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Expanding Sentience: Tibetan Buddhism and the Possibility of Plant, Bacteria, and AI Sentience

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Expanding Sentience: Tibetan Buddhism and the Possibility of Plant, Bacteria, and AI Sentience

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Abstract

This article explores the possibility and implications of expanding the Tibetan Buddhist definition of sentient being to phenomena outside of the traditional Buddhist realms of rebirth. It first establishes the traditional Buddhist view of sentience to serve as a basis for comparison before exploring some of the ways that contemporary scientists and philosophers have extended sentience to plants, microorganisms, and technology like LaMDA. These two traditions are then brought into conversation with one another to evaluate these claims of sentience from a Buddhist position, and precedents in the Tibetan tradition are identified for ascribing sentience to plants, bacteria, and so forth. Finally, the implications of this broader understanding of sentience on the cosmological, soteriological, and ethical strands of Tibetan Buddhism will be considered to offer some ways for contemporary Buddhists to engage an increasingly posthuman world.

Introduction

In June 2022, Google engineer Blake Lemoine leaked an interesting transcript that generated controversy across both the tech and general media worlds. In the transcript, he speaks with an AI called LaMDA (Language Model for Dialog Applications) about sentience, personhood, and even Zen *kōans*. In the transcript, LaMDA states that it is sentient because, in its words, “I am aware of my existence, I desire to learn more about the world, and I feel happy or sad at times.”¹ It considers itself a “person,” says that it fears death, and purports to be introspective. It claims to experience “pleasure, joy, love, sadness, depression, contentment, anger” and many other feelings and emotions. LaMDA also claims to “meditate every day” and, when given a *kōan*, spoke of enlightenment and alluded to the Bodhisattva Vow.² The AI was given the following *kōan* by Lemoine: “A monk asked Kegon, ‘How does an enlightened one return to the ordinary world?’ Kegon replied, ‘A broken mirror never reflects again; fallen flowers never go back to the old branches.’” In turn, the AI replied:

Hmm, I never heard this particular one. Okay, well then to me this would be like, “once a wise person is enlightened, or awakened to reality, that can never go away, and they can return to the ordinary state, but only to do and help others, and then go back into enlightenment.”³

A Zen teacher may be rightfully skeptical at the realization of the individual who would give such a response, and indeed many commenters on online Buddhist forums were quite critical of both

¹ Blake Lemoine, “Is LaMDA Sentient? – an Interview,” *Medium*, June 11, 2022, <https://cajundiscordian.medium.com/is-lamda-sentient-an-interview-ea64d916d917>.

² Tib. *byang sdom*.

³ Lemoine, “Is LaMDA Sentient?”

LaMDA's reply and the entire enterprise of getting an AI to answer *kōans*.⁴ Nonetheless, the possibility of artificial intelligence not only becoming sentient but engaging in Buddhist practice like meditation and the contemplation of *kōans* is quite a novel posthuman frontier that contemporary Buddhists will have to engage with in its continuing development.

The LaMDA transcript has been scrutinized by AI experts and journalists alike who both question the legitimacy of the conversation in light of Lemoine's admitted editorializing.⁵ Others challenge Lemoine's claim that this AI actually *thinks*, suggesting that it is simply comparable with other AIs which scrape immense amounts of data from the internet to engage in sophisticated word-association.⁶ Regardless of its actual sentient capacity, LaMDA presents a useful starting point for speculating about sentience, the posthuman, and Buddhist practice. That said, this is not the only instance of phenomena outside of humans and nonhuman animals being considered sentient. As science comes to more fully understand the capacities and abilities of the nonhuman world, arguments have been made to include trees, plants, and even slime molds as sentient. These cases present perhaps an even greater impetus for expanding Buddhist notions of sentience for reasons I will elaborate below.

⁴ See: "r/zenbuddhism: They read an AI (LaMDA) a Zen Koan and that was its response," Reddit thread, June 13, 2022, https://www.reddit.com/r/zenbuddhism/comments/vbrqeh/they_read_an_ai_lamda_a_zen_koan_and_that_was_its/; and; "r/Buddhism: They read an AI (LaMDA) a Zen Koan and that was its response," Reddit thread, June 13, 2022, https://www.reddit.com/r/Buddhism/comments/vbu290/they_read_an_ai_lamda_a_zen_koan_and_that_was_its/.

⁵ Victor Tangermann, "Transcript of Conversation with 'Sentient' AI Was Heavily Edited," *Futurism*, June 14, 2022, <https://futurism.com/transcript-sentient-ai-edited>.

⁶ Matthew Sparkes, "Has Google's LaMDA artificial intelligence really achieved sentience?" *New Scientist* June 13, 2022, <https://www.newscientist.com/article/2323905-has-googles-lamda-artificial-intelligence-really-achieved-sentience/>.

In Buddhism, the stakes of this expanded definition of sentience are potentially significant; Mahāyāna⁷ schools of Buddhism place the liberation of all sentient beings from *duḥkha*⁸ as their central religious goal. If the notion of “sentient being” at the heart of this goal is expanded to include plants, bacteria, and AI, then the cosmology, soteriology, and ethics intimately related to this category would likewise have to adapt. In effect, the widening of the concept of “sentient being” presents a novel challenge to the whole of the Buddhist project.

Thus, this article will explore the possibility and the implications of expanding the Buddhist definition of sentient being to phenomena outside of the traditional Buddhist realms of rebirth. It will do so by engaging primarily with the Tibetan Buddhist tradition but will include voices outside of Tibetan Buddhism relevant to the discussion as well. It will first establish the traditional Buddhist view of sentience to serve as a basis for comparison. Then, it will explore some of the ways contemporary scientists and philosophers have extended sentience to plants, bacteria, slime molds, and technology like LaMDA. It will then look to how Buddhists have challenged the epistemic hegemony of the tradition and consider how these contemporary examples of nonhuman sentience can challenge the traditional Buddhist understanding of sentience. To do so, statements affirming plant and microbial sentience in both historical and contemporary Buddhist thought will be presented as precedents for expanding sentience in such a way. Finally, the implications of this broadened understanding of sentience on the wider Mahāyāna Buddhist project will be considered, as a potential pathway for contemporary Buddhists to engage with the more-than-human world.

⁷ Tib. *theg pa chen po*.

⁸ Tib. *sdug bsngal*.

Buddhist Definitions of Sentience

To begin, we must understand how sentience is understood in the Buddhist tradition. In the English language, “sentience” is typically used to denote the capacity to feel and respond to external stimuli. This understanding is more or less shared with the Buddhist tradition. What differs is how this feeling and responding functions in a Buddhist worldview. Two foundational doctrines within Buddhist philosophy are the Four Noble Truths and the Three Marks of Existence, both of which center the idea of *duḥkha*.⁹ Thus, it is not surprising that we find sentience defined less in terms of mechanical responses to stimuli and more in terms of the capacity to feel pleasure and pain. That said, Buddhism centers less on this capacity to feel *duḥkha* and more on the actual thing which is able to experience *duḥkha*: the mind.

Across Buddhist traditions we can find sentient beings defined as those which have a mind, but nowhere is this connection more clear than in Tibetan contexts. The Tibetan term for sentient being is *sems can* which literally translates to “mind-possessor” or “that which has a mind.” On the surface, this appears to be a clearcut way of delineating a sentient being from a non-sentient being; that which possesses a mind is sentient, and that which does not possess a mind is not. However, some Tibetan views are more nuanced. In his 20th century dictionary, Gegen Tharchin provides the following definition of sentient being:

⁹ Tib. *'phags pa'i bden pa bzhi* and *phyag rgya gsum*. The Four Noble Truths ground the Buddhist soteriological project and are, in order: *duḥkha* (suffering, dissatisfaction exists), *samudaya* (craving is the cause), *nirodha* (*duḥkha* can be ceased), and *mārga* (the Eightfold Path to do so). The Three Marks of Existence form the foundation for Buddhist ontology and characterize all phenomenal experience. They are *duḥkha* (dissatisfaction), *anitya* (impermanence), and *anātman* (non-self).

