

**Truth in Mind:
Neuroscientific Studies of Meditation Through
The Lens of Skillful Means**

A THESIS

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Abstract

The dialogue between Buddhism and neuroscience shows great promise. Buddhist ideas have the potential to expand our sense of what is possible for human well-being and scientific understanding of the mind. However, the “Buddhism” that Western scientists and authors interact with is subject to secularization, and neuroscientific studies of meditation are often animated by a materialist argument claiming that the mind is dependent upon the brain—a belief that contradicts the views of the Buddhist tradition from which these practices originate. Secularization and the materialist argument are necessary if practices from Buddhism are to become accessible to a scientific, non-Buddhist audience, but does this prevent Buddhism from offering novel ideas that might expand scientific understanding? The principles of skillful means, a Buddhist term describing any method by which sentient beings are helped to suffer less, can be useful here. Through a skillful means perspective, we can accept the secularization and materialist argument under which the scientific enterprise operates while maintaining hope that our understanding will continue to evolve.

Addressing Generalizations

Buddhism, science, and neuroscience are complex topics, worthy of much more thorough treatment than I can give them. As such, I wish to begin by acknowledging some generalizations I will make throughout the paper:

- When I refer to “Buddhism” and “Buddhist perspectives,” I might be referring to one of many types of Buddhism (Theravada, Mahayana, or Vajrayana/Tibetan). If the “type” of Buddhism is not specified, I am explaining an aspect of Buddhist practice or philosophy that is common to all three types. Multiple Buddhist perspectives are included not to be confusing but because all of these types of Buddhism interact in different ways with scientific studies of meditation. Please note that His Holiness the 14th Dalai Lama of Tibet (HHDL) is mentioned often in this paper because he has been the most public representative of the Buddhist tradition to engage in academic dialogue with scientists, not because I am trying to emphasize the views of his Vajrayana/Tibetan Buddhist lineage over others.
- “Meditation”: I am referring mostly to meditative practices of *samatha* and *vipassana* that are often combined in popularized mindfulness programs such as MBSR (Kabat-Zinn, 2003). *Samatha* cultivates concentration and *vipassana* uses this concentration to observe the impermanent, self-less nature of phenomena (Gethin, 1998, p. 175).
- “Scientists” and “neuroscientists”: Scientific research is generally understood to be animated by an “empiricist” ideal where truth is determined via direct experience / observation rather than abstract reasoning (Dalai Lama, 2005, p. 11). By “scientists” and “neuroscientists,” I am referring to this broader paradigm rather than to actual individuals, among which I assume there is a great deal of variation.

Truth in Mind: Neuroscientific Studies of Meditation

Through the Lens of Skillful Means

High on a mountain above Dharamsala, India in 1992, Western neuroscientists lugged heavy brain imaging equipment up several miles of trails. Their goal? Intrigued by promising results of preliminary studies on meditation, they wanted to scan the brains of Tibetan Buddhist monks who had spent their lives meditating in isolation. Through the request and support of the Dalai Lama himself, the researchers would travel to the monks' homes to gather data on the cognitive and emotional effects of long-term meditation practice. This was one of the most ambitious instances of cross-cultural research on the mind to date.

However, the scientists quickly encountered problems. The monks had initially volunteered to undergo the experiments out of altruism. The Dalai Lama himself suggested that their data would scientifically support how positive mental states can be cultivated, which could transform the views of Western psychology at the time. Nonetheless, the monks ultimately declined to participate (Dalai Lama, 2005, p. 144; Houshmand et al., 2002, p. 11). There were many reasons why¹, but I want to focus on two. First, the monks were concerned that neural correlates were not a worthwhile way of measuring the mind. If the mind is immaterial, why would measuring its neural correlates (a material outcome) reveal anything helpful? Second, the monks were concerned that the neuroscientists' research would not acknowledge rebirth, a fundamental worldview underlying their practice (Houshmand et al., 2002, p. 12). In sum, though the monks strongly desired to help others, they did not think that the use of their data within a completely different worldview was an effective way to help others suffer less.

¹ Another monk, Lobsang Tenzin, had flown to Boston to participate in research only to die four months later. The monks feared experiments for this reason. Lobsang Tenzin had also told them that participation was uncomfortable and involved invasive measurements, which added to the intimidation factor. Lastly, the monks were concerned about how the research would disrupt their practice.

In reflecting on this story, I wondered how else the monks might have thought their meditative attainments could be communicated to a Western audience. After all, much of this audience does not believe in rebirth and sees the mind as an emergent property of the brain. I fully support the monks' decision not to participate, and yet, I came away from this story feeling like something was missing. Surely, there must be a way to introduce Buddhist ideas to Western audiences without compromising key facets of the Buddhist tradition? Or, by "entering the West," is the loss of some essential parts of the Buddhist worldview (e.g., rebirth and the belief that the mind can be investigated through first-person observation) inevitable—and does this prevent this cross-cultural opportunity from achieving its full potential for transformation and healing?

The story of the hillside monks illustrates what can happen when the conversation between Buddhists and scientists comes to a standstill. Currently, however, the opposite is occurring: Buddhist meditation practices have become a popular topic of neuroscientific and psychological research, even being adopted into mainstream healthcare (Van Dam et al., 2018). Mindfulness-based therapies have been shown in meta-analyses to decrease stress, anxiety, and depression in both clinical and non-clinical populations (Grossman et al., 2004; Khoury et al., 2015) and have been shown to significantly reduce the risk of depression relapse in patients with more than three recurrent episodes (Teasdale et al., 2000). Preliminary data from neuroscience also implies that extensive meditation practice can be associated with increased positive affect².

² Two examples of this include a case study of an advanced Tibetan meditator with an unprecedented ratio of left-to-right hemispheric activity (Goleman, 2003, p. 338) and a randomized controlled trial where novice meditators showed significantly increased anterior left-hemisphere activation after an 8-week course in MBSR (Davidson et al., 2003). The ratio of anterior left-hemisphere to anterior right-hemisphere brain activation has been associated with increased positive "approach" emotions and more dispositional positive affect (Davidson, 1992; Davidson et al., 2003). Researchers claim that this data demonstrates how positive affect can be "trained" through meditation—counteracting an old view in psychology where such emotions were considered to be mostly fixed (Davidson & Harrington, 2002, p. 4).

Moreover, the Mind and Life Dialogues have allowed Western scientists to engage in academic discussion with His Holiness the 14th Dalai Lama. These discussions have prompted new neuroscientific research into positive emotion (Goleman, 2003) and prompted questions about the nature of consciousness that science is only beginning to explore (Houshmand et al., 1999).

Research up to this point indicates that Buddhist philosophy and practices have much to offer scientific thought, both in terms of fostering well-being and prompting scientists to rethink assumptions about consciousness (these will be explored later in the paper). Indeed, it appears that the wish HHDL once expressed to the hillside monks—that the scientific study of Buddhist practices be encouraged to help expand Western horizons—is being fulfilled in some ways. However, I have become concerned that the dialogue is tilting too far in this direction. We are now witnessing a total “acculturation” of Buddhist practices into the dominant scientific paradigm rather than a dialogue where Buddhist ideas—especially those that may challenge existing views or even make us uncomfortable—are approached with *open minds*. Although acculturation is natural, I am reminded of the hesitation of the hillside monks. If research on just some aspects of Buddhist practice already demonstrates promising results, Buddhism may have far more to “offer” science than stress-reduction. What might Western science be missing?

