

Mahāyanā Buddhist Ethics:  
Deontological, Virtue-Based or Consequentialist?  
An Optimization Theory Perspective

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**Abstract**

The classification of Mahāyanā Buddhist (MB) ethics into the western deontological, virtue-based, and consequentialist subdivisions has divided scholars in recent years. At the heart of this discussion lies the presence of elements from these three categories in MB, which has led to questions on compability, precedence, and interpretation. In this paper, we argue for a consequentialist classification of MB ethics and use the lens of Optimization Theory to clarify how the different aspects of MB, including precepts (deontological elements) and virtues, fit within this classification. We proceed as follows: First, we draw upon the central MB concept of the bodhisattva vow—the commitment to attain *Nirvāṇa* for the benefit of all sentient beings—to propose a consequentialist framework for MB whose utility function is the cumulative progress of all sentient beings towards the elimination of the roots of suffering, namely ignorance, attachment, and aversion (also known as the *three poisons*). Second, we restate the problem in the language of Optimization Theory and analyze the role that precepts and virtues, skillful means, and spiritual guides play in MB by enquiring about their function with regards to the navigation of the optimization landscape; Finally, we explore different mathematical questions that are commonplace in the field of Optimization Theory, and use them as a basis for studying MB’s ethical framework.

**Keywords:** Mahāyanā Buddhism; Deontology; Aristotelian Ethics; Utilitarianism.

## 1 Introduction

In recent years, the classification of Buddhist ethics into the classical deontological, virtue-based, and consequentialist categories has divided western philosophers. At the root of this disagreement lies the *prima facie* conflicting presence of elements from all three moral theories in the texts: The five precepts—commitments to abstain from killing, stealing, sexual misconduct, false speech and intoxicants—are examples of deontological rules [1];

The ten and six perfections (*pāramī* and *pāramitās* resp.) found in the Theravāda and Mahāyanā traditions [2] and the four immeasurables (*brahmavihārā*) [3] fit within the framework of virtue ethics; Finally, the ultimate goals of enlightenment and of freeing all sentient beings from suffering (associated with Theravāda and Mahāyanā resp.), hint at a possible consequentialist classification [4]–[6]. In this essay, we will address two points of contention that are detailed in Sections 1.1 and 1.2.

## 1.1 Precepts and Virtues

The first point concerns the possible conflict between moral requirements (precepts) and moral ideals (virtues) [7], and of which take precedence in case of conflict. The following hypothetical scenario illustrates this point [8]:

Suppose Anne Frank were hiding in your attic and the Nazis came knocking at your door to ask if you were harboring her. According to Buddhist philosophy, could lying—thus breaking the fourth precept—with the purpose of saving her be considered more ethical than choosing not to do so? (We can assume that no physical repercussions to yourself could result from your reply.)

While some scholars, such as Damien Keown in the case of the non-killing precept [9, p. 211], have argued that intentional violations of the precepts are always wrong, others have claimed that there can be legitimate moral dilemmas arising from dual commitments towards respecting the precepts, on the one hand, and acting virtuously, on the other [10, p. 176] [7]; in case of conflict, some scholars defend that virtuous actions take precedence over others that respect the precepts [11]. Based on this, we will subject three moral positions to analysis:

- (a) Violating a precept is unethical independently of whether or not doing so is more virtuous. (strict deontology)
- (b) Violating a precept is unethical because it *always* constitutes an unwholesome (non-virtuous) action. (deontology-virtue compatibilism)
- (c) Violating a precept is more ethical than not if such action is more virtuous. (virtue ethics)

Both (a) and (b) state that breaking the precepts is always wrong; however, in (a), precepts are viewed as primary, i.e., absolute *per se*, whereas in (b) they are secondary to virtues in the sense that breaking a precept is wrong *because* such action is *always* unwholesome (non-virtuous). Finally, (c) (unlike (a) and (b)) raises the possibility of conflicts between the precept and virtues and states that, in cases of conflict, the most virtuous approach should be followed.

## 1.2 Virtue Ethics and Consequentialism

The second point of contention concerns whether Buddhism should be regarded as consequentialist or virtue-based. Some authors, such as the Keowns, state that Buddhism rejects consequentialist patterns of justification [12], while others have claimed that Buddhism is arguably strongly consequentialist, especially in its Mahāyanā form [4]. Those who defend the former have proposed to classify Mahāyanā Buddhist (MB) ethics as Aristotelian (virtue-based)<sup>1</sup>; they argue that, in Buddhism, virtuous actions are intrinsically good, as opposed to being means to achieve a consequentialist goal [1] (I call this proposal *strict virtue ethics*). In contrast, proponents of the latter defend that even though “the principal focus of the theory is on the virtues, [...] their value derives not from their relation to human nature but from their role in promoting the cessation of *dukkha*” [5] (aretaic consequentialism).

In order to clarify the different theories at stake here, take two different, mutually exclusive actions, **A** and **B**, that can be performed at a given time. Consider the following statements about **A** and **B**:

- (d) **A** is more ethical than **B** if **A** is more aligned with wholesome qualities and devoid of unwholesome ones than **B**, independently of the fact that **A** leads to a greater “shrinking” of the roots of *dukkha*, namely ignorance, attachment, and aversion, than **B**<sup>2</sup>. (strict virtue ethics)
- (e) **A** is more ethical than **B** if **A** is more aligned with wholesome qualities and devoid of unwholesome ones than **B**, given that this will result in a greater “shrinking” of the roots of *dukkha*, namely ignorance, attachment, and aversion. (aretaic consequentialism)

It is important to emphasize that neither of these statements raise the possibility of conflicts between virtuous actions and individual or collective progression towards *Nirvāṇa* (in contrast to c when it comes to precepts and virtues). Indeed the claim made by defenders of (d) is more nuanced: they state that wholesome actions are *intrinsically* “good” *independently* of their possible role in maximizing some utility function [1, p. 50].

## 1.3 Buddhist Traditions

To properly address statements (a-e), we have to consider that Buddhism is not an unified philosophy but rather comprises a plethora of sects. Buddhist schools are commonly grouped into three traditions—Theravāda, Mahāyanā and Vajrayāna—, which can be

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<sup>1</sup>The fact that Damien Keown classifies MB ethics as Aristotelian but still holds that the first precept is absolute (*aka* the sanctity-of-life position) shows that he does not believe in the possibility of conflicts between precepts and virtues.

<sup>2</sup>In MB, this statement concerns not just the individual but all sentient beings (cf. Section 5)

seen as building one on top of the other, in the sense that Mahāyanā accepts the most relevant scriptures of Theravāda but adds other texts such as the Mahāyanā sutras, and Vajrayāna accepts the Mahāyanā sutras but further adds the Tantras [13]. However, such a hierarchical view is a coarse one, because these traditions differ on their perspectives of the Path and do not emphasize the same teachings equally; for example, the concept of *śūnyatā* (emptiness) and the cultivation of *bodhicitta*—a compassionate aspiration to attain Buddhahood for the benefit of all sentient beings—are a central focus of Mahāyanā but not of Theravāda [14, *śūnyatā*, *bodhicitta*].

Given the relevant distinctions between the different Buddhist traditions, in this essay we will restrict ourselves to Mahāyanā Buddhism (MB). This choice is motivated by the interesting moral consequences of the importance that MB places on the bodhisattva vow and skillful means (cf. Sections 2.2 and 2.3), and the fact that MB is the most common form of Buddhism around the world [15]. Given the overlap of Mahāyanā and Vajrayāna, the ensuing discussion will also apply to the latter. This leaves Theravāda out of the picture, although this could be a starting point for a reflection on the foundational vehicle since some of the points do not reference Mahāyanā-specific teachings.

## 1.4 Roadmap

Section 2 introduces the philosophical foundations of MB that are relevant for this essay, beginning with the Four Noble Truths (which are fundamental in all Buddhist traditions), followed by the Mahāyanā concepts of the Bodhisattva and skillful means. In Section 3, we lay the groundwork required to address the moral statements (a-e): we discuss the meaning of a moral action in Buddhism, the distinction between wholesome and unwholesome actions, and the moral objectivity of Buddhist ethics. In particular, we defend Richard Gombrich’s position claim that the quality of the volition behind an action is alone sufficient for assessing its moral character (without the need to further analyze its consequences). In Section 4, we discard the propositions which state that precepts are absolute and that there can be no incompatibilities between precepts and virtues, and argue that virtuous actions take precedence over precept-abiding ones in case of conflict. In Section 5, we prospectively classify MB ethics as aretaic consequentialism based on MB teachings and propose an utility function for this framework; we then make this proposal final by justifying why we believe the alternative classification as virtue ethics is misleading. Having established a consequentialist categorization of MB ethics, in Section 6 we frame it in the language of Optimization Theory. This enables us to analyze the role that precepts and virtues, skillful means, and spiritual guides play in MB by considering their function in the navigation of the optimization landscape; Finally, we explore a few mathematical questions that are commonplace in the field of Optimization Theory, and use them as a basis for studying MB’s ethical framework.