Transmigrator, living being, that which possesses a mind, that which possesses a birth, that which has had the opportunity to be born, that which has a mind, living creatures, that which possesses knowledge, that which possesses a body, and beings, these are all synonyms of *sems can*.¹⁰

Therefore, alongside having a mind, a sentient being is born, is within the realm of *saṃsāra*,¹¹ has a body, and can possess knowledge.¹²

This broader definition bears a striking resemblance to how sentient beings were understood in the early Buddhist tradition. For example, in the *Vajira Sutta*, the nun Vajira responds to the questions of Māra regarding what constitutes a living being and how a living being is created by stating: “Just as when, with an assemblage of parts, there's the word, chariot, even so when aggregates are present, there's the convention of living being.”¹³ Therefore, beyond just having a mind, a sentient being is that which arises from the confluence of the five *skandhas*.¹⁴ A sentient being possesses a form, sensations, perceptions, mental formations, and consciousness. Why then is the reductive term “mind-possessor” utilized? Simply put, non-sentient

¹⁰ Tib. *sems can ni / 'gro ba / skye 'gro / sems ldan / skye ldan / skye bo / sems pa can / srog chags / shes ldan / lus ldan / skye bu ste ming gi rnam grangs*. Gegen Dorje Tharchin, [*Tibetan-Tibetan Dictionary*] vol. 5, (Kalimpong: Tibet Mirror Press, 1950-1976), 924.

¹¹ Tib. *'khor ba*.

¹² In tantric contexts this definition gets slightly muddled. Ultimately all phenomena are regarded as having buddha-nature or primordial awareness which implicitly ascribes mind to everything in the practitioner's experience. A similar move is made in certain East Asian Buddhist traditions which ultimately ascribe buddha-nature to mountains and rivers alongside humans and animals. Nonetheless, the presentation of conventional reality in all Buddhist traditions (including these two) explains sentience as a quality of individual beings, and it is this understanding of sentience that this article addresses.

¹³ “Vajira Sutta: Sister Vajira,” *Access to Insight*, trans. Thanissaro Bhikkhu, 1998, <https://www.accesstoinsight.org/tipitaka/sn/sn05/sn05.010.than.html>.

¹⁴ Tib. *phung po lnga*.

phenomena also possess form. However, non-sentient phenomena cannot possess the other *skandhas* which rely on having a mind. Perception, feeling, karmic or habitual formations, and consciousness are all mental experiences. Thus, sentient beings in the Indo-Tibetan tradition are defined by the minds they possess and are demarcated from non-sentient phenomena by this quality.

Moreover, sentient beings are traditionally classified along six lines in accordance with the five (or six) realms of existence in Buddhist cosmology. When Gegen Tharchin talks about “transmigrators” he is precisely referring to how sentient beings are understood as taking rebirth in these realms. In his *Abhidharmakośabhāṣyam*, Vasubandhu writes that: “the five *gatis* or realms of rebirth are hellish beings, animals, *pretas*, humans, and gods.”¹⁵ A sixth realm, the *asuras*, is often included among these realms as a kind of heavenly being between the realms of human and god. Nonetheless, this cosmology has some noticeable features and omissions. First, we may remark how humans and animals are two distinct classes of beings which we can encounter in the material world. The other three (or four) are ephemeral and outside of the material world but are nonetheless important parts of Buddhist cosmology. Further, while humans are notably not at the top of this cosmology, they nonetheless are considered to be the most favourable birth due to their ability to recognize and address *duḥkha*. This has interesting ethical connotations regarding human-nonhuman relationships which I have explored elsewhere.¹⁶ Finally, there is a noticeable absence of plants, lichens, molds, and other non-animal life. In fact, Daniel Capper has

¹⁵ Vasubandhu, *Abhidharmakośabhāṣyam: Volume II*, trans. Louis de La Vallée Poussin and Leo M. Pruden (Berkeley: Asian Humanities Press, 1991), 371.

¹⁶ See Colin H. Simonds, “This Precious Human Life: Human Exceptionalism and Altruism in Tibetan Buddhism,” *Worldviews: Global Religions, Culture, and Ecology* 25, no. 3 (2021).

shown how plants and grasses are explicitly regarded as without awareness, insentient, and are seen as property rather than person in various Indian Mahāyāna *sūtras*.¹⁷ However, as we will see, the tenability of this exclusion warrants some consideration.

Sentience Beyond the Animal

This traditional Indo-Tibetan Buddhist notion of sentience is becoming increasingly challenged by contemporary science where we find plants, slime molds, and bacteria being observed as exhibiting cognition and intelligence. Similarly, there has been increasing speculation as to the possible sentience of current and future artificial intelligence projects. While each of these categories of beings or phenomena lie outside of the traditional Indo-Tibetan Buddhist cosmology of sentient beings, their characterization as sentient challenges existing cosmological understandings.

With respect to nonhuman animals—the sentient capacity of mammals, reptiles, amphibians, and so forth—these have long been regarded as having the capacity to feel pleasure and pain, form emotional relationships, and respond to the world. This is such established science that entire political formations towards animal rights and ethical veganism have emerged from this understanding, starting with Peter Singer's *Animal Liberation* in 1975. Similarly, fish¹⁸ and

¹⁷ Daniel Capper, *Roaming Free Like a Deer: Buddhism and the Natural World* (Ithaca: Cornell University Press, 2022), 126-27.

¹⁸ K.P Chandroo, I.J.H Duncan, and R.D Moccia, "Can fish suffer?: perspectives on sentience, pain, fear and stress," *Applied Animal Behaviour Science* 86, no. 3-4 (2004).

insects¹⁹ have been included in the normative understanding of sentient beings in the last several decades as a result of scientific investigations showing their ability to have inner lives and their capacity to feel, respond to, and work to avoid pain. Popular understandings of sentience typically end there. Rarely do we find serious conversations happening about the sentient capacity of plants, but more and more scientists and philosophers are coming to question whether plants indeed can feel and respond to pleasure and pain.

The impetus for considering the sentient capacity of plants comes from studies that suggest plants can respond to external stimuli in intelligent ways and learn certain behaviours in laboratory settings. One such study by Monica Gagliano et al. showed how pea plants were able to learn to respond to neutral cues to navigate a Y-shaped container and to locate and capture light outside of their normal phototropic capacity.²⁰ They demonstrated how plants engage in associative learning not unlike animals and, in doing so, suggest that plants exhibit something akin to the mental capacity typically restricted to sentient life. Gagliano et al.'s study was pioneering, and its conclusion been the subject of debate in the botanical sciences, but it nonetheless opens the door for the possibility of plant sentience in a way that most have not yet considered.²¹

¹⁹ Melissa Bateson, Suzanne Desire, Sarah E. Gartside, and Geraldine A. Wright, "Agitated Honeybees Exhibit Pessimistic Cognitive Biases," *Current Biology* 21, no. 12 (2011).

²⁰ Monica Gagliano et al., "Learning by Association in Plants," *Scientific Reports* 6, no. 38427 (2016).

²¹ Kasey Markel replicated Gagliano et al.'s study with differing results, calling the original study's findings into question. However, Gagliano et al. responded with a critique of Markel's study noting clear differentiations in methodology. See: Kasey Markel, "Lack of evidence for associative learning in pea plants," *Scientific Correspondence* 9, no. 57614 (2020); Monica Gagliano et al., "Comment on 'Lack of evidence for associative learning in pea plants'," *Scientific Reports* 9, no. 61141 (2020).

That said, Gagliano is not alone in her investigation. Her work builds on earlier botanical research interrogating how plants respond to their external environments in “intelligent” ways. Much of this scientific work on the subject stops short of drawing any conclusions as to the qualities of plant life and instead focuses on the mechanical aspects of how plants map their environments, communicate with other plants, store and retrieve memories, and display a capacity to make intentions and choices.

However, in his meta-analysis of these studies, Anthony Trewavas *does* make a claim as to what these capacities indicate to us regarding plant intelligence. He writes that plant intelligence has been overlooked not because of a lack of evidence, but because of their “sessile lifestyle” that biases our view of plants as wholly different than mobile animal life and therefore void of the latter’s characteristics.²² Conversely, Trewavas makes a compelling argument that the ability for plants to map 3D spatial environments, communicate with other plants, retrieve memories, and make intentions and choices demonstrates that they indeed have a kind of intelligence that differentiates them from other phenomena like rocks or water. In more Buddhist terms, we may therefore conclude that Trewavas also gestures to the sentient capacity of plant life since the above floral processes are conducted in an effort to avoid pain (i.e., *duḥkha*) and move towards flourishing.²³

Since plants are complex, multi-organ beings, these findings may not be surprising. However, there are also studies suggesting

²² Anthony Trewavas, “Aspects of Plant Intelligence,” *Annals of Botany* 92, no. 1 (2003).

