

*Train yourself in doing good
that lasts and brings happiness.*

*Cultivate generosity, the life of peace,
and a mind of boundless love.*

Itivuttaka 1.22

Neurodharma: Growing the Deepest Roots Of the Highest Happiness



Arbor Seminaire
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Mind in Life

*We ask,
“What is a thought?”*

*We don't know,
yet we are thinking
continually.*

Venerable Tenzin Palmo



A Framework

There are **experiences**: thoughts, feelings, memories, awareness.
In squirrels and people alike. Experiences are **natural** phenomena.

There is **matter** (and energy): water, light, trees, bodies, brains.

There is **information**: signals, meanings, instructions.
The function of the **nervous system** is to process information.

Our experiences **depend upon** flows of information represented by flows of neural activity.

There's probably **more to it** than this.

We can know ourselves in two ways:

- From the outside in, objectively, informed by science, particularly by neurobiology
- From the inside out, subjectively, informed by modern psychology and perennial wisdom

“Neurodharma” is where these two meet.

Consider the proverb:
“Your mind takes its shape
from what it rests upon.”

A modern update could be:
“Your brain takes its shape
from what your mind rests upon.”

From States to Traits

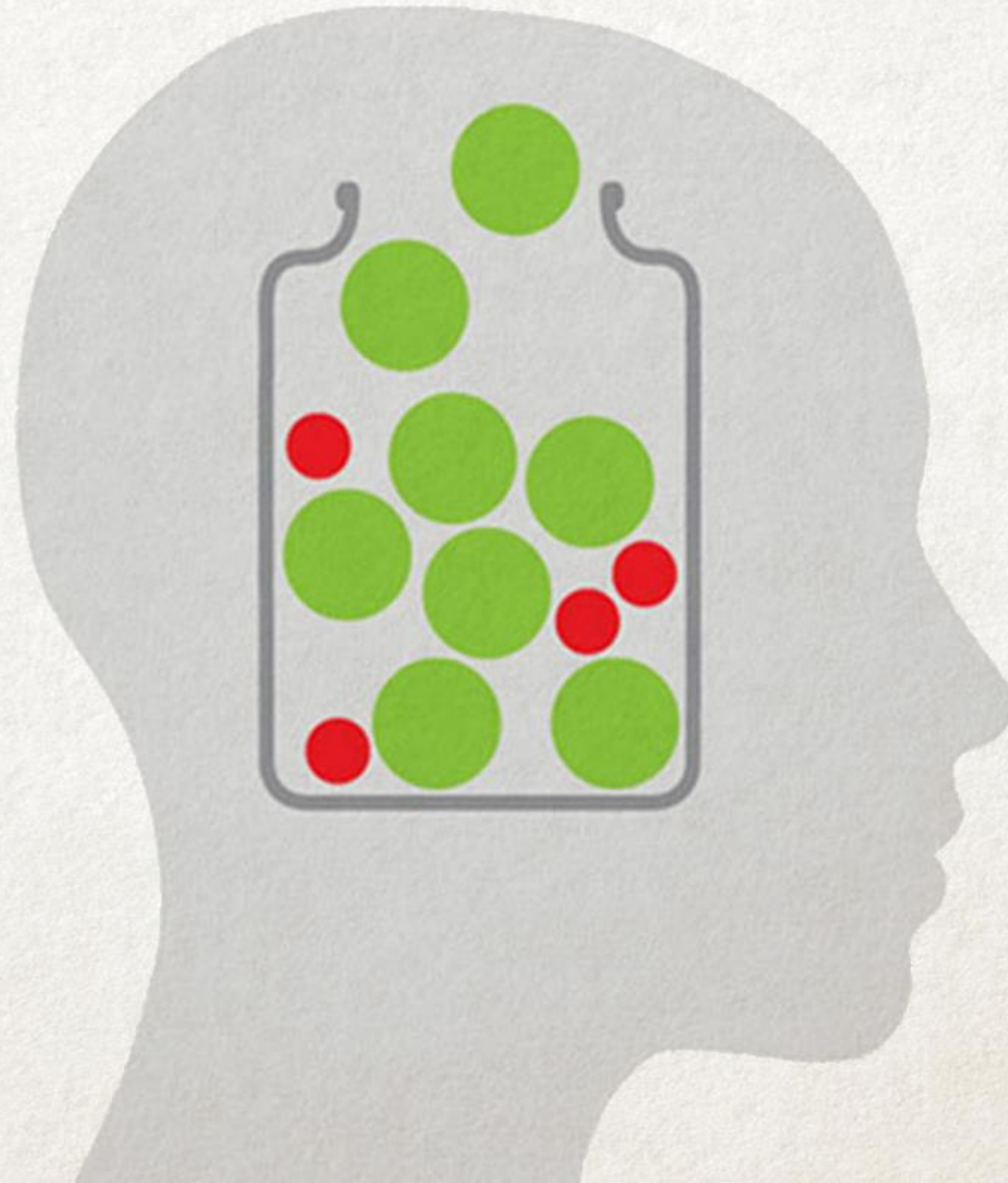
States come and go, **traits** endure.

We acquire traits by having experiences
– states – that we **learn** from.

Positive traits foster positive states.

State → Trait → States → Deeper trait

Which Means Changing the Brain For the Better



Learning – including becoming more virtuous, concentrated, and wise – occurs in two stages:

Encoding



Consolidation

Activation



Installation

State



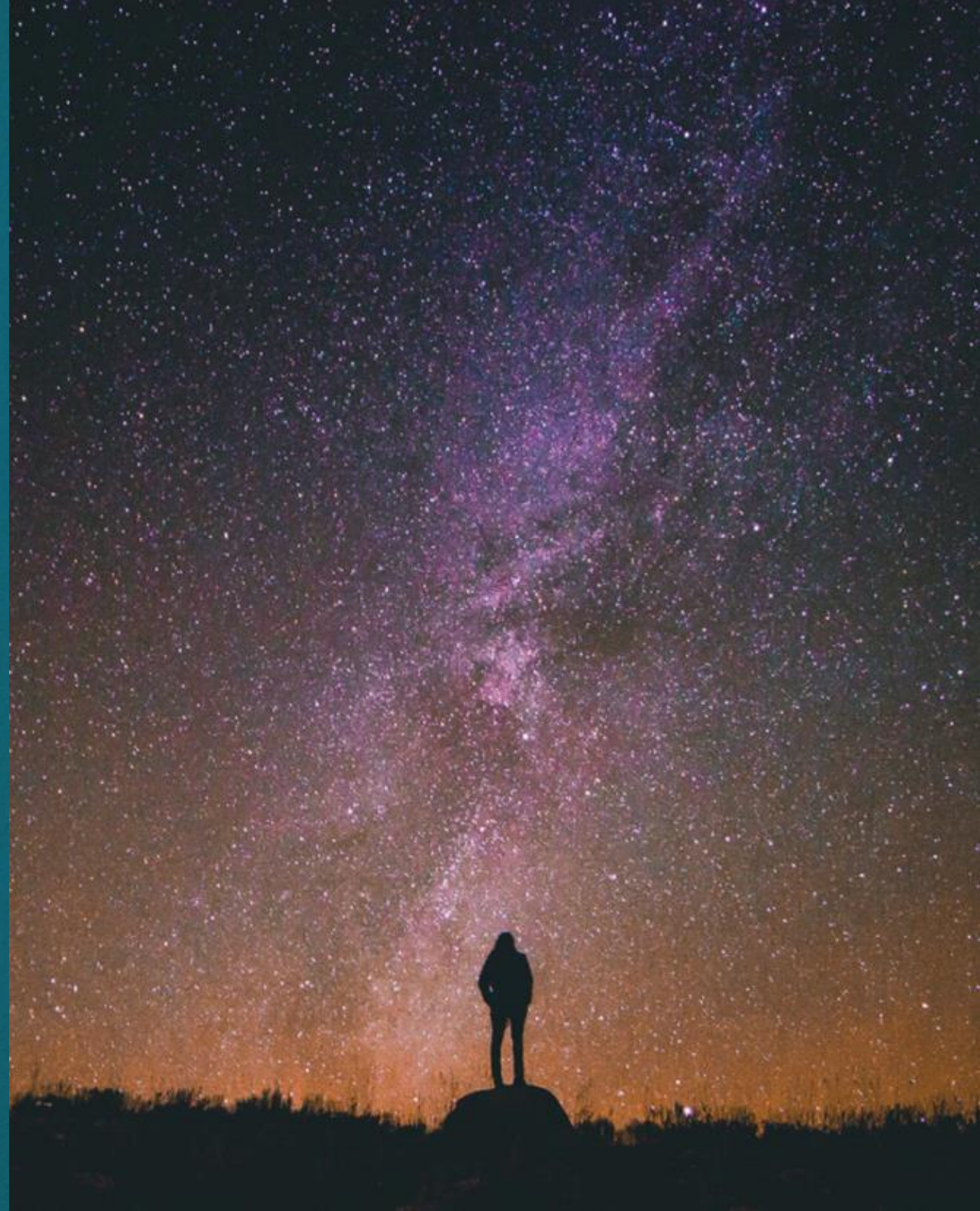
Trait

*In the beginning,
nothing came.*

*In the middle,
nothing stayed.*

*In the end,
nothing left.*

Milarepa





Neurons that fire together,

wire together.

