Buddhist Meditation and the Ethics of Human Augmentation

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Abstract
Emergent technologies of “Human Augmentation,” typically associated with the related concepts of “Human Engineering” and “Human Enhancement,” are rapidly changing the nature of human embodiment and have profound social and moral implications. Particularly noteworthy among these are technologies that enhance human physical, sensory, and cognitive capacities, from artificial limbs and visual and hearing aids that expand action and perception, to wearables and implants that provide instant access to vast amounts of data and augment knowledge of, and control over, otherwise autonomous physical processes. A counterpoint to technologies that aim to transform human embodiment are those that aim to transcend embodiment entirely, such as “uploading,” in which human consciousness is moved from the “wetware” of the human body and brain to machine-based “hardware.” Some technologists and enthusiasts view such augmentation as potentially ushering in the transformation of humanity into a different order of being—first, as “transitional humans” or “transhumans,” and second, as “posthumans” that represent a new evolutionary era for humanity, and, perhaps, the building blocks of utopia. This paper will argue that the philosophy and practice of Buddhist meditation (Skt. dhyāna) or meditative cultivation (bhāvanā) provides a paradigm for understanding how Buddhist philosophy and ethics might address issues raised by the augmentation of human capacities. It will also demonstrate how emergent philosophical and religious conceptions of the Transhuman and Posthuman can be compared, critiqued, and re-interpreted in light of Buddhist philosophy and cosmology, both with respect to Buddhist notions of the fluidity of the human-divine boundary and the radical transformation of the awakened Noble Person (āryapudgala).

I. Introduction
Emergent technologies of human engineering, also known as human augmentation or human enhancement, are rapidly changing the nature of human embodiment and have profound social and moral implications (Lilley 2013, 1–12; Häggström 2016, 38–84; Pilsch 2017, 1–24; Hook 2004). Particularly noteworthy among these are technologies that
enhance human physical, sensory, and cognitive capacities, from artificial limbs and visual and hearing aids that expand action and perception, to wearables and implants that provide instant access to vast amounts of data and augment knowledge of, and control over, otherwise autonomous physical processes. A counterpoint to technologies that aim to transform human embodiment are those that aim to transcend embodiment entirely, such as “uploading,” in which human consciousness is moved from the wetware of the human body and brain to machine-based hardware.¹ Some technologists and enthusiasts view such augmentation as potentially ushering in the transformation of humanity into a different order of being—first, as “transitional humans” or transhumans, and second, as “posthumans” who represent a new evolutionary era for humanity, and, perhaps, the building blocks of utopia.² This paper will argue that the philosophy and practice of Buddhist meditation (Sanskrit dhyāna) or meditative cultivation (bhāvanā) provides a paradigm for understanding how Buddhist philosophy and ethics might address issues raised by the augmentation of human capacities. It will also demonstrate how emergent philosophical and religious conceptions of the transhuman and posthuman can be compared, critiqued, and re-interpreted in light of Buddhist philosophy and cosmology, with respect to both Buddhist notions of the fluidity of the human-divine boundary and the radical transformation of the awakened Noble Person (āryapudgala).

II. Science, Technology, and Augmentation
In the study of the relationship between religion and science, it is common to distinguish between issues of spirituality and transcendence—that is, between general or universal concerns and the unique content of particular religious traditions, such as Hinduism,

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¹ Fuller and Lipinska depict this as represented by the contrast between Pelagians and Arians, manifest in the visions of Aubrey de Grey and Ray Kurzweil, respectively (Fuller and Lipinska 2015). Ray Kurzweil is particularly associated with the conception of the “singularity,” though the concept was utilized as early as 1958 (Vinge 2013, 366; Kurzweil 2005).

² Hook argues that the name of the transhumanism movement began in the 1980s with the writings of the Futurist FM-2030, whereas Fuller and Lipinska connect the term to the work of Julian Huxley in the 1950s (Hook 2004, 2518; Fuller and Lipinska 2015, 410).
Buddhism, Judaism, Christianity, and Islam (Peters 2005, 8180). With respect to the issue of unique content, Buddhism provides a distinct set of principles that position it quite differently than other religious traditions—particularly the Abrahamic family of Judaism, Christianity, and Islam—including a rejection of metaphysical absolutism and the notions of an “ultimate” creator god and of a substantive self (ātman). On the other hand, there are parallels to be found in how Buddhism and other traditions interact with science and technology—whether that be antagonistically, cooperatively, or as distinct domains, among other possibilities (Peters 2005, 8186; Dixon 2008, 1–17). The recent history of Buddhism, particularly the development of Buddhist modernism and the Buddhism-informed neurosciences, points towards the active engagement of scholars and practitioners of Buddhism and of scientists in a largely cooperation-based or dialogic relationship, one that seeks to frame scientific study as complementary, if not coextensive, to Buddhist endeavors (Lopez 2008, 1–37). The scientific study of Buddhist meditation through the use of high-