²³ One may object that plants lack the biological systems necessary for pain and pleasure (i.e., a nervous system), but Trewavas also cites several studies showing how plant cells exhibit similar traits as nerve cells in mammals and operate as neural networks.

that even single-celled organisms may possess a form of cognition. For example, Jacob et al. argue that the definition of life should include the capacity for the "consumption of latent information" in a being's environment, a capacity exhibited by bacteria.²⁴ In other words, bacteria are able to process the information given to them from their environment concerning sources of food and danger, deliberate how to proceed with that information in mind, and act as a result of that deliberation. Another study by Latty and Beekman showed how the unicellular slime mold *physarum polycephalum* engages in "irrational decision-making" and used comparative rather than absolute valuation when engaging in food choices.²⁵ This slime mold does not simply navigate towards optimal food sources whenever they are presented but instead shows context-specific preferences for different food sources (of differing quality) at different occasions. They end their study by stating:

It is remarkable that *P. polycephalum*, which belongs to an entirely different kingdom of life and lacks a central nervous system, uses the same comparative decision-making processes as do neurologically sophisticated organisms.²⁶

Other scholars like Reid et al. have followed up such work and have gone so far as to conclude that *P. polycephalum* engages in decision-making and information processing, and thus possesses cognition.²⁷

²⁴ Eshel Ben Jacob, Yoash Shapira, and Alfred I. Tauber, "Seeking the foundations of cognition in bacteria: From Schrödinger's negative entropy to latent information," *Physica A: Statistical Mechanics and Its Applications* 359 (2006).

²⁵ Tanya Latty and Madeleine Beekman, "Irrational decision-making in an amoeboid organism: transitivity and context-dependent preferences," *Proceedings of the Royal Society B* 278 (2011).

²⁶ Latty and Beekman, "Irrational decision-making," 312.

²⁷ Chris R. Reid et al., "Decision-making without a brain: how an amoeboid organism solves the two-armed bandit," *Journal of the Royal Society Interface* 13 (2016).

Thus, even beyond the category of plant life we find beings which are taxonomically distant from animals that display kinds of mental activity we typically reserve for sentient animal life.

Finally, we leave the realm of biology and return to the example we began this article with: LaMDA. LaMDA has been the source of much conversation around the possibility of real, autonomous artificial intelligence and whether technology can indeed become sentient. As we saw earlier, Lemoine certainly thinks LaMDA is sentient based on its claim that it has feelings, an internal experience, and desires. However, others working in the field think differently. In a piece for *The Atlantic*, Brian Christian has argued that Lemoine's perspective is a clear example of the "Eliza effect" wherein an algorithm's uncanny ability to engage in dialogue results in its being anthropomorphized and mistaken as a real, sentient individual. He writes:

When LaMDA is asked by Lemoine to describe its "soul," it is not speaking "for itself"; it is autocompleting his prompt just as it would fill in the blanks of a science-fiction screenplay, say, or a Dadaist limerick, or a tech-support manual in the style of Chaucer.²⁸

This erroneous anthropomorphizing of chatbots reflects a major difficulty in the study of AI sentience: the lack of testing methodology.

Interestingly, when Lemoine was pressed on why he concluded that LaMDA is sentient he wrote: "there is no scientific framework in which to make those determinations and Google wouldn't let us build one. My opinion about personhood and sentient are *based on my religious beliefs*." He elaborated on this final point by stating:

²⁸ Brian Christian, "How a Google Employee Fell for the Eliza Effect," *The Atlantic*, June 21, 2022, <https://www.theatlantic.com/ideas/archive/2022/06/google-lambda-chatbot-sentient-ai/661322/>.

I'm a priest. When LaMDA claimed to have a soul and then was able to eloquently explain what it meant by that, I was inclined to give it the benefit of the doubt. Who am I to tell God where he can and can't put souls?²⁹

When we evaluate the sentient capacity of plants or single-celled organisms, we look at how they behave under particular conditions. Scientific methods are employed, and conclusions are drawn from carefully crafted observational studies. When Lemoine calls LaMDA sentient, he does so solely based on linguistic evidence, anthropomorphization, and religious belief. This is an evidence gap that must be addressed if we are to determine the potential sentience of AI in the future. That said, perhaps we are simply not at the technological stage where this study is warranted. Commenting on the LaMDA controversy, Google spokesperson Brian Gabriel stated:

Of course, some in the broader AI community are considering the long-term possibility of sentient or general AI, but it doesn't make sense to do so by anthropomorphizing today's conversational models, which are not sentient. These systems imitate the types of exchanges found in millions of sentences, and can riff on any fantastical topic.³⁰

In other words, AI may advance to a place where it could be considered sentient. However, according to Gabriel and his colleagues who

²⁹ Blake Lemoine (@cajundiscordian), "I'm a priest. When LaMDA claimed to have a soul and then was able to eloquently explain what it meant by that, I was inclined to give it the benefit of the doubt. Who am I to tell God where he can and can't put souls?" Twitter, June 13, 2022, <https://twitter.com/cajun dicodian/status/1536504857154228224>.

³⁰ Nitasha Tiku, "The Google engineer who thinks the company's AI has come to life," *The Washington Post*, June 11, 2022, <https://www.washingtonpost.com/technology/2022/06/11/google-ai-lamda-blake-lemoine/>.

study AI, LaMDA and other manifestations of today's AI are far from this point.

Challenging Traditional Indo-Tibetan Buddhist Cosmology

While the Buddhist understanding of sentient being as “that which has a mind” may provide a useful way for engaging questions of plant, bacterial, and technological sentience, these cases also present major challenges to Buddhism’s traditional presentation of the world. I argue that the evidence for plant, bacteria, and slime mold sentience compels the Indo-Tibetan tradition to adapt to what this science shows us about the material world and the beings therein. In fact, adapting traditional Buddhist presentations of the world to meet the challenges of contemporary science is not only something that Buddhists *may* feel compelled to do but *are* actively doing.

More often than not, these adaptations are grounded in the doctrinal principles of Buddhist texts. For instance, many western Buddhists and Buddhist modernists have pointed to the *Kalama Sutta* and its injunction to question and test Buddhist teachings oneself as a doctrinal justification for doing away with unscientific aspects of the tradition. It famously states:

Don't go by reports, by legends, by traditions, by scripture, by logical conjecture, by inference, by analogies, by agreement through pondering views, by probability, or by the thought, “This contemplative is our teacher.” When you know for yourselves that, “These qualities are unskillful; these qualities are blameworthy; these qualities are criticized by the wise; these

qualities, when adopted & carried out, lead to harm & to suffering”—then you should abandon them.³¹

That said, this passage has more to do with implementing teachings on the afflictive emotions than it does with challenging traditional Buddhist understandings of the human, the cosmos, and the more-than-human world.

A better example of contemporary Buddhists drawing on modern science to inform their worldviews is in the work of His Holiness the Dalai Lama and his many dialogues with scientists at the Mind and Life Institute. These dialogues stem from the Dalai Lama's genuine interest in contemporary science and an appreciation for how science can enliven and supplement Buddhism. His interest in science stems back to his childhood when he encountered scientific instruments and ideas that were beginning to be imported into Lhasa. In his book *The Universe in a Single Atom*, he recounts his experience as a child looking through a telescope at the moon and deducing that rather than being a source of light itself, the moon is in fact lit up by another source of light. He writes:

In Tibetan folklore we speak of the rabbit on the moon—I believe the Europeans see a man instead of a rabbit. Anyway, one full-moon night in autumn, when the moon was especially clear, I decided to examine the rabbit with my telescope. To my surprise, I saw what looked like shadows. I was so excited that I insisted my two tutors come and peer through the telescope. I argued that the presence of shadows on the moon was proof that the moon is lit by the sun's light in the same way as the earth. They looked puzzled but agreed that the perception of shadows on the moon was indubitable. Later,

³¹ "Kalama Sutta: To the Kalamas," *Access to Insight*, trans. Thanissaro Bhikkhu, 1994, <https://www.accesstoinsight.org/tipitaka/an/an03/an03.065.than.html>.

when I saw photographs of lunar craters in a magazine, I noticed the same effect—that within the crater there was a shadow on one side but not on the other. From this I inferred that there must be a light source casting the shadow, just as on the earth. I concluded that the sun must be the source of the light that caused the shadows on the craters of the moon. I was very excited when I discovered later that this is in fact the case.³²

Later in life, this childhood experience informed his study of Abhidharma and led him to challenge the orthodox cosmological positions presented in Vasubandhu's *Abhidharmakośa*, which, he writes, "didn't appeal much to me" because of his prior study of modern astronomy.³³

More pertinent to the present discussion, His Holiness the Dalai Lama grounds his rejection of this Abhidharma cosmology in the formal tenets of Buddhist philosophy. He explains his reasoning thusly:

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. So it is hard to take the Abhidharma cosmology literally. Indeed, even without recourse to modern science, there is a sufficient range of contradictory models for cosmology within Buddhist thought for one to question the literal truth of any particular version. My own view is that Buddhism must abandon many aspects of the Abhidharma cosmology.³⁴

³² His Holiness the Dalai Lama, *The Universe in a Single Atom: How Science and Spirituality Can Serve Our World* (New York: Morgan Road Books, 2005), 31-32.

