

CHAPTER 23

NEURO-EUDAIMONICS
OR BUDDHISTS LEAD
NEUROSCIENTISTS
TO THE SEAT OF
HAPPINESS

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NEURO-EUDAIMONICS

Eudaimonics is naturalistic inquiry into the constituents and causes of happiness, which Aristotle wisely said is what everybody wants more than anything else (Flanagan, 2007). Most people think Aristotle was right that the one (perhaps only) universal truth about *Homo sapiens* is that at every time and in every place people wish to be happy, to flourish, to achieve eudaimonia. So it would be good to know what it is, where it is kept, and how to get some of it. Neuro-eudaimonics, if there is or can be such a thing, claims that neuroscience can advance our understanding of the constituents and causes of happiness. Here I examine what some early forays into neuro-eudaimonics have actually delivered and discuss the promise and prospects of this research program. Eudaimonics is promising, but the neuroscientific contribution to the study of the nature, causes, and constituents is easily overrated (Flanagan, 2007).

“The Colour of Happiness” was the title of an article I wrote for *New Scientist* in May 2003 that reported on two preliminary studies of “positive affect” in (as revealed in the brain of) exactly one meditating monk (Flanagan, 2003b). To my chagrin, news agencies such as Reuters, the BBC, and Canadian and Australian Public Radio were quick to sum up the message of my essay with hyperbole of this sort: “Buddhists Lead Scientists to ‘Seat of Happiness’” (a Japanese website put it this way which I found especially compelling:

性格・幸福感・感情：昔の記事 書庫館 (進化研究と社会>

I did (too) many media interviews in a futile attempt to quell or at least rein in the ridiculous enthusiasm for the idea that the brains of Buddhists were extremely frisky in the happiness department, and thus the owners of these brains were unusually happy people, perhaps the happiest of all, and that, in addition, meditation (whatever that is) was responsible for the very happy brains inside the very happy people. I was asked when I had discovered that Buddhists were the happiest people who ever lived and where exactly in the brain the happiness spot was. *Dharma Life* magazine, in an amusing headline of its own, called the scientists, Richie Davidson and Paul Ekman, who performed the early studies on the meditating monk, “Joy Detectives.”

I had joked for years about the way, for example, the *New York Times* Tuesday Science Section reported neuroscientific discoveries. Like most of my neurophilosopher friends, I thought most of the hyperbolic hoopla foolish but harmless. But this Buddhism stuff was not funny. First, it was happening to me. Second, the situation felt Orwellian and thus vaguely dangerous. Most Buddhists I know are sweet and dear, but I sensed that many of the Buddhists I knew and respected were all too ready to buy into the hyperbole and sell their own Buddhist brand of snake oil claiming for it certification by neuroscience as *the* way to happiness and goodness. Being allergic to magic univocal spiritual solutions, I had to play skeptic.¹ Even if neuroscientists are generally responsible in reporting results (although it is worth noting that neuroimaging especially allows reports on very small *n*'s), the neuro-journalists are not. So a certain neuro-skepticism is warranted (see Harrington, 2008, for a compelling, suitably skeptical, history of mind–body medicine).²

What is the evidence for the claim that there is a connection between Buddhism and happiness? The claim that there is some such connection is very much (still) out there. The first point or observation is that there are several different claims that, to my eye, are being conflated:

1. There is a connection between being a Buddhist (what counts as being-a-Buddhist? what are the membership properties?) and being happy (which kind? how defined?).
2. There is a connection between meditating (which way, among the 84,000 types?) in a Buddhist way and feeling good (feeling good = being happy?).

3. There is a connection between being-in-Buddhist-frame-of-mind and being good (what is the connection between happiness and goodness?).
4. There is a connection between being a Buddhist and physical health and well-being (what is the connection between health and happiness?).
5. There is a connection between being a Buddhist and possessing certain kinds of unusual autonomic nervous system control, such as being able to control the startle reflex (what is the connection between happiness and this sort of autonomic control?).
6. Experienced Buddhist practitioners are very good face readers (what is the connection between face reading and happiness?).
7. Experienced Buddhist meditators have lots of synchronized global brain activity (so did Timothy Leary and other acid trippers).

There are more, but 1–7 provide a sense of the distinct hypotheses being bandied about and conflated as if they express some well-founded scientific consensus that Buddhists are unusually happy.

HAPPINESS AND THE BRAIN

At the time I wrote “The Colour of Happiness” article, the only completed brain study I discussed actually on the connection between Buddhism and happiness had an $n = 1$, that is, exactly one experimental subject had his brain scanned by an fMRI. This is not ordinarily considered a good sample size. However, this first exemplary individual, Matthieu Ricard, was an experienced Buddhist monk (born and bred in France) and his left prefrontal cortex (the area just behind the forehead), an area well established to be reliably correlated with positive emotion, lit up brightly (thus the editor’s choice of “colour” in the title).³ Indeed, the left side lit up brightly and more leftward than any individual tested in previous studies (approximately 175 subjects). However, none of these prior studies involved people meditating while the scanning was under way (in the monk’s case, most meditation was on compassion and loving kindness). But as I have said, these scientific problems did not prevent various media sources from announcing that scientists had established that Buddhist meditation produces (a high degree of) happiness. I do not know whether the “joy detectors,” who, unlike me, were actually doing the preliminary studies, cautioned the neuro-journalists or not. I guess not, because they are enthusiasts for the hypothesis that was receiving media confirmation, if not its empirical equivalent.

