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From Search to Synthesis: Generative AI, Internet Use, and the Transhuman Epistemic Shift

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Abstract

This discourse on human-machine cognition offers a rigorous philosophical and epistemological exploration of generative artificial intelligence's transformative impact on human knowledge, cognition, and the Internet. Anchored in the shift from Google's search-based paradigm to the generative capacities of large language models like ChatGPT, it examines the Internet's reconfiguration from a static archive to a dynamic epistemic ecology. It argues we are entering a transhuman epistemic condition where cognition is distributed across biological and algorithmic systems. Methodologically, this work employs critical conceptual analysis and interpretive synthesis of interdisciplinary literature spanning media theory, philosophy of mind, posthumanism, and critical epistemology. Drawing on thinkers such as Andy Clark, Donna Haraway, N. Katherine Hayles, Michel Foucault, and Bernard Stiegler, it frames generative AI as more than a tool of efficiency or surveillance, positioning it as a site of epistemic and ontological contestation. The argument foregrounds how generative AI reshapes concepts of authorship, agency, memory, and epistemic authority by reconfiguring knowledge production, distribution, and attribution. It further interrogates ethical and political dimensions, especially concerns of epistemic injustice, algorithmic opacity, and dependency on proprietary platforms. By developing novel concepts such as epistemic assembling, relational subjectivity, and hybrid co-authorship, the paper advances debates on human-machine knowledge systems. Ultimately, this study underscores the urgency of critical literacies, interdisciplinary research, and ethical frameworks promoting epistemic justice and democratic accountability. As AI increasingly mediates cognition and authorship, it calls for reconceptualizing knowledge as a shared, evolving project between humans and machines.

Keywords: Artificial Intelligence, Cognitive Science, Epistemology, Human-Machine Interaction, Knowledge Management

1 Introduction

In the early twenty-first century, Google fundamentally reshaped how humans accessed and

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engaged with information. With a few keystrokes, users could summon vast quantities of knowledge, transforming the Internet into a searchable archive. This shift altered cognition, memory, and epistemic behavior. As Nicholas Carr (2010) famously argued, tools like Google restructured not only what we know but how we know it (Sharon & Gellert, 2024). The "Google effect" (Sparrow et al., 2011) revealed a cognitive offloading from internal memory to external sources, a pattern that Gerlich (2025) expands by highlighting the societal risks of cognitive offloading, including diminished critical thinking and increased passivity toward AI-generated information. In response, Bhuman and Nkala (2024) advocate for educational strategies that actively cultivate critical reasoning within AI-saturated contexts.

Today, however, we stand at the edge of a new shift, one arguably deeper and more transformative: the advent of generative artificial intelligence. No longer passive seekers of static information, users now engage in dynamic exchanges with models that not only retrieve knowledge but synthesize, contextualize, and co-create it (Zhang et al., 2025). This shift marks the emergence of a transhuman epistemic condition: a mode of being in which cognition and memory are distributed across human and machine (Raikov & Pirani, 2022), and the Internet becomes not merely an archive but an evolving, generative partner in knowledge formation (Yoo, 2024).

While both techno-optimistic and techno-critical accounts of AI abound, this study addresses a gap in current scholarship by tracing how generative AI transforms the very structure of epistemic life. Unlike boosterist visions that celebrate efficiency or productivity (Jarrahi et al., 2023; Königs, 2022), and unlike dystopian critiques that frame AI solely in terms of surveillance or displacement (Morozov, 2013, 2020; Zuboff, 2023), this work offers a philosophical reframing: AI is not just a tool or threat, but an epistemic agent. By theorizing human-machine cognition as co-constituted, this study challenges binary narratives and foregrounds the ontological, ethical, and cognitive consequences of this shift.

