Wishing: In gladness and in safety, may all beings be at ease.

Omitting none, whether they are weak or strong, the great or the mighty, medium, short, or small, the seen and the unseen, those living near and far away, those born and to-be-born: May all beings be at ease.

Let none through anger or ill-will wish harm upon another. Even as a mother protects with her life her child, her only child, so with a boundless heart should one cherish all living beings; radiating kindness over the entire world: spreading upwards to the skies, and downwards to the depths, outwards and unbounded, freed from hatred and ill-will.

One should sustain this recollection. This is said to be the sublime abiding.

The Buddha
The Neurodharma of Love

Esalen
December 11, 2010

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Topics

- Self-directed neuroplasticity
- Your loving nature
- Empathy
- Unilateral virtue
- Universal compassion
Perspectives
Common - and Fertile - Ground

Psychology

Neurology

Buddhism
The history of science is rich in the example of the fruitfulness of bringing two sets of techniques, two sets of ideas, developed in separate contexts for the pursuit of new truth, into touch with one another.

J. Robert Oppenheimer
Great questioning, great enlightenment;
little questioning, little enlightenment;
no questioning, no enlightenment.

Dogen
When the facts change,  
I change my mind, sir.

What do you do?

John Maynard Keynes
Domains of Intervention

- We can intervene in three domains:
  - World (including relationships)
  - Body
  - Mind

- All three are important. And they work together.

- We have limited influence over world and body.

- In the mind:
  - Much more influence
  - Changes are with us wherever we go
Why does the brain matter -
for relationships, for love,
or for the path of awakening?
Self-Directed Neuroplasticity
Basics of Meditation

- Relax
- Posture that is comfortable and alert
- Simple good will toward yourself
- Awareness of your body
- Focus on something to steady your attention
- Accepting whatever passes through awareness, not resisting it or chasing it
- Gently settling into peaceful well-being
Factors of Mindfulness

- Setting an intention
- Relaxing the body
- Feeling safer
- Evoking positive emotion
- Whole body and panoramic awareness
- Absorbing the benefits
Neural Basis of Mindfulness Factors

- **Setting an intention** - “top-down” frontal, “bottom-up” limbic
- **Relaxing the body** - parasympathetic nervous system
- **Feeling safer** - inhibits amygdala/ hippocampus alarms
- **Evoking positive emotion** - dopamine, norepinephrine
- **Whole body and panoramic awareness** - lateral networks
- **Absorbing the benefits** - positive implicit memories
How to Take in the Good

1. Look for positive facts, and let them become positive experiences.

2. Savor the positive experience:
   - Sustain it for 10-20-30 seconds.
   - Feel it in your body and emotions.
   - Intensify it.

3. Sense and intend that the positive experience is soaking into your brain and body - registering deeply in emotional memory.
Brain Basics

- **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

- **Complexity:**
  - Potentially 10 to the millionth power brain states
A Neuron

[Diagram of a neuron showing dendrites, soma, nucleus, axon, axon terminal button, and myelin sheath.]
Brain Basics

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The Mind/Brain System

- "Mind" = flow of information within the nervous system
  - Information is represented by the nervous system.
  - Most mind is unconscious; awareness is part of mind.
  - The headquarters of the nervous system is the brain.

- In essence then, apart from hypothetical transcendental factors, your mind is what your brain does.

- Brain = necessary, proximally sufficient condition for mind.
  - The brain depends on the nervous system, which intertwines with and depends on other bodily systems.
  - These systems in turn intertwine with and depend upon nature and culture, both presently and over time.
  - And as we’ll see, the brain also depends on the mind.
Fact #1

As your brain changes, your mind changes.
Fact #2

As your mind changes, your brain changes.

Immaterial mental activity maps to material neural activity.

This produces temporary changes in your brain and lasting ones.

