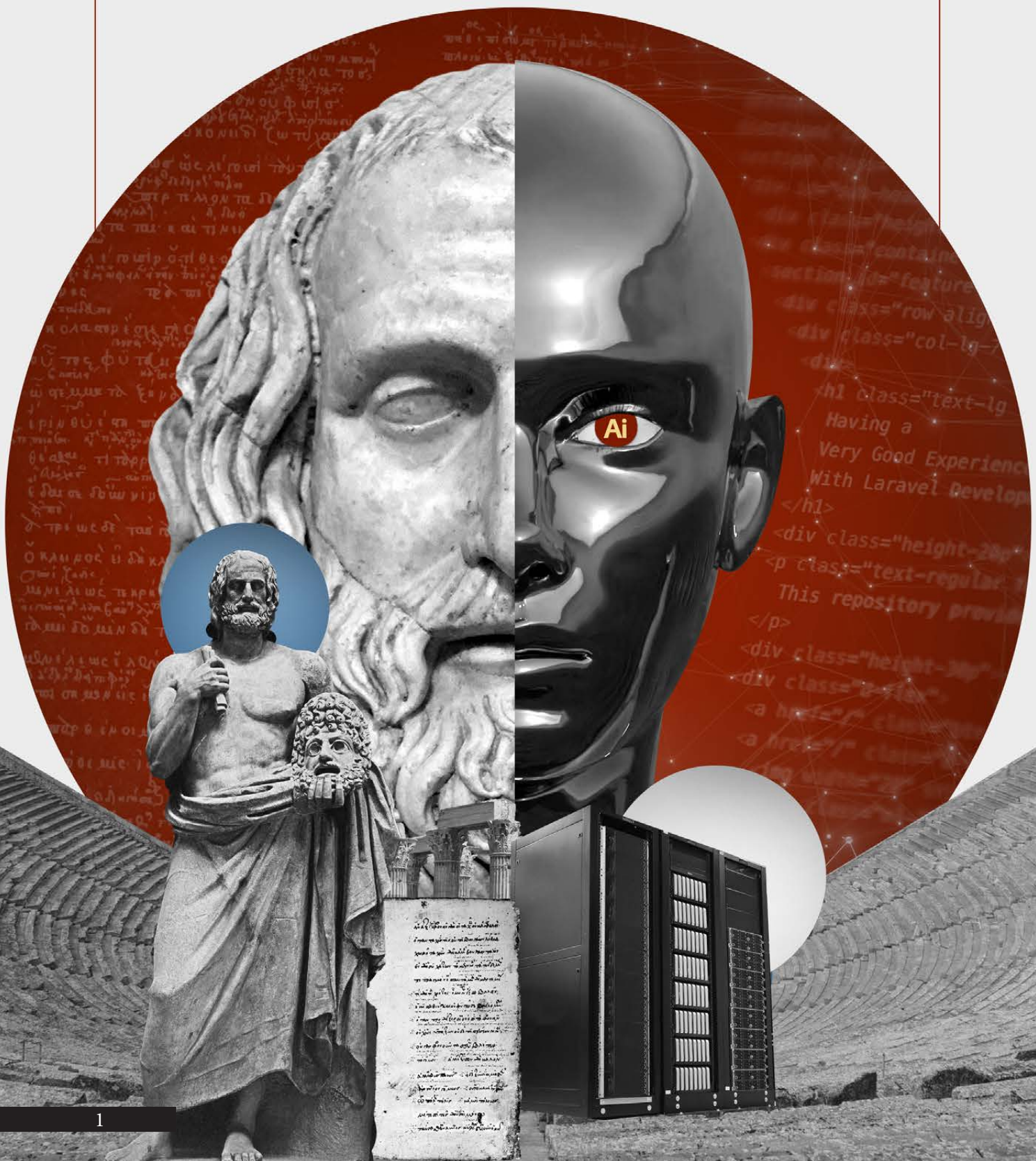
ARTIFICIAL INTELLIGENCE AND ANCIENT GREEK THEATRE:

ATTIC DRAMA IN THE FOURTH INDUSTRIAL REVOLUTION



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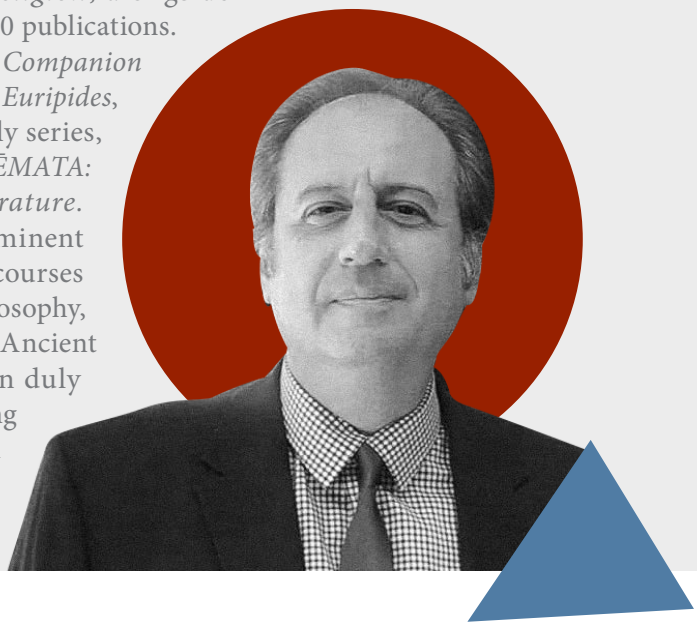
Andreas Markantonatos is a leading scholar of ancient Greek Literature, internationally distinguished for his contributions to the study of Attic drama, narratology, and the intellectual history of Greek myth and religion. He is the author of numerous monographs, including *Tragic Narrative: A Narratological Study of Sophocles' Oedipus at Colonus, Oedipus at Colonus: Sophocles, Athens, and the World, and Euripides' Alcestis: Narrative, Myth, and Religion*, alongside a prolific body of articles and chapters exceeding 120 publications. He has edited major reference works, such as *Brill's Companion to Sophocles* and the two-volume *Brill's Companion to Euripides*, and serves as editor or co-editor of several scholarly series, including *PANTHEON of Ancient Greek Classics* and *SĒMATA: Contemporary Approaches to Ancient Greek Literature*. Professor Markantonatos has held a range of prominent academic leadership roles, directing postgraduate courses in Ancient and Modern Greek Philology, Moral Philosophy, and Performing Arts, and founding the Centre for Ancient Rhetoric and Drama (CARD). His work has been duly acknowledged with significant distinctions, including the Prize of the Academy of Athens and major research grants.



