Self-Directed Neuroplasticity
Three Facts about Brain and Mind

- As the brain changes, the mind changes.
  - Mental activity depends upon neural activity.

- As the mind changes, the brain changes.
  - **Transient**: brainwaves, local activation
  - **Lasting**: epigenetics, neural pruning, “neurons that fire together, wire together”
  - Experience-dependent neuroplasticity

- You can use the mind to change the brain to change the mind for the better: **self-directed neuroplasticity**.
Mental activity entails underlying neural activity.
Ardent, Diligent, Resolute, and Mindful
Repeated mental activity entails repeated neural activity.

Repeated neural activity builds neural structure.
Neurons that fire together, 
wire together.
The Opportunity

We can use the mind

To change the brain

To change the mind for the better

To benefit ourselves and other beings.
Three Keys on the Path to a Buddha Brain

Cultivate yourself

Take in the good

Come home to green
Cultivate Yourself
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.

(PhotobyEdRitger)
Causes of Suffering and Its End

- Mental and physical phenomena change due to causes.

- Causes in the brain are shaped by the mental/neural states that are activated and then installed within it.

- Inner “poisons” (e.g., hatred, greed, heartache, delusion) cause suffering and harm.

- Inner strengths (e.g., virtue, mindfulness, wisdom, peace, contentment, love) cause happiness and benefit for oneself and others.
Two wolves in the heart
Cultivation in Context

Three ways to engage the mind:
- Be with it. Decrease negative. Increase positive.
- Let be. Let go. Let in.
- Mindfulness present in all three ways to engage mind

While “being with” is primary, it’s often isolated in Buddhist, nondual, and mindfulness-based practice.

Skillful means for decreasing the negative and increasing the positive have developed over 2500 years. Why not use them?
Negativity Bias

- As our ancestors evolved, not getting hit by “sticks” was more important for survival than getting “carrots.”

- Negative stimuli get more attention and processing. Loss aversion.

- Preferential encoding in implicit memory:
  - Easy to create learned helplessness, hard to undo
  - Negative interactions: more powerful than positive
  - Good at learning from bad, bad at learning from good
  - Most good experiences are wasted on the brain: lowers both the results of practice and motivation
Velcro for Bad, Teflon for Good

The negativity bias
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.
Take in the Good
HEAL by Taking in the Good

1. **Have** a positive experience. Notice or create it.

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

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

4. **Link** positive and negative material (optional).

**Benefits:** Specific contents internalized. Implicit value of being active and treating yourself like you matter. Gradual sensitization of the brain to the positive.
Savor the experience
Sense the experience sinking into you.
Come Home to Green
Evolutionary History

The Triune Brain - (P. MacLean 1990)
Stone age brains in the 21st century
Three Fundamental Motivational and Self-Regulatory Systems

- **Avoid Harms:**
  - Primary need, tends to trump all others

- **Approach Rewards:**
  - Elaborated via sub-cortex in mammals for emotional valence, sustained pursuit

- **Attach to Others:**
  - Very elaborated via cortex in humans for pair bonding, language, empathy, cooperative planning, compassion, altruism, etc.
The Homeostatic Home Base

*When not disturbed by threat, loss, or rejection [no 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**, “green zone,” **minimal craving** mode.
The Responsive Mode
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**, “red zone,” **craving** mode.
The Reactive Mode

Avoid
Hatred
Greed

Ignorance
Suffering

Heartache
Attach

Approach
Choices . . .

Reactive Mode

Responsive Mode

Or?
The Fruit as the Path

Peace

Contentment

Love
The Law of Little Things
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
Great Books

See [www.RickHanson.net](http://www.RickHanson.net) for other great books.

Key Papers - 1

See www.RickHanson.net for other scientific papers.


Key Papers - 2


- Hanson, R. 2008. Seven facts about the brain that incline the mind to joy. In *Measuring the immeasurable: The scientific case for spirituality*. Sounds True.
Key Papers - 3


Key Papers - 4


Where to Find Rick Hanson Online

*Hardwiring Happiness: The New Brain Science of Contentment, Calm, and Confidence*

www.rickhanson.net/hardwiringhappiness

Personal website: www.rickhanson.net

Wellspring Institute: www.wisebrain.org

youtube.com/drrhanson   facebook.com/rickhansonphd