## 2 Philosophical Foundations

### 2.1 The Four Noble Truths, *Dukkha*, and *Nirvāṇa*

The “Four Noble Truths” was the first teaching of the Buddha. In the Uttaratantra Shastra, this teaching is likened to the treatment a sick patient: the disease is diagnosed (*dukkha*), its causes are pointed out (*samudaya*), the possibility of a cure is suggested (*nirodha*), and a regimen required for healing is presented (*magga*). Each of these steps corresponds to one noble truth [16].

The first noble truth is that all conditioned phenomena is prone to suffering and dissatisfaction (*dukkha*). This includes the suffering from birth, old-age, sickness, and death, the suffering of meeting the unpleasant, and the suffering of parting from the pleasant. According to Buddhist philosophy, suffering can be understood in three forms: suffering of suffering (*dukkha-dukkha*), suffering of change (*viparināma-dukkha*), and all-pervasive suffering (*sankhara-dukkha*) [17], [18]. The first form of suffering includes all physical and mental afflictions, and is arguably the one that most closely approaches the meaning of *suffering* in the English language. The second form is associated with the impermanence of conditioned phenomena; it can manifest as a sense of insecurity, a clinging to “favorable” circumstances when they arise, or a sense of loss when “favorable” circumstances disappear. The third form is the most fundamental one and the cause of the other two; it relates to the compounded and conditioned nature of all phenomena. Because all conditioned phenomena is dependent on innumerable causes and conditions, as long as our well-being rests upon their maintenance or dissolution, we are prone to suffering. As a result of this unstable reliance, a background sense of insecurity naturally arises.

The second noble truth points out the origin of *dukkha*: *taṇhā* (craving, thirst, or desire), which can be subdivided into the craving for sensual pleasures (*kāma-taṇhā*), the craving for being or becoming (*bhava-taṇhā*), and the craving for non-existence or destruction (*vibhava-taṇhā*), [19, ṭṭṣṇā]. Craving can also be understood in light of the “three poisons”—ignorance, attachment, and aversion—in the sense that attachment includes the desire for sensual pleasures and the desire to be or become, aversion includes the desire for non-existence or destruction, and ignorance is the basis for *taṇhā*. Due to this equivalence, the three poisons (*triviṣa*) are said to be the causes of *dukkha* in other sutras [13, p. 73], [20]–[22].

The third noble truth is the statement that suffering can be eliminated if one reaches *Nirvāṇa*, which is the extinction of the causes of *dukkha*—ignorance, attachment and aversion [13, p. 73], [18]. In a cessation state, all craving (*taṇhā*) ceases and ultimate wisdom, the understanding of our true nature and the nature of phenomena, is attained [1, p. 64–8]. *Nirvāṇa* is a fundamental goal of the practice in all forms of Buddhism [23,

p. 89]. Once one has achieved *Nirvāṇa*, one is liberated from the cycle of life, death, and rebirth, known as *saṃsāra*.

Finally, the fourth noble truth provides the path to actualize the promise made in the third noble truth—the cessation of *dukkha*. This path, known as the “noble eightfold path”, has eight components: right view and right resolve (the two wisdom aspects); right speech, right action, and right livelihood (the three moral aspects); and right effort, right mindfulness, and right concentration (the three meditation aspects).

### 2.1.1 Ignorance: The Root Cause of *Dukkha*

It is important to mention that although the three poisons are collectively referred to as the fundamental causes of *dukkha* (and the source of all other unwholesome mental states [*kleśas*]), technically ignorance is considered to be its root cause and attachment and aversion consequences/manifestations of ignorance. Indeed, according to the teachings of the Buddha, ignorance is the first of twelve links in a causal chain that propel *saṃsāra*—with *taṇhā* being the sixth; accordingly, ignorance may be understood as “the driver of the bus to *dukkha*” (Ajahn Sucitto) [24]. With this caveat in mind, we will still refer to the three poisons as the causes of *dukkha* due to usefulness of this presentation<sup>3</sup>, as demonstrated by its prevalence in the Buddhist literature.

## 2.2 The Bodhisattva Path

In MB, a *bodhisattva* is a being who has generated *bodhicitta*, a compassionate aspiration to attain buddhahood for the benefit of all sentient beings. This aspiration can be expressed in the form of a vow such as the one mentioned in the *Aṣṭasāhasrikā Prajñāpāramitā* sutra:

We having crossed (the stream of samsara), may we help living beings to cross! We being liberated, may we liberate others! We being comforted, may we comfort others! We being finally released, may we release others [25]!

The bodhisattva path, whose goal is to fulfill this vow, is referred to as the “great vehicle” in MB<sup>4</sup>. In contrast, the path whose sole (or main) aim is individual liberation is designated as “foundational vehicle” (*Śrāvākayāna*)<sup>5</sup>. Unlike Theravāda, Mahāyanā sees the bodhisattva path as being open to everyone and encourages all individuals to become bodhisattvas [26]. The bodhisattva path is practised by cultivating the six perfections (*pāramitās*) and the four immeasurables (*brahmavihārās*) in ten bodhisattva stages (*bhūmis*) [1].

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<sup>3</sup>It is common for pride and jealousy to be further added to these three to make up the *five poisons*.

<sup>4</sup>“Great Vehicle” is the actual translation of the word “Mahāyanā”.

<sup>5</sup>In Mahāyanā and Vajrayāna, the foundational vehicle is sometimes controversially called Hīnayāna, which translates to “the small vehicle”.

## 2.3 Skillful Means

Skillful means are methods or teachings that are tailored to a particular audience, taking into account their beliefs, level of understanding, and predispositions, in order to make progress towards awakening more expedient [27]. They are useful at a relative level but might not be true in an ultimate sense. To illustrate this point, the Mahāyanā scholar Jamyang Khyentse Rinpoche gives the example of Jack, a man with a snake phobia who walks into a dimly lit room and mistakes a Giorgio Armani necktie on the floor for a snake. In this case—he says—, if Jack is overwhelmed with fear, it might be better for his friend Jill to just play along and throw the tie away instead of dangling it in Jack’s face, since the latter could potentially give him a heart attack [28]. Jamyang Khyentse Rinpoche claims that a lot of Buddhist teachings fall under the umbrella of this example:

In Buddhism, not all the teachings are ultimate truth. In other words, there are lots of Buddhist teachings that are taught by the Buddha and he never meant it. It’s all in the category of “It’s okay, don’t worry, remember? It’s okay, just drink some water.” Teachings such as meditation, karma and reincarnation all fall under that [29, part 2].

The Buddha has, in fact, likened all of his teachings to a raft (skillful means) which one uses to cross a river but abandons upon arrival to the other shore:

In the same way, I have taught how the teaching is similar to a raft: its for crossing over, not for holding on. By understanding the simile of the raft, you will even give up the teachings, let alone what is against the teachings [30].

In his comment of this parable, Bhikkhu Thanissaro states:

[...] the implication is clear: One has to hold onto the raft properly in order to cross the river. Only when one has reached the safety of the further shore can one let go [31].

Likewise, in the Mahāyanā Diamond Sutra we find the following interpretation of this passage:

[...] fearless bodhisattvas do not cling to a dharma, much less to no dharma. This is the meaning behind the Tathagata’s saying, “A dharma teaching is like a raft. If you should let go of dharmas, how much more so no dharmas” [32].

## 3 Moral Foundations

### 3.1 Wholesome and Unwholesome Actions

In Buddhism, the moral character of an act depends upon the mental volition (*cetanā*) behind it, which encompasses “the motive for which an action is done, its immediate intention (directed at a specific objective, as part of fulfilling a motive), and the immediate mental impulse which sets it going and sustains it” [1, p. 17]; an intentional action is known as *karma*:

Intention, I tell you, is karma. Intending, one does karma by way of body, speech, and intellect [33]. (Buddha)

Commenting on this passage, Rupert Gethin states:

[Karma is] a being’s intentional “actions” of body, speech, and mind—whatever is done, said, or even just thought with definite intention or volition; [a]t root karma or “action” is considered a mental act or intention; it is an aspect of our mental life [34, p. 119-20].

Generally, an action is “unwholesome” (*akusala karma*) if it arises from attachment, aversion and delusion (the three poisons), and “wholesome” (*kusala karma*) if it arises from non-attachment/generosity, non-hatred/loving-kindness, and wisdom <sup>6</sup>. There is, however, a divergence of opinion amongst scholars on whether the quality of the volition behind an action is alone sufficient for assessing its moral character. Richard Gombrich is one of the authors who answer this question affirmatively; he states:

The Buddha defined *karma* as intention; whether the intention manifested itself in physical, vocal or mental form, it was the intention alone which had a moral character: good, bad or neutral [...] The focus of interest shifted from physical action, involving people and objects in the real world, to psychological processes [35].