ABSTRACT

The rapid transformations of the Fourth Industrial Revolution have intensified debates about artificial intelligence, algorithmic governance and the future of human agency. This article proposes that ancient Attic drama, especially the tragedies of Sophocles and Euripides, provides a vital ethical grammar for interpreting these technological dilemmas. Treating the plays as dynamic modes of thought rather than cultural artefacts, the study develops a model of 'tragic humanism' to complement contemporary AI ethics. Through close reading and conceptual synthesis, it identifies four tragic frameworks: truth-seeking, conscientious resistance, mortality, and cognitive burden, that illuminate modern concerns about disinformation, authoritarian optimisation, life-extension technologies and mental overload. While not offering direct solutions, this article argues that tragic thought cultivates ethical sensibilities essential for navigating the uncertainties of the algorithmic age and affirms the continuing relevance of classical Greek theatre as a philosophical interlocutor in twenty-first-century technological life.

Keywords

artificial intelligence, greek tragedy, attic drama, tragic humanism

INTRODUCTION: CLASSICAL THOUGHT IN AN AGE OF ACCELERATION

To speak of artificial intelligence in the early decades of the twenty-first century is to speak of a technological landscape defined by an unprecedented fusion of biological, physical and computational domains, a constellation of transformations already identified as emblematic of the Fourth Industrial Revolution (Schwab, 2016, 2017). The speed with which advanced AI systems have transformed communication, labour, politics, warfare, healthcare and cognition continues to unsettle established conceptual boundaries (Harari, 2015; Tegmark, 2017). We increasingly inhabit a world in which human decision-making is supplemented, altered or even replaced by algorithmic processes; in which the structures of knowledge are reorganised by machine-produced outputs; and in which

the lines separating the artificial from the organic, the simulated from the real, the automated from the voluntary, become progressively more difficult to identify. Such transformations demand an equally rigorous interpretive and ethical response (Floridi, 2014).

It is striking that many of the most influential thinkers of the Fourth Industrial Revolution, among them Klaus Schwab, Nick Bostrom, Max Tegmark, Yuval Noah Harari and Luciano Floridi, recurrently gesture toward classical antiquity as a reservoir of concepts capable of clarifying the moral and political stakes of the present technological moment (Bostrom, 2014; Floridi, 2014; Harari, 2016). The rediscovery of ancient categories such as *hubris, technē, logos* and *sōphrosynē* within discussions of AI ethics reflects not nostalgia but something more demanding: an intuition that the dilemmas of the digital age echo, at a structural level, the tensions that animated classical thought (Vernant & Vidal-Naquet, 1990). For while the technological circumstances of classical Athens bear little resemblance to those of the twenty-first century, the ethical, political and psychological problems explored in Greek drama, namely truth, authority, justice, mortality, freedom, responsibility, retain profound relevance (Nussbaum, 1986).

Ancient Greek tragedy in particular offers a unique vantage point from which to approach the challenges of the AI era. Unlike philosophical treatises that present systematic arguments, tragedy articulates ethical and political questions through narrative embodiment and performative intensity, allowing audiences to witness the collision of values and the limits of human foresight (Goldhill, 1986). Tragic protagonists occupy situations of extreme tension in which competing values collide and in which actions unfold within opaque networks of causality that neither they, nor their societies, fully comprehend (Dodds, 1951). To read tragedy is to encounter a mode of thought that resists simplification and refuses to present dilemmas in the form of easily solvable problems. It is this resistance to closure, explicitly this awareness of the limits of human understanding, that renders tragedy a productive partner for contemporary reflections on AI (Hall, 2010).

This article argues that Attic drama can contribute to the development of a distinctive ethical sensibility, what I call *tragic humanism*, capable

of addressing certain blind spots in current AI discourse. While debates in AI ethics often place emphasis on transparency, fairness, accountability, privacy and risk mitigation (O'Neil 2016), they do not always attend to deeper questions of existential vulnerability, epistemic humility, incomplete knowledge, conflict between values and the fragility of civic life (Arendt, 1958). Tragedy, by contrast, foregrounds precisely these aspects of the human condition. Through its exploration of the tensions between aspiration and limitation, intention and consequence, power and responsibility, tragedy calls into question any overconfident belief in the possibility of total control, whether of the self, of society or of technology (Seaford, 1994).

In what follows, I propose to examine four classical tragedies, *Oedipus Tyrannus, Antigone, Alcestis* and *Bacchae*, as case studies for understanding key dilemmas of the algorithmic age. Each play encapsulates a particular dimension of the contemporary technological predicament. *Oedipus Tyrannus* dramatises the risks inherent in the pursuit of truth, especially when knowledge challenges personal and civic identity (Knox, 1957). *Antigone* raises questions about authority, justice and resistance, illuminating the ethical conflicts that arise when decision-making becomes bureaucratised or automated (Honig, 2013). *Alcestis* interrogates the ethics of mortality and sacrifice, offering insights relevant to life-extension technologies and posthuman aspirations (Segal, 1993; Markantonatos, 2013). *Bacchae* explores the psychological consequences of excessive rational control and the need for intermittent release, providing a lens through which to understand cognitive overload in a hyper-connected world (Dodds, 1960; Markantonatos, 2025).

Though I do not suggest that classical tragedy can offer straightforward answers to problems such as algorithmic bias, surveillance capitalism, autonomous weapons or the political consequences of deepfake technologies, I maintain that tragedy provides something essential: a way of thinking about technology that refuses to divorce technical questions from their ethical, psychological and civic dimensions (Zuboff, 2019). It asks us to contemplate what it means to be human under conditions of radical uncertainty. It encourages patience, humility and attentiveness, qualities often overshadowed by the speed and scale of technological innovation. Tragic humanism thus serves as an intellectual counterweight to the sometimes utopian and sometimes nihilistic narratives that dominate discussions of AI (Vallor, 2016).

RESEARCH METHODOLOGY

In accordance with the interpretive traditions of classical studies and the stylistic conventions of humanities scholarship, this study adopts a comparative hermeneutic methodology aimed at elucidating the resonance between ancient tragic thought and contemporary debates in AI ethics. The approach is interdisciplinary, drawing upon literary analysis, political theory, philosophy of technology and ethical inquiry, yet it remains anchored in a close reading of the primary texts (Goldhill, 1986; Hall, 2010). This is not a project of analogy-hunting but of conceptual illumination.

The primary methodological principle is that tragedy be treated not merely as literature but as a form of thinking, namely a mode of philosophical inquiry embedded in narrative, performance and civic ritual. By examining the dramaturgical structures, character dynamics and thematic tensions of the selected plays, I seek to uncover how tragedy stages fundamental dilemmas of human existence that persist across historical epochs (Vernant & Vidal-Naquet, 1990). This analysis is then placed in dialogue with contemporary discussions of artificial intelligence, not in order to impose anachronistic interpretations upon the ancient texts, but to show how classical thought can assist in articulating the ethical and political stakes of technological modernity (Floridi, 2014; O'Neil, 2016).

