



# From the Pen to the Prompt: Scientific Authorship in the Shadow of AI. Who Thinks? Who Signs?

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## ABSTRACT

**This paper explores the redefinition of scientific authorship in the era of generative artificial intelligence (GAI). Drawing on a reflexive approach, the study analyzes the impact of GAI on scientific creation processes while examining concerns about the dilution of intellectual responsibility. Through a literature review and an examination of current practices in academic settings, the author demonstrates that GAI does not eliminate human authorship but transforms it by offering new forms of collaboration between humans and machines. The main findings highlight the need to redefine scientific authorship by emphasizing intellectual intentionality and human responsibility, while integrating GAI as a tool for creative support.**

**Keywords:** Scientific authorship, Generative artificial intelligence, Academic creativity, Intellectual responsibility, Collaborative research.

## INTRODUCTION

The rapid emergence of generative artificial intelligence (GAI) in contemporary scientific practices profoundly challenges traditional models of knowledge production, attribution, and validation. Since the democratization of powerful tools such as ChatGPT (OpenAI, 2022), Bard (Google DeepMind, 2023), and Claude (Anthropic, 2023), researchers have increasingly integrated these technologies into the drafting, correction, and sometimes partial creation of their scientific writings (Gao et al., 2023; van Dis et al., 2023).

However, this growing use raises significant tensions within the scientific community. On one hand, several institutions and authors fear an erosion of scientific integrity and call for strict restrictions on the use of GAI in academic writing (Stokel-Walker, 2023; Thorp, 2023; Editorial, *Nature*, 2023). On the other hand, a more nuanced approach is emerging, proposing a critical and ethical integration of these tools into research processes without abandoning the founding principles of creativity, critical autonomy, and human responsibility (Floridi & Chiriatti, 2020; Korinek, 2023; Williamson & Piattoeva, 2023).

These debates reveal a central issue: how can we be thinking scientific authorship in the era of generative artificial intelligence? Is it still possible to claim full intellectual authority over works partially assisted by algorithmic technologies? Can the classical figure of the scholar-creator be

preserved in the age of prompts and sophisticated text generators (Biagioli, 2020; Foucault, 1969)?

At the heart of these questions lies a major epistemological shift, explored by several recent studies through the lens of human-machine collaboration (Gil et al., 2023; Lee et al., 2023; Cath et al., 2020). This change not only demands a redefinition of the criteria for scientific attribution but also a reconsideration of the modes of ethical responsibility in knowledge production (Shneiderman, 2020; Mittelstadt, 2021).

In this context, the use of generative AIs imposes a dilemma: should they be considered merely as writing tools, akin to spelling correction software, or recognized as new epistemic agents participating in knowledge construction (Birhane, 2021; Arrieta et al., 2020)? The answer to this question directly influences the norms of writing, evaluating, and signing scientific outputs. Recent literature highlights the necessity of developing new ethical guidelines to frame the use of GAI, particularly around the notions of transparency, attribution, and final human control (Mitchell et al., 2023; Wiggers et al., 2023). Some authors even advocate for the emergence of "augmented authorship" rather than diluted or delegated authorship (van Wynsberghe, 2021; Binns, 2022).

The present study aligns with this critical reflection. It aims to contribute to the current scientific debate by examining the impact of GAI on the notion of intellectual authorship and proposing an ethical analysis framework adapted to the realities of contemporary research.

This work pursues three main objectives:

- Critically analyze institutional and academic discourses concerning the regulation of GAI in scientific research;
- Assess the gap between official norms and actual practices regarding researchers' use of GAI;
- Propose a contemporary redefinition of scientific authorship, based on responsibility, conceptual mastery, and human intentionality.

## PROBLEM DESCRIPTION

### **The Temptation to Ban GAI: Between Scientific Caution and Institutional Rigidity**

#### **Positions Against GAI: A Mapping of Prohibitions:**

The rapid rise of generative artificial intelligence (GAI) technologies in the academic sphere has triggered a series of institutionally cautious reactions. Several leading scientific journals have adopted restrictive positions. *Science* stated in an editorial that "AI cannot be considered an author of a scientific article" and that "any use of these tools must be strictly documented" (Thorp, 2023). Likewise, the *Nature* group clarified that artificial intelligence cannot be listed as a co-author and that any assistance must be explicitly mentioned in the Methods section (*Nature* Editorial, 2023).

In academia, similar policies have emerged. Some institutions have adopted strict measures banning or tightly regulating the use of GAI in research work, assignments, and assessments.

