



Buddhist Brains: A Case Study in the Reenchantment of the Brain Sciences

Citation

Harrington, Anne. 2008. Buddhist brains: a case study in the reenchantment of the brain sciences. *Philoctetes: The Journal of the Multidisciplinary Study of Imagination* 3.

Published Version

<http://philoctetes.org/journal/>

Permanent link

<http://nrs.harvard.edu/urn-3:HUL.InstRepos:3996840>

Terms of Use

This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Open Access Policy Articles, as set forth at <http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#OAP>

Share Your Story

The Harvard community has made this article openly available. Please share how this access benefits you. [Submit a story](#).

[Accessibility](#)

Buddhist brains: A Case Study in the Reenchantment of the Brain Sciences

Anne Harrington

Does science disenchant the world? Is it an enterprise that drains the world of all inherent meaning and human value? The knowing perspective of modernity tends to assume that the answer is yes. It was, of course, the sociologist Max Weber who offered the classic rendering of the disenchantment thesis in his 1918 lecture at the University of Munich, "Science as a Vocation." :

Who--aside from certain big children who are indeed found in the natural sciences--still believes that the findings of astronomy, biology, physics, or chemistry could teach us anything about the meaning of the world? If there is any such "meaning," along which road could one come upon its tracks? If these natural sciences lead to anything in this way, they are apt to make the belief that there is such a thing as the "meaning" of the universe die out at its very roots. ... Tolstoy has given us the simplest answer, with the words: "*Science is meaningless because it gives no answers to our question, the only question important for us: 'What shall we do and how shall we live?'*" That science does not give an answer to this is indisputable (Weber 1922).

Now, Weber says the conclusion he reaches is indisputable. But he also concedes -- even if in the most disparaging and briefest of ways -- that actually some people, even within the sciences, did dispute his conclusion. One of these, the Gestalt psychologist Wolfgang Köhler was the author of a 1938 book remembered today more for its title than for the details of its argument: *The Place of Values in a World of Facts*. Köhler felt he had reason to believe -- on empirical grounds -- that the disenchanting message people were hearing from the sciences in general, and from the mind and brain sciences in particular, was misplaced. New developments, new findings in the mind and brain sciences of his time, he taught, were showing that people's minds, when they engage with the world, have no choice but to see structure, order, and value everywhere. One might think that

this perception of order and value is just an illusion that the brain imposes onto the world, but he stressed that that was not so. Evidence from physics and biology showed that top-down ordering processes could be found at all levels of reality -- we are “required” to see the values that we see in the world, Köhler said, because on some deep level they are really there . And this insight meant that human beings no longer had to feel like orphans in the universe, because the values that they cherish in their hearts turn out to really exist in the natural world (Köhler 1938).

For us today, living in an age of behavioral genomics, brain science, and pharmacology, the discipline that Köhler had chosen as his wedge into the disenchantment debates might feel particularly ironic. Is it not the case, we think, that Weber’s vision of disenchantment is actually being most vigorously realized today in the brain sciences above all? Is it not the case, we think, that as the brain sciences turn their sights on everything from shyness to schizophrenia, it flattens our subjectivity, deprives us of our sense of moral agency, turns us into the sum of our molecular interactions, or the product of those functions that can be recorded on a brain scans? There is definitely no place for human values, we think, in a brain scan.

The viewpoint of the anthropologist Emily Martin, expressed in the course of a Presidential Keynote Address to the American Ethnological Society in the year 2000, is relatively typical here. “Neuroreductionism,” she said, was on the rise, winning converts and influence at such a rate that she and her colleagues were left blinking (as she put it):

... like a deer in the headlights of a Mack truck, realizing how the new neuroscience is eradicating the social and cultural (by reducing them to more fundamental processes in the brain), how it is gaining recruits from sibling disciplines, and how it relies on a caricature of how anthropology understands social and cultural phenomena. (Martin 2000)

But is this all there is to say? In my own work as an historian of the mind and brain sciences, I've wanted to resist the reflex tendency to assume that the neurological turn in our culture can, taken as a whole, be summarily understood as a wholesale project in the disenchantment of our humanness. I am persuaded that, when it comes time to write the history of the neurological turn of our times, it will be found that things were more complex; that in the fact the brain sciences came in our time to serve as an arena, not just for reductionist, disenchanting work, but also for projects we might consider efforts at re-enchantment and value-seeking. Just as people in Weber's time resisted his dire message, so people in our time resist the doom-saying conclusions of humanists like Emily Martin, and attempt to show that the brain sciences themselves allow for a more optimistic vision.