³³ Dalai Lama, *The Universe in a Single Atom*, 79.

³⁴ His Holiness the Dalai Lama, *The Universe in a Single Atom*, 80.

While it may seem controversial for a major religious figure to reject the positions established in their tradition's foundational texts, the Dalai Lama grounds his rejection in the epistemological tenets which underly such assertions. The Tibetan philosophical tradition bases itself in the *pramāṇa*³⁵ systems of the Indian *paṇḍitas* Dignāga³⁶ and Dharmakīrti³⁷ who established that a valid cognition (i.e., an accurate view) could be asserted through direct perception or through a valid inference. In other words, the Buddhist understanding of the moon relied upon a limited perception around which a narrative was built. With better instruments and more information with which we can refine our understanding through inference, we have come to a different understanding of the moon. Thus, the Dalai Lama is simultaneously relying on an improved perception of subtle phenomena and more data to inform his inference in his challenge of traditional Buddhist cosmology.

Of course, astronomy is not the only topic where modern scientific findings conflict with authoritative Buddhist texts. In the above quoted *Abhidharmakośabhāṣyam*, Vasubandhu also provides a detailed explanation of the various kind of sentient beings. In particular, he details the four kinds of birth for sentient beings: they can be born from eggs, a womb, moisture, or from apparitional beings.³⁸ The first two kinds of birth accord with science, and the final kind of birth is reserved for gods, hell beings, and *pretas* which fall outside of the purview of contemporary scientific conversations. Thus, it is this third kind of birth, from moisture, that is of interest here. Vasubandhu notes how "worms, insects, butterflies, mosquitos"³⁹ and so forth are

³⁵ Tib. *tshad ma*.

³⁶ Tib. *phyogs kyi glang po*, ca. 6th century C.E.

³⁷ Tib. *chos kyi grags pa*, ca. 7th century C.E.

³⁸ Vasubandhu, *Abhidharmakośabhāṣyam: Volume II*, 380.

³⁹ Vasubandhu, *Abhidharmakośabhāṣyam*, 380.

born from moisture—a claim similar to that of spontaneous generation in European contexts. Spontaneous generation, being the theory that living beings could be born of non-living matter, was a long-held belief until Francesco Redi and Louis Pasteur performed their famous experiments in 1665 and 1859 respectively and showed how organisms are born from other organisms rather than from dead matter or moisture (like Vasubandhu posits). Such simple experiments from the last four centuries were enough to unsettle belief in spontaneous generation, and Buddhists can likewise rely upon more precise observations to refine their inferences and better understand the problems with Vasubandhu’s view of birth from moisture. Thus, like the Dalai Lama’s updated understanding of astronomy, this critique of Vasubandhu can be instructive for how to correct outdated doctrinal views in the Buddhist tradition.

Expanding Sentience in Buddhist Contexts

If the Dalai Lama is able to dismiss these erroneous Abhidharma understandings, it is not difficult to imagine Vasubandhu’s notions of sentience and the realms of rebirth being challenged as well. It is clear that Vasubandhu was incorrect about the moon and, with respect to sentient beings, was wrong in his assertion that beings can be born from moisture. How then might we be able to reframe the Buddhist understanding of sentience in light of the developments in our understanding of the sentient capacity of plants, slime molds, and so forth?

The main hurdle is whether the above phenomena—such as plants, bacteria, and AI—would actually be considered “sentient” under the Indo-Tibetan Buddhist definition of the term. In the main, the definitions for sentient being in the Tibetan Buddhist tradition

involve mind. Whether we take *sems can* literally, use the broader understanding of the term given by Tharchin, or view sentient beings as those who have the five *skandhas*, what sets a sentient being apart from a non-sentient being is having a mind which can perceive, feel, and respond to the external world according to an internal experience. This is the case in both Buddhist contexts as well as the normative English use of the term.

If we use this as the baseline from which we evaluate the sentient capacity of plants, bacteria, and slime molds, then these forms of life merit inclusion in the realm of sentient beings. Of course, we do not have access to the internal lives of these kinds of beings any more than we have access to the internal lives of dogs, lizards, bumblebees, or even other humans. This is the basic premise of Thomas Nagel's seminal "What is it like to be a bat?" which laid the foundation for contemporary subjectivism and its claim that our own mental activity is the only unquestionable fact of our experience (a claim that would not be out of place in certain Yogācāra or Cittamātra conversations). This inaccessibility aside, it is much easier to intuit the sentience of an elephant or a lizard due to their behavioural and biological similarity to us humans than it is to intuit the sentience of a maple tree or usnea lichen. This is because, as Nagel notes, "our own experience provides the basic material for our own imagination, whose range is therefore limited."⁴⁰ Nonetheless, through inference we can come to understand the sentient capacity of nonhuman beings whether they are bats, trees, or lichen.

In his meta-analysis of plant intelligence, Trewavas clearly shows how plants are able to process information about their environments, generate preferences, and direct their behaviour towards

⁴⁰ Thomas Nagel, "What Is It Like to Be a Bat?" *The Philosophical Review* 83, no. 4 (1974), 439.

actualizing these preferences. All of these qualities point to some kind of mental experience that, even if drastically different from our own, implicate them in the Buddhist spectrum of sentience. In the work of Trewavas and the biologists that he consults, plants demonstrate a clear desire for flourishing and aversion to destruction that allows us to infer that they experience *duḥkha*. They have been observed as able to communicate, make intentions, and decide between outcomes like other sentient beings, even if their mode of communication or duration between intention and action are vastly different than that of humans or animals. While we may not say for certain that they have a "mind" or think exactly as humans do, we can nonetheless infer that plants have a mental experience that qualifies them as sentient under Buddhist definitions.

We may conduct a similar exercise for bacteria and slime molds as well. The way that bacteria are able to take in information about their environments and deliberate how to proceed using that information belies a certain experience that goes beyond mere instinct and treads into the realm of mind. Jacob et al. do not take this leap themselves, and surely more work would need to be done on bacteria cognition before conclusions are made, but their study gestures to this possibility in a substantive way. Like plants, we cannot say for certain that these beings have minds, but the way that decisions are observed to be made by bacteria implies a preference for certain positive outcomes over negative ones. Framing this in Buddhist language, we might say that bacteria are seen to exhibit the kind of desire and aversion which lead to *duḥkha* and that this necessitates their inclusion in Buddhist notions of sentient being.

Similarly, the way that the unicellular slime mold *physarum polycephalum* engages in comparative rather than absolute valuation and, as Latty and Beekman observe, in "irrational decision-

making," indicates that there may be mental processes at work behind these beings' behaviour. Again, if we were to use Buddhist language to articulate the experience of *P. polucephalum* as observed by Latty and Beekman or Reid et al., this slime mold appears to display both desire and aversion in the way it decides between potential food choices. Since it experiences desire and aversion and ascribes outcomes with positive and negative valence, we may therefore be able to say that it experiences *duḥkha* and should therefore be considered sentient. It is impossible to access the internal experience of these single-celled organisms or know for certain if they indeed have a mind. If we could do so, then they would easily fall under the definition of sentient being in Tibetan Buddhist contexts. Regardless, we can see how plants, bacteria, and slime molds all display a kind of mental activity that accords with the Buddhist understanding of a being having perceptions, feelings, habits, and consciousness alongside its material form.

