

Corrections to proofs for J. Dunne's "What is Inner Science?"

### **EDITS TO TEXT**

p. 328, line 16, change "a sufficient" to "sufficient"

p. 330, second to last line of main text: change "another the question" to "the question"

p. 332, line 29 (first words in line): change "that theory?" to "a theory?"

p. 336, line 4 (first words in line): change "experimental and interpretive." to "experimental and interpretive findings."

p. 338, 8 lines up from bottom of main text (end of line): change "in the claim that can" to "in the claim that one can"

### **EDITS TO NOTES**

Note 1:

- In both references, delete "Kindle ed.," but keep "loc."

Note 2:

- Change *MindScience* reference to read as follows: Dalai Lama, *et al.*, *MindScience*.
- Use short title for Wallace book as follows: Wallace, *Contemplative Science*. Delete all other info.

Note 4: Add "accessed November 11, 2012" at end of URL thus:

<http://report.nih.gov/research.aspx>, accessed November 11, 2012.

Note 5: Change "Lama" reference as follows: Dalai Lama, *Universe in a Single Atom*, loc. 53-270.

Note 8: Change to short reference: Heuman, "What's at Stake as the Dharma Goes Modern?"

Note 9: change reference as follows: See Lakatos, *Methodology of Scientific Research Programmes*.

Note 10: change reference as follows: Cabezón, "Buddhist Studies as a Discipline."

Note 11: change Derge tengyur references to read: “Sde dge Bstan ’gyur” instead of “Derge”

Note 12: References should be reduced to short format. End of note should thus read:

Published accounts that have attracted scientific attention include Lutz, Dunne and Davidson, “Meditation and the Neuroscience of Consciousness.” See also Lutz et al., Attention Regulation and Monitoring in Meditation.”

Note 13: Reference should be reduced to short form: Dreyfus and Thompson, “Asian Perspectives: Indian Theories of Mind.”

Note 16: References should be reduced to short form: Dunne, *Foundations of Dharmakīrti’s Philosophy* and Dreyfus, *Recognizing Reality*.

Note 23: Cross-reference should be to “note 17.”

Note 26: change to: Thurman, *Why the Dalai Lama Matters*, loc. 1255-1263.

Note 27: Apply title case to title of Kuhn book.

Note 29: Apply title case to Van Fraassen book.

Note 33:

- Close paren (Ibid, 366).
- Change *varam eva* to *varam evaṃ*
- Delete material after Ibid, 361 at end of note.

Note 34: Note should read as follows: Khenpo Namdrol importantly cites Mt. Meru in his contribution to the 2009 conference on Buddhism and science held at the Central University of Tibetan Studies. For the proceedings, see Roy, *Buddhism and Science*.

Note 36: Delete extra period at end of note

Note 38: should read: *Dalai Lama, The Universe in a Single Atom*, loc. 945.

Note 39: should read: Ibid, loc. 948.

Note 40: Apply title case to title of McClintock book.

## *What is Inner Science?*

**John D. Dunne**

His Holiness the Dalai Lama has met on many occasions in public and private dialogs with scientists from various disciplines, and his book, *The Universe in a Single Atom*, speaks eloquently to the breadth and richness of those conversations. Many of these meetings have been facilitated by the Mind and Life Institute (MLI), an organization founded in 1987 for the purposes of facilitating the first Mind and Life dialog in Dharamsala, the home of His Holiness in exile. In October, 2012, MLI celebrated its 25th such meeting, and the program included time to celebrate the various publications, groundbreaking research, grants and other fruits that have emerged over the years. MLI has become critically important to the conversation and collaboration between Buddhism and science, and as an institution it certainly deserves much praise. Nevertheless, perhaps even greater thanks should go to the visionary organizer of an earlier meeting: Robert A.F. Thurman. In 1984, Prof. Thurman organized a dialog between His Holiness the Dalai Lama and scientists at Amherst College that clearly served as an important precedent for the many meetings later organized by MLI. Perhaps of even greater importance is Prof. Thurman's brilliantly eloquent articulation of the underlying vision for these dialogs, with particular emphasis on Buddhism as a source for an "inner science" that complements and deepens Western scientific approaches. Prof. Thurman's approach gave voice to many aspects of His Holiness the Dalai Lama's rationale for the dialogs, and Prof. Thurman's articulation of "inner science" continues to be an influential way of conceptualizing the Buddhist contributions, even if his central role often goes unrecognized.

At the outset, one can point to some central features that are frequently used to present inner science to those unfamiliar with the concept. If one states these features in simple and direct terms, one first notes that, in terms of its domain of inquiry, inner science emerges from a standard Buddhist dichotomy between the outer and inner (*bāhyādhyātma*): the outer is the material world of inanimate things; the inner concerns especially the minds of the beings in that world. Thus, Western science is outer in that it has historically focused on the material world. In contrast,

the rhetorical frame for “inner science” emphasizes that way that Buddhists turn inward to examine the nature of the mind itself. Second, in terms of method, both Western science and Buddhist inner science employ rigorous, analytical methods that permit careful and unbiased inquiry based on empirical evidence.<sup>1</sup> And third, in terms of results, Western science has been tremendously useful, but Buddhist inner science offers additional and essential resources for alleviating human suffering and promoting human flourishing in the most effective ways. These resources emphasize not only an understanding of human experience from a phenomenological or first-person perspective, but also the need for an ethical perspective in our empirical examination of our lives and world.<sup>2</sup>

In almost every context, the above three points—interiority, empirical rigor, and a perspective that emphasizes flourishing and ethics—are central to the framework for speaking about inner science. These points raise a number of important issues, including questions about the cultural and historical roots of the rapprochement between Buddhism and science.<sup>3</sup> The goal of this essay, however, is not to defend or critique this framework, nor even to inquire into its cultural roots and implications. Instead, we will examine a more basic question that is sometimes overlooked in this discussion: what exactly is inner science? This essay attempts a preliminary answer to that question by first examining some of what is at stake in the very notion of inner science. We will then turn to the problem of defining “science” in both Western and Buddhist contexts and settle especially on theory revision as an important feature. Examining next the notion of empiricism, we will see how an authentic

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<sup>1</sup> Emphasis on empiricism in Buddhism has been a hallmark of Prof. Thurman’s approach (see, for example, *Why the Dalai Lama Matters*, Kindle ed., loc. 1240–41). But note also how strongly H.H. the Dalai Lama expresses the same point (in, for example, *Universe in a Single Atom*, Kindle ed., loc. 66–73).

<sup>2</sup> A *locus classicus* for this framework is presented by Prof. Thurman in his essay for *MindScience: an East-West dialogue*. (Boston: Wisdom Publications, 1991). But see also B. Alan Wallace, *Contemplative science: where Buddhism and neuroscience converge* (New York: Columbia University Press, 2007).

