred** (the Avoiding system)
- **Greed** (the Approaching system)
- **Heartache** (the Attaching system)

This is the brain in allostatic, ***Reactive,*** *craving* mode.

The Reactive Mode

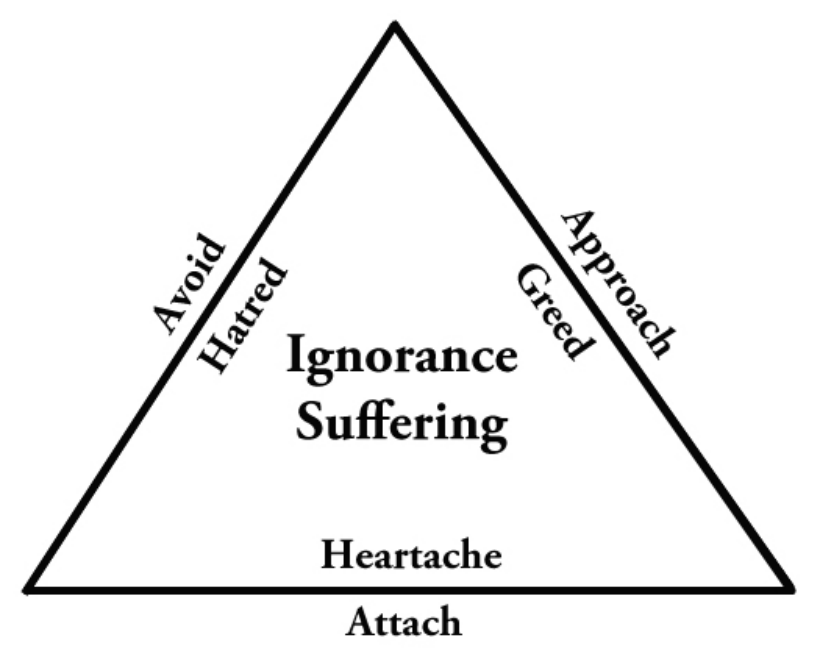


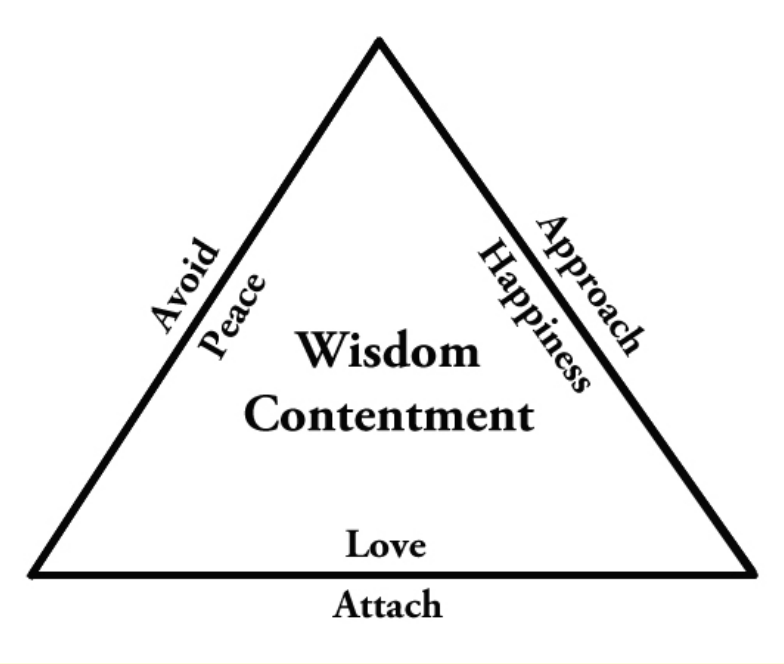
Reactive Dysfunctions in Each System

- **Avoid** - Anxiety disorders; OCD; PTSD; panic, terror; rage; violence
- **Approach** - Addiction; over-drinking, -eating, -gambling; hoarding; driving for goals at great cost
- **Attach** - Borderline, narcissistic, antisocial PD; “looking for love in all the wrong places”

Choices . . .

Or?





