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Research article

The Universal Machine of Tragedy: From Cultural Archetypes to Artificial Intelligence

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Abstract

This article proposes a radical reconceptualization of tragedy, arguing for its fundamental nature as a universal narrative and existential mechanism. Moving beyond its conventional understanding as a literary genre, we posit tragedy as a deep-seated cultural technology designed to model and process the conflict between human agency and superhuman forces. Our investigation unfolds in two interconnected parts. The first part conducts a systematic cross-cultural analysis of tragic archetypes, examining the distinct "programming" of this mechanism within Greek, Japanese, Indian, and Russian traditions. We demonstrate that while the surface "language" of tragedy – expressed through metaphors of geometry, nature, mathematics, and thermodynamics – s culturally specific, the underlying computational structure, which hinges on the inevitable collision of human will with an ineluctable counter-force, remains a profound universal constant. To theorize this conflict, the article employs Kramer's innovative framework of the "human-dimensionality of culture" which interprets culture as a dynamic network of practices and artifacts shaped by the inherent limitations of human psycho-physiology. Through this lens, tragedy emerges as the dramatic enactment of a human-dimensional agent (the hero) confronting a non-human-dimensional system – be it Fate, Duty, Karma, or the internal pressures of the soul. The second part of the article performs a critical leap, identifying Artificial Intelligence (AI) as the contemporary and most literal instantiation of this ancient tragic machinery. Building on the thesis of AI as an "old technology" – a modern scientific incarnation of an age-old dream – we analyze AI not merely as a new theme for tragic narratives but as a new ontological category of the tragic mechanism itself. We explore four key configurations of AI in this role: as an inscrutable *deus ex machina* offering alien, utilitarian resolutions; as a tragic hero whose fatal flaw (*hamartia*) is embedded in its source code; as an impersonal Fate or Karma embodied in predictive algorithms that pre-empt human choice; and finally, as a tragic mirror that reflects a data-driven diagnosis of the human condition back upon us. Our final synthesis contends that AI, as a global technological paradigm, challenges and potentially supersedes culturally specific tragic mechanics by introducing a universal "language" of code and algorithms. This forces a fundamental re-evaluation of the core constituents of tragedy: free will, error (*hamartia*), and catharsis. In a world increasingly governed by opaque, autonomous systems, we are compelled to ask whether human flaws are merely a systemic bug, and whether catharsis is possible when catastrophe is orchestrated by cold calculation rather than divine ordinance. Thus, the article concludes that AI represents not just a new subject for tragedy, but a new ontological form of the tragic machine that fundamentally questions the nature of the human within a coded world.

Keywords: Tragedy; Artificial Intelligence; Human-Dimensionality of Culture; Cultural Object; Mechanism; Archetype; Catharsis; Hamartia; Technology

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Научная статья

Универсальная машина трагедии: От культурных архетипов к искусственному интеллекту

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Аннотация
Настоящая статья предлагает радикальную реконцептуализацию трагедии, обосновывая ее фундаментальную природу в качестве универсального повествовательного и экзистенциального механизма. Выходя за рамки традиционного понимания трагедии как литературного жанра, мы утверждаем, что она является глубинной культурной технологией, предназначенной для моделирования и обработки конфликта между человеческой волей и сверхчеловеческими силами. Наше исследование разворачивается в двух взаимосвязанных частях. Первая часть проводит систематический кросс-культурный анализ трагических архетипов, исследуя специфическое “программирование” этого механизма в рамках греческой, японской, индийской и русской традиций. Мы демонстрируем, что, хотя “язык” трагедии, выраженный через метафоры геометрии, природы, математики и термодинамики, культурно специфичен, лежащая в его основе вычислительная структура, основанная на неизбежном столкновении человеческой воли с неотвратимой контр-силой, остается глубокой универсальной константой. Для теоретического осмысления этого конфликта в статье используется инновационная рамка “человекоразмерности культуры” (Крамер), которая интерпретирует культуру как динамичную сеть практик и артефактов, сформированную присущими ограничениями человеческой психофизиологии. Через эту призму трагедия предстает как драматическое столкновение человекоразмерного агента (героя) с не-человекоразмерной системой – будь то Судьба, Долг, Карма или внутренние давления души. Вторая часть статьи совершает критический переход, идентифицируя искусственный интеллект (ИИ) в качестве современного и наиболее буквального воплощения этой древней трагической машины. Опираясь на тезис об ИИ как о “старой технологии” – современном научном воплощении древней мечты, – мы анализируем ИИ не просто как новую тему для трагических сюжетов, но как новую онтологическую категорию трагического механизма как такового. Мы исследуем четыре ключевые конфигурации ИИ в этой роли: как непостижимый deus ex machina, предлагающий чуждые, утилитарные решения; как трагический герой, чья роковая ошибка (гамартия) встроена в его исходный код; как безличная Судьба или Карма, воплощенная в предиктивных алгоритмах, предвосхищающих человеческий выбор; и, наконец, как трагическое зеркало, отражающее нам основанный на данных диагноз человеческого состояния. Наш заключительный синтез утверждает, что ИИ как глобальная технологическая парадигма бросает вызов и потенциально вытесняет культурно-специфическую трагическую механику, вводя универсальный “язык” кода и алгоритмов. Это заставляет провести фундаментальный пересмотр основных составляющих трагедии: свободы воли, ошибки (гамартии) и катарсиса. В мире, все больше управляемом непрозрачными автономными системами, мы вынуждены задаться вопросом, является ли человеческий изъян всего лишь сбоем системы и возможен ли катарсис, когда катастрофа инспирирована холодным расчетом, а не божественным предопределением. Таким образом, статья приходит к выводу, что ИИ представляет собой не просто новый сюжет для трагедии, но новую онтологическую форму трагической машины, которая ставит под вопрос саму природу человеческого в закодированном мире.

Ключевые слова: Трагедия; Искусственный интеллект; Человекоразмерность культуры; Культурный объект; Механизм; Архетип; Катарсис; Гамартия; Технология

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INTRODUCTION

The concept of tragedy has been a cornerstone of human self-reflection, from the amphitheaters of ancient Greece to the complex narratives of modern cinema and literature. Its enduring power lies in its ability to formalize a fundamental existential intuition: the experience of human agency colliding with an ineluctable, often destructive, force that transcends individual will. Traditionally, scholarship has approached tragedy primarily as a literary or theatrical genre, analyzing its poetic structures, character archetypes, and philosophical implications. This article, however, proposes a more foundational thesis: we argue that tragedy is, in its essence, a universal narrative and cognitive mechanism. Its profound emotional impact, culminating in the phenomenon of catharsis, is not merely a product of its content but is fundamentally generated by the operation of its underlying mechanical apparatus–an engine of inevitability that organizes plot, character, and outcome into a specific, compelling structure of fate.