A different stance is taken by Peter Harvey, who defends that the effects of an action, in terms of causing suffering or happiness and leading to progress or regression along the spiritual path, should also be taken into account in determining its moral character [1, p. 46] <sup>7</sup>. Harvey bases his position on the following excerpt from a conversation between the Buddha and Rāhula:

When you want to act with the body, you should check on that same deed:  
Does this act with the body that I want to do lead to hurting myself, hurting

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<sup>6</sup>This will be developed in section 5.1.

<sup>7</sup>He makes an exception for acts that are not driven by volition, such as the unintentional killing of a bug.



others, or hurting both? Is it unskillful, with suffering as its outcome and result? If, while checking in this way, you know: This act with the body that I want to do leads to hurting myself, hurting others, or hurting both. Its unskillful, with suffering as its outcome and result. To the best of your ability, Rāhula, you should not do such a deed. But if, while checking in this way, you know: This act with the body that I want to do doesn't lead to hurting myself, hurting others, or hurting both. Its skillful, with happiness as its outcome and result. Then, Rāhula, you should do such a deed [36].

A closer analysis shows that this passage does not really support Harvey's position—nor does it invalidate Gombrich's one, for that matter—because it can be entirely understood as a warning against volitions that are not rooted in wisdom; indeed, acting without first considering whether that action will be conducive to *dukkha* is acting from a place of ignorance, particularly a lack of understanding of the truth of *dukkha*, non-self (*annatā*), and interdependence. Despite this, we will still entertain Harvey's claim. Let us first consider consequences (of an action) that do not result from volition. (Saying that consequences do *not result from volition* is not the same as saying they are *unintended*. For example, if one drives too fast to reach their workplace and *unintentionally* runs over someone, the action of killing still results from a volition rooted in ignorance and attachment, specifically one that lacks consideration for other people's lives in favor of one's personal agenda.) Consequences (of an action) that do not result from volition are clearly portrayed in Buddhist texts as not contributing to the moral character of an action<sup>8</sup>. For example, it is said that the Buddha was not morally culpable when sixty monks of “wrong view” vomited blood while listening to one of his discourses [37]. Some consequences that fit into this category are:

1. Accidentally treading on an insect with no thought of harming them [1, p. 53];
2. Unintentionally benefitting someone [1, p. 57];
3. Unintentionally triggering a fatal allergic reaction in a sick person after giving them medicine with the intention of treating them [1, p. 300-1].

Note that even when the intended action is unwholesome, if some of its consequences did not result from volition, then these do not contribute to its unwholesomeness. For example, although the killing of one's parent is said to produce terrible karmic results—worse than those produced by killing another person—, these do not occur if the parent was not the intended victim [1, p. 25]. It seems, then, that the only way for Harvey's claim to hold is if *consequences that result from volition contribute to the moral character*

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<sup>8</sup>The term usually used in the texts is “karmically neutral”. Although there is a nuanced difference in emphasis between what is neither wholesome nor unwholesome and what is karmically neutral, we will see them as equivalent here. (For more details see [1, p. 48].)

of an action; in this case, *the consequences would serve to compound the wholesomeness or unwholesomeness of the associated volition*. Dissecting Harvey’s claim in this way, we reach a corollary that goes unjustified. (In fact, Harvey does not provide further support for his claim apart from referring to the aforementioned excerpt—which, as mentioned previously, doesn’t provide enough support to his thesis.) As far as we are aware, there is no such mention that (as this reasoning implies) the consequences of an action compound to the moral character defined by its associated volition, or, in other words, that two actions with the same volition but different consequences have different moral characters. This hypothesis also seems farfetched in light of Buddhist texts, given that the Buddhist gradations of unwholesome actions depend solely on the degree of both intention and knowledge involved, and not on its consequences [1, p. 53-9].

An alternative reading of the previous passage is that the purpose of alluding to “external” consequences <sup>9</sup> is solely to lead the “doer” to cultivate wholesome intentions—which are conducive to wholesome mind states—and let go of unwholesome one. The focus on intentions and their consequences on the “doer”—and not on external consequences—is present in the *Dhammapada* [38]:

**67.** Ill done is that action of doing which one repents later, and the fruit of which one, weeping, reaps with tears.

**68.** Well done is that action of doing which one repents not later, and the fruit of which one reaps with delight and happiness.

[. . .]

**166.** Let one not neglect one’s own welfare for the sake of another, however great. Clearly understanding one’s own welfare, let one be intent upon the good.

According to these view, since an action that helps others is generally in one’s best interest, and one that harms others is not, considering the external consequences of an action can be a useful way to guide intention. In fact, the consequences of an action can be much more evident and immediate than the intentions behind it, because it is hard to understand how our actions are influenced by attachment, aversion, and ignorance; for example, one might believe they are acting with “good intentions” and altruistic motives when they say a “white lie”, but be, in fact, hiding a selfish agenda that distorts their view of the effect of that lie [39].

In sum, Gombrich’s proposal that volitions are alone sufficient to determine whether an action is wholesome (which is supported by the literature), seems to be hold ground. This doesn’t mean, of course, that Buddhist have no preference for some outcomes over others, but that moral character of an action is not influenced by which outcome actually

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<sup>9</sup>Here, as with all morality, we are talking in terms of relative truth. In an ultimate level, according to Mahāyānā Buddhism there is no separation of the “internal” and “external”.

comes to fruition.

### 3.2 Moral Objectivism

As mentioned in the previous section, Buddhists have a quite clear criteria on what constitutes wholesome and unwholesome moral actions. This criteria is summarized as follows by Bhikkhu Thich Nhat-Tu:

Whatever *karma* performed out of greed, hatred and delusion or have this threefold vice as their root is evil. That *karma* is harmful, having suffering as its result and bringing about the creation of more samsaric *karma*. Whatever *karma* performed out of non-greed, non-hatred and non-delusion or have these threefold (A) cardinal virtue as their root is morally good. That *karma* is beneficial, having welfare or happiness, as a result, and bringing about the cessation of samsaric *karma* [40].

Because of the precision in this distinction, Harvey states that he is “quite happy to agree” with the assertion that there are objectively wrong actions in Buddhism and that one can be mistaken in holding them [1, p. 57]. This moral objectivity comes from fact that morality must necessarily be informed by (is secondary to) wisdom—an objective understanding of reality. For example, compassion (*karuṇā*)—the heartfelt wish that others are free from suffering—is derived from an acknowledgement of the suffering of others, an understanding of the causes of that suffering, and an insight into the wisdom that leads to its eradication; without this solid base, an action that one believes to be compassionate might actually not be (and “to perform an unwholesome action while regarding it as acceptable or wholesome is seen to be particularly perverse” [1, p. 59], [6]). As Jamyang Khyentse Rinpoche states:

Any so-called good action that is *not* based on these four views [seals] is merely righteousness; it is not ultimately Siddhartha’s path. Even if you were to feed all the hungry beings in the world, if you acted in complete absence of this four views [seals], then it would be merely a good deed, not the path to enlightenment. In fact it might be a righteous act designed to feed and support the ego [...]

If not accompanied by the four views [four seals], morality can be similarly distorted [28].

In summary, what constitutes wholesome and unwholesome actions in Buddhism is not a matter of personal opinion: wholesome actions stem from “right view”—an adequate apprehension of reality—, while unwholesome actions stem from “wrong view”—a

misapprehension of reality. When volitions are not grounded in a correct understanding of phenomena, *dukkha* necessarily follows [1, p. 17], [41].

### 3.3 Wholesome and Ethical

The previous discussion shows us that what is considered “wholesome” in Buddhism can differ substantially from what is generally considered “ethical” in the west. In western philosophy, the field of Ethics is only concerned with interactions between agents. However, in Buddhism, given the collapse of the notion of “self” and “other” (*anattā*, *ūnyatā*, and interdependence or interpenetration), ethics take place in a much larger context. Internal states such as thoughts and states of mind—which we consider as having no direct effect on the other—now become pertinent [1, p. 48]: the thought of killing someone is considered unwholesome while deliberately putting such thought down is considered wholesome, and meditating with the goal of benefitting others is considered a very wholesome action that moves one further along the bodhisattva path. In what follows, we will discuss ethics from this vaster Buddhist perspective that encompasses any action driven by volition (*karma*), and not just actions that involve interactions between agents.