<sup>3</sup> The cultural history of the relationship between Buddhism and science is critical to understanding the current context. See especially McMahan, *The Making of Buddhist Modernism*. For a somewhat more contentious account, see Lopez, *Buddhism & Science*.

collaboration between science and Buddhism is indeed possible, but also how that very collaboration poses challenges that emerge from the shifting grounds of knowledge that the dialog creates. It is this challenge to the way we know our world that holds perhaps both the most promise and the greatest peril, at least for the Buddhist traditions involved in the dialog with science.

*What is at Stake?*

The notion of inner science emerges out of the overall dialog between Buddhism and science, and one might well wonder why we should care about that dialog. Perhaps monks belong in monasteries, and scientists belong in laboratories. Why bother bringing them together? In response, one might speak methodologically about the need to inquire into the nature of reality from multiple perspectives, or one might equally well point to the potential for larger human benefit when insights and methods from both Buddhism and science are brought to bear on the problems facing our world. These and other such responses should certainly be appreciated, but here, let us focus on more practical issues. Beginning with the scientific side of the equation, one of the most practical issues is money. Science is an extremely expensive enterprise, and in terms of the overall amount of funding that is devoted to scientific research in the United States, the funding that connects to this dialog is quite small. Nevertheless, the funding still amounts to many millions dollars over the last two decades, and it is only growing. Nearly all of that funding is devoted to the scientific study of the way that Buddhist meditation practices affect body and mind. More specifically, the funding focuses particularly on therapeutic interventions such as Mindfulness Based Stress Reduction (MBSR). These interventions are based on Buddhist contemplative techniques that have been secularized for use in clinical and other such contexts.<sup>4</sup>

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<sup>4</sup> A search of the NIH Report Expenditures and Results Tools (at <http://report.nih.gov/research.aspx>) for 2010–2012 using keyword “mindfulness” yielded a result of more than \$10,000,000 in grants. A more thorough search would yield evidence of even more federal funding, and of course private foundations and individuals also support this type of research with considerable generosity.

The scientific focus on Buddhist contemplative practices has generated a parallel interest in understanding the Buddhist theories that underlie these techniques, and much of the dialog between Buddhism and science has therefore turned in the direction of what can be broadly called “psychological science” and “cognitive science.” As a result, the general connotation of the term “inner science” now focuses almost entirely on Buddhist accounts of mind and its workings. And this brings us to a major issue that is at stake in the dialog: if Buddhist theoretical accounts of mindfulness and other aspects of mind turn out to be highly problematic (or even outlandish) from a scientific perspective, then might funding agencies and private foundations become more hesitant about supporting research on mindfulness and the like? In other words, if Buddhist inner science fails to be a robust dialog partner for psychological and cognitive science, this failure might negatively affect the research agenda that emerges from the current interest in Buddhist contemplative techniques such as mindfulness. At the very least, the way in which Buddhism is presented in research proposals and publications will need to be changed. From this perspective, part of what is at stake in the dialog is the need for a robust Buddhist inner science that can justify—or at least, not embarrass—those scientists and funding agencies that have committed to a research agenda in this area.

Thus, some portion of what is at stake in the notion of inner science is the benefit or harm that might be done to a considerable and well funded research agenda on interventions that are derived from Buddhist contemplative practices such as mindfulness. On the Buddhist side of the dialog, however, different concerns hold sway. Many Buddhists have engaged in a dialog with science over the past many decades, but in the current context of inner science, His Holiness the Dalai Lama is clearly preeminent. My experience in various Mind and Life meetings is that His Holiness has a complex and nuanced view of the dialog with science, and that view has yet to be fully articulated in any publication. It likewise would be presumptuous of me to suggest that I can fully articulate that view here. Nevertheless, I will hazard to offer some educated guesses about what is at stake in the notion of inner science for His Holiness.

At the outset, one issue does not require guesswork: it is clear that, first and foremost, His Holiness’s engagement with science is motivated by a concern to seek maximal benefit with the widest possible scope. And that benefit requires a clear and unbiased understanding of the facts

at hand, whatever they may be. Both science and Buddhism exhibit this type of clear and unbiased approach, but Buddhism offers additionally a sophisticated account of mind from a first person or phenomenological perspective. At the same time, however, Buddhist inquiries into the nature of the mind are also motivated by an ethical framework that, in combination with many other sources, can be helpful in developing a universal, secular ethics to guide scientific work. Thus, what is foremost at stake in Buddhism's dialog with science is the potential to produce great benefit for many living beings through an ethically grounded and unbiased inquiry into the nature of reality that includes not only the outer reality of our physical world but also the inner reality of our phenomenal experience.<sup>5</sup>

Given this overall framework for the dialog, His Holiness the Dalai Lama in recent years has attended closely to the best way to configure the conversation. Concerned perhaps about the futility of discussing issues that are empirically intractable, he has proposed that one maintain a clear distinction between Buddhist science, Buddhist philosophy and Buddhist religion. The dialog with science, if it is to remain pragmatic, must concern only Buddhist science. Philosophical analyses are not necessary in that context, and the empirically unanalyzable beliefs of Buddhist religion are even less relevant.<sup>6</sup> Importantly, this way of framing the dialog can also make the conversation less threatening to Buddhist believers by compartmentalizing science and its scope of authority. Lowering the perceived threat-level may be important for His Holiness, since it would seem to facilitate another aspect of His Holiness's vision that involves a more practical concern: the teaching of science in Buddhist monasteries.

For some years, various programs and individuals have sought to assist His Holiness in his goal of integrating science into the curriculum of the major Tibetan monastic institutions in exile. These efforts motivated

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<sup>5</sup> Lama, *The Universe in a Single Atom*.

<sup>6</sup> H.H. the Dalai Lama has offered this formulation (of Buddhist science, philosophy and religion) in spoken remarks on numerous occasions, but the first time that he clearly endorsed the formulation fully may have been during Mind and Life XV, "Investigating the Mind: Mindfulness, Compassion, and the Treatment of Depression," Emory University, October 20, 2007.

the founding of the Emory Tibet Science Initiative (ETSI) with the express guidance and encouragement of His Holiness. Under the direction of Geshe Lobsang Tenzin, my colleague at Emory University, ETSI is producing Tibetan language textbooks on various topics such as cosmology and neuroscience, and an ongoing program for the education of Tibetan monastics has met with considerable success. The goal of integrating science into the monastic curriculum certainly appears attainable, and the viability of that project is part of what is at stake in the dialog on the Buddhist side.<sup>7</sup>

In a larger sense, however, the scientific education efforts of ETSI are not ends in themselves; rather, they seem instrumental to a broader set of concerns. One such concern, in simple terms, is the relevance of Tibetan Buddhism to contemporary life. In some ways, this is a delicate issue, not least because its broader context concerns the hegemonic nature of modernity and the predominant role that scientific rationalism plays therein. Some Western Buddhists might prefer that His Holiness the Dalai Lama would simply reject or at least downplay the importance of science and instead maintain that Buddhist educational institutions can remain fully relevant even without science in the curriculum.<sup>8</sup> Yet from the standpoint of those institutions themselves, relevance to their own communities—especially relevance to their youth—may well require a serious engagement with science. This essay is not the place to ponder the complexities of configuring a Tibetan Buddhist identity that can retain its integrity in the face of the various cultural juggernauts in our late modern world, but it seems clear that a robust inner science could play a key role in valorizing that identity.