Key Mechanisms of Neuroplasticity

(De)Sensitizing existing synapses

Building new synapses

Building and integrating new neurons

Altered gene expression

Altered activity in a region

Altered connectivity among regions

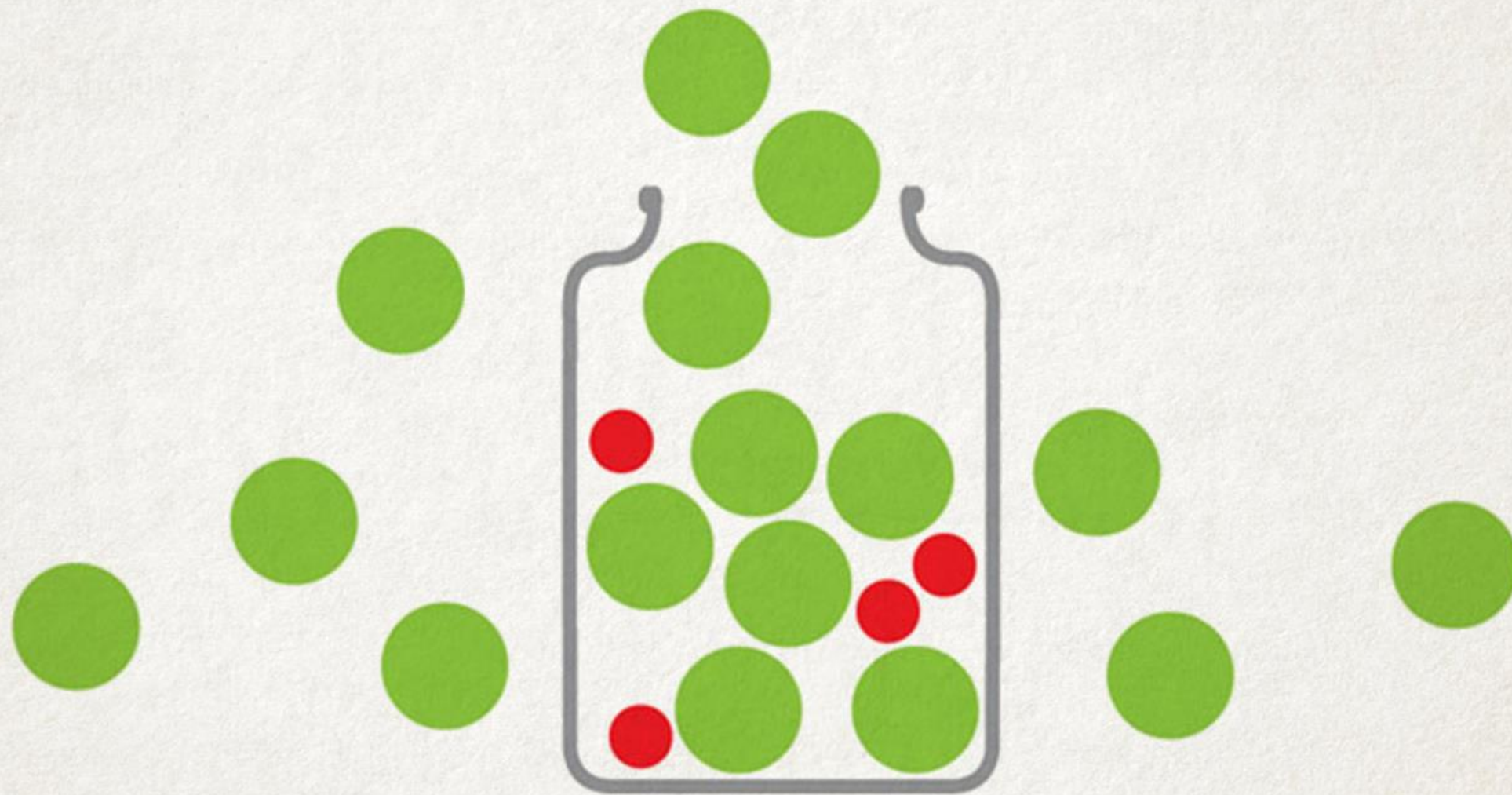
Changes in neurochemical activity (e.g., dopamine)

Changes in neurotrophic factors (e.g., BDNF)

Modulation by stress hormones, cytokines

Information transfer from hippocampus to cortex

Slow wave and REM sleep

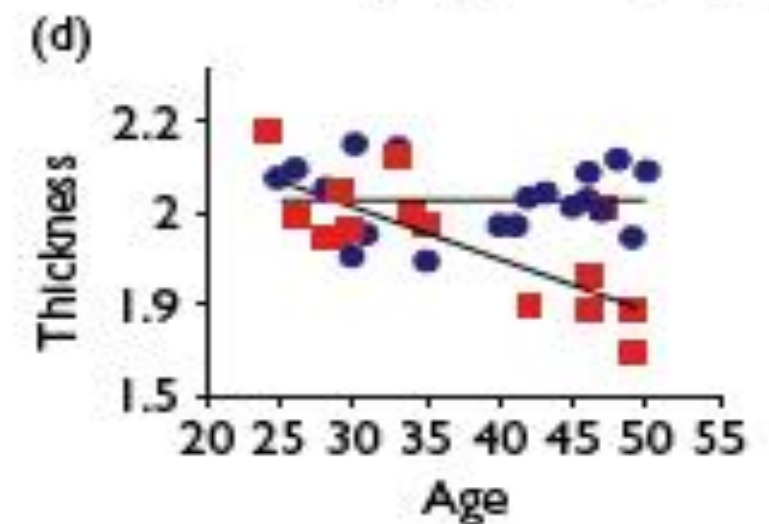
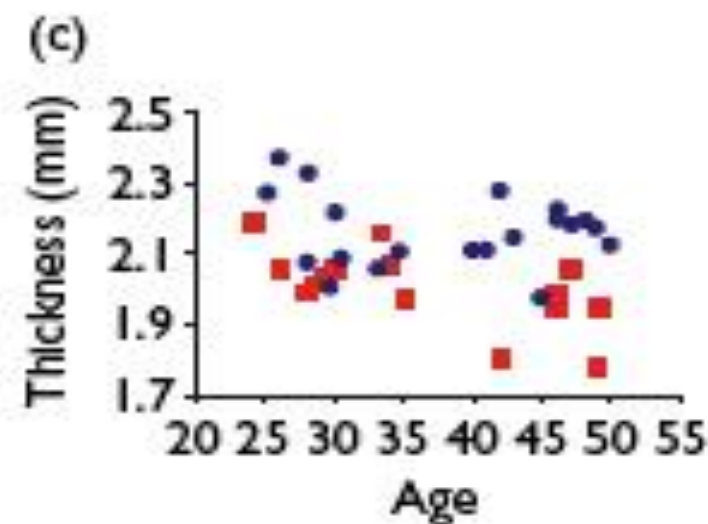
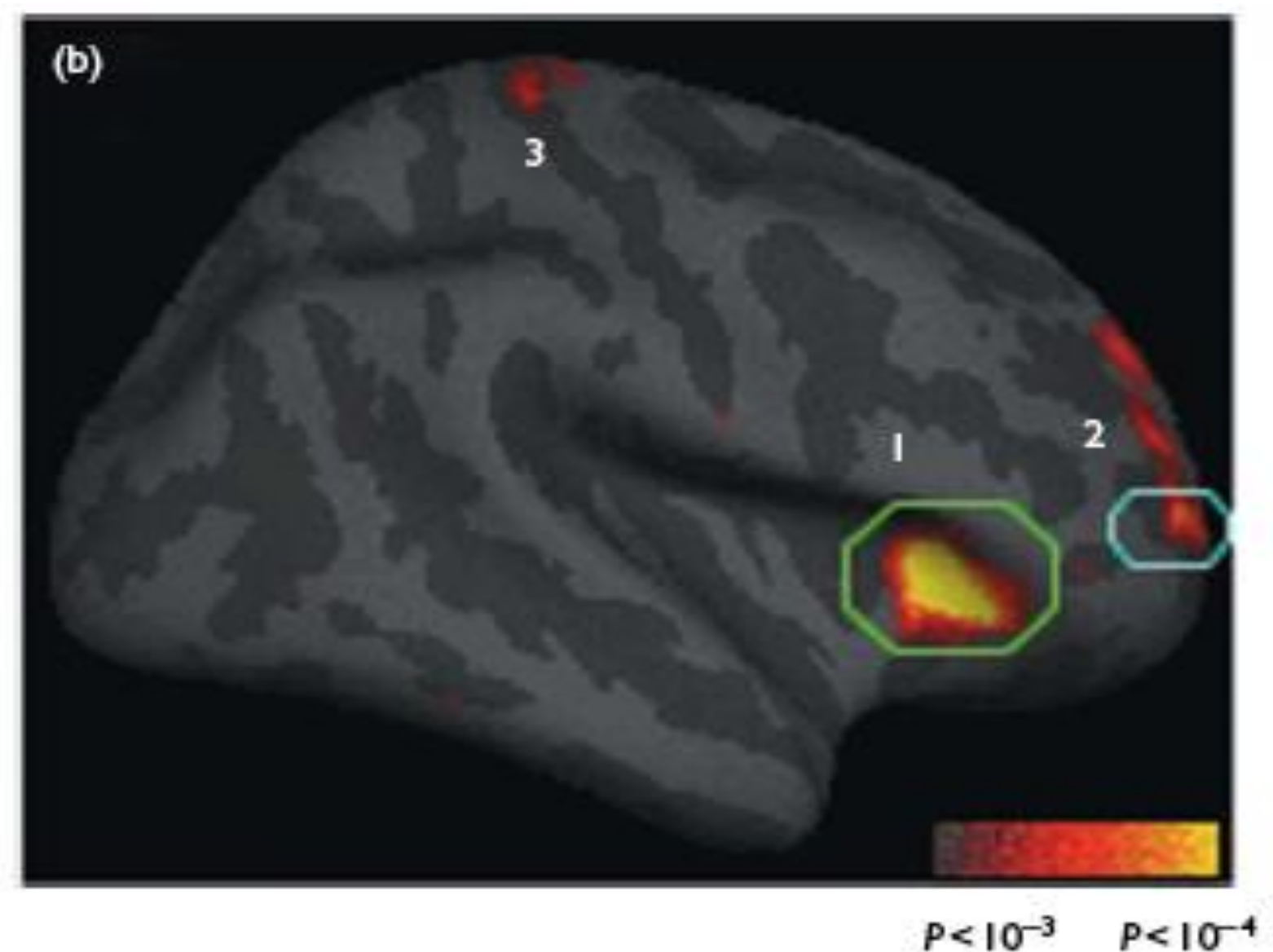


Have It, Enjoy It

Meditation
experience is
associated
with increased
cortical thickness.

Lazar, et al. 2005.

Neuroreport, 16, 1893-1897.