## 4 Precepts and Virtues

In Mahāyanā the ethical precepts are regarded not as commandments but as “rules of training” that help one progress along the path [6], [7]. (This is arguably also the case in Theravada, but such view is somewhat controversial [4], [12].) For Mahayanists, consciously breaking the precepts is permissible if that means acting more skillfully and compassionately [42, pp. 150–63]. This idea is expressed with regard to the first precept in the *Upayākauśalya* (“skill in means”) Sutra [43], where it is said that the act of taking life is unrepensible “when it develops from a virtuous thought”, i.e., one that is free of the three poisons [1, p. 135], [11, p. 323]. As an example, this sutra mentions a compassionate killing performed by the Buddha himself in a past life, when he was a ship captain and bodhisattva called Great Compassion. This is detailed in the following passage:

Great Compassion was carrying 500 merchants aboard his ship when he discovered a stowaway who was set on killing all the passengers to steal their property. Realizing that if the robber carried his plan through he would suffer in hell for aeons, and that if he told any of the merchants they would kill the criminal without compassion and suffer terrible karmic consequences, the ship captain decided to kill the robber himself.

It is also stated that “even though Great Compassion himself would be reborn in hell for ‘a hundred thousand eons’ because of this, he was willing to endure this to prevent

others from suffering” [1, p. 135]<sup>10</sup>. We thus conclude that an act like this one, even if wholesome, may still create karmic consequences for the doer [44].

While some Mahāyanā texts, such as the previous one, provide descriptions of bodhisattvas overriding the precepts, others explicitly endorse it in specific scenarios. The following are two examples:

1. *Mahā-parinirvāṇa* Sutra states that a true follower of the Mahāyanā should ignore the moral precepts if this is necessary in order to protect a monk who is under attack [1, p. 138];
2. The Mahāyanā scholar Asaṅga defends that a bodhisattva overthrows an oppressive regime (possibly violently) and steals back the property of thieves who have stolen from the *saṅgha*, for the benefit of both the criminals (by reducing their chances of continuing to harm others) and their victims [11, p. 71]. He also mentions that a bodhisattva will lie in order to protect others from death or mutilation but not to protect himself, and that they will slander an unwholesome adviser of a person [11, p. 72]. (Note that the “Anne Frank” thought experiment mentioned in Section 1.1 falls under the scope of this commentary: without a viable alternative, a bodhisattva will lie to save Anne Frank’s life.)

Taking a step further, the new commentary of the *Bodhisattva-bhūmi* even considers it a misdeed for a bodhisattva with skill in means not to override the precepts when virtue requires it; it is said that for such a bodhisattva “there is no fault” in breaking the precepts, “but a spread of much merit” [1, p. 140], [11, p. 211-12].

From the preceding examples, the following two claims regarding MB ethics become clear: 1. precepts are not absolute ((a) is false); 2. violating a precept does not always constitute an unwholesome action ((b) is false), and that doing so is more wholesome than not if such action is more virtuous ((c) is true). Despite this, breaking the precepts should be done with the right view and particular caution because the stakes can be very high (as in the case of killing) and it is difficult to ensure a purely wholesome motivation [44]; if one acts beyond one’s spiritual level, out of self-interest, with aversion, hatred, and lack of wisdom and compassion, such action is unwholesome and has negative karmic repercussions [11, p. 213-4]; as Shantideva states, “at the time for giving one can overlook the practice of morality and so forth. But for all that he must not be lax” [45, p. 12]

<sup>11</sup> For this reason, Buddhist teachers are generally reluctant in endorsing breaking the precepts [44]<sup>12</sup>.

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<sup>10</sup>See [1, p. 135-8] for more examples of *compassionate killing*.

<sup>11</sup>There is one 2nd century CE Mahāyanā text, the *Bodhisattva-piṭāka*, that allows no scope for a bodhisattva to break the precepts (likely due its dangers) [1, p. 135]. This is, however, an exception in Mahāyanā.

<sup>12</sup>Nonetheless, even the 14th Dalai Lama has suggested that Osama bin Ladens killing was justified [46]

## 5 Virtue Ethics and Consequentialism

Based on MB's core teachings, especially the bodhisattva vow to free all sentient beings from suffering, it seems plausible to suggest that the overall goal of MB is to shrink and ultimately eliminate the roots of *dukkha* at a collective level. This suggests a possible consequentialist classification of MB ethics where virtuous actions are regarded as means to achieve this goal. The most natural utility function for such framework is the following:

13

**Mahāyanā Utility Function :**

**The cumulative progress of all sentient beings towards the elimination (UF) of the roots of *dukkha*, namely ignorance, attachment, and aversion.**

The maximization of this utility function corresponds to all sentient beings attaining *Nirvāṇa* <sup>14</sup> Adapting the aretaic consequentialist position to use (UF) results in the following three premises:

**Aretaic Consequentialism:**

1. The goal of Mahāyanā Buddhism is to increase utility (UF) as much as possible, ideally until the attainment of its maximum value.
2. Actions that increase utility are those that are rooted in wisdom, non-attachment, and non-aversion <sup>15</sup>.
3. Because actions rooted in wisdom, non-attachment, and non-aversion increase utility, they are called virtuous.

Let us now contrast the above proposal with its virtue ethics alternative, which is supported by Keown [42, p. 193-227]. Peter Harvey argues in defense of this position as follows:

A danger in Utilitarianism (particularly Act Utilitarianism) is that it tends to a perspective of the end justifies the means, so a means which one might want to say is evil might be justified by the goal it is seen to lead to.

[...]

Admittedly, the goal of Buddhism, *Nirvāṇa*, is equivalent to the end of *dukkha*,

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<sup>13</sup>The closest western analogue to this framework might be negative utilitarianism, as defended by Carl Popper [47, p. 284-5]. However, this analogy is quite limited because *dukkha*, unlike suffering (as used in the west), is not the opposite of happiness (as used in the west) [48]; it is best described as unsatisfactoriness and as a kind of imprisonment caused by clinging to compounded phenomena. Moreover, the goal for Buddhists is to ultimately be free from all dualities—which are a source of *dukkha* (second seal)—, including seeing emotions as pleasant/desirable or unpleasant/undesirable.

<sup>14</sup>Since ignorance is the basis of the other two poisons, this utility function could be reduced to the cumulative wisdom of all sentient beings.

<sup>15</sup>Whether this is always the case is a matter of discussion.

the end of suffering, a goal which an utilitarian would share. But *Nirvāṇa* is also the destruction of attachment, hatred and delusion, and the Path to this is good or wholesome because it is intrinsically related to this goal, not contingently so: it is not the Path which just happens to conduce to it. As it consists of actions rooted in non-greed, non-hatred and non-delusion, the Path has natural affinities to *Nirvāṇa*, the destruction of the opposites of these. Moreover, it is not that *Nirvāṇa*, the absence of greed, hatred and delusion, is (arbitrarily) chosen as the ultimate goal, and then actions seen as “good” if they happen to conduce to this. Actions rooted in non-greed etc. can be recognized as good or wholesome whether or not one is a Buddhist with *Nirvāṇa* as one’s ultimate goal.

This shows that a better broad Western analogue to Buddhist ethics is Aristotelian (virtue) ethics [1, p. 49-50].

[...]

In both Aristotelian and Buddhist ethics, an action is right because it embodies a virtue which conduces to and “participates” in the goal of human perfection. Both are “teleological” in that they advocate action which moves towards a telos or goal/end with which they have an intrinsic relationship. This is as opposed to being simply consequentialist, like Utilitarianism: judging an act by the effects it happens to have — though some Utilitarians would dispute this distinction.

Based on this excerpt we can now summarize the virtue-ethics position into the following three premises:

**Virtue Ethics:**

- (i) Virtuous actions are those that are rooted in wisdom, non-attachment, and non-aversion.
- (ii) Virtuous actions are intrinsically good, and not just means towards *Nirvāṇa* [increasing utility (UF)].
- (iii) Virtuous actions have natural affinities to *Nirvāṇa* [increasing utility (UF)].

(The square brackets above indicate the replacement of Harvey’s assumed utilitarian goal of *Nirvāṇa* with “increasing utility (UF)”, as discussed next.)

In the following subsection, we will argue in opposition to the aforementioned proposal and defend that aretaic consequentialism, as expressed in (1-3), is the most adequate classification of MB ethics.

## 5.1 A Critique of the Virtue-Ethics Classification

The first problem with the above is that it targets a subset of MB utilitarian frameworks where utility is *exclusively* linked to *Nirvāṇa* while taking it as representative of the whole theory<sup>16</sup>. This mistaken generalization leads to the unsound conclusion that any kind of MB utilitarianism is *necessarily* all-or-nothing in the sense that virtuous actions are regarded as valuable *solely because* they increase the likelihood that one eventually achieves enlightenment (from which it follows that there is no value in performing virtuous actions if, hypothetically, one cannot eventually become fully enlightened). The utilitarian framework given in (1-3) disproves this claim: According to (UF), virtuous actions are valuable because they lead to an increase in utility and not through their relation to the ultimate goal, which is “simply” the maximal attainable utility. In particular, in (UF), the value of virtuous actions is independent of:

1. Whether the ultimate goal is eventually reached;
2. Whether “one is a Buddhist with *Nirvāṇa* as one’s ultimate goal”.

