

Meditation, Buddhism, and Science

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Introduction

FROM COLONIALISM TO BRAINSCANS: MODERN TRANSFORMATIONS OF BUDDHIST MEDITATION

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“OH MINDFULNESS MEDITATION, how do we love thee? Let us count the ways.” So begins a 2013 article in the “Lifestyle” section of the *Huffington Post*, entitled “Mindfulness Meditation Benefits: 20 Reasons Why It’s Good for Your Mental and Physical Health.” The article then enumerates the benefits of meditation practice, some as specific as helping with weight loss, boosting one’s immune system, raising students’ grades, and making music sound better, and others as vague as: “It lets us get to know our true selves. . . . It changes the brain in a protective way. . . . It makes you a better person” (Chan 2013). All of the claims contain links to other articles citing scientific studies documenting the benefits.

Such scientific studies of Buddhist and Buddhist-derived meditation and mindfulness practices have skyrocketed in the last fifteen years or so.¹ The number of publications on “mindfulness” in scientific journals has increased from a total of 13 in the entire decade of the 1980s to 92 in the

1. Practices that could be called “meditation” exist in numerous religious traditions, but the ones that have gained widespread popular attention in recent years are primarily derived from Buddhist traditions (see later in this chapter for the specifics of the developments of their key characteristics). Also notable are popular practices such as Transcendental Meditation (TM) and meditation associated with popular yoga practices. These are derived from Hindu traditions. For the purposes of this book, we focus on meditation and mindfulness practices derived from Buddhist traditions.

1990s to 674 in 2015 alone.² Such articles have presented evidence that various meditative practices reduce stress, heighten perceptual sensitivity, increase attentional stability, enable better regulation of emotions and anxiety, and mitigate symptoms of a number of physical ailments. Researchers have studied meditation's effects on immune system functioning, central nervous system activity, and specific neurological structures. Functional magnetic resonance imaging (fMRI) studies, which map blood flow to various regions of the brain, indicating heightened activity, have become popular among researchers and have been widely reported in popular media. Dozens of subjects have been inserted into these devices to meditate while researchers track the activity of different regions of the brain. One fMRI study suggests that regular mindfulness meditation decreases the activity of the amygdala—the part of the brain responsible for the “fight or flight” response—and increases mass in the prefrontal cortex, associated with higher-order brain functions such as decision-making and concentration. Others focus on neuroplasticity, the brain's ability to forge new neural connections in response to particular activities. Such research is carried out at the most prestigious universities in the United States—Harvard, the University of California, Los Angeles (UCLA), Stanford, Yale, and Brown, among others—and, increasingly, universities and institutions in Europe. Studies have been funded by the National Institutes of Health, the National Science Foundation, the Department of Defense, and many other public and private funding entities, and the results have been published in prestigious scientific journals.³

The popular media have reported far and wide on these studies—sometimes, as the *Huffington Post* article illustrates, with a near-breathless abandon. These reports have in turn led to the growth of a new cottage industry of popular books and articles touting the efficacy of Buddhist and Buddhist-derived meditation for treating a wide variety of physical and mental health conditions and for doing a nearly limitless variety of things more calmly and effectively. Articles in dozens of popular magazines in the last decade promote mindfulness meditation as a way of helping one decrease stress, manage pain, lower blood pressure, function better at work, and treat the family better

2. “AMRA Resources and Services.” <https://goamra.org/resources/> (accessed May, 2017).

3. Some examples of such studies and a few books and articles summarizing some of this research include Davidson et al. (2003); Farb, Anderson, and Segal (2012); Grant et al. (2010); Lazar et al. (2005); Lutz, Dunne, and Davidson (2007); MacLean et al. (2010); Ryan, Creswell, and Brown (2015); Rubia (2009); Shapiro and Carson (2009); Wallace (2007).

at home. Books have proliferated on mindful parenting, investing, cooking, horsemanship, sex (as a chapter in this volume will explore in more detail), and many other activities that, it is claimed, one can do better with the calm and focus that mindfulness brings. Meditation has also entered the world of business: Google has an in-house mindfulness program called “Search Inside Yourself” and, as the tagline of a 2013 article in *Wired* magazine put it, “Meditation and mindfulness are the new rage in Silicon Valley. And it’s not just about inner peace—it’s about getting ahead.”⁴ A rapidly increasing number of major corporations, including General Mills, Target, Sun Life Financial, Ford Motor Company, Genentech, and Kaiser Permanente, now have mindfulness programs, and business schools, including Harvard Business School and the Claremont Graduate University, are teaching students to meditate (Hunter 2013).