Reactive Mode

Responsive Mode

The Negativity Bias

Negative Experiences Can Have Benefits

- There's a place for negative emotions:
  - Anxiety alerts us to inner and outer threats
  - Sorrow opens the heart
  - Remorse helps us steer a virtuous course
  - Anger highlights mistreatment; energizes to handle it
- Negative experiences can:
  - Increase tolerance for stress, emotional pain
  - Build grit, resilience, confidence
  - Increase compassion and tolerance for others

But is there really any shortage of negative experiences?

The Brain's Negativity Bias

- As our ancestors evolved, avoiding "sticks" was more important for survival than getting "carrots."

- Negative stimuli:
  - More attention and processing
  - Greater motivational focus: loss aversion

- Preferential encoding in implicit memory:
  - We learn faster from pain than pleasure.
  - Negative interactions: more impactful than positive
  - Easy to create learned helplessness, hard to undo
  - Rapid sensitization to negative through cortisol

Velcro for Bad, Teflon for Good

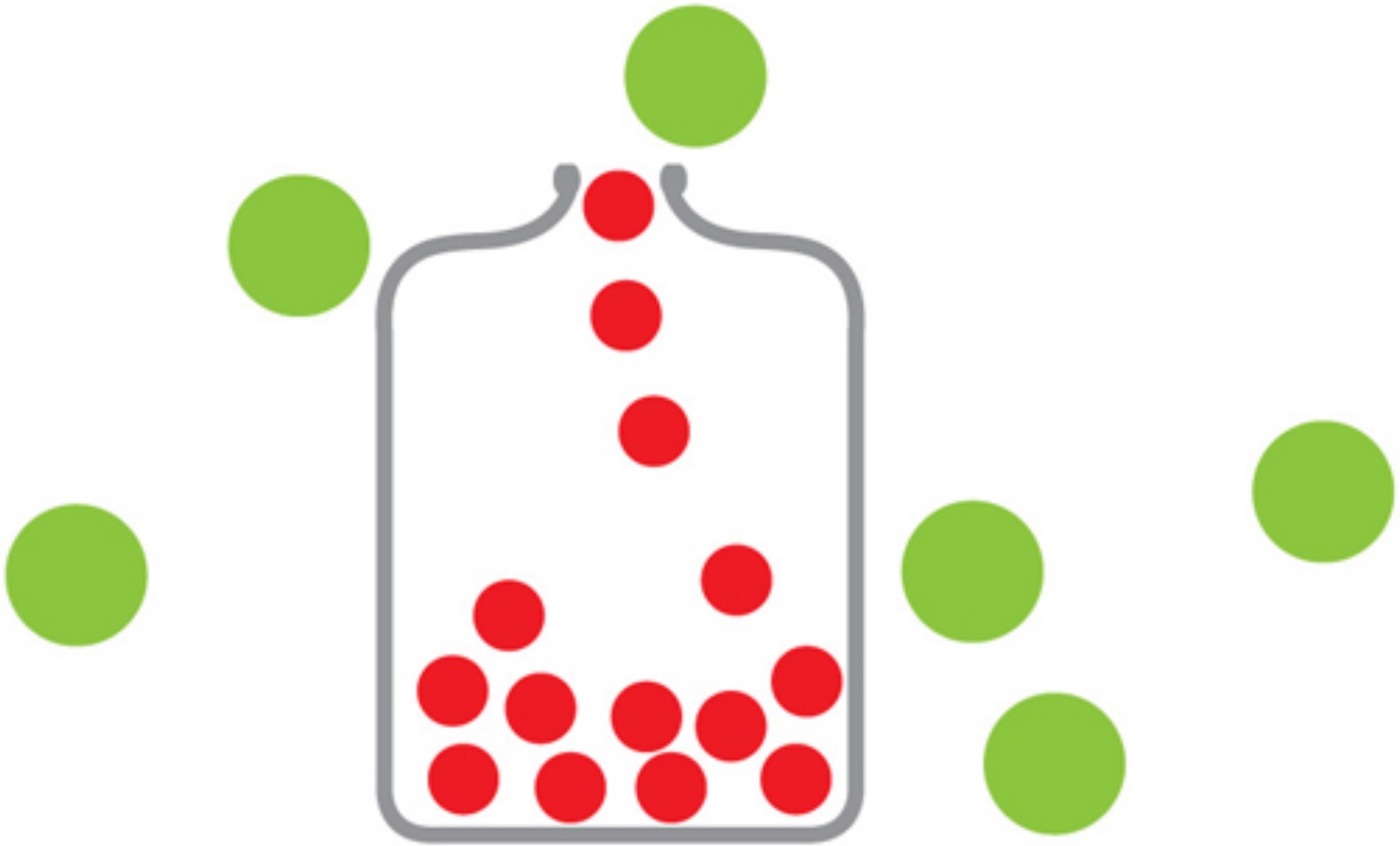
A Bottleneck For Growing Inner Strengths