The latter point (2) is a consequence of the universal nature of the *dharma* (“the way things are” or “natural law”<sup>17</sup> [49]): Buddhists claim that ignorance, attachment, and aversion being the roots of suffering is a truth to which every sentient being is subject to; therefore, if one acts in line with this wisdom, one will reduce suffering even if one has never heard of Buddhism before. (Of course, being exposed to the *dharma* and setting an intention to awaken increases one’s likelihood to optimize (UF).) As Dzongsar Khyentse Rinpoche states when introducing the four seals, “If all these four seals are found in a path or a philosophy, it doesn’t matter whether you call it Buddhist or not. You can call it what you like; the words ‘Buddhist’ or ‘Buddhism’ are not important” [50].

The second issue with Harvey’s proposal has to do with the definition of what is wholesome/unwholesome<sup>18</sup>: Harvey defines an unwholesome action as one that “arises from greed, hatred or delusion, leads to immediate suffering in others and/or oneself—and thus to further karmic suffering for oneself in the future—and contributes to more unwholesome states arising and liberating wisdom being weakened,” and a wholesome action as one that has the opposite characteristics [1, p. 48]. Note that when presenting these definitions, the author is careful never to make them contingent on any goal, thereby discarding the possibility of the “ends justifying the means”. Instead, Harvey defines virtuous actions *axiomatically*, assigns them an intrinsic value, and then establishes the existence of an unexplained intrinsic relationship between them and goals that “util-

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<sup>16</sup>The argument is of the form “ $(A = B) \wedge (B \implies C) \vdash (A \implies C)$ ”, where  $A$  is the set of all utilitarian frameworks and  $B$  is the utilitarian framework criticized above (with the fault being in the first statement).

<sup>17</sup>*dharma* also refers to the “the teachings of the Buddha”.

<sup>18</sup>Here, we use wholesome/unwholesome and virtuous/unvirtuous interchangeably, respectively.



itarians would share”<sup>19</sup>. In the process, questions of why virtuous actions are defined as such, what it means for a virtuous action to be intrinsically wholesome, or why do virtuous actions have an intrinsic relationship with (or a “natural affinity” to) *Nirvāṇa* are mostly left unanswered. All in all, Harvey’s proposal ends up being obscure.

Let us examine where the definition of virtuous actions stands in light of aretaic consequentialism (1-3) and its utility function (UF). (According to this proposal, the definition of virtuous actions is contingent on what increases utility, and, therefore, their value is not intrinsic.) If Harvey were to claim that actions rooted in wisdom, non-attachment and non-aversion are virtuous because they lead to a shrinking of the roots of ignorance, attachment and aversion, then the definition of what is virtuous relies/*is contingent* on what increases utility: This is precisely the aretaic consequentialist position presented here. So the alternative is to extend the aforementioned axiomatic approach to take into account (UF), by stating that virtuous actions have an intrinsic value that is not contingent on what shrinks the roots of ignorance, attachment, and aversion (i-iii, square brackets).<sup>20</sup> For this approach to be informed, one has two options:

1. Show that there are virtuous actions that do not lead to an increase in (UF).
2. Provide a justification for why virtuous actions always go hand-in-hand with increases in (UF) but are not contingent on the latter.

But as Dzongsar Jamyang Khyentse, if a virtuous action does not lead to wisdom (the opposite of ignorance, which—as discussed previously—is the root of *dukkha*), it cannot be considered virtuous in the first place [28]:

Ethics and morality may be secondary in Buddhism, but they are important when they bring us closer to the truth. But even if some action appears wholesome and positive, if it takes us away from the four truths [seals], Siddhartha himself cautioned us to leave it be.

(This statement can be generalized to (UF) by noting that ignorance is the basis for attachment and aversion, and taking *bodhicitta* into account.) The citation above also seems to contradict 2 by asserting the necessity of tying virtuous actions to wisdom. This contingency is also unequivocal in the *four noble truths* (Section 2.1) considering that the eightfold path (the last noble truth), which includes the ethical aspects of right speech, view, and action, is offered as a a cure to *dukkha* (the first noble truth). Interestingly, Harvey seems to concede this by stating that “from the perspective of the four noble truths, ethics is not for its own sake, but is an essential ingredient on the path to the final goal” [1, p. 40].

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<sup>19</sup>From this perspective, when Harvey states that Buddhism is “teleological” in that it “advocate[s] action which moves towards a telos or goal/end”, the *which* is not to be interpreted as a *because*, but more like a *that happens to*.

<sup>20</sup>A third option is to declare an alternative goal and make the definition of virtuous actions contingent on it; this would still be an aretaic consequentialist position, but just one with a different utility function.

### 5.1.1 The contingency of virtuous actions

Apart from the four noble truths, we find several other examples in the MB literature which support the consequentialist view that the value of virtuous actions is instrumental and not intrinsic. Most notably, the *Rathavināta* Sutra describes a conversation on the topic between Śāriputra, one of the Buddha's two chief disciples, foremost in wisdom, and Puṇṇa, one of the ten principal disciples of the Buddha, foremost in preaching the dharma [51]:

In the same way, reverend, purification of ethics is only for the sake of purification of mind. Purification of mind is only for the sake of purification of view. Purification of view is only for the sake of purification through overcoming doubt. Purification through overcoming doubt is only for the sake of purification of knowledge and vision of the variety of paths. Purification of knowledge and vision of the variety of paths is only for the sake of purification of knowledge and vision of the practice. Purification of knowledge and vision of the practice is only for the sake of purification of knowledge and vision. Purification of knowledge and vision is only for the sake of extinguishment by not grasping. The spiritual life is lived under the Buddha for the sake of extinguishment by not grasping.

In a similar manner, the Buddha states [52]:

Thus in this way, Ananda, skillful virtues have freedom from remorse as their purpose, freedom from remorse as their reward. Freedom from remorse has joy as its purpose, joy as its reward. Joy has rapture as its purpose, rapture as its reward. Rapture has serenity as its purpose, serenity as its reward. Serenity has pleasure as its purpose, pleasure as its reward. Pleasure has concentration as its purpose, concentration as its reward. Concentration has knowledge and vision of things as they actually are as its purpose, knowledge and vision of things as they actually are as its reward. Knowledge and vision of things as they actually are has disenchantment as its purpose, disenchantment as its reward. Disenchantment has dispassion as its purpose, dispassion as its reward. Dispassion has knowledge and vision of release as its purpose, knowledge and vision of release as its reward.

In this way, Ananda, skillful virtues lead step-by-step to the consummation of arahantship.

It is then no surprise that several western authors classify Buddhist ethics as consequentialist. In his critique of Harvey's position, Mark Siderits states [5]:

Buddhist ethics is best thought of as a form of aretaic consequentialism: the principal focus of the theory is on the virtues, but their value derives not from

their relation to human nature but from their role in promoting the cessation of suffering.

This thesis is also endorsed by Robert E. Florida [6]:

Moral behaviour in Buddhist systems, then, is not an absolute in itself—it is a means towards a religious end, the transcendence of those selfish cravings which bind all beings to an unending round of suffering. Accordingly all moral acts are understood either to be *kusala karma*, skilful deeds which are beneficial to self and others, or *akusala karma*, unskilful deeds which harm self and others. [...]

Everything in the phenomenal world is relative. Human behaviour, therefore, is to be judged not on an absolute scale of good and evil but rather on a relative scale of skilful and unskilful. Skilfulness, of course, is understood in regard to the ascent of the paths of Lord Buddha out of this world of suffering.

In summary, the development of virtues is not the end-goal of MB but simply a means to shrink the roots of *dukkha* of sentient beings—a goal that is constantly reinforced with initial prayers/intentions and dedication in Mahāyanā practices. Making virtues the central focus of MB ethics, as Harvey and Keown defend, leads to an ungrounded position where virtuous actions need to be defined axiomatically so that the existence of an obscure intrinsic value can be asserted; in this way, virtuous actions are detached from their actual purpose of increasing utility (UF). In contrast, the classification of MB ethics as aretaic consequentialism is much more consistent with the sutras. As Harvey himself states “the aim of overcoming dukkha, both in oneself and others, is the central preoccupation of Buddhism, and one towards which ethical action contributes” [1, p. 33]. And although one could argue that a path towards the elimination attachment, aversion, and ignorance is practically equivalent to a path where one develops its virtuous antidotes, the focus on virtues loses track of the four noble truths and the instrumental nature of the whole path. Ultimately, as the simile of the raft conveys, all ethics (and teachings more generally) are instrumental and not valuable *per se*: they are just means to reach the other side of the shore and can be abandoned once their purpose is served.