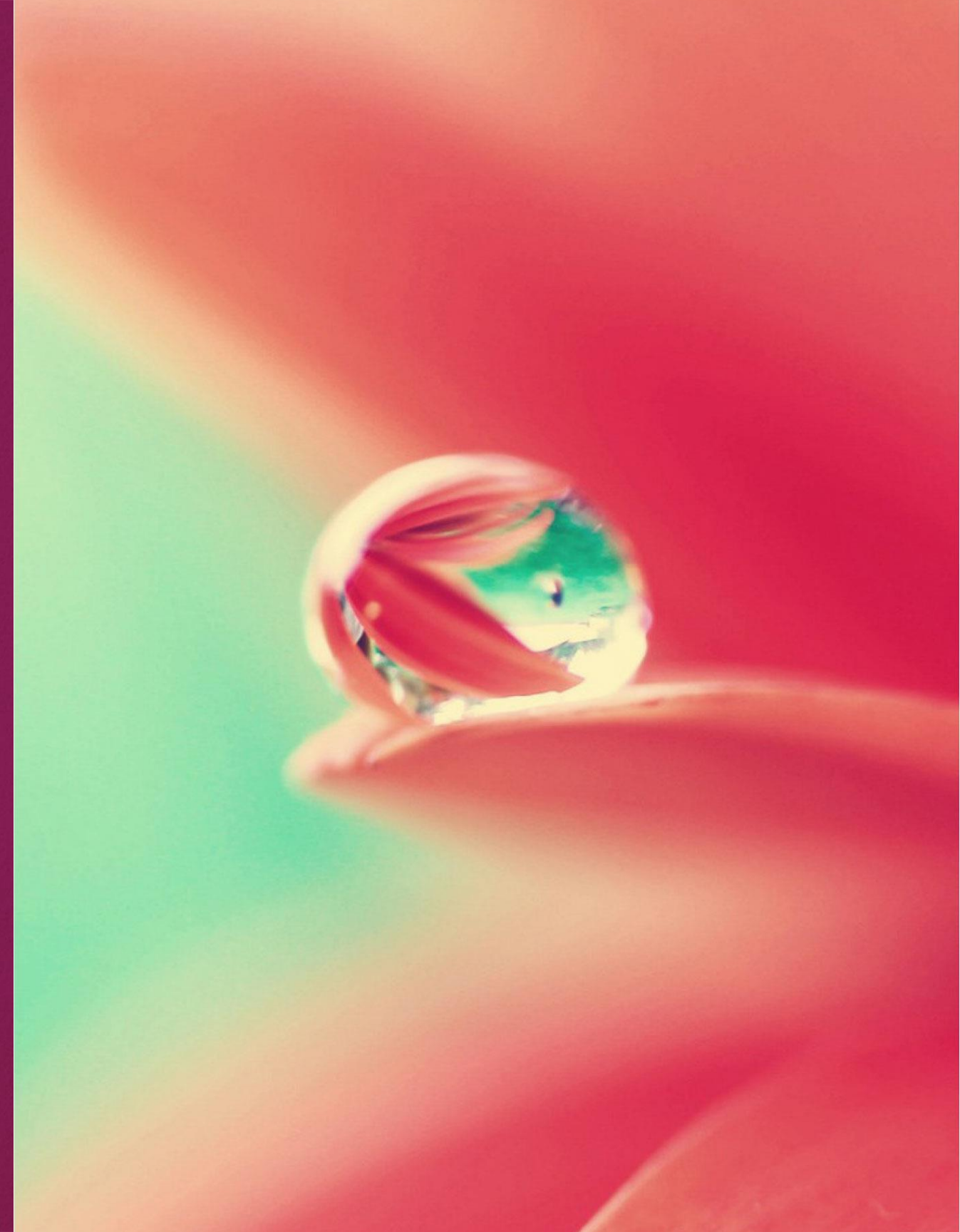


*Think not lightly of good, saying,
“It will not come to me.”*

*Drop by drop is
the water pot filled.*

*Likewise, the wise one,
Gathering it little by little,
Fills oneself with good.*

Dhammapada 9.122



In these ways, we can develop seven aspects
and *factors* of the highest happiness:

Steadiness

Warmheartedness

Fullness

Wholeness

Nowness

Allness

Timelessness

Gradual cultivation

Sudden awakening

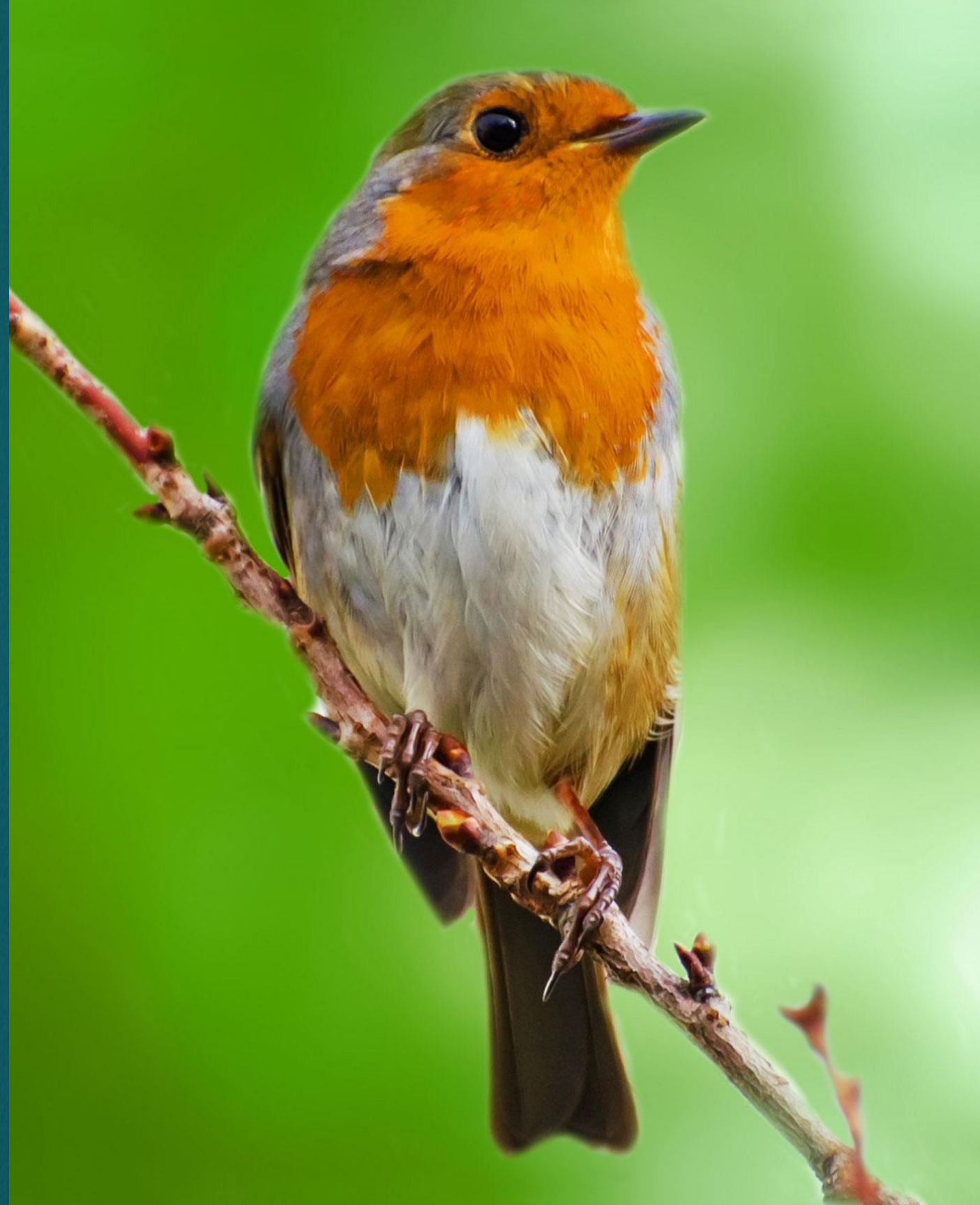
Gradual cultivation

Sudden awakening

Gradual cultivation . . .

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

Lao Tzu



Wholesome Intentions

Let's sit a bit,
letting the mind settle down,
opening to support for yourself,
listening to what calls you,
carried along by your
wholesome intentions for practice.

Steadying the Mind

Basics of Meditation

- Good will toward yourself
- Posture that is comfortable and alert
- In the present; aware and letting go
- Stable object of attention
- The mind settling and coming to rest

Mental Factors of Steadiness

- Establishing intention
- Relaxing body and breath
- Warming the heart
- Feeling safer
- Opening to positive emotions

Neural Factors of Steadiness

- Intention – Top-down and bottom-up
- Relaxation – Parasympathetic NS
- Heartwarming – Social engagement sys.
- Safer – Calms sympathetic NS
- Positive emotions – Steadies attention,
reduces “craving”

Warming the Heart



Self-Compassion

Bring to mind beings who care about you . . . Focus on feeling cared about. . . Take in this experience.