Fortunately (for science), prior to the study of the meditating monk, there had been a number of excellent studies on positive affect and the brain (Davidson, 2000; Davidson and Hugdahl, 2002; Davidson and Irwin, 1999; Davidson, Scherer, and Goldsmith, 2002), which the 14th Dalai Lama (using his given name, Tenzin Gyatso), alluded to in an op-ed piece for the *New York Times* (Gyatso, 2003a), I reported on

in *New Scientist*, and Dan Goleman (2003b) wrote about in the *New York Times*. Davidson and colleagues' experiments revealed that when subjects are shown pleasant pictures (say, sunsets), scans (PET or fMRI) or skull measurements of activity (EEG) reveal increased left side activity in the prefrontal cortex. When subjects see unpleasant pictures (say, a human cadaver), activity moves rightward. Furthermore, people who report themselves generally to be happy, upbeat, and the like, show more stable left side activity than those who report feeling sad or depressed, in whom the right side of prefrontal cortex is more active.

Positive mood, we can say, has two faces. This makes a neurophenomenological approach possible. Subjectively, phenomenologically, or first-personally positive mood reveals itself in a way that an individual feels and about which he or she typically can report on (although subjects commonly report difficulty describing exactly what the positive state is like). Objectively, the subjective feeling state is reliably correlated with a high degree of leftward prefrontal activity (the neuro-part). Thus we can say that *if* a subject is experiencing happiness or, what is possibly different, is in a good mood, then left prefrontal cortex is or gets frisky, or bright, or even colorful depending on whether you use EEG, fMRI, or PET.

It is important to emphasize that the prefrontal cortices are involved in more than emotion, affect, and mood. The prefrontal lobes are relatively recently evolved structures (in ancestors of *Homo sapiens*) and have long been known to play a major role in foresight, planning, and self-control. The confirmation of the fact that prefrontal cortices are also crucially implicated in emotion, mood, and temperament is exciting because it lends some insight into where—one place where—a well-functioning mind coordinates cognition, mood, and emotion. How exactly the coordination is accomplished is something about which little is known at this time.⁴

Davidson found that in a normal population (of undergraduates) prefrontal lobe activity is distributed in a bell-shaped curve fashion. If the curve were entirely normal and assuming that the undergraduate population is representative, we would expect 67 percent of the population to show mixed left and right activity with roughly 16 percent showing predominantly left side activity and 16 percent showing predominantly right side activity. If the curve were normal, we might use alleged neurophenomenological background knowledge and say one-sixth of ordinary Americans are “very happy,” two-thirds feel mixed or average (“okay,” as we say), and one-sixth feel “on the low side.” However, Davidson's bell curve was not quite normal. It bulged some toward the happy side. This is consistent with data that claim that 30 percent of Americans are very happy (= say so), 60 percent are okay, and 10 percent are “not too happy” (Flanagan, 2007, pp. 150–159).

Given these data, I take it that any finding to the effect that Buddhist practitioners are happier than most would be a statistical finding that significantly more than 30 percent would be in the first group. A representative sample of Buddhist practitioners with 40 percent in the first group would be statistically astounding. A somewhat lower percentage would still be impressive. No such data exist—not even data showing that Buddhists hit the average (American) population score of 30 percent.

Putting this important point about the hoopla given the evidence aside, we still might wish to ask this about the one meditating monk studied: Was the meditating monk who was “off the charts” the happiest subject ever tested? Saying “yes” is tempting, and many of my interviewers assumed that this was part of the message, as if being “leftmost” is like being the tallest. But this is crazy. At best, being leftward is correlated with being happy or with, what is different, good mood. There is no evidence that $(x)(y)(L)(H)$ if $Lx > Ly$ then $Hx > Hy$. Nothing that is known about brains and the ways subjective states are realized or subserved neurally would make the hypothesis that the meditating monk is the happiest person ever tested worth taking seriously.

Consider this sort of familiar example: Suppose two people think [that patch is red] in response to the exact same red patch stimulus. Assume that both are having the exact same thought, although it must be said even this assumption is controversial. We might after all experience red a bit differently, perception of red things might cause different associations, and so on. Bracket these worries. Assume that whatever else goes on when each of these two individuals think [that is a red patch], both think that much and each thinks the thought in the same way as far as that red patch goes. If so, there will be brain activation in each individual that is that thought or is the neural correlate of that thought. But no one expects two different brains to have exactly the same thought in a way that is subserved by perfectly identical neural activation. The consensus is that the exact same thought can be realized (indeed is likely to be realized) in different brains in somewhat different ways. We expect the same for phenomenologically identical or very similar emotional states. There is always a level of grain at which (or so most think) some nontrivially different set of neural conditions will, or at least can, realize or subserve mental states that are functionally or phenomenologically indistinguishable.

One upshot is this: For all we currently know, the subject who tests 25th or 35th from the leftmost point so far plotted might be, according to all the evidence taken together—phenomenological, behavioral, hormonal, neurochemical—the happiest person ever tested. Left side prefrontal activity may be a reliable measure of positive affect, but no respectable scientist has asserted, let alone confirmed, that among “lefties,” the further left you are, the happier you are.