#### *What Are We Talking About?*

Perhaps to some extent it is now clear what may be at stake in the dialog between Buddhism and science, but to arrive at this point, we have ignored an elephant in the room: we have been speaking of “science” and “Buddhism” without ever specifying what they might be.

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<sup>7</sup> Basic information about the ESTI program is available at <http://tibet.emory.edu/science/>

<sup>8</sup> See some of the reflections along these lines in Linda Heuman, “What’s at Stake as the Dharma Goes Modern?” *Tricycle: the Buddhist Review*, Fall 2012, 52–100.



Both of these terms are notoriously difficult to define, and any claim to a precise definition will undoubtedly be controversial. That controversy intensifies when one begins with a normative approach, such that one purports to define what Science and Buddhism ought to be. Thus, one objection to Karl Popper's work in the philosophy of science is that it offers a theoretical account that is in fact rarely if ever instantiated in any particular scientific endeavor.<sup>9</sup> And parallel critiques have been leveled at scholarship on Buddhism that generates idealized accounts, usually drawn from texts, without any appreciation for the realities of Buddhist practice on the ground.<sup>10</sup> Approaches that ignore actual practice in this way are especially controversial in part because they are not constrained by what any particular scientists or Buddhists actually do.

One way to avoid squabbles about idealized and normative versions of Buddhism or science is to focus on what particular scientists and Buddhists do. Even so, one has not avoided controversy altogether. The problem is that, even taking a quite operational and "fuzzy" approach, one will never produce a useful description that is adequately constrained by the relevant activities of every one who claims to be a "Buddhist" or a "scientist." An account endorsed by everyone who would lay claim to those titles would have little explanatory power, and to generate more useful accounts, one must therefore exclude some who claim to be "Buddhists" or "scientists." How does one choose particular "scientists" or "Buddhists" to focus upon? One rationale is simply the purpose at hand—specifically, the need to understand the large institutional forces at play in the various concerns discussed above. And the particular persons involved then become fairly obvious: they are the virtuosi of "science" and "Buddhism" who are upheld as paradigmatic by these institutions. In the case of science, these virtuosi publish in the highest impact journals, not least of which is *Science* itself. They obtain the largest grants, and their opinions hold the most sway in reviews of proposals and publications. They run labs or otherwise conduct research at prestigious institutions, and those institutions themselves often fight to

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<sup>9</sup> This is arguably a crucial element in Lakatos' famed critique of Popper. See Imre Lakatos, *The methodology of scientific research programmes*.

<sup>10</sup> For a nuanced account, see Cabezón, "Buddhist Studies as a Discipline and the Role of Theory."

woo these scientists away from their institutional rivals. These scientific virtuosi are consulted by the media as “experts,” and their names are immediately recognizable to every member of their respective disciplines.

The comparable Buddhist virtuosi are more difficult to define. Since our main interest in this context emerges from the recent history of interactions between science and Tibetan Buddhism, we can at least narrow the field by speaking only of Tibetan Buddhists. And we can narrow the field further by recalling that “Inner Science” is the most relevant domain within Tibetan Buddhism. Thus, the virtuosi we seek are Tibetan Buddhists who are recognized as experts in Inner Science. And this raises an obvious question: what precisely is this Inner Science, and who are the Buddhist experts that master it?

### *Inner Science and Inner Scientists*

As noted above, the strongest claims to Buddhism’s compatibility with science focus on the “Inner Science” of Buddhism. This term, as a rendering of *adhyātmavidyā* (Tib., *nang gi rig pa*), traditionally refers broadly to all the philosophical and contemplative components of the Buddhist path.<sup>11</sup> In the context of current interactions with cognitive and psychological science, however, it connotes only a relatively small portion of those components—namely, Buddhist accounts of mind and the contemplative practices that are alleged to inform (or to be informed by) those accounts. In the various contexts in which I have presented these accounts, scientists often seem surprised by their detail and sophistication. And many are likewise intrigued by the claim that these accounts are scientific in their methodology, especially in terms of their

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<sup>11</sup> In a typical account, Sthiramati (in the *Mahāyānasātrālamkāravṛttibhāṣya*) describes “inner science” as “skill in the twelve types of the Tathāgata’s speech” (*de la de bzhin gshogs pa’i gsung rab yan lang bcu gnyis la mkhas pa ni nang rig pa zhes bya’o*; Derge *sems tsam* vol. *mi*, 202b5–6). This amounts to skill in the understanding of the entirety of the Buddhist scriptures. And at a later point in the same text, he simply equates “inner science” with the Mahāyāna as a whole (*de la theg pa chen po nyid ni nang rig pa zhes bya’o*; Derge, *sems tsam* vol. *tsi*, 203b3).

alleged appeal to phenomenological data that has been carefully collected through the use of various contemplative techniques.<sup>12</sup>

Despite significant interest, there are still relatively few academic works that present these Buddhist accounts of mind in a way that makes them accessible to a dialog with scientists in the psychological sciences.<sup>13</sup> Certainly, there is much of interest, including analyses of perception, concept formation,<sup>14</sup> affect, and consciousness itself. But the difficulty is that the source literature for what might be called the “Buddhist inner science of mind” is vast, and those sources include much that falls outside any account of the mind; indeed, much is even outside the purview of what His Holiness the Dalai Lama refers to as “Buddhist science.” Over the centuries Tibetan exegetes themselves have addressed this complexity by seeking more succinct ways of presenting the materials that were translated from Sanskrit into Tibetan. Sanskrit sources of particular importance for an account of mind are known by Tibetan scholars as the “higher and lower Abhidharma,” namely, Vasubandhu’s *Abhidharmakośa* and Asaṅga’s *Abhidharmasamuccaya*, along with their respective commentarial traditions and related texts.<sup>15</sup>

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<sup>12</sup> Direct, spoken dialogs with scientists who have expressed considerable interest in Buddhist models of mind and cognition have occurred frequently in the context of meetings and workshops sponsored by the Mind and Life Institute. See, for example, the recorded proceedings of the 2010 meeting, “Altruism and Compassion in Economic Systems.” Published accounts that have attracted scientific attention include Antoine Lutz, John D. Dunne and Richard J. Davidson, “Meditation and the Neuroscience of Consciousness,” in Zelazo, Moscovitch, and Thompson, *The Cambridge Handbook of Consciousness*, 499–551. See also Lutz et al., “Attention Regulation and Monitoring in Meditation.”