In this paper, I argue that the acculturation of Buddhist practices does not have to be at odds with expansion—meaning that Buddhism may be adapted within the scientific worldview while still expanding our sense of what is possible for well-being and understanding the mind. Skillful means, a Buddhist concept with secular implications, can provide a first step in linking Buddhist ideas with Western science, helping all parties understand how acculturation and expansion can coexist. First, however, it is important to understand the *methods* that allow the scientific world and its consumers to make sense of Buddhism. These methods include the

“secularization” of Buddhist philosophy and practices and the related “materialist argument” that the mind is dependent upon the brain.

Secularization

Mindfulness, breath-focused, and lovingkindness meditation derive from traditional Buddhist *vipassana*, *samatha*, and *metta* meditation respectively (Gethin, 1998; Kabat-Zinn, 2009; Salzberg, 1995). However, both neuroscientific studies and pop-psychology books often give little or severely abridged descriptions of Buddhism itself, the tradition from which these practices originate. I use the term “secularization” to describe ways in which ideas from Buddhism are framed or selectively omitted to make Buddhist practices more attractive to non-Buddhists. Thus far, I have observed the secularization of Buddhism within the science-Buddhism dialogue to fall under three separate but related categories.

The first category is a focus on meditation practices absent exploration of the broader ethical structures that give them meaning. In Buddhism, *samatha*, *vipassana*, and *metta* meditation are a part of the Noble Eightfold Path, a way of living that leads one to the cessation of suffering. The Noble Eightfold Path is nestled within the Four Noble Truths, or the Buddhist description of suffering’s existence, causes, cessation, and path to cessation. Therefore, in full Buddhist context, these philosophical frameworks give meditation its meaning and establish ideals of ethical action (*sīla*) that result in peace of mind (Gethin, 1998, p. 170). Without peace of mind, meditative clarity and attainment is very difficult to attain. Therefore, while meditation may be a convenient subject of study for now, a full scientific investigation of Buddhist techniques for wellbeing would need to include the ethical frameworks that surround and support meditative practices so that full benefit can be attained, not just “on the cushion” but in all aspects of one’s life.

The second category is when authors of pop-psychology books expound secular explanations for historical Buddhist attainments that ancient practitioners themselves would never have used. In *Buddha's Brain*, a pop-psychology tome that draws creatively upon neuroscience to justify why Buddhist meditative techniques may lead to better health, Drs. Rick Hanson and Richard Mendius write:

...contemplatives have already learned a great deal about the brain states that underlie wholesome mental states and how to activate those brain states... More than two thousand years ago, a young man named Siddhartha—not yet enlightened, not yet called the Buddha—spent many years training his mind and thus his brain. On the night of his awakening, he looked deep inside his mind (which reflected and revealed the underlying activities of his brain) and saw there both the causes of suffering and the path to freedom from suffering (p. 9, p. 12).

Is it reasonable to assume that Siddhartha and other early practitioners had no idea what a neuron was, let alone what complex brain states were occurring while they meditated?

Anthropologist Mayanthi Fernando (2010), a specialist in the study of secularism, writes that “it behooves us to understand our subjects’ practices on an emic level, rather than applying an interpretive schema that may be familiar to us but that may have little resonance with the subjective orientations of the people with whom we work” (p. 22). In this second form of secularization, authors impose concepts such as neural activity to help readers understand ancient meditators’ experiences—essentially using an “interpretive schema” that would not have resonated with their “subjects” at all.

Lastly, secularization of Buddhism occurs when science omits or dismisses prominent aspects of the Buddhist worldview because current methods are unable to investigate them. In *Buddha's Brain*, Hanson and Mendius (2009) write, “with a deep bow to the transcendental, we will stay within the frame of Western science and see what modern neuropsychology, informed by contemplative practice, offers...” (p. 11). A similar argument animates Robert Wright’s *Why Buddhism is True*, another pop-psychology book that argues why Buddhism is a promising

solution to evolutionary psychology's understanding of suffering. Wright (2017) states, "I'm not talking about the 'supernatural' or more exotically metaphysical parts of Buddhism—reincarnation, for example—but rather about the naturalistic parts: ideas that fall squarely within modern psychology and philosophy" (p. xi).

One example of such a "supernatural" part of Buddhism is the claim that an immaterial consciousness interacts with the brain but is fundamentally independent of it (this is related to the belief in reincarnation). Obviously, science has no way of accounting for such a claim. How would we measure this type of consciousness? It is understandable why scientists choose not to engage with such topics and instead omit them from research and discussion. Although I believe that researching meditation is worthwhile regardless of secularization, I also think that this kind of "secularizing" omission can have downsides. When only the "naturalistic" parts of Buddhism are taken for the whole, might this limit the questions scientists might to ask of a tradition where complete freedom from suffering is believed to be possible?

The Materialist Argument

Another avenue by which meditation is "made sense of" by researchers and secular audiences is what I will call "the materialist argument": the creed that the mind is dependent upon the brain because the mind is considered to be an emergent property of neural activity. Of course, this argument is supported by robust scientific evidence. The fact that physical and chemical changes in the brain (e.g., via electrical stimulation, damage to brain areas, or drinking caffeine) cause real changes in the mind strongly supports this brain → mind direction of causality (Penfield, 1958; Vallar, 1998).

How does this materialist argument manifest in academic and pop-psychology discussions of meditation? Some neuroscientists and philosophers argue outright that the mind

originates from brain. One of the most well-known philosophers to champion this view is Dr. Patricia Churchland (1999), who explained her perspective to the Dalai Lama at the second annual Mind and Life Conference (published under the title *Where Buddhism Meets Neuroscience*):

[Materialists] hold that there isn't any independent stuff, any kind of substance, any independent thing. There is just the brain, which is organized in ways that we don't yet really quite understand, that produces things like consciousness, memory, and so forth (p.15).

Unfortunately, this view results in a kind of denial of free will. Even if we *feel* like our choices are our own, that very feeling of agency is produced by the brain, an organ that we do not control.

In addition to those who argue directly that mind arises from brain, I also noticed a subtler version of the materialist argument that maintains an “illusion of agency” for layperson readers. While reading pop-psychology explanations of meditation's effects, I noticed that claims tended to follow the logic wherein meditation (or “mental practice,” as one well-cited study calls it) is said to change the structure of your brain, and changing the structure of your brain fosters positive mental states (Lutz et al., 2004, p. 16369). Because this pattern appeared several times across both books and articles, I began to lightly call it “the neural dogma of meditation”: Mind → Brain → Happiness. Here is a quote from “Neuroscience Reveals the Secrets of Meditation's Benefits,” an article published in *Scientific American*: “The evidence amassed from this research has begun to show that meditation can rewire brain circuits to produce salutary effects not just on the mind and the brain but on the entire body” (Ricard et al., 2014). This logic of Mind → Brain → Happiness appears in *Buddha's Brain* as well:

“What flows through your mind sculpts your brain... Thus, you can *use your mind to change your brain for the better*... This will give you the ability to rewire your own brain—from the inside out—for greater well-being, fulfillment in your relationships, and inner peace” (p. 6).