There are some other problems. First, the concepts of “positive mood” and “positive affect” and “happiness” are not the same concepts. Running them together is not permitted. Furthermore, none of these concepts are fine-grained enough, or sufficiently well operationalized by the scientists who use them, that we know what specific kind of positive mood or emotional state is (allegedly) attached to a lit-up area. (Seligman, 2002, is exceptional among mind scientists in trying to sort out the constituents and components of our ordinary conception of happiness.) A second problem is that there is little effort being expended to distinguish among the neural realizer(s) of happiness, and its *content* and *causes*. For all anyone knows at this point, a happy life (assuming we have a genuine case) whose causal source is family might light up the brain in the same way as a happy life whose source is virtue or even money. For all anyone knows, a state of happiness whose contentful character is a meditation on nothingness may light up the same way as the state of happiness

whose contentful character involves solving quantum physical equations. On the other side, one might wonder why we should seriously expect phenomenological states as different as hedonistic happiness and Buddhist happiness to be realized the same way in the brain. Consider the fact many contemplatives, for example, Christian Trappist, Cistercian, and Carthusian contemplatives believe in and meditate on a personal deity. Personal faith and a relationship with God are almost certainly thought to be constitutive of the kind of happiness they seek. This difference in the content of their mental states—from Buddhists, for example—is one that ought to (it better) reveal itself when and if brain scans reach a point that they can deliver fine-grained understanding of different kinds of mental states, including happiness. Scientists can look for mental states that take a deity as their foci (mental content) without believing that there really are deities. But if thinking starts to go in this credible direction, then the fact that the happy hedonist and the happy Buddhist brains light up the same way might make us think that the lit-up stuff isn't really illuminating what we want to see more clearly.

BUDDHIST HAPPINESS

These difficulties about the concepts being used and about content and causes suggest that anyone who aims to study the relations among a life form such as Buddhism and happiness ought to look carefully at the concept of happiness that the tradition claims to offer. Buddhism doesn't say much about happiness. It says a lot about suffering and its causes. But not suffering is not the same as being happy. You have a headache. You are suffering. I give you aspirin. Are you happy?⁵

Buddhism claims, first and foremost, to offer a solution, so far as one is possible, to what it claims is the main existential problem faced by all humans: how to minimize suffering. Happiness, not being possible, is not much, or at least not the main thing, on offer in classical Buddhism (at least not until one has lived uncountable lives at which point if happiness is conceived as reaching nirvana, one becomes happy by becoming nothing, nothing-at-all). However this situation has changed recently. The 14th Dalai Lama says repeatedly in recent writings that happiness is the sole universal aim of humans. He and several Western collaborators have been charting out approaches, which might help us overcome suffering—this is the aspirin part (Flanagan, 2000; Goleman, 2003a)—and then to help us find the way to “true happiness,” as conceived in a Buddhist way, what I call happiness^{buddha} (Dalai Lama, 1999; Dalai Lama and Cutler, 1998; Flanagan, 2006, 2007).

So we might wonder, given the hoopla over happy Buddhists, (1) what kind of happiness does Buddhism offer (happiness^{buddha} I claim, but what is that?); and (2) is there any reason to think that Buddhists are happy in the same first-personal (phenomenological) way and neural way that Trappist monks or hedonists or University of Wisconsin undergraduates are happy? Or is it that many more Buddhists

are happy in this presumably neurally shared way? But then again, given that Buddhists seek the kind of happiness Buddhism promises and not the kind that Trappist monks, hedonists, or Wisconsin undergraduates seek, it seems very odd to think that happiness across these traditions or life forms would show up “the same way” in brains.

Like every other moral tradition, Buddhism distinguishes between worthy pleasures and base ones, between things we ordinarily think bring happiness and things that really do bring happiness. Money doesn’t bring happiness, at least not true happiness (although it might help some), but wisdom *and* virtue do. Buddhism is, at a most fundamental level, a practical philosophy that claims that wisdom and virtue are their own reward. Wisdom and virtue constitute liberation. By achieving wisdom and virtue, we overcome suffering and unsatisfactoriness and gain (maybe) happiness^{buddha}. What is happiness^{buddha}?

Here’s a credible answer. A person who is happy^{buddha} is conventionally moral, so he or she doesn’t lie, steal, cheat, gossip, or work for nonpacifistic organizations (the noble eightfold path). In addition, he or she works to develop four virtues, compassion (wishing to alleviate suffering), loving kindness (wishing to bring happiness in its stead), sympathetic joy (joy about the successes of others), and equanimity. These four virtues are necessary for happiness^{buddha}, but they are not sufficient. Happiness^{buddha} also requires wisdom where the wisdom consists of knowing such truths as that everything is impermanent and that I, being one of the things in the everything, am impermanent, too. This is wisdom. Taken together the four great virtues and a wise assessment of the nature of reality and oneself will bring happiness^{buddha}. Will these virtues and this wisdom bring the same sort of happiness the hedonist seeks, or the same sort of happiness a Jewish mystic seeks or a liberal twenty-first-century American seeks? It would be odd to think that the answer is yes because each of these conceptions of happiness claims for itself very different causes and contents. It is logically possible that everyone in fact seeks the same kind of happiness, but it doesn’t seem likely. If this is right, then there be a major but unnoticed conceptual problem facing the happiness researchers who seem to assume that what are multifarious conceptions of happiness with distinctive causes and constituents can be measured against each other by looking at or for a single type of brain activity.

WHAT DOES HAPPINESS HAVE TO DO WITH IT?

Even if this problem of looking for a univocal marker for what could seem to unitary (it’s happiness we are talking about) phenomena but isn’t can be solved, there are other matters about the interpretation of the research. Specifically, there is research that is interpreted by the “Buddenthusiasta” (some neuro-journalists but also some of the researchers) as reinforcing the happiness hypothesis but that doesn’t.