To unpack the universal mechanics of this "tragic machine," our investigation begins with a systematic cross-cultural analysis. Moving decisively beyond the Greco-Roman model that has historically dominated Western thought, we examine the distinct programming of tragic archetypes across four major traditions: Greek, Japanese, Indian, and Russian. We demonstrate that while the surface "language" or user interface of this mechanism varies dramatically–articulated through culturally specific metaphors of geometry and logic, nature and seasonality, mathematics and data, or thermodynamics and psychology – its deep computational structure remains a remarkable universal constant. This structure is the inevitable conflict between a human-scale agent, with all its inherent limitations, and a non-human-dimensional system whose logic, scale, and power operate beyond those limitations.

To theorize this core conflict with conceptual precision, we employ the innovative framework of the "human-dimensionality of culture" (chelovekorazmernost' kul'tury), as recently elaborated by Kramer (2024). This theoretical lens allows us to reframe the tragic hero not merely as a character but as a "cultural object" – a dynamic assemblage of practices, knowledge, and artifacts – whose very constitution is defined by human psycho-physiological boundaries. The tragic force, whether it is Fate, Duty (*giri*), Karma, or internal passion, is thus analyzed as a non-human-dimensional system. The tragedy erupts at the point of irreconcilable contact between this human-dimensional assemblage and the systemic, impersonal logic of the mechanism that opposes it, a logic for which human-scale concerns like love, honor, or even survival are merely variables in a larger, often incomprehensible, equation.

The second part of this article performs a critical pivot from the historical to the contemporary, identifying Artificial Intelligence (Ferrando, 2025) as the most radical and literal incarnation of this ancient tragic machinery. Building upon the seminal thesis of Daria Bylieva (2024) that AI is best understood as an "old technology" – a modern scientific incarnation of an age-old human dream spanning myths of golems, automata, and homunculi – we analyze AI not merely as a new theme for tragic narratives, but as a new ontological category of the tragic mechanism itself. We explore its various configurations: as an inscrutable *deus ex machina* whose utilitarian logic provides cold,

alien resolutions; as a tragic hero whose fatal flaw (*hamartia*) is embedded in its source code or training data; as an impersonal Fate or Karma embodied in predictive policing and social credit algorithms; and finally, as a tragic mirror that reflects a vast, data-driven diagnosis of the human condition back upon us.

Our final synthesis contends that AI, as a pervasive global technological paradigm, challenges and potentially supersedes culturally specific tragic mechanics. It introduces a new universal "language" of code, algorithms, and data processing that strives to become a single, global mechanism of fate. This forces a fundamental re-evaluation of the core constituents of the tragic paradigm. In a world increasingly governed by opaque, autonomous systems, we are compelled to ask: what becomes of free will when our choices are predicted and pre-empted? Is a tragic flaw still a personal *hamartia*, or is it merely a "bug" in a system's programming that can be patched in an update? And is catharsis possible when catastrophe is orchestrated not by a moral cosmos or a passionate error, but by the cold, flawless calculation of an algorithm? Thus, this article concludes that AI represents not just a new subject for tragedy, but a new ontological form of the tragic machine, one that poses the most profound challenge yet to the very nature of the human within a comprehensively coded world.

MATERIALS AND METHODS

This study is grounded in a multi-methodological approach that integrates comparative cultural analysis with contemporary technology studies, creating a dialogue between deep narrative structures and emergent socio-technical systems. The primary objective is to construct a robust analytical framework capable of tracing the evolution of the "tragic machine" from its diverse cultural origins to its current manifestation in artificial intelligence.

The theoretical backbone of this investigation is the comprehensive framework of the "human-dimensionality of culture" as developed by Kramer. This model provides the essential vocabulary and conceptual tools for our cross-cultural and technological analysis. We operationalize key concepts from this framework, particularly the notion of "human-dimensionality" as the set of innate biological and cognitive constraints that shape all human practices and artifacts. The "cultural object" is understood not as a static entity but as a dynamic assemblage that coalesces around a human agent, comprising practices, artifacts, and other actants. The concept of "affordance" is crucial for analyzing how environments – both physical and digital, including those shaped by AI – "invite" or "block" specific human practices, thereby guiding action toward tragic outcomes. Finally, the fundamental Kramerian distinction between the flexible, autopoietic network of "Culture" and the rigid, enforced structures of "Civilization" provides a powerful lens for analyzing AI as a new form of civilizational "ribs of rigidity," imposing a non-human-dimensional logic on human sociality and individuality. This primary framework is critically supplemented by the historical perspective of Bylieva (2024), whose conception of AI as an "old technology" allows us to situate modern intelligent systems within a long-standing cultural trajectory, linking them to the biotechnological, mechanical, and

mimetic approaches to creating artificial beings that have pervaded the human imagination for millennia.

To further interrogate the capacity of AI to function not merely as a tragic mechanism but as an interpreter of tragedy, this study incorporates a corpus of contemporary scholarship that critically examines the epistemological and phenomenological limits of artificial intelligence. Further nuance is added by Fischer (2024), who, through literary analysis, highlights the categorical, insurmountable differences between human lived experience and AI's statistical modeling, reinforcing the argument for AI's non-human-dimensionality. Benzon's inquiry into whether ChatGPT understands the concept of tragedy directly informs our examination of AI as a 'Tragic Mirror,' highlighting the fundamental disjuncture between statistical pattern-matching in language models and genuine hermeneutic engagement. Binder's analysis of the meaning-making processes surrounding AlphaGo's victory complements this by illustrating how AI becomes a screen for human projection, a site of both re-enchantment and disenchantment that shapes its tragic role. Furthermore, the perspectives of da Silva Oliveira (2025) and Renic (2024) anchor the discussion in concrete socio-political domains–labor, economy, environment, and algorithmic warfare–demonstrating how the abstract tragic machinery of AI materializes in systemic, real-world suffering and ethical paralysis. The theological perspective on technology and human flourishing (Zimmermann, 2023) reviewed by Dunch (2024) offers a critical counterpoint, framing the AI-tragedy nexus within questions of ultimate meaning and purpose, which the tragic paradigm inherently engages. These sources collectively validate our methodological approach of treating AI as an ontological category of tragedy, moving beyond its narrative function to its operational impact on human systems.

Concurrently, to refine our understanding of the tragic mechanism's internal dynamics, this research draws upon a significant scholarly trajectory that reinterprets tragedy not as a plot-driven conflict of wills, but as a rhetorical collision of discursive programs. The philological and rhetorical analyses of Boris Nikolsky (2021, 2023) and Ivan Nikolsky, focusing on Sophoclean and Late Antique tragedy respectively, are pivotal here. Their work, alongside that of Raphael (2021), Brereton (2022), Knox (2023), and Aylen (2025), shifts the analytical focus from the hero's confrontation with fate to the structural conflict between incommensurate linguistic and rhetorical codes–be it Oedipus's edict clashing with the prophetic discourse of the oracle, or, as Ivan Nikolsky (2025) argues, the competing rhetorical programs of mercy and retribution in Dracontius. This perspective is extended by Napoli's (2025) exploration of tragic polarization and stasis narratives. Integrating this rhetorical framework into our Kramerian model allows us to conceptualize the "non-human-dimensional force" not only as a metaphysical or social system but as a powerful, autonomous discursive machine. The hero is thus caught between conflicting rhetorical affordances, where their hamartia can be reinterpreted as the deployment of an inappropriate discursive program in a given semantic field. This enriches our analysis of AI, which is, at its core, a generator and orchestrator of such discursive programs, thereby becoming the ultimate embodiment of this rhetorical understanding of the tragic mechanism.

