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Research article

Beyond Progress: Technology, Ethics, and Interdependence

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Abstract

Tragedy has historically accompanied Western narratives of technology, from Prometheus to Oppenheimer, framing invention as a force that promises progress while courting catastrophe. This Eurocentric lens, however, obscures non-Western traditions that have long reflected on technological excess through ethics of balance, care, and interdependence. This article proposes a transcultural and existential framework for understanding technology not merely as an instrument of progress or disaster, but as a relational and culturally situated agent. Drawing on *Yoruba* mythology, particularly the figure of *Ogun* as an ambivalent deity of technique, creation, and violence, the paper examines how technological power is ethically constrained by communal responsibility and ritual regulation. It then turns to Mesoamerican worldviews, where technologies such as *chinampas* and agricultural calendars were embedded in cosmologies of reciprocity, ritual time, and ecological care rather than optimization. Narratives and practices among the San people of the Kalahari further emphasize restraint, balance, and the avoidance of accumulation, situating technical knowledge within social cohesion and environmental limits. The Taoist principle of *wu-wei* complements these perspectives by framing technique as alignment with natural flows rather than domination. From a South American perspective, the article analyzes how contemporary extractivism, particularly lithium, cobalt, and data industries, reproduces a modern Promethean tragedy in which promised ecological salvation masks territorial sacrifice and structural inequality. Finally, the paper examines generative artificial intelligence as a cultural technology and "context machine," arguing that evaluating AI solely through performance metrics perpetuates technological determinism. Instead, a hermeneutic approach grounded in technodiversity, relational ethics, and situationality enables more just and sustainable technological imaginaries.

Keywords: Technology; Tragedy; Technodiversity; Relational ethics; Anthropocene; Artificial intelligence; Computational hermeneutics

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Научная статья

За пределами прогресса: Технологии, этика и взаимозависимость

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Аннотация
Исторически сложилось так, что западные нарративы о технологиях, от Прометея до Оппенгеймера, сопровождались трагедиями, которые изображали изобретение как силу, обещающую прогресс и в то же время грозящую катастрофой. Однако эта евроцентричная концепция скрывает незападные традиции, которые долгое время отражались на технологическом избытке через этику баланса, заботы и взаимозависимости. В этой статье предлагается транскультурная и экзистенциальная основа для понимания технологии не просто как инструмента прогресса или катастрофы, но и как фактора взаимоотношений и культурного влияния. Опираясь на мифологию йоруба, в частности на образ Огуна как амбивалентного божества техники, созидания и насилия, в статье рассматривается, как технологическая мощь этически ограничивается общественной ответственностью и ритуальным регулированием. В мезоамериканском мировоззрении такие технологии, как чинампы и сельскохозяйственные календари, были встроены в космологию взаимности, ритуального времени и заботы об окружающей среде, а не оптимизации. Легенды и обычаи народа Сан в Калахари еще больше подчеркивают сдержанность, сбалансированность и стремление избегать накопления, помещая технические знания в рамки социальной сплоченности и экологических ограничений. Даосский принцип ву вэй дополняет эти взгляды, рассматривая технику как соответствие природным потокам, а не как доминирование. С точки зрения Южной Америки, в статье анализируется, как современный экстрактивизм, особенно в литиевой, кобальтовой и информационной отраслях, воспроизводит современную трагедию Прометея, в которой обещанное экологическое спасение маскируется территориальными жертвами и структурным неравенством. Наконец, в статье рассматривается генеративный искусственный интеллект как культурная технология и “контекстная машина”, утверждающая, что оценка ИИ исключительно с помощью показателей производительности увековечивает технологический детерминизм. Вместо этого герменевтический подход, основанный на техническом разнообразии, этике взаимоотношений и ситуативности, позволяет создавать более справедливые и устойчивые технологические представления.