At first, the “neural dogma of meditation” appears to argue FOR the existence of personal agency. It seems to say that the mind exists separately from, and can influence, the brain—until one realizes that the logic does not add up. In the end, portraying brain as the basis for mind will result in denying that I have any control over my mind. According to Mind → Brain → Happiness, the mind, which I “control,” shapes the physical brain, which I do not control, and this gives rise to desirable emotional states. However, since mental states like happiness arise from the brain, the mind I allegedly control must arise from the brain too—for in this materialist framework, where else could it come from? Therefore, we arrive at the same place that we did with Churchland’s statement. If the materialist argument is true, my mind is a product of a brain I do not control, and I have no free, independent agency at all.

Problems with Secularization and the Materialist Argument

It is clear that the “interface” between science and Buddhism takes place on scientific turf. For Buddhist meditative practices to be taken seriously by most scientific researchers and consumers, they must undergo secularization and explanation through a lens that assumes a material basis for the mind. To some, this is problematic purely because Buddhist practices are “uprooted” and planted within a very different framework of values and ideas than the one in which they originated. This is a fair argument, but it does not change the reality that scientific research on meditation necessitates that Buddhist ideas undergo acculturation. That said, I want to emphasize that secularization and the materialist argument can be problematic *when* they limit the ability of neuroscientific research on meditation to expand what we think is possible for well-being and our understanding of the mind.

The materialist argument supports a hierarchy of evidence wherein third-person observation of the brain (the source of the mind) is considered more important than first-person

experience (what is occurring in the mind itself). This hierarchy is very clear in pop-psychology books on meditation. In *Buddha's Brain*, Hanson and Mendius (2009) state, "Because of all the ways your brain changes its structure, your experience *matters* beyond its momentary, subjective impact" (p.73). *Why Buddhism is True* echoes this sentiment when Wright (2017) states, "It's not that meditative observations about your mind validate theories, but more that theories can help validate meditative observations about your mind" (p.106).

According to these quotes, the "momentary, subjective impact" of experience (meaning, the entirety of our experience?) does not mean much by itself. Rather, the scientific *theory* that physical changes in the brain underlie all of conscious experience should be used to validate what we observe about our minds firsthand. To me, this is backwards. Although awareness of physical changes in the brain can indeed be helpful for medical diagnoses and treatment, I respond that using physical changes to validate subjective experience is unnecessary. Subjective experience does not need validation. Is it not true that we (these authors included) go about our daily lives guided by what we think and feel *internally*, not by an external affirmation of how our brain is changing when we do certain tasks?

This dismissal of first-person experience in favor of third-person observation is problematic for several reasons. First, the logic is circular and mistakes a temporary methodological limitation for a lasting hierarchy of evidence. Authors such as Wright are essentially arguing that first-person experience is not valid scientific evidence because first-person experience is not valid scientific evidence; no WHY is provided beyond "science says so." Moreover, this viewpoint mistakes a current and *temporary* methodological limitation for a value ruling by which different evidence sources should be judged. Just because neuroscience and psychology *currently* do not admit first-person meditative observation of thoughts and

emotions as standalone empirical evidence does not mean that this technique is not a potentially groundbreaking tool for examining the mind internally³.

It remains unclear whether authors of pop-psychology books actually believe in this “primacy of third-person evidence,” or whether this idea is more akin to a “language” they feel they must speak in order to appear academically legitimate. Even *after* arguing how first-person observation is not data, Wright states:

It’s one thing to be led intellectually to the conclusion that, say, the self doesn’t exist. As we’ve seen, there are psychologists and philosophers who have been led to suspect as much by some combination of data and logic and introspection. But most of them haven’t had the kind of powerful *experience* of not-self that can impart deep conviction, a conviction that surpasses intellectual persuasion in its power to change lives (p. 228).

Much of *Why Buddhism is True* is organized around epiphanies Wright stumbled upon while meditating. His experiences convinced him that the Buddhist path is a legitimate solution to the suffering described by evolutionary psychology, where humans come to know “*both* the discomfort of being aware of [their] mental afflictions and the discomfort of being ruled by them” (Wright, 2017, p. 10). Would it be a wild guess that Wright did not write *Why Buddhism is True* because of neuroscientific findings about meditation, but because of his personal experiences? Authors of such books can always assert the primacy of third-person data, but it begs the question of whether powerful first-person experiences are the real drivers of their argument.

This logic may even lead us to wonder whether arguing for the primacy of third-person data is ultimately moot. After all, even our scientific understanding of third-person data must be filtered through our first-person perspective; as we are humans, there is no other way. William James (1994) writes in *The Varieties of Religious Experience*, “Scientific theories are organically

³ Again, see the section, “Openness to Letting Go of the Raft” for more details on first-person meditative observation.

conditioned just as much as religious emotions are” (p. 17). Ultimately, the view that mind is dependent upon brain is a metaphysical position. Although it is supported by empirical evidence, the analysis and interpretation of that evidence can occur nowhere else but in the subjective mind.

Lastly, the materialist argument incorrectly assumes that one direction of causality (brain → mind) must automatically negate the other direction (mind → brain). From this perspective, because the mind is a product of brain activity, the mind being able to influence the brain seems as absurd as a lightbulb’s light being able to flip its own switch. Unfortunately, strong supporters of the materialist argument nonetheless appear willing to shut down the pursuit of what we do not yet know. For instance, Dr. Patricia Churchland seems to find materialism so convincing that she told HHDL:

Moreover, there is no need to postulate a nonphysical mind or soul apart from the brain, because we can account pretty well already for these phenomena in terms of brain properties, dynamic circuitry, electrophysiological properties, etcetera... I think that we are living at a very special time when psychological properties can find solid explanations in terms of neurobiological properties (p. 20).

Although the materialist argument may be a sufficient “working hypothesis,” it would be unscientific to allow this hypothesis to prevent the investigation of further questions— ESPECIALLY when more recent research from neuroscience has begun to support the mind → brain direction where mental activity *does* influence neural structure and physiology. One example of this is how major depression has been linked to volume loss in the hippocampus, a part of the brain important for memory (Lee et al., 2002; Lucassen et al., 2006). Of course, the materialist explanation for this is that the anatomical changes in the hippocampus must have preceded and caused the depression. However, the authors above describe a number of neural mechanisms by which stress and depression, *as mind states*, are known to influence physical

outcomes (e.g., release of glucocorticoids as a response to stress). Therefore, to take the materialist claim (brain → mind) as naturally negating additional possibilities (mind → brain) would be short-sighted. However, if both causal directions (brain → mind *and* mind → brain) are true, scientists appear to be stuck in an endless loop (mind → brain → mind → brain...) Where might “mind” begin? This is a question for which the encounter with Buddhism may yet bear fruit.