A second methodological element is conceptual mapping. This involves identifying structural parallels between tragic themes and contemporary technological concerns. Such parallels do not imply equivalence; rather, they illuminate shared patterns of tension, conflict and uncertainty (Nussbaum 1986). When Oedipus' relentless pursuit of truth confronts him with the shattering revelation of his identity, we encounter a dramatic exploration of the ethical costs of knowledge, an issue that resonates with contemporary fears surrounding data harvesting, algorithmic inference and the erosion of privacy (Zuboff 2019). When Antigone challenges Creon's decree, we witness a confrontation between individual conscience and institutional authority that parallels current debates concerning the opacity of "black-box" algorithmic systems (Pasquale, 2015). When Alcestis sacrifices herself so that Admetus may live, Euripides invites reflection on the ethics of extending life at another's expense, a tension mirrored in modern discussions of life-extension technologies and the socio-economic inequalities they may exacerbate (Bostrom, 2014).

When Pentheus attempts to suppress the Dionysian rites in *Bacchae*, we see the dangers of rigid rational control, which anticipates contemporary questions about cognitive overload and the psychological costs of technological acceleration (Dodds, 1951; Crary, 2013).

The third methodological component is philosophical synthesis. Drawing upon the work of contemporary philosophers, including Martha Nussbaum on the fragility of goodness, Hannah Arendt on truth and politics, Shoshana Zuboff on surveillance capitalism, and Floridi on information ethics, I construct a theoretical framework for what I call *tragic humanism* (Nussbaum 1986; Arendt 1958; Floridi 2014; Zuboff 2019). This framework lays much stress upon human vulnerability, epistemic humility and the necessity of ethical responsibility in conditions of uncertainty. It aims to complement existing AI governance frameworks, which often prioritise technical solutions at the expense of broader ethical reflection (Yeung, 2017).

The final methodological aspect is cross-disciplinary integration. The argument proceeds in dialogue with fields such as cognitive science, human-computer interaction, political philosophy and digital sociology, not in order to force interdisciplinary homogenisation but to reveal the multifaceted nature of the problems at stake. Questions concerning the design, deployment and regulation of AI systems cannot be fully understood without attending to the psychological, cultural, philosophical and historical dimensions that shape how human beings relate to technology (Harari, 2015; Vallor, 2016).

RESULTS AND DISCUSSION

1. Ancient Drama in the Age of Algorithms: Sophocles' Oedipus Tyrannus and Antigone

The emergence of the Fourth Industrial Revolution has prompted scholars to reconsider how ancient intellectual traditions might contribute to our understanding of technological modernity (Schwab, 2016, 2017). As societies confront the ethical and political challenges posed by AI, the classical world offers not merely historical instruction but a mode of conceptual clarity shaped by its own encounters with uncertainty, power and human limitation (Floridi, 2014). Among the cultural forms of classical Athens, tragedy stands out as particularly relevant. Performed at civic festivals before thousands of citizens, tragedies served as communal spaces for deliberating some of the most difficult questions confronting the polis. They were not didactic lectures but living enactments of moral and political conflict (Goldhill, 1986; Hall, 2010).

The civic function of tragedy is essential to understanding its relevance to the algorithmic age. Unlike modern ethical debates, which often occur within academic, corporate or governmental institutions, Athenian drama took place in the open, before a heterogeneous public composed of citizens from different classes and backgrounds (Vernant & Vidal-Naquet, 1990). The theatre thus served as a space where collective anxieties could be articulated, contested and partially resolved through dramatic performance. It offered the citizenry a means of reflecting upon the tensions inherent in democratic life, including those surrounding authority, justice, responsibility and the role of divine or unseen forces (Nussbaum, 1986).

Contemporary technological life shares, in a philosophical sense, this condition of uncertainty. AI systems increasingly operate as opaque forces shaping social, political and economic outcomes in ways that may be as inscrutable to the ordinary citizen as divine intervention was to the Athenian audience (Zuboff, 2019). The algorithmic structures that influence elections, determine creditworthiness, allocate social services or recommend media content operate at a scale and speed that make them difficult to comprehend, let alone regulate (Pasquale, 2015; O'Neil, 2016). In this respect, the tragic world, in which protagonists confront forces beyond their understanding, mirrors the lived experience of individuals navigating an increasingly automated order.

The tragic imagination, then, offers an interpretive vocabulary through which to grasp the ethical tensions of technological transformation. What tragedy provides is not predictive insight but a mode of thinking attuned to ambiguity, complexity and the limits of human control (Dodds, 1951). The Greek tragedians possessed a keen understanding of how knowledge, even when pursued with noble intentions, can weaken the individual and threaten the cohesion of the community; they knew that authority, when exercised without humility or accountability, can mutate into tyranny; they acknowledged the ethical ambiguity inherent in attempts to manipulate or evade the conditions of mortality; and they understood, perhaps more clearly than any subsequent cultural tradition, that the human psyche cannot endure unremitting rationality

without descending into fragmentation (Nussbaum, 1986; Vernant & Vidal-Naquet, 1990). For these reasons, ancient drama is uniquely positioned to illuminate the dilemmas produced by artificial intelligence, for AI technologies threaten to displace, obscure or distort precisely those aspects of the human condition that tragedy so powerfully dramatizes.

One might argue that the comparison between ancient drama and modern technology risks romanticising the former or distorting the latter. Yet the point is not to claim that Greek tragedy anticipates AI in any literal sense, but that the tragic worldview cultivates an ethical disposition capable of addressing the ontological instability and epistemic uncertainty introduced by contemporary technologies (Floridi, 2014; Vallor, 2016). In an era when algorithmic processes can predict, nudge or manipulate human behaviour, and when the complexities of AI systems far exceed the capacities of individual understanding, the tragic recognition of human limitation becomes an essential counterpart to the optimistic narratives often promoted by technological progressivism (Bostrom, 2014; Harari, 2015; Tegmark, 2017). The tragic imagination resists both naïve faith in technological salvation and alarmist prophecies of disaster. It urges instead a grounded realism, a recognition that human beings must act ethically within conditions of uncertainty, that action always entails risk, and that wisdom often emerges not from mastery but from the acceptance of limitation (Arendt, 1958).

