



REIMAGINING MAHĀYĀNA KARUṆĀ: BUDDHIST COMPASSION AND HUMAN VALUES IN THE AGE OF SCIENTIFIC AND TECHNOLOGICAL TRANSFORMATION

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Abstract

In the new industrial revolution AI, biotech and cybernetics unfolding exponentially are faced with human axiological and ontological crisis. Examples of dominant technocratic structures including algorithmic hyper-individualism and surveillance capitalism deepen social inequality and induce new forms of systemic duḥkha (suffering). Major Western moral philosophies such as utilitarianism and deontology find inadequate to deal with the distributed and structural nature of algorithmic agency. Based on the ontological and epistemological thinking from Mahāyāna Buddhism, we reconstruct karuṇā as "being-with, " as a command and normative should, embedded in the metaphysics of praṭītyasamutpāda (dependent origination) and śūnyatā (emptiness). By operationalizing karuṇā in upāya-kaūśalya (skillful means), we envision the normative architecture of "Compassionate Technology, " through which algorithmic determinism, commodification of human attention, transhumanist ego-reification, and data extractivism can be critically analyzed based on a relational way of thinking that is beyond the anthropocentric sovereignty.

Keywords: Mahāyāna Buddhism, Karuṇā, Artificial Intelligence, Ethics of Technology, Value-Sensitive Design.

1. Introduction

1.1 Background of the Study

In what has been called the Technocene, the current, historical age, an ontological civilizational contradiction emerges: almost unlimited control over information and material structures and complete moral confusion (Bostrom, 2014; Vallor, 2016). Innovations in machine learning and neural networks, genomic editing tools (e.g. CRISPR-Cas9), web interfaces and auto-interfaces are altering all aspects of human agency, governance, and knowing (Floridi, 2014). Despite their potential to provide relief to the diseased individuals and unburden all people from material shortages, they continue to operate, at present, under surveillance capitalism, cognitive scraping and rigid reductionism (Crawford, 2021; Zuboff, 2019).

1.2 Problem Statement

Digital infrastructure increasingly produces structural harms: algorithmic affirmations of social biases, predatory monetization of cognitive biases through the attention economy, and existential alienation via the transhumanist project (Benjamin, 2019; Pasquale, 2015; Wu, 2017). Conceptually rooted in these issues are mainstream Western moral-philosophical systems (cost-benefit utilitarianism, rights-based deontology) for maintaining the order of networked digital infrastructure. These systems often fail to localize networked harms: utilitarian maximization still condones unequal treatment of marginalized groups for efficiency (O'Neil, 2016), while Kantian deontology cannot determine moral agency on the loci of nonhuman algorithmic metaassemblies (Brey, 2012; Ess, 2020).



1.3 Research Rationale

Across a Buddhist philosophical perspective, this problem diagnosis signals a deeper epistemic distortion, i.e. the "reification of the autonomous, persistent 'I'" (i.e. ātman) and alienation of the individual from the ongoing interconnectedness of existence (Garfield, 2015). Algorithmic architectures intensify this episteme by atomizing the user into individualized information processing loops, whereby sentient agency is reduced to available telemetry (Hershock, 2021). Such dysfunctions can only be overcome through an ontological transition to a metaphysics of interconnectedness, which shapes normativeness as well as technical design.

1.4 Research Gap

Contemporary applied ethics has begun to include Buddhist ideas in other areas of technology, most especially in Hongladarom (2016) on robot ethics and Hershock (1999, 2021) on digital attention, but we still often encounter karuṇā (compassion) as more of a neutral affective state and/or interpersonally oriented emotion (pity, emotional empathy) than a formal ontological commitment. What we lack is a clear set of engineering heuristics and governance tools that can be extracted from the Mahāyāna triumvirate of śūnyatā, pratītyasamutpāda, and upāya.

1.5 Research Aim and Objectives

Aim: To systematically re-build Mahāyāna karuṇā as an ontologically and axiologically rooted norm of moral orientation in emerging technologies, by translating its philosophical and normative rationality into a design setup, "Compassionate Technology", in which compassionate philosophy is embedded in the culture of technological development, nurturing human flourishing, relational responsibility and accountability.