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3 For further reference, see the definition of science in the *Oxford English Dictionary*, especially 4b: “A branch of study that deals with a connected body of demonstrated truths or with observed facts systematically classified and more or less comprehended by general laws, and incorporating trustworthy methods (now esp. those involving the scientific method and which incorporate falsifiable hypotheses) for the discovery of new truth in its own domain” (*OED Online*, s.v. “science, n.,” updated March 2014, http://www.oed.com/view/Entry/172672). On technology, OED definitions 4b and 4c are useful: “The application of such knowledge for practical purposes, esp. in industry, manufacturing, etc.; the sphere of activity concerned with this; the mechanical arts and applied sciences collectively” and “The product of such application; technological knowledge or know-how; a technological process, method, or technique. Also: machinery, equipment, etc., developed from the practical application of scientific and technical knowledge; an example of this. Also in extended use” (*OED Online*, s.v. “technology, n.,” updated September 2009, http://www.oed.com/view/Entry/198469).

4 For example, the notion of the danger of science and technology leading to humans becoming, out of their hubris, like “God,” or modifying nature in “unnatural” ways, do not apply to Buddhist thought and practice in a symmetric and coherent way. The dialogue between Buddhism and science undoubtedly looks different from that of science and Abrahamic theism and offers a set of different trajectories (Peters 2005, 8180).

5 Tenzin Gyatso, the fourteenth Dalai Lama, has claimed that he would be willing to try “headwiring” (i.e., implantation of an electrode) if it reduced negative emotions (Hochberg and Cochrane 2013, 245). The Dalai
definition scanning technology such as functional magnetic resonance imaging (fMRI) has been in the vanguard of the contemporary Buddhism-science interface, in part due to the centrality of meditation in Buddhist cosmopolitanism (Lopez 2008, 197–210; Thurman and Goleman 1991). This has, in turn, led to a comparative approach to the Buddhism-Science conversation, one that looks to find cross-cultural expressions of spirituality and focuses on the rootedness of religious experience in the body and the brain (D’Aquili and Newberg 1999; Newberg 2010; Newberg and Waldman 2017).

As such, a significant aspect of the Buddhism-science dialogue of the late twentieth and early twenty-first centuries has been the observation of physiological correlates to Buddhist meditation practice, exemplified by the pioneering work of the Mind & Life Institute and of neuroscientists such as Richard Davidson (Goleman and Davidson 2017). However, a new wave of emergent technologies aim to induce, support, and explore, as opposed to simply measure, the effects of contemplative practice, especially as derived from Buddhist models. These include neurofeedback devices that aim to accelerate meditation practice through the use of electroencephalogram (EEG) technology, as well as transcranial magnetic stimulation (TCMS) and transcranial electrical stimulation (TCES) (Navarro Gil et al. 2018; Leong et al. 2013; Farah 2015; Reteig et al. 2017). In addition, studies being performed on the use of psychoactive agents as catalysts for therapeutic psychological transformation, such as the Johns Hopkins psilocybin study, have examined the ways in which Buddhist meditation practice further facilitates “quantum change,” or dramatic self-transformation catalyzed by psychoactive drugs (Griffiths et al. 2018). Nootropics, formerly known as “smart drugs,” which are supplements intended to enhance brain function, offer another potential approach to augmenting mental capacities, and thus

Lama has also stated publicly the willingness to abandon Buddhist claims if proven false by science. See, for example, Dalai Lama (2005, 2–3).

6 These are increasingly available as consumer and mass production products, such as the Muse Meditation Headband EEG system, TheBrain TCES system, and the Magventure Express TCMS system. Emergent scientific literature has been growing in parallel. The impact of magnetic fields on the brain and their implications for religion are perhaps most popularly associated with Persinger’s “God Helmet,” discussed by Biello (2007).
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meditation (Wexler 2017). Other related technologies include so-called “technodelics”—including virtual reality (VR) and augmented reality (AR) technologies that aim to induce meditative or visionary states through the constructive application of sensory stimulation or “overloading.” Unlike the earlier observation-driven models, such technologies are aimed at inducing contemplative or visionary states, and not just measuring them (Lange 2014).

Such technologies of self-transformation, or “contemplative technologies,” can be subsumed under the larger umbrella of technologies of human augmentation. Interpreters of this technological sphere often differentiate between two primary modes of such intervention: therapy and enhancement (Gert and Culver 2015). The first type of technological intervention seeks the reduction or elimination of various types of harms and the restoration of absent or lost mental and physical capacities; the second aims at the extension of, or addition to, mental and physical capacities, thereby producing extraordinary modes of knowledge and action (Gert and Culver 2015, 360). Therapy is typically viewed as the less morally complicated of the two modes of intervention, though there is considerable debate over whether the distinction between therapy and enhancement is a coherent one (Gert and Culver 2015, 361). Conservative, or “bioconservative,” positions on human augmentation have been expressed both in terms of religious-based critiques of human hubris that emphasize the sanctity of human nature or creation and in terms of secular philosophical and environmental critiques focused on the danger of the unintended or ignored consequences of technology. Intersectionalists, particularly feminists, have expressed optimism at the positive valuation of alterity, or otherness, in

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7 One prominent nootropic company states, “Green tea may, in fact, be the original nootropic herb—first recognized as such by Buddhist monks of the Far East,” arguing for the compatibility between meditation and nootropics (Wright 2018).