The Buddhist View of Consciousness

The Tibetan Buddhist tradition holds a nuanced view of the relationship between mind and matter that may provide modern science with one possible answer to the mind → brain → mind → brain loop, though it would require an expansion of scientific methodology in order to be investigated. For background, this view has been refined by centuries of systematic meditative observation, debate in academic schools of Tibetan Buddhist philosophy, and firsthand and witness accounts of rebirth (Dalai Lama, 2005, p. 132). I mention this not to advocate for the view (I am still an “agnostic” in terms of my beliefs about consciousness) but to emphasize that it is supported by generations of logical debate and experience from the Buddhist tradition, even if such evidence does not fall within the usual “scientific” purview.

In *Where Buddhism Meets Neuroscience*, HHDL explains the Tibetan Buddhist perspective on consciousness to an audience of Western scientists. According to him, what we call consciousness exists on a “spectrum” from “gross” to “subtle” (Dalai Lama in Goleman, 2003, p. 79). Gross consciousness includes “everyday” mental phenomena such as sensations, perceptions, thoughts, and emotions. These phenomena relate intimately with brain structure and physiology, so their neural correlates can be readily observed (HHDL in Houshmand, 1999, p. 32). However, Tibetan Buddhist thought diverges from neuroscience and psychology in

recognizing a phenomenon known as subtle consciousness. In HHDL's words, subtle consciousness is "a kind of luminosity which is of the nature of awareness itself" that is understood as existing independently from physical matter⁴ (HHDL in Houshmand, 1999, p. 33). Although subtle consciousness is present in everyone's mind and can be "uncovered" in deep meditation states, it usually only manifests when fainting, sneezing, orgasming, and dying (Hopkins, 1998). Because this subtle consciousness is independent of matter, it would not show any neural correlates (HHDL in Goleman, 2003, p. 206).

How does subtle consciousness relate to the brain? HHDL provides an answer using the Tibetan Buddhist "theory of causation," a product of centuries of philosophical inquiry and debate (Dalai Lama, 2005, p.131). In the theory of causation, there are two types of causes: substantial and contributory. HHDL explains this through the analogy of a clay pot. The substantial cause of the finished pot is the clay itself; the contributory causes include the kiln, the potter, the potter's accumulated skill, and other factors that helped the finished pot to form but did not directly constitute it. Applied to the relationship between mind and brain, the theory of causation states that subtle consciousness and matter can be contributory causes for each other, but *one cannot be the substantial cause of the other*. In other words, the brain cannot be the basis of subtle consciousness because matter cannot be a substantial cause of subtle consciousness. So what IS the substantial cause of subtle consciousness?

Tibetan Buddhists hold that only a previous moment of subtle consciousness can be the substantial cause of the next moment of subtle consciousness (Dalai Lama, 2005, p. 132).

Therefore, the consciousness experienced by a newborn must have been preceded by a previous

⁴ Here, HHDL outlines the traditional Buddhist approach. However, HHDL's own perspective is less clear. He is quoted at the 2003 Mind and Life XI conference as believing that all forms of consciousness (including subtle) must have a physical basis, but ends his statement with "I don't know. Hahahaha." Complete interview can be found in Mind & Life XI, Session 2, 1:26:00 – 1:28:49 (The Mind & Life Institute, 2003).

consciousness; herein lies the basis for the belief in rebirth (HHDL in Houshmand, 1999, p. 40). In this framework, subtle consciousness is the continuum that connects one life with the next, departing the body upon death and entering the newborn upon conception. Importantly, the presence of subtle consciousness is what ALLOWS the body to be a basis for gross consciousness (HHDL in Houshmand, 1999, p. 33). In other words, what is most commonly referred to as “mind” (e.g., sensation, perception, thought, and emotion) is made possible by the presence of a subtle consciousness that is immaterial, independent of matter, and will continue on after death. This is the Buddhist view.

The notion of subtle consciousness therefore provides a possible starting point for the mind → brain → mind → brain loop that neuroscientific research is now running up against. However, it is not clear how science might measure an immaterial phenomenon such as subtle consciousness. In one recent study, Dr. Richard Davidson and a team of colleagues used EEG to assess whether brain activity persisted after death in Tibetan meditators who had entered the state of *Tukdam*⁵ (Lott et al., 2021). To the researchers’ surprise, no EEG signals were observed in the postmortem meditators whom Tibetan religious and medical professionals had declared to have entered this unique state of consciousness. In this case, might the LACK of EEG signals in this postmortem, pre-decomposition state support the existence of subtle consciousness as something that could be preventing bodily decomposition while still not manifesting in material form? It is difficult to say without a way to assess the degree of *awareness* present during *Tukdam*—a variable that their study was not designed to assess. Nonetheless, this study represents a first step

⁵ *Tukdam*, or *Thugs Dam*, is a documented postmortem phenomenon where experienced Tibetan meditators are said to rest in the fundamental nature of awareness that becomes most easily available upon death. Though cardiac and respiratory function have ceased, bodily decomposition is delayed for days or even weeks, with the skin of the deceased remaining supple and their face being described as “radiant” (Lott et al., 2021).

towards investigating subtler levels of consciousness that are not currently recognized by Western science.

Searching for a New Paradigm

The downsides of secularization and the materialist argument are not to be taken lightly. First, they lead to a judgement commonly made by authors of pop-psychology books on meditation that third-person data are more important than first-person experiences. Unfortunately, this is problematic for a number of reasons: it is based on circular logic, mistakes methodological limitation for an innate hierarchy of evidence, appears performative rather than genuine, and assumes that the mind → brain direction is not possible despite recent research from neuroscience indicating the opposite possibility. The idea of subtle consciousness expounded by Buddhism may be an interesting avenue through which the origins of the mind → brain → mind → brain loop might yet be determined, though investigating subtle consciousness may prove to be quite difficult.

Thus, we appear to be stuck in a bind. While secularization and the materialist argument allow the study of Buddhist practices to fit comfortably within established worldviews (“acculturation”), this also prevents these same worldviews from being challenged in fruitful ways (“expansion”). Must these outcomes be at odds?

How we view this tension is crucial. Acculturation is a fact; it is neither an optional aspect of the current interface between scientific research and Buddhist ideas, nor a fault. However, *expansion* of scientific horizons regarding well-being and consciousness is not guaranteed. Indeed, the surest way to ensure that expansion will *never* occur is to promote the belief that acculturation makes expansion impossible. To *keep the possibility of expansion alive*, we need a way that allows us to see how acculturation and expansion can co-exist. Skillful

means is this perspective.

The lens of skillful means envisions acculturation and expansion as working together—pulling in the same direction rather than playing tug-of-war. Further, I believe that the principles of skillful means provide timely guidance for neuroscientific studies on meditation (and their popular interpretations) as this area continues to grow. If researchers and authors are able to apply the principles of skillful means to their work, we can respect secularization and the materialist argument while keeping an open mind about what Buddhist meditative practices may yet contribute to our understanding of the mind and to human well-being.

