

Steadying the Mind

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Topics

- Mindfulness and concentration
- Challenges to concentration
- Foundations of mindfulness
- Doing and being
- Neurological diversity
- Resources for issues with concentration
- A road map from the Buddha
- Buddhist concentration factors
- Quietening the mind
- Neuropsychology of the jhanas
- The brain and nirvana

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Mindfulness and Concentration

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Distinctions . . .

- **Awareness** is the field in which neural activity (mysteriously) becomes conscious experience.
- **Attention** is a heightened focus - a spotlight - on a particular content of awareness.
- **Mindfulness** is sustained attentiveness, typically with a metacognitive awareness of being aware.
- **Concentration** is deep absorption in an object of attention - sometimes to the point of non-ordinary states of consciousness.

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The Importance of Concentration

- We'll focus on one aspect of one pillar: meditative depth.
- That aspect has often been under-emphasized as Buddhism came to the West.
- But strong concentration is recommended by the Buddha and traditional teachers. It brings heft to insight, strengthens the will, and purifies the mind.
- The Noble Eightfold Path includes Wise Concentration, which is four jhanas, profound states of meditative absorption.
- We're not teaching the jhanas, but how to nourish the brain states that support the mental states that are their factors.

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*Concentration is
the proximate cause of wisdom.*

*Without concentration, one cannot even secure
one's own welfare, much less the lofty goal of
providing for the welfare of others.*

Acariya Dhammapala

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Cultivating Vipassana

- Insight is the ultimate aim.
- Insight is nourished by stable, quiet, collected, and concentrated states . . . of the brain.
- Liberating insight - and Nibbana itself - is the fruit of virtue, wisdom, and contemplative practice.

*Even if the ripe apple falls ultimately by grace,
its ripening was caused
by the watering, feeding, protecting, and shaping of its tree.*

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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

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Penetrative insight

joined with calm abiding

utterly eradicates

afflicted states.

Shantideva

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Challenges to Concentration

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Challenges to Mindfulness and Concentration

- We evolved continually scanning, shifting, wide focus attention in order to survive: "monkey mind."
- This generic, hard-wired tendency varies in the normal range of temperament, extending from "turtles" to "jackrabbits."
- Life experiences - in particular, painful or traumatic ones - can heighten scanning and distractibility.
- Modern culture - with its fire hose of information and routine multi-tasking - leads to stimulation-hunger and, divided attention.

Neurological Diversity

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How the Brain Pays Attention

- Key functions:
 - Holding onto information
 - Updating awareness
 - Seeking stimulation
- Key mechanisms:
 - Dopamine and the gate to awareness
 - The basal ganglia stimostat

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Individual Differences in Attention

	<u>Holding Information</u>	<u>Updating Awareness</u>	<u>Seeking Stimulation</u>
High	Obsession Over-focusing	Porous filters Distractible Overload	Hyperactive Thrill-seeking
Mod	Concentrates Divides attention	Flexible Assimilation Accommodation	Enthusiastic Adaptive
Low	Fatigues w/Conc. Small WM	Fixed views Oblivious Low learning	Stuck in a rut Apathetic Lethargic

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What is your own profile of attentional capabilities?

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Challenges to Stable Focus

- Primary challenges:
 - Fatigue with concentration
 - Porous filters (sensations, emotions, thoughts, desires, etc.)
 - Stimulus "hunger" (or "thirst" - "tanha")
 - Heightened with anxiety, spirited/ADHD temperament
- Secondary challenges:
 - Riding through these holes in steady attention come the five horsemen of the Hindrances:
Greed - Aversion - Sloth - Restlessness - Doubt

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Thus the importance of training the mind - and thus the brain - over time to become increasingly mindful and concentrated.