This rather sudden penetration of meditation techniques into secular spheres of activity is inseparable from the framing of these ancient practices in scientific language and the attempts to quantify their benefits. As the preceding examples attest, the thousands of clinical studies conducted in recent years have asked questions about benefits of interest to modern people in developed societies, such as decreasing stress, increasing productivity, and ameliorating particular physical and psychological disorders. Funding often depends on producing measurable “outcomes,” and many of these scientific studies understandably focus on facets of meditation that are amenable to empirical, quantifiable research—the production of stress hormones, improvement in immune function, change in metabolic rate, and alteration of brain functioning that can be observed in new brain-imaging technologies. The methods and results of such studies have helped to define meditation’s purposes and effects according to not only current scientific practices but also the broader cultural characteristics of the populations that are interested—largely educated middle- and upper-class professionals, mostly in Europe and North America, but increasingly across the globe. Most of these people are not Buddhists, and in many contexts the practices are stripped of any language hinting at their Buddhist origins or their original goals of attaining enlightenment and escaping repeated rebirth in this world. While the vast majority of Buddhists who have meditated throughout history have been monastics attempting to transcend the world, these new iterations of meditation are quite “this-worldly.” In many cases, practice becomes a means to alleviate

4. “Enlightenment Engineer,” *Wired Magazine*, June 18, 2013. <http://www.wired.com/business/2013/06/meditation-mindfulness-silicon-valley/all> (accessed September 1, 2014).

psychological ailments, accomplish one's tasks efficiently, or find relief from the general anxiety of modern life and work.

This recasting of meditation in scientific, pragmatic terms has come to constitute the most prominent discourse on meditation in recent years, and the very fact that the questions are framed in terms of effectiveness (construed in pragmatic, pro-social terms), clinical applications, and neurological activity indicates that this is a unique and momentous chapter in the well over two-millennia history of meditative practices originating in India. The attention such studies have garnered promises (or threatens, depending on your point of view) to define the very conception of meditation in both the current popular imagination and certain sectors of the academy. Yet these developments are not simply a matter of framing, language, and representation. In the disembedding of meditation from the monastery to the hospital, the health club, the company multipurpose room, and the military training center—as well as countless individuals' bedrooms and meditation nooks—the practices themselves change, sometimes considerably, in order to fit into these new cultural, social, and institutional contexts. So we are witnessing the emergence of not only an entirely new discourse on Buddhist-inspired meditation, but also a significant transformation of the practices. The purpose of the chapters that follow is not to criticize these changes as deviations from any ideal Buddhist understanding of meditation. Rather, they seek to understand these new contexts and their presuppositions by uncovering and exploring the cultural, historical, philosophical, and political implications of these changes in specific situations.

A Genealogy of Mindfulness

If we want to identify the start of modern mass meditation, we could begin with a single day: March 25, 1883. On that day, the whole northern quarter of the Burmese capital of Mandalay burned to the ground. A young monk named Ñāṇadhaja, later to be called Ledi Sayadaw (1846–1923), watched the conflagration reduce his monastery and his scholarly life's work to ashes. The fire, enabled if not directly caused by the destabilizing policies and pressures of the British just over the border to the south, convinced him that Buddhism teetered on the edge of oblivion. Not long after, he took off for the wilds of the jungle and began to meditate—then a fairly rare practice. When the British took over all of Burma just a couple of years later, he saw the prospect of oblivion only grow larger and so began to promote meditation for all, even to the laity—even to women—as a means to preserve Buddhism. This was the start

of the mass practice of meditation among the laity—previously the domain of a minority of specialist monks. Meditation for large groups of lay people began in Burma before anywhere else in the world, then spread to other countries and eventually around the world.