Introducing Skillful Means

Skillful means in Sanskrit is *upāya-kausālya*. *Kausālya* is derived from *kuśala*, which means “wholesome,” “skillful,” or that which is conducive to well-being. *Upāya* denotes “means” or “device” (Gethin, 1998, p. 84; Pye, 1978, p. 11). Together, skillful means / *upāya-kausālya* describes anything that leads towards greater well-being. A nuance to point out: freedom from suffering is a consequence of clearly understanding that all things are impermanent, dissatisfactory, and non-self—not just in an intellectual sense, but in an embodied understanding that pervades every cell of one’s being. Therefore, the idea of skillful means not only encompasses anything that directly reduces suffering, but also anything that deepens our lived understanding of the way things truly are.

In the most traditional Theravada Buddhist context, skillful means (*upāya-kausālya*) has referred to ways in which teachers adapted their teachings to fit the unique beliefs and needs of disciples (Jackson, 2004). However, skillful means took on additional meaning within Mahāyāna Buddhism, where it is argued that the three separate Dharma “vehicles” (*śravaka*, *pratyekabuddha*, and *bodhisattva*) all constitute the same path leading to Buddhahood

(attainment of enlightenment for the sake of all beings). In the Mahāyāna, skillful means refers to how Buddhas and bodhisattvas bring all sentient beings to Buddhahood via these three seemingly different paths that lead to the same end. Moreover, skillful means within the Mahāyāna also denotes “method,” the sibling quality to wisdom / insight. This means that any articulation of skillful means cannot be fully effective in liberating beings from suffering unless it is in alignment with wisdom, or a full understanding of the three marks of existence (impermanence, dissatisfaction, and non-self).

This is the more comprehensive Buddhist understanding of skillful means. My argument, however, centers on the *principles* underlying these more technical concepts. These principles are no more innately Buddhist (or religious) than values like kindness or courage. Because I believe these principles are best understood through a parable, I provide one here from the Lotus Sutra, a text within Mahāyāna Buddhism (Paraphrased from Reeves, 2008, p. 142-145):

Suppose a young son ran away from his father. For the next twenty years, he desperately tried to make a living in lands far away, becoming increasingly poor and needy. Meanwhile, the father had moved towns and through investments and luck became quite rich—but he was growing old.

The father yearned to find his son again so that his riches could have an heir.

One day, the wandering son chanced upon a palace in the new town where his father now lived. Not recognizing his father, who was sitting upon a jeweled throne surrounded by riches, the son suddenly felt afraid. “Someone like me could not possibly earn a living here. If I stay, surely they will capture me and force me into servitude!” The son left as quickly as he had come. The father, however, recognized his son immediately and was filled with joy. He sent a convoy to bring his son back but was met with disappointment. The son had only been able to believe negative reasons why he was sought, so he had resisted and escaped. The father realized he faced a dilemma. How could he get his poor, needy son to accept his identity as heir to a fortune?

The father understood that he could not tell the truth, for his son, trapped by low self-esteem, would never believe himself to be his heir. So, the father used the first of many skillful means. He sent common-looking peasants after the son to promise him a job shoveling dung for double the normal wage. The son accepted the job and returned to live in his father’s servant quarters.

The son worked as a dung laborer for the next twenty years. During this period, the father would

occasionally smear himself with dirt, grab a dung-shovel, and go out to work alongside his son. "I've been watching you," the father would tell him. "You're a good worker, not lazy like those other ones. You don't need to worry about losing your job anymore. Why? Well, I am getting older, and you are young and do good work. I sometimes even think of you like my own son."

This pleased the son, though he still thought of himself as a simple laborer. However, when the father became ill, he summoned his son and told him that he needed an accountant for his gold and silver. Would the trustworthy son be willing to take inventory, calculate payouts, and ensure there would be no careless losses? During his twenty years as a paid and valued dung laborer, the son had gained some confidence. He accepted responsibility for managing the coffers.

After some time, the father was nearing death. He called his son into the room, along with all of his relatives, noblemen, and other citizens. Speaking to all, he proclaimed the son to be his natural-born son, returned to him after twenty years of poverty and suffering. The son, whose sense of self-worth had grown over the course of gradually earning trust and responsibility, was overjoyed. All of these riches had come to him though he had never once intended it!

Let us unpack what this story—the Lost Son parable—can tell us about skillful means.

The story demonstrates that a skillful means operates under three principles: *intention*, *acceptance*, and *provisionality*.

First, skillful means are motivated by the *intention* to help people reach greater wellbeing and understanding. In the Lost Son parable, this intention is represented by the father's wish to have his son accept his identity as heir: Fulfillment of this wish would both reduce the son's suffering and expand his understanding of what he was capable of. Intention is crucial because skillful means by nature may entail a great variety of actual methods that might seem unrelated to, or even contradictory to, the ultimate goal. For example, in the Lost Son parable, employing the son as a dung laborer for twenty years might seem contrary to helping his son see himself as heir to a fortune. Here, it is the father's underlying intention behind his skillful means that gives these methods consistency and direction.

Second, skillful means *accepts* where each person is at because you can only start from where you are. For example, in the Lost Son parable, the son's identity as heir can be likened to a

mountain on the other side of the horizon. From where the son first stood, the mountain was so far away that he could not see it and therefore doubted its existence. Wisely, the father knew that trying to convince the son of the existence of an invisible mountain would only cause harm: his claim would be scoffed at and dismissed, or he could come across as lying, damaging his son's trust in him. However, the father realized that he *could* help his son *continue walking* until the mountain appeared on the horizon and the son could see it for himself. Thus, starting where the son was at in each moment, the father used skillful means—offering the dung-shoveling job, praising his son's labor over the years, and promoting him to accountant of the treasury—to broaden his son's "horizons" of what he thought he was capable of. The *acceptance* principle of skillful means acknowledges the fact that there cannot be "progress" without acceptance of where one is progressing *from*.

Lastly, skillful means are *provisional*. In his commentary on the Lost Son parable, Michael Pye (1978) writes,

Each [of the father's actions] is necessary because of the disposition of the son himself, each involves a provisional disguising of the true situation (for even the shoveling away of the dirt is a task invented to serve the purpose), and when all is done each of the skillful means is superseded or redundant. Indeed they have to be set aside for the full realization of the purpose to be brought about (p. 42).

For the son to finally realize his identity as heir, the skillful means used by the father must be treated as *provisional*. This means that even if the son is currently just a dung laborer, a skillful means understanding knows that he will not always see himself this way—this is just one step, one necessary *iteration* of truth along the path to recognizing himself as heir. Thus, while a skillful means framework emphasizes the importance of *accepting* where one stands, it also requires the equanimity to realize that one's current understanding will not last. This is what makes growth possible. According to the principle of *provisionality*, skillful means can be

likened to a raft (Pye, 1978, p. 1). Although the raft was needed to cross the river, one must leave it behind to walk on the shore.

Skillful Means Bridges Acculturation and Expansion

Eminent Tibetan Buddhist master Chögyam Trungpa once said, “Buddhism will come to the West as a psychology” (Trungpa in Goleman, 2003, p. 72). Indeed, it appears that Buddhist practices such as meditation primarily interact with Western science through neuroscientific and psychological research and pop-psychology interpretations of research for secular audiences. Must this interaction be caught between the two opposed outcomes of acculturation and expansion? Not in context of a skillful means approach. Michael Pye (1978) writes,

Buddhism does not reject other thought systems but associates with them, with a view to realizing the intention of the Buddhist system. The striking thing is that this mode of correlation may involve a paradoxical, provisionally positive acceptance of ideas which are quite different from or even contradictory to the central intention or meaning of Buddhism itself”
(p. 127).