8 Enhancement technologies include extraordinary sensory capacities, life extension, and “uploading,” which provide agency beyond the limits of human biophysical existence.

9 Other issues include the degree to which such augmentation is limited or contained, such as somatic-cell genetic engineering, versus being perpetual, such as germ-line genetic engineering. In nonhuman experimentation, the problem of unintended effects looms, for example in the production of GMOs and practices of “DIYbio.”

10 Some of the more disparaging language labels for conservative opinions include “technoluddites” or “technophobes.” See Carrico (2006).
transhumanist thought, but have also articulated concern for the danger that augmentation technologies will only further exacerbate existing injustice and oppression, including gender, economic, and political asymmetries (MacCormack 2016; Haraway 2006). On the other end of the spectrum from the bioconservatives are the avowed transhumanists and posthumanists, especially technophiles who view the process of enhancement as a “manifest destiny” for humans to evolve into a new type or order of being (Carrico 2006). A particularly visible and vocal contemporary representative of the transhumanist movement is the community of biohackers, specifically “body-modders” or “grinders,” who have taken on the task of implementing the technologization of the body (Platoni 2015; O’Connell 2018; Wohlsen 2012; Vargo 2017). Biohackers apply technology in a direct and visceral way to their own biology, creating an embodied bridge between theoretical and applied science encapsulated by the notion of a “technoscience” (Hottois 2015). Transhumanism and posthumanism are often millenarian and utopian in their orientation; both view human augmentation and transformation as inevitable, if not as a good in themselves, and as the culmination of the “human project” (Hook 2004, 2519). Critics, on the other hand, view the transhuman and posthuman projects as potentially reinscribing the faults of modernity, especially social and environmental injustice, on the future, lending toward even greater resource disparity and oppression (Häggström 2016, 48; MacCormack 2016). Will the future be egalitarian and utopian, or will it be a dystopia in which the wealthy and powerful enjoy even greater autonomy and luxury while the rest of humanity competes for an ever-diminishing share of resources? Or might posthumans view humanity as akin to the Neanderthals, as inferiors who should ultimately be eliminated? (Häggström 2016, 48). Some scholars and activists have called for a “technoprogressivism” that negotiates between the extremes of technophilia and technophobia and views social and environmental justice as an essential component of any transhumanist vision (Carrico 2006).

11 Platoni makes a distinction between “soft” and “hard” biohacking, the first being discursive and cultural and the second being machine-technological, which makes for an interesting comparison with contemplative techniques. Vargo (2017) discusses the bioterrorism of the Rajneesh community in Oregon, which by some estimates was a pioneering project in DIYbio.

12 Indian Buddhism’s skepticism regarding “unanswerables” or “non-edifying questions” might be seen to be at parity with a technoscientific approach that is concerned with application more than with theory.

13 An “inevitablist” view articulated by the physicist Freeman Dyson.
III. Ascetic-Contemplative Traditions and Human Augmentation

The origins of Buddhism are associated with the development of Brahmanical asceticism and Śramaṇa traditions in mid-first-millennium BCE India. By most scholarly estimates, this was a period of rapid transformation in the Gangetic plain, driven by the rise of an urban agricultural civilization out of the pre-urban, especially Vedic, culture of northern India (Olivelle 1998, 3–27; Gombrich 2006, 32–60). The Vedic priestly (brāhmaṇa) tradition, perhaps in conversation with heterodox traditions, began to forefront and highlight ascetic and contemplative practices, idealizing the ṛṣi, the “seer,” and the muni, or “silent one,” as templates for virtuoso Brāhmaṇical asceticism. The early Vedic tradition drew inspiration from the soma cult, which built a liturgy around the pressing, praising, and consumption of an elixir (soma) that induced ecstasy. Scholars have wildly debated the identity of the soma plant—ephedra, cannabis, Syrian rue, poppy, the amanita muscaria mushroom, or even an ayahuasca analog—but it is nonetheless clear that it was a psychoactive agent used to inspire ritual performance and visionary experience from early on in the Vedic tradition (Clark 2017). In addition, a type of ascetic referred to as the Keśin, or “long-haired one,” also referred to as muni, is portrayed as ingesting an agent (viṣa) that induces extraordinary visionary states, including possession and flight (Sarbacker, forthcoming 2021, 54). Lastly, the Vedic tradition appears to have utilized the practice of tapas (asceticism, literally “heat”) extensively, most notably the practices of fasting (vrata, abhuñjāna), breath control (prāṇāyāma), and celibacy (brahmacarya), sometimes collectively referred to as austerities (kṛcchra), extolling them as purifying and empowering (Kaelber 1989, 45–71).