Consider Paul Ekman's work. Before the meditating monk's brain was scanned in Davidson's lab in Wisconsin, he spent several days with Ekman in San Francisco. Ekman is the world's leading authority on the basic emotions (fear, anger, sadness, surprise, disgust, contempt, and happiness) and on the universal facial expressions that accompany them (Ekman, 2003; Ekman, Campos, Davidson, and De Waal, 2003; Flanagan, 2003a). With his longtime colleague and collaborator, Robert Levenson, who works across San Francisco Bay at the University of California, Berkeley, the two set to work at studying the effects of long-term Buddhist practice on evolutionarily basic emotional responses and on individual differences in ability to read emotions from faces. Thus, one study focused on the startle response, which is thought to be essentially a mental reflex (i.e., virtually automatic). The other looked at face reading.

When I tell people about this research, there is often a presumption that Buddhist practice is known to result in unusual abilities, such as the ability to control anger or read faces more sensitively than normal people. But this is not known. It is what Buddhism advertises about itself. It hasn't been tested systematically to this day, because Ekman and Levenson's experiments were only pilot studies and thus it could be (still might be) mere Buddhishit. I mention this because I myself was initially too naive in interpreting the results I revisit here, being caught up until recently (2007) in the hype (for a form of life I very much admire) and not always being careful enough to mark the paucity of evidence for the happiness hypothesis (Flanagan, 2000, 2002, 2003b, 2006). As I report on the Ekman and Levenson pilot studies, ask yourself this question: What does this research have to do with testing the connection between Buddhism and happiness? The right answer is that although the pilot studies were done on a small number ($n = 4$, as I recall) of Buddhist practitioners, what they test has *nothing* obvious to do with the happiness hypothesis.

First the startle results. The amygdala, twin almond-shaped organs, as well as adjacent structures in the forebrain beneath the cerebral cortex, are part of quick-triggering machinery for fear, anxiety, and surprise. I see a fierce, snarling wolf and—without any forethought—head for the hills in fear. Lightning strikes in my vicinity—I am scared and anxious and seek lower ground. The amygdala and associated structures are key components of this affective response system. It is likely (but not yet confirmed) that areas in these very old brain structures (fish have amygdala-like structures) are involved in other evolutionarily basic emotions such as anger and, more controversially, in certain pleasant feelings associated with good meals or good sex. Although the amygdalae lie beneath the cerebral cortex, they require cortical processing for activation. I need to see the bear (visual cortex) or hear the thunder (auditory cortex) before I feel frightened.

Much of what we know about the amygdala is due to path-breaking work by Joseph LeDoux (1996) at New York University, who instigated work throughout the world on these structures. We know, among other things, that a person, via the amygdala and thalamus, can be classically conditioned so that things that really aren't worth being scared of or anxious about can become fear- or anxiety-inducing. We also know that although the prefrontal cortices and amygdala interact, what the

amygdala “thinks” and “feels” is extraordinarily hard to override simply by conscious rational thought.

Ekman found some confirmation in the pilot study for the hypothesis that experienced meditators don't get nearly as flustered, shocked, or surprised as ordinary folk by unpredictable sounds, such as loud gunshots. Indeed, there is some reason to believe that one subject, our friend the meditating monk, in addition to not showing signs of being flummoxed, did not even move the five facial muscles that always move (at least a little) when the startling sound occurred. According to the standard protocol in such experiments, he was told that a loud noise would occur when the count backward from 10 reached 1. He chose “one-pointed concentration” in one test and “open state” meditation in another. The monk reported the biggest experienced effect in the open state where he “moved” the expected loud noise far away so when it came, it seemed a faint noise.

Interestingly, during one-pointed concentration meditation the most interesting physiological surprise occurred. The monk's heart rate and blood pressure, contrary to all expectations and unbeknownst to him, actually decreased. Of course, these results need to be replicated with larger populations, but again the preliminary findings are really interesting because gaining control over autonomic processes is thought by some to be nearly impossible (without extensive cognitive-behavioral therapy).

Next consider the face-reading results. The face-reading system is very complicated, brain-wise. It involves the amygdala, visual cortex, frontal cortex, and more and is not reflexive in the way the startle response operates. We may well be innately biased to accurately read basic emotions off faces. But proficiency at doing so takes time and experience. Children of severely depressed and/or alcoholic parents confuse angry and sad faces. However, because the facial muscles move in essentially the same ways across all cultures (modulated by local display rules), most of us (if we are paying attention) become pretty good at detecting the emotions expressed facially for the emotions actually being experienced. This is especially so when we are presented with photos in which various emotions are displayed or in simple one-on-one conversational settings.

At first it looked to Ekman's team as if no one ever studied ($n > 5,000$) was any good at the following: show a fleeting image of a person displaying a basic emotion for long enough that it is detected and processed in the brain (between one-fifth and one-third of a second), but not long enough so that the person looking at it can report what he or she saw. Then ask the subject to pick out (i.e., “guess”) which face from an array of pictures matches what was just flashed. The normal score is at random, that is, one in six correct answers/guesses. This is somewhat surprising because the literature on what is called implicit memory or subliminal perception often shows that people respond above chance with similarly short, below-threshold stimuli in other domains, but not with faces. However, to everyone's great surprise, the meditating monk and two other experienced meditators scored at 2 standard deviations above the norm, getting three or four out of six right! Ekman hypothesizes that some combination of meditative work on empathy and concentration explains these unusual results. If so, we have no clue as to how meditation

causes such remarkable powers. Before we try to answer how the remarkable power is caused, we need to replicate the very small sample evidence that such powers reliably exist among experienced meditators. That has not been done.