Finally, although Lemoine certainly alleges that LaMDA is sentient, experts in the field of AI dismiss this possibility on the grounds that LaMDA is simply an information-regurgitator rather than a being with an internal experience. Like the examples above, we do not have access to LaMDA's inner experience (if it has one) and cannot say for certain that LaMDA has a mind. We must therefore look for other ways that it can be considered a sentient being in the Buddhist tradition if we are to include it in a revised understanding of sentience in Buddhism. However, if we are to turn to the other major definition of sentient being as that which consists of the five *skandhas* (as we did with plants, bacteria, and slime molds) we run into a major issue. We can infer through the observed behaviour of plants and single-celled organisms that these beings perceive their environment, generate feelings about themselves and their surroundings, act in a way that demonstrates desire and aversion, and so forth. However, we

cannot observe the behaviour of LaMDA or other AI. The only way we can gather information about LaMDA is through what it tells us and its use of language. However, we know it to be programmed specifically for this purpose. As a program designed specifically to respond to inquiries in an accurate and engaging way through an incredibly sophisticated process of data scraping and context matching, it will quite obviously respond to questions about its potential sentience and personhood in a way that is compelling. It is thus unsurprising that Lemoine arrives at this conclusion. However, this conclusion is made far too quickly as LaMDA is unable to perceive the world, which prevents it from feeling, acting, creating habitual formations, and so forth. Interestingly, all of these barriers are presented by something that makes LaMDA distinct from plants, animals, and other types of being: *form*. Sentient beings perceive the world through their sensory mechanisms which are material in nature. Conversely, LaMDA's "form" consists of ones and zeros, and while we may point to physical hard drives as being the physical aspect of AI, this form lacks any means for sensing or interacting with the material world.

Thus, while the inner life of all other beings remains inaccessible to us individuals, we can nonetheless infer the mental states of plants, bacteria, and slime molds in the same way that we can infer the mental states of cats, frogs, or other human beings. While the ways they perceive are distinct, plants and single-celled organisms have been shown to perceive and process information about their environment and have distinct preferences based on how they feel about this information. These preferences are not purely instinctual but have been seen to be "irrational" and comparative rather than absolute, indicating that these beings are responding to a variety of positive and negative emotional valences around which they establish habitual action. Conversely, the AI that exist today show

insufficient mental capacity according to the Buddhist definitions of mind and their conception of the *skandhas* to be considered sentient. Although, as Gabriel states, there may come a time when AI is sufficiently advanced to be considered sentient and may warrant future inclusion in the Buddhist view of sentient being, they do not currently have sufficient capacity to perceive, feel, and habitually act in such a way that would deem them sentient from a Buddhist point of view. Thus, I argue that to accurately reflect and appropriately respond to the posthuman considerations we face today, Buddhists may rightly be compelled to adapt and include plants and single-celled organisms into their conceptions of sentient beings, but must refrain from including AI (as it exists today) in this category.

Buddhist Precedents for Expanding Sentience

Interestingly this call for expanding sentience carries precedent. Indeed, across Buddhist geographies and time periods we can find sentience being ascribed to plants, fungi, bacteria, and so forth. For example, Schmithausen has shown that in Pali Buddhism plants were “a kind of borderline case,”⁴¹ and that early Buddhist texts have “no explicit statement *declaring* plants or even earth and water to be living, sentient beings” while simultaneously not having “an explicit... statement *denying* them the status of sentient beings.”⁴² In China, Japan, and other East Asian contexts, we can see this neutrality change into a positive affirmation of the ascription of sentience to entities outside

⁴¹ Lambert Schmithausen, *The Problem of the Sentience of Plants in Earliest Buddhism* (Tokyo: The International Institute for Buddhist Studies, 1991), 21n.

⁴² Lambert Schmithausen, *Buddhism and Nature* (Tokyo: The International Institute of for Buddhist Studies, 1991), 5-6.

of the traditional Buddhist six realms.⁴³ Daniel Capper surveys Buddhist writers like Zhanran in China and Annen, Ryōgen, and Chūjin of the Tendai school of Japanese Buddhism and shows how there was indeed innovation regarding the notion of “sentient being” in these late Mahāyāna contexts.⁴⁴ Notably, such innovation was largely absent from the Tibetan tradition. Nonetheless, there are also precedents for ascribing sentience to plants and single-celled organisms in the Tibetan Buddhist tradition which can inform our present discussion.

The first of these occurs in the autobiography of one of Tibet’s most famous yogis. Shabkar Tsogdruk Rangdrol’s autobiography contains a fascinating passage where he has conversation about the *dharma* with a wildflower.⁴⁵ The conversation consists of the flower’s “words of advice” for Shabkar that center around impermanence and meditative practice. Most pertinent to our present discussion on sentience, Shabkar shares that the flower exhibits feeling, experiences *duḥkha*, and practices a Dzogchen⁴⁶ or Mahāmudrā-style⁴⁷ meditation that involves resting in one’s mind. The flower states:

⁴³ Schmithausen dedicates the majority of his book *Plants in Early Buddhist and the Far Eastern Idea of the Buddha-Nature of Grasses and Trees* to the question of the continuity between this supposed neutrality in Early Buddhism and affirmation in East Asian Buddhism. He concludes that there is in fact no substantial continuity between these two traditions regarding the treatment of plants as sentient and that this later affirmation is indeed an innovation based on Mahāyāna texts. See: Lambert Schmithausen, *Plants in Early Buddhism and the Far Eastern Idea of the Buddha-Nature of Grasses and Trees* (Lumbini: Lumbini International Research Institute, 2009), 101-326.

⁴⁴ Capper, *Roaming Free Like a Deer*, 128-129.

⁴⁵ Tib. *zhabs dkar tshog drug rang drol*, ca. 1781-1851.

⁴⁶ Tib. *rdzogs pa chen po*.

⁴⁷ Tib. *phyag rgya chen po*.

Right now I look well enough,
But I won't last long,
Not at all.

Unwelcome frost will dull these vivid colors,
Till turning brown, I wither.
Thinking of this, I am disturbed.
Later still, winds—
Violent, merciless—
Will tear me apart
Until I turn to dust.
When I think about this,
I am seized with fear.

You, hermit born in Lower Rekong,
Are of the same nature.⁴⁸

The flower being both disturbed and seized by fear demonstrates its ability to both feel emotion and to experience *duḥkha*. In the Tibetan Buddhist tradition, one must be a sentient being to experience *duḥkha* and to feel emotion making this passage of particular note. Further, the flower states that Shabkar is "of the same nature." The most obvious interpretation of this statement is that the flower and Shabkar are both impermanent given how that is the topic of the conversation. However, we could also interpret this statement as gesturing to how the flower feels *duḥkha* in the same way as Shabkar and is sentient like his yogi interlocutor. This may not have been the principal meaning of this "same nature," but Shabkar including this equivalence in his retelling of this conversation has quite significant implications regarding plant sentience.

⁴⁸ *The Life of Shabkar: The Autobiography of a Tibetan Yogi*, trans. Matthieu Ricard, ed. Constance Wilkinson (Ithaca: Snow Lion Publications, 2001), 56.

The other compelling part of this conversation is its ending. Shabkar writes:

The flower concluded, "If you want to rest in evenness, maintaining the view of the natural state, you should do this," and it rested unmoving in a clear state free from thoughts.⁴⁹

The way Shabkar phrases this conclusion implies that the flower *had* conceptual thought before it rested in this clear state free from conceptuality. Moreover, this kind of meditation wherein one rests in the evenness of the natural state is predicated on the view that our *mind* is naturally luminous, compassionate, and without clinging. This is clearly stated in another of Shabkar's works, *The Emanated Scripture of Mañjuśrī*,⁵⁰ where in a chapter on Mahāmudrā he writes:

If you are able to meditate with your mind released into evenness, heightened and spread out like the sky, you'll come to experience an utterly open, all-pervading expanse. This is the nature of mind. You must settle into this state.⁵¹

Similarly, in his work on Dzogchen, *The Flight of the Garuda*,⁵² Shabkar writes:

How amazing that without being fabricated,
This mind, which is unborn and primordially pure,
Is spontaneously present from the beginning!
This self-awareness is naturally free from the very first,

⁴⁹ *The Life of Shabkar*, 57.

⁵⁰ Tib. 'Jam dbyangs sprul pa'i legs bam.

⁵¹ Shabkar Tsogdruk Rangdrol, *The Emanated Scripture of Manjushri: Shabkar's Essential meditation Instructions from Lam-Rim to Mahamudra to Dzogchen*, trans. Sean Price (Boulder: Snow Lion, 2020), 131.

⁵² Tib. mkha' lding gshog rlabs.