Thus, we begin with the history of insight or mindfulness practice in Theravāda Buddhism. By no means has it been the only source for the current widespread practice of meditation. As we note later in this chapter, Japanese Zen and, more recently, Tibetan Buddhism have had great influence. But we start with the fire that kindled the insight meditation movement because, as the *Huffington Post* paean to mindfulness at the start of this Introduction shows plainly, it has come to be the most secularized, standardized, and widely practiced method, and this trend has allowed it to dominate the scientific study of meditation in recent times—and even to shape the presumptions about the natures and goals of techniques in other traditions.

Colonial policy and practice within Burma shaped the nature of insight meditation and enabled its spread. The disestablishment of state support for the monkhood (and the perception among Burmese of its subsequent deterioration), the dismantling of traditional structures of governance (above all, the exile of the king), economic rationalization along foreign lines, rapid technological transformation, the sudden growth of print capitalism, and the apparent colonial support for Christianity and Christian missionary activity all deepened the tremendous anxiety over the well-being of Buddhism and promoted militant and innovative responses, including meditation. Ledi Sayadaw was a pioneer, but his efforts were soon matched by those of others who sought to make meditative practice a feasible undertaking for all sorts of people who had never considered meditation a reasonable undertaking before. Innovative teachers in nineteenth- and early twentieth-century Burma made meditation a plausible endeavor by simplifying and standardizing techniques, and using new mass printing capabilities to spread them widely.⁵

The most general term for meditation, in both Sanskrit and the Southeast Asian Theravāda Buddhist language of Pali, is *bhāvanā*. This term means, most basically, “cultivation,” and it encompasses a wide variety of techniques and objects of focus. Generally, in all Buddhist systems of meditation, the methods fall within two broad categories, those aimed at serenity or calming, called *śamatha* (*samatha* in Pali), and those aimed at liberative insight, *vipāśyanā* (*vipassanā* in Pali). The meditator typically undertakes calming

5. For a detailed history of the growth of mass meditation in Burma and Ledi Sayadaw’s role, see Braun (2013).

practices initially, in order to develop concentration (*samādhi*) that can then be used to observe reality at a heightened level of focus and so gain insight into its true nature—namely, that it is impermanent (*anitya/anicca*), devoid of any lasting satisfaction (*duḥkha/dukkha*), and without essence (*anātman/anattā*). To realize this fully is to rid oneself of greed, hatred, and delusion, and so attain awakening (*nirvāṇa/nibbāna*).

Traditionally, the effort needed to develop deep concentration in order to gain insight into the subtlest levels of reality was understood to require extended periods of retreat from the regular world, and thus such practice was not considered appropriate for those living the mundane lives of laypeople. In addition, up to the modern period many Buddhists within the Theravāda ambit believed that real meditative accomplishment was not possible in such a degenerate time. For these reasons, few monks and even fewer laypeople within the Theravāda sphere of influence meditated prior to the sociocultural developments being sketched here.⁶ The direct and indirect pressures of colonialism caused the change. Following Ledi Sayadaw, the Mingun (1868–1955) and Mahasi (1904–1982) Sayadaws, as well as lay innovators such as the layman U Ba Khin (1899–1971), argued that certain insight techniques that required only a minimal level of concentration (a level called “momentary concentration” or *khaṇikasamādhi*) could be used to develop insight.⁷ Now, one could live a regular life in the world and still meditate. As Ledi Sayadaw put it, repurposing a statement of the Buddha, “One can be a monk in the world, even though a regular lay person.”⁸

This streamlined meditation suited to laypeople’s lives spread to Western cultures and joined forces with the growing popularity of meditation practices stemming from other Buddhist traditions. Above all, in the United States there was the increasing influence of Zen beginning in the late nineteenth century, received in often romanticized and Orientalist ways. From the World Parliament of Religions to the “Zen boom” of the 1950s, Zen practice—varied but often with innovative divergences from traditional Zen in Japan—shaped

6. This is certainly not to say that no one meditated prior to modern times, but such practice was limited and not widely promoted as a necessity for monks, let alone laypeople. On the frequency of practice, see Bechert (1988 [1966], 1–50); Carrithers (1983, 223); Cousins (1996, esp. 41); Dreyfus (2003, 168–69); Houtman (1990, esp. part 1; 1999, 8, 203); Jordt (2007, 20–23); Lopez (2002, xxviii–xxix); and Sharf (1995a, 105).