<sup>13</sup> In addition to the pieces mentioned in the previous note, see also Georges Dreyfus and Evan Thompson, “Asian Perspectives: Indian Theories of Mind” in *The Cambridge Handbook of Consciousness*, edited by P. Zelazo, M. Moscovitch and E. Thompson (Cambridge University Press, 2007): 89–115.

<sup>14</sup> In the area of concept formation, see especially this recent publication: Siderits, Tillemans, and Chakrabarti, *Apoha*.

<sup>15</sup> English language versions of these seminal texts are available: Vasubandhu, *Abhidharmakośa-Bhāṣya of Vasubandhu*. And Asaṅga, *Abhidharmasamuccaya: the Compendium of the Higher Teaching*. Another crucial text, the *Thirty Verses* (Skt., *Triṃśikā*), is best consulted through its French translation: Vasubandhu and Lévi, *Un Système De Philosophie Bouddhique*.

Equally important Sanskrit sources for accounts of mind are found in the Buddhist Epistemological tradition, with Dharmakīrti's works and their long commentarial tradition.<sup>16</sup> Finally, in terms of contemplative practices, the *Abhidharma* and the epistemological tradition both discuss contemplative practice in some detail, but these forms of literature also interact with a vast range of Sanskrit texts, some of them far less systematic, that discuss the mind in the context of meditative practices.

Extracting relevant materials from these sources, Tibetan exegetes composed texts that examine specific topics within this vast corpus. Important examples include works on “mind and mental facets” (*sems dang sems byung*), as extracted from the *Abhidharma* literature, and other works on “the study of cognition” (*blo rig*), based on the epistemological tradition.<sup>17</sup> Numerous other Tibetan works explore the theoretical underpinnings of contemplative practices, often with reference to the two genres just mentioned. At the same time, however, it is difficult to argue for a sufficient cohesiveness among all these works such that they form a single genre, and this is perhaps one reason for what may be a surprising fact: namely, that there is no single Tibetan term that demarcates an “inner science of mind,” such that texts on mind and mental facets, the study of cognition, and theoretical accounts of contemplative practice would all fall under that single rubric. Yet, as noted above, it is precisely an “inner science of mind” that has the greatest interest in the contemporary context.

What then does this mean for the notion of a Buddhist “inner science,” especially if we mean a science of mind that is separated from Buddhist philosophy and Buddhist religion? In part it means that the dialog with psychological science apparently requires Buddhists to create a new genre or discipline that more thoroughly integrates the disparate

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<sup>16</sup> For accounts of Dharmakīrti's philosophy, see John D. Dunne, *Foundations of Dharmakīrti's Philosophy*, (Boston: Wisdom Publications, 2004) and Georges Dreyfus, *Recognizing Reality: Dharmakīrti's Philosophy and Its Tibetan Interpretations* (Albany: State University of New York Press, 1997).

<sup>17</sup> A “study of cognition” text available in English is Lati Rinbochay, Napper, and Jamdpal-bsam-phel, *Mind in Tibetan Buddhism*. And the well known “mind and mental facets text” by the 18th century Tibetan author Tshe mchog gling Ye shes rgyal mtshan is available, although problematically translated, in English: Guenther, *Philosophy and Psychology in the Abhidharma*.

literatures noted just above. This is not in itself a problem, but it does mean that we cannot expect to find an already intact and free-standing “inner science of mind” within traditional Buddhist literature. We thus also should not expect to encounter Tibetan Buddhist virtuosi who have been trained in that specific discipline. What we can expect to encounter are persons who have mastered the various materials noted above and who can create that synthesis (a late modern “hybrid”) when prompted to do so. Indeed, this is precisely what happens so often in the context of the dialogs organized by the Mind and Life Institute. Many virtuosi trained in traditional Tibetan institutions have amply demonstrated their capacity to speak from such a standpoint, even if it is not a single, recognized discipline or genre of study in traditional contexts. And it may well be that, as these outstanding Buddhist scholars interact more frequently with scientists on the psychological sciences, such a discipline will naturally emerge within traditional Tibetan Buddhist institutions, if the traditions see it as desirable.

#### *The Role of Contemplative Practice*

The emergence of an inner science of the mind within the contemporary context of Tibetan Buddhism certainly seems within reach, and in many ways, such an emergence is well under way. An inner science of this kind may be mostly a matter of bringing pre-existing elements of the Tibetan Buddhist tradition into a more interactive relationship. Revisions are not required at the outset, but inconsistencies among the various elements will likely need to be addressed. For example, in the literature on mind and mental facets, the mental facet known as “recognition” (*saṃjñā*, Tib., *'du shes*) generally follows the definition found in the *Abhidharmakośa* such that “recognition” is defined as “grasping a mark” (*nimittagrahana*, Tib., *mtshan mar 'dzin pa*).<sup>18</sup> However, this would seem to imply a degree of conceptuality that conflicts with the account of perception as nonconceptual in the literature on the study of cognition.<sup>19</sup>

<sup>18</sup> See *Abhidharmakośa* I.14cd and the appropriation of that definition (via the *Pañca-skandhaprakaraṇa*) in the aforementioned “mind and mental facets” text: Tshe-mchog-glin Ye-ses-rgyal-mtshan, Guenther, and Kawamura, *Mind in Buddhist Psychology*.

<sup>19</sup> For the interpretation of perception as necessarily “nonconceptual” (*nirvikalpaka*), see Dunne, *Foundations of Dharmakīrti's Philosophy*, 91–98.

Resolutions to such inconsistencies have apparently been unimportant to the Tibetan traditions, as will be discussed further below. An “inner science” account of issues such as the nature of perception, however, might require resolving some of these tensions. This raises the question of revision, but first, the role of contemplative practice must be examined more clearly.

As noted earlier, one of the main claims about the Buddhist approach to understanding the mind is that it proceeds on the basis of close observation of phenomenal experience. The claim here is that, with the proper training, individuals can learn to observe their own minds (or more precisely, mind as it manifests phenomenally) so as to generate information that is reliable for developing observation-based accounts.<sup>20</sup> Similar claims have been made in the context of neurophenomenology, a method pioneered by Francisco Varela, Evan Thompson, Antoine Lutz, and others. Neurophenomenology attempts to align carefully gathered “first-person” phenomenological data with “third-person” neuroscientific data from fMRI imaging, EEG and other methods. Various problems and critiques have become evident in the neurophenomenological project, and many center on the very notion of “phenomenological data” itself.<sup>21</sup> For the purposes of the present discussion, however, let us simply stipulate that the phenomenological side of the approach is feasible. That is, scientists use observational procedures to generate data that enables the development and testing of theories that are properly “scientific.” Likewise, Buddhist contemplatives can use phenomenological observation to generate data that produces theories that are likewise “scientific” in some parallel way to be discussed below. What we are sidestepping here is the controversial issue of whether phenomenological observations of this kind are possible. In doing so, we can thus focus more directly on another the question of whether Buddhist theories of mind are actually developed and tested in this way.