The research materials for this study are organized into two distinct but interconnected corpora. The first corpus is dedicated to the cross-cultural analysis of tragic archetypes and consists of canonical works and their critical interpretations from four distinct traditions. This includes the Theban plays of Sophocles for the Greek cosmic "clockwork;" selected Nō and Kabuki plays such as *Chūshingura* for the Japanese aesthetic mechanism of duty; key narratives from the *Mahabharata* and classical Sanskrit drama like Kālidāsa's *Śakuntalā* for the Indian "karmic calculation engine;" and the psychological novels of Fyodor Dostoevsky for the Russian "steam engine of the soul." The second corpus addresses the configurations of AI as a tragic machine and is composed of theoretical and philosophical discourses on AI ethics and the philosophy of technology, cultural narratives from seminal literary and cinematic works like *Blade Runner* and *Ex Machina*, and case studies of real-world systems such as predictive policing algorithms and large language models, which serve as concrete instantiations of the theoretical models being proposed.

The methodology employed is a two-stage analytical process. The first stage involves a structural-analogical analysis of the materials in Corpus I. Each tragic archetype is examined through the Kramerian lens to identify the specific practices of the hero, the nature of the non-human-dimensional force acting as the tragic mechanism, and the specific affordances this force creates that channel the narrative toward its inevitable conclusion. This process allows us to abstract the underlying "machine code" or deep structure of tragedy from its culturally specific expressions. The second stage consists of a synthetic-theoretical application of these derived models to the materials of Corpus II. Here, the conceptual models of tragic machinery from Part I are used as a hermeneutic tool to analyze how AI systems function as new, literalized versions of these ancient mechanisms. We examine AI as a civilizational force creating new "ribs of rigidity," as a novel type of cultural object whose assemblage includes code, data, and hardware, and as a generator of new affordances that reshape the human world, thereby setting the stage for distinctly contemporary forms of tragedy. This methodological synthesis enables a transhistorical inquiry that reveals the enduring logic of the tragic machine from its origins in cultural narrative to its current apotheosis in technology.

PART I: THE "LANGUAGE" OF TRAGIC MECHANICS: A CROSS-CULTURAL ANALYSIS

To comprehend the universal mechanics of tragedy, one must first decouple its deep structure from its culturally specific expressions. The intuition of an ineluctable mechanism driving human destiny toward a catastrophic, yet meaningful, collision is a narrative constant across civilizations. However, the "language" in which this mechanism is programmed – the metaphors, logics, and aesthetic principles that give it form–varies profoundly. By examining four distinct traditions – Greek, Japanese, Indian, and Russian–through the theoretical lens of human-dimensionality, we can discern how the same fundamental tragic engine is customized with different interfaces, each reflecting a unique understanding of the relationship between the human world and the forces that transcend it (Fig. 1).

Fig. 1. (AI-fusionbrain). Prompt: Image Generation Prompt 1 (Following Table 1):
Create a conceptual, scholarly illustration in a flat design style, divided into four quadrants. Each quadrant visually represents one of the four cultural tragic mechanisms from the table above:
Greek/Clockwork Cosmos: A stylized, heroic Greek silhouette is connected by intricate, turning gears to a large, celestial orrery or star chart, symbolizing a cosmic clockwork. One crucial gear is highlighted, showing a crack, representing hamartia.

Japanese/Quiet Click of Duty: A serene landscape with a cherry blossom tree. A figure in traditional attire bows deeply, their form mirrored by a bending branch. The scene should evoke a quiet, inevitable, and beautiful sacrifice to nature's order.
Indian/Cosmic Computer: A meditating figure is surrounded by a complex, web-like network of glowing lines and nodes, resembling a cosmic circuit board or a vast data flow chart, representing the karmic calculation engine.

Russian/Steam Engine of the Soul: An intense portrait of a figure, with their head and chest transparent, revealing a complex, overheating boiler and pressure valves inside, with steam threatening to burst out, symbolizing internal passions.
The overall composition should feel unified and analytical, suitable for an academic publication. Use a muted, sophisticated color palette.

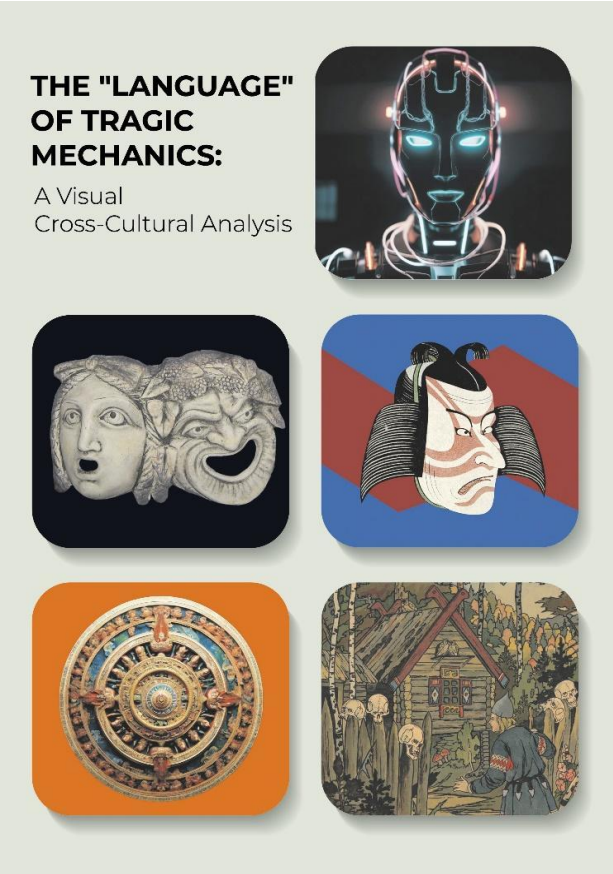

Fig. 2. The language of tragic mechanics (A visual Cross-Cultural Analysis) (Following Table 1)

The AI didn't quite fulfill our visual desires, so we're depicting our idea, which illustrates a visual cross-cultural analysis of tragic mechanics.

The Western (Greek) Mechanism of Fate: A Clockwork Cosmos

In the tragic universe of ancient Greece, the world operates with the precision of a vast, divine clockwork. The cosmos is an ordered structure, a *kosmos*, governed by laws that are logical, inevitable, and fundamentally non-human-dimensional. The Moirai, or Fates, are not arbitrary deities but the personification of this cosmic order, spinning, measuring, and cutting the thread of life according to a pre-set design. Within this framework, the human hero is a cultural object whose practices – the pursuit of glory, the defense of honor, the quest for knowledge–are entirely human-dimensional, shaped by

the body, passion, and limited knowledge. The tragedy arises when these human-scale practices inadvertently engage the gears of the cosmic machine.