7. The canonical and paracanonical texts accepted the possibility of insight practice without the attainment of deep concentrative states (*dhyāna/jhāna*), but the standard textual model was of deep concentration prior to insight practice (Cousins 1984, 1996).

8. In verse 142 of the *Dhammapada* the Buddha says that even a layperson can be called a Brahmin or a monk if he is chaste, self-controlled, and dedicated to harmlessness.

meditative sensibilities among American practitioners (Seager 2009). Zen, as the initial bridge to the psychologization of meditative practice and a flourishing transplanted tradition in its own right (both factors discussed later), helped to lay the basis for the mutual and mutually supportive success of Theravāda insight practice's reception in the 1960s.

The Scientific Discovery of Buddhism

Colonialism, Orientalism, and all the forces and influences they brought in train, however, were not just irritants that spurred indigenous innovations. What Henri de Lubac called “the scientific discovery” of Buddhism by Western scholars in the first half of the nineteenth century actually did far more than reveal a Buddhism simply waiting for its debut on the world stage (Lopez 2012, 40). Working principally with Theravāda Pali texts, believed to be the oldest and most authentic, such scholars conceived of what they called “original,” “primitive,” “early,” or even “pure Buddhism.” Whatever the name, it was understood to have existed only in India, where it had died out, but now was safely under the control of Western scholars who had mastered the necessary classical languages to retrieve it (Almond 1988, 7). Particular cultural manifestations of Buddhism, whether in Japan, Tibet, Thailand, or elsewhere, were understood to be, to a greater or lesser degree, deviations from the universal essence of this textual Buddhism. Thus, Buddhism as a stand-alone entity that was viewed as inherently transcultural and translocal—a “world religion”—was born in Europe (Almond 1988, 4; Lopez 1995a, 2; Masuzawa 2005, Chapter 4). This free-floating Buddhism has allowed interested parties to more easily appropriate its practices or teachings in the West, given that it was already seen as something detachable from any particular cultural context. At the same time, scholarly study of the Buddha (first European, then also American and Japanese) reshaped his image into a resolutely historical, humanistic, and rational figure who had a clear biography, promoted social reform (especially of the caste system), and rejected mindless ritual (Snodgrass 2009). This view erased much of the ancient cosmology from the Buddha and Buddhism, leaving a system of self-transformation more exclusively for the here and now that further elevated the role of meditation.

While there was a complex interplay of influence between the Western scholar and the Asian Buddhist in which each shaped the other's views (Hallisey 1995, 33), there can be no doubt that the power of colonialism has meant that Buddhists began on the defensive. Victorian-era assessments of Buddhism varied widely, of course, but Buddhists were often attacked by

Christian missionaries, whose criticisms took on particular weight within the context of colonial subjugation. On the critical side of what Philip Almond (1988) has called “a polarity of assimilation and rejection” of Buddhism by Westerners (132), arguments against Buddhism’s rationality and compatibility with science were a preeminent means of attack. It would not go too far to say that Christianity, often riding on the back of colonialism, was the means through which Buddhists first grappled with science (Lopez 2012, 10). For instance, the great debate at Pānadurē in Sri Lanka in 1871 between a Buddhist monk and a Christian missionary before an audience of some five thousand hinged on the issue of which religion was truly in accord with a scientific understanding of the universe (Lopez 2002, vii; 2008, 41–46).

The Sri Lankan Buddhists at that debate considered themselves the winners, but that hardly settled the matter. Arguments about the relationship between science and Buddhism would take place in many different cultures and among diverse groups throughout Asia and in the West. In the interests of space, we can only pass over some representative figures quickly here, but the Sri Lankan reformer Anagarika Dharmapāla (1864–1933) (who was in the audience at Pānadurē), Burmese monks such as Ledi Sayadaw, the Chinese figures Yang Wenhui (1837–1911) and Taixu (1890–1947), the Japanese Buddhists Shaku Sōen (1859–1919) and D. T. Suzuki (1870–1966), as well as Westerners such as the theosophists Henry Steel Olcott (1832–1907) and Helena Blavatsky (1831–1891), all helped to support the claim, often made in response to Christian critiques, that Buddhism was the religious system—or simply the philosophical and ethical system—most in tune with science.