There is reason to worry about the hypothesis. The word was that no one had ever done as well as the adepts. This turns out to be false. There were a few others in the big database Ekman had who achieved similar scores. There is no way to know whether these individuals were skillful face readers or just lucky. That aside, Ekman has developed techniques that can train anyone to be as good as the four adepts at reading micro-expressions. (You can purchase it at www.paulekman.com/training_cds.php if you have the proper certification and \$175.)

What remains very interesting is why, if it is so easy to learn this skill, everyone hasn't done so—after all, there is an arm's race to detect liars and cheaters. Ekman (personal communication) has no answer yet. The fact remains that the adepts naturally developed the skill, but not as far as we know by trying to do so for faces. My best guess is that what is called insight (*vipassana*) meditation where concentration and skills of analytic attention are honed (often primarily on one's own sensations, mental states, etc.) result in good analytic skills in interpersonal situations. Ekman's first surmise was that it might have to do with skills that come from *metta* (loving kindness) meditation, where empathy and compassion are honed. We may both be right. But as of now, we just don't know why or how these adepts developed the skill.

It is worth emphasizing—returning to the question “what does this have to do with happiness?”—that Ekman's own work on Buddhist practitioners, aside from his collaboration with Davidson on the left prefrontal cortex study, has nothing directly to do with measuring happiness—happiness either as understood in ordinary language or as defined by Buddhism or some other ethical or spiritual tradition. Perhaps being unusually calm when a loud noise occurs relates to feelings of well-being. For now, all we can say is that certain kinds of meditation can be used to screen the effects of normally unpleasant stimuli. Regarding face reading, no evidence exists relating the ability to read below conscious-threshold facial stimuli and good feelings, happiness, let alone happiness^{buddha}. If the results are replicated, the enhanced empathy hypothesis (probably combined with the enhanced attentiveness hypothesis) is a contender, but again empathy can, in certain individuals, be a source of some distress. In fact, Buddhist practitioners have long recognized this problem, so that there are techniques to ward off being afflicted by negative emotions that are not one's own. At this point, there are no data on the effectiveness of such techniques.

BUDDHISM AND INFLUENZA

There are several other studies that examine potential links between Buddhism and things other than happiness. A group at Emory University, led by Guiseppe Pagnoni, is comparing Zen meditators with at least 3 years' experience against controls with

no such experience to measure attention, concentration, and problem-solving ability. If Zen meditators are better than the controls at these tasks, then perhaps Zen meditation techniques can be used on persons with attentional disorders (ADHD, e.g.) and possibly even for those in the early stages of Alzheimer disease.

Meanwhile, a collaboration between Richie Davidson and Jon Kabat-Zinn (Davidson et al., 2003; Rosenkrantz et al., 2003), with an $n = 25$, found that as little as 8 weeks of 1 hour daily meditation and 3 hours of weekly training produced positive effects on mood (as measured by leftward movement in prefrontal cortical activity) in the meditators (all of whom worked in stressful high-tech jobs), as well as increased immune function as measured by the number of influenza antibodies in meditators versus the nonmeditating controls, where both groups had taken the flu vaccine.

The important point for now is that the Davidson and Kabat-Zinn study examined the link between Buddhism and both positive affect and positive immune system effects. Measuring changes in the immune system and changes in cognitive performance among those who practice one-pointed meditation and those who do not are completely tractable using existing psychophysical tools. However, studies allegedly establishing links between meditation and positive affect have yet to become sophisticated enough to tell us much about the kind of positive affect experienced, and whether and how positive affect connects with the kind of happiness that is alleged to come from wisdom and virtue. Our ways of measuring brain function in a fine-grained manner that correlates activity with specific and various types of mental states are in their infancy. Note, for example, the debate over whether (and if so how and where) the amygdala processes positive basic emotions (left or right, anterior or posterior). In 1999, Davidson and Irwin pointed out that resolving this question requires more powerful fMRI magnets than existed at the time. Now a few sufficiently powerful magnets exist and are coming on line, but they are being used on scientific issues other than whether Buddhist brains are particularly frisky in the happiness department.

Even now with magnets powerful enough to plot activity in the prefrontal cortex, we understand almost nothing about how to distinguish among the myriad specific states that fall under the very general categories of positive affect or good mood. That said, the meditating monk did show different kinds of neural activity when he was engaged in different kinds of meditation. It is far too early to know, however, whether the brain processes involved, say, in his meditation for compassion, correspond to the brain processes of other meditators engaged in compassion meditation and whether (and if so, how) these are the same or different from the neural activity of nonmeditators who experience or embody compassion.

In any case, it is completely unclear at this time whether and in what ways better immune function and better capacities to pay attention link up with happiness. They obviously link up to better health (a lower chance of catching the flu) and possibly with better school and job performance. It is easy to see how these might lead to a better life than the alternative. What link if any these things have to happiness in the relevant sense(s) remains obscure.