Ключевые слова: Технология; Трагедия; Техноразнообразие; Этика взаимоотношений; Антропоцен; Искусственный интеллект; Компьютерная герменевтика

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INTRODUCTION

In the modern world, numerous narratives warn of the dangers of technology: Frankenstein and Faust, Oppenheimer, and other iconic figures illustrate inventions that promise progress yet result in disaster. These stories demonstrate that excessive pride often leads to overstepping human limits and suffering the consequences. However, a strictly Europe-centered perspective is no longer sufficient. Contemporary challenges: climate change, resource exploitation, and digitalization demand recognition that technological tragedy is more complex than the repetition of classical myths.

Non-Western traditions offer alternative readings. African, Mesoamerican, and Taoist narratives reveal that technology has never been neutral or linear: it is ambivalent, simultaneously enabling creation and destruction, balance and imbalance. While Western narratives tend to absolutize progress, these traditions emphasize fragility, interdependence, and the maintenance of equilibrium among humans, nature, and technology. From this perspective, technology is neither destiny nor doom, but a field of tensions where ethics and prudence are central.

In South America, these reflections acquire particular urgency. The region participates in global technological systems while bearing its most visible costs: lithium extraction for batteries, resource-intensive industries, and the perpetuation of structural inequalities that render territories as sacrifice zones. Here, technology is understood not as a perfect tool or automatic guarantee of progress, but as fragile, contingent, and context-dependent. Recognizing this vulnerability opens the door to discussions on technodiversity, or plural approaches to technological engagement beyond Western paradigms.

Generative artificial intelligence further accentuates these tensions. Promoted as a promise of efficiency and expanded knowledge, GenAI also functions as a "context machine," capable of generating cultural meanings. Evaluating it solely in terms of accuracy or performance reduces culture to quantitative metrics, perpetuating technological determinism. In contrast, a technodiverse and ethical approach enables critical possibilities: new ways of understanding, creating meaning, and caring for humans, culture, and environments.

This article proposes a transcultural and existential framework for conceptualizing the relationship between technology and tragedy. Tragedy is not an inevitable fate but an ethical warning that highlights human vulnerability. In a world at risk of ecological and social collapse, recognizing technodiversity is essential: without it, our modes of inhabiting ecological and cultural systems, and sustaining subjectivity, are impoverished (Hui, 2017; Stiegler & Ross, 2020).

TECHNOLOGY AS TRAGEDY IN THE WEST

Western history interprets technology through the lens of tragedy, portraying invention and progress as forces that, while enabling new possibilities, may lead to collapse. From Greek mythology to modern literature and contemporary science, narratives emphasize hubris, downfall, and the consequences of imbalance (Heidegger, 1977; McLuhan, 1964).

In ancient Greece, Prometheus gave fire to humanity, a gift that unlocked unforeseen possibilities but condemned him to eternal punishment. Icarus flew too close to the sun, and his ambition to transcend human limits ended in death (Grossarth & Grunwald, 2025; Kirk, Raven & Schofield, 1983). These stories do not celebrate invention; they warn of its dangers. Within this framework, technology is conceived as ambivalent: powerful, necessary, yet potentially destabilizing.

During modernity, this tension shifts into literature and science. Frankenstein animates the inanimate, Faust sells his soul for knowledge, and Oppenheimer observes his invention annihilate cities. In each case, technology is dual: a condition of possibility and a source of danger (Wilson-Bates, 2024; Jasanoff, 2016). Tragedy does not reside solely in creation, but in the imbalance it generates, detaching technical power from ethical and relational considerations.

The Western approach, emphasizing the singularity of the inventor and invention, contrasts with other ways of understanding technology. While European narratives individualize blame and dramatize failure, African, Mesoamerican, and Taoist traditions underscore interdependence, fragility, and the necessity of balance (Mbiti, 1990; Carrasco, 1999; Fung, 2010). Technology is a node within broader networks of human, natural, and spiritual relations.