Objectives:

1. Examine the structural constraints of your choice of utilitarian, deontological, and virtue-ethical structures within distributed algorithmic contexts.
2. Design the metaphysical basis of karuṇā to include, as aspectual of it, its inherent unitedness with śūnyatā and pratītyasamutpāda.
3. Perform a new Buddhist diagnostic critique of three contemporary technology afflictions: transhumanist digital immortality, algorithmic determinism and the attention-economy engagement system.
4. Develop Mahāyāna ethics into specific criteria for VSD, relational data governance, and international AI policy.

1.6 Research Questions

1. How have traditional Western ethical models failed to address the distributed agency and networked harms of computational systems?
2. How does the ontological interdependence of śūnyatā, pratītyasamutpāda, and prajñā reconceptualize karuṇā, moving it beyond the scope of sentimental empathy?



3. How might these three primary pathologies of the Technocene transhumanist ego-reification, algorithmic determinism, and attentional extraction be understood for the tradition's categorical taxonomy of the three kleśas (afflictive passions) and duḥkha?

4. So, what are the architectural requirements when upāya-kausālya and anātman are embedded within the structure of algorithmic architecture, data architectures and technological governance?

1.7 Significance of the Study

This work adds to cross-cultural philosophy of technology by having bridge way of thinking from high-level comparative metaphysics to technical operationalization. Connecting the Mādhyamaka metaphysics to such fine-grained, next-generation information design practices as value-sensitive design (VSD) and data commons governance, this work offers computer scientists, ethicists, and policymakers a set of relational terms to counteract algorithmic extraction, and free socio-technical systems design.

1.8 Scope and Delimitations

This investigation first and foremost focuses on the Mahāyāna Buddhist tradition, drawing from Mādhyamaka ontology (Nāgārjuna, Śāntideva) and its core concepts (śūnyatā, pratītyasamutpāda, prajñā, upāya-kausālya, anātman). The technological analysis centers on computational intelligence, predictive algorithms, attention-driven platform architectures, and transhumanist enhancement discourses. The paper intentionally excludes early Theravāda abhidhammic classifications and non-computational mechanical technologies to maintain philosophical precision and domain focus.

2. LITERATURE REVIEW

The ethics of novel technology has become a prolific, interdisciplinary literature, based largely on Western moral philosophy but augmented by a nascent sub-discipline of Buddhist applied ethics, which aims to broaden the scope of ethical reflection beyond traditional philosophical boundaries.

2.1 Western Ethical Frameworks in Technology

Applied normative assessments of technical systems commonly rely on three traditions:

Dominant Western Ethical Traditions

Utilitarianism (linked to Jeremy Bentham, John Stuart Mill) judge's actions as right if they promote the maximum of happiness and wrong if they do otherwise (greatest happiness principle). Its greatest weakness for emerging technologies is that as it aims to record and process all knowledge utilitarian ideas may be subject to the encoding of structural bias (when the advantages and disadvantages of technology are not evenly distributed). In addition, a focus solely on the greatest good for the greatest number fails to take into account the existence of externalities that may negatively affect minority groups.

Deontological ethics, famously linked to Immanuel Kant, locates ethical ground in universalizable duties rights principles, and human dignity. This offers useful oversight on potentially technocratic applications of ethical principles and guidelines that might lead to overlooking human needs and treating people as nothing more than means to technological ends. But this approach is challenged by novel technological systems with distributed agency.



Virtue ethics, which has its roots in Aristotle and has been further developed in contemporary technological ethics by thinkers like Shannon Vallor, focuses on fostering moral character, practical wisdom, and virtuous habits. Although this structure offers a character-based approach to responsible technology use, it is still susceptible to anthropocentric and agent-centered bias. These limitations may hinder its ability to engage with the relational, systemic, and non-human aspects that are increasingly relevant in technologically mediated contexts.