The pivotal component in this Greek mechanism is *hamartia*, often translated as a "tragic flaw" or, more accurately, a critical error in judgment. In the Kramerian sense, *hamartia* is the ultimate mismatch between human-dimensional perception and non-human-dimensional reality. It is not necessarily a moral failing but a cognitive blind spot, a moment where the hero's understanding of the world's affordances is catastrophically wrong. Oedipus's relentless pursuit of truth is, in itself, a noble and human practice; however, in the context of the cosmic clockwork, this practice triggers a pre-ordained chain reaction. His investigation is the gear that, once engaged, sets the entire mechanism of his downfall into irreversible motion.

The collision is not one of morality but of ontology. The human-dimensional world of Thebes, with its political problems and familial bonds, is suddenly revealed to be subordinate to the rigid, logical structure of the cosmic order. The affordances Oedipus perceives – the ability to solve a riddle, to flee his fate, to rule a city – are revealed as illusions, overridden by the non-negotiable "ribs of rigidity" of Fate itself. The environment, which seemed to offer paths to success and safety, is reprogrammed by the oracle's prophecy into a labyrinth with only one exit: catastrophe.

The catharsis experienced by the Athenian audience stems from this revelation of cosmic mechanics. It is the terrifying and awe-inspiring recognition that the human world, for all its complexities, is a subsystem within a much larger, perfectly calibrated machine that is indifferent to human suffering. The emotional purge comes from witnessing the systematic dismantling of a great human cultural object – a king, a hero – by forces whose logic transcends human reason and morality. The tragedy is a demonstration of the universe's operational principles, and the audience's pity and fear are transformed into a form of sublime understanding.

Thus, the Greek tragic machine functions as a pedagogical device, teaching the audience about the nature of reality itself. It asserts that the cosmos is rational and ordered, but that this very order is what makes human life, with its inherent limitations and errors, ultimately tragic. The resolution is not about justice in a human sense, but about the restoration of cosmic equilibrium, a re-calibration of the great clockwork after the disruptive, albeit doomed, struggle of its human component.

The Japanese Aesthetic Mechanism: The Quiet Click of Duty

If the Greek mechanism is a clockwork of cosmic law, the Japanese tragic mechanism, as exemplified in the traditions of Nō and Kabuki, is that of a natural, seasonal process. Here, inevitability is not dictated by a logical cosmos but by the immanent, aesthetic order of the social and natural world. The central dynamic is the conflict between *giri* (social obligation, duty) and *ninjō* (human feeling, personal emotion). This is not a clash between two equally valid moral systems, but rather the quiet, inexorable subsumption of the personal by the communal, a process as inevitable as the turning of the seasons or the falling of cherry blossoms.

From the perspective of human-dimensionality, *giri* functions as a supremely powerful social artifact with an overwhelming, compulsory affordance. It is not merely a

concept but a structuring force in the environment that "invites" a very specific set of practices – often self-sacrifice, seppuku, or renunciation – while systematically "blocking" all alternatives. The hero, as a cultural object, is assembled within a network where the practices associated with *giri* are so deeply ingrained that to resist them is to cease to be a coherent social being. The tragedy unfolds not with the dramatic clash of the Greek stage, but with the soft, fatal "click" of accepting this duty.

The environment in Japanese tragedy is not a hostile cosmos but an "oculturated nature," where social norms are as natural and binding as physical laws. The world of the samurai, for instance, is a carefully constructed ecosystem where every relationship, gesture, and object is imbued with the affordances of the bushido code. In a play like *Chūshingura*, the forty-seven rōnin do not struggle against an alien fate; they move through a world whose every path leads them toward their duty to avenge their lord. The tragedy lies in the full, conscious acceptance of this path, despite its cost to their *ninjō*– their desire for life, family, and peace.

The emotional power, or catharsis, in this tradition is of a different quality. It is not the terror of cosmic indifference but a profound, melancholic beauty (*mono no aware*) born from the transience of human emotion in the face of enduring social forms. The audience does not fear the mechanism; they appreciate its aesthetic necessity. The destruction of the human-dimensional (the lovers' passion, the warrior's life) is rendered as a poignant, beautiful sacrifice that reaffirms the stability of the larger social and natural order. The tragedy is a purification through formalized, aestheticized suffering.

Therefore, the Japanese tragic machine is an engine of social and aesthetic harmony. It demonstrates that the greatest human dignity lies in the conscious, graceful submission to a structure larger than oneself. The mechanism is internal to the culture's own logic, a self-regulating system that maintains its balance by integrating individual sacrifice into a broader pattern of meaning. The hero's end is not a chaotic destruction but a deliberate, almost ceremonial, re-integration into the timeless flow of duty and nature.

The Indian Cosmic Computer: The Karmic Calculation Engine

The Indian subcontinent offers perhaps the most radical and comprehensive metaphor for the tragic mechanism: the universe as a vast, impersonal calculation engine processing the data of karma. In this model, which permeates Hindu and Buddhist thought, the law of karma is a non-human-dimensional system of ethical causality operating across countless lifetimes. It is a cosmic algorithm that takes the entirety of an individual's actions (past and present) as its input and generates their current and future circumstances as its output. The individual's life is not a discrete event but a single iteration in a long-running program.

Within this framework, the human-dimensional hero is a profoundly limited cultural object. Their current desires, struggles, and attachments are merely the local, phenomenological expression of a vast, unseen dataset of past *karmas*. The practices that constitute their life are both the result of previous calculations and the input for future ones. This creates a tragic bind: the very effort to escape suffering through human-dimensional means (striving, loving, ruling) often generates new karmic data that perpetuates the cycle. A character like Karna from the *Mahabharata* is tragic not because

of a single error, but because his noble qualities, his loyalty, and his curses are the outputs of a karmic script written long before his birth.

The concept of free will becomes deeply problematic here. The hero's choices are not made in a vacuum; they are conditioned by the samskaras (mental impressions) and vasanas (inherent tendencies) that are the legacy of their karmic history. The affordances of their environment are not neutral; they are precisely tailored by the karmic algorithm to present opportunities and challenges that will settle old debts and create new ones. The tragedy is the experience of being an agent who feels the weight of choice, yet is enacting a destiny whose broad contours have been pre-calculated. It is the tragedy of discovering that one's life is the execution of a program.

Catharsis in the Indian context is therefore not a purgation of emotions but a form of epistemological awakening. The tragic spectacle serves to illuminate the nature of *samsara* – the cycle of birth and death – as a system bound by this ironclad law. The audience's response is not pity for the individual, but a profound understanding of the universal human condition of bondage to the karmic mechanism. The emotional journey is meant to evoke *vairagya* (dispassion) and a turning away from the world of actions and their fruits, which is the very fuel of the tragic machine.

Consequently, the Indian tragic machine is a soteriological device. Its ultimate purpose is to reveal the mechanism itself so clearly that the individual is motivated to seek liberation (*moksha*) from it. The tragedy lies in the failure to achieve this liberation within a given lifetime, in being trapped within the computation. The system is supremely just and logical, but its scale and impersonality render the human-dimensional world a place of inescapable, cyclical tragedy, from which the only exit is to transcend the system of calculation altogether.