I don't mean to be understood as saying that the scientific work just described is not interesting. My point so far is to emphasize that the extant research on Buddhism and happiness is heterogeneous in terms of what states of body or mind it targets. The work just discussed connects Buddhism to effects on the immune system or on attention; concentration, and cognition; or on suppression of the startle response; or on face reading. This work is not about the effects of Buddhism on happiness. Even the work that claims to be on happiness is not, in every case, at least obviously, about happiness. This is because positive mood or positive affect does not obviously equal happiness, even in the colloquial sense(s). The tools that we currently use are simply not powerful enough to yield fine-grained descriptions of the mental states of subjects that would enable us, for example, to say, "Look, there is the compassion. Notice how it looks different from loving kindness." Combining various existing technologies, including doing assays of neurochemicals, might enable us to make such assertions after studying large populations of subjects. But that is a long way off (meanwhile, see Ospina et al., 2007, for reasons to worry that what the Buddenthusiasta believe to be the case will confirmed to be the case).

WHAT DOES METAPHYSICS HAVE TO DO WITH IT?

Now that we have examined an array of research that claims to measure a variety of states produced by Buddhist practice, I can express more clearly the problem that concerns me about brain studies of happiness. To make the concern as clear as possible, it is necessary to say something about the metaphysical background assumptions that guide this work.

Almost all neuroscientific work proceeds on either of two assumptions. The first view, *identity theory*, assumes that all mental states *are* in fact brain states. We access the surface structure of our minds first-personally, in a phenomenological manner, in terms of how a particular state seems or feels to us. But first-person access fails to get at the neural deep structure of our mental states. Only impersonal, or third person, techniques can do this. Suppose I see a red patch. According to identity theory, my brain will reveal activity in visual cortex in areas that specifically compute "redness" and "patchiness." There will also be some computation somewhere that marks, or is, the "I see." Then there will be some activity that is or represents where the components are bound (in psychology this is known as "the binding problem") or come together to produce my unified perception. The complete neuroscientific picture of my perception of the red patch will reveal everything that is true of my subjective perception, including causal and constitutive features of the perception that I am clueless about first-personally.

The second view, the *neural correlate view* (NCV) can be understood as quietistic or agnostic as far as commitment to metaphysical physicalism goes (the view that “what there is and all there is, is physical,” i.e., matter and energy transfers). Although NCV claims that each and every mental state has certain distinctive neural correlates, it need neither endorse nor condemn the view that the subjective properties of every experience are reducible to or exhausted by the neural underpinnings of that experience. Perhaps subjectively experienced mental states have *sui generis* properties that are nonphysical.

In addition, although proponents of the NCV usually assume, as do proponents of identity theory, that there will be neural property correlates for all the features of mental states as detected first-personally, the view doesn’t actually entail this. Because identity is not claimed, mental states might possibly be caused by or correlated with brain states, but the neural correlates do not contain specific matches (correlates) for each and every property revealed at the mental level.

In a piece, “On the Luminosity of Being,” (Gyatso, 2003b), that appeared alongside my “Colour of Happiness,” the Dalai Lama expresses doubt that at least in the case of states of “luminous consciousness,” *any* neural correlates will be found for this extra-special conscious mental states. Luminous consciousness is an especially pure state of mind that involves getting in touch with one’s purest essence, one’s Buddha nature, whatever that is. His argument rests first on the rarity of this state; second, on the fact that luminous consciousness *seems* so very nonphysical; and third, on the fact that Buddhist philosophy claims that destructive mental states, afflictions, and poisons, such as delusion, avarice, and hatred—the three poisons—do not penetrate luminous consciousness. Or better, these three poisons penetrate all material nature (and thus the brain). But we can overcome the poisons, so we must have a part of mind that has no commerce, not even correlative commerce, with the material world. This is luminous consciousness. The argument is obviously unpersuasive (see Flanagan, 2007, chapter 3, for a discussion of Dalai Lama’s views on testability and the nature of consciousness).

MENTAL DETECTION: CONTENT AND CAUSES

Whether one is an identity theorist or holds the weaker neural correlate view, NCV, one will need to do what Varela (1999) calls *neurophenomenology*. In the simplest terms, neurophenomenology is the strategy of trying to explain the activity of the mind–brain by carefully gathering sensitive first-person phenomenological reports from subjects, and then using whatever knowledge and tools we currently possess in cognitive psychology and neuroscience to locate how the brain is doing what the subjects report experiencing.

Neurophenomenology is the only game in town because when we explore the conscious mental, we must always use two kinds of probes. First, there is the

subjective or phenomenological method of gathering first-person information about what an experience seems or feels like. First-personally, we only know and can report what content our state has—“I am happy because [my son graduated from college today].” Sometimes we make surmises about the causes of the states with particular contents. In the example, the cause might be identical to the content: “I’m so happy because my son graduated today.” But often content and cause come apart. Suppose taking an antidepressant causes a person’s mood to improve to the point that she finally appreciates good weather once again. She says, “What a beautiful sunny day.” That [it is a beautiful sunny day] is the content of her mental state. But the cause of her positive mental state is due in some measure to the medication.

Do current techniques and technologies for studying the brain reveal any fine-grained details that correspond to what I call the content and the cause(s) of mental states as revealed first-personally? The answer is no. Even if we grant that current techniques can detect positive affect, there is no technique that can distinguish contents of “propositional attitude” states—states like I believe that [p], I expect that [q], I am happy that [r], where p, q, and r are the propositional contents of the states.