Maintaining this contrast enables a contemporary South American reading, in which technological tragedy emerges not solely from individual hubris but from structural inequalities in the global economy, resource extraction, and socio-ecological consequences. Relational ethics, conceived as the acknowledgment of interdependencies among humans, technologies, and ecosystems, provides a conceptual framework for juxtaposing Western narratives of tragedy with other cultural and local perspectives. This approach facilitates critical discussions on technodiversity and ethical stewardship of environmental and cultural resources (Ulloa-A, 2017; Lehuedé, 2024; Paul, 2025).

TECHNOLOGY, BALANCE, AND RELATIONSHIPS IN OTHER TRADITIONS

Unlike Western narratives, many traditions do not conceive technology as an inevitable tragedy or a mere instrument of power. In African traditions, technique and knowledge are deeply linked to community and nature; every invention is evaluated by its impact on human and ecological relations (Mbiti, 1990). Innovation is assessed not only by efficiency or progress, but by its capacity to maintain balance within interdependent networks, emphasizing social responsibility, respect for ancestors, and ecosystem care.

In *Yoruba cosmology, Ogun* embodies the ambivalence of technology: he is simultaneously the deity of iron, tools, roads, and warfare. *Ogun* enables agriculture, craft, and connectivity, yet his power is dangerous if unregulated. Ethical engagement with technique is therefore mediated through ritual, sacrifice, and communal norms that acknowledge both creative and destructive potentials. Technology, in this view, demands responsibility and restraint; imbalance results not from invention itself, but from ignoring its relational consequences.

Similarly, Mesoamerican cultures integrate technology into cycles of reciprocity and care. Agricultural, architectural, and astronomical innovations carry social, ritual, and cosmological implications, measured by their ability to sustain community and ecological harmony (Carrasco, 1999). Agricultural systems such as *chinampas* were not merely efficient techniques but socio-technical practices synchronized with ritual calendars, seasonal cycles, and collective labor. These systems embodied an ethic in which technological intervention was evaluated by its capacity to sustain ecological balance and communal life across generations, rather than by productivity alone.

Among the San people of the *Kalahari,* technical knowledge, such as hunting tools and tracking practices, is embedded within narratives that discourage accumulation and domination. Balance is maintained through sharing, mobility, and attentiveness to environmental limits. Technology functions here as a means of sustaining social cohesion and ecological continuity, not as an instrument of expansion.

Taoism frames technology as an extension of natural flows rather than absolute control. Texts highlight humility, adaptability, and respect for interdependence, warning against hubris and disruption of ecological balance (Fung, 2010). Here, the challenge is not control but alignment with natural rhythms, acknowledging human creations as inherently connected to nature's fragility. Taoist philosophy articulates a complementary logic through the principle of wu-wei, or non-forcing action. Technique is not rejected but reframed as alignment with natural rhythms. Excessive intervention and control are understood as sources of imbalance, reinforcing an ethic of humility and adaptation

These perspectives demonstrate that relationships with technology can be ethical, relational, and balanced. Beyond avoiding tragedy, they emphasize the effects of innovations on human networks, ecosystems, and future generations. Technodiversity recognizes multiple culturally grounded approaches to technology, each integrating care, reciprocity, and context sensitivity.

SOUTH AMERICA, FRAGILITY, AND EXTRACTIVISM

In South America, technology is ambivalent: a condition of possibility and a source of vulnerability. The region provides critical resources for global energy transitions, including lithium in the Bolivia-Chile-Argentina triangle and cobalt in other Global South regions. While these minerals underpin promises of ecological progress, their extraction generates profound social, environmental, and cultural costs. Local communities endure water contamination, land degradation, and threats to traditional lifeways, while benefits are concentrated in corporate and global actors.

This reflects a contemporary Promethean paradox: the fires of liberating innovation become suppressive chains for those sustaining its production. Structural fragility in South America, where technology, territory, and communities are interdependent yet unequally so, highlights the ethical necessity of relational frameworks. Evaluating technology through relational ethics accounts for impacts on human networks, ecosystems, and future generations, and fosters technodiversity that values local solutions, environmental justice, and fair distribution of benefits and risks.