Buddhist Meditation in the West

The thinkers listed in the preceding section (and many more besides) reflect widely different varieties of Buddhism—even, one might say, entirely different Buddhisms. But a general conviction of the consonance of Buddhism and science prevails among them all. Arguments about science and Buddhism were largely post facto efforts, however, until the practice of meditation arrived in the West. The focus on the scientific study of meditation—rather than retrospective correlation of two entities seen as discrete and separate—has largely taken place in the West and especially in the United States.

Besides mindfulness or insight meditation, Zen and Tibetan Buddhist practices have also come to play an important part in the clinical study of meditation in America. The prominence of these traditions reflects the history of the introduction of Buddhism to the United States. Both Dharmapāla

and Shaku Sōen attended the World Parliament of Religions in 1893, helping secure a foothold for their traditions of Buddhism (Seager 2009; Snodgrass 2003). But the discourse of Buddhism and science—and especially the scientific study of meditation—would not develop much further until about half a century later.⁹ In the 1950s, some American and Japanese thinkers, drawing inspiration from the work of D. T. Suzuki, sought to develop psychoanalysis in dialogue with Zen.¹⁰ At a time when Freudian psychoanalysis was at its zenith in American culture, Erich Fromm, for example, argued that Zen meditation was a way of rendering conscious the entire contents of the unconscious.¹¹ Zen would grow in popularity and would profoundly influence American culture in subsequent decades, though it did not develop such secularized and psychologized versions as insight meditation did.¹²

It was the particular development of insight meditation in the United States that facilitated its detachment from specific cultural traditions and gravitation toward secularization. In the 1960s, Theravāda meditative techniques were brought to popular consciousness by Westerners who traveled to Asia and brought back the teachings. Joseph Goldstein, Sharon Salzberg, and Jack Kornfield are the most well-known seekers of the baby-boom generation who imported mindfulness techniques and established the institutional structures, preeminently the Insight Meditation Society (IMS) in 1975, that allowed the mass practices first formulated in Burma by Ledi Sayadaw,

9. On changing understandings of meditative practice in the West, particularly in Britain, that impeded its spread until after World War II, such as its association with the occult, see Federman (2015).

10. Carl Jung stands as the founding figure whose attempts to relate Buddhism to psychotherapeutic approaches from the perspective of depth psychology first legitimated Buddhism as a resource for Western psychological uses. He wrote, for instance, introductions to both D. T. Suzuki's *Introduction to Zen Buddhism* and to Evan-Wentz's version of the *Tibetan Book of the Dead* (McMahan 2008, 53; see also Parsons 2009, esp. fn. 1, p. 179). Parsons notes, speaking of the 1950s and 1960s, that "the dialogue between psychoanalysis and Buddhism of this period was a full-fledged Zen affair" (Parsons 2009, 190). On Suzuki and psychoanalysis, see also Harrington and Dunne (2015, 622–25).

11. See Fromm (1963), McMahan (2008, 192), and Part I of Molino (1998).

12. Harrington and Dunne (2015) argue that interest in aligning psychology and Buddhism declined in the 1960s because some popularizers of Buddhism, such as Alan Watts, sought to link Zen with countercultural projects that were "more political and edgy than before" (625), putting off mainstream psychologists. Parsons (2009) suggests, however, that Karen Horney's use of Zen as a means to acceptance of the self—in other words, a change in relating to the self (i.e., without reaction) rather than changing the self—set the stage for the emphasis on non-judgmental acceptance of experience by therapists shaped by mindfulness rooted in insight practice (193).

Mahasi Sayadaw, and others to spread widely among laypeople in the United States (see Cadge 2005, Chapter 2).

These insight teachers by no means rejected Buddhism or denied their links to Buddhist teachers. On the contrary, they have celebrated the connections to Buddhist monks such as Mahasi Sayadaw, who visited the Insight Meditation Society in 1979. But the teachers of IMS have rejected any official lineal affiliation. While they look to the Theravāda tradition for teachings and techniques, the organization exists apart from any Buddhist tradition. Teachers and practitioners often interpret the practices in psychotherapeutic terms, sometimes in ways that fit within overarching Buddhist teachings, but not always. The dialogue is ongoing.¹³