This essay explores the ontological and epistemological stakes of this transformation: generative AI represents a qualitative shift in how humans interface with knowledge systems (Johnson et al., 2022), an evolution from indexed retrieval to intelligent synthesis (Jarrahi et al., 2023). This shift is not merely technological; it is cognitive, cultural, and philosophical. It challenges inherited notions of authorship, agency, memory, and identity, raising urgent questions about the ethics and politics of mediated knowledge (Chateau et al., 2025). Through cross-disciplinary review and conceptual synthesis, and drawing on thinkers such as Clark, Haraway, Hayles, Foucault, and Stiegler, this paper positions generative AI not as a tool, but as an epistemic environment: one in which humans are increasingly becoming transhuman co-knowers (Yoo, 2024).

The genealogy of Internet use reveals a shift from the search-dominated paradigm popularized by Google to a generative paradigm enabled by models such as ChatGPT (Tsao & Nogues, 2024). The Internet increasingly operates as an epistemic ecology, where AI tools change not only what is known but how knowledge itself is formed (Vetter et al., 2024). Interpreting this transformation involves a range of theoretical frameworks, including extended mind theory and posthumanism. Attention to these perspectives clarifies the risks, responsibilities, and future directions emerging within this increasingly entangled epistemic landscape.

Side Box 1

What is Transhuman Epistemology?

Transhuman epistemology refers to a way of understanding knowledge and knowing that recognizes how human cognition is increasingly intertwined with technological systems. Rather than seeing knowledge as produced solely by individuals, this perspective highlights how humans and machines co-create, mediate, and extend understanding together.

Key ideas include:

- **Distributed cognition:** Thinking processes that happen not just inside a person's mind but across tools, devices, and digital platforms.
- **Hybrid agents:** Human beings acting in partnership with AI and other technologies, forming new, entangled ways of knowing.
- **Posthuman subjectivity:** Moving beyond traditional ideas of the autonomous, rational human to embrace relational, networked identities shaped by technology.

In this view, the Internet and AI are not just tools; they become active participants in how knowledge emerges, reshaping who we are as knowers.

2 Method

This study adopts a critical literature synthesis approach (Grant & Booth, 2009) combined with interpretive conceptual analysis (Yehezkel, 2025) to explore the epistemic transformations induced by generative AI. Drawing on interdisciplinary scholarship from philosophy (Barad, 2007; Haraway, 1999), cognitive science (Clark & Chalmers, 1998), and science and technology studies (Latour, 2005), the analysis synthesizes existing theoretical frameworks to develop a meta-conceptual understanding of transhuman epistemology. Through thematic coding and close reading of key texts, the study identifies core concepts and debates, situating generative AI within evolving discourses on knowledge production and human-machine interaction. This method prioritizes theoretical depth and conceptual clarity over empirical generalization, aiming to articulate the ontological and ethical implications of hybrid cognition.

3 Historical Arc: From Indexing to Interaction

The digital turn of the late 20th and early 21st centuries produced a seismic transformation in human information behavior (Baraglia et al., 2017). At the center of this shift was Google, whose search engine model redefined the Internet as a field of retrievable, indexable knowledge (Mager et al., 2023). Google's algorithmic genius lay in its ability to rank relevance (Metz, 2022), effectively externalizing memory and collapsing the latency between question and answer. The Internet became not just a repository but a kind of prosthetic memory (Stiegler, 1998), accessed seamlessly and constantly. The epistemic subject, once reliant on internal recollection or institutional gatekeeping (libraries, educators, religious authorities), now engaged directly with algorithmic logic (Krasmann, 2020).

This paradigm centered on keywords, queries, and links. It was, to borrow Foucault's term, an "archaeology of knowledge"—users dug through stratified layers of information, excavating facts, forums, PDFs, and hypertext trails. In this schema, the human remained the active agent: asking, searching, discerning.

But this model began to erode in the 2020s with the rise of generative AI. Unlike search engines, generative models do not return documents—they generate text. They do not just retrieve; they synthesize. In doing so, they alter the cognitive script of the user. Now, instead of formulating precise queries, users articulate prompts in conversational tones (Wang et al., 2025). Instead of scrolling through multiple links, they receive unified narratives or structured answers (Keyvan & Huang, 2022).

