



Dukkha without Tanha: Integrating Buddhist Insights and Neuropsychology¹

By Rick Hanson

Rick Hanson explores the way we can meet our most basic needs for safety, satisfaction, and connection without craving (taṇhā). Hanson offers both a conceptual framework for understanding our situation as embodied beings as well as practices to support us in meeting our needs wisely, free of the suffering that results from craving.

Is Life Suffering?

A central Buddhist teaching is generally translated as: all conditioned things are suffering.[2] “Conditioned” is a shorthand way of saying that something exists due to various causes; it didn’t just pop into being out of nowhere. For example, a wooden chair is the result of many factors, including the trees it came from and the people who made it. The sensations of breathing are also the result of many factors, such as the circuitry of the nervous system and

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whether you just took a big breath. In turn, these causes are themselves conditioned by their causes . . . ultimately widening out into the universe and back into time.

Are all conditioned things indeed suffering? I don't think so. If we are to fulfill the task – and opportunity – of understanding suffering, we need to unpack this teaching in order to find the way in which it is actually true. So, I'd like to walk through different versions of it I've encountered.

Taken literally – “all conditioned things are suffering” – this statement cannot be true. All conditioned things can't be suffering. Suffering is an experience. A chair is a conditioned thing – a physical object – that cannot have an experience, and it cannot be an experience. So it would be wrong to say, “All chairs are suffering.”

A related version of this that I've heard is: “Life is suffering.” Yet, is it? Experiences – at least as this word is normally used – require a nervous system. Plants and microbes do not have nervous systems. Therefore, they can't have experiences, so they can't suffer. Bones and blood and neurons don't suffer, either. This is not just semantics: suffering is not “out there” in physical objects or in life as a whole. Most conditioned things are not suffering. It can feel startling and freeing to recognize that suffering is just a small part of everything.

Let's suppose that the term “conditioned things” is meant to refer only to our experiences, and not to physical objects like chairs. Then a version of this statement could be: “All human experiences are suffering.”[3] Is this actually true?

There are times when the mind is filled with physical pain, grief, fear, outrage, depression, or other overwhelming kinds of suffering. I've had those times myself, and then it feels like suffering is all there is. There are also countless people who each day must bear pain, illness, loss, disability, poverty, hunger, or injustice. And in the blink of an eye something might happen – perhaps a car on the highway swerving into you, or a shocking betrayal by someone you've trusted – that changes the rest of your life. Suffering is certainly around us and often, if not always, inside us. Compassion calls us to do what we can about it. And still – are all of our experiences suffering?

Suffering matters because it is a particular kind of experience – one that is unpleasant – so there must be other kinds of experiences. The pleasure in eating a juicy peach is not itself suffering. Nor is virtue, wisdom, or concentration. Awareness itself is not suffering. Human experience certainly contains fear and grief, but that's not all it contains. Further, any experience, even a painful one, is highly “pixelated,” with many elements like the individual brushstrokes of a painting. Most of those elements are not themselves suffering. The redness of red, the knowledge that a ball is round . . . none of these is itself unpleasant or suffering.

These points may seem merely technical, but if we overlook what is not suffering, then we won't truly understand what is suffering. And we will miss out on experiences and resources that we could use both for increasing health and well-being and for reducing suffering. Recognizing suffering in yourself and others opens the heart and motivates practice. But these good ends are not served by exaggerating it.

So let's get even narrower and consider this statement: "Human experiences – even loving, beautiful, inspiring ones – always have some suffering in them,." This seems a lot closer to what could be true – but why would pixels of suffering always be present somewhere in the movie of consciousness?

At this point it's helpful to think of suffering in a broader and looser way as "that which is unsatisfactory or unsatisfying." But we still need to clear away some underbrush. In the immediate moment of an experience – perhaps there is the smell of cinnamon or the recognition that a job is done – the smell or recognition is just what it is, and it is not itself unsatisfying. Some might say that it is the inevitable ending – the impermanence – of all experiences that makes them always unsatisfying. But impermanence alone can't be the problem, since some kinds of impermanence are welcomed; the impermanence of pain makes room for pleasure. And even if the ending of each moment of experience is a loss, it is balanced by the gain of each new moment that arises.[4]

Yes, because all experiences are impermanent, they cannot be permanently, continuously satisfying. But this becomes a problem only when we try to hold on to them. The suffering, stress, or dissatisfaction is not inherent in experience itself or in its impermanence. It is inherent only in the holding on to experiences. It's good to slow down to appreciate the implications of this. We must still face the inescapable physical and emotional pains of life, and the inescapable transience of all experiences, but we need not suffer these as long as we can practice letting go instead of holding on.