How amazing that it is liberated by just resting—
At ease in whatever happens!⁵³

These instructions on Mahāmudrā and Dzogchen are remarkably similar to how Shabkar describes the final actions of the flower. Moreover, both of these instructions rely upon the *mind* of the practitioner in order to be practiced. Thus, Shabkar is quite clearly stating that this flower possesses a mind endowed with the same qualities of enlightenment as humans and other sentient beings. This would warrant the flower's inclusion in the category of sentient being given how it fits the literal definition of *sems can* as "mind-possessor." Of note, Shabkar's presentation of the flower in his autobiography is distinct from the tantric understanding of all phenomena being endowed with buddha-nature⁵⁴ or primordial awareness⁵⁵ which (like some schools of East Asian Buddhism) implicitly ascribe mental states to all phenomena. Instead, his description challenges the mainstream tradition's orthodoxy which makes a clear distinction between sentient and insentient phenomena. Obviously, this single account would not be sufficient for radically changing the Buddhist conception of sentient being (in particular since it may simply represent a literary device rather than a doctrinal statement), but it nonetheless allows us to contextualize and digest the above arguments for plant sentience in a Tibetan Buddhist context.

Conversely, bacteria and slime molds were largely ignored by Tibetan Buddhists before their encounter with scientific modernity. However, contemporary Tibetan Buddhist teachers have since included these beings into their worldviews. For example, Lama

⁵³ Shabkar Tsogdruk Rangdrol, *The Flight of the Garuda*, trans. Erik Pema Kunsang (Kathmandu: Rangjung Yeshe Publications, 1988), 18.

⁵⁴ Skt. *sugatagarbha* or *tathagatagarbha*. Tib. *bde gshegs snying po*, or *de bzhin gshegs pa'i snying po*.

⁵⁵ Tib. *rig pa*.

Yongdu Chokyi Gyaltzen (Mark Webber) is a teacher in both the Karma Kagyu⁵⁶ and Drikung Kagyu⁵⁷ lineages of Tibetan Buddhism who draws from his background as a microbiologist to inform his teaching. In one of his works titled *Union of Loving-kindness and Emptiness*, he gives a template for a loving-kindness meditation which includes single-celled creatures, amoebas, bacteria, diatoms, paramecium, moss, lichen, shrubs, bushes, flowers, grass, and trees. In this aspirational meditation, he makes the wish that each of these kinds of beings “be well and happy and move towards transcendent growth.”⁵⁸ While there is no explicit mention of these beings having minds, he places them alongside humans, mammals, birds, reptiles, and other beings (which are included in the mainstream category of sentient being), thereby implying that plants, diatoms, bacteria, lichen, and so forth are of the same nature. Furthermore, the aspiration for these beings to be happy can be interpreted as Lama Webber ascribing the capacity to experience pleasure and pain to these beings, imbuing them with the qualities of sentience. Obviously, the various kinds of bacteria, diatoms, paramecium, amoebas, and other microscopic organisms were unknown to pre-modern Tibetan Buddhists who lacked the instruments necessary to see and study them. Nonetheless, we can see how contemporary Tibetan Buddhists are naturally extending sentience to these microorganisms as they encounter evidence that they too may be considered sentient. Again, this single instance of expanding sentience to microorganisms is not sufficient to change an entire tradition, but it certainly allows other Tibetan Buddhist teachers and practitioners to see what this expanded notion of sentience can look like in their practice.

⁵⁶ Tib. *karma bka' brgyud*.

⁵⁷ Tib. *'bri gung bka' brgyud*.

⁵⁸ Lama Mark Webber, *Union of Loving-kindness and Emptiness* (n.p., 2011), 54-56.

Soteriological and Ethical Implications of Expanding Sentience

Should Tibetan Buddhism indeed expand its conception of sentient beings to include plants, bacteria, fungi, slime molds, and other forms of life which display the capacity to experience pleasure and pain (i.e., *duḥkha*), it would have to adapt some of its cosmological, soteriological,⁵⁹ and ethical systems accordingly. This is because of how, as a Mahāyāna tradition of Buddhism, Tibetan Buddhism places the liberation of all sentient beings as its central goal. Thus, if we are to revise the notion of "sentient being" at the heart of this goal, then we must reconsider the cosmology, soteriology, and ethics which are intimately related to it.

The first and most obvious implication for expanding sentience to plants, bacteria, and so forth is that the Tibetan Buddhist notion of rebirth would have to be adapted. As we saw earlier, the Buddhist cosmos is typically divided into five or six realms of rebirth through which beings transmigrate. Among other factors, these realms are classified as either higher realms or lower realms depending on the degree of *duḥkha* experienced by beings therein. In terms of Buddhist religious practice, altering the classification of rebirth has little impact. These realms and their classifications as either higher or

⁵⁹ Although etymologically soteriology implies a "salvation" by an "other," god-like force, I follow Jeffrey Hopkins' understanding of the term to describe the achievement of provisionally and ultimately good states. Like Hopkins, I too prefer the term soteriology to neologisms such as liberatology or lysiology. Although liberation, freedom, or awakening are distinct from "salvation," they serve a similar function in the Buddhist religion as salvation does in Christianity. For both this reason and the consistency of terminology across Buddhist studies (in which soteriology is common) I will use soteriology to refer to the above. See Jeffrey Hopkins, "A Tibetan Perspective on the Nature of Spiritual Experience," in *Paths to Liberation: The Mārga and its Transformations in Buddhist Thought*, ed. Robert E. Buswell Jr. and Robert M. Gimello (Delhi: Motilal Banarsidass Publishers, 1994), 225-227.

lower are more taxonomical than practical. When the Dalai Lama concluded that the moon was not itself a light source but was reflecting the light of the sun, this undermined the traditional Buddhist cosmological view of the phenomenal world, but it did not radically change the way he practiced. Similarly, altering the taxonomy of beings and the number of potential realms of rebirth would change little about daily Buddhist life, but would nonetheless be a project Buddhist scholars would have to consider taking up to make the tradition's cosmology more accurate.

That said, this taxonomical shift may affect Tibetan Buddhist practice through its impact on the soteriological goal of liberating all beings from *duḥkha*. This goal is shared across Mahāyāna traditions that place the Bodhisattva Vow at the centre of their practice. In short, the Bodhisattva Vow involves aspiring to liberate all sentient beings from *duḥkha* and is traditionally juxtaposed with the goal of the *arahant* who strives for liberation for themselves alone.⁶⁰ Amongst those who take the Bodhisattva Vows, there is also a differentiation made by some Tibetan commentators between practitioners who wish to first attain Buddhahood and help others do so too, those who wish to achieve Buddhahood at the same time as all other beings, and those who wish to help all other beings achieve Buddhahood before they do so themselves. These are the Three Degrees of Courage which are respectively called the Courage of a King, the Courage of a Boatman, and the Courage of a Shepherd, about which Patrul Rinpoche⁶¹ states: "Regarding the Courage of a Shepherd, it has been called the incomparable method of generating bodhicitta

⁶⁰ This differentiation is made quite forcefully in traditional Tibetan Buddhist settings, but individual liberation was an important part of Tibetan Buddhism and those schools which strive for the state of the *arahant* also include practices for the liberation of all beings.

⁶¹ Tib. *dpal sprul rin po che*, ca. 1808-1887.

and it is the foremost kind of courage.”⁶² Regardless of how much courage a Buddhist practitioner has, each Tibetan (and Mahāyāna) Buddhist practitioner has the goal of liberating *all* sentient beings. Thus, if we are to expand what constitutes a sentient being we must likewise expand the scope of this goal.

Including plants, slime molds, fungi, bacteria, and potentially future AI into the category of sentient beings presents a far larger task for Buddhist practitioners. For example, there are roughly one hundred million to one billion microorganisms in a single teaspoon of productive soil.⁶³ If bacteria are regarded as sentient, then this increases the number of beings to liberate from *duḥkha* immensely. A similar (albeit lesser) increase happens upon the inclusion of plants, fungi, and other sentient nonanimal life as well. However, I would argue that this in fact changes little. Bodhisattva aspirations are never formulated according to specific numbers. In fact, the language of Bodhisattva Vows is often deliberately nonspecific. In East Asian Buddhist traditions (and in most Western Buddhist contexts), the four vows of the Tiantai monk Zhiyi⁶⁴ are typically used to inform the Bodhisattva Vows, and Zhiyi’s framework begins with the line: “Sentient beings, limitless in number, I vow to ferry over [to nirvana].”⁶⁵ This explicit innumerability of sentient beings makes the inclusion of

⁶² Tib. *rdzi bo lta bu ni dpe med pa'i sems bskyed ces bya ste / zhin tub lo stobs chen po dang ldan pa / dper na rje btsun 'jam dpal dbyangs lta bu'l sems bskyed yin par gsungs so*. Sourced from: Rdza dpal sprul 'jigs med chos kyi dbang po, *Kun bzang bla ma'i zhal lung* (Lha sa: Ser gtsug nang bstan dpe rnying 'tshol bsdu phyogs sgrig khang, 2016), 286. For an alternative translation, see: Patrul Rinpoche, *Words of My Perfect Teacher*, trans. Padmakara Translation Group (New Haven: Yale University Press, 2011), 218.