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Resources for Issues with Concentration

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General: Regenerate Intention

- Centrality of intention in psychology and contemplative practice: "*Ardent, diligent, and resolute* . . ." (the Buddha)
- Instructions from frontal lobes; executive oversight via anterior cingulate
- How to:
 - Evoke a sense of the desired state
 - Establish intentions at start of meditating
 - "Channel" a teacher/mentor/guru
 - Re-intend at short intervals

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Hold the Object of Attention

- Enlist language centers for more resources
 - Count breaths, steps, etc.
 - "Soft noting"
- Set up overseer function to watch the watcher
 - Probably centered in the anterior cingulate (AC)
 - Warm up the AC with compassion
- Evoke warmth, fondness, devotion for the breath
 - Increases positive emotion and energy
 - Deepens engagement

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Filter out Distractions

- Satiating on stimuli: Recurring, safe to ignore.
- Use frontal lobe intentionality to set "high filtering."
- Bat away other stimuli before they take root.
- Postpone planning, worrying, thinking, getting upset, etc., to later.
- If necessary, focus on the intrusive stimulus.

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Increase General Stimulation

- Enjoy "the beautiful breath."
- Evoke feelings of sufficiency, contentment, fullness.
- Activate oxytocin, giving yourself a mental hug.
- Savor the pleasant sense of absorption itself.

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Increase the Stimulation of the Object of Attention

- Re-orient to each breath as a fresh stimulus
 - Beginner's mind, "don't-know mind"
- Intensify contact (= more stim): details, subtleties
- Attend to breath as a whole
- Move attention among its parts
- Walking meditation

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Be Satisfied with Less

- Mindfulness thickens cortical layers, so less stimuli are still rewarding.
- Practice focusing on neutral - neither pleasant nor unpleasant - experiences. (*"The neutral is actually very close to peace and ease. It's a real doorway to resting in the eventless."* Christina Feldman)
- Recall the truth that all stimuli are fundamentally impermanent, empty, and ultimately unsatisfying.
- Call up a sense of disenchantment with the inner and outer worlds.

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Foundations of Mindfulness

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Awake and Alert

- You can't be attentive unless you're awake.
- Get enough sleep
- Good posture - Reticular formation
- "Brighten the mind" - Norepinephrine
- Oxygen - Gas for the brain

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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

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Foundations of Meditation

- Setting an intention
- Relaxing the body
- Feeling cared about
- Feeling safer
- Encouraging positive emotion
- Absorbing the benefits

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Neural Basis of Meditation Foundations

- **Setting an intention** - "top-down" frontal, "bottom-up" limbic
- **Relaxing the body** - parasympathetic nervous system
- **Feeling cared about** - social engagement system
- **Feeling safer** - inhibits amygdala/ hippocampus alarms
- **Encouraging positive emotion** - dopamine, norepinephrine
- **Absorbing the benefits** - positive implicit memories

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Doing and Being

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Dual Modes

"Doing"	"Being"
Focused attention	Open awareness
Goal-directed	Nothing to do, nowhere to go
Sense of craving	Sense of peace
Personal, self-oriented perspective	Impersonal, 3 rd person perspective
Lost in thought, mind wandering	Mindful presence
Conceptual	Sensory
Future- or past-focused	Now-focused
Much verbal activity	Little verbal activity
Firm beliefs	Uncertainty, not-knowing
Evaluative	Nonjudgmental
Looping contents of mind	Transient contents of mind
Tightly connected experiences	Loosely connected experiences
Focal view	Panoramic view
Prominent self-as-object	Minimal or no self-as-object
Prominent self-as-subject	Minimal or no self-as-subject

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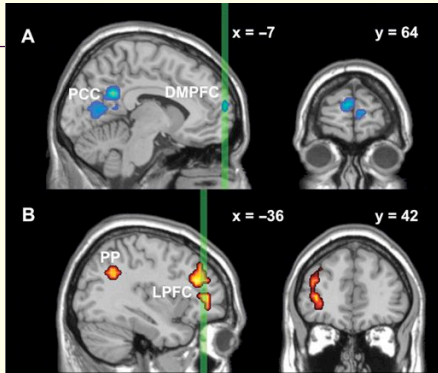
Increased Medial PFC Activation Related to Self-Referencing Thought



Gusnard D. A., et.al. 2001. *PNAS*, 98:4259-4264

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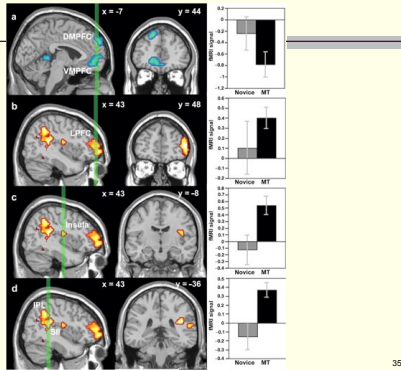
**Self-Focused (blue) and Open Awareness (red) Conditions
(in the novice, pre MT group)**



