

Why Pascal's Wager Needs a Dual-System Framework

Evaluative System Asymmetry and the Limits of Expected Utility

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Abstract

This article contributes to decision theory by identifying conditions under which expected utility reasoning loses normative force, even when probabilities and utilities are formally well-defined. Pascal's Wager serves as the central case study, but the argument generalizes. The Wager fails not because of technical problems with infinite utilities but because it attempts to apply probabilistic reasoning across incommensurable evaluative frameworks—the finite system of earthly valuation and the distinct regime of salvational outcomes. I introduce the concept of *evaluative system asymmetry* to characterize this structural feature and distinguish it from merely epistemic limitations on rational choice. The analysis extends recent work on transformative experience (Paul, 2014; Pettigrew, 2015, 2019) by showing that the problem is not only that agents cannot know their post-transformation preferences, but that cross-system transitions lack the unified outcome space that expected utility theory presupposes. When actions constitute transitions between fundamentally different value systems rather than choices within a single system, probabilistic decision theory is normatively inapplicable. This limitation affects not only Pascal's Wager but any decision where choosing transforms the chooser's evaluative framework itself.

1. Introduction: A Decision-Theoretic Problem

Pascal's Wager is standardly treated as either a religious argument or a failed application of expected utility theory. This article argues that both framings obscure the Wager's deeper significance for decision theory. Properly understood, Pascal's Wager reveals a structural

limitation of probabilistic reasoning: expected utility theory presupposes a unified outcome space, and certain decisions—those involving transitions between incommensurable evaluative systems—necessarily violate this presupposition.¹

The most rigorous contemporary critique of Pascal's Wager comes from Alan Hájek (2003), who demonstrates that expected utility theory cannot generate determinate recommendations when infinite utilities, undefined expectations, and competing hypotheses are involved. Hájek's analysis is mathematically sound: within the framework of standard decision theory, the Wager fails.

However, this article argues that the mathematical failures Hájek identifies are symptoms of a deeper problem. The Wager does not merely fail because infinity breaks expected utility calculations. It fails because expected utility theory is being applied beyond its domain of applicability. The problem is not numerical but structural: Pascal's Wager spans two evaluative systems that lack a common metric, and no formal apparatus operating within a single system can coherently evaluate transitions between systems.

This insight has implications beyond Pascal's Wager. Any decision where choosing transforms the chooser's evaluative framework—becoming a parent, committing to a vocation, undergoing religious conversion—potentially involves the same structural limitation. The contribution of this article is to identify the conditions under which this limitation obtains and to distinguish structural incommensurability from the epistemic limitations emphasized in recent work on transformative experience.

2. Historical Context: The Wager as Rhetorical Device

Before examining the decision-theoretic issues, a brief historical clarification is necessary. Pascal's Wager was not formulated as a general argument for theism or as a foundational proof of Christianity. It was a deliberately reductive rhetorical device addressed to a specific audience:

¹After consultations with Professor Alan Hájek, whose remarks highlighted the relevance of transformative-experience frameworks in decision theory, this article was revised to clarify the decision-theoretic implications of evaluative system asymmetry, particularly in relation to the limits of expected utility.

libertine skeptics of 17th-century France who had rejected theological, moral, and existential arguments.

Pascal temporarily adopted the evaluative framework of his interlocutors—the language of risk, gain, loss, and prudential calculation—precisely because no other language remained available for communication. The Wager speaks to those who recognize only worldly rationality, using their own terms to produce minimal destabilization, not immediate conversion.

This context matters for decision theory. Interpreting the Wager as a universal rational argument treats a rhetorical bridge as a foundational structure. Nevertheless, once the argument entered philosophical discourse, it developed a life independent of Pascal's intentions. It is this formalized version—reconstructed as an expected utility argument—that reveals important truths about the limits of probabilistic reasoning.

3. The Standard Critique and Its Hidden Assumption

Hájek's critique proceeds by granting the Wager its strongest possible formulation and demonstrating internal collapse. The argument employs dominance reasoning, expected utility calculation, and the assignment of infinite value to salvation. Hájek shows that under these conditions, standard decision theory cannot generate a unique recommendation because infinite utilities make expected values undefined or lead to paradoxical results when multiple hypotheses with infinite payoffs compete.

This critique is correct within its domain. However, it implicitly accepts a crucial assumption: that the problem at hand belongs to a single system of rational evaluation. Hájek's analysis treats the Wager as a standard decision problem with unusual numerical values. The question becomes whether the mathematics works out, not whether the framing itself is appropriate.