*Temporary changes include:*

- Alterations in brainwaves (= changes in the firing patterns of synchronized neurons)
- Increased or decreased use of oxygen and glucose
- Ebbs and flows of neurochemicals
Rewards of Love
Pain network: Dorsal anterior cingulate cortex (dACC), insula (Ins), somatosensory cortex (SSC), thalamus (Thal), and periaqueductal gray (PAG).

Reward network: Ventral tegmental area (VTA), ventral striatum (VS), ventromedial prefrontal cortex (VMPFC), and amygdala (Amyg).

Tibetan Monk, Boundless Compassion
What flows through the mind sculpts your brain. Immaterial experience leaves material traces behind.

- Increased blood/nutrient flow to active regions
- Altered epigenetics (gene expression)
- “Neurons that fire together wire together.”
  - Increasing excitability of active neurons
  - Strengthening existing synapses
  - Building new synapses; thickening cortex
  - Neuronal “pruning” - “use it or lose it”
Honoring Experience

One’s experience *matters*.

Both for how it feels in the moment and for the lasting residues it leaves behind, woven into the fabric of a person’s brain and being.
Fact #3

You can use your mind to change your brain to change your mind for the better.

This is self-directed neuroplasticity.
The Power of Mindfulness

- **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
Being for Yourself

- All the great teachers have told us to be compassionate and kind toward all beings. And that whatever we do to the world affects us, and whatever we do to ourselves affects the world.

- You are one of the “all beings!” And kindness to yourself benefits the world, while hurting yourself harms the world.

- It’s a general moral principle that the more power you have over someone, the greater your duty is to use that power wisely. Well, who is the one person in the world you have the greatest power over? It’s your future self. You hold that life in your hands, and what it will be depends on how you care for it.

- Consider yourself as an innocent child, as deserving of care and happiness as any other.
“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
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.
Self-Compassion

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

- Self-compassion is a major area of research, with studies showing that it 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 focus of compassion to yourself, perhaps with phrases like: “May I not suffer. May the pain of this moment pass.”
Your Loving Nature
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, 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, green, hazel eyes
Evolutionary History

The Triune Brain

The Triune Brain (P. MacLean 1990)
Three Stages of Brain Evolution

- **Reptilian:**
  - Brainstem, cerebellum, hypothalamus
  - Reactive and reflexive
  - Avoid hazards

- **Mammalian:**
  - Limbic system, cingulate, early cortex
  - Memory, emotion, social behavior
  - Approach rewards

- **Human:**
  - Massive cerebral cortex
  - Abstract thought, language, cooperative planning, empathy
  - Attach to “us”
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.
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 roughly 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.
All sentient beings developed through natural selection in such a way that pleasant sensations serve as their guide, and especially the pleasure derived from sociability and from loving our families.

Charles Darwin
Oxytocin

- It promotes bonding between parents and children - and between mates and friends, keeping kids alive.

- In women, it triggers the let-down reflex in nursing, and tend-and-befriend behaviors during stress.

- In both sexes, it dampens the stress response; it feels pleasurable, relaxed, a “rightness.”

- 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 these
  - Nipple stimulation
  - Orgasm
Ananda approached the Buddha and said, “Venerable sir, this is half of the spiritual life: good friendship, good companionship, good comradeship.”

“Not so, Ananda! Not so Ananda!” the Buddha replied. “This is the entire spiritual life. When you have a good friend, a good companion, a good comrade, it is to be expected that you will develop and cultivate the Noble Eightfold Path.”

[adapted from In the Buddha’s Words, Bhikkhu Bodhi]
In the cherry blossom’s shade
there is no thing
as a stranger

Issa
If there is anything I have learned about [people], it is that there is a deeper spirit of altruism than is ever evident.

Just as the rivers we see are minor compared to the underground streams, so, too, the idealism that is visible is minor compared to what people carry in their hearts unreleased or scarcely released.

(Hu)mankind is waiting and longing for those who can accomplish the task of untying what is knotted, and bringing these underground waters to the surface.