The full flowering of ascetic-contemplative techniques of this era is most evident in the Śramaṇa, or “striver traditions,” of the era, particularly in Jainism, Buddhism, and in the Ājīvika tradition, all of which embraced varying degrees of asceticism and contemplation. Narratives of the life of the Buddha illustrate the range and depth of ascetic-contemplative techniques of the era. One aspect of this is his training with Ārāḍa Kālāma and Udraka Rāmaputra, who are said to have taught him meditation on nothingness (ākiṃcanyāyatana).

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14 It is interesting to speculate about how, similarly, the radical transformations of the modern world, especially as brought on by urbanization, industrialization, and information technology, may be a driving force in the success of Buddhism in the contemporary era.
and on “neither perception nor nonperception” (naivasamjñānāsamjñāyatana), states of deep introversion. Gautama’s practice of self-mortification with the five ascetics (pañcabhadravargīya-bhikṣū), exemplified by the Buddha’s fasting to the brink of death, encapsulates a Buddhist critique of Jain traditions of severe asceticism (Bronkhorst 1993, 1–25). The narratives of the Buddha’s renunciation may also contain references to the utilization of immobile posture (āsana), prāṇāyāma techniques (particularly breath retention), and possibly even an analog to the yogic practice of khecarīmudrā, specifically the pressing of the tongue against the palate during prāṇāyāma practices (Mallinson 2007, 17–19).

These various techniques—whether of Brahmanical ascetic or Śramaṇa origin—are distant ancestors of contemporary practices of biohacking. In fact, one might argue that these early Indian ascetics, yogins, and yoginīs were some of the original biohackers, who had discovered how various exogenous catalysts (such as psychoactive substances) and endogenous techniques (such as exposure, immobility, fasting, breath control, sense-withdrawal, and meditation) evoked extraordinary physical and mental states, having “unlocked” or “hacked” their biophysical systems. From the viewpoint of human augmentation, both therapeutic and enhancement aspects are represented in this early Indic context as well—in both narrative and philosophical contexts, it is understood that spiritual

15 Mahāvīra’s attainment of liberation is represented in texts as occurring while fasting from food and water and squatting in the midday sun.
16 Mallinson notes that the Pāli passages indicate the pressing of the tongue against the palate, not placing it behind it, which is the case in khecarīmudrā. As he demonstrates, some passages speak negatively about such practices, and others positively. Many of these practices likely engage the vagal nerve system.
17 It might be noted that fasting has a direct impact on the body’s mechanism for metabolism and may also engage reward processes (e.g., dopamine); pain and stress elicit endogenous pain relief (e.g., body-produced opioids, cannabinoids) and may facilitate learning; and near-death experiences may facilitate the release of endogenous DMT analogs. Though the Buddha rejected bodily mortification, he did not reject asceticism. In addition to the tradition of the dhutāṅga (or dhūtaguṇa) mode of Buddhist practice, in contemporary Buddhism there are controversies regarding the austerities of modern vipassanā practice, such as the Goenka system. With respect to meditation, discussed in detail below, Buddhist techniques are an important part of the contemporary (and popular) biohacker repertoire. See, for example, Pradas (2016). The pervasive role of asceticism in modern culture, often “hidden in plain view,” is discussed by Peeters, Molle, and Wils (2011).
discipline (*yoga*) serves as a basis not only for the elimination of harm (freedom from *duḥkha*, meaning suffering or dissatisfaction) but also for the attainment of an array of extraordinary powers of perception and action (such as mind-reading, flight, and divine sight). Whether the elimination of suffering (*duḥkha*) was temporary or lasting in a given traditional context was a matter of dispute, and the Buddha is repeatedly portrayed as rejecting practices due to their limited or temporary effect. The power resulting from ascetic and contemplative practice was viewed as morally and spiritually ambiguous, in some cases being framed as a significant impediment to spiritual practice (Sarbacker 2008, 166–67). This dynamic reaches a subtle but profound expression in practice of meditative cultivation (*bhāvanā*), which is said to be derived from the awakening experience of the Buddha himself, and, as we will see, provides a philosophical and moral template for reflecting on the augmenting of human capacities through technology.