Farb, et al. 2007. *Social Cognitive Affective Neuroscience*, 2:313-322

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**Self-Focused (blue) and Open Awareness (red) Conditions
(following 8 weeks of MT)**



Farb, et al. 2007. *Social Cognitive Affective Neuroscience*, 2:313-322

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Ways to Activate “Being” Mode

- Relax.
- Focus on bare sensations and perceptions.
- Sense the body as a whole.
- Take a panoramic, “bird’s-eye” view.
- Engage “don’t-know mind”; release judgments.
- Don’t try to connect mental contents together.
- Let experience flow, staying here now.
- Relax the sense of “I, me, and mine.”

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Whole Body Awareness

- Involves insula and mesial (middle) parietal lobes, which integrate sensory maps of the body, plus right hemisphere, for holistic (gestalt) perception
- Practice
 - Sense the breath in one area (e.g., chest, upper lip)
 - Sense the breath as a whole: one gestalt, percept
 - Sense the body as a whole, a whole body breathing
 - Sense experience as a whole: sensations, sounds, thoughts . . . all arising together as one unified thing
- This sense of the whole may be present for a second, or two, then crumble; just open up to it again.

Panoramic Awareness

- Recall a bird’s-eye view (e.g., mountain, airplane).
- Be aware of sounds coming and going in an open space of awareness, without any edges: boundless.
- Open to other contents of mind, coming and going like clouds moving across the sky.
- Pleasant or unpleasant, no matter: just more clouds
- No cloud ever harms or taints the sky.

*Trust in awareness, in being awake,
rather than in transient and unstable conditions.*
Aiahn Sumedho

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A Road Map from the Buddha

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A Road Map from the Buddha

The Buddha described a progressive process in which:
...the mind is steadied internally, quieted, brought to singleness, and concentrated - Anguttara Nikaya 3:100 - leading to liberating insight.

- *Steady* - attention is very stable
- *Quiet* - tranquility; little verbal or emotional activity
- *Singleness* - integrative awareness; minimal thought; deep and nearly effortless engagement with the target of attention
- *Concentrated* - the jhanas or related non-ordinary states of consciousness; great absorption; often powerful feelings of rapture, bliss, happiness, contentment, and equanimity

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Steadied Internally

A stable
stability of attention . . .

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Quiet

- Little verbal activity
- Minimal sensorimotor stimuli
- Little goal-directedness
- A still pond with few waves

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Quiet . . . and Silence

- Two kinds of quietness:
 - Exceptional states, with preserved awareness of outside stimuli (not uncommon)
 - Extraordinary states with no awareness of outside stimuli (fairly rare)
- We're generally referring to the first of these.

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Singleness of Mind

- Great collectedness: integrated, inclusive awareness: all one percept
- Largely absorbed in the object of attention; withdrawn from most everything else
- Only wispy, peripheral thoughts
- Growing equanimity: impartiality toward experience
- Little sense of self: breathing without a breather

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Concentrated

- Profound absorption in non-ordinary state of consciousness: e.g., the "form" and "formless" jhanas; samadhi; mystical transport
- Pervading sense of rapture, bliss, happiness, contentment, tranquillity, equanimity
- Penetrating clarity into fine-grained details of experience, e.g., transience, interdependence, selflessness

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Buddhist Concentration Factors

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Factors of Concentration

- **Applied attention** - focus on the object
- **Sustained attention** - staying with the object
- **Rapture** - great interest in the object, bliss
- **Joy** - happiness, contentment, and tranquility
- **Singleness** - unification of awareness

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Stilling the Verbal Centers

- You're not struggling with inner language.
- Gentle instructions to verbal mind:
"There will be time for this later, so relax."
- Keep returning to physical sensations.
 - Whole body awareness - Right (nonverbal) hemisphere
- Surrender control of breathing.
- A soft word, phrase, or mantra (e.g., peace, Om, metta) can occupy verbal circuits.