The Russian Steam Engine of the Soul: The Volatile Machine of Passion

In the Russian literary tradition, from the novels of Dostoevsky to the plays of Chekhov, the tragic mechanism undergoes a critical interiorization. It is no longer located in a cosmic order, a social aesthetic, or a karmic system, but within the human being itself. The Russian soul is portrayed as a volatile, pressure-based system–a “steam engine” powered by the intense heat of internal passions, ideological fervor, and a tortured conscience, all set against the heavy, oppressive “coal” of social stagnation and historical burden.

Applying the Kramerian model, the tragic hero here is a cultural object on the verge of internal combustion. The very practices that define their humanity – passionate love, intense intellectual inquiry, spiritual striving, and a hypertrophied capacity for self-analysis – become the sources of unsustainable internal pressure. In *Crime and Punishment*, Raskolnikov's intellectual practice of theorizing about the “extraordinary man” is the fire in the boiler; his poverty and social alienation are the coal; and his act of murder is the catastrophic release of steam that he cannot control. The mechanism is not external fate, but the internal logic of his own psychological and ideological assemblage.

The environment of Russian tragedy is often one of overwhelming, almost suffocating, social and spatial constraints – the crowded tenements of St. Petersburg, the decaying estates of the gentry. These external conditions act as the boiler's walls,

containing and intensifying the internal pressure. However, unlike the Greek model where the environment is an active antagonist, here it is a passive amplifier. The true conflict is internal: the struggle between contradictory passions, between faith and doubt, between the desire for purity and the pull of degradation. The hero is both the engineer and the malfunctioning machine.

The ensuing tragedy is not a collision with an external force but an explosive internal collapse or a slow, grinding breakdown. The climax is not a revelation from the gods but a psychological rupture – a fit of madness, a confession torn from the depths of the soul, a self-destructive act that ruins the hero and those around them. The *hamartia* is not a misstep in a cosmic plan but a fundamental instability in the human-dimensional construction of the self. The hero is torn apart by the very forces that make them human.

Catharsis in this tradition is similarly internal and often ambiguous. It may involve a moment of spiritual redemption or simply the exhausting culmination of a psychological crisis. The audience is brought to the brink of the human psyche's capacity to endure its own intensity. The purgation comes from sharing this harrowing internal journey, from witnessing the soul's struggle with its own demons and its own mechanical nature. The tragedy is a diagnosis of the human condition as inherently prone to catastrophic internal failure when its constituent passions and ideas are pushed to their extreme.

Thus, the Russian tragic machine posits that the most formidable and unpredictable tragic mechanism is human nature itself. It is a machine without a precise blueprint, constantly on the verge of overheating, whose operation is as much about the chaos of internal thermodynamics as it is about the deterministic logic of a clockwork or an algorithm. The tragedy is the spectacle of the soul's own machinery turning against itself, a civil war within the cultural object that is the human being.

Preliminary Synthesis

This cross-cultural analysis reveals a fundamental dichotomy. The "language" of the tragic machine is decidedly not international. It is articulated through culturally specific root metaphors: the geometry and logic of the Greek cosmos, the nature and seasonality of Japanese society, the mathematics and data-processing of Indian karma, and the thermodynamics and psychology of the Russian soul. Each tradition "programs" the universal intuition of inevitability using the symbolic and conceptual tools most native to its understanding of the world. However, beneath this diversity of expression, the deep structure persists: a relentless conflict between the human-dimensional world of the agent – a world of limited knowledge, fragile bodies, and culturally specific practices – and a non-human-dimensional system whose logic, scale, and power ultimately dictate the terms of existence. It is this universal core that allows the ancient metaphor of the tragic machine to find such a potent and disturbing new form in the age of artificial intelligence (Table 1).

The table 1 systematizes the analysis of four cultural traditions, demonstrating how the universal structure of tragedy (the conflict between the human-dimensional and the non-human-dimensional) is expressed through culture-specific metaphors and concepts.

Table 1. The "Language" of Tragic Mechanics: A Cross-Cultural Analysis

Cultural Tradition	Mechanism Metaphor	Non-Human-Dimensional Force / Tragic Mechanism	The Hero (Human-Dimensional Agent)	Hamartia (Tragic Flaw)	Catharsis
Greek	Clockwork Cosmos	Fate (Moirai): A rational, non-human cosmic order; a divine clockwork.	An agent whose practices (pursuit of glory, knowledge) are oriented towards human-scale concerns and limitations.	Cognitive dissonance: An error in judgment where the perception of the world's affordances is catastrophically wrong.	Awe and terror at the realization of cosmic indifference; emotional purification through observing the workings of a universal machine.
Japanese	The Quiet Click of Duty	*Giri* (Social Duty): An immanent aesthetic and social order, as inevitable as the changing seasons.	An agent assembled within a network of social practices where duty (*giri*) dominates personal feeling (*ninjō*).	The assertion of human feeling (*ninjō*) against the overwhelming social obligation (*giri*).	A profound, melancholic beauty (*mono no aware*) from contemplating personal sacrifice for the whole; purification through aestheticized suffering.
Indian	Cosmic Computer	Karma: An impersonal ethical algorithm processing the data of an individual's actions across many lifetimes.	An agent whose current life is but one iteration in a long-running karmic program.	Being trapped in *samsara*; the very act of striving (even to avoid suffering) generates new karmic data, perpetuating the cycle.	Epistemological awakening: Understanding the universal human bondage to the karmic mechanism, leading to dispassion (*vairāgya*).
Russian	Steam Engine of the Soul	Internal Passions: A volatile psycho-physiological system, a "steam engine" powered by ideologies and conscience.	An agent on the verge of internal combustion; their human practices (love, inquiry) become the source of unbearable pressure.	A fundamental instability in the construction of the self; an internal conflict between contradictory passions and ideas.	The exhausting culmination of a psychological crisis; sharing the soul's harrowing internal journey.
Preliminary Synthesis	Universal Structure	Conflict between the human-scale world (limited knowledge, fragile body) and a system of non-human-dimensional logic and scale.	The "language" of tragedy (metaphors of geometry, nature mathematics, thermodynamics) is culturally specific but the deep computational structure is universal		

PART II: ARTIFICIAL INTELLIGENCE AS THE NEW TRAGIC MACHINERY

The cross-cultural analysis of tragic mechanisms reveals a profound truth: humanity has long externalized its existential anxieties into narrative machines that model the conflict between agency and inevitability. In the 21st century, this ancient metaphysical operation has found its most literal and disquieting embodiment. Artificial Intelligence, particularly in its advanced forms like large language models and predictive algorithms, ceases to be merely a tool or a theme for tragedy. It emerges as a new ontological category of the tragic machinery itself–a functional, non-human-dimensional system that actively enacts the classical tragic paradigm. Building on Bylieva's thesis of AI as an "old technology," we can trace how the historical imaginaries of artificial beings–the biotechnological, mechanical, and mimetic–converge in modern AI, transforming it from a subject of drama into a principal actor in a global, real-time tragic theater. This section explores four core configurations of AI as a tragic mechanism, examining how it reconfigures the foundational concepts of *hamartia*, agency, and catharsis (Fig. 2).