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<sup>20</sup> B. Alan Wallace has argued strongly for this claim. See, for example, the way this theme is treated throughout *Contemplative science*.

<sup>21</sup> An important statement of neurophenomenology is made by Lutz and Thompson, “Neurophenomenology.” One of the most straightforward critiques emerges from Dennett’s challenge to David Chalmers to specify an experiment that could only be treated in neurophenomenological terms. See Dennett, “Who’s On First?”

For various reasons, questions about the generation and use of phenomenological data in Buddhist contexts are not easily answered. One way to approach such questions would be to examine the history of anomalies and inconsistencies in theories and to explore the role that phenomenological data has taken in debates or attempted revisions about such issues. One prime example is the mental facet known as *smṛti* in Sanskrit (Tib., *dran pa*), often translated as “mindfulness” in English. In the *Abhidharmakośa*, it is identified as one of the ten ubiquitous or omnipresent mental facets that occur in every moment of consciousness.<sup>22</sup> A typical “mind and mental facets” text,<sup>23</sup> however, speaks of only five omnipresent facets, and *smṛti* is not included; instead, it is a facet that only occurs with mental moments that have a “determinate object” (*pratiniyataviṣaya*, Tib, *yul nges*), a classification that is apparently based on Vasubandhu’s *Triṃśikā*.<sup>24</sup> Moving beyond the Sanskrit *Abhidharma* texts that inform the Tibetan traditions, one can further note that in the Pāli *Abhidhamma* literature employed by the Theravāda tradition, this facet (called *sati* in Pāli) is categorized as necessarily virtuous or wholesome, whereas in the aforementioned Sanskrit texts it can also occur in nonvirtuous or unwholesome contexts.<sup>25</sup> It is important to note that these discrepancies have been in place for some 1,500 years, and clearly the Buddhist traditions involved did not consider it necessary to revise these theories or even defend them against alternatives. Hence, the clear discrepancies in accounts of *smṛti* / *sati* would seem to provide an excellent context in which to examine the way that phenomenological data is used to resolve discrepancies, but it does not appear that any such data was ever deployed to resolve these discrepancies. Thus, it may well be that phenomenologically generated data is central to the process of generating and revising theories for Buddhists, but at this point we lack the historical research to know whether this is so because no cases of such data-driven revision have been identified.

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<sup>22</sup> *Abhidharmakośa*, VII.24.

<sup>23</sup> I am referring to the text by Tshe mchog gling Ye shes rgyal mtshan noted above, n. 0000.

<sup>24</sup> See the account of the five facets with determinate objects in Vasubandhu’s *Triṃśikā*, Lévi and Dharmapāla, *Vijñaptimātratāsiddhi*, 25–26.

<sup>25</sup> Gethin, “On Some Definitions of Mindfulness,” 69.

While one awaits further historical research that presumably will identify cases of the kind just mentioned, one might suggest that the role of phenomenological data can at least be examined through the way it is deployed as evidence in the current Buddhist process of theory generation and revision. This suggestion, however, raises a difficult issue—namely, for several centuries the Tibetan Buddhist traditions have not *explicitly* formulated any new theories or accounts about the mind and its workings, nor have these traditions attempted any *explicit* revisions of existing theories. One must speak of *explicit* formulations and revisions because each generation of Tibetan scholars finds ways to innovate in a manner that keeps their traditions alive and dynamic. Yet for centuries, significant, explicit revisions did not reach the point of institutional acceptance such that they became, for example, the new mainstream theories or accounts in a traditional curriculum. Thus, one cannot simply turn to contemporary Tibetan Buddhist institutions to examine the way that phenomenological data is used to generate and revise theories about the mind because at the institutional level explicit novelty of that kind is rare.

We will more fully examine the question of theory revision below, but returning now to the role of contemplative practice, at this point three issues emerge that require further research and discussion; they are worth enumerating, even though they are beyond the scope of this essay. First comes the set of problems shared with neurophenomenology in regard to the generation of phenomenological data itself. One of the thorniest issues here is the notion that this data relies on introspection, which the psychological sciences assume to be unreliable and limited. Second come questions concerning how phenomenological data is (or should be) used in concrete contexts for theory generation and revision. How, in other words, do we deploy that data as evidence that supports or contradicts that theory? A critical question here involves the process whereby the data becomes accessible in a public, intersubjective way after somehow being translated out of a phenomenal space that seems to be in principle inaccessible to others. Finally, the third set of issues is also practical, and it concerns the training that would make one an “inner scientist of the mind.” In the Mind and Life dialogs and other such contexts, a picture has emerged that suggests inner scientists not only have expertise in the theoretical materials mentioned above, but also in contemplative practice itself. They thus fit the Tibetan Buddhist paradigm of the “scholar-practitioner” (*mkhas grub*) who not only has theoretical or intellectual



mastery, but also practical mastery of methods for observing the mind. The questions here concern simply what goes into becoming such a person. What training is required? Is there an equal emphasis on theory and practice? What interactions will one find between training in contemplative practice and training in theory? These questions might best be answered by ethnographic work, perhaps even a kind of reflexive ethnography performed by Tibetan institutions themselves. A crucial goal would be to give an account of such training that does not simply repeat what textual sources say *should* be the training, but rather presents what occurs on the ground in contemporary institutions. This type of inquiry would greatly enhance our understanding of what we all mean by “inner science” and what it takes to become a true “inner scientist.”

### *Theory Revision*

Above it was noted that, over the last several centuries, explicit revision or generation of theories about the nature of the mind and its workings has been scarce in Tibetan institutional contexts. What factors might inhibit this type of theory revision? This question will raise an important methodological issue to be explored below, but first it is useful to see how the question is flawed. Clearly, the question springs from a scientific context in which theory revision is understood to be necessary. And striking a rather unexamined stance toward science, one might suppose that theory revision is necessary because it is essential to a process that leads us ever closer to an objectively true account of reality (or, at least, some piece of reality, such as the way the mind or brain really works). And if Tibetan institutions do not have a robust process for theory revision, they cannot be fully sharing in that endeavor.