Utilitarian calculus is the given operational protocol for algorithmic improvement, forward-looking risk-scoring and autonomous vehicle decision matrices (Bonnefon et al., 2016; Gordon, 2020). Critical data studies have pointed out that the functioning of utilitarian tuning remains a device which, in the name of objectivity and efficiency, encodes historical injustices (Noble, 2018; O'Neil, 2016).

Deontological models highlight human dignity, moral obligations, and basic rights, shaping contemporary regulatory tools such as the European Union's General Data Protection Regulation (Floridi et al., 2018). Still, both Ess (2020) and Brey (2012) note that deontology takes well defined, rational individual agents. In machine learning networks, agency is diffused through the programmers, proprietary datasets, statistical principles, and the learned interactions between the system and its environment, leaving a responsibility vacuum where agency vanishes.

Vallor (2016) developed this line of thinking with "technomoral virtue ethics," which preserves the call for classical virtues (e.g. honesty humility, empathy) as preconditions for this very strategy in the Technocene. Even so, this proposal too is ultimately a comprehensive, yet relatively agent centric, and man-centered way of thinking that under-theorizes nondual relational ontologies conceptualizing human agents and technical artefacts as co-constituted systems.

2.2 Buddhist Ethics and Emerging Technology

More recently, some authors have used Buddhist philosophy as a concrete platform for critiquing and engaging modern ethical issues (Harvey, 2000; Keown, 2001). In the field of digital technology, Hongladarom (2016) applies Buddhist ethics to new and developing technologies such as artificial intelligence and robots; if artificial consciousness were to arrive in the world, it would warrant compassion and moral considerability in the form of its ability to suffer, he claims.

Hershock (1999, 2021) offers a sustained and critical analysis of algorithmically mediated digital environments, showing how automated technological systems appropriate human attention, disrupt intentional presence (smṛti), and contribute to the systemic and industrial production of duḥkha. Complementing this, Macy (1991) establishes important theoretical foundations by identifying structural correspondences between general systems theory and the Buddhist principle of praṭīyasamutpāda (dependent origination or mutual causality), so providing a conceptual basis for understanding technological occurrences as dynamically interconnected systems rather than isolated entities.

2.3 Synthesis and Research Gap

Even with this, karuṇā is still frequently minimized in applied fields of literature to an emotional sentiments of kindly or gentle empathy. Textual studies tend to focus on karuṇā's realization as ontological insight, occurring with śūnyatā within Mahāyāna works (Garfield, 2015; Siderits, 2003). Quite simply, there remains an absence of reformative ways that rigorously integrate this ontological triad into hands-on designing practices such as Value-Sensitive Design (Friedman et al., 2013), or on the systemic level of technology governance.



3. METHODOLOGY

This study uses philosophical analysis, conceptual synthesis, and critical hermeneutics:

[Textual Hermeneutics: Mādhyamaka Primary Treatises]



[Conceptual Reconstruction: Karuṇā as Ontological Insight]



[Critical Dialectical Evaluation: Diagnosis of Technocene Pathologies]



[Applied Normative Modeling: "Compassionate Technology" Framework]

1. Textual Hermeneutics:

Hermeneutically informed readings of core Mahāyāna philosophic texts like Nāgārjuna's Mūlamadhyamakakārikā or Śāntideva's Bodhicaryāvatāra are examined in dialogue with prominent modernizations and interpreters (Garfield, 1995, 2015; Siderits, 2003) for a philosophically rigorous and fine-grained account of the correlated principles of śūnyatā, praṭīyasamutpāda, prajñā, and karuṇā, which underlay the metaphysics of this project.

2. Conceptual Reconstruction:

This study deconstructs the traditional psychological, emotional, or sentimental reading of karuṇā and proposes instead that compassion must be reconstituted through a normative, structural, and relational value system. Compassion is thereon considered as not simply a potential individual affectual disposition but an ethically constituting norm of being, which is a function of ontological interdependence.