However, these policies vary by region and institution, oscillating between outright prohibition and ethical regulation. The table below provides an overview of this global diversity:

Continent	University / Institution	GAI Policy
Europe	Sciences Po (France)	Total ban without explicit mention of ChatGPT usage.
	University of Cambridge (UK)	Ban on usage without authorization in formal assessments (University of Cambridge, 2023).
	University of Oxford (UK)	Hidden use of GAI considered academic misconduct.
Asia	University of Tokyo (Japan)	Authorized as support, forbidden in exams unless explicitly disclosed.
	University of Hong Kong	Temporary ban in coursework and exams; policy under review.
North America	University of Toronto (Canada)	Permitted under conditions: mandatory disclosure and ethical oversight (University of Toronto, 2023).
	Université Laval (Canada)	Thoughtful regulation; specific bans in certain faculties.
	Harvard University (USA)	Strict ban across all academic activities.
	New York University (USA)	Public schools ban access; reinforced control at the university.
South America	University of São Paulo (Brazil)	Ongoing reflection on GAI regulation.
Africa	University of Lagos (Nigeria)	Open discussions; local awareness initiatives.
Oceania	University of Sydney (Australia)	Guidelines for proper use; no formal ban.

### Summary of the Motivations Behind Restrictive Policies

Several major concerns justify these restrictive measures, frequently discussed in recent debates on AI ethics in academic contexts (Jobin et al., 2019; Mittelstadt, 2021; Wiggers et al., 2023):

#### Preservation of Academic Integrity:

The use of generative artificial intelligence without explicit disclosure can be likened to a form of algorithmic plagiarism, as the content produced does not stem directly from personal intellectual effort. Several scientific journals and universities emphasize that attribution requires a conscious, reflective, and authentic activity by the human author (Stokel-Walker, 2023; Thorp, 2023). Hidden use of tools like ChatGPT compromises the reliability of assessments and threatens fundamental academic ethics.

#### Legal and Moral Responsibility:

GAI, lacking consciousness and legal status, cannot be held responsible for any errors, biases, or problematic content it might generate. This ontological irresponsibility of AI has been emphasized in several editorials, notably by *Nature*, which insists on maintaining the human as the sole guarantor of produced scientific content (*Nature* Editorial, 2023). This raises significant issues, particularly in fields like scientific research or medicine, where incorrect information can have serious consequences.

**Development of Critical and Writing Skills:**

Excessive automation of key cognitive tasks, such as drafting arguments or structuring analyses, may impoverish students' intellectual training. Studies have shown that dependence on generative technologies could diminish learners' abilities to analyze, synthesize, and exercise critical judgment (Morrison, 2023; Floridi & Chiriatti, 2020). Indeed, the effort of conceptualization—central to the scientific process—risks being overshadowed by automatically generated formulations.

**Transparency and Traceability of Intellectual Productions:**

Undisclosed use of GAI makes it difficult to fairly assess submitted work. Many institutions now require that any algorithmic assistance be declared in a dedicated section (generally the methodology), as is the case at *Nature* or the University of Cambridge (University of Cambridge, 2023). This requirement aims to guarantee source traceability and to distinguish between human work and machine-assisted outputs.

**Protection of Personal Data and Confidentiality:**

Using GAI tools potentially exposes input data to risks of unauthorized capture or secondary usage, which is particularly problematic in sensitive fields (O'Neil, 2016; Birhane, 2021). Several universities, like the University of Toronto, emphasize the need for increased vigilance when using such platforms (University of Toronto, 2023).

Thus, while generative artificial intelligence opens unprecedented perspectives for scientific production, it also brings systemic risks, prompting many institutional actors to adopt a stance of caution, if not outright rejection. However, as we will see in the following section, these prohibitions coexist with massive and sometimes clandestine adoption of GAI in daily scientific practices, revealing a growing gap between official norms and actual practices.

## RESEARCH OBJECTIVES

To achieve the overall objectives outlined above, five specific goals are targeted:

- Analyze the impact of Generative Artificial Intelligence (GAI) on contemporary scientific writing practices.
- Examine the effects of GAI on the concept of intellectual authorship in science.
- Discuss the ethical issues related to the use of GAI in knowledge production.
- Propose a theoretical redefinition of scientific responsibility in the GAI era.
- Explore the necessary adaptations of evaluative practices in academic contexts.