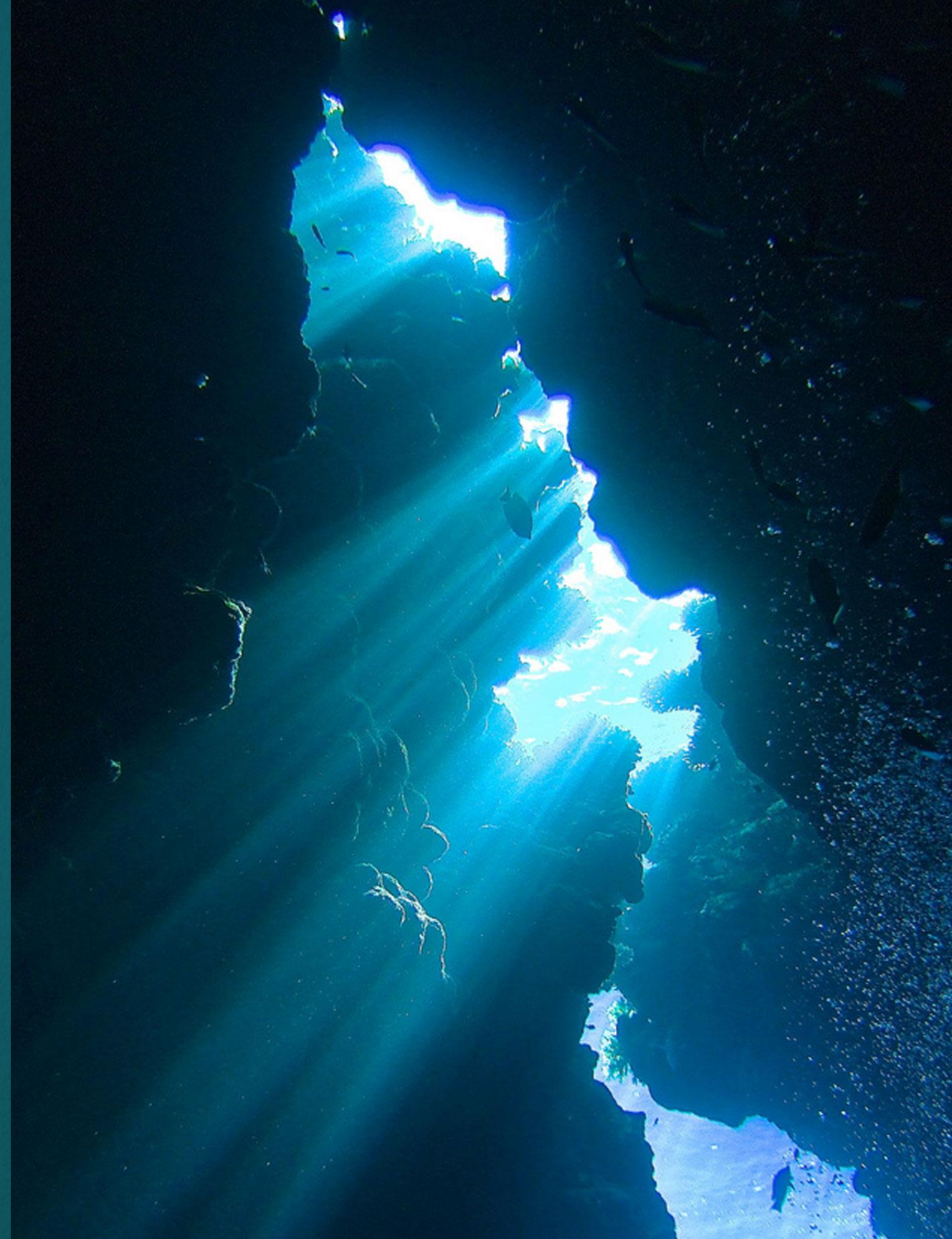
Bring to mind beings for whom you have compassion . . . Receive the sense of compassion into yourself . . . Know what compassion feels like.

Be aware of your own burdens, stresses, and suffering – and bring compassion to yourself . . . Get a sense of caring, warmth, support, compassion sinking deeply into you.

“Anthem”

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

Leonard Cohen



Resting in Fullness

Our Three Fundamental Needs



Safety



Satisfaction



Connection

Meeting Our Three Fundamental Needs



Safety

Avoiding
harms

(threat response)



Satisfaction

Approaching
rewards

(goal pursuit)



Connection

Attaching
to others

(social engagement)

Cultivation Reduces Craving

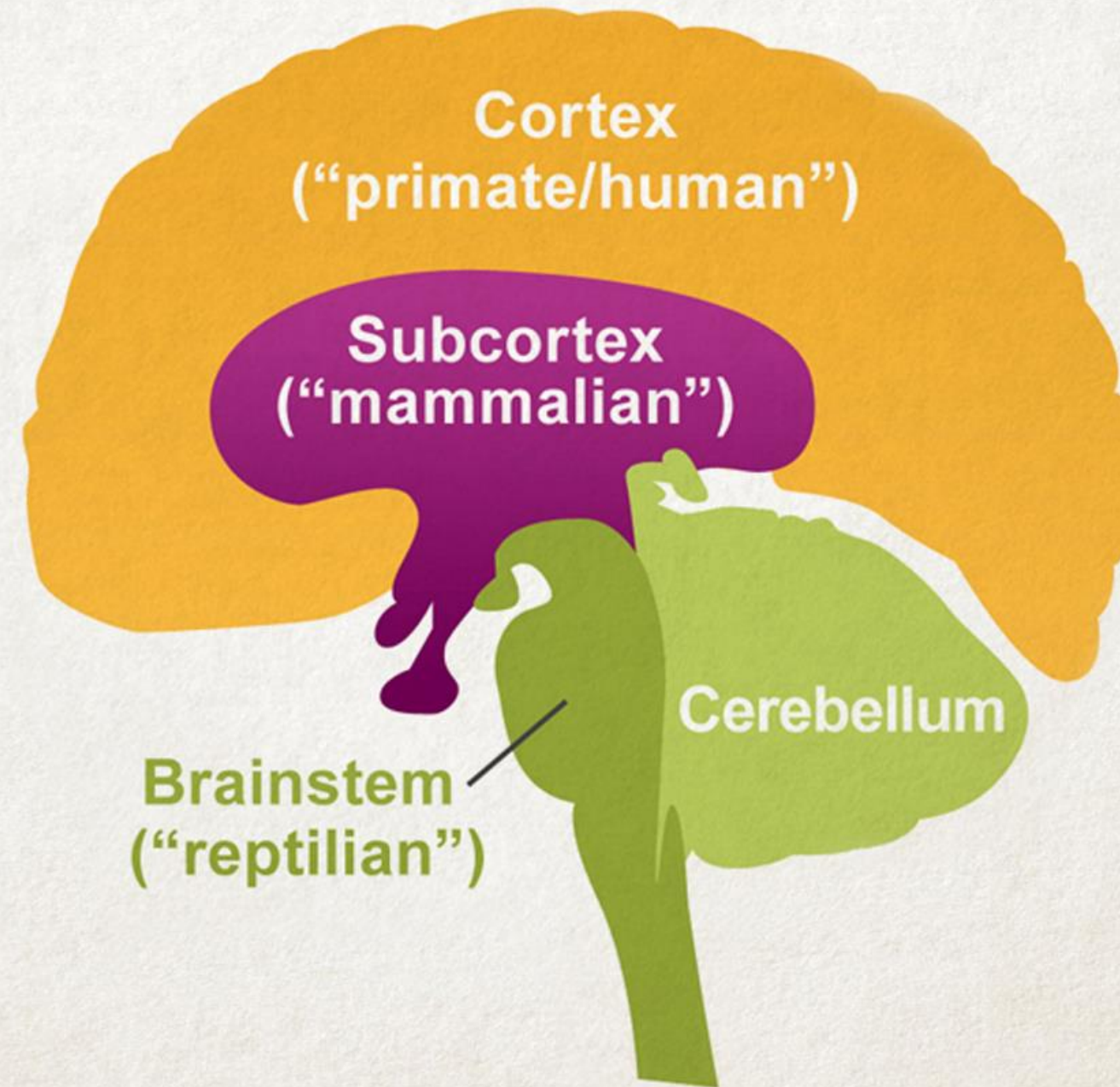
Biologically, craving is a drive state based on an underlying sense of deficit or disturbance in meeting our basic needs for safety, satisfaction, and connection.

As we grow inner strengths to meet challenges effectively, and *internalize beneficial experiences of needs met enough*, we develop unconditional inner peace, contentment, and love.

Resting in fullness and balance disentangles us from craving.

With time, even the practice of cultivation falls away – like a raft that is no longer needed once we reach the farther shore.

The Evolving Brain



Pet the Lizard



Feed the Mouse



Hug the Monkey



Coming Home

Peace

Contentment

Love

Being Wholeness

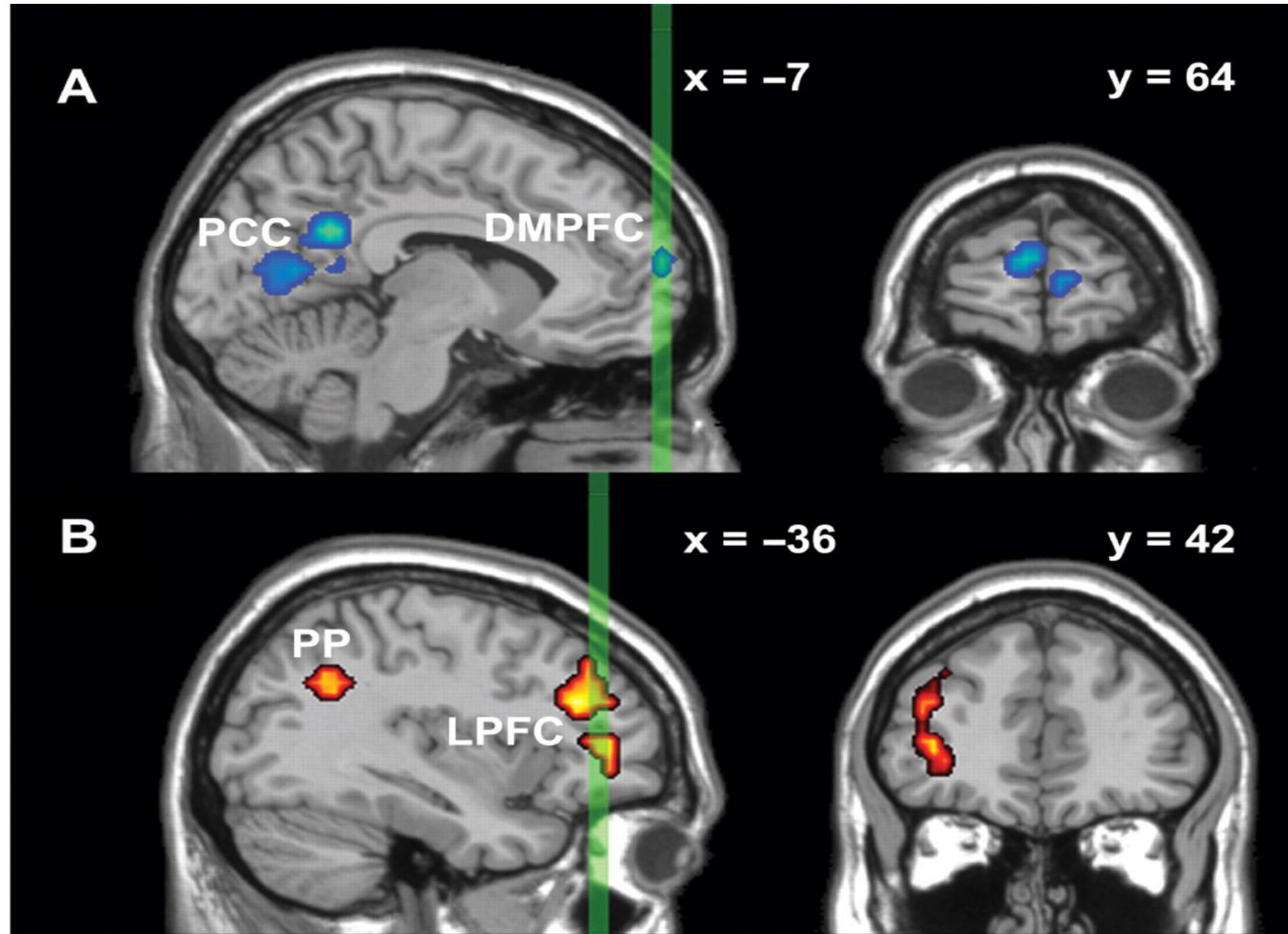
The Parts and the Whole

Suffering is parts struggling with parts.
Which includes not accepting yourself fully.
Meanwhile, there is always mind as a whole.
Mind as a whole simply is, not a problem.
When you experience your mind as a whole,
suffering falls away.