It is with these principles in mind that we may now turn to the first of the four tragedies under consideration, Sophocles' *Oedipus Tyrannus*, a drama that explores the ethics of knowledge in a world where truth is both necessary and dangerous. Of all the plays of the ancient world, *Oedipus Tyrannus* has most captured the imagination of later philosophers, psychoanalysts, novelists and theorists (Knox, 1957; Markantonatos, 2002). Its exploration of identity, truth, self-discovery and civic responsibility has rendered it an inexhaustible source of reflection. In the context of AI, however, one feature of the play appears particularly salient: Oedipus' determination to uncover the truth at any cost, even when the truth threatens to annihilate the very foundations of his identity and authority. The tragedy unfolds as an investigation, viz. an inquiry undertaken by a man who believes in rational explanation, causal reconstruction and the power of human intelligence to dispel darkness. Yet the deeper Oedipus probes, the more the truth escapes his interpretive grasp, until it finally reveals itself with devastating clarity.

What interests us here is not the psychoanalytic dimension of the Oedipus myth but the intellectual and ethical stance Oedipus embodies. He is a figure of unyielding epistemic commitment, a man who refuses to accept complacent myths or comforting evasions. Even when Jocasta warns him that the pursuit of truth may bring ruin, he insists on knowing. Sophocles thus confronts us with the paradox of truth: it is indispensable for justice and self-understanding, yet it can also undermine the very structures of meaning that hold individual and collective life together (Goldhill, 1986). In this sense, the play offers a powerful reflection on the ethics of knowledge in an age governed by information technologies.

Artificial intelligence presents contemporary society with a parallel dilemma. On the one hand, AI promises unprecedented access to information, the ability to model complex systems and the capacity to predict outcomes with an accuracy previously unimaginable. On the other hand, the same systems that generate knowledge may also distort it, conceal it or make it accessible only to those who control the underlying algorithms (O'Neil, 2016; Zuboff, 2019). Oedipus' insistence on truth stands in stark contrast to the algorithmically curated worlds of personalised feeds, targeted misinformation, synthetic media and predictive profiling (Pasquale, 2015). Whereas Oedipus seeks to uncover an objective reality independent of his desires, today's digital systems increasingly shape our perceptions of reality according to behavioural data, commercial incentives and political interests.

The tragic force of *Oedipus Tyrannus* thus resides in its portrayal of truth as an ethical imperative rather than a commodity. Oedipus does not pursue knowledge in order to expand outcomes or increase efficiency. He does so because truth possesses intrinsic value, because a life grounded in illusion is incompatible with the dignity of moral agency (Nussbaum, 1986). His self-blinding at the end of the play, far from representing a rejection of truth, signifies his refusal to inhabit a world sustained by deception. It is a gesture of fidelity to the truth even when it destroys him. In the context of AI, where truth is increasingly subject to manipulation, commodification and algorithmic distortion, Sophocles' play reminds us that knowledge possesses an ethical dimension that cannot be reduced to data or computation.

Yet the story of Oedipus also warns that knowledge, especially when pursued without sufficient humility, can become destructive. Oedipus' confidence in his rational capacities blinds him to the possibility that his interpretation of evidence may be flawed, that his agency may be entangled in forces beyond his understanding. This *hubris* underscores a crucial limitation of human intelligence and, by extension, of technological intelligence: the belief that complete knowledge is attainable and that mastery of information equates to mastery of fate (Dodds, 1951). AI systems, particularly those grounded in predictive modelling and data inference, often project an aura of objectivity and omniscience. Yet, as scholars such as Zuboff, Cathy O'Neil and Frank Pasquale have argued, the opacity of these systems conceals profound uncertainties and ethical risks (Pasquale, 2015; O'Neil, 2016; Zuboff, 2019). The tragic lesson of Oedipus suggests that the pursuit of knowledge must be accompanied by an awareness of its limits, that epistemic humility is essential in contexts where information shapes individual lives and collective futures.

This lesson bears directly upon debates concerning algorithmic transparency, explainability and the governance of automated decision-making. If AI systems operate as modern oracles, namely entities whose predictions influence financial markets, judicial rulings, hiring practices, medical diagnoses and political campaigns, then the integrity of the truth they produce becomes a matter of public concern (Pasquale, 2015). Just as the citizens of Thebes sought clarity from the Delphic oracle but misinterpreted its cryptic language, modern societies risk misplacing their trust in algorithmic outputs that appear authoritative but may conceal bias, error or manipulation (O'Neil, 2016). Sophocles thus anticipates one of the central ethical dilemmas of AI: how to pursue truth without succumbing to the illusion that truth is easily obtained, perfectly transparent or devoid of moral consequence.

It is precisely this tension between authority, legitimacy and interpretation that lies at the heart of Sophocles' *Antigone*, the second tragedy examined in this study. Whereas *Oedipus Tyrannus* dramatizes the dangers of epistemic ambition, *Antigone* exposes the perils of political overconfidence. Creon, newly installed as ruler of Thebes, issues an edict forbidding the burial of Polyneices, whom he regards as a traitor. His decree is grounded in a desire to preserve civic order and assert political authority. Antigone, by contrast, obeys what she perceives as a higher moral law, refusing to accept the legitimacy of a command that violates familial loyalty and religious duty (Nussbaum, 1986; Butler, 2000). The conflict between Creon and Antigone is not merely a clash of personalities but an exploration of the limits of political authority, the nature of justice and the role of dissent in civic life (Honig, 2013).

The relevance of *Antigone* to debates on artificial intelligence becomes clearer when we consider the increasing reliance of governments, corporations and public institutions on algorithmic systems to exercise authority. In many contemporary contexts, decisions once made by human beings are now delegated to automated processes. Predictive policing algorithms determine areas of surveillance and resource

distribution; automated risk assessments influence judicial sentencing; credit-scoring systems decide access to financial opportunity; recommendation algorithms shape political discourse; welfare agencies use machine learning to detect alleged fraud (O'Neil, 2016). These systems are often presented as neutral, objective and efficient, yet their operation can obscure the moral, political and social values embedded within their design (Pasquale, 2015; Zuboff, 2019).

Creon's confidence in the rationality of his decree mirrors the technocratic faith placed in algorithmic governance. He believes that his decision follows logically from the requirements of civic order and that dissent threatens the stability of the city. Similarly, modern algorithmic systems are often defended on the grounds that automated decision-making reduces human error, eliminates bias and enhances predictability. Yet, as scholars have extensively demonstrated, algorithms can encode and perpetuate forms of injustice that remain invisible precisely because they are couched in the language of objectivity (Pasquale, 2015; O'Neil, 2016). Antigone's act of resistance thus becomes emblematic of the ethical necessity to question, challenge and, when appropriate, oppose systems of authority that operate without sufficient transparency or accountability.

What makes *Antigone* particularly relevant to AI ethics is not merely its portrayal of unjust authority but its representation of the tragic consequences that arise when authority becomes impermeable to dialogue. Creon's downfall does not stem from malice but from a refusal to listen, that is, from an insistence that dissent is equivalent to disorder (Hall, 2010). In this sense, *Antigone* invites reflection on the importance of contestability in technological systems. If AI systems are to play a central role in governance, they must remain open to challenge, review and revision. Citizens must have the right to understand how decisions are made and to appeal decisions that adversely affect them. The tragic conflict between Antigone and Creon thus underscores the ethical imperative that technological authority remain subordinate to human judgement and democratic deliberation (Arendt, 1958).