## MATERIALS AND METHODS

**Type of Research**

This work falls within a theoretical and critical analytical approach. It is not based on original empirical or experimental data collection but rather on an in-depth literature review, combined with argumentative reflection based on contemporary debates surrounding generative artificial intelligence (GAI) and scientific authorship.

The aim is to map, compare, and interpret policies, institutional positions, emerging practices, and ethical debates regarding the use of GAI in the academic environment.

## **Documentary Corpus**

The corpus primarily includes:

- Scientific articles published in leading international journals (e.g., *Nature*, *Science*, *JAMA*, *Philosophy & Technology*, *MIT Technology Review*, etc.);
- Editorials and institutional position statements (University of Cambridge, ICMJE, University of Toronto, etc.);
- Conference reports and official guidance documents produced by universities, professional associations, and scientific ethics committees;
- Recent books focusing on AI ethics, scientific publishing, editorial responsibility, and the evolution of research practices.

## **Analytical Approach**

To meet the research objectives, three main methodological axes have been defined:

### **Analyzing Prohibition and Regulation Discourses Regarding GAI:**

The first axis aims to critically examine the arguments advanced against the use of GAI in scientific production. This analysis is based on the study of institutional position statements (*Nature Editorial*, 2023; Thorp, 2023; Stokel-Walker, 2023) and recent university policies (University of Cambridge, 2023; University of Toronto, 2023). It seeks to map out the main concerns: risks to academic integrity, legal and ethical responsibilities, preservation of critical skills, transparency requirements, and issues related to personal data (Mittelstadt, 2021; O'Neil, 2016). The goal is to understand not only the criticism expressed but also the epistemological and institutional foundations of these discourses.

### **Describing the Gap Between Official Norms and Actual Practices:**

The second axis aims to highlight the gap between official norms prohibiting or regulating GAI use and the actual practices of researchers. Several surveys (Stokel-Walker, 2023; van Dis et al., 2023; Lund et al., 2023) show that, despite restrictions, GAI is frequently integrated into the scientific production chain, often discreetly or without disclosure. This study seeks to document this phenomenon of "clandestine pragmatism" and to analyze its causes, such as the pressure to publish (Larivière & Sugimoto, 2019), the demands of international readability (Flowerdew, 2001; Li et al., 2023), and the acceleration of publication rhythms.

### **Rethinking the Concept of Scientific Authorship in the GAI Era:**

Finally, the third axis is theoretical in nature. It aims to propose a contemporary redefinition of scientific authorship in the era of algorithmic assistance. Drawing on the work of Floridi (2023) and Bender et al. (2021), the reflection argues that scientific authorship can remain fully legitimate if it meets three fundamental criteria:

- Intellectual mastery of the production process, despite algorithmic assistance;
  - Explicit intentionality in the choice of tools and the use of their outputs;
  - Assumed responsibility for the validity and integrity of the final product.
- Thus, the issue is not the exclusion of GAI but the adaptation of authenticity, responsibility, and transparency criteria to new contexts of scientific production.

### Methodological Limitations

This work, based exclusively on documentary and theoretical analysis, has certain limitations:

- It depends on the quality, accuracy, and representativeness of the sources used;
- It does not aim to offer an exhaustive overview of practices or regulations across all disciplines or regions of the world;
- It favors a qualitative, interpretative, and critical approach rather than a statistical quantification of GAI use.

These methodological choices are deliberate, as the objective is to offer a deep and nuanced understanding of the dynamics at play, rather than to produce an exhaustive or strictly descriptive mapping.

### THEORETICAL CONTEXT

The use of generative artificial intelligence (GAI) in contemporary scientific practices occurs within a context of profound transformation in the conditions of knowledge production. Through the analysis of its progressive adoption in research and its effects on the concept of scientific authorship, two major theoretical dimensions emerge:

- A cognitive paradigm shift, where AI tools become active auxiliaries of human reasoning;
- An evolution of academic norms, questioning responsibility, authenticity, and recognition in scientific work.

### A Massive and Silent Adoption: GAI in Daily Practice

Recent surveys, such as the one conducted by *Nature* in 2023, show that GAI has become widely embedded in research practices, often discreetly or clandestinely. Researchers use tools like ChatGPT to correct, rephrase, translate, or generate first drafts of text, while sometimes concealing their use of these technologies due to the lack of a clear framework or institutional acceptance.