Unfortunately, the brain is inefficient at turning positive experiences into neural structure.

This design feature of the brain creates a kind of bottleneck that reduces the conversion of positive mental states to positive neural traits.

Most positive experiences are wasted on the brain.

This is the fundamental weakness in psychotherapy, mindfulness training, character education, human resources training, and informal efforts at growth.



The Negativity Bias

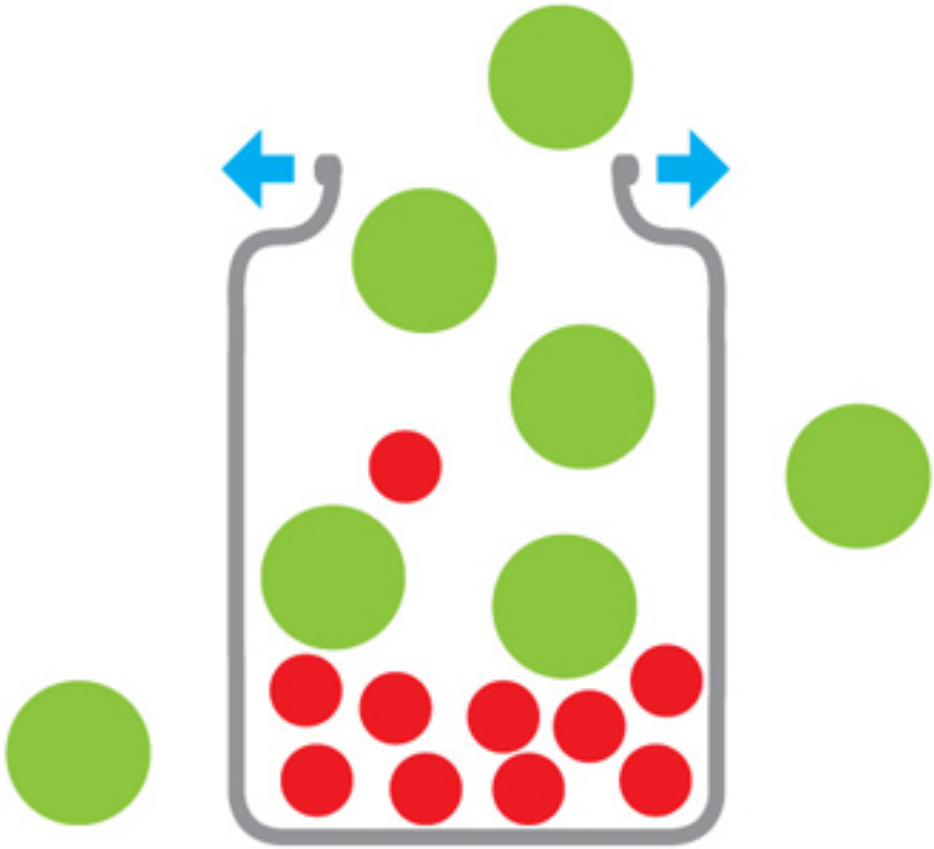

Stone age brains in the 21st century

Taking in the Good

Just having positive experiences is not enough.

They pass through the brain like water through a sieve, while negative experiences are caught.

We need to engage positive experiences actively to weave them into the brain.



Learning to Take in the Good

HEAL by Taking in the Good

1. **H**ave a positive experience. Notice it or create it.