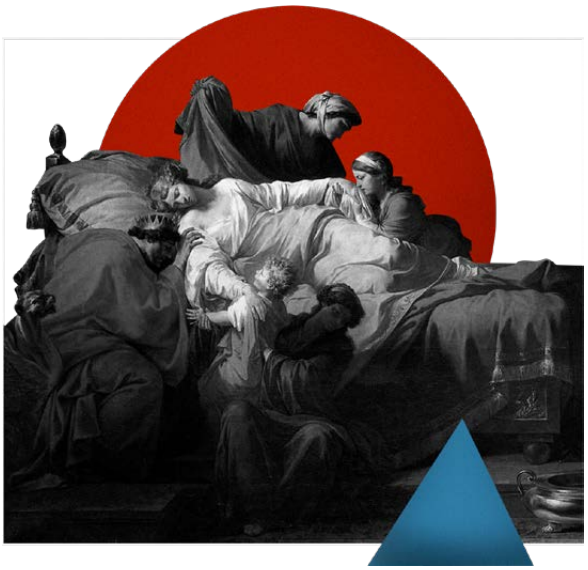
At the same time, *Antigone* also complicates simplistic narratives of resistance. Antigone's unwavering commitment to her cause raises questions about the relationship between personal conviction and collective responsibility. Her defiance is morally admirable, yet it also threatens civic order. The tragedy does not endorse one perspective over the other; rather, it exposes the irreconcilability of two ethical frameworks. This irreconcilability is central to the concept of tragic humanism. In many contemporary debates about AI, we encounter similar tensions between the values of innovation and caution, efficiency and justice, progress and dignity. Like tragedy, AI ethics must grapple with dilemmas that admit no perfect solutions (Nussbaum, 1986; Vernant & Vidal-Naquet, 1990).

2. Ancient Drama in the Age of Algorithms: Euripides' Alcestis and Bacchae

The article now moves to consider *Alcestis*, where Euripides confronts the ethical implications of altering the boundaries of life and death; a theme that resonates deeply with contemporary aspirations toward life extension, genetic enhancement and posthuman transformation (Bostrom, 2014). Yet before turning to Euripides' exploration of mortality, it is necessary to note that tragedy often exposes the costs of pursuing what appears beneficial. Whether the goal is truth, order or longevity, classical drama compels us to ask: at what point does the pursuit of a good become a source of harm? It is this question, perhaps more than any other, that makes Greek tragedy an indispensable companion to the ethical challenges of the Fourth Industrial Revolution.

The concerns explored in Sophocles' *Oedipus Tyrannus* and *Antigone* converge in Euripides' *Alcestis*, a drama whose emotional and philosophical resonance has often been overshadowed by the more politically charged tragedies of the fifth century but which, in the context of contemporary technological life, may be the most relevant of all (Nussbaum, 1986; Segal, 1993). If *Oedipus Tyrannus* examines the dangers inherent in the pursuit of truth, and *Antigone* interrogates the rigidity of authority confronted with moral dissent, *Alcestis* turns its attention to the most fundamental of all human conditions: mortality. Euripides' play presents a world in which death is not merely an inevitable event but a negotiable term, an economy in which life may be extended if another agrees to die in one's place. The premise appears at once fantastical and ethically disturbing, and it is precisely this combination that makes the play so relevant to debates concerning life-extension technologies, biomedical enhancement and posthumanism's aspirations emerging in the early twenty-first century (Bostrom, 2014; Harari, 2015).

The plot of *Alcestis* is deceptively simple. Admetus, king of Pherae, has been granted



the privilege of escaping death if he can find another to die in his stead. His parents refuse the honour; his wife Alcestis volunteers. Her decision is presented neither as coerced nor as entirely voluntary, but as a complex mixture of duty, loyalty, love and resignation. She offers her life so that her husband may live, and the tragedy unfolds as a meditation on the emotional, social and ethical implications of her choice. The climax arrives when Heracles, moved by the hospitality Admetus shows him even in grief, rescues Alcestis from death and returns her to the living. Yet the ending, though joyous in tone, remains ethically ambiguous. Alcestis' sacrifice has revealed the darker dimensions of Admetus' character; the apparent restoration of harmony obscures the trauma that preceded it (Segal, 1993).

Modern readers often struggle with the moral logic of *Alcestis*. Why should Admetus be permitted to circumvent mortality at the expense of another? Why should Alcestis be expected to sacrifice herself? Why should the mythical apparatus of divine intervention validate such an arrangement? These questions take on new urgency in a world increasingly committed to the possibility of extending life through advanced medical technologies, genomic editing, regenerative therapies and AI-assisted diagnostics (Harari, 2015). The play anticipates, in mythological form, the ethical dilemmas that arise when mortality becomes subject not to fate but to human engineering (Bostrom, 2014).

In contemporary debates on bioethics and transhumanism, advocates of radical life extension often frame mortality as an outdated biological limitation, a technical problem awaiting a technical solution (Bostrom, 2014). Scholars such as Bostrom envision a future in which human beings may transcend their evolutionary constraints, achieving not merely longer lives but qualitatively enhanced forms of existence. Yet critics have warned that such visions risk obscuring the ethical, social and political consequences of altering the structure of life and death (Vallor, 2016). Who will have access to life-extension technologies? How will such technologies transform familial, social and intergenerational relationships? What happens to the meaning of responsibility, of sacrifice, of love, of grief, when the boundary between life and death becomes negotiable?

Alcestis suggests that attempts to extend life inevitably implicate others. Admetus' survival depends on the sacrifice of his wife. Although he expresses grief, his acceptance of her offer reveals a troubling moral asymmetry. He values his own life more than the lives of his parents, whom he unsuccessfully implores to die in his place. The play thus exposes the self-interest that can underlie the desire to overcome mortality (Nussbaum, 1986). Even the miraculous restoration of Alcestis does not erase the revelation of Admetus' weakness. Euripides forces the audience to confront the unsettling possibility that the desire to exceed biological limits may mask a profound moral failure: the refusal to accept the vulnerability and finitude that define human life.

This theme resonates with contemporary fears that life-extension technologies may exacerbate existing inequalities. If only the wealthy or technologically privileged have access to enhancements, the division between those who can afford longevity and those who cannot may deepen social stratification (Zuboff, 2019). Moreover, if longevity becomes the norm for certain segments of the population, the generational transfer of political, cultural and economic power may be disrupted in ways that undermine democratic institutions. In *Alcestis*, the social and familial order is watered down by the substitution of one death for another. While the play itself does not provide a clear moral verdict, it draws attention to the relational consequences of altering mortality.