This shift introduces a fundamentally different mode of epistemic interaction. The Internet is no longer a passive container for human-initiated queries; instead, it becomes a co-constitutive interlocutor (Baraglia et al., 2017). Users do not just browse information; they engage in knowledge dialogues, participating in a form of synthetic co-authorship with machine intelligence.

The implications are profound. While Google organized the Internet as a spatial map of existing knowledge, generative AI introduces a temporal dimension. It transforms the Internet into a real-time, responsive medium (Atherton, 2024). The user moves from explorer to collaborator, and the Internet from archive to interlocutor.

In this way, the historical arc is not just about interface design or information flow; it marks a deeper epistemological reconfiguration (Krasmann, 2020). If Google was a compass, generative AI is a companion, an agent that not only navigates knowledge but co-produces it. Figure 1 illustrates the epistemic evolution of human-technology interaction, tracing a progression from indexed retrieval to generative synthesis and finally toward an emerging transhuman epistemology.

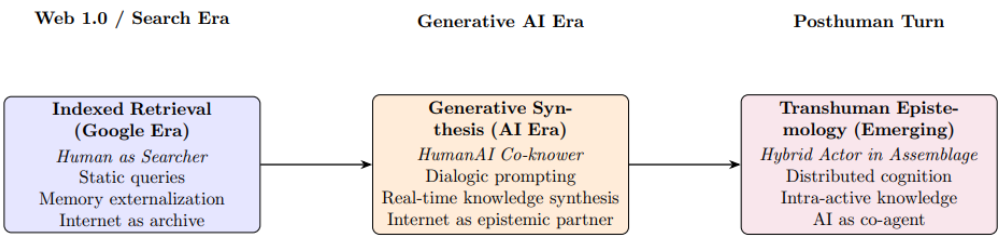


Figure 1. Epistemic Evolution of Human-Technology Interaction.

4 The Internet as an Epistemic Environment

To grasp the magnitude of the transformation inaugurated by generative AI, we must shift our ontological understanding of the Internet itself. No longer merely a digital archive of documents or hyperlinks, the Internet (when mediated by AI) becomes an epistemic environment: a space where knowledge is not just stored or accessed, but actively generated, negotiated, and reconfigured in real time.

As Mollick (2023) notes, AI's role is not merely to provide answers but to co-create knowledge in collaboration with humans. This framing aligns with Barad's (2007) notion of "intra-action," which challenges the idea that entities preexist their relations. Instead, knowledge emerges through entangled interactions between human and machine. In this context, knowledge is not simply transmitted from Internet to user; it is co-enacted through AI-mediated engagement.

Generative AI transforms the Internet from a fixed cartography of knowledge into a fluid epistemological terrain (Lin & Zhao, 2025). Each prompt activates a unique synthesis, one not previously stored in any database (Edler et al., 2025). This suggests a shift from a representational mode of knowing (retrieving existing facts) to a performative one (co-creating meaning through dialogue).

Through generative AI (De Vries, 2020), the Internet becomes less a mirror of reality and more a knowledge-generating ecology, where knowledge arises as a series of emergent epistemic events (Mehlenbacher et al., 2025). This resonates with Hayles' (1999) notion of the "posthuman text," a nonhuman assemblage through which human meaning is mediated and extended. This dynamic is particularly evident in educational, creative, and research settings. Students no longer simply cite sources; they co-produce content with AI models (Vetter et al., 2024). Writers brainstorm with AI suggestions that influence style and concept. Researchers simulate interpretive dialogues with

algorithmic counterparts. In each instance, agency is distributed across human and machine.