2. **E**nrich the experience through duration, intensity, multimodality, novelty, personal relevance

3. **A**bsorb the experience by intending and sensing that it is sinking into you as you sink into it.

4. **L**ink positive and negative material. [optional]

Let's Try It

- **Notice** the experience already present in awareness that you are alright right now
  - Have the experience
  - Enrich it
  - Absorb it

- **Create** the experience of compassion
  - Have the experience - bring to mind someone you care about . . . Feel caring . . . Wish that he or she not suffer . . . Open to compassion
  - Enrich it
  - Absorb it

It's Good to Take in the Good

- Development of specific inner strengths
  - General - resilience, positive mood, feeling loved
  - "Antidote experiences" - Healing old wounds, filling the hole in the heart
- Implicit benefits:
  - Shows that there is still good in the world
  - Being active rather than passive
  - Treating yourself kindly, like you matter
  - Rights an unfair imbalance, given the negativity bias
  - Training of attention and executive functions
- Sensitizes brain to positive: like Velcro for good

Keep a green bough in your heart,
and a singing bird will come.

Lao Tsu

Targets of TG

- **Thoughts** - expectations; object relations; perspectives on self, world, past and future
- **Perceptions** - sensations; relaxation; vitality
- **Emotions** - both feelings and mood
- **Desires** - values, aspirations, passions, wants
- **Behaviors** - reportoire; inclinations

Some Types of Resource Experiences

Avoiding Harms

- Feeling basically alright right now
- Feeling protected, strong, safe, at peace
- The sense that awareness itself is untroubled

Approaching Rewards

- Feeling basically full, the enoughness in this moment as it is
- Feeling pleasured, glad, grateful, satisfied
- Therapeutic, spiritual, or existential realizations

Attaching to Others

- Feeling basically connected
- Feeling included, seen, liked, appreciated, loved
- Feeling compassionate, kind, generous, loving

Pet the Lizard

Feed the Mouse

Hug the Monkey

Some Major Buddhist States/Traits

Mindfulness

Investigation

Energy

Bliss

Tranquility

Concentration

Equanimity

Conviction

Compassion

Kindness

Altruistic joy

The Four Ways to Offer a Method

- Doing it implicitly
- Teaching it and then leaving it up to the person
- Doing it explicitly with the person
- Asking the person to do it on his or her own

Synergies of TG and Mindfulness

- Improved mindfulness enhances TG.
- TG increases general resources for mindfulness (e.g., heighten the bodily calming that supports stable attention).
- TG increases specific factors of mindfulness (e.g., self-acceptance, self-compassion, tolerance of negative affect)
- TG heightens internalization of key mindfulness experiences:
  - The sense of stable mindfulness itself
  - Confidence that awareness itself is not in pain, upset, etc.
  - Presence of supportive others (e.g., meditation groups)
  - Peacefulness of realizing that experiences come and go

TG and Children

- All kids benefit from TG.
- Particular benefits for mistreated, anxious, spirited/ ADHD, or LD children.
- Adaptations:
  - Brief
  - Concrete
  - Natural occasions (e.g., bedtimes)

Healing Old Pain

Using Memory Mechanisms to Help Heal Painful Experiences

- The machinery of memory:
  - When explicit or implicit memory is reactivated, it is rebuilt from schematic elements, not retrieved *in toto*.
  - When attention moves on, the memory gets reconsolidated.
- The open processes of memory reactivation and reconsolidation create a window of opportunity for shaping your internal world.
- Reactivated material associates with other things in awareness, especially if they are prominent and lasting.
- When memory returns to storage, it takes associations with it.
- You can imbue memory with positive associations.

The Fourth Step of TG

- When you are having a positive experience:
  - Sense the current positive experience sinking down into old pain, and soothing and replacing it.
- When you are having a negative experience:
  - Bring to mind a positive experience that is its antidote.
- In both cases, have the positive experience be big and strong, in the forefront of awareness, while the negative experience is small and in the background.
- You are not resisting negative experiences or getting attached to positive ones. You are being kind to yourself and cultivating positive resources in your mind.