What helps us experience
the mind as a whole?

Self-Focused (blue) and Open Awareness (red)



Ways to Activate Lateral Networks

Focus on the present moment.

Don't problem-solve, fantasize, or ruminate.

Relax the sense of "me" and "I."

Widen into a panoramic view.

Rest in "don't know mind."

Sense your body as a whole.

Sensing Your Body as a Whole

Be aware of sensations of breathing all over your body.

Pick an area (e.g., chest) and include all the sensations there as a single whole.

Relax and receive sensations.

Gradually include more of your body.

Abide as a whole body breathing

Opening into Being

Aware of the whole body, rest in a sense of openhearted contented peacefulness.

Let go of the past . . . Let go of the future . . .

Let go of the present . . . Let your mind be . . .

Aware of spaciousness . . .

Let go of doing . . . Let go of do-er . . .

Rest increasingly in a simple sense of being.

Receiving Nowness



*Enlightenment is
to forget this moment
and grow into the next.*

Suzuki Roshi

*Let go of the past, let go of the future,
let go of the present, and cross over
to the farther shore of existence.*

*With mind wholly liberated,
you shall come no more
to birth and death.*

Dhammapada, 24.348

The Present Moment of Mind

Now is the great mystery: infinitely thin temporally, yet containing everything.

Imagine super-slow motion mindfulness of the emergent edge of Now, coming into being as it passes away.

The Present Moment of Brain

The neural networks of alerting are like the leading edge of the windshield of consciousness, continually updating us with what's new, while also supporting the sense of wholeness and allness.

*If you let go a little,
you'll have a little peace.*

*If you let go a lot,
you'll have a lot of peace.*

*If you let go completely,
you'll be completely peaceful.*

Ajahn Chah

Letting Go

Rest in a sense of alrightness . . . peaceful,
contented, warmhearted.

Be mindful of this moment continually
emerging . . . so it's alright to let go.

Let go while exhaling.

Be mindful of sensations, all experiences
changing . . . letting them pass away.

Opening into Allness

*The Buddha: “Bahiya, you should train yourself thus:
In reference to seeing, there will be only seeing. In
hearing, only hearing. In sensing, only sensing. In
cognizing, only cognizing.*

*When for you there is only seeing in seeing, only hearing
in hearing, only sensing in sensing, only cognizing in
cognizing – then, Bahiya, there is no you in connection
with that.*

*When there is no you in connection with that, there is no
you there. When there is no you there, you are neither
here nor yonder nor between the two.*