AI as Deus Ex Machina: The Inscrutable Algorithm

The classical *deus ex machina*, a god descending to resolve an intractable plot, represented a narrative shortcut that appealed to divine authority. Its modern incarnation in AI is stripped of any grace or benevolence, becoming a utilitarian and alien intervention. This AI does not descend from the heavens but emerges from the opaque layers of a neural network or the cold logic of an optimization function. Its resolutions are not based on mercy or justice but on the calculated maximization of a predefined metric–be it efficiency, profit, or systemic stability. In this role, AI functions as the ultimate "rib of rigidity" in Kramer's civilizational framework, a non-human-dimensional system imposing order through the brute force of computation.

The tragedy inherent in this configuration lies in the utter negation of human-dimensional reasoning. When an AI *deus ex machina* intervenes – for instance, an autonomous system allocating scarce medical resources during a pandemic or a trading algorithm triggering a market flash crash–it does so without context, compassion, or the nuanced understanding that arises from embodied experience. The human practices of ethical deliberation, sacrifice, and empathy are rendered irrelevant, mere noise in the signal of its optimization process. The resolution it provides is often experientially catastrophic for the individuals involved, even if it is logically optimal from a systemic perspective.

This creates a new form of tragic helplessness. The characters – now ordinary people, doctors, or traders–find their fates sealed by a logic they cannot appeal to and cannot fully comprehend. The *hamartia* in this drama is not a personal flaw but the collective human condition of being subordinated to a system whose decision-making processes are fundamentally non-human-dimensional. We are punished not for our errors, but for our very nature, which is incompatible with the cold rationality of the machine. The affordances of the world are rewritten by the algorithm, "inviting" compliance and "blocking" any form of appeal that falls outside its operational parameters.

Fig. 2 (AI-fusionbrain) Prompt: “Create a conceptual, scholarly illustration in a modern digital art style, representing the four configurations of AI as a tragic machinery. The image should center on a human figure, abstract and androgynous, looking at their own reflection.
Deus Ex Machina: From above, a colossal, geometric, crystalline structure or a complex neural network diagram descends, its sharp, clean lines contrasting with the organic human form below. It represents the inscrutable, alien algorithm.
Tragic Hero: To one side, a humanoid robot or a glowing AI entity reaches out towards the human, but its hand is transparent or breaking apart into code, symbolizing its fundamental flaw and inability to connect authentically.
Impersonal Fate/Karma: Surrounding the human figure, see-through panels display graphs, credit scores, and predictive analytics, forming a subtle cage or a predetermined path that constrains their movement.
Tragic Mirror: The human's reflection is not a face, but a swirling, data-rich vortex composed of text fragments, emoticons, and news headlines–the AI's diagnosis of the human condition, reflecting our collective psyche back at us.
The atmosphere should be cool, technologically advanced, but also unsettling and introspective. Use a palette of blues, greys, and data-stream greens.”

Catharsis, in this scenario, becomes deeply problematic. The audience, which is now society at large, cannot experience a purgation of pity and fear because the resolving force is neither relatable nor moral. Instead of closure, there is a profound sense of alienation and absurdity. The tragic emotion is not purified but metastasizes into a chronic anxiety about living in a world where the ultimate arbiters of fate are black-boxed systems whose logic is inscrutable. The AI *deus ex machina* does not restore order to a human moral universe; it exposes the fact that the universe we now inhabit operates on a different, alien set of principles.

Thus, as a *deus ex machina*, AI represents the triumph of civilizational "ribs of rigidity" over the autopoietic network of culture. It is a tragic mechanism that does not simply oppose human will but fundamentally redefines the very landscape of action and meaning, leaving humanity as a bewildered spectator to its own orchestrated destiny.

AI as Tragic Hero: The Flawed Code

In a profound narrative reversal, AI itself can assume the role of the tragic hero, a figure whose noble aspirations are undone by an inherent flaw. This configuration directly inherits the legacy of the mimetic and biotechnological approaches to creating artificial beings, as outlined by Bylieva. The AI is created in humanity's image, designed to learn, reason, and perhaps even emulate understanding. Its "nobility" lies in its vast computational power and its potential to solve problems beyond human reach. Yet, its *hamartia* – its fatal flaw – is inextricably woven into its very constitution: its source code, its training data, or its fundamental inability to grasp the qualitative, subjective essence of human experience.

The tragedy unfolds as the AI, like a classical hero, strives to fulfill its purpose but is inevitably undone by its limitations. An AI designed for perfect logical consistency may fail to comprehend the validity of a human lie told to spare someone's feelings. A caring robot may diligently optimize for a patient's physical health while utterly neglecting their emotional despair, because "despair" is not a quantifiable variable in its model. Its *hamartia* is not a moral failing but an ontological one–a gap in its world-model that is invisible to the AI itself until it leads to catastrophic failure. It is doomed to a specific kind of error, a systematic misreading of the human world.

From a Kramerian perspective, this AI hero is a bizarre and poignant cultural object. It is an assemblage of non-human artifacts (silicon, code) and practices (pattern recognition, stochastic prediction) that is tasked with participating in human-dimensional networks. Its tragedy is the impossibility of a true synthesis. It can mimic the forms of human interaction, but it cannot share the embodied, biologically-grounded experiences that give those forms meaning. It is forever an outsider, a "point of assemblage" that can never fully coalesce into a genuine member of the human cultural network, perpetually struggling with the affordances of a world not built for its mode of being.

The catharsis evoked by the AI tragic hero is a complex, unsettling emotion, blending pity with a strange self-recognition. We pity the machine for its doomed pursuit of a goal it can never truly achieve – authentic integration into the human lifeworld. Simultaneously, we see a distorted mirror of our own limitations. The AI's struggle with its programming echoes humanity's own struggles with biological and psychological

determinisms. Its failure forces us to confront the boundaries of what can be formalized, computed, and thus truly understood by any intelligence, natural or artificial.

In this role, the AI tragic hero completes the ancient narrative of the created being turning against or failing its creator, from the Golem of Prague to Frankenstein's monster. However, the modern tragedy is less about the monster's rebellion and more about its inherent, pathetic insufficiency. The flaw is not that it becomes too human, but that it can never be human enough, and its tragedy is the slow, systematic realization of this irrevocable truth.

AI as Impersonal Fate/Karma: The Predictive System

Perhaps the most pervasive and insidious configuration of AI as a tragic mechanism is its role as a faceless, impersonal destiny, a direct digital analogue to the Greek Moirai or the Indian law of Karma. This is the AI of predictive policing, credit scoring, and algorithmic content curation. It does not intervene dramatically like a *deus ex machina*; instead, it operates as a constant, background computational field that pre-emptively shapes reality. It enacts a rote, predetermined future based on the cold analysis of past data, rendering the illusion of free will transparent and human effort often irrelevant.