3. Critical Dialectical Evaluation:

The reconfigured metaphysics is then subjected to a critical exchange with current empirical and interdisciplinary discussions on machine learning, surveillance capitalism and transhumanism (Benjamin, 2019; Bostrom, 2014; Zuboff, 2019). This dialectic assesses the ethical flaws, the blind spots and the systemic impact of new technological regimes with the Mahāyāna method.



4. Applied Normative Modeling:

Last, the philosophical lessons extracted from these discussions are compiled into normative and practical design principles, formulated with, and in conversation with, VSD (Friedman et al., 2013) and current data-governance models (Viljoen, 2021), so translating Mahāyāna philosophical and moral lessons into an applicable normative and practical model of responsible technology governance and design.

4. RESULTS

4.1 Theoretical Derivation: The Ontological Architecture of Mahāyāna Karuṇā

The hermeneutical inquiry reveals a threefold ontological structure for karuṇā, where karuṇā is not understood as a moral emotion or as a psychological state, but as an ethic, ontologically, and epistemologically co-constitutive with śūnyatā and praṭīyasamutpāda. Emptiness (śūnyatā) supplies the ontological basis, dependent origination describes the relational form of reality, and the non-separable relationship between prajñā and karuṇā brings the epistemological and ethical dimension. These constitutive elements provide the perspective from which Mahāyāna ethics can be translated into the technological domain.

Nāgārjuna and the Proper Function of emptiness. With its insight into empty dependent origin, Nāgārjuna's formulation of the Mūlamadhyamakakārikā (XXIV:18) can be read as defining dependent origin as the same as emptiness: "whatever is dependently originated is emptiness." This confirms that emptiness is not to be understood as a form of ontological negation, but rather as the lack of intrinsically whole, independently existing svabhāva, and the affirmation of relation-based constitution. When applied to the architectures of recent digital systems, the concept of emptiness exposes that it is not possible to understand technological artifacts as independent entities: everything from microprocessors algorithms training data architectures extraction, and supply chains to institutions and users is constituted via material, informational, economic, social, and causal networks (Ganascia, 2015; Macy, 1991). That means, technology shows dependent origin, as its functions, consequences, and effects are produced from the complex networks of conditions in which it is designed and employed.

The Inseparability of Prajñā and Karuṇā. In Mahāyāna philosophy, prajñā refers to the transformative wisdom that directly perceives the lack of inherent existence and the interdependent nature of events. This wisdom is not ethically neutral; it necessarily expresses itself as mahākaruṇā, or great compassion, because the strict conceptual separation between self and other is ultimately unsustainable (Śāntideva, trans. 1997). Recognizing interdependence turns compassion from a voluntary feeling into an ethical result of accurate understanding. In technological settings, an algorithmic system focused only on predictive accuracy, efficiency, or overall performance, while ignoring its differential and systemic impacts, lacks this integrated wisdom. Documented racial disparities in automated facial-recognition systems, for instance, show that technically effective systems can also continue structural harm when their wider relational effects are overlooked or unaddressed (Buolamwini & Gebru, 2018). From a Mahāyāna viewpoint, technological intelligence without systemic awareness does not qualify as prajñā, and technical tuning without karuṇā risks reinforcing duḥkha.

Upāya-kausālya: Technology as Skillful Means The third dimension stems from the recognition that technology, like all conditioned things, has no fixed or inherent svabhāva. As a result, their ethical significance does not necessarily lie in their materiality alone, but also in the pragmatic contexts and motivations of their creation and application. By accepting this premise, technology can be rethought through the Mahāyāna notion of upāya-kausālya, or skillful means. Technology need not be a technical activity in itself, but may instead be a function for engendering advantageous conditions when design goals and applied contexts are attentively and deliberately harnessed toward the alleviation of systemic duḥkha (Schroeder,



2001). If conceptualized in this way, technological design as an ethical act becomes far more purposive than value-free technical activity. It, because of this, redirects the core inquiry from "What can technology do?" to "Under what relational conditions, for what beneficiaries, and with what consequences should technology be designed and applied?" As such, the conceptual transition from Mahāyāna ontology to a model of Compassionate Technology is established.