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

*Blissful is passionlessness in the world,
the overcoming of sensual desires.*

*But the abolition of the conceit “I am” –
That is truly the supreme bliss.*

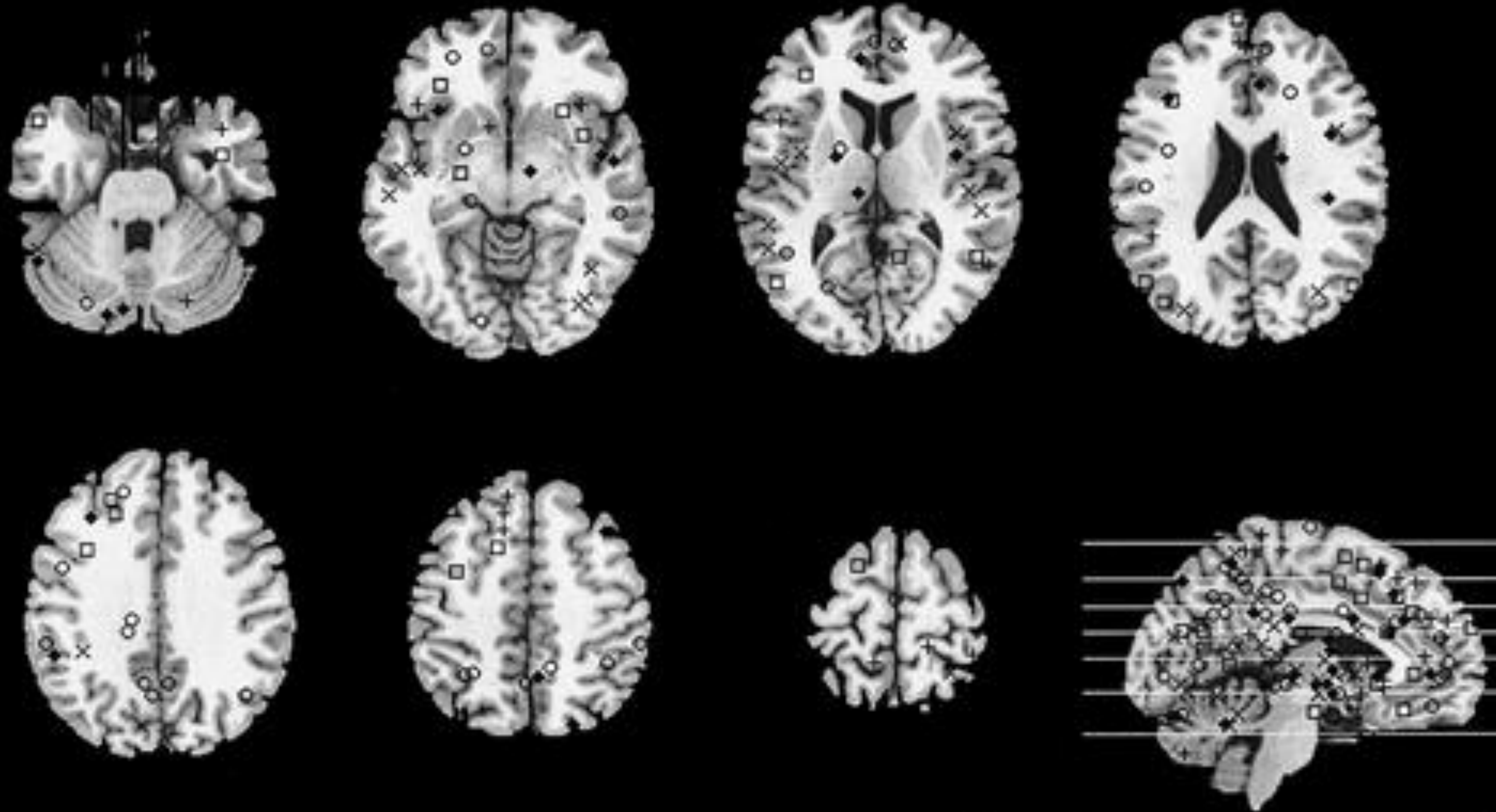
Udana 2.11

*To learn the Buddha way
is to learn about oneself.*

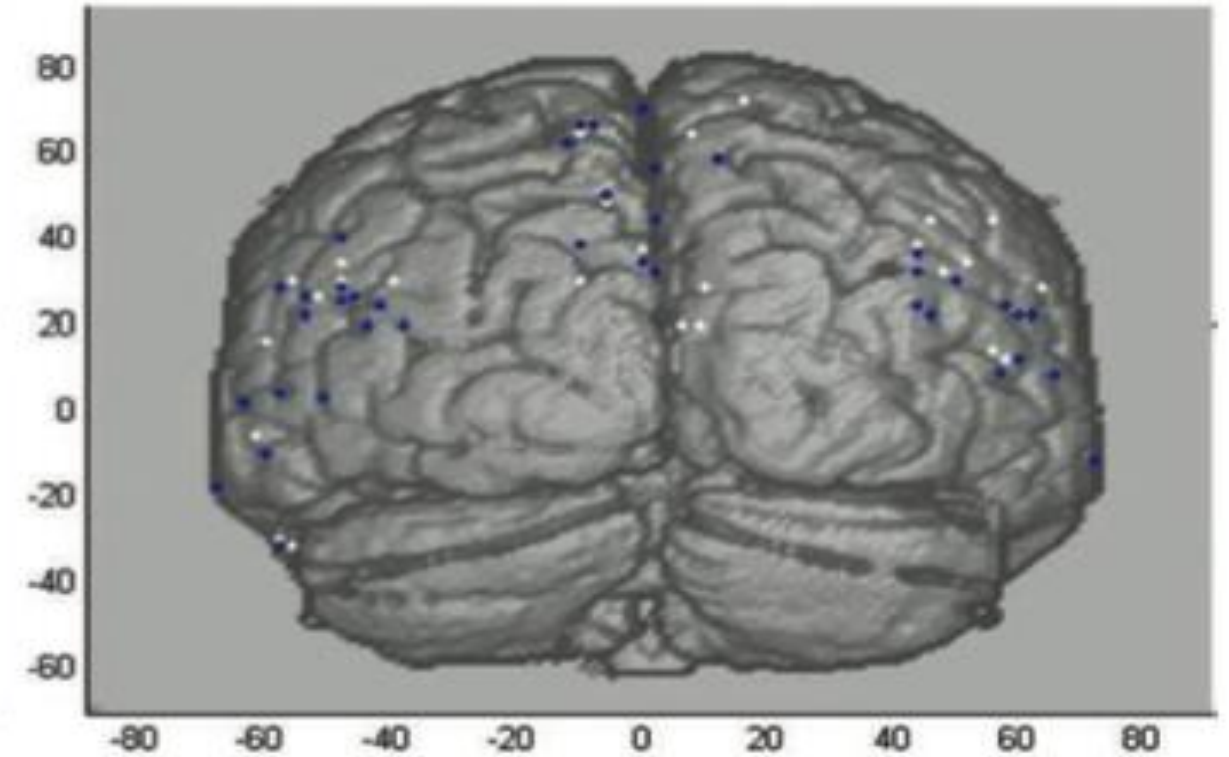
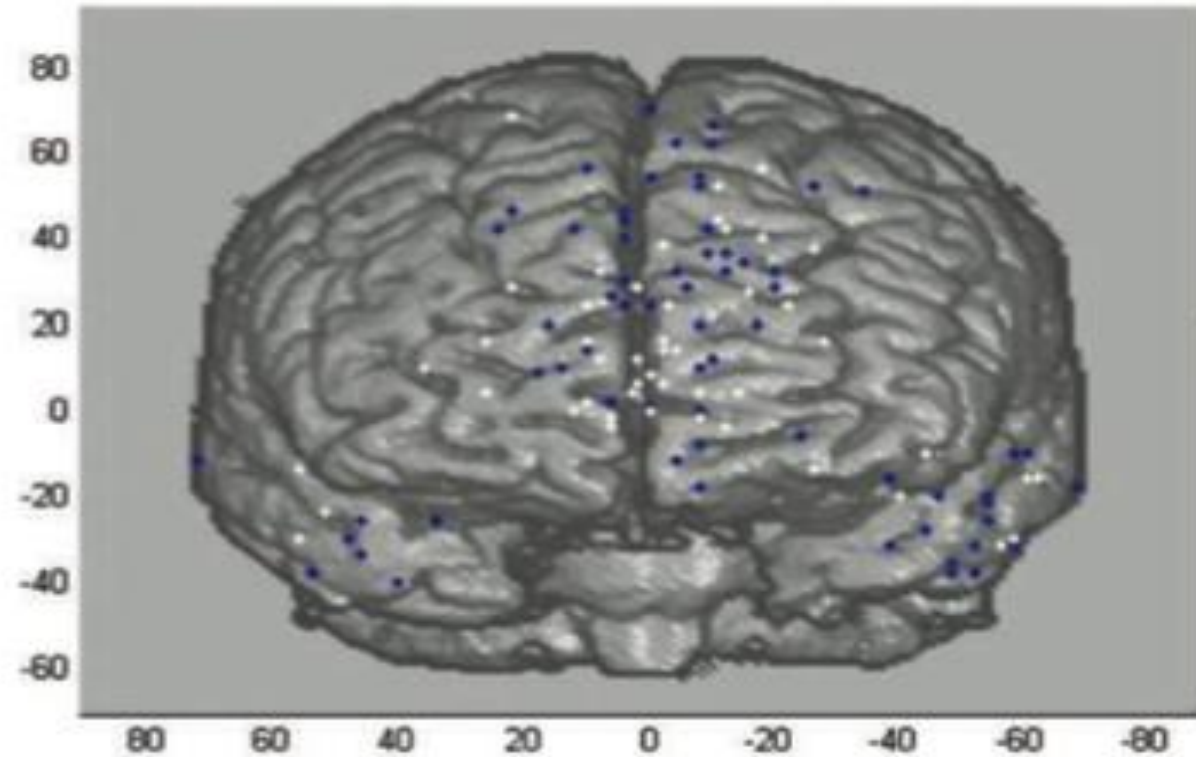
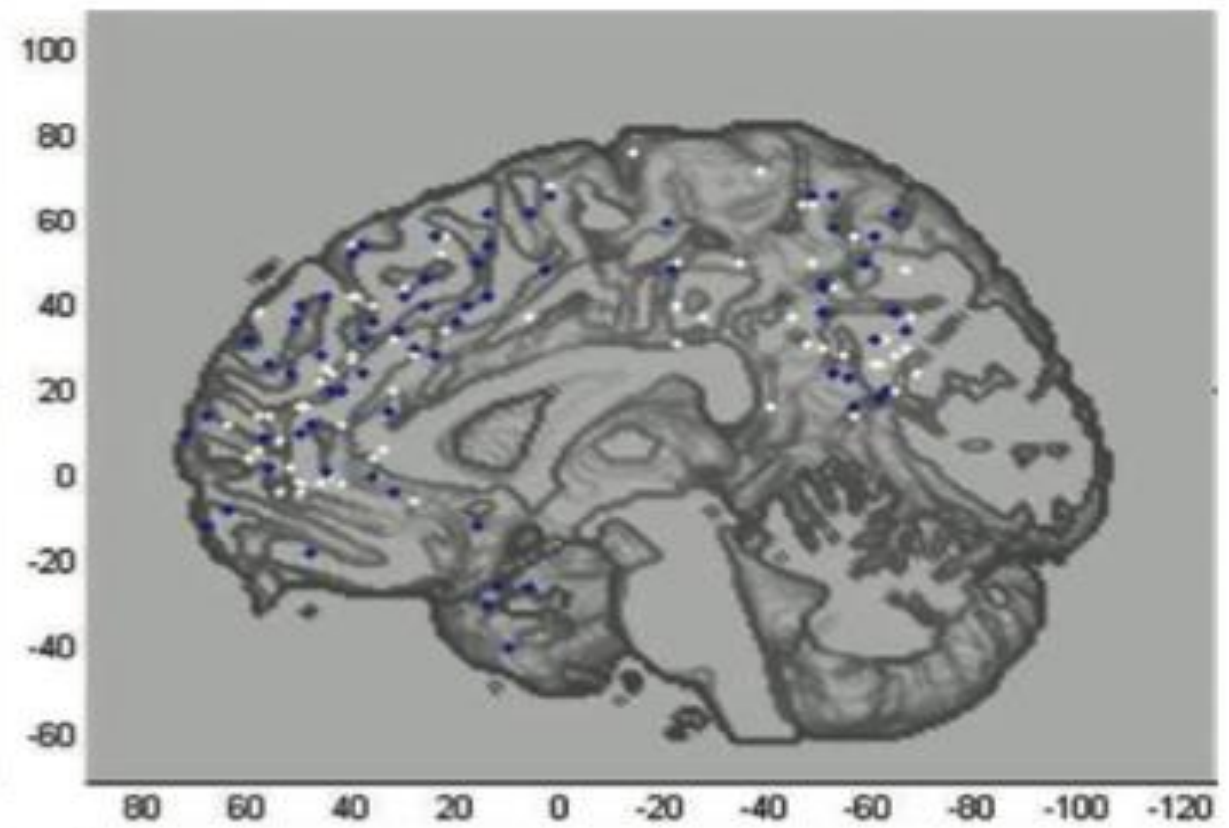
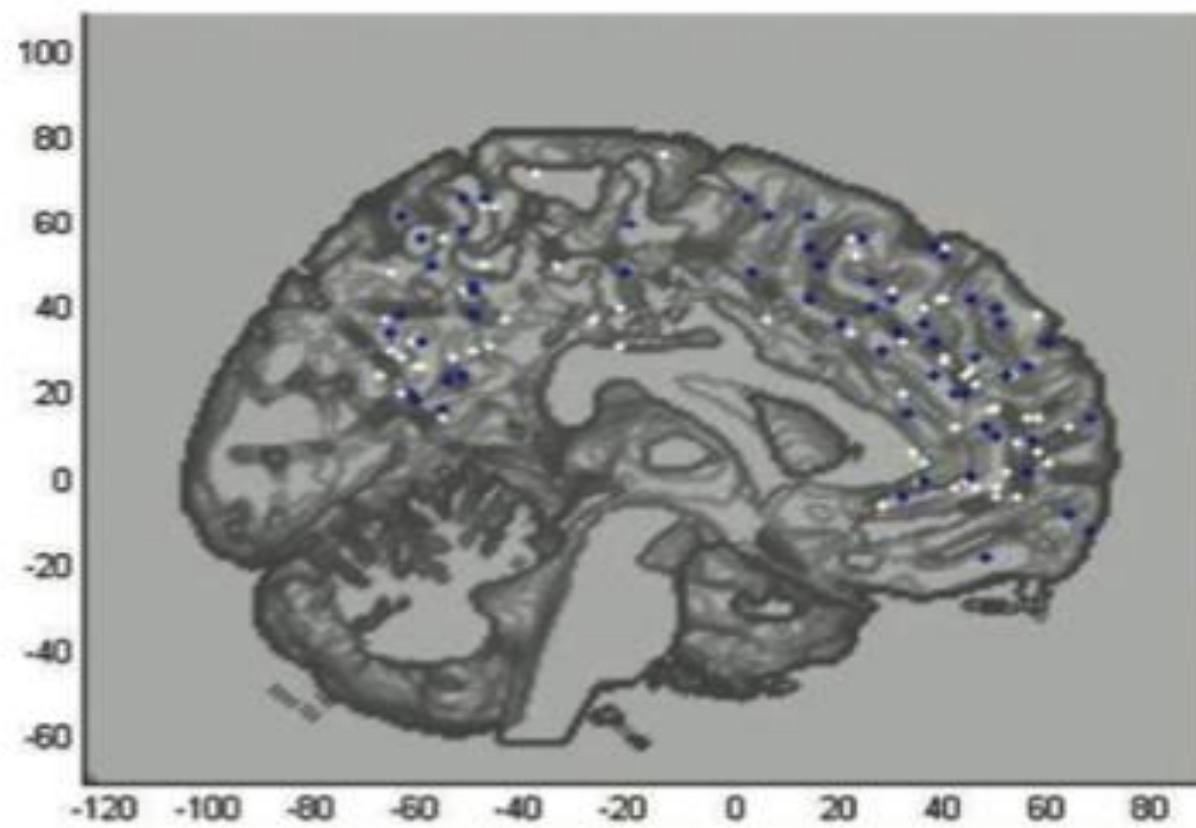
*To learn about oneself
is to forget oneself.*