How could we do this?

Two Kinds of Holding

There are two kinds of holding. First, we tend to hold on to what the Buddha called the four objects of attachment:

- Pleasures (which can include resisting pain)
- Views (such as opinions, beliefs, expectations)
- “Rites and rituals” (which could be extended today to rules and routines)
- The sense of self

For example, I know what it’s like to want some ice cream but then find that the container is empty; to have a strong opinion that no one should ever take the last bit of ice cream without seeing if I want some, too; to want a new rule about this in my home; and to feel annoyed that someone took “my” ice cream. This kind of holding is a form of craving, and you can observe it with mindfulness. Like everything else in awareness, craving increases and decreases, ebbs and flows. With practice, you can get more comfortable with letting go instead of holding on, which is a theme throughout this book. Also, as we’ll see in what follows, you can feel already full, already at ease, and therefore less driven to hold on to any moment at all. Even at its most intense, the first kind of holding is only a part of consciousness, not the whole of it. And with practice, this type of holding gradually releases.

But there’s a second kind of holding that is inherent in life itself. Intrinsicly, the nervous system is always attempting to stabilize and segment extremely dynamic and

interconnected processes. To serve the life of the body it inhabits, the nervous system keeps trying to hold onto the patterns of activation that underlie each moment of experience . . . even as they keep dispersing and morphing into something else. When your mind is quiet and steady, you can really see this. It produces an ongoing subtle tension that is a form of suffering. This tension is not the only thing we experience, but it is part of everything we experience. In this particular sense, suffering is indeed an inherent feature of our lives. While we cannot remove this tension since it is grounded in our biology, we can understand it, which brings a sense of clarity and calm. Additionally, if we can accept this property of the nervous system and not resist it, then we don't add suffering to suffering. This kind of holding is just what brains do. In this life, there is always some tension somewhere. But amidst and around it can be so many other things, such as an open heart, the undisturbed spaciousness of awareness, and thankfulness for the good that is real.

The Causes of Craving

Just as a felled tree grows again

If the roots are unharmed and strong,

So suffering sprouts again and again

Until the tendency to crave is rooted out.

Dhammapada 338[5]

The first kind of holding is the craving that causes most of our suffering. This raises a really important question: What causes our craving?

Three Causes of Craving

Our craving comes from three sources.

First, there are social factors such as insecure attachment[6] and feelings of inadequacy, loneliness, envy, and resentment. Practices of relationship for these factors include compassion, kindness, and happiness for others.

Second, there are visceral factors based on a sense of needs unmet: something is missing, something is wrong. In Pali, one of the languages of early Buddhist texts, the word for craving is *tanha*, whose root meaning is “thirst” – which is particularly apt for the drives that underlie these sources of craving. You can address them through practices of fullness that develop both specific inner strengths for meeting your needs and general feelings of enoughness and emotional balance.

Third, there are cognitive factors, due to thinking that:

- something is lasting when actually it is changing;
- something will be continually satisfying when actually nothing can be continually satisfying; or
- there is a fixed “I” or “me” inside when actually there is no fixed self inside.

Practices to address this source of craving focus on the recognition of these forms of ignorance and confusion.

Three Kinds of Practice

These three kinds of practice – through relationship, fullness, and recognition – are equally important, and each one supports the others. We draw on steadiness of mind for all of them as well as insight – vipassana in Pali – which must be relational and embodied if it is to be truly liberating.

There's a natural rhythm in which we often begin with relationship-oriented practices, including moral conduct and self-compassion. As the heart opens and softens, we turn more to practices of fullness that develop resilience and equanimity. With this inner stability, there's a growing recognition of the cognitive factors of suffering. Then these realizations feed back into your relationships and sense of fullness in a positive cycle. [7]

People are naturally drawn to one aspect of practice or another, and that's fine. Still, it's useful to ask whether it would serve you these days to highlight other aspects, too. For instance, without fully addressing the social and visceral sources of craving, a person's practice can become overly analytical and dry, and not as fruitful as it could be. Further, just one aspect of practice can predominate in some settings. I like to ask myself: How might Buddhism have developed if its root teacher had been a woman and a mother rather than a man and a father? Or if householders had held greater institutional authority for the next 2500 years? I'm not saying it would have been better, but it's worth considering how it might have been different. Truths are truths regardless of their messengers, but their expressions and the practices designed to realize them depend upon many factors, including gender, class, and history.[8] There is a saying: leave nothing out of your practice.[9] In both our personal

practice and in our institutions, we can ask: What – and
whom – might we be leaving out?