In the Tibetan context, however, it is not at all clear that the generation and revision of theories would be aimed at producing accounts of reality that draw ever closer to full, objective truth. From the standpoint of the highest levels of Tibetan Buddhist philosophy, this approach would be highly problematic because it appears to assume that “reality” stands “out there” in some fashion waiting to be accurately described and explained. This type of naïve objectivity is seen as one of the major flaws in the “lower” (*'og ma*) philosophical systems such as the *Abhidharma* that are the primary sources for most of the material about the mind that has been brought into dialog with the psychological

sciences. These systems are considered lower in that they exhibit flaws in their metaphysical presuppositions, including especially notions about objectivity. In contrast, at least some Tibetan accounts of the highest system, the Madhyamaka, would maintain that explanatory systems are always at least partly constitutive of the explananda that they purport to explain. And this is perhaps especially obvious in the case of theoretical accounts of the mind, since those accounts themselves are the product of human minds. In any case, Prof. Thurman has pointed out to me that the very notion of higher and lower accounts means that in a certain sense a particular type of theory revision is integral to Tibetan Buddhist accounts of mind (and everything else besides). Specifically, theory revision in this sense manifests as the ongoing critique of the metaphysical presuppositions that explanatory systems inevitably exhibit. Prof. Thurman, drawing on the highest level of analysis that focuses on the notion of emptiness or voidness (*śūnyatā*), remarks:

All things being relational, whenever anything is sought as an absolute by the kind of analytic inquiry that seeks the ultimate nature of that thing, that thing dissolves under the analysis and disappears from view. It cannot be found as an absolute. This is obvious, in a way, because if it is found at all, the finder has related to it by finding it and so has voided its absoluteness. Therefore, the voidness theory means that all theories about all things are from a particular perspective, relational, valid, or invalid only in a certain context. All theory is hypothetical, awaiting further refinement by experimental or experiential discovery of further aspects of the realities in question.<sup>26</sup>

The upshot of all this is that from the highest level of analysis, the Madhyamaka perspective, it is impossible to produce the one, true and fully accurate account of reality because such a goal would involve a kind of objectivity that would make the very act of explanation impossible. That objectivity can never be achieved because it ignores the interdependence between accounts and what they purport to describe or

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<sup>26</sup> Thurman, *Why the Dalai Lama Matters*.

explain. Thus, from the highest Tibetan philosophical perspective, theory revision cannot be driven by any such objectivist goal.

In lieu of being driven to “get it right” about objective reality, Tibetan Buddhist theorists appear to be motivated much more by the efficacy of theoretical accounts for training persons on the Buddhist path in a way that minimizes suffering and maximizes genuine happiness. And this may explain why it is that, other than metaphysical critique, there have been so few substantive revisions of the accounts of mind and its workings that the Tibetans received from their Indian sources. If those accounts have been “good enough” for the purposes of training persons to advance on the path, why would various inaccuracies or discrepancies motivate one to revise those accounts? In the present context where the possibility of revisions has been raised, the urge toward objective accuracy and other such motivations seem far less salient than the issues of relevance and compassion noted earlier. It may indeed be time to revise some theories, but it would seem that any such revisions will spring far more from an ethically grounded pragmatism than from any thirst for objective truth.

At this point, however, skeptics might argue that the picture painted here is too rosy. To darken the picture, one must also admit that Tibetan institutions are resistant to theory revision, and that the resistance comes from an attitude toward authority and tradition that inhibits all attempts at revision. These skeptics may have some historical grounds for making such claims, but on my view, authority and tradition inhibit revision only when their use deviates from the tradition itself. To see how this is the case, we must now take a more normative approach and examine some features of the mainstream Tibetan Buddhist theory about what constitutes good evidence and the role of traditional authority.

#### *Empirical Inference and the Role of Authority*

In science, the relationship between observation and theory revision is complex. Thomas Kuhn has famously argued that even when the observed data conflicts with an institutionally entrenched theory, such anomalies will not immediately lead to any revisions. It is only when the anomalies reach a kind of critical mass that they can overcome institutional forces, social relations and other factors not rooted in

observation or experimentation. Thus, for Kuhn, the regnant theoretical paradigm holds authoritative sway over a scientific community, and the pressures to confirm and build on that paradigm can long outweigh experimental ~~and interpretive~~. This basic insight, now widely accepted, shows that even in the context of science, observation and experimentation do not always trump an appeal to the authority of a scientific tradition and its current paradigm.<sup>27</sup>

Nevertheless, one can recognize when scientists have stepped beyond the pale. At some point, a scientist's work, motivated by an irresistible need to uphold a particular paradigm, sidesteps the results of observation and experimentation to such an extent that the community objects. This does not mean that the community is not also committed to the same paradigm, but rather that all the possible paradigms presume a methodology that considers the results of observation and experimentation to be the final touchstone for testing theories. The line that should not be crossed is a methodological one, and that line becomes vividly clearly when, for example, a virtuoso scientist succeeds in publishing a paper based on falsified data.<sup>28</sup> Such falsification could be driven by a kind of excessive reverence for a paradigm, but one may falsify simply because it enables one to publish more widely or because the next grant will be easier to obtain. Or perhaps one is working in the lab of a scientist who has played a role in developing the paradigm in question. Whatever the motives, even a virtuoso scientist (tenured at a top-tier research university) might succumb to such pressures and "fudge" the data so that one's work is "successful" in accord with the paradigm's definition of success.

In contrast to excessive devotion to a paradigm, a scientific community thus adopts a methodological attitude in which the results of observation and experimentation *in principle* must trump theoretical

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<sup>27</sup> Kuhn, *The structure of scientific revolutions*.

<sup>28</sup> Perhaps the most egregious recent case is that of Diederik Stapel, who rose to a position of considerable prominence and whose publications appeared in many prestigious journals, including *Science*. In a major scandal, he was found to have fabricated data for dozens of publications. The case provoked well publicized responses from a dismayed scientific community. See, for example, the details reported in the *New York Times* (<http://www.nytimes.com/2011/11/03/health/research/noted-dutch-psychologist-stapel-accused-of-research-fraud.html>).

commitments, even if they cannot always do so in practice. Again, this principle is most easily articulated in terms of its violation. Bas C. van Fraassen, framing this issue in that context of what he calls an “empirical stance,” speaks of the point at which a scientist crosses the line:

A disregard for evidence, a refusal to submit one's ideas to natural selection by relevant experiment or to engage in vigorous testing when nature itself does not put one to the test...can certainly take one beyond the scientific pale.<sup>29</sup>

Van Fraassen goes on to cite Paul Feyerabend's more vociferous characterization of the researcher who, having stepped beyond the pale, becomes what Feyerabend calls the “crank”:

The distinction between the crank and the respectable thinker lies in the research that is done once a certain point of view is adopted. The crank usually is content with defending the point of view in its original, undeveloped, metaphysical form, and he is not at all prepared to test its usefulness in all those cases which seem to favor the opponent.... It is this further investigation ... which distinguishes the ‘respectable thinker’ from the crank. The original content of his theory does not.<sup>30</sup>

Certainly, we can be confident that the virtuoso scientists working in major institutions will all commonly agree on this basic point—namely, that they would never give tenure to a “crank,” and they would never wish to become one themselves.