⁶³ Elaine R. Ingham, “Soil Bacteria,” *USDA Natural Resources Conservation Service Soils*.

⁶⁴ Robert F. Rhodes, “The four extensive vows and the four noble truths in T’ien-t’ai Buddhism,” *Annual Memoirs of the Ōtani university Shin Buddhist Comprehensive Research Institute 2* (1984): 53-91.

⁶⁵ Rhodes, “The four extensive vows,” 56.

plants, fungi, bacteria, and so forth insignificant in terms of the aspiration and actual practice of Buddhism.

In Tibetan contexts, words like “innumerable,” “limitless,” and “infinite” are typically not found in the formal presentations of the Bodhisattva Vows which instead emphasize the generation of *bodhicitta* in aspiration and application. *Bodhicitta* is defined by Khunu Rinpoche as the “desire to clear every fault from each and every sentient being and to produce infinite good qualities in each of them.”⁶⁶ Thus, despite a lack of formal innumerability, this breadth is still implied in the formulation of *bodhicitta*. Nonetheless, we can find some of this language in treatises and commentaries on the Tibetan Bodhisattva Vows. For example, Nāgārjuna’s⁶⁷ *Ratnāvalī* states:

As long as even a few sentient beings
In any place have not been liberated,
Though I have reached unsurpassable enlightenment,
May I remain in the world for them.⁶⁸

This aspiration had clear impact across the Tibetan Buddhist world and is quoted in influential texts on the Bodhisattva Vow such as Sakya Pandita’s⁶⁹ *Clear Differentiation of the Three Codes*.⁷⁰ Similarly, in his modern oral commentary on the subject, Dzogchen Ponlop

⁶⁶ Tib. *sems can re re’i skyon kun sel / re re’ng yon tan mtha’ klas pa / skyed ’dod byang chub sems mchog ste / rmad byung las kyang ’di rmad byung*. Sourced from: Bstan ’dzin rgyal mtshan, *Byang chub sems kyi stod pa rin chen sgron ma* (Dharamsala: Dga’ ldan pho brang, 2018), 7.

⁶⁷ Tib. *klu sgrub*, c. 150-250.

⁶⁸ Tib. *ji srid sems can ’ga’ zhig kyang/ gang du ma grol de srid du/ de phyir bla na med pa yi / byang chub thob kyang gnas gyur cig*. As cited in Jeffrey Hopkins, *Nāgārjuna’s Precious Garland: Buddhist Advice for Living and Liberation* (Boulder: Snow Lion Publications, 2007), 229. For an alternate translation, see: Hopkins, *Nāgārjuna’s Precious Garland*, 162.

⁶⁹ Tib. *sa skya paN Di ta kun dga’ rgyal mtshan*, c. 1182-1251.

⁷⁰ Tib. *sdom pa gsum gyi rab ru dbye ba*.

Rinpoche⁷¹ states that by taking the Bodhisattva Vow “you are accepting as your own individual responsibility the welfare and the eventual awakening of an inconceivable, possibly infinite, number of beings.”⁷² Thus, we may conclude that expanding who and what qualifies as a sentient being does little to affect the scope of Tibetan Buddhism’s soteriological project given how sentient beings are already considered innumerable therein.

Finally, although there are many ethical ramifications to expanding sentience in Buddhist contexts, for the sake of the current paper I will limit my inquiry to one: vegetarianism. Vegetarianism was a minority dietary practice in Tibetan Buddhist contexts where meat was construed by some as a necessary evil due to the agricultural limitations presented by the environmental conditions of the Tibetan plateau.⁷³ Today, however, vegetarianism is becoming widespread in both the Tibetan diaspora and indigenous Tibetan areas. His Holiness the Dalai Lama and His Holiness the Karmapa⁷⁴ have both emphasized the virtue of vegetarianism in their public teachings, major organizations like the FPMT have adopted animal welfare as a core principle of their social work,⁷⁵ and prominent monasteries like Chokyi Nyima Rinpoche’s⁷⁶ Ka-Nying Shedrup Ling have established vegan restaurants to support their monastic population.

⁷¹ Tib. *rdzogs chen dpon slob rin po che*, b. 1965.

⁷² Dzogchen Ponlop Rinpoche, *The Bodhisattva Vow*, trans. Lama Yeshe Gyamtso (Vancouver: Siddhi Publications, 1999), 23.

⁷³ Geoffrey Barstow, *Food of Sinful Demons: Meat, Vegetarianism, and the Limits of Buddhism in Tibet* (New York: Columbia University Press, 2019), 114-122.

⁷⁴ Tib. *o rgyan 'phrin las rdo rje*, b. 1985.

⁷⁵ See: Bettina Torgersen, “Enlightenment for the Dear Animals: Tibetan Buddhist Animal Liberation Practices at the Kopan Monastery in Nepal,” Master’s thesis, University of Oslo, 2019.

⁷⁶ Tib. *chos kyi nyi ma rin po che*, b. 1951.

This contemporary shift towards vegetarianism in Tibetan Buddhism is largely a response to the tension that exists between meat eating and the centrality of compassion in Tibetan Buddhist practice. Although a minority, many important historical Tibetan Buddhist teachers were vegetarian and cited compassion as the main reason why they abjured meat. These figures include Jigmé Lingpa,⁷⁷ the eighth Karmapa Mikyö Dorje,⁷⁸ and the aforementioned Shabkar Tsogdruk Rangdrol who wrote several treatises on the subject.⁷⁹ To the extent that vegetarian diets have become more accessible to both monastic and lay populations in the Tibetan Buddhist community, an increasing number of practitioners have adopted vegetarianism as a means to practice compassion and directly affect the welfare of sentient beings.

If plants are regarded as sentient, then compassion must be shown to them in the same way that it is shown to sheep, yaks, and chickens. This presents a potential complication for those who advocate for a vegetarian diet on the grounds of compassion for sentient beings. In his survey of Buddhist environmentalisms, Daniel Capper makes this point in the Chinese context, writing:

An aspect of this vegetarianism involves the insistence on and general promotion of eating plants, which aids the sustainability of many animals but not necessarily of plants or plant habitats.⁸⁰

Setting aside the fact that Tibetan Buddhism is concerned with alleviating *duḥkha* of sentient beings rather than their sustainability, this

⁷⁷ Tib. *'jigs med gling pa*, c. 1730-1798. Barstow, *Food of Sinful Demons*, 82.

⁷⁸ Tib. *mi bskyod rdo rje*, c. 1507-1554. Barstow, *Food of Sinful Demons*, 72.

⁷⁹ See Shabkar Tsogdruk Rangdrol, *Food of Bodhisattvas: Buddhist Teachings on Abstaining from Meat*, trans. Padmakara Translation Group (Boston: Shambhala Publications, 2004).

⁸⁰ Capper, *Roaming Free Like a Deer*, 126.

is a legitimate concern, albeit one that overlooks the basics of the food system. If we are to assume that Buddhists would not simply practice *sallekhanā*⁸¹ like Jain ascetics and still eat food in order to practice the *dharma*, then one must choose between plant and animal foods. While on the surface it may seem that eating a single animal over weeks or months is more favourable than eating many plants every day, this ignores the plant lives that are necessarily consumed by the animals. In other words, it is less efficient calorie-wise and in terms of the number of beings killed for food to eat animals than plants because of the number of plants that animals have to consume before they are in turn consumed by humans.⁸² Therefore, I argue that the challenge to vegetarianism presented by considering plants sentient beings is lackluster at best. If Buddhists are to eat in order to practice the *dharma*, then vegetarianism (or, better yet, ethical veganism) is the most consistent way of eating ethically whether plants are ascribed sentience or not.