Technological tragedy is not accidental but structural: extractive policies and development models privilege GDP or tech output, ignoring social and environmental harm, repeating patterns of exploitation. Technodiversity and relational ethics are critical tools for designing technologies that respect communities, culture, and territories, mitigating the colonial logic of sacrifice inherent in global innovation.

CONTEMPORARY TECHNOLOGICAL INEQUALITY: ELON MUSK, AFRICA, AND SOUTH AMERICA

Contemporary technological inequality exemplifies a modern form of tragedy rooted not in individual hubris alone, but in structural asymmetries. Figures such as Elon Musk symbolize techno-optimism and planetary salvation through electric vehicles, renewable energy, and space exploration. Yet these futures depend materially on extractive processes concentrated in the Global South. Lithium extraction in the *Bolivia–Chile–Argentina triangle* and cobalt mining in Central Africa underpin battery technologies marketed as ecological solutions.

These operations frequently involve water depletion, land degradation, labor exploitation, and the erosion of local lifeways. While technological benefits and profits accrue to corporate and Global North actors, environmental and social costs are localized, reproducing colonial patterns of sacrifice. This disparity underscores the contemporary Promethean paradox: technologies framed as solutions to planetary crisis simultaneously generate new forms of vulnerability.

Electric vehicles and batteries, symbols of ecological progress, are fueled by lithium in South America and cobalt in Central Africa. Mining operations, often associated with human rights violations, child labor, and hazardous working conditions, reveal that technological progress is neither neutral nor universal. Benefits concentrate in the Global North, while social and environmental costs accrue to those sustaining production.

Tragedy here is not accidental but systemic, arising from development models that prioritize innovation metrics and market expansion over relational accountability. A technodiversity framework, grounded in relational ethics, exposes these asymmetries and calls for technologies that respect territorial contexts, distribute risks and benefits more equitably, and acknowledge interdependence among human, ecological, and technological systems.

GENERATIVE ARTIFICIAL INTELLIGENCE AND CONTEMPORARY DILEMMAS

Generative AI exemplifies the ambivalence of contemporary technology. Presented as a “context machine,” it produces texts, images, and sounds that previously required human intervention, groundbreaking decisions, and creativity. Evaluating AI solely by technical metrics reduces culture to numbers and reenforces Western ideas of technological determinism. A relational ethics perspective emphasizes impacts on human relationships, cultural ecosystems, and historically marginalized communities.

Algorithms trained on global datasets may appear neutral but often render local voices invisible, concentrating power in those controlling digital infrastructures. Recognizing technodiversity allows AI deployment to respect cultural and territorial contexts, fostering balanced interactions among technology, society, and environment.

TOWARD AN ETHICAL AND RELATIONAL TECHNODIVERSITY

Technology is historically ambivalent. Western narratives often emphasize hubris and downfall, yet South American, African, Mesoamerican, and Taoist perspectives reveal the ethical and interdependent dimensions of technology. The extraction of lithium and cobalt highlights structural inequalities, while AI centralizes knowledge production, thereby reproducing global asymmetries. Relational ethics provides a framework to evaluate technological impacts, emphasizing relationships, ecosystems, and future generations rather than isolated innovations or economic efficiency.

Technodiversity is a practical tool for imagining plural approaches to technology, culturally sensitive and context-aware. Tragedy is not inevitable; recognizing interdependence, vulnerability, and relational responsibility enables ethical innovation. Technology, thus, is neither purely tragic nor purely salvific, but opens a complex relational space that calls to be inhabited justly, sustainably, and culturally.

Integrating transcultural perspectives, relational ethics, and technodiversity shifts the narrative from tragedy to ambivalence, responsibility, and shared ethical engagement. This approach is essential both in South America and globally, underscoring the simultaneous power and fragility of technology, and the ethical imperative of caring for interdependencies and valuing diversity in technological practice.

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