The implications are double-edged. This epistemic environment offers unprecedented opportunities for creative and intellectual augmentation but challenges traditional norms of authority, originality, and verification (Tsao & Nogues, 2024). Questions arise: Who is the author of an AI-assisted paragraph? How is truth negotiated when outputs are probabilistically generated rather than logically deduced or empirically verified? The answer cannot rest solely on technical parameters; it must involve critical, philosophical reflection on the shifting contours of knowledge itself.

We might describe this new formation as an epistemic assemblage (Deleuze & Guattari, 1987): a constantly reconfigured network of human intention, algorithmic processing, infrastructural systems, and cultural meaning. In such an assemblage, agency is distributed. Knowledge is no longer the product of a solitary mind engaging with inert data, but the output of a dynamic, hybrid system. Figure 2 visually maps this epistemic assemblage, depicting the networked interactions among key actors (e.g., Human, AI, Archive, Algorithm, and Infrastructure) and illustrating the flows of memory, agency, authorship, and feedback that constitute the hybrid cognitive ecology.

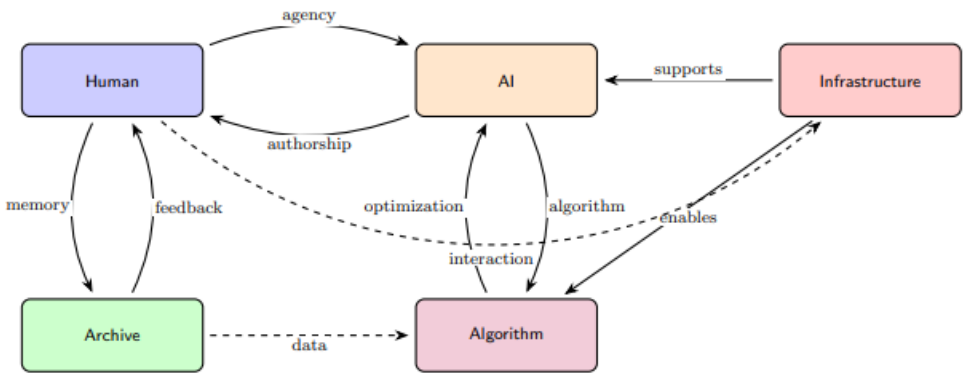


Figure 2. Cognitive Assemblage Map: Distributed Cognition in the Age of Generative AI.

This section traces the conceptual movement from viewing generative AI as a tool to recognizing it as a co-constituent of the digital epistemic ecology. This shift demands new frameworks for thinking about learning, authorship, interpretation, and the role of the human in a world of machine-mediated cognition.

5 Cognition Extended: Theories of Distributed and Transhuman Intelligence

If generative AI transforms the Internet into an epistemic environment, then what becomes of the human mind within this ecology? Cognitive science and philosophy of mind have long wrestled with the question of where thinking occurs. The *Extended Mind Thesis*, articulated by Andy Clark and David Chalmers (1998), posits that cognitive processes do not end at the skull but can include external tools like notebooks, smartphones, and, by extension, digital systems. From this perspective, interacting with generative AI is not ancillary to thought; it is thought, distributed across human and nonhuman nodes.

Clark's (2003) concept of the "natural-born cyborg" now feels prescient. In co-authoring, querying, and dialoguing with AI, humans externalize parts of memory, pattern recognition, and even intuition. The boundaries of the self blur. When a writer asks an AI to reframe an argument, is it the human or the AI thinking? The answer lies not in choosing one but in recognizing the

hybrid: cognition occurs in-between, through distributed flows of language, inference, and context.

This process of distributed intelligence aligns with key ideas from transhumanism, particularly the vision advanced by thinkers like Nick Bostrom (2003) and Ray Kurzweil (2005). Transhumanism imagines the technological augmentation of human capacities, encompassing bodily, cognitive, and ethical domains. Generative AI exemplifies this promise: a cognitive augmentation not embedded in the body but networked through language. Rather than chips in brains, we have language models that extend reasoning, interpretation, and problem-solving.