Meditation's Reformulations

Psychotherapy has been what many call the “dharma door” or “dharma gate” for Buddhism to enter popular American consciousness and, especially, for insight practice to gain great popularity (McMahan 2008, 52; Metcalf 2002). But such a metaphor belies what is not simply a passageway but a process of transformation. Insight meditation has come to be reconceptualized within the psychotherapeutic context. Frequently, those operating within this context have promoted a radically simplified practice understood as “bare attention.”¹⁴ Its definition by Bishop et al. has become standard in clinical trials: “a kind of nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is” (Bishop et al. 2004, 232). Ongoing interest in the development of mindfulness meditation has meant that many practitioners have continued to draw on scholarly studies of Buddhism to revise and complicate their teachings about its nature, whether operating from the Buddhist or the psychological side (and such a distinction is only heuristic, as people

13. Many well-known insight teachers are also therapists, such as Jack Kornfield and Mark Epstein. See, for instance, Kornfield (2009) and Epstein (1995). On the continuing dialogue between psychology and Buddhism, see Gleig (2012).

14. Mindfulness, now so prominent a term, seems to have had its start as the translation of the Pali word *sati* in the work of the British scholar T. W. Rhys-Davids, first appearing in his 1877 work, *Buddhism: Being a Sketch of the Life and Teachings of Gautama, the Buddha*. Mindfulness was brought to popular consciousness through the work of the German-born monk Nyanaponika Thera (1901–1994) in his work *The Heart of Buddhist Meditation* (1973 [1954]), in which he used the expression “bare attention” to describe mindfulness. Lopez (2012, 99) notes that mindfulness as a concept really took off in the United States in the 1980s.

often operate from both).¹⁵ Nonetheless, the basic idea of mindfulness as a non-elaborative state of choiceless awareness still generally guides experimental studies.

The term “bare attention” is hardly bare of connotation, however, for, at the least, it suggests a cognitive state outside of any faith claims or tradition-specific values, and this has augmented the scientific claims made about Buddhist meditation even as it detaches practice from a Buddhist outlook in favor of a secular one.¹⁶ This is evident if we consider the current institutional reach of meditation. Until recently, Buddhist meditation and mindfulness practices had their institutional homes in the monastery and in Buddhist meditation centers, typically run by monastics. Now they have homes in some of the most influential secular institutions in the world—hospitals, universities, corporations, and even the US military. The British health care system now provides mindfulness classes for free, some American insurance companies cover their cost, and they have been incorporated into countless regimens of physical and psychological therapy.

This process of reconfiguring meditation as a therapeutic tool has reached its most influential form in the Mindfulness-Based Stress Reduction (MBSR) program, first formulated by Jon Kabat-Zinn. The program uses mindfulness techniques derived largely from insight meditation, as taught by Joseph Goldstein and Jack Kornfield, and is aimed at reducing stress by undercutting pre-reflective reactions to stimuli (Gilpin 2008, 238). This method, explicitly presented in clinical settings in secular terms, has received enormous attention and has become, by far, the most scientifically studied meditation method. And in recent years, prominent universities, including Stanford, Brown, Harvard, UCLA, Oxford, and the University of Virginia, have begun graduate programs in contemplative studies, which train researchers and clinicians in the study and application of these techniques. In all of these settings, the practices must be reframed and reshaped to fit the category of the secular, since practices seen as religious cannot be promoted in state-supported schools and universities in the United States and many other Western countries. Representing meditation as a non-religious, non-sectarian

15. Dunne (2015); Gleig (2012). A clear example of the interplay between scholarship on the nature of mindfulness and the understandings of those teaching it in Buddhist, as well as therapeutic and clinical, settings can be seen in the volume *Mindfulness: Diverse Perspectives on Its Meaning, Origins and Applications* (2013), edited by J. Mark G. Williams and Jon Kabat-Zinn.

16. The understanding of mindfulness, even when defined as bare attention, often belies a more complex practice in reality (Dunne 2015; Rosch 2015).

technique is what allows it to function freely in secular contexts and renders it eligible for the public funding that has supported a great deal of scientific research, not to mention freeing it to some extent from the stigma of foreignness and mysticism.