Ironically, both Pascal's formulation (as commonly interpreted) and Hájek's critique share this single-system assumption. Pascal assumed the framework could be exploited for persuasive purposes; Hájek demonstrates that it cannot be exploited because the mathematics fails. Neither questions whether cross-system evaluation is coherent in the first place.

This shared assumption deserves scrutiny. I argue that it is precisely this assumption—not the infinite utilities or competing hypotheses—that represents the Wager's fundamental problem. The failure is not technical but categorical: expected utility theory presupposes conditions that cross-system decisions necessarily violate.

4. Evaluative System Asymmetry

To articulate the structural problem, I introduce the concept of *evaluative system asymmetry*.² An evaluative system, for present purposes, is a framework that defines what counts as an outcome, how outcomes are measured, and what makes one outcome preferable to another. Expected utility theory presupposes that all relevant outcomes can be placed within a single evaluative system with a unified value metric.

Consider two idealized evaluative systems relevant to Pascal's Wager. The first—call it the *earthly system*—operates under conditions of finitude, scarcity, and irreversibility. Resources are limited, time is bounded, and certain losses cannot be recovered. Rationality within this system is instrumental: actions are evaluated by their contribution to survival, security, or advantage. Utility functions can be defined over states, and probability distributions over outcomes make expected value calculations meaningful.

The second—the *salvational system*—operates under fundamentally different constraints. Value is determined not by accumulated states but by orientation or relationship to a transcendent ground. Scarcity does not govern in the same way; certain losses may be reversible or even generative; and evaluation may be holistic rather than state-by-state. In such a system, actions that decrease value by the first system's metrics might increase value by the second system's metrics, and vice versa.

These systems are not merely different in degree; they are structurally incommensurable. They do not share a common outcome space, a unified value metric, or consistent preference

²The formal apparatus underlying this dual-system model of evaluative asymmetry is developed in Kriger (2025a, 2025b). The present article extracts the philosophically general implications for decision theory without presupposing the theological context of those works.

orderings. An agent cannot coherently optimize across both systems simultaneously because optimization requires a single maximand, and no such maximand exists that respects both systems' evaluative criteria.

Pascal's Wager implicitly spans exactly this asymmetry. The decision is framed within the earthly system—risk, gain, loss, expected payoff—while the promised outcomes belong to the salvational system. The Wager attempts to place both within a single payoff matrix, treating salvation and damnation as merely very large (infinite) versions of ordinary goods and harms. But infinite quantities cannot bridge a qualitative, ontological gap between systems. Quantitative amplification cannot overcome structural incommensurability.

5. The Structural Failure of Cross-System Expected Utility

5.1 Conditions for Expected Utility's Applicability

Expected utility theory, as applied in decision contexts, requires several conditions for coherent application. Outcomes must be specifiable within a common framework. The value of different outcomes must be comparable on some metric. The decision-maker's preferences must be representable by a utility function over the outcome space. And crucially, the decision and its consequences must be evaluable within the same system.

When these conditions fail, expected utility reasoning does not merely give wrong answers; it loses applicability altogether. This is the key claim: the problem is not that expected utility gives indeterminate results in Pascal's Wager (though it does), but that the framework is being applied beyond its domain.³

Consider an analogy. Suppose someone asked you to calculate the expected utility of a lottery where the prize is 'becoming a different person with different values.' The question is not merely

³Alternative frameworks such as lexicographic preferences (Fishburn, 1974), imprecise probabilities (Walley, 1991), or dominance reasoning without full comparability (Sen, 1997) have been proposed for handling undefined or infinite utilities. However, these approaches still presuppose that outcomes can be ordered within a meta-framework, even if incompletely. Cross-system incommensurability denies even this weaker assumption: the systems do not share the structural features required for any comparative ordering.

difficult; it is ill-formed. Expected utility calculations require a stable evaluator whose preferences provide the metric. If the outcome transforms the evaluator, the calculation loses its anchor.

5.2 Epistemic vs. Structural Incommensurability

It is essential to distinguish two kinds of incommensurability. *Epistemic incommensurability* arises when we lack information needed to compare outcomes—we cannot know what our future preferences will be, or we cannot assign probabilities to uncertain events. *Structural incommensurability* arises when outcomes belong to evaluative frameworks that lack a common metric, regardless of what we know.⁴

Consider two contrasting cases. First, choosing a career under radical uncertainty: I do not know whether I will enjoy being a lawyer or a musician, but if I had perfect information, I could in principle compare the outcomes within a single framework of lifetime satisfaction. This is epistemic incommensurability—a problem of knowledge, potentially resolvable.