There are any number of case studies to which I might now turn in order to demonstrate this thesis. I want to offer just one. The simple way to talk about this case study is that it deals with efforts to study the effects of meditation training on the brain functioning of advanced practitioners, especially Tibetan Buddhist monks. My point will be, however, that nothing is really simple here.

My argument here will proceed in stages. I will begin by explaining what the studies say: how they work as science. I will then make the case that we have here to do with something that is not just science, but also a cultural project, a project in value-seeking and value-making, a project in re-enchantment. After that, I aim to say something about how this project came to be: tell a bit of the mostly unknown history behind it. Finally, I want to offer some thoughts on what larger light this project in particular can

cast on the larger efforts of our time to create pockets of enchantment within the brain sciences.

What Do the Studies Say?

The bare scientific claims about the brain-functioning of advanced Buddhist practitioners of meditation proceed in a hierarchy of increasing spectacularity. The first claim is that the brains of such practitioners are more stable, less prone to startle and involuntary emotional reactions than those of ordinary people—when presented with sudden loud noises, for example, their amygdalas are less trigger-happy, and their startle responses are more muted. The second claim is that such people have baseline levels of positive affect, of happiness, that are notably higher than that of ordinary people: fMRI scans of such practitioners show higher than average levels of left prefrontal activity, supposed to be associated with well-being. The third claim is that these practitioners synchronize different elements of experience more effectively than ordinary people; studies have shown striking synchrony in the electrical activation across different part of the brain, that is believed by the researchers to have functional significance .

The fourth and last claim is arguably most interesting of all: it is a claim that the brains of these practitioners are capable of compassion at levels unknown in the West. When nine monks were asked to engage in a particular meditation practice designed to cultivate compassion, the researchers documented brain wave activity unlike anything ever seen in other healthy human subjects: gamma waves (indicative of intense alertness) that were 30 times as strong as that of a student control group (Lutz 2004, Harrington and Zajonc, 2006, Begley 2007).

Now: this last claim in particular begins to mix value and norms up with brain science ways that could interest us here, but one might say that it does not in itself represent an “enchanted” claim: that is to say, a claim that helps us discover some kind of inherent meaning and value in the physical world. Indeed, there is a way in which we might see these studies of Buddhist brains as actually evidence for Emily Martin’s point that the brain sciences are everywhere, turning all aspects of human behavior into the sum of what can be seen on a brain scan. But obviously, I am saying that there is a difference here. What is it?

The Case for Re-enchantment

It is true that we are seeing a lot of efforts in the neurosciences these days to see what the brain sciences might have to say about aspects of human behaviour previously not widely thought to be susceptible to naturalizing explanations: religious experience, morality, aesthetic reactions, economic decision making. These other projects often bring a certain confidence, even bravado to their work that is likely part of what so alarms people like Martin (we can find the God spot in the brain! We can relate moral behaviors to prefrontal lobe functioning!). The Buddhist brains project feels different from those other projects for exactly the way it is characterized, not by bravado, but by a kind of self-conscious humility. In this project, scientists come, not just to figure things out, but to be improved by an encounter Tibetan Buddhism, an ancient Eastern tradition that is believed by these scientists to be, not only morally exemplary, but also deeply wise about the ways of the mind in its own way.