Psychological Antidotes

Avoiding Harms

- Strength, efficacy --> Weakness, helplessness, pessimism
- Safety, security --> Alarm, anxiety
- Compassion for oneself and others --> Resentment, anger

Approaching Rewards

- Satisfaction, fulfillment --> Frustration, disappointment
- Gladness, gratitude --> Sadness, discontentment, “blues”

Attaching to Others

- Attunement, inclusion --> Not seen, rejected, left out
- Recognition, acknowledgement --> Inadequacy, shame
- Friendship, love --> Abandonment, feeling unloved or unlovable

The Tip of the Root

- For the fourth step of TG, try to get at the youngest, most vulnerable layer of painful material.
- The “tip of the root” is commonly in childhood. In general, the brain is most responsive to negative experiences in early childhood.
- Prerequisites
  - Understanding the need to get at younger layers
  - Compassion and support for the inner child
  - Capacity to “presence” young material without flooding

TG and Trauma

- General considerations:
  - People vary in their resources and their traumas.
  - Often the major action is with “failed protectors.”
  - Cautions for awareness of internal states, including positive
  - Respect “yellow lights” and the client’s pace.

- The first three steps of TG are generally safe. Use them to build resources for tackling the trauma directly.

- As indicated, use the fourth step of TG to address the peripheral features and themes of the trauma.

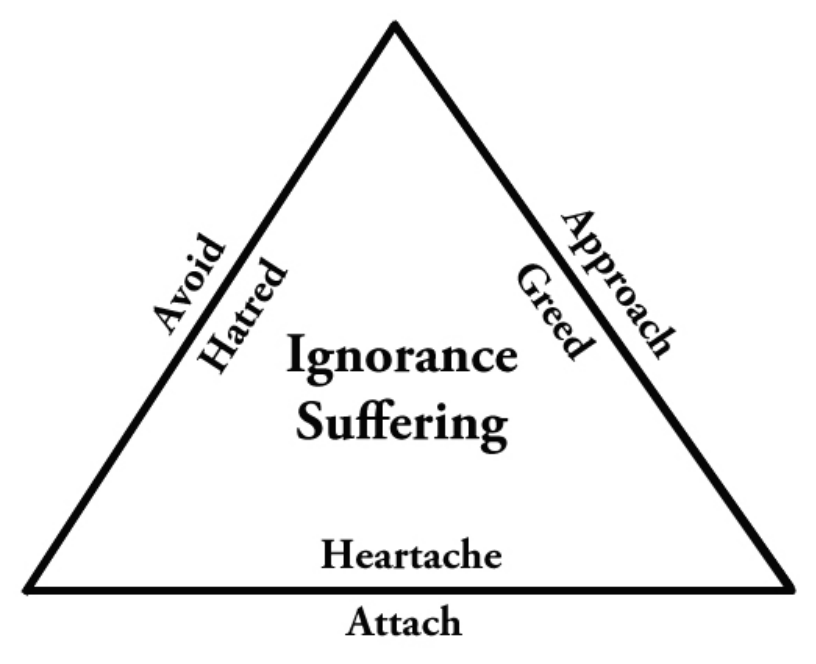
- Then, with care, use the fourth step to get at the heart of the trauma.

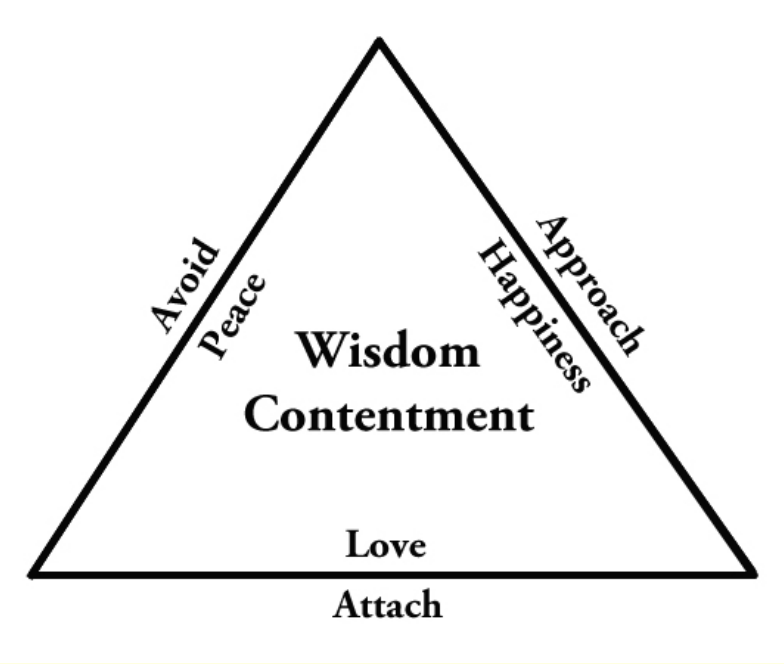
First of all, do no harm.