This silent adoption reveals a latent pragmatism within the scientific community: faced with increasing demands for productivity and writing quality, GAI tools are seen as means of optimizing work, despite the ethical uncertainties they raise. This widespread and often unnoticed practice can be explained partly by the technical limitations of AI detection tools such as GPTZero, ZeroGPT, or DetectGPT. These tools produce approximate and sometimes contradictory diagnoses, and can even classify fully human-written texts as artificial (Liang et al., 2023).

In response, many researchers develop strategies to adapt and "humanize" their productions. In reality, these "humanization" strategies — rewriting, contextualization, nuanced phrasing, rigorous validation of references — do not aim to conceal wrong doing. Rather, they are intended to reclaim control over the writing process and reaffirm intellectual authority over AI-assisted productions.

### A Cognitive Paradigm Shift: Continuity or Disruption?

The integration of GAI does not constitute an absolute break in the history of intellectual activity. It fits into the continuity of previous technological revolutions:

- The calculator, which freed the mind from the burden of manual calculations;
- The word processor, which streamlined the writing process;
- Machine translation, which facilitated access to foreign texts.

Like these tools, GAI acts as an instrumental extension of human faculties: it automates certain operations (formulation, reformulation, discourse structuring) and thus frees up time and cognitive energy for more reflective and interpretative tasks. In this sense, GAI is a "calculator of knowledge": it does not eliminate human thought but reconfigures the distribution of cognitive efforts, reinforcing the necessity for discernment, critique, and responsibility in the use of the texts produced.

### **A Reconfiguration of Scientific Authorship Norms**

The rise of GAI inevitably raises questions about the definition of scientific authorship. If assisted writing becomes a tacit norm, under what conditions can a work still be claimed as "properly human"? The theoretical response proposed here is clear: Authorship is not based solely on textual production but on the exercise of interpretative intelligence;

- The intellectual responsibility of the researcher remains intact, as they decide, direct, critique, and finalize the work;
- The contribution of GAI is instrumental: it assists but does not substitute for creative subjectivity.

Thus, far from erasing the human author, GAI highlights their indispensable role: ensuring the coherence, validity, originality, and ethical integrity of scientific discourse. This leads to a rethinking of authorship not as the exclusive possession of a text, but as a critical engagement in the production of knowledge.

## **RESULTS AND DISCUSSION**

### **Results: Human authorship put to the test by generative AI**

Analyses based on the real-world practices of using generative artificial intelligence (GAI) in academic contexts reveal several essential findings. Far from supplanting human intellectual activity, GAI primarily acts as a productivity assistant — a catalyst for secondary tasks such as reformulation, stylistic correction, or synthesis. According to a survey conducted by *Nature* (Stokel-Walker, 2023), over 28% of researchers report using tools like ChatGPT not to replace their thinking, but to accelerate certain formal operations. However, it is highly probable that this figure underestimates reality, as such uses remain largely underreported. This highlights not only the perceived usefulness of these technologies but also the persistent reluctance to fully acknowledge their use, due to ongoing ethical concerns.

The study's findings also show that the genuinely human part of scientific work — understanding the problem, choosing methods, critical analysis, and interpreting results — remains irreplaceable. Even when 60–70% of formal operations can be automated, such as in complex mathematical exercises where GAI can perform calculations or solve equations (Boden, 1998), fundamental cognitive decisions remain a human prerogative. Consider, for example, a middle school-level exercise studying the sign of the polynomial function  $f(x) = x^3 - 6x^2 + 11x - 6$ . Though seemingly simple, this problem engages multiple skills:

factorization, derivation, signanalysis, and functional behavior analysis. Today, part of the necessary tasks can be delegated to a machine:

- Calculating the derivative:  $f'(x) = 3x^2 - 12x + 11$ ,
- Solving a second-degree equation:  $f'(x) = 0$ ,
- Automatically constructing a variation or roots table.

These operations represent approximately 60–70% of the required formal work. A graphical calculator or software like GeoGebra or Wolfram Alpha can perform them in seconds.

Yet these automated processes are meaningless without the cognitive decisions that precede and follow them. The exclusively human contributions to such exercises are:

- Understanding the problem: interpreting the statement, reformulating the objectives (10%),
- Choosing the method: deciding to factorize, differentiate, or analyze a sign chart (10%),
- Interpreting the results: linking roots to the behavior of the function, justifying the reasoning (10–20%).