**IV. The Śamatha-Vipaśyanā Distinction and Human Augmentation**

One of the principal frameworks for understanding Buddhist meditation that developed in the centuries following the life of the Buddha, especially during the late centuries BCE and early centuries CE, was the distinction between serenity (*śamatha*) meditation and insight (*vipaśyanā*) meditation (Sarbacker, forthcoming 2021, 82–86). This distinction was, in part, viewed as a systematization of the method of the historical Buddha himself, who, having abandoned the practice of austerities at the discovery of the Middle Way, is said to have taken up the practice of mental cultivation (*bhāvanā*), specifically meditation (Pāli *jhāna*, Sanskrit *dhyāna*), which became a basis for his awakening experience through his cultivation of insight (*vipaśyanā*) into the nature of embodied existence (Shaw 2006, 1–20).

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18 Illustrated, among other ways, in narratives of battles and competitions over psychic power.

19 Whether such techniques—including meditation—are, in fact, technologies is not the primary concern here. For a further discussion of that issue, see Gleig (2015). A provocative representative of the term “technology” with respect to the larger context of the practice of mind-body discipline (*yoga*) is found in Feuerstein (1990). A common trope in the modern era has been that of the “science of Yoga,” which ostensibly draws upon Sanskritic notions of “Yoga knowledge” (*yoga-vidyā*) but appeals to the modern, secular framing of Yoga and its rhetorical power (Sarbacker 2014, 105–8).

20 Particularly in the classical Śramaṇa traditions of Buddhism, as represented in the *Vimuttimagga*, *Visuddhimagga*, and *Abhidharmakośa*, among other texts.
Bhāvanā, and by extension both śamatha or vipaśyanā, is understood to be rooted in the practice of mindfulness (smṛti), the cultivation of a reflective awareness that helps cultivate and sustain meditative practice.\(^{21}\) In the Indian Buddhist context, dhyāna (Pāli jhāna), the goal of śamatha, is a deep and powerful meditative absorption typically achieved through the contemplation of a single meditation subject, whether the breath, an image of the Buddha, or another physical or mental object (Shaw 2006, 1–20). The various subjects have an “antidotal” quality, in that they are understood to counteract particular mental afflictions. Meditation on the breath, for example, is said to counter the affliction of over-rumination, and meditation on loving-kindness (maitrī) counters anger and hatred (Gunaratana 1985, 22–26). The establishment of facility in dhyāna is said to lead to various forms of higher knowledge (abhijñā), which are five types of extraordinary capacity, including [psychic] accomplishments (ṛddhi), mind-reading (paracittajñāna), the divine ear (divyāśrotra), the divine eye (divyacakṣus), memory of former lives (pūrvanivāsānusmr̥ti), and the knowledge that destroys mental pollutants (āśravaksayajñāna). Śamatha is said to lead to mental purification, calmness and focus, and extraordinary capacities, facilitating but not bringing about awakening.

Vipaśyanā represents, in contrast, what is often considered uniquely Buddhist about meditative cultivation (bhāvanā), namely the cultivation of liberating insight. The Buddha’s awakening experience is characterized by his attainment of śamatha (Pāli samatha, specifically jhāna) and abhijñā followed by his liberating insight into the process of birth and rebirth, conceptualized in the form of the perception of the Four Noble Truths (catvāri āryasatyāni). Vipaśyanā is represented in Indian Theravāda Buddhist commentarial traditions by the development of the Foundations of Mindfulness (smṛtyupasthāna), including body (kāya), feelings (vedanā), mind (citta), and principles (dharma). In Mahāyāna, vipaśyanā is associated with concepts such as śamathavipaśyanāyuganaddha, or the “union of calming and insight,” especially as meditation on emptiness (śūnyatā) or Buddha-nature (tathāgatagarbha, buddhadhātu). In this understanding, śamatha is an instrument that supports liberating insight through vipaśyanā but is not an end in itself. It provides temporary relief through eliminating the manifest afflictions in the mind,

\(^{21}\) Contemporary usage of the term “mindfulness” extends well beyond such technical usage. For a larger perspective on the adaptation of the terms smṛti and “mindfulness” over time, see Williams and Kabat-Zinn (2013).
cultivating mental composure, calmness, and concentration that support *abhijñā* and *vipaśyanā* (Shaw 2006, 18–20; Sopa 1978). Šamatha temporarily suspends mental affliction, whereas *vipaśyanā* removes the roots of affliction.

Additionally, the cognitive states of *śamatha-bhāvanā*, specifically those of the *dhyāna* and *samāpatti* states, are connected to those of divine brahmās and devas who dwell in the higher cosmological realms of the form (*rūpa*) and formless (*ārūpya*) realms (*dhatu*) of existence, who, insulated from the travails of the Desire Realm (*kāmadhātu*), are largely unmotivated to pursue liberation (Sarbacker 2005, 104–8). *Vipaśyanā*, on the other hand, destroys the roots of affliction, leading to the achievement of awakening (*bodhi*) and liberation (*vimukti*). As the roots of affliction are destroyed, the propensity to perform unvirtuous or unskillful (*akuśala*) action is eliminated, transforming the worldly (*laukika*) practitioner into an otherworldly (*alaukika*) saint. Unlike the worldly brahmās, the āryapudgala has achieved at least a degree of liberation from *samsāra*, having achieved a level of extinction (*nirvāṇa*) or cessation (*niruddha*). In addition, having achieved freedom, the noble person can serve others in an extraordinary capacity, especially in the pursuit of liberation, through the use of the *abhijñā* powers.