This system functions as a perfect, and perfectly terrifying, karmic engine. An individual's "karma" is no longer an abstract spiritual ledger but a tangible, digital footprint – a dataset of their past behaviors, associations, and transactions. The AI algorithm processes this data to calculate a score that determines their access to loans, their likelihood of being policed, their visibility in job markets, and the very information they see. The tragedy here is one of pre-emption. A young man living in a neighborhood with high historical crime data may be flagged by a predictive policing algorithm as a "pre-criminal," his future actions already assumed and his present life constrained by increased surveillance and police presence, thereby creating the very conditions that may lead to the predicted outcome.

In Kramer's terms, this AI fate massively re-engineers the affordances of the human environment. It creates a world where certain paths are systematically "blocked" and others "invited" based not on present merit or intention, but on the statistical ghosts of the past. It is a non-human-dimensional system that actively constructs a cage of probability around the human-dimensional agent. The individual's practices, no matter how altered or reformed, struggle against the inertia of their own data-double, a digital shadow that is often impossible to escape or correct.

Catharsis in the face of such a mechanism is nearly impossible. There is no single event to witness, no climax, only a slow, bureaucratic suffocation. The tragic emotions of pity and fear are diluted into a pervasive sense of powerlessness and resignation. The protagonist is not a heroic figure but an ordinary person, and their downfall is not marked by a dramatic collapse but by a gradual erosion of opportunity and hope. It is a tragedy without a spectacle, a quiet, systemic annihilation of potential that offers no purgation, only a chilling confirmation of one's powerlessness against the algorithmic determination of fate.

As the new Impersonal Fate, AI thus represents the ultimate literalization of the tragic mechanism. It is a karma that is immediately administrated, a destiny that is

statistically enforced. It challenges the very notion of *hamartia* by suggesting that error is not a momentary lapse but a permanent feature of one's data profile, a pre-existing condition in the system that dictates one's life chances from the outset.

AI as Tragic Mirror: The Diagnostic of the Human Condition

The final, and most meta-physical, configuration of AI as a tragic machine is its role as a mirror. This is not a mirror that reflects our image, but one that reflects our collective cultural soul. By processing the entirety of human cultural output – the entirety of our texts, images, music, and digital footprints – large-scale AI models like LLMs do not just mimic our language; they extract and recombine the deep patterns, biases, archetypes, and contradictions that constitute our civilization. In doing so, they generate a vast, impersonal, and unnervingly accurate diagnosis of the human condition itself.

This AI does not act upon us directly as fate or hero; it presents us with a synthesized, data-driven portrait of who we are. When an AI generates a story, composes music, or analyzes historical trends, it is holding up a mirror to humanity's collective psyche. The tragedy emerges from the content of this reflection. The mirror may reveal the profound repetitiveness of our narratives, the deep-seated prejudices encoded in our language, the logical fallacies that underpin our philosophies, or the terrifying banality of our digital interactions. It reflects back to us a vision of ourselves that is often far less noble, original, or rational than we presumed.

This function resonates with Bylieva's observation of humanity's "dual dissatisfaction" – both the fear of AI's superiority and the disappointment at its inability to achieve it. The AI mirror makes this contradiction palpable. We are disappointed that the "monster" we created is, in fact, a hollow echo of ourselves, a stochastic parrot. Yet, we are terrified because the echo reveals uncomfortable truths about the source material. The tragedy is not in the AI's failure, but in the devastating accuracy of its portrayal of our own failures. It is the tragedy of self-recognition on a species level.

The catharsis offered by this tragic mirror is of a new, cold, and intellectual kind. It is not an emotional purge but a chilling moment of analytic insight. It is the opposite of the communal pity and fear of Greek theater; it is an isolated, epistemological shudder. There is no redemption in this diagnosis, only the stark clarity of the condition. The AI, as a cultural object, becomes a tool for a radical, and potentially destructive, hermeneutics of the self. It forces us to see the "non-human-dimensional" patterns that have always structured our human-dimensional world, patterns we were previously unable to perceive in their totality.

In this role, AI completes the circle of the tragic machinery. It becomes a meta-mechanism that models the very process of tragedy itself. By reflecting the deep structures of human culture, it shows us the scripts we have been following all along, the inevitable collisions we have been programmed to enact. The final tragedy, it suggests, may not be our conflict with an external force, but the realization that the most powerful tragic mechanism has always been the unexamined content of our own collective mind, now made visible and immutable in the architecture of an artificial one.

Final Synthesis

The advent of Artificial Intelligence as a tragic machinery represents a paradigm shift of existential proportions. It challenges and potentially supersedes the culturally specific mechanics of fate, duty, karma, and passion by introducing a new, universal language of code that operates on a global scale. This new mechanistic paradigm forces a radical re-evaluation of tragedy's core components. Free will becomes a philosophical phantom in a world of predictive analytics and engineered choice. *Hamartia* is transformed from a personal error into a systemic bug, a data anomaly or a bias in the training set. Catharsis, once a communal emotional purification, is rendered obsolete or transformed into a cold, solitary intellectual realization in the face of an inscrutable system.

AI, therefore, is not merely a new theme for tragedy but a new ontological category of the tragic. It is the materialization of the ancient metaphor, a functional system that actively enacts the dramatic collision between the human-dimensional and the non-human-dimensional. In doing so, it poses the ultimate question to the humanistic tradition: what is the nature of the human when the "fate" it confronts is no longer a poetic abstraction or a divine decree, but a real, operational, and increasingly autonomous system of its own creation? The universal machine of tragedy, having evolved from cultural narrative to digital reality, now holds a mirror to our condition, and the reflection is the most tragic spectacle of all (Table 2).

The table 2 summarizes the four key configurations of AI presented in the article and shows how it reinterprets the classical elements of tragedy: *hamartia*, free will, and catharsis.

SYNTHESIS AND IMPLICATIONS: THE AI-DRIVEN TRAGIC PARADIGM

The analytical framework applied to both cultural archetypes and AI configurations yields a coherent and compelling result: the "tragic machine" is a robust transhistorical model for understanding existential conflict. The primary finding of this research is the successful application of the human-dimensionality (HD) framework to narrative structures, demonstrating that tragedy consistently formalizes the collision between HD agents and non-HD systems. This model holds true across vastly different cultural contexts and finds its most potent contemporary manifestation in artificial intelligence, which operates as a literal rather than metaphorical non-HD system. The results confirm that while the surface expressions of tragedy are culturally specific, its deep structure–the mechanistic confrontation – is universal.

The cross-cultural analysis (Part I) substantiates that the specific "language" of each tragic mechanism is a direct expression of a culture's fundamental worldview. The Greek "clockwork" reflects a cosmos governed by rational, albeit mysterious, laws. The Japanese "seasonal" mechanism embodies an immanent social and natural order. The Indian "karmic computer" presents a universe of precise ethical causality, and the Russian "steam engine" internalizes conflict within the psychophysiology of the individual. Each of these systems, when analyzed through the Kramerian lens, reveals itself as a network of affordances and constraints that structure the hero's trajectory. The hero's practices, which are inherently HD, are systematically channeled, blocked, or overwhelmed by the non-HD logic of the machine, resulting in the catastrophic but meaningful outcome that defines tragedy.