There has also been a recent neurological turn in the study of meditation, framed broadly within the discourse of cognitive science, that has propelled to new heights the interest in and study of MBSR and other forms of meditation.¹⁷ The rise in the popularity and scholarly awareness of Tibetan Buddhism has likely contributed to this turn, too. Here, the Dalai Lama has played a decisive role, inaugurating in October 1987 what would become a series of meetings on “Mind and Life” that linked Tibetan Buddhism with neuroscientific study (Hayward and Varela 1992, x). The Mind & Life Institute, of which the Dalai Lama is the honorary chairman of the board of directors, is now a prominent vehicle fostering the clinical and neuroscientific study of contemplative practices. To be sure, the interest in the functioning of the brain in meditation reflects a growing precision in the scientific study of meditation, and prominent claims about brain-imaging technology’s capacity to map brain states have contributed to the field’s recent phenomenal growth. In turn, growing sophistication in measurement and in the ongoing dialogue between Buddhist Studies and brain science is beginning to lead to a more critical awareness of the challenges in the study of meditative traditions, which are increasingly recognized as far more complex than clinical studies have previously acknowledged.

Whatever the complexity of meditation, its re-envisioning in scientific terms promotes the now common interpretation of meditation as a kind of “internal science” or “science of mind” in which practitioners can observe the contents of consciousness from a first-person perspective and discover particularities and laws just as a scientist studies the “external world” (Wallace 2007). Building upon the long-standing historical discourse rooted in the nineteenth century (touched upon in the preceding historical sketch), it culminates today in the widespread vision of meditative practice as a tool for the very this-worldly optimization of human potential. Thus, Silicon Valley techies incorporate practice into an often utopian view of the transformability of human beings and the capacities of the human mind, and members of the “Buddhist Geeks Network” and other young tech-savvy Buddhists style meditation as “mind-hacking,” use (and sell) mindfulness apps on their phones,

17. The study of meditation’s physiological benefits began in earnest with Herbert Benson’s study of the relaxation response among TM practitioners but rapidly moved into the study of Buddhist techniques (Harrington and Dunne 2015, 626).

and discuss the possibilities of neurologically and technologically charting meditative states and even enlightenment itself (Gleig 2014). Speculation on the possibility of an “enlightenment machine” that would track meditative progress and save time on the journey to enlightenment shows the degree to which Buddhist meditation has in some circles embedded itself in the technoscientific imaginary.¹⁸ At the far reaches of this imaginary are dalliances between Buddhism and transhumanism, such as the Cyborg Buddha Project, which studies the intertwining of meditation and neurotechnologies to promote “happiness, spirituality, cognitive liberty, moral behavior and the exploration of meditational and ecstatic states of mind.”¹⁹

The Backlash

All of these rapid transformations and displacements of Buddhist meditation practices have begun to produce what one *New York Times* opinion piece has called a “mindfulness backlash.”²⁰ Some meditation teachers and researchers have begun to discuss the powerful and sometimes disturbing, disorienting, and even psychotic states practitioners have encountered during extended meditation retreats. A note of caution has emerged regarding recommending extensive meditation for all, no matter what one’s psychological condition.²¹ And, more fundamentally, critics have noted that scientific evidence for the supposed vast array of benefits of meditation is more tentative than many in the popular press have suggested. A 2007 report by the US Department of Health and Human Services reviewed 813 studies of meditation and concluded that the therapeutic benefits of meditation are “beset with uncertainty” and “cannot be established based on the current literature” (Ospina et al. 2007). Part of the problem, it claims, is the lack of clear conceptual and operational definitions of meditation itself. A more recent survey of 47 studies with a total of 3,515 participants by researchers at Johns Hopkins University concluded that there is, in fact, moderate evidence of reduced anxiety, depression, and pain in meditators, though low or insufficient evidence of improvement in

18. <http://www.buddhistgeeks.com/2007/10/bg-043-neuroscience-and-the-enlightenment-machine>

19. <http://ieet.org/index.php/ieet/cyborgbuddha>

20. http://op-talk.blogs.nytimes.com/2014/06/30/the-mindfulness-backlash/?_php=true&_type=blogs&_r=0

21. <http://www.theatlantic.com/health/archive/2014/06/the-dark-knight-of-the-souls/372766>

positive mood, attention, substance use, eating habits, sleep, and weight. Despite these more positive (though hardly extraordinary) results, it suggests, like the 2007 study, that much of the research on meditation has had design problems and has used sample sizes too small to reach firm conclusions (Goyal et al. 2014).²²