Any sensual bliss in the world,

Any heavenly bliss,

Isn't worth one sixteenth-sixteenth

Of the bliss of the end of craving.

Udāna 2.2[10]

Embodied Craving

The deepest roots of craving are in biologically-based drive states that we share with other animals, including neurologically simpler ones, such as monkeys, mice, and lizards.[11] The neurobiological hardware that is the basis of these drives emerged hundreds of millions of years ago, long before the capabilities developed for complex cognitive errors. The most fundamental causes of craving lie beneath these cognitive errors, both in the physical structures of the brain and in evolutionary time.

We enter a drive state when there is an invasive sense of deficit or disturbance in the meeting of an important need. As an embodied being, what do you need?

Broadly stated, the fundamental needs of any animal, including us, are safety, satisfaction, and connection – and you might pause for a moment and reflect on how these needs

appear in various ways throughout your day. The brain meets these needs through regulatory and motivational systems that, respectively, avoid harms, approach rewards, and attach to others.[12] In order, these systems are loosely related to our reptilian brainstem, mammalian subcortex,[13] and primate/human neocortex.[14] For example, if you feel the need for connection with a friend after a misunderstanding, you could draw on capacities for empathy and language in the neocortex to attach to this person in ways that feel good to you.

Our needs are normal, and the neuropsychological systems that try to meet them are necessary. Awakening is not the end of needs, nor can it change the basic structure of the brain. The question is: Can we meet our needs wisely – and without craving and the suffering it causes? To answer this question, it's useful to know something about our neural hardware.

A Healthy Equilibrium

Three major networks in your brain help to keep you on an even keel amidst the waves of life. First, the salience network[15] highlights need-relevant information. Second, the default mode network[16] is active when we are daydreaming or ruminating, dwelling on the future or the past, or preoccupied with ourselves. Third, the executive control network[17] is involved with problem-solving and decision-making.

These three networks work together and influence each other. To summarize and simplify: when the salience network flags something that matters, it tells the default mode network to stop spacing out while urging the executive control network to start figuring out what to do.

Hedonic Tones

To evaluate challenges and opportunities related to each of your needs, these networks track the hedonic tones[18] of your experiences. The sense of something as unpleasant highlights the need for safety, and the sense of something as pleasant highlights the need for satisfaction. Along with a third hedonic tone, neutral, this summary of human life as boiling down to nothing more than avoiding pain and approaching pleasure is found both in the ancient teachings of the Buddha and in modern psychology.[19]

But is this all there is to our lives? What about our need for connection, met through attaching to others? Experientially, our relationships have much more to them than only what feels unpleasant, pleasant, or neutral. And in them, we're motivated by much more than just avoiding pain, pursuing pleasure, and skipping past what is neither. Warm feelings of connection increase oxytocin activity in your brain, and releases of this neurochemical have a powerful influence over the neural basis of pain and pleasure.[20] Further, while living in small groups over the last several million years, a major reason our ancestors evolved a much bigger neocortex was to meet their need for connection more effectively. Today, we routinely draw upon aspects of the "social brain" to exercise top-down control over more ancient pain and pleasure systems embedded in the brainstem and subcortex.

If the need for connection is meaningfully distinct from the needs for safety and satisfaction, and if attaching is meaningfully distinct from avoiding and approaching, then it would be biologically adaptive for a fourth hedonic tone to evolve that is meaningfully distinct from unpleasant,

pleasant, and neutral. I believe that this is in fact occurring, especially in the brains of the most social species of all: human beings. Let's call it the sense of things as relational, and you can observe it in your own experience. While being with another person, first notice what feels neutral: not unpleasant and not pleasant; perhaps simply a neutral fact about them, such as they have an elbow. Then notice what is unpleasant that you want to move away from . . . notice what is pleasant that you want to move toward . . . and then notice what is not specifically unpleasant or pleasant but is a sense of being in relationship with. This fourth hedonic tone may be subtle in keeping with its possibly recent emergence in evolution, but you can be mindful of it and recognize its role in highlighting your need for connection.

Managing Needs by Craving

When there is an invasive sense of a need insufficiently met, the brain initiates a neurohormonal stress reaction. The amygdala signals the sympathetic nervous system to prepare for fleeing or fighting, or the parasympathetic system for freezing. Simultaneously, it tells the hypothalamus to call for stress hormones such as adrenaline, cortisol, and norepinephrine. In the body, long-term projects such as strengthening the immune system are put on hold. At the same time, the cardiovascular, gastrointestinal, and endocrine systems are shaken. In the mind, depending on whether safety, satisfaction, or connection is challenged, there could be a sense of fear, frustration, or hurt.