Yet perhaps the most profound insight of *Alcestis* lies in its recognition that mortality is not simply a biological fact but a condition that structures meaning. Without death, responsibility loses its urgency, relationships lose their depth and choices lose their weight. If a life can be indefinitely prolonged, if sacrifice becomes optional, if suffering can be reversed at will,

then the very qualities that make human life ethically significant (its fragility, its temporality, its openness to loss) may be diminished (Nussbaum, 1986; Vallor, 2016). Euripides thus offers a cautionary perspective on the contemporary fascination with posthuman transformation. To seek immortality may be to misunderstand the nature of the human good.

The next tragedy under consideration, *Bacchae*, explores a different dimension of the human condition: the tension between rational control and ecstatic release. If modern technological life is haunted by cognitive overload, information saturation and the relentless pressure of expansion, then the psychological dynamics portrayed in *Bacchae* provide a powerful lens through which to understand the consequences of suppressing human needs that exceed rational explanation (Crary, 2013). Euripides' play centres on the conflict between Pentheus, the rigidly rational and authoritarian king of Thebes, and Dionysus, the god of ecstasy, liberation and ritual madness. Pentheus' refusal to acknowledge the divine nature of Dionysus and his attempt to suppress the Dionysian rites lead to his catastrophic downfall, culminating in his dismemberment by his own mother and the women of Thebes, who are driven into a frenzied state by the god (Dodds, 1960).

Scholars have long interpreted *Bacchae* as a meditation on the dangers of denying or repressing the irrational dimensions of human experience (Vernant & Vidal-Naquet, 1990). Pentheus' worldview is branded by an insistence on order, discipline and control. He seeks to regulate behaviour, suppress disorder and uphold a rigid conception of civic propriety. Dionysus represents the opposite: the force of disruption, the eruption of the unconscious, the transformative power of ritual, music, intoxication and collective frenzy. The tragedy unfolds as an allegory of the human psyche, dramatizing the catastrophic consequences that ensue when one dimension of human nature, rationality, attempts to dominate and eliminate another (Dodds, 1960).

In the context of the Fourth Industrial Revolution, the conflict between Pentheus and Dionysus mirrors the tensions experienced by individuals navigating an environment dominated by digital technologies. Modern life is saturated with stimuli: notifications, alerts, messages, advertisements, metrics and algorithmic predictions that demand constant attention. Cognitive theorists and cultural critics have documented the effects of such hyperconnectivity on the human mind, noting increased anxiety, reduced attention span and an almost continuous state of mental exhaustion (Crary, 2013). Digital systems, designed to enhance engagement and productivity, impose patterns of interaction that leave little room for rest, reflection or unstructured experience.

Pentheus embodies the mindset that prizes efficiency, control and rationality above all else. He cannot comprehend why his citizens seek refuge in Dionysian ecstasy, why they abandon their tasks and duties for ritualised experiences of release. His inability to distinguish the psychological necessity of such experiences ultimately leads to his destruction. In a similar manner, contemporary technological culture often undervalues the importance of rest, slowness and contemplative practices. The logic of augmentation infiltrates all aspects of life, from work to leisure to personal relationships. Human beings are encouraged to become self-rearming subjects, constantly measuring, improving and expanding their capacities (Zuboff, 2019).

Yet as *Bacchae* demonstrates, the human psyche cannot sustain perpetual rationality. Ritual, ecstasy and symbolic participation are not archaic residues of a pre-rational past but essential components of human flourishing (Vernant & Vidal-Naquet, 1990). Dionysus does not merely disrupt; he restores balance by reintroducing dimensions of experience that Pentheus would suppress. The tragedy suggests that any system, be it political, social or technological, that ignores the need for psychological interruption courts disaster. In the context of AI, this insight translates into an understanding that technological systems must be designed in ways that respect human cognitive limits (Crary, 2013). A society that subjects its citizens to continuous data flow, algorithmic upgrading and digital compulsion risks producing a condition akin to the Dionysian frenzy, not as liberation but as overload.

As with *Oedipus Tyrannus* and *Antigone*, the ethical relevance of *Bacchae* is not confined to its narrative. Rather, the play offers a profound reflection on the nature of human cognition, the importance of identifying the limits of rational control and the need for psychological balance in an increasingly machine-oriented world (Dodds, 1960). The tragedy does not advocate irrationality; instead, it insists that rationality must be tempered by an acknowledgment of the forces that lie beyond the reach of reason. In the age of AI, when technological systems can measure, predict and manipulate behaviour with unprecedented precision, the balance between rational

control and Dionysian release becomes an urgent ethical question.

THE VIRTUES OF TRAGIC HUMANISM

At this point, having examined the four tragedies in depth, we may begin to discern the contours of what I call *tragic humanism*, a way of thinking that integrates the insights of classical drama with the ethical challenges posed by contemporary artificial intelligence. Tragic humanism acknowledges the precarity and vulnerability of human and nonhuman agencies (Nayar, 2019), the complexity of ethical decision-making and the irreducible uncertainty that typifies human life (Nussbaum, 1986; Vernant & Vidal-Naquet, 1990). It rejects the notion that technical solutions can resolve moral dilemmas and cautions against the *hubris* of assuming that technological mastery equates to ethical wisdom. It accentuates humility, responsibility, attentiveness and the need for ongoing dialogue (Arendt, 1958; Vallor, 2016).

The tragedies examined in this study collectively articulate a vision of the human condition grounded in vulnerability rather than control, in relationality rather than isolation, in ethical ambiguity rather than moral certitude. *Oedipus Tyrannus* teaches that the pursuit of truth, though noble, must be tempered by humility. *Antigone* teaches that authority must remain open to challenge and that justice cannot be reduced to procedural legality. *Alcestis* teaches that attempts to circumvent mortality inevitably implicate others and that the desire for immortality may undermine the ethical foundations of human life. *Bacchae* teaches that rational control must be balanced by recognition of the psychological dimensions of existence (Dodds, 1951; Nussbaum, 1986).

In the contemporary technological landscape, such insights are indispensable. Artificial intelligence promises unprecedented levels of prediction, enhancement and efficiency, yet these promises come with profound ethical risks (O'Neil, 2016; Zuboff, 2019). The tragedies remind us that human beings are not merely data points or enrichment problems but complex, vulnerable and interdependent agencies whose lives unfold under conditions of uncertainty. The tragic worldview thus offers a counterpoint to the technological imaginary that seeks to render human life fully predictable, controllable and improvable (Floridi, 2014).