And having made this point, we need now to put another word on the table: “Orientalism” (Said 1975). This refers to the tendency to see the East as our imagined

Other and opposite, to turn it into the ancient balm for our modernist woes, the mystical antidote to our rationalistic malaise. In vision of an enchanted encounter between ancient wisdom and brain science, the Dalai Lama functions as a critical – perhaps the most critical – character. He is a close personal friend of one of the key scientists behind the monk studies, Richie Davidson. It is known that he has personally blessed all the brain studies of monks, and that he has a strong personal interest in science (he is fond of saying that, had he not become the Dalai Lama, he would have liked to have been an engineer [Dalai Lama 2005]). Since the late 1990s, he has become a favored guest of honor at various high-profile meetings to discuss the effects of meditation on the brain. Most remarkably of all, on November 12, 2005, the Dalai Lama addressed some 14,000 neuroscientists at the annual meeting of the Society of Neuroscience on the theme “the neuroscience of meditation” (Gerland 2006).

Why is he so visible in this enterprise? Why so sought out? The most important answer is that he functions to amplify the larger cultural message that this is not just brain science as usual, but something deeper, finer, and more daring. The Dalai Lama functions in this studies both as the embodiment of an ancient tradition, and a living example of its great benefits. Certainly, he often has very interesting things to say about the studies, but even when he is largely silent at these meetings, just listening, his presence enlarges the meaning of everything that is said.

How Did We Get Here?

All this has happened, not because it was inevitable, but because of a little-known history that I want now to unpack, at least briefly and partially. Knowing a bit of history

is helpful, because it will help us notice some instabilities and further complexities at the heart of this enterprise that we might otherwise fail to see.

For our purposes, we can begin with a cardiologist named Herbert Benson, who in the early 1970s, had an encounter with the counter-culture . Benson was interested in stress and in particular in the possibility that there might be ways to lower blood pressure using biofeedback or conditioning techniques. A group of young people who had learned Transcendental Meditation from the Maharishi Mahesh Yogi told him to stop studying monkeys and start studying them. Through simple meditative techniques, they could lower their blood pressure and much more besides.

Benson agreed to study them, and concluded that they were broadly right. The practice of TM actually seemed to result in a systematic reversal of the stress response; he called it the “relaxation response.” But then he went on to say that these findings bore in no way on the truth or relevance of any counterculture popular beliefs in the superiority of Asian spiritual practices. It was simply a physiological finding, one that he endeavored to thoroughly dissociate from its counterculture and Asian associations, and make a completely practical and straightforward – disenchanted – affair, a health intervention like jogging or taking vitamins. And he had considerable success in promoting this disenchanted vision of meditation as a stress-buster (Benson 1975, Harrington 2008).

In 1979, however, Benson was introduced to the Dalai Lama of Tibet, who was taking his first trip to the United States. The visa for that trip had been reluctantly granted by the U.S. government - involved in those year in delicate diplomacy with China -- on the condition that the Dalai Lama agree that he was visiting, not as an exiled head of

state, but simply as a religious leader on a spiritual visit. There must be no discussion of the Chinese occupation, he was told, or anything else politically sensitive (Dart, 1979).

He was as good as his word. When reporters asked him about China or anything that might be construed as political, he responded with one or another good-natured deflection, and went on to talk about inter-religious dialogue, ethics, baseball, and other safe themes. When he had the chance, he also talked about science. For example, at a meeting of scholars held in Texas on his behalf, he told them “I’d like to listen to your experiences. I’d like to hear what is the latest in research into the relations between consciousness and matter, and how they affect each other” (Vecsey, 1979)

In fact, the scholars in Texas did not have much to say about those matters, and so the conversation there turned in other directions. Two weeks later, however, the Dalai Lama came to Harvard University for a three-day visit, and one of the people he met there was the cardiologist Herbert Benson, who did have things to say on this topic. Benson told the Dalai Lama all about how he had been studying the physiology of meditation. Then he admitted that he had a request of his own. He was interested, he said, in taking his work on the physiology of meditation to the next stage. He knew that there was an esoteric Tibetan meditative practice called g’T’ummo or “inner heat” meditation, during which advanced practitioners were said to be able to regulate their thermal production to stay warm even in frigid weather conditions and without warm clothing. If this could truly be done, it would be of great physiological and medical interest. Would the Dalai Lama assist him, Benson asked, in the task of persuading some appropriate Tibetan monks to participate in some physiological experiments?