### 5.1.2 On means and ends

The possibility of using non-virtuous means to reach a virtuous end seems to be what Harvey’s argument tries to avoid; as Harvey states: “[in Buddhism] only wholesome means have the ability to conduce to truly wholesome ends” [1, p. 49]. But according to this proposal, a wholesome means are defined as those that lead to wholesome ends, so this affirmation is true by construction. In that sense, there are no incompatibilities between means and ends.

One could also ask if aretaic consequentialism admits temporary increases in *dukkha* as means to achieve the end of reducing it in the long run. Here, it is important to remember that the proposed utilitarian function does not contemplate suffering itself but its roots. While a wholesome action might arguably increase suffering temporarily, it can never strengthen its roots. A good analogy is that of a tree: if we wish to destroy the tree of suffering, we first have to expose its roots in order to cut them, and that exposure might temporarily cause suffering. But, from a Buddhist points of view, the causes and conditions for that suffering—the tree roots—were already there and it was just a matter of time until they became exposed (karmic fruit). The process of exposing the tree roots does not need to feed them—and, if it does, it is considered unwholesome.

## 6 The Optimization Landscape

### 6.1 Introduction

In the previous sections, we presented a consequentialist framing of Mahāyanā Buddhism according to which the goal of MB ethics is to increase utility (UF) as much as possible, ideally until the attainment of its maximum value (all sentient beings achieving full Buddhahood). In this section, we propose to restate this project in the language of optimization theory (OT); doing so will not only allow us to gain a new perspective into MB ethics through an analysis of the role that different elements, such as precepts and virtues, play in navigating the optimization landscape <sup>21</sup>, but it will also open up the possibility of using OT to inform the study of MB ethics.

### 6.2 A very brief tour of optimization theory

For the purposes of our discussion, an optimization problem has two ingredients [54], [55]:

1. A feasible set  $\chi$  which contains the admissible input variables of the problem.
2. A cost function  $C : \chi \rightarrow \mathbb{R}$  that maps each input location  $\mathbf{x} \in \chi$  to its cost value  $C(\mathbf{x})$  (a real number);

Depending on the optimization problem at hand, the input location  $\mathbf{x}$  can be a finite-dimensional vector of the form  $\mathbf{x} = (x_1, \dots, x_D)$ , where  $D$  is the number of input variables, or an infinite-dimensional one. Two examples of cost functions of two variables ( $D = 2$ ) are given in figures 1 and 2.

Given this setup, the goal of mathematical optimization is to find a location  $\mathbf{x}^*$  for which the cost  $C$  is lowest amongst all locations in the set  $\chi$  (there can be several of

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<sup>21</sup>This is similar to the idea of a moral landscape as introduced by Sam Harris [53].

them). In simple mathematical terms, this can be stated as follows:

$$\text{find } \mathbf{x}^* \in \mathcal{X} \text{ such that } C(\mathbf{x}^*) = \min_{\mathbf{x} \in \mathcal{X}} C(\mathbf{x}).$$

Note that this formulation allows us compare two locations: if  $C(\mathbf{u}) < C(\mathbf{v})$  for  $\mathbf{u}, \mathbf{v} \in \mathcal{X}$ , then  $\mathbf{u}$  is said to be a better location than  $\mathbf{v}$  with respect to  $C$ .

To make matters concrete, take the example of a sprinter who is looking to minimize his run time  $C$  in a 100m competition. For the sake of simplicity, suppose  $C$  is a function of just two variables,  $x_1$  and  $x_2$ , where  $x_1$  is quantity of water drank in the day of the competition (in liters), and  $x_2$  is the number of calories ingested in the same day (in kcal). Since both variables need to be positive and bounded, the feasible set  $\mathcal{X}$  could be  $\mathcal{X} = \{(x_1, x_2) : 0 \leq x_1 \leq 10, 0 \leq x_2 \leq 10\,000\}$ . Then, the goal of optimization is to find the combination  $\mathbf{x}^* = (x_1^*, x_2^*) \in \mathcal{X}$  of water drank and calories ingested that will yield the best performance in the race, i.e., the lowest value of  $C$ . (Supposedly, too little water and food would hamper performance as well as the opposite.)

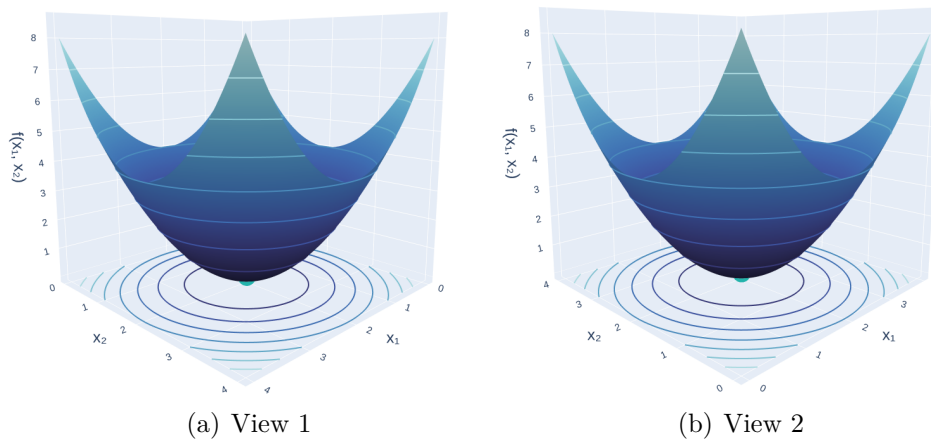


Figure 1: Example of a convex cost function of two variables. The light blue dot shows the location of the minimum cost.

### 6.2.1 A powerful local algorithm

There are countless methods to solve optimization problems. One of the most fundamental ones is *Gradient Descent*. A high-level manner to explain how it works is the following <sup>22</sup>:

This algorithm is a local one: starting from a given position, it only considers the “immediate surroundings” to decide where to “move”. Despite the lack of global information, this method is still widely used in optimization theory, especially in the sub-field of deep learning [56].

<sup>22</sup>To take the feasible set  $\mathcal{X}$  into account, we could, for example, additionally verify that each new location falls within this set and, if not, project it there.

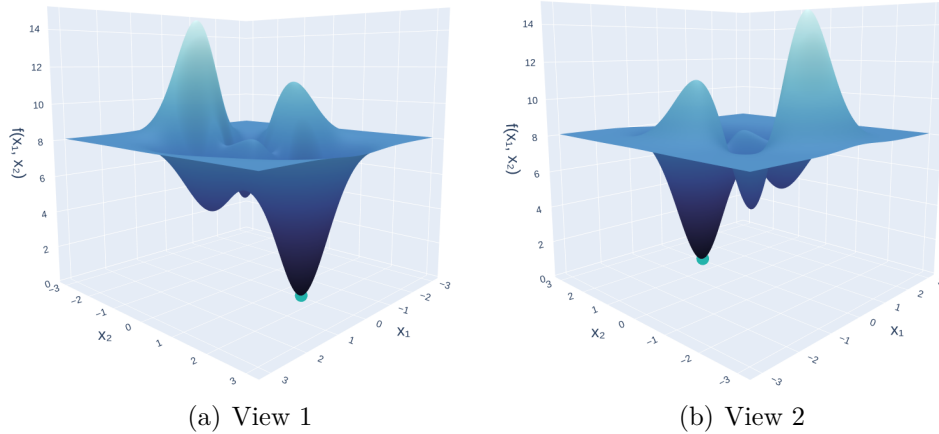


Figure 2: Example of a non-convex cost function of two variables. The light blue dot shows the location of the minimum cost.

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**Algorithm 1** Gradient descent

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- 1: Choose a random location  $\mathbf{x}_1$ .
  - 2: **for** iteration  $j = 1, 2, \dots, N$  **do**
  - 3:     At  $\mathbf{x}_j$ , choose the direction  $\mathbf{v}_j$  that has the steepest descent at the current location;
  - 4:     Take a step of length  $t$  in the direction of  $\mathbf{v}_j$ :  $\mathbf{x}_{j+1} = \mathbf{x}_j + t\mathbf{v}_j$ ;
  - 5:     **Stop** if  $C(\mathbf{x}_{j+1})$  is close enough to  $C(\mathbf{x}^*)$ .
  - 6: **end for**
- 

The downside of this local approach is that we are only guaranteed to find the optimal cost value if the cost function  $C$  does not have local minima (“ups and downs”), since, at these locations, the best decision for a local algorithm is not to move at all, which leads to the optimization getting stuck there. Functions without local minima are known as convex functions; for such functions there is always a step that can be taken to reduce the cost (a descent direction) except at the global minima—the optimal location. A convex function is shown in figure 1 and a non-convex one is shown in figure 2.