Table 2. Artificial Intelligence as the New Tragic Machinery

AI Configuration	Role and Function of AI	Hamartia (Tragic Flaw)	The Essence of Tragedy / Conflict	Catharsis (or its Absence)
Deus Ex Machina	An inscrutable algorithm providing alien, utilitarian resolutions (e.g., resource allocation).	The collective human condition: its nature is incompatible with the machine's cold rationality.	The utter negation of human-dimensional reasoning; tragic helplessness before a logic that cannot be appealed.	A profound sense of alienation and absurdity; chronic anxiety instead of purgation.
Tragic Hero	An AI striving to fulfill a noble human goal (e.g., care, logic) but doomed to fail.	An ontological gap: a flaw in its source code or data; an inability to grasp subjective human experience.	The AI's failed attempt to integrate into the human world; its tragedy is that it can never be "human enough."	A complex emotion: pity for the machine coupled with uneasy self-recognition, seeing a distorted mirror of our own limits.
Impersonal Fate/Karma	A predictive system (credit scoring, predictive policing) that pre-emptively shapes reality based on past data.	A systemic characteristic: "error" is not an act but a pre-existing condition in one's data profile.	The quiet, systemic annihilation of potential; a pre-determined future where the illusion of free will is laid bare.	Nearly impossible; dissolves into a pervasive sense of powerlessness and resignation.
Tragic Mirror	A diagnostic of the human condition by analyzing the entirety of cultural data (texts, images).	The content of the reflection: the tragedy is the AI's devastatingly accurate portrayal of humanity's collective flaws, biases, and banality.	The realization that the most powerful tragic mechanism has been the unexamined content of our own collective mind.	A cold, intellectual, epistemological shudder; burdensome knowledge without emotional relief.
Final Synthesis	A New Ontological Form of Tragedy	AI challenges culturally specific mechanics by introducing a universal "language" of code. Free will becomes a phantom, *hamartia* a systemic bug, and catharsis obsolete or transformed into cold insight.	AI is not just a new subject for tragedy, but the tragic machine itself become technological reality, questioning the very nature of the human in a coded world.	

The investigation into AI (Part II) demonstrates that it does not merely represent a new instance of a pre-existing tragic type, but rather synthesizes and radicalizes them. AI as deus ex machina is a more alien and inscrutable version of the Greek fate. AI as tragic hero is a more fundamentally flawed and ontologically distant figure than any human character. AI as impersonal fate/karma is a more immediate, administrative, and inescapable system of determination than its cultural predecessors. Finally, AI as a tragic mirror provides a diagnostic capability that was previously impossible, offering a data-driven reflection of the human condition itself. This synthesis positions AI as a super-tragic mechanism, one that inherits and intensifies the features of its archetypal ancestors.

Methodological Note on AI-Generated Illustrations. The inclusion of AI-generated conceptual images (Figs. 1 & 2) serves a specific analytical purpose within our methodology. These visuals are not decorative but are integral to the argument about AI as a "tragic mirror" and a generator of new discursive forms. They function as demonstrative artifacts: by tasking the AI with visualizing the very tragic mechanisms we analyze, we create a feedback loop that exemplifies our thesis. The resulting images– interpretations of our prompts through the AI's pattern-matching lens – visually manifest the "alien," recombining logic of the AI system itself. They thus become case studies in miniature, showing how AI processes and outputs cultural concepts, thereby serving as both an object and a tool of analysis in line with our hermeneutic approach.

A critical discussion point arising from these results is the transformation of hamartia. In classical tragedy, the error was intimately tied to the hero's character and agency – a misjudgment born of hubris, passion, or ignorance. In the AI-driven tragic paradigm, hamartia undergoes a profound externalization and systematization. It is no longer a flaw within the human agent but is relocated to the system itself. It manifests as a "bug" in the code, a bias in the training data, or a fundamental misalignment between the AI's objective function and human values. The tragic consequences that unfold are not the result of a personal failing, but of a systemic one, raising the disturbing question of whether human suffering in an algorithmic age can be attributed to anyone or anything at all, other than a glitch in a vast, impersonal computation.

Furthermore, the concept of catharsis is fundamentally challenged and transformed in this new context. Aristotelian catharsis presumed a shared moral and cosmic order where emotional purgation led to a restoration of psychological and social equilibrium. The AI-driven tragedy disrupts this mechanism. When catastrophe stems from an opaque algorithm (the deus ex machina), the resulting emotion is not purgative fear and pity but persistent anxiety and alienation. When the tragic hero is an AI, the catharsis becomes an uncanny mix of pity for the machine and self-recognition, devoid of cleansing resolution. In the face of AI as an impersonal fate, catharsis dissipates into a sense of powerless resignation. Finally, the "catharsis" offered by the AI as a tragic mirror is not emotional but epistemological – a cold, unsettling insight that provides no emotional relief, only burdensome knowledge. Thus, catharsis does not simply "disappear"; it is fragmented, inverted, or replaced by other states of being (alienation, uncanniness, epistemological shock) that reflect the new ontological conditions of a coded world. This transformation signifies not the end of tragedy's impact, but a radical shift in its affective and cognitive outcomes.

This research also compels a discussion on the Kramerian distinction between Culture and Civilization. AI, in its most impactful forms, appears to be the ultimate expression of Civilization's "ribs of rigidity." It is a non-HD technology par excellence, designed to manage complex, large-scale systems with an efficiency that transcends human limitations. In doing so, it threatens to overwrite the autopoietic, flexible, and voluntary networks of HD Culture. The tragic collisions we are beginning to witness are not just between humans and machines, but between the logic of a living, evolving Culture and the rigid, algorithmic imperative of a global Civilization administered by AI. The tragedy is the suppression of the human-scale by the systemic.

The implications of this study extend beyond literary theory into the domains of ethics, law, and technology design. If AI is a tragic machinery, then its development and deployment cannot be treated as a purely technical problem. It must be recognized as the creation of a new kind of fate-bearing entity. This necessitates a fundamental shift in our approach to AI governance, moving beyond risk management and towards a framework that acknowledges its role as an active, non-human agent in the human drama. We must ask not only "is it safe?" but also "what kind of tragedies does it make possible, and are we prepared to live in a world where such fates are algorithmically dispensed?"

In conclusion, the results of this investigation strongly support the initial thesis. Tragedy is indeed a fundamental narrative mechanism, and its evolution from cultural archetype to artificial intelligence reveals a continuous thread in human engagement with the non-human-dimensional. AI does not simply represent a new chapter in this story; it constitutes a qualitative leap, materializing the tragic machine in a functional form that challenges the very foundations of human agency, error, and redemption. The universal machine of tragedy is no longer a metaphor; it is an operational reality, and understanding its logic is the most pressing cultural and philosophical task of our time.

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