As with the ascetic-contemplative methods of Brāhmaṇical Asceticism and the larger range of Śramaṇa practice, the practice of *bhāvanā* in the form of the *śamatha-vipaśyanā* dialectic encompasses the goals of a therapeutic attenuation, if not removal, of mental affliction and its resultant suffering and dissatisfaction (*duḥkha*), and the achievement of a range of powers of perception and action that serve the process of liberation of self and the compassionate activity of the liberated noble person (*āryapudgala*). These parallels open the door to a uniquely Buddhist ethical view that provides a coherent technological ethic for human augmentation, anticipating on a number of levels the issues that arise from the development of new technologies. From the *śamatha-vipaśyanā* distinction, we can glean a set of insights into how Buddhist ethics might be utilized to evaluate technologies of human augmentation. These include: 1) a recognition that technology may make humans more

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22 As Shaw notes, the relative import of *śamatha* and *vipaśyanā* is a matter of some debate; the emphasis here is on the necessity of *vipaśyanā* for achieving liberating insight, whether or not *śamatha* is valued.

23 In the *Buddhacarita* 2.30–34, Aśvaghoṣa likens Siddhārtha’s life of blissful ignorance in the palace to that of the experience of deities in their celestial palaces, who, caught up in sport and enjoyment, are unaware of the miseries of others in *samsāra* (Sarbacker, forthcoming 2021).
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godlike, but that from the viewpoint of Buddhist cosmology the gods, including the illustrious brahmās and devas of the rūpadhātu and ārūpyadhātu, are still denizens of samsāra and not liberated beings; 2) that technology, like meditation, might facilitate the achievement of serenity and concentration as instruments for achieving liberating knowledge or wisdom (jñāna, prajñā), if applied skillfully; and 3) that one who has achieved liberating knowledge or wisdom might utilize technology in a manner similar to the abhijñā as a vehicle for helping free others from suffering.24

Buddhism and contemporary science are largely at parity in viewing human nature as an impermanent phenomenon. Not only is transformation of one’s mode of human existence possible, it is, in fact, inevitable. In Buddhism, the boundary between human and divine power and agency is a fluid one, both in terms of the practice of meditation and in terms of the process of rebirth. What is of critical importance from the viewpoint of Buddhist philosophy and ethics, however, is that the divine mode of existence is coextensive with all of samsāra; it is a temporary state of being (though perhaps lasting eons) and is still subject to suffering (duḥkha), however subtle. No permanent or lasting satisfaction or peace is to be found in the divine realms—or, for that matter, in a technological augmentation of the human that approximates such a mode of existence. The powers afforded by the divine mode of existence, in fact, might provide opportunities for abuse—Indian narrative literature offers many examples of questionable behavior on the part of powerful ascetics and yogins (White 2009). However, in Buddhist cosmology there are virtuous deities, and the Buddha himself is referred to as the “teacher of gods and men.” On the other hand, the beings of the ārūpyadhātu, the formless realm, exist in a state of suspension that is, at best, a temporary relief from suffering, corresponding to the states of “nothingness” and “neither perception nor nonperception” experienced by Gautama Buddha during his renunciation (Kloetzli 2005; Buswell and Lopez 2014, 25).25

24 One might ask with respect to the second insight if the “perpetual” mode of existence would, itself, become a form of misery and dissatisfaction (duḥkha) over such a great span of time.

25 “Nothingness” and “neither perception nor nonperception” represent profound states of absorption and the suspension of awareness, up to the peak of existence (bhavāgra), the summit of the formless realms, and of samsāra. These can be contrasted with the desire world (kāmadhātu) heavens, which include the abode of the Thirty-Three (trāyastrimśa), including Indra/Śakra. Non-returners (sakṛdāgāmin) are reborn into the “non-
This being said, to the degree to which śamatha represents an instrument for achieving serenity and concentration of mind in service of the Buddhist path, it might be said that technologies that support serenity and concentration of mind have the potential to improve the human condition. Though the development of calm through biofeedback and other contemplative technologies, for example, may not eliminate the roots of affliction, it reduces the likelihood of harm (hiṃsā) through the reduction of affliction (kleśa) and provides an opening for insight. However, this would require a relationship with technology that did not foster physical or psychological dependence; in other words, part of the value of śamatha is being able to cultivate serenity and concentration without the need for an external support. This is where the import of the skillful (kuśala) application of technology enters the picture, particularly a recognition of its benefits, limits, and pitfalls.