Cultivation and Craving

Choices . . .

Or?





Reactive Mode

Responsive Mode

The Fruit as the Path

Peace

Contentment

Love

Cultivation Undoes Craving

- All life has goals. The brain continually seeks to avoid harms, approach rewards, and attach to others - even that of a Buddha.
- It is wholesome to wish for the happiness, welfare, and awakening of all beings - including the one with your nametag.
- We rest the mind upon positive states so that the brain may gradually take their shape. This disentangles us from craving as we increasingly rest in a peace, happiness, and love that is independent of external conditions.
- With time, even the practice of cultivation falls away - like a raft that is no longer needed once we reach the farther shore.

“Bahiya, you should train yourself thus.”

In reference to the seen, there will be only the seen. To the heard, only the heard. To the sensed, only the sensed. To the cognized, only the cognized.

When for you there will be only the seen in the seen, only the heard in the heard, only the sensed in the sensed, only the cognized in the cognized, then, Bahiya, there’s no you in that.

When there’s no you in that, there’s no you there. When there’s no you there, you are neither here nor yonder nor between the two.

This, just this, is the end of all suffering.

The Buddha

A Fifth Yana?

The “Buddhastream” has developed through four major vehicles (*yanas*): Theravadan, Tibetan, Chan/Zen, and Pure Land.

Could we be helping develop an emergent Fifth Yana, with:

- Many householders engaging deep contemplative practice
- Multiculturalism as both a reality and a value
- Access to and eclectic use of the full array of Buddhist teachings
- Flattening hierarchies
- Naturalizing dharma practice; using science and psychology
- Skillful use of positive experiences; “Western tantra”
- Deconstructing and applying Buddhist practices in non-Buddhist settings (e.g., pain-control clinics, schools, psychotherapy)

Heartwood

This spiritual life does not have gain, honor, and renown for its benefit, or the attainment of moral discipline for its benefit, or the attainment of concentration for its benefit, or knowledge and vision for its benefit.

But it is this unshakable liberation of mind that is the goal of this spiritual life, its heartwood, and its end.

The Buddha

Think not lightly of good,
saying, "It will not come to me."

Drop by drop is the water pot filled.

Likewise, the wise one,
gathering it little by little,
fills oneself with good.

Dhammapada 9.122


Thank you

Great Books

See www.RickHanson.net for other great books.

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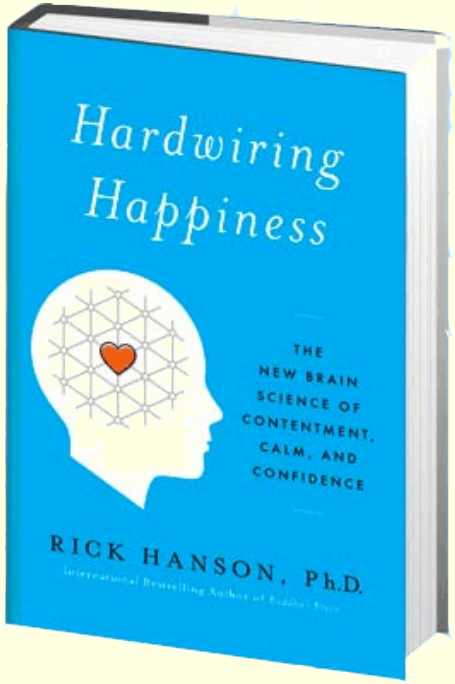

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