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Rapture

- Experience
 - Feelings of pleasure, even bliss, in the body; pulses, waves of energy; rising quality
 - Range of capacity for rapture
 - Can come to feel a little overwhelming
- Neurology
 - Norepinephrine of SNS arousal ("brightening the mind")
 - Intense stimulation of "liking" nodes in nucleus accumbens
 - Intensifies natural opioids of bliss
 - Very high, steady dopamine closes the gate to working memory
 - Norep. and dopamine promote synaptic formation, thus learning.
- Practice
 - Softly think: "May rapture (*piti*) arise."
 - Perhaps gently arouse the body: strong inhale; pulse muscles at base of spine.
 - If rapture doesn't come, return to the breath.

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Joy

- Experience
 - Happiness - Gratitude, gladness, delight
 - Contentment - Well-being plus no wish at all that the moment be any different (hint of equanimity)
 - Tranquility - Deep peace; a still pond
 - Feelings can be subtle, and still pervade the mind.
- Neurology
 - Moderate stimulation of NA nodes and dopamine; natural opioids of happiness; as tranquility grows, these levels and norep. decline.
- Practice
 - Settle down from rapture.
 - Softly think: "May joy (*sukha*) arise."
 - OK to think of cues to joy.
 - Explore the spectrum of joy; know each state.

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Cultivating Singleness

- Experience
 - A sense of all contents of experience appearing as a unified whole, as a single gestalt, moment by moment
 - Great collectedness; minimal thought; deep, nearly effortless engagement with the object of attention; non-reactivity; little sense of self
- Neurology
 - Fast gamma wave entrainment
 - Less "effortful control" by the ACC
- Practice
 - Relax into whole body awareness
 - Softly think: "May singleness (*ekaggata*) arise."
 - Open up to the "ka-woosh" of it all coming together

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Neuropsychology of the Jhanas

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Concentration

And what, friends, is right concentration? Here, quite secluded from sensual pleasures, secluded from unwholesome states, a person enters upon and abides in the first jhana, which is accompanied by applied and sustained thought, with rapture and pleasure born of seclusion.

With the stilling of applied and sustained thought, the person enters upon and abides in the second jhana, which has self-confidence and singleness of mind without applied and sustained thought, with rapture and pleasure born of concentration.

*With the fading away as well of rapture, the person abides in **equanimity**, and mindful and fully aware, still feeling pleasure with the body, enters upon and abides in the third jhana, on account of which noble ones announce: "He or she has a pleasant abiding who has equanimity and is mindful."*

*With the abandoning of pleasure and pain, and with the previous disappearance of joy and grief, he or she enters upon and abides in the fourth jhana, which has neither-pain-nor-pleasure and purity of mindfulness due to **equanimity**. This is called right concentration.*

The Buddha

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The First Jhana:

"Accompanied by applied and sustained thought, with rapture and pleasure born of seclusion."

- **Applied thought** - Prefrontal cortex (PFC) for the intention to apply attention and the executive instruction to do so; anterior cingulate cortex (ACC) to monitor the execution of the intention
- **Sustained thought** - PFC for this intention and initiation of instruction to carry it out; ACC to monitor execution
- **Rapture** - Norepinephrine associated with sympathetic NS arousal and "brightening the mind"; intense stimulation of "liking" nodes in nucleus accumbens (NA); natural opioids of bliss; very high, steady dopamine tracking the rewards of rapture and keeping the gate closed to the dorsal-lateral-PFC substrates of working memory
- **Pleasure (Joy)** - Moderate stimulation of NA nodes; natural opioids of happiness; steady, moderate dopamine continues to track rewards. As tranquility increases, these levels plus norepinephrine decline.
- Overall, the internal stimulation of Rapture and Joy reduce basal ganglia needs for external stimulation.

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The Second Jhana:

"Self-confidence and singleness of mind without applied and sustained thought, with rapture and pleasure born of concentration."

- **Applied and sustained attention fade away:**
 - Just enough PFC intentionality to stay in the jhana
 - ACC quiets, not needed to apply or sustain attention
- **Rapture and pleasure persist, with their neural substrates of norepinephrine, nucleus accumbens activation, natural opioids, and dopamine.**

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The Third Jhana:

"With the fading away as well of rapture, one abides in equanimity [with the disappearance of joy and grief], still feeling pleasure with the body."