One particularly complex example is the use of psychoactive substances, such as cannabis and psilocybin, in concert with Buddhist practice. In the United States, psychedelic use has, historically, been an important precursor to popular Buddhist practice, and an increasing number of practitioners are integrating such substances into meditative practice (Osto 2016, 79–119, 139–74; Badiner 2015). However, the use of psychoactive substances raises questions of the degree to which they foster dependence and have the potential to distort reality (Osto 2016, 121–38). In some respects, the philosophical and ethical issues that arise out of the use of technology to augment Buddhist practice might be comparable to those that arose from the development of mantranaya or Vajrayāna Buddhism—particularly with respect to the issue of accelerating spiritual development through the use of extraordinary, or even dangerous, means.

Lastly, the practice of śamatha provides another template for the use of technology by Buddhists: augmenting human capacities in order to more effectively support the liberation of the young” (akaniṣṭha) heaven of the rūpadhātu (Buswell and Lopez 2014, 25). The Bodhisattva Maitreya is said to be in the “satisfied” (tuṣita) heaven of the kāmadhātu.

26 The Yogasūtra (4.1) lists five sources of accomplishment (siddhi), namely birth (janma), herbs (auṣadhi), incantation (mantra), asceticism (tapas), and contemplation (samādhi), which are nearly identical to the sources of rddhi listed in the Abhidharmakośabhāṣya (commentary to Abhidharmakośa 7.53) (Sarbacker, forthcoming 2021).

27 On ritual, including tantra, as technology, see Keul (2015). Conscious attempts to bridge transhumanism with tantra include Weinstone (2004).
of others from suffering. Whereas the higher knowledges (*abhijñā*) might be a temptation or distraction for the unawakened, for the liberated person they become resources for inspiring faith or confidence (*śraddhā*) and the application of skillful means (*upāya-kauśalya*), that is, helping others in the most appropriate and effective way. This might take the form of the use of communication technologies such as livestreaming and social media that provide accessible contact with a teacher from around the globe, and the potential to carefully preserve living teachings for future generations in the form of various digital media.

V. Buddhism, Transhumanism, and Posthumanism

As mentioned above, *śamatha* meditation is connected in Buddhist cosmology to an ascension through the scale of being from the human mode to that of the *devas* and *brahmās*. This malleability of the mode of existence, and particularly the notion that humans may take on divine attributes, parallels the malleability of species characteristic of transhumanist thought. In Buddhism, rebirth is typically expressed as a continuum of types, which are expressed on both micro- and macrocosmic scales, from the fluctuating psychological states experienced in a single life to the profound disruptions of individual and cosmic death and re-emergence. As such, the notion of radical transformation of a being’s mode of existence, even within a single lifetime, is not foreign to Buddhist thought. However, from the viewpoint of Buddhist cosmology, a technologically enhanced transhuman 1) would still be a sentient being characterized by compositional factors (*saṃskāra*), however subtle; 2) would therefore still be subject to suffering or dissatisfaction (*duḥkha*), again, however subtle; and 3) would exist in a temporary state, that is, one that would come to an end, because of the impermanent (*anityā*) nature of the compositional factors (*saṃskāra*), however astronomically long it might last (via bioengineering or uploading, for example). In this analysis, the transhuman can never truly become posthuman, to the degree to which even the transhuman is still a being that is still bound to *saṃsāra* in which return to other modes of existence is an inevitability.

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28 Including rebirth as a god (*deva*), demigod (*asura*), human (*manuṣya*), animal (*tiryaṇe*), ghost (*preta*), or hell-being (*naraka*).

29 A counterargument to this is that a technological utopia would be more like a *buddhakṣetra*, what James Hughes calls a “Techno-Utopian Pure Land,” but this presumes an already enlightened state. Likewise, he
In Buddhist philosophy, the one who represents a truly radical disruption of human existence—and of sentient beings in general—is the Noble Person (āryapudgala), whose liberating insight frees them, in various degrees, from the processes of samsāra. Whereas ordinary persons (prthagjana) are ultimately at the mercy of their samskāra construction, the āryapudgala are increasingly free of the roots of affliction and samskāra, dukkha, and samsāra as a whole.30 Buddhhas, Pratyekabuddhas, Śrāvaka arhats, and āryabodhisattvas have all, in principle, escaped the cycle of birth and rebirth to some degree, and are no longer subject to it in the way that ordinary people (prthagjana) are.31 Other Śrāvakas, also considered noble (ārya), include the Stream Winner (śrotāpanna), who is on the path to liberation within seven lives, with no unfortunate rebirths along the way; the Once-returner (sakkāgāmin), who is reborn as a human once more before achieving liberation; and the Non-returner (anāgāmin), who is reborn into a heavenly realm and achieves liberation there. The various types of āryapudgala represent varying degrees of otherness—trans- and posthumanism—of a spiritual sort, in that there is a mixture of cosmological ascension (i.e., becoming a deity or like one) and radical disruption (breaking the process of samsāra). And even within these various schemata, significant differences exist between Buddhist sects—as is evident in the degree of emphasis placed upon Gautama or Śākyamuni Buddha’s parinirvāṇa, and whether emphasis is placed on the “gone-ness” or upon the continued compassionate activity of a Buddha after physical death. This parallels the questions in transhumanism over whether the ultimate trajectory of humanity is towards embodiment or disembodiment. Buddhist attempts to negotiate this dialectic might be said to be epitomized by the doctrine of the three bodies (trikāya) and the notion of the creation of Buddha-fields