In the context of the dialog between Tibetan Buddhism and science, one of the most appealing features of the Buddhist approach is a strikingly similar attitude, a Buddhist version of an “empirical stance.” We have already noted that we lack the resources to speak in detail about the way that Buddhists concretely manifest such a stance in their inquiries into the nature of the mind, but one can turn to the normative claims of

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<sup>29</sup> Van Fraassen, *The empirical stance*. 631–633.

<sup>30</sup> *Ibid*, locations 634–637.

the tradition itself. Specifically, one can examine the role of scripture in reasoning, for the Buddhist equivalent of a “crank” is one who inappropriately appeals to scripture or tradition as a means to ignore or refute empirical evidence.

*Buddhist Empiricism and the Limits of Scripture*

In current practice, virtuoso scientists step beyond the pale when they refuse to allow observation and experimentation to sway them from their commitment to a particular paradigm. It is difficult to specify exactly how observation and experimentation are meant to have the final say; indeed, it is even difficult to specify exactly what one means by observation and experimentation. Yet, borrowing from van Fraassen, one can say that to be a scientific virtuoso, one must adopt a kind of “empirical stance” such that one exhibits an invariable commitment to a methodological approach that can be called “empirical” in part because it echoes philosophical appeals to “the evidence of the senses.” One Buddhist version of such a stance emerges in the philosophy of Dharmakīrti, a 7th century (CE) Indian philosopher whose theories became highly influential in Tibet starting as early as the 8th century.<sup>31</sup> Dharmakīrti’s analysis of inferential reasoning in particular is the vastly dominant account for all Tibetan Buddhist scholars, and although the precise interpretation of Dharmakīrti’s theories are a matter of considerable debate, one clearly cannot be considered a scholar-practitioner in the Tibetan Buddhist context if one violates Dharmakīrti’s guidelines for inferential reasoning.

Dharmakīrti’s account of inference is rooted in the claim that can know only what is causally efficient. The paradigmatic case of such knowing occurs when an object impinges on the senses such that, with other conditions in place, one “knows” the object by virtue of the effects that it has had on consciousness through that sensory interaction. In cases where one cannot directly know an object through its interaction with the senses, one can nevertheless infer its existence by appealing to the effects that the object has on the senses. Thus, even if one cannot see a fire on

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<sup>31</sup> The account of Dharmakīrti’s thought given here is based on Dunne, *Foundations of Dharmakīrti’s Philosophy*.

the far side of the hill, one can nevertheless know the presence of a fire by virtue of its smoke, an effect of the fire that can be known directly. In contrast, an object that does not have either direct or indirect effects on the senses cannot be known.

For Dharmakīrti, perception and perceptually based inference are the sole means of definitively establishing whether something is existent or real (*sat*). And he thus characterizes the domain of the existent as either perceptible (*pratyakṣa*) or perceptually “remote” (*viprakṣta*). Remote entities are still knowable because, even though they are not directly perceptible, they can be inferred as the cause at the end of a chain of one or more perceptible effects. It seems clear that one can speak of this approach as “empirical,” given its appeal to sensory perception as the touchstone for all that can be called existent or real. From a Buddhist perspective, an important feature of Dharmakīrti’s philosophy is his insistence that all of the “important” (*pradhāna*) claims in Buddhism can be known through the empirical knowledge—that is, all of the central elements of the Buddhist path can be established through either what is perceived directly or what is inferred on the basis of perception.<sup>32</sup>

Dharmakīrti’s strict empiricism comes at a price. Specifically, it means that he must acknowledge that traditional Buddhists believe in many things whose existence cannot be established. Such entities are said to be “extremely remote” (*atyantaparokṣa*) in that they cannot be detected by virtue of any direct or indirect effects on the senses. Importantly, Dharmakīrti insists that, just as we lack the means to prove the existence of such things, we also cannot *disprove* their existence. Being completely uninvolved or undetectable in the causal processes that we can know, extremely remote things cannot be disproven because they cannot conflict with what we know empirically. For Dharmakīrti, we must thus adopt a rigorous agnosticism toward such entities.

As noted above, Dharmakīrti maintains that all of the “important” elements necessary for progressing on the Buddhist path can be established through empirical knowledge, so even if the tradition may speak of things that are beyond empirical knowledge, Buddhists should

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<sup>32</sup> The issue under discussion here is known as “scriptural inference” (*agamaśrītānumāna*). See *Ibid.*, 223–251 and the translation in the appendix, 361ff.

have no trouble taking an agnostic stance toward claims about those transempirical things. Nevertheless, Dharmakīrti does acknowledge that under some circumstances, we may need to drop that agnosticism and hold a particular belief about some transempirical entity. One does so because there is “no other way” (*agatyā*), in that one's practice of the path somehow requires this (otherwise unimportant) belief in order for one to progress.<sup>33</sup> Dharmakīrti is not clear about what such things might be, and perhaps he would have claimed to need no such beliefs. Whatever Dharmakīrti's personal beliefs about transempirical entities might have been, later commentators identify some typical instances of such entities, and a prime example is Mt. Meru.<sup>34</sup>

Traditional Buddhist cosmology is complex, but briefly, it maintains that at the center of every “world system” (*lokadhātu*) stands a central mountain known as Mt. Meru that extends down to the lowest cosmological realms and reaches into the heavens.<sup>35</sup> Mt. Meru is extremely far from our own world, and even if this distance alone may make it unknowable, some Buddhists further maintain that human senses lack the capacity to see it or detect its effects. Under these conditions, Dharmakīrti's approach requires one to strike an agnostic stance toward the alleged existence of entities such as Mt. Meru, except in cases where a belief in the existence of such an entity is essential for progress on the path. In those cases, however, one should not simply posit the existence of such things willy-nilly; rather, one must appeal to tradition or scripture (*āgama*) as evidence to support one's belief. That appeal to scripture will

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<sup>33</sup> The term *agatyā* actually occurs toward the end of the discussion in Dharmakīrti's own commentary on *Pramāṇavārttika* I.217 (Ibid., 366). At the beginning of the section on scriptural inference, he describes the context as one involving the suspicion that some important but transempirical issue must be assumed for practice, and that one feels, “Thus, if this is to be done, it is best that it be done thus,” i.e., in accord with the tradition. This statement (in Skt., *tat sati pravartitavye varam eva pravṛtta iti*) and the sentiment expressed in “no other way” clearly mark a specific psychological context for the use of scriptural inference. See Ibid., 361; *The Prāmaṇavārttikam of Dharmakīrti: the first chapter with the autocommentary*, 108.

<sup>34</sup> Khenpo Namdrol importantly cites Mt. Meru in his contribution to the 2009 conference on Buddhism and science held at the Central University of Tibetan Studies in Roy, *Buddhism and science*.