My brain may light up “happily,” but no brain technology can reveal at present or in the foreseeable future that the content is that [my son is about to graduate] as opposed to that [it is a cool and sunny day]. First-person phenomenological reports or behavioral observation can lead us to distinguish between two individuals, one who is happy that [she is working for Doctors without Borders] and the other who is happy that [he just made a million dollars on insider trading]. Suppose, as is possible, that their happy centers light up in the same way and to the same degree, neuroscience will reveal no such content difference. So content is a big problem—terra incognita for contemporary brain science.

Similar problems arise regarding the causes of contentful mental states. When the cause of a mental state lies in the past, say, in one’s upbringing or in many years of practicing meditation, brain scans can’t reveal the actual distal cause(s) because these lie outside the brain and in the past. Even supposing, as is plausible, that distal external causes leave neural traces, these are probably global and no one has a clue as to how to study or detect them.

CONCLUSION: HOW MUCH NEW LIGHT IS BEING SHED?

One lesson about neurophenomenology and the study of happiness is that happiness^{buddha} is characterized as having a certain cause and a certain content (with constituent structure, for example, the four required virtues of compassion, loving

kindness, sympathetic joy, and equanimity). If there is such a thing as happiness^{buddha}, it is produced by distinctively Buddhist wisdom and virtues. And first-person detection (very humble detection) that one is enlightened and virtuous is at least part of the content of the happiness.

Assume that we gather a group of Buddhists of the same age, with the same amount of training, committed to the same kind of Buddhism, and so on. Can brain scans detect the “belief” states that constitute their enlightenment/wisdom? No. The problem could be due to current technologies or current psycho-neural theories of how, what, and where belief states are, or (most likely) both. In any case, we cannot presently see or measure or distinguish among such states. Can we distinguish among the virtues in the brain? No. Can we detect virtue, in general, in human brains? No. At present we are utterly clueless and without resources to do any such fine-grained analyses of the neural underpinnings of states of character. Here is the good news—if there is any prospect for doing so, it will come from using the method of neurophenomenology while we develop more sensitive methods, technologies, and theories for studying the brain.

It amuses me to think of Siddhartha Gautama looking down from nirvana, heaven, the true pure land, or wherever, and observing all the activity attempting to study, confirm, or disconfirm the relation between Buddhist practices and various goods. I think he would be pleased both that Buddhism has so many advocates and that the hope it brings to alleviate suffering and achieve true happiness is being taken very seriously. I picture him a bit befuddled by all the new gadgets being used to measure all sorts of mental and bodily states as well as by a *Zeitgeist* that so relishes empirical confirmation. But that aside, I like to think of Buddha as approving of what we are trying (still) to learn: how to end suffering, achieve enlightenment and goodness, and to find true happiness.

Now is a propitious time to proceed with scientific studies on the connections between Buddhist practices and the various positive mental and physical states these practices are hypothesized to engender. The good news is that for immune response, sensitivity of the virtually automatic amygdala-based emotional system, facial expression detection, and cognitive task performance guided by one-pointed meditation, there are reliable fine-grained physiological, behavioral, and, in some cases, neurological measures than can be used, even if these have not yet been used on sufficiently large populations to have really confirmed any of the hypotheses in the air.

As far as measuring and locating the neural correlates for the different types of happiness, we have a long and difficult row to hoe. We need to combine very sensitive phenomenological reports about the feeling and contours that comprise the heterogeneous kinds of happiness that ordinary speech picks out. Seligman's (2002) research on “authentic happiness” holds promise for distinguishing among the multifarious kinds of happiness (as understood colloquially) by using questionnaires that try to get clear and nuanced reports from subjects on their mental states (see also Easterlin, 2003, 2004; Frank, 2004). I like to think that my own work introducing the research program of eudaimonics (Flanagan, 2007) advances the inquiry

and shows that the study of happiness will get nowhere unless scholars who understand the history and philosophical texture of the multifarious wisdom traditions are involved. Indeed, without deep philosophical understanding of what various traditions promise in terms of virtue, wisdom, and happiness, including how these are alleged to interpenetrate, the neuroscientists don't know what they are looking for. This is, by and large, the case as I write.

It follows that for the promising program of eudaimonics to proceed, we will require thick descriptions of the multiplicity of theory and tradition specific conceptions that offer true happiness. We know that Aristotle, Epicurus, Buddha, Confucius, Mencius, Jesus, and Mohammed each put forward somewhat different philosophical conceptions of an excellent human life with somewhat different conceptions of what constitutes true happiness. With these different conceptions well articulated, we can look at brain activity within and across advocates of different traditions to see what similarities and differences our mappings reveal. The same strategy should work for negative emotions and destructive mental states. Get well-honed first-person reports from subjects on the negative states they experience, and then look for brain correlates. With such data in hand, we can test Buddhist techniques, say, meditation on compassion, which are thought to provide antidotes for anger, hatred, and avarice. Along with first-person reports on any experienced change in mood or emotion, we can look and see what, if anything, reconfigures itself brain-wise. We can do the same for practices from other traditions. Eventually, we will want to coordinate such studies with the ever-deeper knowledge of the connections among virtue, mental health, well-being, and human flourishing, allowing science and philosophy to speak together about what practices seem best suited to make for truly rich and meaningful lives. At this distant point, with an array of conceptions of excellent human lives before us, as well as deep knowledge of how the brains of devotees of these different traditions look and work, we should be able to speak much more clearly about the nature of happiness and flourishing.