### 6.3 Mahāyanā ethics and Optimization Theory

In order to make Mahāyanā ethics amenable to analysis under the lens of Optimization Theory, we take the utility function (UF) and transform it into a cost function by measuring the distance to the ultimate goal (the enlightenment of all sentient beings) instead of the progress towards it. This results in the following:

**Mahāyanā Cost Function :**

**The total strength of the roots of *dukkha*, namely ignorance, attachment, and aversion, of all sentient beings.** (CF)

Note that this cost function depends on countless variables: every action of body, speech, and mind of every sentient being—ranging from what one eats for lunch to whether one

identifies with the next thought—has a positive, neutral, or negative effect on the cost.

We propose that **the goal of Mahāyanā ethics is to minimize (CF) as much as possible**. In order to do that, beings need to **choose which individual and collective actions (directions) to pursue depending on (1.) the shape of the optimization landscape (cost function) and (2.) the current location on it**. We defend that to help the practitioner do precisely that is the *raison d'être* of Mahāyanā philosophy and practice. To further this claim, in the next subsections we explore the following questions:

1. What role do precepts and virtues play in navigating the optimization landscape?
2. How does this perspective account for the multiplicity and diversity of Buddhist teachings, as well as the importance of skillful means and the spiritual teacher?
3. What can be said about the shape of the optimization function? Is it convex and therefore entirely compatible with local optimization algorithms? Is zero cost attainable?
4. Is it possible that an unwholesome action actually lowers the cost, or that a wholesome one increases it due to unintended consequences?

## 6.4 Precepts and virtues

Observing the five precepts is seen as a precursor for mind training and attaining the four factors of stream-entry, the first of four stages of awakening [57], [58]. The fourth factor of stream-entry relates to an “impeccable ethical conduct”, which leads to (meditative) “immersion”: “And a noble disciples ethical conduct is loved by the noble ones, unbroken, impeccable, spotless, and unmarred, liberating, praised by sensible people, not mistaken, and leading to immersion [58].” Therefore, although observing the five precepts alone is not likely to lead one to enlightenment, it is seen as a precondition. They might also be seen as safety mechanisms for avoiding the most karmically treacherous terrain, thus providing a safe environment that facilitates continued progress; a similar suggestion is made by Robert Florida: “The precepts are designed to provide guidelines for skilful activity and when followed will minimize negative karmic consequences. [6]”. This is especially evident in the non-killing precept, which, usually being observed by even non-buddhist does not clearly lead one to enlightenment. From the point of view of our optimization framework, the precepts attempt to block locations in the optimization function that are likely to lead to substantial increases in cost (see figure).

As stated earlier, breakage of the precepts is generally reserved to seasoned practitioners and bodhisattvas. From the point of view of the optimization landscape, this can be seen in a couple of ways:

1. Beings further along the path, being more rooted in wisdom, have a clearer understanding of the optimization landscape in the sense that they are more capable of seeing which actions (directions) to take to lower the cost. Therefore, they might skillfully override the “baseline rules” if they know it to be beneficial.
2. Beings further along the path are better equipped to pursue a better direction because they are more capable of ensuring pure motivation and not be guided by the ego.

Indeed, according to Buddhist teachings, an unenlightened mind is always a distorting one; therefore, with limited information, it is advised to err on the side of caution. (For example, if one does not know fully understand the consequences of pressing a large red button, it is safer not to do even if one believes otherwise.) But breakage of the precepts might still lower the cost. This can be understood by likening a precept to a safety mechanism used for accessing dangerous chemical materials: only extraordinary circumstances require the safety mechanism to be lifted and the dangerous materials to be handled; moreover, in such cases, the process should be done by a skillful expert.

## 6.5 84 000 dharma doors, skillful Means, and gurus

## 6.6 The shape of the optimization landscape

## 6.7 Wisdom as Primary, Ethics as Secondary

# 7 Conclusion

## Glossary

***Nirvāṇa*** . The uprooting of all ignorance, attachment and aversion, which are the causes of *dukkha* [20]–[22], [13, p. 73], [1, p. 437]; the liberation from *samsāra*; the ultimate goal of the Buddhist path [14, nirvāṇa], [23, p. 89]. 1

***śūnyatā*** . The tenet that all entities, including the teachings and *Nirvāṇa*, are empty of self and have no intrinsic existence [1, p. 125]. 4, 26

***dukkha*** . Translated as suffering, unsatisfactoriness, stress, anguish, pain, or discomfort. [14], [19, dukḥa]; its three types are: suffering of suffering (*dukkha-dukkha*), suffering of change (*viparināma-dukkha*), and suffering of conditioned phenomena (*sankhara-dukkha*) [17].. 3

***karma*** (Pali). An action of body, speech, and mind that is driven driven by volition/intention. 8



**saṅgha** . The monastic community of monks and nuns. 13

**saṃsāra** . The repeated cycles of birth, life, and death, driven by the three poisons, namely attachment, aversion, and ignorance. The liberation from *saṃsāra* is *Nirvāṇa* [14, saṃsāra]. 6, 24

**dharma** . The teachings of the Buddha [14, Dharma]; the way things are; natural law [49]. 16

**five precepts** . Commitments to abstain from killing, stealing, sexual misconduct, false speech and intoxicants.. 1

**four immeasurables** (*brahmavihārā*). Also known as the four sublime attitudes. Series of MB virtues; it also refers to the meditations used to cultivate them. They are:

- Loving-kindness (*mettā*);
- Compassion (*karuṇā*);
- Sympathetic joy (*muditā*);
- Equanimity (*upekkhā*).

. 2, 6

**four seals** . The four fundamental discoveries made by the Buddha [50], [59, p. 119]. They are:

- All compounded things are impermanent;
- All things contaminated by duality (including emotions) are *dukkha*;
- All phenomena are without inherent existence and devoid of self;
- *Nirvāṇa* is beyond extremes.

(This presentation is heavily Mahāyanā-based) [28] . 16

**six perfections** (*pāramitās*). Series of MB virtues. They are [19]:

- Giving (*daāna*);
- Morality (*sīla*);
- Patience or forbearance (*ksānti*);
- Effort (*vīrya*);
- Concentration (*dhyaāna*);
- Wisdom (*prajñā*).

. 2, 6

**sutras** . The recorded discourses of Shakyamuni Buddha. 4

**unwholesome** qualities/actions are those that are contaminated with attachment, aversion and delusion; they lead to *dukkha*, and, therefore, move the practitioner away from *Nirvāṇa* [1]. 2

**wholesome** qualities/actions are those that are free from attachment, aversion and delusion; they contribute to the eradication of *dukkha*, and, therefore, bring the practitioner closer to *Nirvāṇa*. [1]. 3

**wisdom** . Experiential knowledge of our true nature and the nature of phenomena. This includes an understanding of suffering, its origin, and the path towards its cessation (the “four noble truths”), of impermanence (*aniccā*), interdependence, and non-self (*anattā*), and of emptiness (*śūnyatā*) and non-duality [50]. The level of wisdom of a practitioner corresponds to how much these “truths” are sustained in lived experience. In a sustained insight into emptiness and non-duality is regarded as the ultimate wisdom . 5, 8, 11

## Acknowledgements

## References

- [1] P. Harvey, *An Introduction to Buddhist Ethics: Foundations, Values and Issues* (Introduction to Religion). Cambridge University Press, Jun. 2012.
- [2] A. Dhammapala, *A Treatise on the Prams: From the Commentary to the Cariyapitaka* (The Wheel Publication 409/411), trans. by B. Bodhi. Buddhist Publication Society, 1996.
- [3] Shantideva, *The Way of the Bodhisattva (Bodhicharyavatara)*, trans. by Padmakara Translation Group. Shambhala Publications, 2006.
- [4] R. W. Perrett, “Buddhism, Euthanasia and the Sanctity of Life,” *Journal of Medical Ethics*, vol. 22, no. 5, pp. 309–313, Oct. 1996.
- [5] M. Siderits, “An Introduction to Buddhist Ethics: Foundations, Values and Issues (Review),” *Journal of Chinese Philosophy*, vol. 31, no. 3, pp. 405–409, Sep. 2004.
- [6] R. E. Florida, “Abortion in Buddhist Thailand,” in *Buddhism and Abortion*, London: Palgrave Macmillan UK, 1998, pp. 199–218.
- [7] R. W. Perrett, “Buddhism, Abortion and the Middle Way,” *Asian Philosophy*, vol. 10, no. 2, pp. 101–114, Jul. 2000.