4.2 Axiological Diagnosis: The Three Poisons in the Technocene

Applying a Mahāyāna ontological lens to the Technocene reveals that the contemporary technological crisis is not simply a technical or regulatory issue, but a profound axiological collapse. The modern socio-technical matrix works as a planetary-scale system that institutionalizes, automates, and boosts the three root mental afflictions (*triviṣa / kleśas*): fundamental delusion (*moha*), greed (*rāga*), and aversion (*dveṣa*). These afflictions have moved beyond individual consciousness and are now embedded in machine-learning algorithms, tuning metrics, and extraction-driven business models, systematically reproducing *duḥkha* across global networks.

The transhumanist pursuit of cybernetic enhancement and digital immortality is an institutionalized form of delusion (*moha*) combined with the desire for eternal existence (*bhava-tṛṣṇā*). Transhumanist theorists propose overcoming aging, biological weakness, and mortality by integrating human cognition with computational systems (Bostrom, 2005; Hughes, 2004). Although presented as a noble effort to eliminate suffering, this approach is based on a fundamental metaphysical mistake: the belief in a lasting, independent self (*ātman*) and the rejection of universal impermanence (*anitya*). Seeking liberation by transferring ego-consciousness into digital permanence confuses the cause of suffering with its solution. Rather than resolving existential anxiety, transhumanist enhancement increases bodily craving (*deha-tṛṣṇā*) and risks dividing humanity into biologically and computationally unequal groups, potentially creating new forms of structural oppression and causing significant ecological harm (Lilley, 2013). As the Mahāyāna tradition, liberation cannot be manufactured through technology; it is realized only through direct understanding of non-self (*anātman*).

Second, rigid ritualism to set algorithms in predictive policing, court sentencing, and automated credit provision shows the brittle ritual of mechanized *moha* masquerading as "computational objectivity" (Pasquale, 2015). Predictive machine learning models, because they treat the past as always illuminating, petrify historical configurations of unqualified public prejudice into fixed mathematical schema that then cast an immutable grid over the future (Benjamin, 2019). This robotic absolutism runs counter to the Buddhist doctrine of genuine agential possibility, or *cetanā*, by which human beings have the capacity to revolutionize their karmic coordinates in the moment-to-moment flux of reality. Turning human life into risk scores to feed into inscrutable statistical matrixes collapses space for natural compassion (*karuṇā*) and concomitantly our obligation to act ethically, consigning humankind to a network of wheels it cannot turn (Coeckelbergh, 2020).

Finally, the attention economy is the industrialization of compulsive craving (*rāga*) and reactive aversion (*dveṣa*). The architectures of persuasive interfaces are calibrated to hijack neural dopamine mechanisms and turn human attention into a commodity of behavioral surplus (Alter, 2017; Wu, 2017). The architectures propagate continuous clinging (*upādāna*) and insatiable sensory craving (*tṛṣṇā*), disintegrating contemplative presence and mindful awareness (*smṛti*). To maximize the reading time of each web page, to optimize advertising revenues, recommendation algorithms trigger outrage, deep tribal conflict and mutual hatred all digital harnessing of the karmic locomotive of aversion (*dveṣa*) (Hershock, 2021). This epidemic of discord and alienation damaging individual mental health and catalyzing political radicalization transforms how persuasive architectures threaten relational empathy, displacing the luminous exemplar of *karuṇā* (Turkle, 2011).



5. DISCUSSION: OPERATIONALIZING "COMPASSIONATE TECHNOLOGY"

The concrete translation of Mahāyāna *karuṇā* into concrete technology praxis involves a radical departure from extractivist incentives and profit-driven logics, and the formulation of well-defined design principles, ethical protection mechanisms, and institutional governance pillars that have the ability to ingrain compassion care caring responsibility, and harm reduction in engineering practice and governance of technology.