As Benson always later publicly recalled the conversation, the Dalai Lama's response was immediate and straightforward at the meeting: "His Holiness agreed to help me." But documents in the Benson archives, housed in Harvard's Medical School, reveal that there was more politics and strategy than that behind the radical decision to say yes. The Dalai Lama was initially inclined to say no; the monks did what they did for religious reasons and this would risk disturbing them. Then he suddenly thought again, and said: "Still, our friends to the East might be impressed with a Western explanation of what we are doing." In other words, this might impress the Chinese, who spent a great deal of energy on their side trivializing all of Tibetan religious practices as empty superstition with no value. It was at this point that he turned back to Benson and said yes. The Dalai Lama was not allowed to be overtly political during this trip to the United States, but he was not going to turn down an opportunity to assist the Tibetan cause and change the dynamic of Sino-Tibetan relations if one simply opened up for him (Benson 1979, Paine 2004). Besides, as he later repeatedly noted, there might well be benefit for many in the West from this work, if they could be persuaded through science to take meditation seriously.

What is important about this event is not so much the controversial studies on monks who practiced *g'T'ummo*, that Benson then did carry out (Benson 1982, Cromie 2002). What is important is the fact that the Dalai Lama, for partially political reasons, had decided to open a door between brain science and the most esoteric and traditionally private practices of the Tibetan Buddhist spiritual tradition. And that decision in turn set the stage for the emergence of the specific project in reenchanting brain science that we're tracking here.

Here's why. Even though Benson brought a fundamentally disenchanting, or normalizing sensibility to his interest in the brain basis of meditation— including *g'T'ummo* meditation -- others who walked through that door after him did not necessarily share his cultural values. In the early 1990s, the psychologist Richard Davidson was introduced to the Dalai Lama in the course of participating in a meeting organized in Dharalamsa, India on the “health benefits of meditation” (Goleman, 2003). As a graduate student at Harvard, Richie had been deeply involved in the counterculture turn to the East in the 1970s. In the intervening years, he had gotten a job in a first-ranked university, become respected by mainstream psychology, and turned his research interest in other directions.

But the meeting with the Dalai Lama in the early 1990s gave him an opportunity to reconnect to his youthful passion. At that meeting, people asked what was known about the physiological basis and effects of advanced meditation. The answer, predictably, was “very little.” As the conversation continued, both in the meeting and informally over meals, a new idea emerged. Perhaps, with the advent of new, more portable instruments for measuring cognitive and brain function, it was now possible to do the kinds of studies of which people previously had only dreamed: to study the effects of long-term and intensive meditative practice on the brains and cognitive functioning of senior monks from the Tibetan monastic community

Obviously, though, this would only be possible with the approval of the Dalai Lama. What would he think? In a different time, with a different Dalai Lama, in a different political culture, the answer might well have been a firm no. But it wasn't. Just as he had said yes to Benson, the Dalai Lama said yes to this group. They could study the

monks. In fact, so enthusiastic was the Dalai Lama about the idea that he actually went to the trouble of personally asking the Council for Religious and Cultural Affairs of the Tibetan government-in-exile to identify the most experienced senior monks living in retreat in the mountains above Dharamsala, so he could provide that information to the scientists who would do the research

The first effort to do this largely failed – the monks meditating in huts above Dharamsala were both suspicious of what was being asked of them (they feared the equipment might hurt them), and also largely failed to see its point. If a person wants to understand meditation, that person should learn to meditate, they thought (see Houshmand et al. 2002). It was only when a senior Tibetan monk named Matthieu Ricard, got involved, that the effort turned a corner. Matthieu is a senior Tibetan monk living in Nepal, but he is French-born and, before he entered monastic life thirty years earlier, he was a graduate student in biochemistry in Paris, working under the Nobel laureate Francois Jacob. He didn't fear science, he was willing to volunteer his own brain, and within a year, with the blessing of the Dalai Lama, he was able to persuade other monks from Nepal to come to Richie's lab and volunteer their own brains.