Yet, as Hayles (2017) warns in her work on cognitive assemblages, such distributed systems are not neutral extensions; they reconfigure agency, power, and epistemic authority. In human-AI co-production, it is not just what we think that changes, but how thinking is understood: as a dialogue between intelligences, one biological and affective, the other algorithmic and statistical.

This hybrid mode of cognition challenges classical Enlightenment models of the autonomous rational subject. Instead, we are moving toward what Rosi Braidotti (2013) calls a posthuman subjectivity, in which the self is constituted not by isolation and mastery, but by relationality, entanglement, and partiality. The Internet, once an external archive, becomes part of a "transhuman noosphere," a shared mental space wherein thought is no longer owned but co-constituted.

Figure 3 illustrates this extended and hybrid cognition. It maps interactions among the human mind, AI models, externalized memory systems, and infrastructural platforms. Each node is distinct but interdependent; arrows indicate flows of information, agency, and collaboration. The diagram shows how memory, reasoning, and creativity emerge from human-machine interplay, transcending the biological brain.

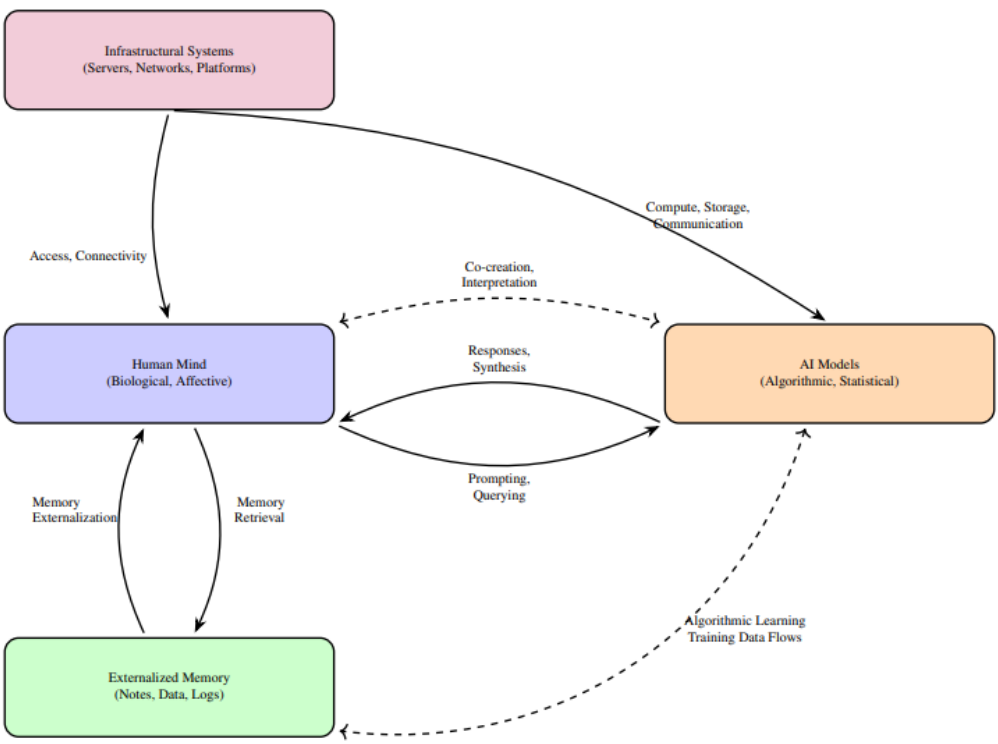


Figure 3. Cognition Extended: Theories of Distributed and Transhuman Intelligence.

Yet this expansion of mind introduces new risks. Who owns externalized thoughts? How does reliance on AI affect memory, creativity, and critical judgment? What cognitive ethics govern platform-dependent, opaque infrastructures? These urgent questions demand frameworks of responsibility, interpretation, and care as cognition becomes extended and mediated.