- **Applied and sustained thought remain absent.**
 - PFC is getting very quiet
- **Rapture fades away.**
 - Minimal norepinephrine; reduced stimulation of NA; no opioids of bliss; reduced dopamine
- **Equanimity:**
 - Amygdala gets very, very quiet.
 - Other limbic (emotion) centers quiet.
 - Large-scale gamma wave entrainment
- **Pleasure persists, with activation of its substrates**
- **. . . with the body:**
 - Sensory signals continue to flow through thalamus; body representations in insula and parietal lobes

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The Fourth Jhana:

*"Abandoning of pleasure and pain . . .
[with] purity of mindfulness due to equanimity."*

- Pleasure and pain abandoned:
 - Zero to bare minimum activity in amygdala, basal ganglia, and hippocampus
 - Minimal dopamine
- Purity of mindfulness . . .
 - Neural substrates of consciousness (e.g., thalamus, dorso-lateral PFC, lateral networks) are stably activated but are representing little content
- . . . due to equanimity:
 - Profound disengagement from emotional reactivity
 - Intensification of neural substrates of equanimity

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The Brain and Nirvana

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Common Nature of Matter and Mind

- Patterns - eddies - form from matter (including energy, quantum weirdness, etc.): whirlpools, butterflies, and galaxies. Patterns of information (mind) form via assemblies of material synapses.
- These patterns exist only within Now - which is infinitely "thin" yet holds all the causes of the past conditioning the future.
- All patterns are transient, interdependent, and emergent.
- At the leading edge of Now, they are effectively unconditioned.

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The Nature of Awakened Being?

- Awakened beings (and those far along the path) seem to:
 - abide as the nature of things at the leading edge of Now,
 - embedded in and embodying the ongoing knowing of transience that continually undoes craving and clinging,
 - with a freedom that comes from both that undoing and some sense of the unconditioned.
- This abiding, knowing, undoing, and freedom could be the natural fruit of Nibbana manifesting in the brain - at least in terms of the progression into Nibbana and the return from it.

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Nibbana and the Brain

- In a recurring description in the dharma, one moves through the eight absorptions (Jhanas) to the point of "cessation."
- Then - mysteriously - Nibbana "occurs." After a while, more ordinary consciousness returns, through which the effects of Nibbana continue to ripple, for a lifetime.
- In the brain, these eight steps seem to correspond to a profound quieting of mind and brain: all eddies of information (and their underlying neural assemblies) disperse in awareness so that there is only fertile noise.
- At that point, the person is utterly present with the bare nature of matter and mind - the realization of which is transforming.

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For one who clings motion exists, but for one who does not cling there is no motion.

Where no motion is, there is stillness.

Where stillness is, there is no craving.

Where no craving is, there is neither coming nor going.

Where no coming or going is there is neither arising nor passing away.

Where neither arising nor passing away is, there is neither this world, nor a world beyond nor a state between.

This verily, is the end of suffering.

The Buddha, Udana 8:3

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Flashes of Nibbana

Actually, when we meditate we do experience little breakthroughs, like tiny flashes of the unconditioned mind. But that's just the beginning of the processes. It's certainly not the end!

Wisdom is a huge subject. It 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.

- Ven. Tenzin Palmo

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Seeing Conditioned and Unconditioned

- In great quiet and singleness, the constructed, empty nature of experience and the self are readily seen.
- "Behind" it, the ineffable, unnameable true reality can be perceived.

*Like living in a valley surrounded by high mountains.
Then one day you're standing atop the tallest peak,
seeing everything from an utterly fresh perspective.
It's so clear and extraordinary there, yet your life is in the valley.
And so you come back.
But that seeing changes you forever.*

- Steve Armstrong

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Penetrative insight

joined with calm abiding

utterly eradicates

afflicted states.

Shantideva

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Great Books

See www.RickHanson.net for other great books.

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Key Papers - 1

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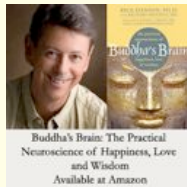
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