Now: all this still might not have unfolded the way it did had the pump not been primed in the way it had. The fact is that the 1990s was, not just the decade of the brain; it was also the decade of America's love affair with Tibet. Having won the Nobel Peace Prize in 1989 for his non-violent efforts to negotiate the Tibetan cause with the Chinese government, the Dalai Lama began traveling ever more frequently to the West. As he did, eloquent followers like the Columbia University Professor of Tibetan Studies Robert Thurman were successful in framing a message about Tibetan culture that emphasized its

relevance for the malaise of Western modern life. Tibetan culture, Thurman taught, is not just for Tibetans, but for everyone, a global resource. It offers a path to a rich and value-filled life that, in contrast to many of our home-grown religious traditions, does not set itself in opposition to science and rationality, but is wholly compatible with those things. Indeed, Thurman said, Tibetan Buddhism could be considered a kind of science in its own right; a science of the mind, an inner science, from which we in the West, focused so much on the results of our external or outer science, have much to learn. As Thurman put it: *"I believe their culture contains an inner science particularly relevant to the difficult time in which we live. My desire is to share some of the profound hope for our future that they have shared with me"* (Thurman, n.d. cited Thurman, 2007)

What Should We Think?

It is that sense of hope in a difficult time that animates much of the current interest in Buddhist brains -- that gives the project much of its enchanted quality. But that said, this is a cultural project in re-enchantment that is inherently unstable. There are two reasons for this. The first lies in the fact that there is a basic tension between the mainstreaming scientific goals of this enterprise and its larger cultural goals. The happiness of enlightened lifestyles is still translated into specific enhanced left prefrontal activation; compassionate states of consciousness are still translated into the language of gamma waves. In this sense, it is not the logic of the science itself, but more the unique cast of characters involved that give this project its sense of being something more than business-as-usual. The visuals that accompany the news reports of this enterprise give this fact away. Again and again, in this endeavor, visual symbols of opposing values -- ancient wisdom and modern science, inner and outer, East and West -- are juxtaposed to

suggest a union-in-the-making that will be different and finer than the sum of their parts. The Dalai Lama in electrodes. The Tibetan monk Matthieu Ricard, wearing his flowing monk robes, in a scanning machine.

And this point in turn takes me to my next point: where the Dalai Lama really fits into this larger project. In the aesthetic of this enterprise, he is the embodiment of ancient Eastern wisdom engaging with modern science, but in fact that role fits him only partially. Yes, he is very interested in science, but it is unclear that his goal is to “enchant” it. On the contrary, he brings a thoroughly practical and even modernist attitude to his interest in science, one that is clearly tempered by his sense that, for Tibetan Buddhism to survive in the modern world, both in exile and in Chinese-occupied Tibet, it needs to modernize.

Earlier in this essay, I mentioned the 2005 meeting of the Society of Neuroscience, where the Dalai Lama spoke on the “neuroscience of meditation.” In the course of his remarks, he suddenly came out with quite a remarkable statement: Having affirmed his support for research into the brain bases of meditative practice, he went on to say that, in his view, meditation was nothing more than a technology for rewiring or reprogramming the brain in more productive directions. There might well be other technologies that could be equally beneficial: “If it was possible,” he said there, “to become free of negative emotions by a riskless implementation of an electrode – without impairing intelligence and the critical mind – I would be the first patient.”

It was a distinctly modernist, even disenchanting suggestion, and later I asked some of my colleagues later what they thought about it. I was struck by their answer: he

hadn't meant it, they said; it was just a joke. I don't know if it was or it wasn't, but this reaction seemed significant. .

The history here is not over, so a final appraisal of this effort is not yet possible. Regardless, though, we should keep an eye on it. We should do so, not only because the science is interesting. We should do so because it is in a position to teach us important things about the real, complex cultural effects that the brain sciences are having on our sense of human values. One important thing they may teach us is this: that, if it is the case that we as a society have decided to grant the brain sciences a hugely expanded realm of authority to pronounce on our natures, then it should not surprise us if we should also see (just as we saw in Weber's time) are some pre-emptive attempts to ensure that the idiom and practices of the brain sciences do not in fact undermine too drastically human values that we cherish. It may be okay for us to be brains first and foremost, if we believe that being so will still allow room for more of what we care about.