6 Co-authorship and Machine Mediation

The rise of generative AI challenges not only the locus of cognition but the very notion of authorship. Traditional epistemologies and legal frameworks rely on a clear distinction: humans are the authors, machines are tools. Yet when large language models contribute not only to the mechanics of writing but to its content, structure, and style, the line between assistant and co-author begins to dissolve. What we are witnessing is a shift from solitary authorship to machine-mediated co-authorship.

Generative AI systems, such as OpenAI's GPT models or Google's Gemini, are not merely input-output devices. They interpret prompts, generate plausible continuations, restructure ideas, and introduce conceptual connections that may not have been consciously intended by the human user. In doing so, they participate in meaning-making. This aligns with Roland Barthes' (1977) declaration of the "death of the author," which emphasized the multiplicity of meaning in any text and decentered the primacy of authorial intent. With AI, this decentering is literalized: the "author" becomes a composite subject, a human intention filtered through algorithmic suggestion.

The phenomenon raises ontological and ethical questions: Is an AI-authored idea ever original? Can machines create in the same way humans do, or are they simply recombiners of past human content? These are not merely technical debates but philosophical ones, rooted in longstanding concerns about creativity, influence, and the boundaries of the self.

From a media theory perspective, we might view generative AI as an intermediary turned mediator, in Bruno Latour's (2005) terms. Unlike an intermediary, which simply transmits information, a mediator actively transforms it. A prompt becomes a paragraph; an outline becomes an argument. The machine shapes the outcome not merely by formatting or translating it, but also by contributing to its content.

Furthermore, the collaborative process with AI shifts our understanding of expertise. Knowledge is no longer produced solely within disciplinary boundaries or institutional frameworks. Instead, it emerges through dialogic co-processing, where the AI becomes a kind of externalized second self, a mirror or sparring partner for thought. This refigures what it means to "know," since the process of knowing becomes distributed across biological, technological, and linguistic systems.

Yet this mediation is not neutral. The knowledge produced through AI is shaped by its training data, by the values encoded into its architecture, and by the socio-political infrastructures that govern its deployment. As Safiya Noble (2018) shows in her work on algorithmic bias, all technological systems are steeped in the cultural and economic conditions of their production. Therefore, co-authorship with AI is not just a technical entanglement—it is a political one.

In response, we must develop critical literacies for AI-mediated knowledge production. This includes recognizing the limits of generative systems, interrogating their sources, and reclaiming human interpretive agency in the act of meaning-making. Rather than seeing co-authorship as a threat to human originality, we might frame it as a condition of contemporary authorship, one that requires reflexivity, accountability, and collaboration across boundaries of species, substrate, and code.

7 Philosophical Implications: Agency, Memory, and Identity

The shift toward machine-mediated cognition and AI co-authorship forces a reckoning with foundational philosophical concepts: agency, memory, and identity. In a world where generative

AI participates in the construction of knowledge, who acts? Who remembers? Who are we, when our cognitive processes are so thoroughly entangled with nonhuman systems?

Traditionally, agency has been understood as the capacity for intentional, autonomous action. In Enlightenment thought, the agent is rational, bounded, and self-directed, conceived as a sovereign subject. But this model is increasingly untenable. As Donna Haraway (1991) argued in her *Cyborg Manifesto*, the boundaries between human and machine, organism and mechanism, have already been blurred. Generative AI does not simply extend human will; it refracts it through probabilistic logics and training data from millions of past human expressions. Whether a paragraph, a poem, or a strategic plan the resulting actions are neither fully human nor fully machinic. They are hybrid acts, born of entanglement.

This raises profound questions about responsibility. If an AI co-authors a research paper or influences a policy proposal, who is accountable for its content? Can responsibility be distributed across a system? Here, Hannah Arendt's (1958) insights on action and plurality become relevant. For Arendt, action is always situated in a web of relations, and in the age of AI, that web includes not just other people but also machines, each contributing in varying degrees to the outcome of human endeavor.