Albert Schweitzer
If people knew, as I know, the results of giving and sharing, they would not eat without having given, nor would they allow the stain of niggardliness to obsess them and root in their minds.

Even if it were their last morsel, their last mouthful, they would not eat without having shared it, if there were someone to share it with.

The Buddha
The “dana economy”
is the original and natural economy,
with its circular flow of freely given,
unmonetized goods and services.
Greed, Hatred, Heartache, Delusion
Reverse Engineering the Brain

What’s the nature of the brain when a person is:

- In peak states of productivity or “flow?”
- Experiencing inner peace?
- Self-actualizing?
- Enlightened (or close to it)?
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* mode.
Responsive Mode
Behind the Obscurations

Sam sees “peeping among the cloud-wrack . . . a white star twinkle for a while.

The beauty of it smote his heart, as he looked up out of the forsaken land, and hope returned to him.

For like a shaft, clear and cold, the thought pierced him that in the end the Shadow was only a small and passing thing: there was light and high beauty forever beyond its reach.”

Tolkein, The Lord of the Rings
A human being is a part of a whole, called by us “universe,” a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest... a kind of optical delusion of his consciousness.

This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us.

Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.

Albert Einstein
But to Survive, We Leave Home . . .

- **Avoid**: When we feel 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 Reactive Mode
Us and Them

- 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.

- Our biological nature is much more inclined toward cooperative sociability than toward aggression and indifference or cruelty. We are just very reactive to social distinctions and threats.

- That reactivity is intensified and often exploited by economic, cultural, and religious factors.

- 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?
In between-family fights, the baboon’s ‘I’ expands to include all of her close kin; in within-family fights, it contracts to include only herself.

This explanation serves for baboons as much as for the Montagues and Capulets.

_Baboon Metaphysics: The Evolution of a Social Mind_,
by Dorothy Cheney and Robert Seyfarth
Choices . . .

Or?

Reactive Mode

Responsive Mode
Coming Home: Taking the Fruit as the Path

Gladness

Love

Peace
Empathy
What Is 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:
  - Bodily resonance
  - Emotional attunement
  - Conceptual understanding

- Empathy is usually communicated, often tacitly.

- We can give empathy, we can receive it, and we can ask for it.
Neural Substrates of Empathy

Three *simulating* systems:

- **Actions**: “mirror” systems; temporal-parietal
- **Feelings**: resonating emotionally; insula
- **Thoughts**: “theory of mind”; prefrontal cortex

These systems interact with each other through association and active inquiry.

They produce an automatic, continual re-creation of aspects of others’ experience.
Empathy Skills

- Pay attention.
- Be open.
- Read emotion in face and eyes.
- Sense beneath the surface.
- Drop aversion (judgments, distaste, fear, anger, withdrawal).
- Investigate actively.

Express empathic understanding:
- Reflect the content
- Resonate with the tone and implicit material
- Questions are fine
- Offer respect and wise speech throughout
Can you attend to the postures, facial expressions, and movements of another person?

Can you attune to and feel something of the emotions of another person?

Can you have some sense of the thoughts, hopes, and concerns of another person?
Reflections about Empathy

- You’re more likely to get empathy if you’re:
  - Open, present
  - Honest, real, authentic
  - Reasonably clear
  - Responsible for your own experience
  - Taking it in when you feel felt

- Empathy can be negotiated:
  - Name it as a topic in the relationship
  - Follow NVC format: “When X happens, I feel Y, because I need Z. So I request ______ .”
  - Stay with it.
Unilateral Virtue
Wisdom is . . . all about understanding the underlying spacious and empty quality of the person and of all experienced phenomena.

To attain this quality of deep insight, we must have a mind that is quiet and malleable.

Achieving such a state of mind requires that we first develop the ability to regulate our body and speech so as to cause no conflict.

Venerable Ani Tenzin Palmo
How Virtue Supports Relationships

- Brings peace of mind, “the bliss of blamelessness”
- Reduces interpersonal wrangles
- Encourages good behavior in others
- Teaches us what we can ask for from others
There are those who do not realize that one day we all must die. But those who do realize this settle their quarrels.