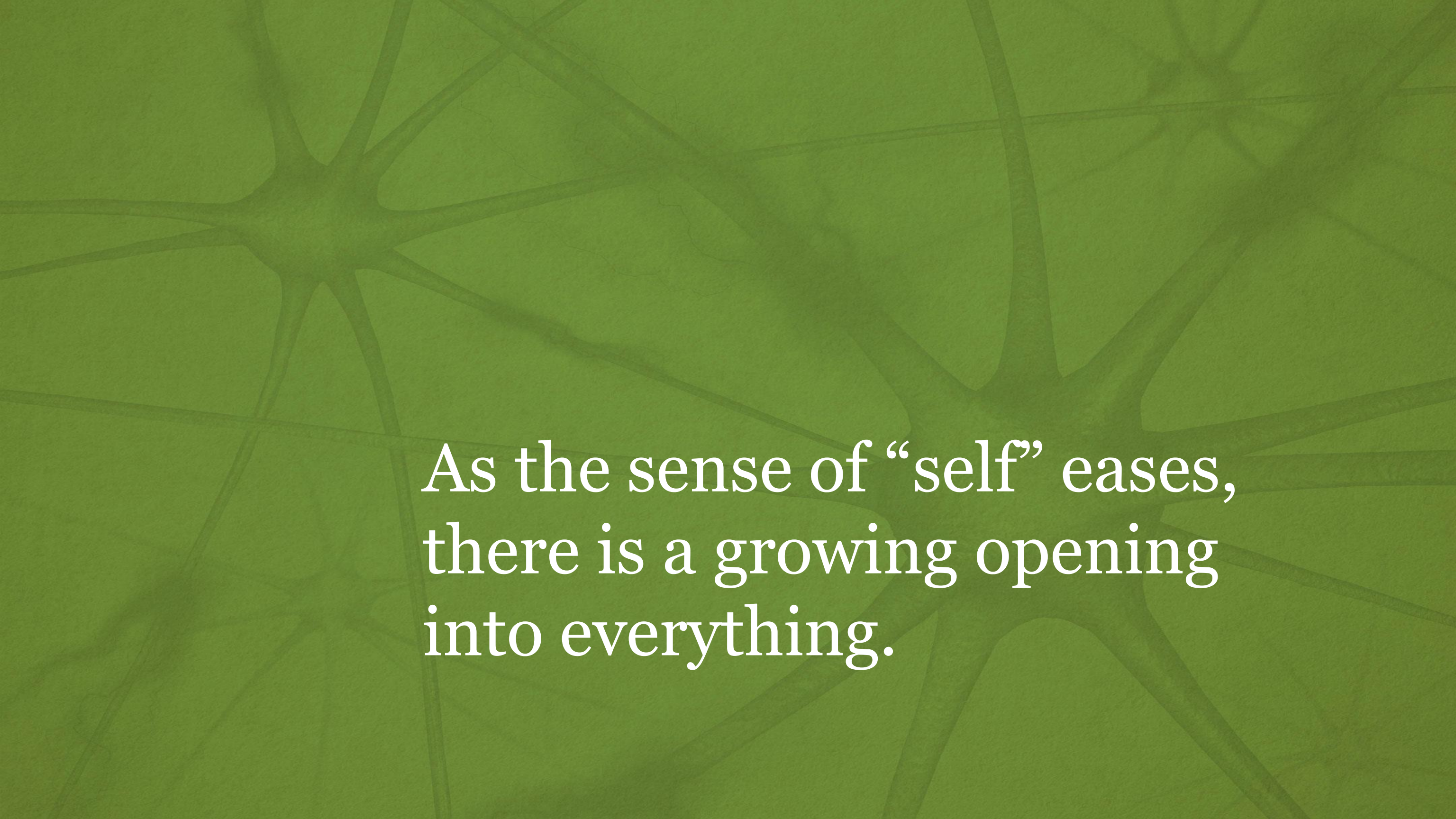
*To forget oneself
is to perceive oneself as all things.*

Dogen

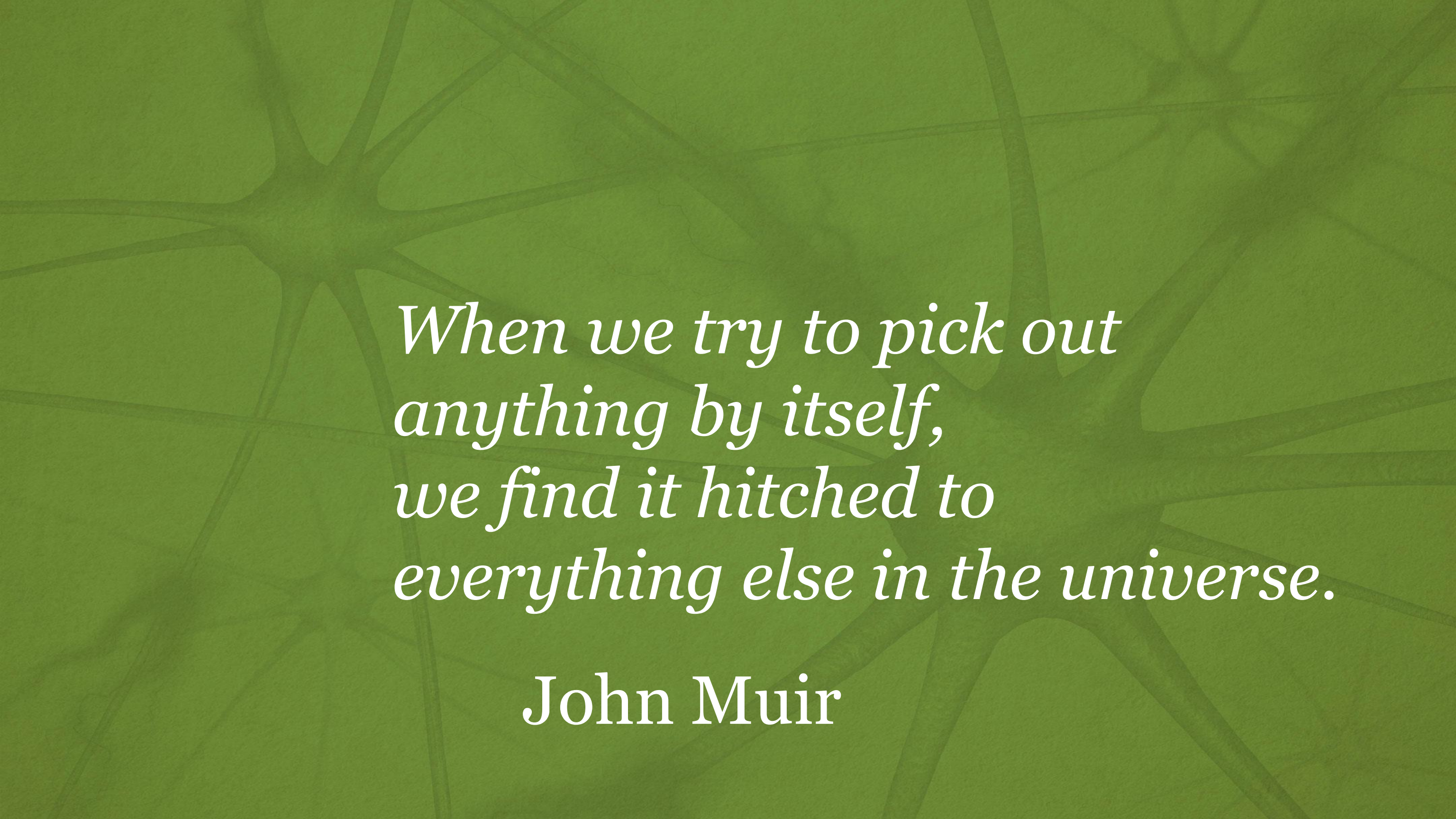


Gillihan, et al. 2005. *Psychological Bulletin*



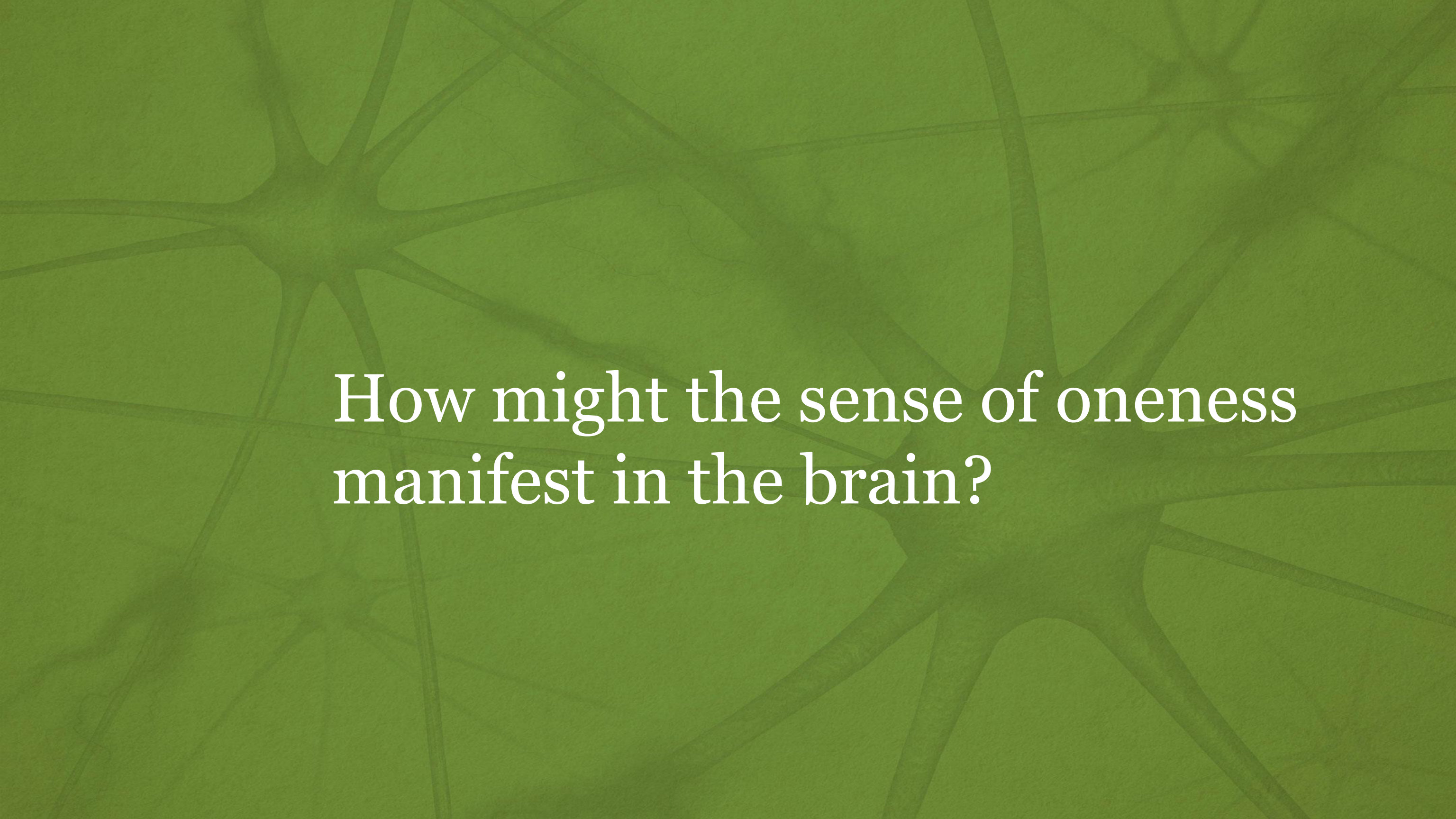


As the sense of “self” eases,
there is a growing opening
into everything.