References

Begley, Sharon, *Train Your Mind, Change your Brain*. New York: Ballantine Books, 2007

Benson, Herbert, *The Relaxation Response*. [1975.] New York: Avon Books, 1976.

----- (1979) Private notes written, 10/18/79, labeled: 2:30–3:15 meeting at Dana Palmer House at Harvard, with Herbert Benson, HHDL, Robert Allen, Henry Meadow, Ellen Epstein [photography], Mark Epstein, Joan Borysenko, Myrin Borysenko. In “Dalai Lama & Dr. Yeshe Donden's Visit, 1979–1987, n.d.,” MG. 898, Herbert Benson Archives, Countway Medical School

----- J. W. Lehmann, M. S. Malhotra, R. F. Goldman, et al. “Body Temperature Changes during the Practice of g Tum-mo Yoga (Matters Arising).” *Nature* 298, no. 587 (1982): 402

Cromie, William J. "Meditation Changes Temperatures: Mind Controls Body in Extreme Experiments." *Harvard University Gazette*, April 18, 2002. Available online at www.hno.harvard.edu/gazette/2002/04.18/09-tummo.html

Dart, John, "Tibet's Exiled Dalai Lama to Visit U.S. This Fall," *Los Angeles Times* (January 21, 1979).

Gerland, John, "Buddha on the Brain: The hot new frontier of neuroscience: meditation! (Just ask the Dalai Lama.)" *Wired* V. 14, Issue 2 (Feb. 2006): at <http://www.wired.com/wired/archive/14.02/dalai.html>

Goleman, Daniel, ed. *Healing Emotions: Conversations with the Dalai Lama on Mindfulness, Emotions, and Health*. Boston: Shambhala Publications, 2003

Harrington, Anne, *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler*. Princeton, NJ: Princeton University Press, 1996

----- and Arthur Zajonc, eds. *The Dalai Lama at MIT*, ed. with Arthur Zajonc. Cambridge, MA: Harvard University Press, 2006.

----- *The Cure within: A History of Mind-Body Medicine*. New York: W.W. Norton, 2008.

Houshmand, Zara, Anne Harrington, Clifford Saron, and Richard J. Davidson, "Training the Mind: First Steps in a Cross-Cultural Collaboration in Neuroscientific Research," in *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature*, ed. R. J. Davidson and A. Harrington (New York: Oxford University Press, 2002), pp. 3–17.

Köhler, Wolfgang, *The place of value in a world of facts*. New York: Liveright Pubs, 1938.

Lutz, Antoine, Lawrence L. Greischar, Nancy B. Rawlings, Matthieu Ricard, and Richard J. Davidson. "Long-term Meditators Self-induce High-amplitude Gamma Synchrony during Mental Practice." *Proceedings of the National Academy of Sciences* 101 (November 16, 2004): 16369–73.

Martin, Emily, "mind-body problems". AES Presidential Address. *American Ethnologist* (2000) 27(3):569-590

Kamenetz, Rodger, "Robert Thurman Doesn't Look Buddhist," *New York Times* (May 5, 1996)

Paine, Jeffery. *Re-enchantment: Tibetan Buddhism Comes to the West*. New York: W. W. Norton, 2004

Said, Edward, *Orientalism*. New York: Pantheon, 1978.

Thurman, Robert, "Training the Mind: From Stress to Bliss," [Poster for a public lecture at MIT, April 26, 2007 at:

<http://prajnopaya.gigshowcase.com/GigPage.aspx?PageID=1081>

Vecsey, George, "Dalai Lama, in Texas, Hears Debate among Learned Men," *New York Times*, (September 20, 1979).

Weber, Max (1919) Science as a Vocation [Wissenschaft als Beruf], in *From Max Weber: Essays in Sociology*, tr. & ed. H.H. Gerth & H. Wright Mills. New York: Oxford University Press, 1946, pp. 129-156.