5.1 Pillar I: Pratītyasamutpāda in Algorithmic Design (Relational Systemic Fairness)

Dependent origination in computer science moves the validation of performance away from closed statistical measurements (raw model accuracy F1 etc) to wide relational measures.

Impacts Relatedness Auditing: Post Value-Sensitive Design (Friedman et al., 2013) and relational algorithmic ethics (Birhane, 2021) systems should be examined for cross-dependent-context interactions, and NLP models should be debiased not only for regulatory compliance, but because we recognize that language vectors create semantic and material violence for communities on the margins.

Explainable AI (XAI) as Countering Moha: Black-box machine learning hides causal chains, making ethical responsibility and agency unclear (Mittelstadt et al., 2016). Transparent, interpretable models clarify interdependent computational causality, so preserving moral accountability.

5.2 Pillar II: Technological Upāya (Orienting Innovation Toward Liberation)

A Mahāyāna perspective redirects research capital away from speculative, rent-seeking platforms toward technologies that actively dismantle systemic suffering (duḥkha):

Therapeutic and Ecological Healing: AI should be prioritized for climate modeling, ecological restoration, low-impact agriculture, and equitable diagnostic healthcare (Tegmark, 2017).

An Embryonic Backlash Democratized Knowledge Generation: the application of gene-editing resources (e.g. CRISPR) should focus on reducing debilitating genetic abnormalities instead of market-oriented enhancement industries (Sandel, 2007).

The Bodhisattva Ethos in Open Science: Software development is moving into open-source infrastructure, public digital networking and split up scientific exploration, as exemplified by non-possessive research networks (Stallman, 2002).

5.3 Pillar III: Anātman in Data Ethics (From Surveillance Capitalism to the Data Commons)

Traditional privacy solutions view data as person- specific property. They are inadequate in the era of network analytics, where the data about an individual is data about her network: her friend's behavior, genome, and social presence (Viljoen, 2021).

An off Self and Inter-Dependent Data: with anātman, informational data is fundamentally relational and not atomized.

The Data Commons: Moving past proprietary enclosure (Zuboff, 2019), data must be managed as a common resource (Morozov, 2018; Ostrom, 1990). Principles of stewardship must democratize data assets, by using them for public health enhancement and the equitable development of infrastructure rather than for monetizing behavior (Green, 2019).



5.4 Governance, Policy, and Curricular Implications

Integrating this structure into broader socio-technical systems calls for specific institutional changes:

Engineering Pedagogy: Computer science classes should include relational ontologies and systems thinking as courses move from abstract modules of Western ethics to apply relational ontologies when designing systems so that engineers learn code is an intervention that participates in a causal web (Mitcham, 1994; Winner, 1980).

Corporate Governance in the "Mindful" Age: Technology companies need to go beyond the half-baked, inward-focused corporate mindfulness programs that seek to make employees more productive within extractive hierarchies (Purser, 2019). Businesses have to relinquish its involvement-based advertising model that makes money on outrage (Lanier, 2018).

Ahimsā in International Governance: Global standards would need to include the main point of non-harm, ahimsa. This could come in the form of a binding international ban on LAWS and high threshold restrictions on remote biometric mass-surveillance, which would act as a safeguard against computer-mediated violence towards human dignity (Asaro, 2012; Sparrow, 2007).

6. CONCLUSION

The contemporary crisis of technology is not just technical, but also deeply axiological and ontological. Uncritically deploying hyper-individualized, extractive socio-technical systems risks entrenching structural suffering, behavioral alienation, and social fragmentation.

Rethinking Mahāyāna karuṇā offers a compelling philosophical lens to frame these dilemmas. Within this context, compassion becomes rooted in the non-dual metaphysics of śūnyatā and praṭītyasamutpāda, illuminating the inextricable link between human and the digital/materia creations we construct. The reframing of engineering innovation as upāya (skillful means) reorients technological innovation towards easing systemic duḥkha. From here on, the future of the digital age will depend not on our success in constructing larger computing and learning models, but on the wise and relationally attentive manner of which we regard their telos.

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