Secularization and the materialist argument where mind is dependent upon the brain are “quite different or even contradictory to” the full spectrum of Buddhist philosophy and its claim that a continuum of subtle consciousness makes the mind-brain relationship possible (Houshmand, 1999, p. 33). However, the concept of skillful means allows us to avoid viewing this conflict as a downside or “stuck point” that neuroscience and Buddhism will never evolve past. Rather, the lens of skillful means *accepts* this contradiction as natural and envisions it as a *provisional* stepping-stone on the path to realizing the ideal *intention* of this dialogue (greater well-being and expanded scientific understanding).

One important note: neuroscientific studies on meditation cannot be considered skillful means in the fullest Buddhist sense. This is because skillful means traditionally requires a

“guiding figure” (e.g., the Buddha or the father in the Lost Son parable) who is leading beings along the path in a very deliberate way. Of course, it would be incorrect to imply that neuroscientists are trying to guide people towards enlightenment through their research, or that the Buddha is somehow guiding these neuroscientists towards “greater understanding” while their current understanding is a white lie. This is not what I am saying—nobody is guiding anybody. I am merely attempting to apply the *principles* of skillful means (intention, acceptance, and provisionality) to secularization and the materialist argument, leaving out both the figure of the guide and the need for a destination. What follows is how I believe intention, acceptance, and provisionality may help us view secularization and the materialist argument as part of this path to well-being and understanding.

Greater Well-Being

According to HHDL, the “central intention of Buddhism itself” is to help all sentient beings be free of suffering (Dalai Lama, 2005, p. 105). However, a common obstacle to the cessation of suffering is the belief that it is simply not possible. For example, no psychological “intervention” has yet been shown to completely rid people of negative emotions like anger, jealousy, and greed; this aspiration currently appears quite idealistic if not downright impossible.

The principles of skillful means, however, nudge us towards a different conclusion. In the Lost Son parable, the wandering son’s poor and lowly past prevented him from believing that he could ever be heir to a fortune. In the same way, empirical psychological and neuroscientific research has not yet supported the Buddhist belief that total cessation of suffering is possible through meditative and ethical cultivation of the mind. This is quite understandable. After all, psychology as a discipline has mostly focused on studying mental disorders and problems. The name Positive Psychology was only coined a mere 25 years ago to designate the first discipline

in psychology's history to study positive emotion (Azar, 2011). Moreover, many foundational neuroscientific studies on meditation and positive emotion were only recently inspired by encounters between HHDL and neuroscientist Richard Davidson in Dharamsala. HHDL asked Davidson why neuroscience had studied pathologies but not positive qualities (Center for Healthy Minds, n.d., "Overview"). This occurred a mere 31 years ago, in 1992.

Of course, the son in the Lost Son parable does not stay lost. The point of the story is that his limited view of himself slowly changes thanks to skillful means. Although shoveling dung for twenty years seems to have little to do with being an heir, it gradually allows the son's self-confidence to expand to the point where becoming an accountant and even an heir is no longer unfathomable. I argue that secularization and the materialist argument operate in this same way. While these ideas might seem to have "little to do" with core tenets of Buddhist philosophy (e.g., ultimate freedom from suffering and belief in a subtle consciousness independent of the brain), they are nonetheless what can potentially allow Buddhist meditative practices to *begin* to expand scientific horizons of what is possible. As Dr. Matthieu Ricard, a molecular biologist turned Buddhist monk, states in *Destructive Emotions: A Scientific Dialogue with the Dalai Lama*:

Such [neuroscientific] results of training point to the possibility that one could continue much further in such a transformation process, and, as some great contemplatives have repeatedly claimed, eventually free one's mind from afflictive emotions. The very notion of enlightenment then begins to make sense. That possibility—freeing the mind completely from the hold of destructive emotions—surpasses any assumptions of modern psychology. But Buddhism, as well as most religions (in the archetype of the saint), holds the possibility of such inner freedom as an ideal, an endpoint of human potential" (Goleman, 2003, p. 26).

In this way, secularization and the materialist argument can be seen as forming a necessary *current* language that allows scientists and non-Buddhists to investigate and interpret the results of meditative practice. Even HHDL recognizes that the discussion of Buddhist claims in scientific terms is what allows them to become relevant to many in our world today (Dalai

Lama, 2005, p. 144). Western scientists recognize this too. In *Destructive Emotions*, psychologist Daniel Goleman (2003) states “that in many ways the currency of modern culture is science, and that if we can address issues in human consciousness scientifically, we can bring them to the forefront of the culture in ways that would not just be acceptable but have great impact” (p. 184). While secularization and the materialist argument initially appear counter to original Buddhist worldviews and goals, these phenomena can be seen as “skillful means” through which the nascent study of meditation can start to expand what we think is possible for well-being and our understanding of consciousness.

Scientific Expansion

The principles of skillful means can also be used to argue that secularization and the materialist argument are not obstacles to, but *precursors of*, the next frontier of consciousness research. Now, a scientist might ask: “Why should *upāya-kauśalya*, a Buddhist term, apply to science? That feels like you are trying to ascribe Buddhist goals to scientific pursuits.” Not at all. I respond that it does not matter where the idea of *upāya-kauśalya* originates from, because it bears strong resemblance to what many of us know as the scientific method.

In science, research begins by asking a question and making a hypothesis based on your existing theory. After you have designed, run, and gathered data from your experiment, your view of the subject will naturally expand based on these new data. This prompts you to ask more questions and conduct more experiments that cause your view of the world to expand again, and so on. Skillful means relies on very similar principles.

Just like science, a skillful means recognizes that people can only start from what we think to be true. Once additional evidence enters our awareness, our understanding of ourselves / the world evolves accordingly. In this case, secularization and materialist assumptions constitute

some current “truths” regarding neuroscientific research on meditation. However, both skillful means and the scientific method intimate that these views are but resting places on the perpetual journey towards greater understanding, even if that understanding ends up being a stronger view (more than a “working hypothesis”) that mind arises from brain. A skillful means understanding reminds us that science ought not to rest on its laurels. Though Mindfulness-Based Stress Reduction (MBSR) has been shown to be remarkably effective in reducing clinical anxiety and depression, Buddhism may have far more to offer scientific inquiry than reducing stress. We are only beginning to see the fruits of the dialogue between contemplative traditions and neuroscience.

Suggestions for Neuroscientific Research on Meditation

Skillful means is more than just a helpful framework through which acculturation and expansion may be understood *now*. I also believe that skillful means provides guidance for how neuroscientific studies on meditation should progress in the *future* in order to realize our intention of increasing well-being and scientific understanding. Two suggestions I envision are centered on the concepts of “openness to letting go the raft” and “ethical intention.”