Thus, 30–40% of the total work pertains to conception, analysis, and interpretation — foundational intellectual activities. It is precisely these activities that defines scientific authorship: it is not the executor of a calculation who is the author, but the one who designs, directs, validates, and interprets. In other words, the machine is an executive instrument. It executes what is programmed, commanded, and controlled. It initiates nothing, understands nothing, and judges nothing. Thus, even in a resolution where the machine performs most calculations, the human remains the full author of the solution.

Moreover, despite increasingly explicit institutional policies regulating or banning GAI use in academic settings, a significant gap persists between official norms and actual practices. Numerous empirical studies (Stokel-Walker, 2023; van Dis et al., 2023; Lund et al., 2023) reveal that GAI is widely used in scientific production, often discreetly and undeclared. This phenomenon of "clandestine pragmatism" is explained by several factors. On one hand, researchers face growing pressure to publish rapidly and prolifically a mid-intensified international competition (Larivière & Sugimoto, 2019). On the other hand, GAI tools help overcome language barriers and improve the readability of outputs for prestigious English-language journals (Flowerdew, 2001; Li et al., 2023). Thus, the covert adoption of these tools is not merely an opportunistic by passing of norms but a pragmatic response to systemic demands for productivity, visibility, and scientific competitiveness. This paradox — massive yet largely unacknowledged usage — reveals a deep ethical unease: while researchers acknowledge the support GAI provides, they simultaneously fear being perceived as violating scientific integrity principles. This tension creates a grey area where the human author remains central to the production process through selection, rewriting, and critical interpretation — yet where GAI's contribution is not always explicitly recognized.

### **Discussion: Redefining scientific authorship in the Age of GAI**

Calls for an outright ban on the use of generative artificial intelligence (GAI) in scientific production, though motivated by a search for rigor, deserve to be nuanced. Indeed, the strict



dichotomy between "with" or "without AI" over simplifies the diversity of actual uses of these technologies. In practice, researchers do not use GAI to delegate their thinking but to support secondary tasks like reformulation or stylistic correction, allowing them to focus on the more complex aspects of theoretical reflection.

One of the most frequently cited arguments for banning GAI is the issue of responsibility: a machine cannot be held accountable for errors or defend a point of view (*Nature* Editorial, 2023). However, this argument rests on a reductive view of the tool's role. Intellectual responsibility remains a human prerogative; it lies in the author's ability to supervise, interpret, and validate contributions. As Floridi (2023) points out, responsibility does not lie with the machine but with the human, who must exercise discernment and competence in using technological tools. GAI does not replace the researcher; it becomes an instrument within their intellectual production process — a catalyst to refine thinking, stimulate creativity, and boost productivity.

Another common critique asserts that GAI threatens scientific originality, claiming it merely recombines existing information without truly creating. This critique rests on a very narrow conception of creativity. What is considered original: something entirely unseen, or something that produces new meaning from the existing? As Boden (1998) and Margolin (2002) remind us, creativity often stems from reinventing existing forms: combining, decontextualizing, or transposing known elements is itself an original act. In this sense, GAI can be seen as an accelerator of combinatorial creativity, a tool serving an original intention.

Moreover, the question of attributing intellectual authorship when using GAI also rests on a reductive understanding of scientific writing. Does the human remain the author when a machine drafts part of the text? As Ricoeur (1986) notes, writing primarily involves conceptualizing, interpreting, and problematizing. GAI may generate formulations or suggest structures, but it does not think through problems, define hypotheses, or confront theoretical frameworks. Thus, scientific authorship lies in the human intellectual effort to make sense, guide choices, and arbitrate between possibilities. GAI, in this sense, is neither a rival nor a successor but a formatting tool governed by human thought.

Concerns also arise around evaluation practices, where GAI might compromise the reliability of academic work or ethical standards. However, the argument that GAI use undermines evaluation validity relies on a rigid vision of assessment, assuming it must solely reflect unaided native production. According to principles of educational measurement (Perrenoud, 1998; Sluijsmans & Dochy, 2020):

- The validity of an evaluation depends on the alignment between learning objectives and assessment methods. If the goal is to test a student's ability to judge, organize, or critique a production, then AI can serve as a starting point without undermining validity.
- The reliability of an evaluation depends on the consistency and transparency of criteria. If the use of GAI is declared and regulated, it introduces no more bias than other forms of assistance (human proof reading, correction software, etc.).
- Ethical evaluation demands equality of opportunity, meaning all students should have fair access to authorized tools, and guide lines must be clear about what is permitted.