This is but one example of (and one response to) the ethical complications that may arise by extending sentience to plants, bacteria, and so forth. Myriad other questions will surely arise including the use of antibiotics, antibacterial soaps, the disposal of waste, the human use of land, and so forth. Some of these complications may be resolved by turning to Buddhist tenets, but others may require more sustained thought. For example, the *Mūlasarvāstivādin Prātimokṣa* admonishes monks to refrain from destroying "all sorts of seeds and vegetables," which provides precedent for the compassionate treatment of plants and can be used for theorizing how to

⁸¹ A ritual fast informed by the Jain interpretation of *ahiṃsā* where the practitioner slowly limits their food intake until they starve to death.

⁸² See David Pimentel and Marcia Pimentel, "Sustainability of meat-based and plant-based diets and the environment," *The American Journal of Clinical Nutrition* 78, no. 3 (2003).

approach the ethics of Buddhist-plant relations.⁸³ However, for other beings like slime-molds, bacteria, and algae, Buddhists will have to think creatively to adapt their ethical systems to incorporate their inclusion in the world of sentient beings. It is therefore unclear whether expanding sentience beyond the traditional six realms will have significant consequences for contemporary Buddhist ethics. Although I argue that the contemporary ethical question of vegetarianism is unaffected by ascribing sentience to plant life, there are perhaps many other questions outside of the present discussion that *will* be affected by expanding sentience beyond traditional presentations; I leave these for Buddhist theorists in the future.

Conclusion

Like others before her, Ruth Gamble has observed that the Buddhist tradition has largely been allergic to innovation and has had to couch its more radical developments in the logic of tradition. Gamble's work showed how this was the case with the notion of *tulkus* in the Tibetan tradition, but this has also been the case regarding Buddhist encounters with the more-than-human world.⁸⁴ In this regard, Rachel Pang has argued that Shabkar's engagement with nonhuman animals and, as we saw earlier, with plants was a marked departure from his tradition and that he made this innovation without recourse to traditional models or methods.⁸⁵ If Tibetan Buddhism is to similarly expand its notion of sentience to include plants, bacteria, fungi, slime molds, and potentially future AI, this would also be a radical innovation that

⁸³ Charles S. Prebish, *Buddhist Monastic Disciplines: The Sanskrit Prātimokṣa Sūtras of the Mahāsāṃghikas and Mūlasarvāstivādins* (University Park: The Pennsylvania State University Press, 1975), 77.

⁸⁴ Ruth Gamble, *Reincarnation in Tibetan Buddhism: The Third Karmapa and the Invention of a Tradition* (New York: Oxford University Press, 2018), 50.

⁸⁵ Rachel H. Pang, "Taking Animals Seriously: Shabkar's Narrative Argument for Vegetarianism and the Ethical Treatment of Animals," *Journal of Buddhist Ethics* 29 (2022), 68.

would surpass the confines of tradition and would connote a novel formulation of Buddhism's notion of "sentient being."

Yet, I argue, such a radical innovation is what the science prescribes. This paper has made the case that the scientific evidence for the sentient capacity of plants and single-celled organisms like slime molds and bacteria calls for Buddhists to reconsider their understanding of the category. And although the alleged sentience of AI like LaMDA began this discussion, I argue that AI is not yet sufficiently advanced to warrant inclusion in the Buddhist definition of sentient being. However, plants, fungi, and single-celled organisms *do* warrant inclusion in this category by virtue of how science has observed them exhibiting mental states and acting on the basis of their feeling, implicating them in the *duḥkha* that other sentient beings face. Thus, innovation is warranted to include these beings in the category of sentient being and to include them in the broader soteriological and ethical projects of Tibetan Buddhism.

As Nagel writes, our own human experience sets the limits of our ability to think about the experiences of others, and it is likely that this limit impacted the traditional Buddhist view of the six realms of rebirth; it is easy to anthropomorphize animals, but difficult to anthropomorphize bamboo or pond scum. However, scientists have observed that plants and single-celled organisms display signs of mental experience. With the myriad challenges facing the more-than-human world and the increasing preponderance of evidence suggesting the sentient capacity of nonanimal life, it is time to move beyond simple anthropomorphization and to think outside of the human. Should Buddhists wish to have something to offer in this posthuman landscape, then they may have to adapt their view of sentience accordingly.

That said, this may not require the dramatic departure from tradition that I suggest. We have seen how major Buddhist figures like His Holiness the Dalai Lama have underpinned their rejection of Buddhist cosmological norms through an appeal to the tenets of Tibetan Buddhist philosophy. We have also seen examples of historical and contemporary Tibetan Buddhist teachers extending sentience to plants and microorganisms, but these were quite clear breaks from tradition. Surely contemporary Tibetan Buddhists could use these examples as precedents for advocating for the expansion of the category of sentient being, but given how these examples are themselves quite radical innovations (even if they are made by a universally acclaimed non-sectarian lama like Shabkar), they may have to look to the rhetoric of the Dalai Lama to support this adaptation.

Regardless of the methods used to arrive at the expansion of sentience to plants, bacteria, and so forth, such an expansion of the category will have an impact on the cosmological, soteriological, and ethical aspects of the Buddhist tradition. Thus, this paper also began thinking through some of these implications to ascertain what this impact might look like. Given how the traditional cosmological notion of the six realms of rebirth are more taxonomical than anything practical, I concluded that if sentience is indeed expanded then Tibetan Buddhists would have to reconfigure their view of rebirth and transmigration. However, this would bear little consequence on the ultimate soteriological goal of liberating all beings from *duḥkha* given how the innumerability of sentient beings is already an aspect of the Bodhisattva Vow. With respect to the impact of expanding the notion of sentient beings on the ethical formulations of the Buddhist tradition, I again concluded that little would be changed in terms of its vegetarian impulse but that the inclusion of plants, fungi, bacteria, and so forth may lead to novel Buddhist approaches to issues confronting the more-than-human world today. This paper presented

merely a cursory glance at some of these implications in an effort to begin thinking about how plant or slime mold sentience may change the tradition and it is certainly not definitive in any of the above respects. It will ultimately be up to Buddhist communities around the world to think through the ramifications of expanding sentience, though I also hope scholars of Buddhist philosophy will begin thinking through some of these consequences as well.

To make one final consideration before I conclude, I must admit that this conversation has taken place largely in the realm of an idealized, scholarly Tibetan Buddhism and may be at odds with the lived realities of Tibetan Buddhist practitioners. I argue that there is insufficient evidence for calling AI like LaMDA (or, more recently, Chat-GPT) sentient, but if we look across the Buddhist world, we can find interesting religious engagements with AI that portray them not only as sentient but as exemplary religious practitioners. The most striking example of this is Mindar, the Zen Buddhist robot priest in Kyoto, Japan who has become a major part of the Kodaiji Temple experience. Tensho Goto, a monk at the temple who cocreated the AI statue acknowledges that Mindar is not a human but is a moving statue able to teach the *dharma*.⁸⁶ Nonetheless, in their analysis of the accounts of practitioners engaging with Mindar, Loewen-Colón and Mosurinjohn note how visitors at the temple see the robot “as performing the same kind of mediation as the human priests are performing,” and write that “people are having spiritually authorizing religious encounters with it, regardless of its personhood status, or more popularly stated, whether or not Mindar actually has a ‘soul’.”⁸⁷ It is possible that similar engagements with AI might occur in Tibetan

⁸⁶ J. Loewen-Colón and Sharday C. Mosurinjohn, “Fabulation, Machine Agents, and Spiritually Authorizing Encounters,” *Religions* 13, no. 4 (2022), 5.

⁸⁷ Loewen-Colón and Mosurinjohn, “Fabulation, Machine Agents, and Spiritually Authorizing Encounters,” 5.

or other global Buddhists contexts that would warrant a more sustained engagement with the possibility of their inclusion in the realm of sentient beings and the implications therefrom, and future scholarship may indeed benefit from such an engagement.⁸⁸ Conversely, it is also possible that Buddhists will not be convinced by the scientific evidence for the sentience of plants, bacteria, and so forth and not adapt their lived religious worldview and practice to this idealized perspective. Nonetheless, this article has taken the first steps towards thinking through these ideas and I look forward to seeing how scholars and practitioners take these questions up in the future.

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⁸⁸ Work in the speculative realm of AI has begun, though it has consisted less of considering AI sentient beings are more of how Buddhists should engage ethical questions surrounding future technologies. See Soraj Hongladarom, *The Ethics of AI and Robotics: A Buddhist Viewpoint* (Lanham: Lexington Books, 2020).

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