Openness to Letting Go of the Raft

From a Buddhist view, skillful means is the raft by which we cross the river of ignorance to arrive at greater well-being/understanding. Therefore, an intrinsic characteristic of skillful means is *provisionality*: skillful means were created to be abandoned. This means that reaching valuable new insights, whether about consciousness or about human potential for well-being, demands the courage to remain unattached to the ideas that got us there. In context of this dialogue, “openness to letting go of the raft” entails not clinging to current materialist hypotheses of the mind-brain relationship, because our understanding will evolve, whether for or against.

To be clear, I do not think that we should abandon secularization and the materialist argument just because they are not perfect. As I have said, these ideas are *necessary* for Buddhist practices research to interact fruitfully with scientific research and Western audiences *right now*. However, in order for this interaction to bear *further* fruit (I will explain potential avenues for this soon), we must be open-minded about Buddhist views that do not fit within current scientific understanding. Here I quote neuroscientist Francisco Varela, one of the founders of the Mind and Life Institute, because I believe that he exemplified this openness to letting go of the raft. This is a section of an interview made of Varela in 2000, as quoted in Geoffrey Samuel's (2014) article, *Between Buddhism and Science, Between Mind and Body* (emphasis mine):

So [the Tibetans] have this notion which people call “reincarnation”—I think that that’s a very bad translation [...] To my understanding, the interesting view there is this kind of idea of flow of consciousness, which has moments in which it manifests as a more layered consciousness including mental phenomena and cognition, and then after death it continues like a flow and it comes up again. But there would be, then, according to their observations such a thing as a form of consciousness, although not individual consciousness, not a “me-consciousness”, but a consciousness, in other words, an awareness that is aware of itself, without brain. Now that is a little hard to swallow for a scientist. We have had this conversation several times with His Holiness [HHDL] and at that point we both say, well, what to say? At this point, science cannot even conceive of that, cannot possibly deal with that idea, and in the Tibetan tradition it is inconceivable not to take into account their accumulated experience and observation that this is so. Including accounts, and witness accounts, and what not. **And my position is, suspend judgement. Don’t say it’s false, don’t say it’s true, don’t neglect their observations, don’t simply say, oh science is so stupid, you know. Let’s go gentle, let this be a question.** And as oftentimes, I’ve learned in my life that one of the greatest difficulties is to have the patience and the forbearance to actually stay with the open question, and not to seek for resolution or an answer, just to contemplate the question and let it sit there, which is not easy, but that’s the way to go (566).

When two traditions with starkly different perspectives convene, fruitful conversation depends on the ability of both sides to entertain the viewpoint of the other. This is the kind of openness that skillful means demands if all parties are truly to expand their horizons. Even if science and Buddhism are nowhere close to coming to an agreement on the specific topic of

consciousness, this is perfectly fine. Open-mindedness also applies to many more aspects of research on Buddhist practices, including research techniques that are underutilized and research topics that are yet untouched.

First-person meditative observation of the mind is a promising research method that scientists are only beginning to take advantage of. Unlike introspection, meditative observation draws upon a foundation of attentional stability and calm that allows the arising and passing of mental phenomena to be reliably observed in a detached manner (Dalai Lama, 2005, p. 135). This works because calming the mind (e.g., by developing steady focus on the breath) prevents one from being carried away by the relentless stream of thoughts occupying most of our waking lives. Once the mind is calmed, it becomes much easier to observe how thoughts and emotions arise and pass away without getting caught up in them; this process can be likened to focusing a microscope lens so that individual cells can be examined rather than staring at an indiscernible mass of tissue. In an interview with Casey Walker (2000), Francisco Varela describes how experienced meditation practitioners are well-equipped to observe the workings of the mind:

Now, most of our subjects are very highly trained to do phenomenological⁶ descriptions. In fact, one is a very advanced Buddhist practitioner. One thing we see is that trained people have very good strategies, including the ability to put their minds at rest in a particular position that enables them to perform and to observe. This ability to rest, this stability of mind, is in sharp contrast to the constantly wobbling mind of ordinary people” (p. 6).

Although meditative observation is new on the scene of scientific research, it is beginning to be taken seriously as a useful research technique. Foremost among scholars in this area is B. Alan Wallace⁷, founder of the Santa Barbara Institute for Consciousness Studies and the Center for Contemplative Research (CCR) in Crestone, Colorado. The CCR is the first organization to

⁶ Phenomenology is the study of consciousness from the perspective of first-person experience (Stanford Encyclopedia of Philosophy, 2003).

⁷ See *The Taboo of Subjectivity* for an in-depth argument about why first-person experience should be considered scientifically valid (Wallace, 2004).

provide committed meditation practitioners the support and space to develop stability of mind in order to collaborate with scientific researchers (Center for Contemplative Research, n.d., “Mission, Vision, & Core Values”). These practitioners live on the premises and work with researchers to produce studies that incorporate refined first-person meditative data.

The fact that this technique is in its infancy is exciting. Buddhist practices hold immense potential for helping to create a refined way of investigating the mind “from the inside-out.” Combined with neuroscientific methods that approach the mind “from the outside-in,” science is poised to develop a well-rounded perspective that honors both material and subjective aspects of the mystery of consciousness.

Openness to letting go of the raft also demands willingness to step outside the boundaries initially posed by secularization. Previously, I explained how some aspects of Buddhist philosophy or practice are commonly “screened out” from being considered as research topics because science does not approve of the method (e.g., first-person meditative observation) needed to investigate them, or because they seem “religious.” However, before psychological research adopted it, mindfulness meditation (*vipassana*) was also seen as just another “hippy-dippy” religious practice. Now, it is not only *vipassana* that is being studied—*metta* (lovingkindness) and *karuna* (compassion) meditation are also being investigated in the secular setting as ways to increase compassion for self and others (Jazaieri et al., 2013) and treat healthcare burnout (Ash et al., 2020; Seppala et al., 2014). Researchers may begin to wonder whether further practices from the Buddhist tradition (e.g., ritual practices like offering incense or circumambulating places of worship, *mudita* / sympathetic joy and *upekkha* / equanimity meditations, or precepts of the Noble Eightfold Path) may also show psychological benefits and/or neural data that may help us learn about the mind-brain relationship.

Ethical Intention

Skillful means has one goal and one goal only: to help all beings be free from suffering. In addition to reminding us how being open to letting go of the raft can be beneficial, skillful means introduces a dimension of ethics where the *intention* behind the act is what counts. Science's general intention is to expand our understanding of the laws of nature. Science is also extremely influential at this time; even HHDL acknowledged science's "inevitable dominance in the modern world" that transformed his relationship with it "from curiosity to a kind of urgent engagement" (Dalai Lama, 2005, p. 10). But what should we do when the scientific intention leads to conclusions that might not serve our own wellbeing and that of our societies? At this point, a skillful means understanding prompts us to ask: *What is the purpose of scientific inquiry? What do we, and should we, value?*

Specifically, I am concerned about aspects related to the materialist argument that have negative consequences for human wellbeing. To be clear, I am not saying that neuroscience is responsible for the outcomes I will state; I am saying that the materialist views *sometimes expounded* by neuroscientists and pop-psych authors create a container in which these outcomes *may* exist. For example, recall how tracing the logic of the "neural dogma of meditation" to its end reveals agentic mind to be an illusion. In this view, all mental states, including choice, arise from a brain that we do not control. This is ultimately a slippery slope to determinism and nihilism—the belief that we have no free will and the belief that life is meaningless, respectively. Moreover, if first-person experience is not considered valid enough to stand alone as scientific data, and science is a dominant cultural paradigm through which we make sense of the world, how might this devaluation of first-person experience subtly chip away at our trust in our own lives, in our own experiences?