- [8] “The Fourth Precept: Abstain from False and Harmful Speech,” Tricycle: Buddhism for Beginners, [Online]. Available: <https://tricycle.org/beginners/buddhism/fourth-precept/> (visited on 05/25/2022).
- [9] D. Keown, “Buddhism and Abortion: Is There a Middle Way?” In *Buddhism and Abortion*, London: Palgrave Macmillan UK, 1998, pp. 199–218.
- [10] K. Jones, *The Social Face of Buddhism: An Approach to Political and Social Activism* (A Wisdom East West Book Grey Series). Wisdom Publications, 1989.
- [11] *Asanga’s Chapter on Ethics With the Commentary of Tsong-Kha-Pa: The Basic Path to Awakening, the Complete Bodhisattva* (Studies in Asian Thought and Religion), trans. by M. Tatz. Edwin Mellen Press, 1986, vol. 4.
- [12] D. Keown and J. Keown, “Killing, Karma and Caring: Euthanasia in Buddhism and Christianity,” *Journal of Medical Ethics*, vol. 21, no. 5, pp. 265–269, Oct. 1995.
- [13] P. Harvey, *An Introduction to Buddhism: Teachings, History and Practices* (Introduction to Religion), 2nd ed. Cambridge: Cambridge University Press, 2012.
- [14] D. Keown, *A Dictionary of Buddhism*, 1st ed. Oxford University Press, Jan. 2004.
- [15] “The Global Religious Landscape: Buddhists,” Pew Research Center’s Religion & Public Life Project, [Online]. Available: <https://www.pewforum.org/2012/12/18/global-religious-landscape-buddhist/> (visited on 03/29/2022).
- [16] A. Maitreya, *Buddha Nature: The Mahayana Uttaratantra Shastra with Commentary*, J. Kongtrul and T. Gyamtso, Eds., trans. by R. Funchs. Snow Lion Publications, 2000.
- [17] L. R. Staff. “What Are the Three Kinds of Suffering?” [Online]. Available: <https://www.lionsroar.com/buddhism-by-the-numbers-the-three-kinds-of-suffering/> (visited on 08/21/2022).
- [18] A. P. Martins Gouveia, *Introdução à Filosofia Budista*. Paulus Editora, Sep. 2016.
- [19] R. E. Buswell and D. S. Lopez, Eds., *The Princeton Dictionary of Buddhism*. Princeton University Press, 2014, 1265 pp.
- [20] “Nibbapañhsutta: A Question About Extinguishment (Sayukta Nikya 38).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/sn38.1/en/sujato> (visited on 08/07/2022).
- [21] “Dhammavdpañhsutta: Principled Speech (Sayukta Nikya 38).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/sn38.3/en/sujato> (visited on 08/07/2022).
- [22] B. Sujato. “dittasutta: Burning (Sayukta Nikya 35),” SuttaCentral, [Online]. Available: <https://suttacentral.net/sn35.28/en/sujato> (visited on 07/20/2022).

- [23] S. Batchelor, “A Secular Buddhism,” *Journal of Global Buddhism*, vol. 13, pp. 87–107,
- [24] A. Sicutto, *Turning the Wheel of Truth: Commentary on the Buddha’s First Teaching*, 1st. Shambhala Publications, 2010.
- [25] H. Dayal, *The Bodhisattva Doctrine in Buddhist Sanskrit Literature*. Delhi: Motilal Banarsidass, 1999.
- [26] T. Skorupski, “The Historical Spectrum of the Bodhisattva Ideal. The Middle Way,” *Journal of the Buddhist Society*, vol. 75, no. 2, pp. 95–106, Aug. 2000.
- [27] E. Conze, *Buddhism: A Short History*. Oxford: Oneworld, 2008.
- [28] D. J. Khyentse, *What Makes You Not a Buddhist*. Shambhala Publications, 2007.
- [29] D. J. Khyentse, “View, Meditation and Action,” (Sydney, Australia), Jan. 2020. [Online]. Available: <https://vimeo.com/showcase/6854026> (visited on 05/27/2022).
- [30] “Alagaddpamasutta: The Simile of the Snake (Majjhima Nikya 22).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/mn22/en/sujato> (visited on 06/28/2022).
- [31] “Alagaddpamasutta: The Water-Snake Simile (Majjhima Nikya 22).” trans. by B. Thanissaro, dhammatalks.org, [Online]. Available: <https://www.dhammatalks.org/suttas/MN/MN22.html> (visited on 06/28/2022).
- [32] *Diamond Sutra: The Perfection of Wisdom*, trans. by Red Pine. Counterpoint, 2003.
- [33] “Nibbedhikasutta: A Penetrative Discourse (Aguttara Nikya 6.63).” trans. by B. Thanissaro, SuttaCentral, [Online]. Available: <https://suttacentral.net/an6.63/en/thanissaro> (visited on 06/28/2022).
- [34] R. Gethin, *The Foundations of Buddhism*. Oxford Univ. Press, 1998.
- [35] R. F. Gombrich, *How Buddhism Began. The Conditioned Genesis of the Early Teachings*. Munshiram Manoharlal Publishers, 1997.
- [36] “Ambalahikarhulovdasutta: Advice to Rhula at Ambalahika (Majjhima Nikya 24).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/mn61/en/sujato> (visited on 06/28/2022).
- [37] J. P. McDermott, “Kamma in the Milindapañha,” *Journal of the American Oriental Society*, vol. 97, no. 4, pp. 460–468, 1977.
- [38] *The Dhammapada: The Buddha’s Path of Wisdom*, trans. by A. Buddharakkhita. Pariyatti, 2019.
- [39] S. Harris, *Lying*. Four Elephants Press, 2013.

- [40] B. Thich Nhat-Tu. “Kusala and Akusala as Criteria of Buddhist Ethics,” *Buddhi Vihara*, [Online]. Available: <https://www.buddhivihara.org/kusala-and-akusala-as-criteria-of-buddhist-ethics/> (visited on 06/01/2022).
- [41] “Bjasutta: The Seed (Aguttara Nikya 10.104).” trans. by B. Thanissaro, SuttaCentral, [Online]. Available: <https://suttacentral.net/an10.104/en/thanissaro> (visited on 06/28/2022).
- [42] D. Keown, *The Nature of Buddhist Ethics*. Palgrave Macmillan London, 1992.
- [43] *The Skill in Means (Upyakaualya) Sutra*, 2nd ed, trans. by M. Tatz. Motilal Barnarsidass Publishers, Jul. 2016.
- [44] “The First Precept: Abstain from Killing,” *Tricycle: Buddhism for Beginners*, [Online]. Available: <https://tricycle.org/beginners/buddhism/first-precept/> (visited on 05/18/2022).
- [45] Shantideva, *iksh-Samuccaya, A Compendium of Buddhist Doctrine Compiled by Shantideva*, trans. by C. Bendall and W. H. D. Rouse. John Murray, 1922.
- [46] S. Jenkins, “It’s Not So Strange for a Buddhist to Endorse Killing,” *The Guardian*, May 11, 2011. [Online]. Available: <https://www.theguardian.com/commentisfree/belief/2011/may/11/buddhism-bin-laden-death-dalai-lama> (visited on 06/15/2022).
- [47] K. Popper, *The Open Society and Its Enemies - Volume One: The Spell of Plato*. Routledge, 2002.
- [48] D. J. Khyentse, *Not for Happiness: A Guide to the So-Called Preliminary Practices*. Shambhala, 2012.
- [49] “Dhamma,” *The New Concise Pali English Dictionary*, [Online]. Available: <https://suttacentral.net/define/dhamma> (visited on 10/09/2022).
- [50] D. J. Khyentse. “Buddhism in a Nutshell: The Four Seals of Dharma,” *Lion’s Roar*, [Online]. Available: <https://www.lionsroar.com/buddhism-nutshell-four-seals-dharma/> (visited on 06/27/2022).
- [51] “Rathavintasutta: Prepared Chariots (Majjhima Nikya 24).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/mn24/en/sujato> (visited on 06/28/2022).
- [52] “Kimatthiyasutta: What’s the Purpose (Aguttara Nikya 11.1).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/an11.1/en/sujato> (visited on 06/29/2022).
- [53] S. Harris, *The Moral Landscape: How Science Can Determine Human Values*. New York: Free Press, 2011.

- [54] S. P. Boyd and L. Vandenberghe, *Convex Optimization*. Cambridge, UK ; New York: Cambridge University Press, 2004, 716 pp.
- [55] C. M. Bishop, *Pattern Recognition and Machine Learning* (Information Science and Statistics). Springer, 2006.
- [56] I. Goodfellow, Y. Bengio, and A. Courville, *Deep Learning*. MIT Press, 2016.
- [57] “Gihisutta: A Layperson (Aguttara Nikya 5.179).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/an5.179/en/sujato> (visited on 04/16/2023).
- [58] “Bhayasutta: Dangers (Aguttara Nikya 10.92).” trans. by B. Sujato, SuttaCentral, [Online]. Available: <https://suttacentral.net/an10.92/en/sujato> (visited on 04/16/2023).
- [59] Dalai Lama and Tenzin Gyatso, *Mind in Comfort and Ease*. New York: Wisdom Publications, 2012.