In a nutshell, this is your brain on craving, a neuropsychological summary of the Second Noble Truth. Milder versions of this pervade everyday experience, yet still with craving at their core. I call this the Reactive mode, or the Red Zone.[21] It is certainly one way to manage challenges

to needs. In Mother Nature's biological blueprint, it is designed to be a brief burst of activity that ends quickly . . . one way or another.[22] But our modern ways of living – and our neurologically advanced capabilities to regret the past and worry about the future – routinely pull us into mild to moderate stress. Life in the Red Zone further depletes and rattles body and mind,[23] which creates a greater sense of deficit and disturbance, fostering even more craving in a vicious cycle.

Managing Needs by Not Craving

But this is not the only way to meet your needs. Many actions of thought, word, or deed – such as taking in a view, murmuring sympathetically to a friend, or reaching for a fork – actually involve no experience of craving. There might be craving elsewhere in the mind at the time, but not regarding the action itself. It's very useful to observe this in your experience and know what no-craving feels like.

Further, when you feel resourced enough to meet your needs, you don't have to fire up into the Red Zone to deal with them. For example, while rock climbing I've been hundreds of feet above the ground hanging on to holds the width of a pencil – and having a ton of fun. The need for safety was definitely challenged, but there was also a sense of capability and trust in the rope and my partner. Similarly, you can pursue big goals with obstacles to satisfaction while simultaneously feeling confident and grateful. In relationships, you can cope with conflict by drawing on interpersonal skills and a sense of self-worth. The crux is not whether a need is challenged, but whether you feel sufficiently resourced to meet it. External resources such as good friends also matter for meeting your needs, but what's out there in the world is not always reliable. The strengths inside you are with you wherever you go.

Most fundamentally, challenges can land on an underlying sense of needs already sufficiently met: a feeling of fullness and balance in the core of your being. Then your body is most able to protect, repair, and refuel itself. Meanwhile, there is a general feeling in the mind of peace, contentment, and love related to the needs for safety, satisfaction, and connection. Fear and anger, disappointment and drivenness, and hurt and resentment may still arise in awareness but they need not “invade the mind and remain,” as the Buddha described during his own preparation for awakening.[24]

I call this the Responsive mode, or the Green Zone. In it, there is little or no visceral basis for craving. Old habits of craving may remain, but their underlying fuel has been dramatically reduced. This is the resting state – the home base – of your body, brain, and mind. It is not the full ending of suffering in the Third Noble Truth,[25] but it is certainly a strong foundation for it. And it is the biological and psychological basis for resilient well-being.

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[2] In Pali: sabbe sankhara dukkha.

[3] We might generalize this to include any animal with a nervous system.

[4] Bhikkhu Anālayo has also offered a critique of broad-brush statements that all elements of consciousness are always suffering. See chapter 16; Anālayo. (2017). *A Meditator's Life of the Buddha: Based on the Early Discourses*. Windhorse Publications.

[5] Translation by Gil Fronsdal in *The Dhammapada: A New Translation of the Buddhist Classic, with Annotations*. Shambhala, 2006, p. 88.

[6] See https://en.wikipedia.org/wiki/Attachment_theory

[7] Earlier in the book I focused on practices of relationship; in this chapter I explored fullness. The later chapters emphasize practices of recognition.

[8] I am not trying to criticize the role of monasticism per se in Buddhism. I am deeply grateful to the monastic lineages that have kept Buddhism alive for 25 centuries, and to the monks and nuns who have been my teachers.

[9] I heard it described as a Zen saying, but can't find a source.

[10] Translation by Thanissaro Bhikkhu (https://www.dhammadalks.org/suttas/KN/Ud/ud2_2.html).

[11] I am summarizing a great deal of material here. For useful background, I recommend the papers of Kent Berridge, Terry Robinson, and Morten Kringelbach. For example, see Berridge, K. C., & Robinson, T. E. (1998). What is the role of dopamine in reward: hedonic impact, reward learning, or incentive salience?. *Brain research reviews*, 28(3), 309-369; Berridge, K. C., Robinson, T. E., & Aldridge, J. W. (2009). Dissecting components of reward: 'liking', 'wanting', and learning. *Current opinion in pharmacology*, 9(1), 65-73; and Kringelbach, M. L., &

Berridge, K. C. (2016). Neuroscience of reward, motivation, and drive. In *Recent Developments in Neuroscience Research on Human Motivation* (pp. 23-35). Emerald Group Publishing Limited.