Second, choosing between dedication to artistic integrity and dedication to commercial success: even with perfect knowledge of what each life would contain, no common metric exists for comparing them because they are valued according to different evaluative criteria. This is structural incommensurability—a problem of framework, not knowledge.

Pascal's Wager involves structural incommensurability. The 'infinite utility' of salvation is not a very large quantity of worldly satisfaction; it is incommensurable with worldly goods because it belongs to a different evaluative framework entirely. Even perfect knowledge of what salvation would involve could not make it comparable to earthly outcomes, because the comparison requires a unified metric that the two systems do not share.

⁴This distinction parallels but extends Paul's (2014) argument. Paul emphasizes that we cannot know what our preferences will be after transformation (epistemic limitation). The argument here is stronger: even with perfect foreknowledge, cross-system comparison would remain structurally ill-formed because the evaluation metrics themselves are incommensurable. See Section 6 for detailed comparison.

5.3 The 'Low Cost' Distortion

This structural analysis illuminates a particularly misleading element of Pascal's Wager: the claim that belief entails little cost if the religious hypothesis is false.

From a decision-theoretic standpoint, the 'low cost' assumption is not an empirical observation but a modeling choice. It artificially suppresses negative outcomes within the earthly system (costs of religious practice) while importing infinite positive outcomes from the salvational system. The result is an asymmetric payoff matrix that presupposes precisely what is at issue: commensurability between systems.

Within the earthly system alone, the costs of religious commitment may be substantial: time, behavioral constraints, social costs, opportunity costs, and the cognitive burden of beliefs that might be false. These costs are rendered invisible by the framing's focus on cross-system payoffs. This distortion illustrates concretely how probabilistic reasoning breaks down when applied across system boundaries.

6. Relation to Transformative Experience Frameworks

The argument developed here connects with recent work on transformative experience in decision theory, particularly L. A. Paul's (2014) influential analysis and Richard Pettigrew's (2015, 2019) formal treatments. A careful comparison clarifies both the continuities and the distinct contribution of the present framework.

Paul argues that certain choices—becoming a parent, undergoing religious conversion, choosing an identity-altering career—cannot be rationally evaluated by expected utility theory because they transform the agent's preferences in ways that cannot be known beforehand. The agent cannot assign utilities to post-transformation outcomes from the pre-transformation perspective because the agent does not know what it will be like to have the transformed preferences.

Pettigrew develops formal frameworks for rational choice under preference change, proposing continuity conditions and aggregation principles that might govern such decisions. His work

represents a sophisticated attempt to extend decision theory to accommodate transformative choices within a unified formal structure.⁵

The present analysis extends these contributions in a crucial respect. Paul's argument proceeds from epistemic limitations: we cannot *know* our post-transformation preferences. Pettigrew's frameworks presuppose that pre- and post-transformation preferences can be represented within a unified formal structure. The evaluative system asymmetry identified here challenges both: the problem is not only that we cannot know our future preferences, but that cross-system transitions lack the unified outcome space that any expected utility calculation—however sophisticated—requires.

Religious conversion, as envisioned in Pascal's Wager, is not merely epistemically opaque; it is a paradigm case of evaluative system transition. The convert does not simply acquire new preferences within the same evaluative framework; the convert adopts a different framework for determining what is valuable at all. Even with perfect foreknowledge of post-conversion preferences, cross-system comparison would remain structurally ill-formed because the comparison presupposes a meta-framework that neither system provides.

This explains why Pascal's Wager has never been psychologically compelling to its intended audience. The skeptic who rejects religious language does not merely assign low probability to God's existence. The skeptic operates entirely within the earthly system and literally cannot understand what the salvational system's 'outcomes' would mean as values. Infinite utility appears not as an overwhelming prize but as a category error.

⁵Pettigrew (2015, 2019) develops formal frameworks for rational choice under preference change, employing continuity conditions and aggregation principles. These contributions are valuable but presuppose that pre- and post-transformation preferences can be represented within a unified formal structure. The evaluative system asymmetry identified here challenges precisely this presupposition.