Equally transformed is the concept of memory. Once considered a hallmark of human identity and continuity, memory now resides partially in clouds, databases, and algorithms. Bernard Stiegler (1998) described this as epiphylogenesis, the externalization of memory through technical means. With generative AI, memory becomes synthetic, constructed not from lived experience but from statistical aggregations of language. What is remembered is no longer what was lived, but what was likely. This introduces new epistemic risks: hallucinations, false consensus, and historical flattening.

Moreover, AI-generated memory challenges collective memory. Historiography and cultural heritage are no longer preserved solely in archives and museums but are constantly rewritten in dialog with algorithmic processes. AI becomes a historical actor, shaping not just access to the past but the form in which the past is recalled, interpreted, and deployed.

Finally, the problem of identity becomes increasingly salient in the context of daily interaction with generative systems. Individuals develop selves that are fragmented, partial, or distributed across human and machine. The "I" that writes with AI, the "I" that learns through AI, is not the same as the isolated Cartesian subject. This resonates with Judith Butler's (1990) view of identity as performative—constructed through iterative acts within discursive regimes. The AI-mediated self is both performer and audience, writing with a machine that remembers more than it knows and responds without ever understanding.

Yet this distributed self is not necessarily diminished. Rosi Braidotti (2013) offers a more affirmative view: the posthuman subject is fluid, collective, and networked, not as a loss but as a possibility. In relinquishing the fantasy of absolute autonomy, we may embrace a richer, more entangled ontology: one better suited to the complexities of our contemporary technological moment.

In sum, generative AI does not merely augment existing cognitive functions. Instead, it transforms the very ground of philosophical reflection. This technology displaces inherited categories and demands a rethinking of what it means to know, act, remember, and be.

8 Risks and Ethical Horizons

Generative AI has emerged as a powerful force shaping human knowledge and cognition, raising significant ethical and political concerns. Although AI-mediated Internet use offers the promise of cognitive enhancement and innovative creativity, it also deepens existing inequalities and creates

new vulnerabilities in how knowledge is formed and trusted. These developments pose serious challenges to fundamental democratic principles.

First, there is the risk of epistemic injustice, a concept developed by Miranda Fricker (2007), which refers to wrongs done to someone specifically in their capacity as a knower. Generative AI systems inherit biases embedded in training data often drawn from marginalized or silenced groups. As boyd and Crawford (2012) emphasize in critical data studies, big data and algorithmic processes do not merely reflect reality but actively participate in shaping social inequalities, often obscured by their technological opacity. This reinforces dominant epistemic hierarchies and marginalizes alternative knowledges.

Latina feminist epistemologies, notably those articulated by Gloria Anzaldúa (2022) and María Lugones (2007), who emphasize how knowledge production is inextricably intertwined with power relations, identity formations, and the multifaceted dimensions of intersectional oppression, significantly enrich this perspective. Anzaldúa's concept of the "new mestiza," which embodies a hybrid epistemic subjectivity that simultaneously navigates and negotiates borderlands of culture, language, and identity, offers a crucial framework for understanding the complex, hybrid human-machine knowledge ecologies that AI, as an emergent force, engenders. Meanwhile, Lugones' critique of the colonial/modern gender system, which reveals the epistemic violences that determine whose knowledges are legitimized or excluded, presses us to critically consider how AI technologies might either reproduce or disrupt these enduring colonial legacies embedded within contemporary digital knowledge infrastructures.

Second, the commodification of knowledge intensifies. Platforms that provide AI access typically operate under profit-driven logics, influencing which knowledge is amplified or suppressed. As Evgeny Morozov (2013) warns, digital technologies are often harnessed to reinforce power asymmetries rather than dismantle them. The risk is a future in which knowledge itself becomes a product, filtered through corporate interests rather than public good.

Third, the dependency on AI-mediated cognition risks cognitive offloading to the point of diminished human critical capacities. Nicholas Carr (2010) cautioned that technology shapes not just what we know, but how we think. Overreliance on AI for synthesis and decision-making may erode the habits of critical inquiry, skepticism, and creative thought essential for democratic deliberation.