I have offered several reasons for a somewhat cautious, even indirect approach to the study of happiness at the present time. For scientists, when studying a form of life or a practice that has its home in a form of life, specify very precisely what goods the life form or practice claims to offer and then explain in similarly precise detail what mental or bodily effects you claim to discover among practitioners. In concert with experts on the form of life, proceed to more completely articulate what exactly it is that is being seen or revealed.

For the time being, we might follow Seligman's attitude toward the scientific status of the terms *happiness* and *well-being*: "The word *happiness* is the overarching term that describes the whole panoply of goals of Positive Psychology. The word itself is not a term in the theory... Happiness, as a term, is like *cognition* in the field of cognitive psychology or *learning* within learning theory. These terms just name a field, but they play no role in the theories within the field" (2002, p. 304).

The unease I have expressed about the theoretical usefulness (or lack thereof) of the colloquial concept of happiness ought to be shared by Buddhist practitioners

and Buddhist studies experts. Unless the concept of happiness is being put forward in a theory-specific way, such as Buddhism and Aristotelianism both do (and as could be done for Trappist monks and the local hedonist club), then we might for now be best advised to stop talking about it, or at least to stop using the everyday term *happiness* in philosophical or scientific contexts. Scientists like Seligman are, of course, also entitled (indeed encouraged, if it is possible) to try to draw out and specify the ordinary understanding of the constituents of positive states of mind such as happiness. They will then have regimented, in a precise way or ways, the meanings of happiness according to folk psychology.

The more theory-specific conceptions of virtue, well-being, and flourishing that we have, so much the better will be our understanding of the constituents of happiness. Overlapping consensus on the components of these things will, hopefully, reveal itself. Importantly, differences in conceptions of virtue, well-being, and flourishing will also reveal themselves. The overlaps and the differences can be discussed and debated at the philosophical level from a normative ethical perspective, and the scientists can chime in, wearing philosophical hats if they wish but, equally important, telling us how the brains of practitioners from different traditions light up, which neurochemicals rise and fall, and so on.

Intertheoretical conversation such as I am envisioning will put us in the exciting position of being able (a) to have a better idea of the fine-grained states we are looking for, and (b) to compare different theories in terms of the goods they claim to produce and hopefully do in fact produce.

For those of us who are convinced that Buddhism is a noble path to wisdom, virtue, and happiness^{buddha}, and especially at this time when some scientists claim to be reaching pay dirt in the empirical exploration and confirmation of what many Buddhist practitioners already claim to know, it is necessary to speak with maximal precision about what practices, Buddhist and others, are thought to produce what sorts of specific positive states of mind and body. Overall, this sort of inquiry provides a truly exciting, unique, and heretofore unimagined opportunity for mind-scientists, practitioners, and philosophers from different traditions to join together in a conversation that combines time-tested noble ideals with new-fangled gadgetry to understand ourselves more deeply and live well, better than we do now. On the other hand, we need to beware of overrating brain imagery and what it shows. Some days when I think about brain imaging I am reminded of the following joke. “In the beginning there was nothing and then God said ‘Let there be Light.’ There was still nothing, but you could see it much better.”

NOTES

1. My friend Rob Hogendoorn and I have coined the word *Buddshit*, which is simply self-serving, specifically Buddhist bullshit. Bullshit is universal. Buddhists are just lucky to have their own name for their kind of bullshit.

2. No investigation is required to find many examples of the hype that concerns me here. This week (March 2008) as I was completing this chapter, an article appeared in the *Shambala Sun*, a popular Buddshit magazine, called “Mindfulness of Mind,” by Michael Stroud, which advertises itself as a report on “the growing evidence of meditation’s helpfulness” on health. But it does no such thing. Instead, we get a report on what some people at good universities are studying about possible effects of meditation. There is reason for concern because a comprehensive meta-analysis for the U.S. Department of Health and Human Services (Ospina et al., 2007) of all the literature up to 2002 claims no significant results overall.

3. William James made the study of exemplary individuals, some of them genuine odd-ducks, respectable in his masterpiece *Varieties of Religious Experience: A Study in Human Nature* (1898/1982). *Varieties* is based on the Gifford Lectures, in Edinburgh, Scotland, delivered by James in 1898. But there is an important difference between this work on spirituality and the work I am discussing in eudaimonics. James’s masterpiece emphasized the variety, the heterogeneity of states that all might be called “spiritual.” The work on Buddhists and their brains seeks or is reported by the neuro-journalists as seeking general, univocal, shared features of happy people with happy brains.

4. Deficit studies are terrific ways to figure out how a complex system works, so looking at areas affected by stroke, tumors, and so on, has been very helpful in distinguishing among areas differentially involved in particular types of processing. Damasio’s work (especially 1994) has gotten lots of attention. Phineas Gage is widely taken as an example of someone with a moral deficit, a “moral knockout,” due to a brain deficit in medial frontal cortex. And he is. But the evidence from Phineas and contemporary patients involves gross anatomical problems. You knock out a big area, and you normally get big problems. But the Phineas cases as well as the more recent ones provide little information about the normal subtle communication between different brain areas involved in sociomoral cognition.

5. Actually, classical Theravadan Buddhism devotes considerable attention to the topic of happiness and its causes, although these mundane forms of happiness are always less good than nirvanic release. Theravadan Buddhism also involves fewer lives before nirvanic release than later Mayahana Buddhism, sometimes as few as seven. I thank Donald Lopez for asking me to be clear on this matter even though I am not concerned about delicate matters of Buddhology.

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