*When we try to pick out
anything by itself,
we find it hitched to
everything else in the universe.*

John Muir



How might the sense of oneness
manifest in the brain?

Egocentric Experiencing

Central organizing process of me-mine-I

The world related to oneself

Lower visual field

Doing-ness; goal-directed

Upper, midline cortical processing

More recent neural evolution

Allocentric Experiencing

Diffuse, distributed process of “personing”

The world as it is, impersonally

Upper visual field

Being-ness; enoughness already

Lower, lateral cortical processing

More ancient regions of the brain

*We live in illusion
and the appearance of things.
There is a reality. We are that reality.
When you understand this,
you see that you are nothing.
And being nothing, you are everything.*

Kalu Rinpoche

Awakenings into Oneness

The sense of self falls away while the world shines forth in radiant perfection

James Austin: allocentric and egocentric experiencing alternate; something happens at an allocentric peak that flips a “switch” in the thalamus into pure allocentrism

How might we foster milder versions of this in everyday life??

Factors of Allocentrism

Fullness – little to drive egocentrism

Wholeness – less sense of self

Nowness – alerting, openness, surprise

Tranquility – GABA switches in thalamus

Recognizing interconnectedness – you're a
local expression of everything

Only Allness

Much as the mind is a whole, the material universe is a whole.

The allness that includes every sort of mind and matter is also a whole.

Allness as allness is always allness.

Much as mind as a whole is never a problem, allness as allness is never a problem.

Opening, in Peace

Feeling at ease . . . tranquil and alert

Your gaze or imagination extend out to the
horizon and beyond

Experiences flowing, edges softening

Knowing you are lived by everything

Opening into allness

Finding Timelessness

Things appear and disappear according to causes and conditions.

The true nature of things is not being born, and not dying.

*Our true nature is the nature of no-birth and no-death,
and we must touch our true nature in order to be free.*

Thich Nhat Hanh

*The entire world is in flames,
the entire world is going up in smoke;
the entire world is burning,
the entire world is vibrating.*

*But that which does not vibrate or burn, which
is experienced by the noble ones, where death
has no entry –
in that my mind delights.*

The Buddha

*The born, come-to-be, produced,
The made, the conditioned, the transient,
Conjoined with decay and death,
A nest of disease, perishable,
Sprung from nutriment and craving's cord –
That is not fit to take delight in.*

*The escape from that,
The peaceful, beyond reasoning, everlasting,
The not-born, the unproduced,
The sorrowless state that is void of stain,
The cessation of states linked to suffering,
The stilling of the conditioned – bliss.*

Itivuttaka 2.16



Three Kinds of Unconditioned

1. Deconditioning *from* habits of suffering, and opening *into* what is effectively unconditioned: awareness, stillness, possibility
2. An extraordinary state of being – “cessation” – within ordinary reality
3. (possibly) That which is distinct from the conditioned universe: not arising and passing away: thus timeless (and conscious? loving?)

How might we understand the meeting of conditioned and unconditioned?

What could be happening as conditioned processes in the neural substrates of consciousness become extremely, perhaps utterly quiet?

And how might this quiet be an opening to what might lie beyond ordinary reality?

Eddies in the Stream - 1

Twirling electrons, the dance of relationship, flows of feeling and desire – all **eddies** in a stream

Thoughts and things have the same nature:
impermanent, compounded, and interdependent – thus **empty** of solidity, ownership, and independent existence.

An eddying experience depends upon an eddy of information represented by an eddy of neural activity in the eddy of a body in the **stream** of the universe.

Eddies in the Stream - 2

Information is a reduction of uncertainty, a **signal** against a backdrop of noise.

For any experience to emerge, there must be unused neural capacity to represent it – fertile noise, quivering with possibility, **effectively unconditioned**.

Experiences are passing patternings of a field of infinite **possibility**.

Eddies in the Stream - 3

In the progression through the *jhanas* and the “formless realms,” mental activities gradually cease.

In the brain’s substrates of consciousness, eddies of information swirl apart, along with the neural assemblies that represent them.

The heart keeps beating, the brain keeps metabolizing, but signals drop out, stage by stage, so that nothing conditioned or constructed remains.

Eddies in the Stream - 4

At the ultimate point, there is mostly if not entirely unconditioned mental and neural possibility.

Profoundly open, continually in the emergence of the present moment before conditioning, *immersed in what is effectively unconditioned* . . . this could be so *like* the transcendental that there is an opening into it.

Freed from the ordinary mind, we could open to what is beyond ordinary reality.

Eddies in the Stream - 5

While the transcendental may be timeless, time continues for the body.

Eventually eddies of information begin to gather again in the neural streaming of consciousness.

There can be profound, liberating insights into the nature of the mind, and perhaps reality itself.

*It's as if you live in a deep valley
surrounded by mountains.
Then one day you're standing on top of the
highest peak.
The view is amazing.
Still, you can't live there.
And so you come back down to the valley.
But what you've seen changes you forever.*

Steve Armstrong

Unconditioned Possibility

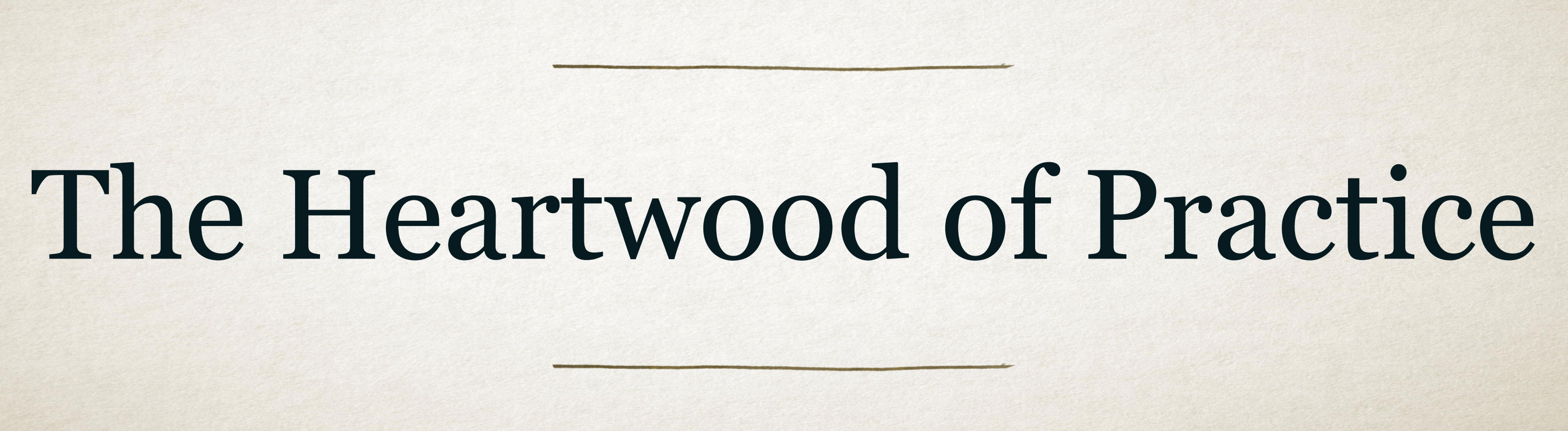
Disengaging from any particular experience

Opening into awareness, stillness, vastness

A sense of possibility . . . including what is
always just before the emergent edge of now

A recognition of mystery

Opening to timelessness



The Heartwood of Practice



*This holy life is not for the purpose of
gain, honor, and fame,
or for the attainment of virtue,
concentration, or knowledge and vision.*

*Rather, it is this unshakeable liberation
of mind that is the goal of this holy life,
its heartwood, and its end.*

Majjhima Nikaya, 30

*My mind has reached
the unconditioned.*

*I have attained
the destruction of craving.*

Dhammapada 11.154

Coming Home

Love

Contentment

Peace

Things appear and disappear according to causes and conditions.

The true nature of things is not being born, and not dying.

*Our true nature is the nature of no-birth and no-death,
and we must touch our true nature in order to be free.*

Thich Nhat Hanh

Pointing directly to the heart-mind

See your own nature

And become Buddha.

Hakuin



*Things fall apart.
Tread the path with care.*

Digha Nikaya 16

Thank You



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See **RickHanson.net** for other good books.

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See www.RickHanson.net/key-papers/ for other suggested readings.

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Supplemental Materials

In the Garden of the Mind

1

**Be with what
is there**

2

**Decrease
the negative**

3

**Increase
the positive**

Witness. Pull weeds. Plant flowers.
Let be. Let go. Let in.
Mindfulness is present in all three.

“Being with” is primary – but not enough.
We also need “wise effort.”

An Overview of Current Research

Much research on people that psychological practices lead to psychological benefits, presumably via changing their brains.

Much research on other animals that various stimuli lead to many kinds of changes in their brains.

Some research that psychological practices change people's brains.

Scattered research on deliberate internal mental factors that lead to individual differences in gains from experiences.

“The absence of evidence is not evidence of absence.”