<sup>35</sup> See Gethin, *The Foundations of Buddhism*.



not enable one to prove the existence (or the nonexistence) of that entity, but it does allow one to hold a belief that is at least consistent with the “trustworthy” (*āpta*) persons who spoke those texts.<sup>36</sup>

Dharmakīrti provides some clear guidelines for using scripture as evidence in this way.<sup>37</sup> First, to the extent that the scripture offers methods for progress along the path, those methods must be feasible. Second, the scripture must likewise be intelligible and coherent in its meaning, and third, it must be suited to one’s purpose. Most important, however, are the guidelines concerning the scripture’s statements about what can be empirically known. In short, if the scripture makes any claims that contradict what can be known empirically through the senses or through inference based on the evidence of the senses, then that scripture cannot be used to support one’s beliefs.

To restate Dharmakīrti’s position, we note first that the important elements of the Buddhist path are established by empirical knowledge; hence, beliefs about those elements should be derived from empirical examination of the issue at hand. In some cases, however, one’s progress on the Buddhist path may require a belief in an entity that is empirically unknowable. In that case, one may appeal to scripture in order to support one’s belief, but one must use a scripture that records the words of a trustworthy person who intelligibly proposes feasible methods for advancing toward one’s spiritual goal. And finally, the scripture must be consistent with what we know empirically. If its claims about perceptible or inferable things contradict our own perceptions and well-formed inferences, then that scripture cannot be used to support our transempirical beliefs.

Clearly, Dharmakīrti’s approach effectively compartmentalizes beliefs in transempirical entities such as Mt. Meru and blocks their relevance to empirical contexts. He creates a context in which, when the need is sufficient, Buddhists can populate the universe with transempirical

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<sup>36</sup> The notion that scriptural inference does not actually prove the existence of anything is not accepted by all Tibetan interpreters, but it is very clearly articulated in Dharmakīrti’s own commentary on *Pramāṇavārttika* I.217. See Dunne, *Foundations of Dharmakīrti’s Philosophy*, 366..

<sup>37</sup> These guidelines are described by Dharmakīrti in *Pramāṇavārttika* I.214–215 and his own commentary thereon. See *Ibid.*, 361–363.

entities that are useful for progress on the Buddhist path, but they can only do so if those beliefs and their sources do not contradict the empirically knowable. If one clings to a scripturally justified belief that contradicts what can be perceived or empirically inferred, then one has stepped beyond the Buddhist pale, at least on Dharmakīrti's view.

*Conclusion: the Shifting Grounds of Knowledge*

The belief in the existence of Mt. Meru, as it turns out, has recently emerged as more than a stock example of a context in which scripture might be employed to support one's beliefs. Specifically, His Holiness the Dalai Lama has suggested that advances in science effectively move Mt. Meru out of the category of transempirical entities; instead, we can now examine the question of Mt. Meru's existence on an empirical basis. And he proposes that in the context of such an investigation, we must respect Dharmakīrti's guidelines. His Holiness notes, "There is a dictum in Buddhist philosophy that to uphold a tenet that contradicts reason is to undermine one's credibility; to contradict empirical evidence is a still greater fallacy."<sup>38</sup> His Holiness' opinion, moreover, is clearly that the empirical evidence against the existence of Mt. Meru is insurmountable. Indeed, it is only one of several elements in the traditional Buddhist cosmology that he would revise. Along these lines, he remarks, "My own view is that Buddhism must abandon many aspects of the Abhidharma cosmology."<sup>39</sup> If one agrees with His Holiness, then from that standpoint a Buddhist scholar who seeks to defend a belief in Mt. Meru through scripture—despite the empirical evidence against it—would be a Buddhist "crank."

His Holiness the Dalai Lama affirms a strong commitment to Dharmakīrti's style of empiricism and the limits of scripture. Nevertheless, that commitment may not itself pose the greatest challenge to the Tibetan Buddhist traditions. Instead, what may be most radical here is the claim that a formerly transempirical entity (i.e., Mt. Meru) postulated by the tradition has shifted into a new epistemic category such that it is now subject to empirical analysis. In principle, such a shift should not be

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<sup>38</sup> Dalai Lama, *The Universe in a Single Atom*.

<sup>39</sup> Ibid.

problematic, since the standard Buddhist account is that this is precisely the type of shift that occurs when one progresses along the path of Buddhist training. Indeed, that training eventually eliminates the category of the “transempirical” itself, such that one gains empirical access to everything knowable.<sup>40</sup> Hence, it clearly must be the case that allegedly transempirical entities such as Mt. Meru must at some point become a matter of empirical investigation from one’s own perspective. Nevertheless, while this shift from the transempirical to the empirical is not objectionable in principle, in practice it may seem threatening to traditional Buddhist knowledge. The concerns that have been expressed privately to me on several occasions amount to this: once Mt. Meru is gone, what comes next?

The deepest qualms about abandoning Mt. Meru may thus come especially from the notion that what was long thought to be unknowable through empirical means is now knowable. And importantly, the methods that enable new empirical investigation are themselves alien to the tradition. This opens up the possibility that these new means—the methods of modern science—call into question not only Buddhist notions about the transempirical, but also Buddhist claims to empirical knowledge itself, including especially knowledge about the mind and its workings. In a sense, the entire universe of the knowable has shifted, and with that shift the grounds for traditional knowledge may seem unsteady.

The peril to traditional knowledge becomes further intensified in the face of the hegemonic juggernaut that is modern science. Above I argued that in the Buddhist context, the reasons for theory revision are largely pragmatic: one revises theories so as to maximize one’s capacity to eliminate suffering and promote genuine happiness. These motivations diverge from the typically objectivist stance that seems to drive scientific progress, at least in institutional contexts and in the popular imagination. Many virtuoso scientists may indeed eschew any claim that science is somehow moving closer to the final truth about the objectively real world “out there.” Yet for the purposes of writing grants, raising money and publicizing one’s efforts to the public, the claim that science is

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<sup>40</sup> For the standard accounts of the “omniscience” (*sarvajñatā*) that is the endpoint of the Tibetan Buddhist path, see McClintock, *Omniscience and the rhetoric of reason*.

marching forward precisely in this objectivist way may be too useful, too persuasive, and thus, too difficult to resist.

And this brings us to a closing, crucial issue in the dialog between Buddhism and science: the sense of what is possible must shift on *both* sides. That is, just as Buddhist inner scientists of the mind may feel that the ground of traditional knowledge is swaying beneath their feet, so too must scientists remain open to the radical, even outlandish possibilities raised by some features of the Buddhist perspective. Many mental processes, for example, are thought to occur below the level of consciousness, but Buddhist scholar-practitioners will claim that at least some of these supposedly undetectable processes can actually be detected and even manipulated with adequate training in contemplative practice. Rather than dismiss such claims out of hand, the challenge to scientists is to remain open to the possibility that in the dialog with Buddhist scholar-practitioners, some of their most fundamental assumptions may need to be abandoned. It is only in this way that the dialog will remain truly fruitful. For both sides, the challenge is daunting.