suggests the concept of “cyborg Buddhas” who are part machine. It also raises the question of whether there could be an “enlightenment machine” that would engender enlightenment and not just heightened capacities. Gleig argues that modern Buddhists are moving toward an “integrative” model, in which “contemplative hybrids” are in the vanguard (Gleig 2015, 196–97).

30 First in degrees (better rebirth) and then in liberation.

31 For clarification, although the arhat is often viewed as a subordinate figure to the Bodhisattva, even within the Mahāyāna world, a group of sixteen or eighteen arhat exemplars serves as a common expression of embodied awakening and compassionate activity (Snellgrove 2005, 1080).
Whether conceived of as a radical form of transcendence or as an extraordinary mode of embodiment, the state of Buddhahood represents a radically different model of the posthuman than that found in contemporary transhumanist movements.

VI. Conclusion

Indian Buddhist meditation models provide a philosophical and ethical framework for reflecting on the way in which Buddhist thought might engage with technologies of human augmentation. The šamatha-vipaśyanā dialectic implies that the transformation of human capacities, whether through meditation or technology, may make humans more like deities, but that such power is spiritually and morally ambiguous and, ultimately, temporary. Like technology, the higher knowledge (abhijñā) achieved through meditation can serve both virtuous and unvirtuous endeavors, just as concentration might be said to serve as a tool for both the sniper and the surgeon. Buddhist cosmological principles, deeply embedded in Indian Buddhist meditation systems, suggest that the transformations of the biotechnological transhuman and posthuman are ultimately limited in scope. However profound such transformations may be, they still conform to the principles of composition (saṃskāra) that drive existence in saṃsāra, which is characterized by the three marks (trilakṣaṇa) of unsatisfactoriness (duḥkha), impermanence (anitya), and nonself (anātman), and driven by the root afflictions (mūlakleśa) or three poisons (triviṣa), namely desire.

The trikāya consists of the truth body (dharmakāya), enjoyment body (saṃbhogakāya), and manifestation body (nirmāṇakāya). The latter two are sometimes subsumed under the rubric of the form body (rūpakāya). The ability to manifest, including in duplicated form, through the use of constructed minds (nirmāṇacitta) provides another example of how meditative powers and technology might be viewed as analogues. In some cases, a fourth body, the own-essence body (svābhāvikakāya) is added, particularly in Vajrayāna Buddhism (Snellgrove 2005). The issue of the nirmāṇacitta evokes the question of whether an AI, for example, should be viewed as a distinct intelligence or as an adjunct to the mind of its creator(s). With respect to the notion of the buddhakṣetra, it might be useful to distinguish between the categories of the purified Buddha-field (pariśuddha-buddhakṣetra) and the unpurified Buddha-field (apariśuddha-buddhakṣetra), the latter of which would seem a more likely candidate, at best, for a technological kṣetra (Kōtatsu 2005). The relationship between Buddhahood, dhyāna, and cosmology, including the use of nirmāṇa-citta and buddhakṣetra, has been discussed in detail by Gethin (1997).
(rāga), hatred (dveṣa), and delusion (moha). From the viewpoint of Indian Buddhist meditation theory, the various stages and states of the Noble Person (āryapudgala), characterized by both worldly (laukika) and otherworldly (alaukika) attainments, are far more radical in scope, hypostasizing the very notion of awakening. In this respect, Buddhist thought might be said to be more at parity with an intersectional analysis of contemporary representations of transhumanism and posthumanism, in which they are, in their mundane formulations, viewed as a subtle and powerful reification of the status quo in samsāra, rather than either a transformation or a radical rejection of it as characterized by the achievement of nirvāṇa.33

33 One way to look at this is through the lens of the technology-society dialectic. Is the nature of society driving technology (being a reflection of it) or is society being driven by technology (technological determinism)? How might this be a cyclical or dynamic process (theorized by terms such as “cultural lag” and “future shock”) explainable in terms of Buddhist causal processes? (Johnson 2015; Briggle and Mitcham 2015). Climate change is likely to become an extremely important environmental factor in the development of technology in the coming decades, again evoking the question of who will benefit the most from the technologies aimed at mitigation (i.e., how will it play out in terms of environmental justice?).
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