[12] These three ways of meeting our needs – avoid, approach, attach – could also be framed as: withdraw, enter, stay; prevent, promote, persist; and destroy, create, preserve.

[13] The anatomical and functional boundaries between these three parts of the brain are inherently fuzzy, and where they are marked can be somewhat arbitrary and in dispute. The subcortex, as I am using this term, includes the amygdala, hippocampus, basal ganglia, thalamus, and hypothalamus. Besides the hypothalamus, the other parts of the subcortex come in pairs, one on each side of the brain. Related parts of the brain include the pons, in the upper part of the brainstem, and the ventral tegmental area at the top of the pons. Other terms are sometimes used besides “subcortex,” but this word is still used widely; for example, see Keuken, M. C., van Maanen, L., Boswijk, M., Forstmann, B. U., & Steyvers, M. (2018). Large scale structure-function mappings of the human subcortex. *Scientific reports*, 8(1), 15854.

[14] For context and details, please see chapter 3 in *Hardwiring Happiness*.

[15] The major elements of the salience network include the anterior insula and dorsal anterior cingulate cortex in the neocortex; the amygdala and nucleus accumbens in the subcortex; and the ventral tegmental area at the top of the brainstem. For the locations: anterior = front; posterior = rear; dorsal = upper; ventral = lower; medial = middle; and lateral = side. See Seeley, W. W., Menon, V., Schatzberg, A. F., Keller, J., Glover, G. H., Kenna, H., ... & Greicius, M. D. (2007). Dissociable intrinsic connectivity networks for salience processing and executive control. *Journal of*

Neuroscience, 27(9), 2349-2356; Menon V. (2015) Salience Network. In: Arthur W. Toga, editor. Brain Mapping: An Encyclopedic Reference, vol. 2, pp. 597-611. Academic Press: Elsevier.

[16] The major elements of the default mode network are centered in the medial prefrontal cortex, posterior cingulate cortex, precuneus, and hippocampus. See Raichle, M. E., MacLeod, A. M., Snyder, A. Z., Powers, W. J., Gusnard, D. A., & Shulman, G. L. (2001). A default mode of brain function. *Proceedings of the National Academy of Sciences*, 98(2), 676-682; Vago, D. R., & Zeidan, F. (2016). The brain on silent: mind wandering, mindful awareness, and states of mental tranquility. *Annals of the New York Academy of Sciences*, 1373(1), 96-113. Note that this network is sometimes referred to as the “resting state network” or the “intrinsic network.”

[17] The major elements of the executive control network include the dorsolateral prefrontal cortex and the lateral posterior parietal cortex. Habas, C., Kamdar, N., Nguyen, D., Prater, K., Beckmann, C. F., Menon, V., & Greicius, M. D. (2009). Distinct cerebellar contributions to intrinsic connectivity networks. *Journal of neuroscience*, 29(26), 8586-8594.

[18] In Pali, these are the vedana of experiences, commonly translated as “feeling tones” though they are not about emotion per se.

[19] For example, see Laricchiuta, D., & Petrosini, L. (2014). Individual differences in response to positive and negative stimuli: endocannabinoid-based insight on approach and avoidance behaviors. *Frontiers in systems neuroscience*, 8, 238.

[20] Boll, S., de Minas, A. A., Raftogianni, A., Herpertz, S. C., & Grinevich, V. (2018). Oxytocin and pain perception: from animal models to human research. *Neuroscience*, 387, 149-161; Shiota, M. N., Campos, B., Oveis, C., Hertenstein, M. J., Simon-Thomas, E., & Keltner, D. (2017). Beyond happiness: Building a science of discrete positive emotions. *American Psychologist*, 72(7), 617.

[21] Stephen Batchelor refers to “reactivity” as synonymous with craving in *After Buddhism* (p. 121).

[22] Robert Sapolsky used this turn of phrase in his classic book about stress, *Why Zebras Don't Get Ulcers*.

[23] And can gradually impair judgment and self-regulation by weakening connections in the prefrontal cortex; see Datta, D., & Arnsten, A. F. (2019). Loss of Prefrontal Cortical Higher Cognition with Uncontrollable Stress: Molecular Mechanisms, Changes with Age, and Relevance to Treatment. *Brain sciences*, 9(5), 113.

[24] For a great summary of the Buddha's life based on well-translated selections from the Pali Canon, including the reference to experiences not invading the mind and remaining (in the *Majjhima Nikaya* 36), see <https://www.accesstoinsight.org/ptf/buddha.html> .

[25] See https://www.stephenbatchelor.org/media/Stephen/PDF/Stephen_Batchelor-Pali_Canon-Website-02-2012.pdf , p. 18.