Tragic humanism does not call for the rejection of technology. Rather, it calls for an ethical orientation that acknowledges the limits of technological mastery and the need to preserve the conditions under which human dignity can flourish (Arendt, 1958). It urges us to ask how technology can serve, rather than diminish, the values that define human life: justice, truth, freedom, responsibility and the capacity for meaningful relationship. It insists that ethical deliberation must accompany technical innovation, that vulnerability must inform design and that humility must guide policy (Pasquale, 2015; Vallor, 2016).

This philosophical synthesis prepares the ground for the final sections of the article, which will draw together the implications of the tragic analysis and articulate a continuous, discursive reflection on the results and conclusions appropriate to a fully humanistic treatment of AI ethics. The emergence of tragic humanism as a conceptual framework for understanding the ethical tensions of the Fourth Industrial Revolution reflects the enduring capacity of classical literature to illuminate questions that transcend historical boundaries. The tragedies of Sophocles and Euripides, though shaped by the religious, political and social contexts of fifth-century Athens, address dilemmas that resonate profoundly with the challenges posed by contemporary artificial intelligence (Hall, 2010). They confront us with the limits of knowledge, the fragility of authority, the complexity of moral choice, the inevitability of death and the pressures exerted upon the human mind by forces that exceed rational comprehension. These concerns, far from being relics of ancient thought, have become central to our contemporary technological experience.

As artificial intelligence becomes increasingly integrated into the fabric of daily life, the question of how to think ethically about its design, deployment and governance grows ever more urgent. Contemporary discussions often focus on technical criteria such as transparency, fairness, accuracy, privacy and security. While these criteria are unquestionably important, they do not exhaust the ethical landscape (Floridi, 2014; O'Neil, 2016). They tend to assume that ethical problems can be formulated in technical terms and resolved through improved design or regulation. Yet tragedy invites us to acknowledge that many dilemmas cannot be reduced to such equations. They involve conflicts between values that cannot be reconciled, situations in which any available choice carries costs, contexts in which knowledge is incomplete and consequences unforeseeable. Tragic humanism therefore articulates an ethical sensibility rather than a prescriptive programme.

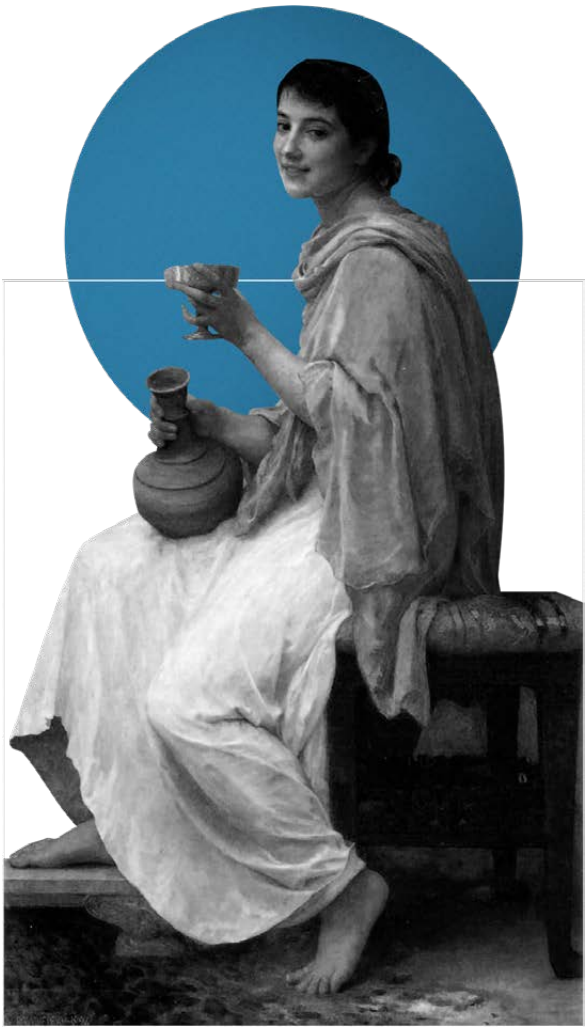
It encourages us to acknowledge the limitations of both human and technological agency and to cultivate virtues appropriate to a world plagued by uncertainty.

The first of these virtues is epistemic humility. Oedipus' determination to uncover the truth is admirable, yet his downfall illustrates the dangers of presuming that knowledge is easily obtained or that its consequences can be anticipated. In an era in which AI systems are capable of generating vast quantities of information and making predictions with formidable accuracy, the temptation to equate information with understanding becomes intense. But the data-driven worldview, like Oedipus' confidence in his interpretive abilities, can obscure the limits of what such information can reveal. Predictive algorithms may detect patterns invisible to human perception, yet they do not provide the kind of contextual, narrative and ethical understanding that tragic drama assigns to truth (Nussbaum, 1986). The tragic perspective thus reminds us that information must be interpreted, that interpretation is fallible and that ethical judgement cannot be automated.

The second virtue that emerges from tragic humanism is attentiveness to moral plurality. *Antigone* illustrates how conflicts arise not because one side is morally right and the other morally wrong, but because both are committed to incommensurable values. Creon seeks to uphold civic order; Antigone seeks to honour familial and divine obligations (Butler, 2000; Honig, 2013). The tragedy demonstrates that justice cannot be reduced to procedural correctness or algorithmic calculation, and that political authority must remain open to dissent even when it appears disruptive. In the context of AI, this insight challenges the belief that decision-making can be fully delegated to machinic processes. An ethical society requires forums in which conflicting values can be articulated, contested and negotiated. Algorithmic authority, if left unchecked, threatens to erode this pluralism by enforcing uniformity under the guise of neutrality (Pasquale, 2015; O'Neil, 2016).

A third virtue, illuminated most clearly by *Alcestis*, is an awareness of relational responsibility. The desire to transcend mortality through technological innovation must be considered not only in terms of individual benefit but in terms of its impact on others. Euripides exposes the moral asymmetry inherent in Admetus' acceptance of Alcestis' sacrifice. Her death, though framed as voluntary, reveals the social cost of granting one individual the privilege of escaping death (Nussbaum, 1986; Segal, 1993). In contemporary debates on life-extension and enhancement technologies, a similar concern arises: who will bear the burden of sustaining the lives of those who choose to prolong them? How will extended longevity affect the distribution of resources, the structure of families, or the organisation of labour? Euripides suggests that any attempt to circumvent mortality must be evaluated in light of its relational implications, for human life is woven from interdependence rather than isolated striving (Vallor, 2016).