The Buddha
Benefits of Unilateral Virtue

- Simplifies things: all you have to do is just live by your own code, and others will do whatever they do.

- Feels good in its own right.

- Minimizes inflammatory triggers, evokes good treatment, empowers you to ask for it.

- Stands you on the moral high ground.
Feeling Strong

- Feeling the strength in awareness itself, never sullied or rattled by what passes through it
- Sense the vitality in your body.
- Recall a time you felt really strong.
- Energy and strength in your breathing . . . in arms and legs . . . in your whole being . . .
- A spacious strength that lets others flow through
- In relationship and at peace
- Relaxed in a spacious world; no need for struggle
If you let go a little, you will have a little happiness.

If you let go a lot, you will have a lot of happiness.

If you let go completely, you will be completely happy.

Ajahn Chah
What is your own code of unilateral virtues?

How will it benefit you and others to undertake the aspiration of living by that code?
Assertiveness
Healthy Assertiveness

What it is
Speaking your truth and pursuing your aims in the context of relationships

What supports it
- Being on your own side
- Self-compassion
- Naming the truth to yourself
- Refuges: Three Jewels, reason, love, nature, God
- Taking care of the big things so you don’t grumble about the little ones
- Health and vitality
Healthy Assertiveness: How to Do It

- Know your aims; stay focused on the prize; lose battles to win wars
- Ground in empathy, compassion, and love
- Practice unilateral virtue
- Communicate for yourself, not to change others
  - Wise Speech; be especially mindful of tone
  - NVC: “When X happens, I feel Y because I need Z.”
  - Dignity and gravity
  - Distinguish empathy building (“Y”) from policy-making
- If appropriate, negotiate solutions
  - Establish facts as best you can (“X”)
  - Find the deepest wants (“Z”)
  - Focus mainly on “from now on”
  - Make clear plans, agreements
  - Scale relationships to their actual foundations
Universal Compassion
Feeding 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.
- Sila/restraint about over-identifying with “us”
- Reflect on the suffering of so many people in the world.
- Self-generate feelings of kindness and love.
When others address you, their speech may be timely or untimely, true or untrue, gentle or harsh, connected with good or harm, and connected with a mind of loving-kindness or inner hate.

You should train thus: My mind will remain unaffected, and I shall utter no evil words; I shall abide compassionate for their welfare, pervading them with a mind of loving-kindness, and pervading the all-encompassing world with a mind that is abundant, exalted, immeasurable, without hostility and without ill will.

Even if bandits were to sever you savagely limb by limb with a two-handled saw, anyone giving rise to a mind of hate would not be carrying out my teaching.

You should train thus: My mind will remain unaffected, and I shall utter no evil words; I shall abide compassionate for their welfare, pervading them with a mind of loving-kindness, and pervading the all-encompassing world with a mind that is abundant, exalted, immeasurable, without hostility and without ill will.

The Buddha [adapted from The Simile of the Saw, trans. Bhikkhu Bodhi]
Can you extend the circle of “us” to include the whole wide world?
Wishing: In gladness and in safety, may all beings be at ease.

Omitting none, whether they are weak or strong, the great or the mighty, medium, short, or small, the seen and the unseen, those living near and far away, those born and to-be-born: May all beings be at ease.

Let none through anger or ill-will wish harm upon another. Even as a mother protects with her life her child, her only child, so with a boundless heart should one cherish all living beings; radiating kindness over the entire world: spreading upwards to the skies, and downwards to the depths, outwards and unbounded, freed from hatred and ill-will.

One should sustain this recollection. This is said to be the sublime abiding.

The Buddha
So that all cubs are our own . . .
All beings are our clan . . .
All life, our relatives . . .
The whole earth, our home . . .
Great Books

See www.RickHanson.net for other great books.

Key Papers - 1

See [www.RickHanson.net](http://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 - 4


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