I mention determinism and nihilism not to make an academic or philosophical argument, but because these ideas have real consequences for our lives. Believing that we have no free will (determinism) or that life is meaningless (nihilism) do not have healthy implications for legal responsibility, let alone for how we value our lives and those of others. In spite of this, our society sometimes treats the scientific pursuit of truth like an “absolute good” that is always justifiable even when it may bring potential harm. I urge researchers and authors to remember that science—just like everything else!—does not exist in a vacuum. Scientific views, which often become the norm in secular culture, have immense potential to influence how we see ourselves and others. I cannot emphasize enough the responsibility that scientists carry not only to the pursuit of truth but to the furthering of human well-being.

Perhaps it may be helpful here to briefly explore why HHDL sees determinism and nihilism inherent in the materialistic argument, even when people may accept these assumptions without falling into either extreme. In Buddhist cosmology, being born a human is an extremely rare and fortunate event—less likely than a blind turtle rising to the ocean’s surface once in a hundred years and putting its neck through a small wooden yoke tossed and turned by the waves (Patrul, 1998, p. 33). This precious human state—the result of endless lifetimes of meritorious deeds—is favorable because it is seen as ideal for attaining enlightenment. One is free enough from suffering (compared to beings in hell-realms) to be *able* to practice the path, but still experiences enough suffering to *motivate* one to practice. Compare this understanding to Wright’s (2017) story where humans are simply animals with the unfortunate capacity to be aware of their animal instincts AND enslaved to them (p. 10), and we may then be able to understand why HHDL critiques materialism as strongly as he does.⁸

⁸ To be clear, I am not trying to “pit” this Buddhist perspective against biological and evolutionary understandings of humanity; these views are apples and oranges, based upon extremely different evidence and

Of course, we must acknowledge the natural counter-argument to the claim that materialism denies free will: “So what? Even if agency is a myth, we will keep living our lives like we have agency.” In other words, even if I believe I have no free will, free will seems to exist in my lived experience and my life operates under the pretense of this feeling. (When I want to reach out and grab my coffee cup, I can do it!)

However, this begs the counter-question, “Why create a scientific theory about humankind (e.g., that mind is reduceable to brain activity and therefore we have no free will) that is contradicted by humankind’s lived experience?” At best, this theory is irrelevant to our day to day lives. At worst, this theory can lead to a perceived lack of agency, meaning, and moral responsibility. I want to know: What is the point of holding a scientific view that will either have no practical use or have negative implications? After all, we want to know the truth, but we also want to live happy, meaningful lives. Should scientific truth, when it is irrelevant or even potentially harmful to lived experience, come at the expense of happiness? Or should happiness come at the expense of scientific truth?

Skillful Means in the Pursuit of Truth

Perhaps one of the most illuminating takeaways from this exploration of popularized neuroscientific and Buddhist perspectives is that conflicting views help us see how each discipline constructs “truth”—and what “truth” in this broader sense really means. Over the course of my engagement with this dialogue, I have come to the following understanding of how “truth” is constructed and how skillful means might play a crucial role in this endeavor.

Our understanding of the truth results from paying attention. This attention may manifest

values. I only hope this example can help clarify where HHDL is coming from with his unusually sharp critique of the ethical “poverty” of materialist assumptions.

in the form of questions (e.g., “How do I know that I’m alive?” or “What parts of the brain process fear?”) Attention may also show up in the form of observations (e.g., I’m aware of reading this right now,” or “increased amygdala activity correlates with the moment when a participant heard a frightening sound”). Subsequently, *where* we focus this attention is wholly guided by our *values*. The questions we *choose* to ask and spend time pursuing, the types of observations that *count* as evidence—these are the crucial foundations upon which truth is built. Note the use of “we,” not “I” here: Disciplinary truth is seldom approached alone. At heart, truth springs from the pursuit of values in community.

How does this understanding of truth function in the conversation between the sciences (e.g., neuroscience) and Buddhism? Let us start with science. Science values knowing how the natural world works. Many scientists enjoy the process of asking questions, breaking phenomena down to find root principles, and potentially even using those root principles to gain mastery over what is being studied. The cessation of suffering is not the flagship concern across all of science, though this may be a primary motivation for some scientists. Importantly, in science, there is the possibility that knowledge **can** be valued for its own sake, though I do not mean to imply that it feels this way to every scientist.

Buddhism functions in a similar but also starkly different way. I have understood Buddhism to value knowing how the natural world works and to prioritize observation and experience over theory, just like science. However, Buddhist views differ in that knowledge of the natural world is only valued to the extent it is relevant to the cessation of suffering (Dalai Lama, 2005, p. 105). To understand this contrast between Buddhism and science, we can turn to the study of consciousness. HHDL writes that Buddhism has valued the study of consciousness only because the Buddha “saw consciousness as playing a key role in determining the course of

human happiness and suffering” (Dalai Lama, 2005, p. 121). Though I do not wish to generalize about the motivations of all scientists, I think it is reasonable to conclude that not every scientist studies consciousness in order to end human suffering⁹. This is just one example of how different reasons and values can animate the study of the same topic. Values may even be a reason why Buddhism and science prioritize different types of evidence. Perhaps Buddhism is grounded in first-person observation because suffering is a first-person reality, whereas science prefers third-person observation because “truth” about the natural world is thought to stay constant regardless of first-person experience.

Importantly, while values reside at the heart of how systems like science and Buddhism establish truth, this also works the other way around. What we understand to be true can reside at the heart of what we value. After all, why would one devote time and energy to researching a claim that current evidence does not support (e.g., that “negative emotion can be completely eliminated with meditative training”)? To value such an implausible pursuit would be a waste of time. However, if research tentatively finds consistent evidence that positive emotion can be cultivated and negative emotion can be weeded out, the possibility of eliminating negative emotion may no longer appear so far-fetched. Gradually, research on techniques shown to increase positive and decrease negative emotions may begin to garner more funding and publications. As our sense of what is scientifically possible expands, the values of science may change accordingly.

Moreover, if values are shaped by what we think is possible, then the principles of skillful means are key. Intention, acceptance, and provisionality prevent us from hopelessly assuming that acculturation must prevent expansion—and if expansion is considered to be

⁹ Let it be known that I am not trying to say that Buddhist or scientific values are superior on this issue—this is just an example of how values differ.

possible, then scientific values may follow accordingly. Perhaps someday, researchers may greet a group of hillside monks and agree to publish research that can hold *both* a materialist and a subtle consciousness explanation for the mind openly, without discounting either view.

As the power of technology expands, the question of science's place in our shared human existence becomes increasingly, urgently relevant. I urge scientists and Buddhists alike to approach new ideas with open minds, and to ground this exploration in the heartfelt wish to benefit others.

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