The fourth virtue, articulated through *Bacchae*, is an appreciation of psychological balance. Pentheus' insistence upon total rational control, his failure to understand the importance of ritual, joy and ecstatic release, leads to personal and civic destruction (Dodds, 1960). His downfall warns against the dangers of suppressing dimensions of human experience that resist quantification. In the digital age, branded by incessant connectivity, perpetual engagement and algorithmic augmentation, the need for cognitive rest becomes ever more pressing



(Crary, 2013). AI systems that operate by capturing attention and stimulating compulsive behaviour threaten to produce a condition not unlike the frenzy induced by Dionysus, albeit one stripped of *mythic transcendence* (Zuboff 2019). Tragedy teaches that human flourishing requires space for contemplation, for unstructured activity, for absorption into beauty and for forms of experience that cannot be programmed or predicted (Vernant & Vidal-Naquet, 1990).

These virtues, namely humility, pluralism, relational awareness and psychological balance, form the ethical core of tragic humanism. They do not provide definitive answers to the dilemmas posed by artificial intelligence. Rather, they shape a mode of thinking that is familiar with the complexity of such dilemmas and resists the reduction of ethical life to computation. They call for an ethics grounded not in the illusion of mastery but in an acknowledgement of our shared vulnerability. They urge us to approach technological innovation with caution rather than fear, enthusiasm rather than naivety and responsibility rather than fatalism (Arendt, 1958; Vallor, 2016).

CONCLUSIONS

From the standpoint of cultural history, the reappearance of tragic themes in contemporary technological discourse suggests a deeper continuity between ancient and modern forms of thought. Classical tragedy emerged in a period of rapid social, political and intellectual transformation. The rise of democratic institutions, the development of natural philosophy, the growth of imperial ambition and the emergence of sophistic rhetoric generated profound uncertainties concerning the nature of human agency (Vernant & Vidal-Naquet, 1990; Hall, 2010). The tragedies of the fifth century BCE dramatize these uncertainties, offering the Athenian audience a means of exploring the psychological and political pressures of their own moment. Today, as we confront transformations no less significant, i.e. digital automation, data extraction, algorithmic governance and biotechnological enhancement, the tragic imagination once again becomes essential (Floridi, 2014; Zuboff, 2019).

What distinguishes tragedy from other genres is its refusal to resolve the conflicts it portrays. It acknowledges that certain dilemmas cannot be solved but only endured, that ethical life consists not in the elimination of conflict but in the capacity to navigate it with dignity (Nussbaum, 1986). This recognition has particular relevance for debates concerning AI, where the desire for technical solutions can eclipse the need for ethical judgement. The tragic perspective cautions against the belief that improved algorithms will eliminate bias, that more data will dispel uncertainty or that more sophisticated machines will relieve humans of the burden of responsibility. On the contrary, tragedy teaches that human beings must continue to exercise judgement precisely because technology cannot replace it (Pasquale, 2015; O'Neil, 2016).

In the final analysis, the contribution of tragic humanism to AI ethics lies in its capacity to reframe the moral landscape. It shifts the focus from narrow technical concerns to broader reflections on the conditions under which human beings can lead meaningful, dignified lives in a technologically mediated world. It challenges us to ask not only whether a system functions efficiently but whether it promotes justice, sustains community, preserves dignity and acknowledges vulnerability (Arendt, 1958; Floridi, 2014). It invites us to cultivate a civic culture capable of resisting the forces that seek to reduce human life to data, labour to metrics, citizenship

to behavioural prediction and morality to algorithmic constraint (Zuboff, 2019).

If the Fourth Industrial Revolution presents unprecedented opportunities for human flourishing, it also presents unprecedented risks (Schwab, 2016; Tegmark, 2017). The tragedies of Sophocles and Euripides do not offer blueprints for managing these risks, but they provide indispensable insights into the human condition that any viable ethical framework must incorporate. They remind us that knowledge can be dangerous, that authority can become destructive, that the desire to escape death can reveal moral weakness and that the suppression of psychological needs can lead to catastrophe. They insist that we acknowledge the fragility of our condition and approach the future with both courage and humility.

To read tragedy in the age of artificial intelligence is to acknowledge that the dilemmas we face are not entirely new. They are variations of ancient questions: What does it mean to know? What does it mean to rule? What does it mean to live? What does it mean to die? The technologies we create may transform the context in which these questions arise, but they do not abolish the questions themselves. The tragic imagination, by confronting these questions with honesty and intensity, provides a vital resource for navigating the complexities of our technological age (Nussbaum, 1986).

Tragic humanism, therefore, should be integrated not only into academic discourse but also into public policy, technological design and civic education. It should inform how we teach engineering students to think about ethics, how we encourage legislators to reflect on the long-term consequences of technological regulation, how we engage corporate leaders in questions of responsibility and how we raise and cultivate public awareness of the social and psychological dimensions of technological innovation (Floridi, 2014; Vallor, 2016). It invites us to admit that the future of artificial intelligence is not only a technological challenge but an ethical, cultural and existential one.

The Humanities, long thought marginal in an era dominated by STEM disciplines, thus regain central importance. For instance, classical studies, philosophy, literature, history and the arts offer insights that cannot be generated by technical analysis alone. They provide the vocabulary, the narratives and the interpretive frameworks through which we understand and explore what it means to be human. As AI systems become more powerful, the Humanities will become not less but more essential, for they safeguard the values that technological and machine systems cannot generate such empathy, reflection, meaning, beauty, dignity and freedom (Arendt, 1958; Hall, 2010).

The tragedies of ancient Greece continue to speak because they address the enduring tensions of the human condition. They remind us that our aspirations toward knowledge, power and longevity must be tempered by an acceptance of our vulnerability, and that our attempts to master the world must be guided by an awareness of the limits of that mastery. In an age when artificial intelligence promises to reshape every aspect of life, the tragic imagination offers a vital ethical compass. It reminds us that to be human is not to transcend limitation but to live responsibly within it.

The dialogue between artificial intelligence and ancient drama is, therefore, not a matter of historical curiosity but a necessary engagement between two modes of understanding the world. By reading the present through the lens of the past, we gain the perspective required to navigate a future that remains uncertain. Tragic humanism does not promise salvation, but it offers guidance. It teaches us how to live with uncertainty, how to act responsibly in the face of ambiguity, and how to preserve humanity in a world increasingly shaped by AI machines. In this sense, the tragedies of Sophocles and Euripides are not merely artistic masterpieces but indispensable companions in the age of artificial intelligence.

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This study aims to explore how ancient Greek tragedy can serve as a conceptual and ethical resource for understanding the challenges posed by contemporary artificial intelligence. It argues that tragic thought, through its distinctive portrayal of human limitation, moral ambiguity and the fragile interplay between knowledge, authority

and agency, can illuminate the dilemmas produced by rapid technological advancement. By juxtaposing classical texts with current technological debates, the paper seeks to enrich AI ethics with insights drawn from the humanities, thereby constructing a richer interdisciplinary framework for evaluating the implications of the Fourth Industrial Revolution.

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