Some Buddhists and scholars of Buddhism have also called into question the decontextualization of meditation from larger Buddhist ethical, philosophical, and cosmological contexts. Donald Lopez (2012), for example, warns of the possible misinterpretations and impoverished understandings of Buddhism that can come when Buddhism is reduced to meditation, meditation is in turn reduced to neural activity, and the authority to speak about meditation is implicitly given to the scientist. Others have criticized the far-reaching conclusions that are often touted on the basis of neuroimaging technologies. Do images measuring the level of blood flow to particular areas of the brain during meditation, for example, really tell us something definitive about the meditator's experience or its potential therapeutic benefits—or are people succumbing to what the neuroscientist Willoughby Britton acidly calls “the blobology effect?” Such questions reflect a broader debate about just what neuroimaging can tell us about human consciousness, the nature of that consciousness, and the relationship between mind and brain (Anderson 2014; Rose and Abi-Rached 2013; Sattel and Lilienfeld 2013). From another perspective, insiders to Buddhist traditions express concern over the corporatization, commercialization, commodification, and militarization of meditative practices that strip away ethical frameworks in which they have traditionally been embedded, leaving a shallow “McMindfulness” (Pursur and Loy 2013). And the philosopher and cultural critic Slavoj Žižek (2001b, 12) has argued that meditation can be an effective means to justify violence and make people more comfortable and compliant in an exploitative late-capitalist system.

The goal of this volume is not to police the boundaries of Buddhist meditation by adjudicating these disputes. Nonetheless, awareness of these issues is vital, for they reveal the novel cultural and historical contexts into which these meditative practices have been recently thrust. As the following chapters

22. The difficulty of operationalizing meditation is a significant problem in scientific studies. While the range of meditation practices among lay practitioners across the globe today is fairly narrow, researchers are hard-pressed to be certain that people doing even the same practice are experiencing the same cognitive, affective, and behavioral effects (Lutz, Dunne, and Davidson 2007). Terminology for studying meditation is also complex. The same term, such as *sati/smṛti*, for example, may have a meaning for practitioners of Tibetan Buddhism that is profoundly different from those who engage in MBSR programs (Lutz, Dunne, and Davidson 2007).

show, never before has meditation been put to so many varied purposes within so many different implied, and sometimes contradictory, worldviews. Bolstered at each turn by scientific legitimation, meditative practice becomes enfolded in the wider landscape of metaphysics, moral values, and ways of being in the world. It might imply ontological commitments to a scientific naturalism that views the person as fundamentally material, or it might entail attempts to revive a non-materialist view of the mind. It might imply the commitment to instrumental techniques for the acquisition of power, wealth, and personal fulfillment, or it might support a critique of such a utilitarian attitude, extolling the value of goallessness. And while these practices often focus on individual fulfillment, they are also a part of many projects aimed at social transformation.²³

All the while, meditative practices continue in their more traditional contexts among Buddhist monks and lay Buddhists, who hope to gain beneficial karma for themselves and others and ultimately enlightenment itself. That the same practices can be employed in realizing such diverse and sometimes contradictory ethical, philosophical, social, and soteriological visions makes them all the more complex to analyze, and also makes them a mirror for late modern culture, its tensions, and its anxieties.

Overview of Chapters

The contributions to this volume come from several disciplines in the humanities, including religious studies, Buddhist Studies, anthropology, and philosophy. If there is a common thread, it is a concern that the scientific study of Buddhist and Buddhist-derived meditative practices has been too narrowly construed and often neglects essential social, cultural, and historical contexts. We hope that this volume exemplifies some of the ways that humanistic thought is essential to the study of meditative practices since, in our view, meditation in the laboratory can never fully account for how such practices function in the lives of practitioners in these complex social, cultural, and historical contexts. We do not mean to mount opposition to the scientific study of meditation, but we do hope to expand the conceptions of meditative practice often at work in such study, to question some of the presuppositions such

23. Examples include the Engaged Buddhism movement, situated mostly on the political left, which attempts to address issues like poverty, injustice, war, and prejudice, and the Mind & Life Institute, which promotes contemplative practices as integral to the transformation of society.