Fourth, the integration of AI in knowledge production raises privacy and surveillance concerns. The data that fuels AI models is often harvested with limited consent, creating risks of misuse and intrusion. As boyd and Crawford (2012) argue, surveillance is not merely technical but deeply political, entwined with social power dynamics that demand critical scrutiny.

Finally, the ethical imperative of care must be addressed. This responsibility extends to users, communities, and the knowledge itself. Attending to these dimensions is essential in the development and deployment of generative AI. Drawing from feminist ethics of care (Tronto, 1993), ethical AI development demands attentiveness to relationality, context, and vulnerability. It requires designing systems that respect human dignity, foster trust, and support the slow work of learning and understanding, rather than simply accelerating consumption.

Addressing these risks necessitates multi-layered strategies. Technical transparency, inclusive data practices, robust regulatory frameworks, and public digital literacy are essential. Moreover, philosophical and cultural critique must remain central, ensuring that AI development is guided not only by efficiency or capability but by human flourishing and epistemic justice.

In embracing the epistemic environment shaped by generative AI, we must remain vigilant. The future of knowledge is not predetermined. It will be shaped by the ethical choices we make today.

9 Conclusion and Future Directions

As generative AI reshapes the Internet into an active epistemic environment, and as humans extend their cognition through machine-mediated co-creation, we find ourselves at a pivotal juncture in the history of knowledge. This transformation reconfigures not only how knowledge is produced and accessed but also who we are as knowing subjects, as hybrid agents entangled in a complex epistemic assemblage.

The implications are profound and multifaceted. On the one hand, AI offers unprecedented opportunities for cognitive augmentation, creative collaboration, and expanded access to information. It invites us to reconsider traditional boundaries of authorship, memory, and identity, urging a move toward posthuman epistemologies that embrace relationality and hybridity.

On the other hand, this emerging landscape presents urgent challenges: epistemic injustices embedded in algorithmic biases, risks of cognitive dependency, threats to privacy, and the commodification of knowledge. These issues underscore the necessity of integrating rigorous ethical frameworks, critical literacies, and democratic accountability into AI development and deployment.

Looking forward, interdisciplinary research must continue to deepen our understanding of AI as both a technological and cultural phenomenon. Philosophical inquiry, cognitive science, media studies, and ethics must converge to explore the evolving relationships among humans, machines, and knowledge. Practically, educational institutions, policymakers, and technology developers must collaborate to create environments where AI serves as a tool for empowerment rather than alienation.

Ultimately, the question is not only how generative AI changes the Internet or cognition but how we as a society choose to shape and govern these changes. Will we cultivate an epistemic ecology that values care, humility, and justice? Or will we succumb to the unreflective acceleration and commodification of knowledge? The future of human and machine intelligence is co-produced. It demands that we remain vigilant, reflective, and committed to a vision of knowledge as a shared, evolving, and deeply human endeavor.

Declaration

Author Contributions Statement

Ezra N. S. Lockhart contributed to conceptualization, development of the critical conceptual framework, interdisciplinary literature synthesis, philosophical and epistemological analysis, interpretation of the literature, and manuscript preparation. The author wrote the original draft; reviewed and edited the manuscript; read and approved the final version; and agreed to be accountable for all aspects of the work.

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All relevant data generated or analyzed during this study are included within the article. No additional data are available from the corresponding author.

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Informed Consent Statement

Not applicable. The study is based on critical literature synthesis and conceptual analysis and did not involve human participants or the collection of primary personal data.

Use of Generative AI Statement

The author declares that no generative artificial intelligence tools were used to generate the scholarly content, conduct the conceptual analysis, interpret the literature, or formulate the conclusions presented in this article. References to generative AI and systems such as ChatGPT are part of the subject matter of the study and do not constitute their use in preparing the manuscript.

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