7. Generalization: Beyond Pascal's Wager

The argument's significance for decision theory becomes clear when we recognize that Pascal's Wager is a special case of a broader phenomenon. The structural limitation identified here affects any decision where choosing transforms the chooser's evaluative framework.⁶

Becoming a parent: Before having children, one evaluates life according to certain criteria—career achievement, personal freedom, experiences accumulated. After becoming a parent, many report that their evaluative framework shifts fundamentally: the child's welfare becomes central in a way that cannot be reduced to pre-parental preferences. The decision whether to have children potentially involves cross-system evaluation.

Vocational commitment: Choosing to dedicate one's life to art, scholarship, or service often involves a shift not merely in preferences but in what counts as success, fulfillment, or a life well-lived. The commercial framework and the artistic framework may constitute different evaluative systems with incommensurable metrics.

Moral transformation: Converting to a demanding ethical framework—effective altruism, monasticism, or radical political commitment—may reorganize one's values so thoroughly that pre-conversion and post-conversion lives cannot be compared on any shared scale.

In each case, the structure mirrors Pascal's Wager: a decision framed within one evaluative system whose outcomes belong (at least partly) to another. The degree to which evaluative system asymmetry obtains in these secular cases is an empirical question that may vary across individuals and contexts. But the conceptual structure is the same: when evaluative frameworks are genuinely incommensurable, expected utility theory loses normative force.

⁶Jackson & Rogers (2019) attempt to salvage Pascal's Wager against transformative objections by arguing that pre-transformation preferences can rationally constrain post-transformation choices. Chan (2020) explicitly links religious conversion to transformative experience. Both acknowledge that standard expected utility fails but seek alternative rational frameworks—a project compatible with, though distinct from, the present analysis.

8. Implications for Decision Theory

The failure of Pascal's Wager points toward a general limitation in decision theory that deserves more systematic attention. Standard decision theory assumes a unified outcome space and a coherent preference ordering across all relevant possibilities. When decisions involve transitions between incommensurable value systems, these assumptions fail—not contingently, but necessarily.

This has implications for how we understand rational choice under conditions of evaluative system asymmetry. When facing decisions that might alter one's evaluative framework itself, expected utility reasoning loses normative authority. But this does not mean such decisions are arbitrary or that reason has no role. It means that expected utility theory has boundaries, and other modes of practical reasoning must operate where those boundaries are reached.

What might guide choice when probabilistic calculation cannot? Several alternatives merit consideration:

Coherence: Does the choice cohere with the trajectory of one's life? Does it make narrative sense given who one has been and is becoming?

Integrity: Does the choice express or violate commitments that define one's identity? Can wholeness be maintained through the transition?

Authentic self-constitution: Does the choice represent a genuine exercise of self-authorship, or is it driven by external pressures or internal compulsions?

Revelatory value: Is there value in discovering what kind of person one would become, independent of the specific outcomes? Paul (2014) suggests this may ground some transformative choices.

These considerations do not reduce to expected utility calculations. They represent different modes of practical reasoning appropriate to choices that probabilistic frameworks cannot accommodate. The task for decision theory is not to force such choices into the expected utility mold, but to develop adequate accounts of rationality for domains where expected utility does not apply.

9. Conclusion: The Boundaries of Probabilistic Rationality

Pascal's Wager does not fail because probability theory is weak. It fails because probability theory is precise about its requirements, and cross-system decisions violate those requirements.

The contribution of this article to decision theory is the identification of conditions under which expected utility reasoning is normatively inapplicable, even when probabilities and utilities are formally well-defined. The key condition is *evaluative system asymmetry*: when a decision spans two evaluative systems that lack a common metric—a unified outcome space—expected utility theory cannot coherently guide choice. This is a structural limitation, not an epistemic one. It obtains regardless of what the agent knows about post-decision states.

Pascal's Wager is the paradigm case because it explicitly spans two maximally asymmetric systems: the finite earthly system of prudential calculation and the infinite salvational system invoked by its promised outcomes. But the limitation generalizes to any decision where choosing transforms the chooser's evaluative framework—where the very criteria of success, value, and rationality would themselves be altered by the choice.

Recognizing these limits does not undermine rational decision-making. It clarifies where expected utility applies and where other forms of practical reasoning must operate. The Wager's true lesson is not theological. It is a lesson about the boundaries of probabilistic rationality itself.

If probabilistic tools fail in the face of evaluative system asymmetry, what alternative modes of practical reason—coherence, narrative integrity, authentic self-constitution—should guide transformative choices? This question extends beyond Pascal's Wager into the foundations of practical reason, and deserves sustained attention from decision theorists and ethicists alike.

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