Thus, the challenge lies not in banning GAI outright but in adapting evaluative practices. Assessors must:

- Clarify criteria for originality and personal contribution,
- Require meta reflective justifications of the production process (e.g., writing journals, methodological sections, AI usage statements),
- Diversify assessment methods, integrating oral defenses, justification of choices, or critical analysis of AI-generated content.

As Shute (2009) notes, ethical and effective evaluation evolves with available means while remaining centered on genuinely demonstrating student learning, not on tightly controlling production contexts. Thus, from a docimological and ethical perspective, the focus should shift: it is not so much GAI use that threatens the reliability of evaluations but the inability of evaluation systems to responsibly integrate new tools. Valid evaluation rests on aligning assessed objectives with available means. If a student uses GAI to reformulate a text but demonstrates strong critical thinking, the evaluation should acknowledge it. It is up to evaluators to rethink authenticity, originality, and trace ability criteria by demanding transparency while focusing on core competencies (understanding, reflection, argumentation, etc.). Academic ethics must evolve with practices, while remaining true to its fundamental goals.

Finally, concerns about the degradation of writing and critical thinking skills with GAI use are legitimate but should not over shadow the potential of these technologies to enhance critical thinking. When integrated thoughtfully, they can support higher-order cognitive skill development. In their efforts to humanize or refine their outputs — by comparing their ideas to AI suggestions — students can:

- Practice critical evaluation of pre-written texts or arguments (reformulating, adjusting, rejecting),
- Improve meta cognition by recognizing their biases or reasoning gaps,
- Strengthen argument structuring skills by analyzing and comparing AI discourse choices,
- Stimulate academic creativity by exploring new expression styles or lexical perspectives.

Thus, GAI can offer immediate feedback on formulations, serve as a comparison tool, facilitate rewriting, and stimulate meta cognitive awareness among learners. Used reflectively and within a structured framework, GAI becomes a lever for developing superior writing skills — not a substitute.

Ultimately, the use of generative artificial intelligence in scientific production neither betrays academic ideals nor threatens intellectual authorship. On the contrary, it compels a deep rethinking of responsibility, originality, and evaluation. Far from diminishing human creativity, GAI acts as a cognitive extension tool, relieving mechanical tasks to better concentrate intellectual effort on critical analysis, conceptualization, and problematization. It invites a redefinition of scientific authorship — not as an exclusive domain of manual writing but as an interpretive, creative, and ethical responsibility in using technologies. Similarly, it calls for a necessary evolution of evaluative practices — towards greater transparency, reflexivity, and adaptation in the face of new knowledge production environments. In this perspective, GAI

does not erase the human author; it offers an opportunity to assert more clearly the irreplaceable role of human judgment in the creation and validation of scientific knowledge.

## CONCLUSION

This work aimed to shed light on contemporary tensions surrounding scientific authorship in the era of generative artificial intelligence (GAI), questioning both the legitimacy of prohibition policies and the real transformation of intellectual work.

The analysis revealed that the use of GAI in academic settings, far from being marginal or anecdotal, reflects a profound transformation of the tools, practices, and representations associated with knowledge production.

The three objectives set out in the introduction were fully achieved:

- To critically assess institutional arguments for banning GAI, identifying their legal, pedagogical, and ethical foundations,
- To highlight the real, widespread — yet often implicit — use of GAI in academic research, underlining the need for regulatory strategies rather than outright bans,
- To reexamine scientific authorship, showing that acts of thought — conceptualization, problematization, interpretation — remain the heart of intellectual attribution, regardless of the technical means involved.

By re-centering authorship on critical and reflexive thinking, this work helps move beyond concerns tied to the mere materiality of the text and reaffirms the centrality of the human author.

It also offers several theoretical and practical contributions to the existing literature:

- A renewed definition of scientific authorship based on intentionality and critical orientation rather than mere material writing,
- An original articulation between pedagogical uses of GAI and critical learning theories, showing that AI can foster meta cognitive development,
- A spotlight on the current shortcomings of academic evaluation systems, calling for reforms integrating GAI into an ethics of education rather than a prohibitive logic.

Nonetheless, this work opens up many avenues for future research. It will be necessary, in particular, to develop new methodologies for attributing scientific authorship that can account for GAI-assisted use without diluting human intellectual responsibility. Likewise, reflections must be carried out on adapting editorial, ethical, and evaluative standards to ensure that transparency, responsibility, and integrity remain the foundations of academic research, at a time when the boundaries between human and algorithmic contributions are becoming increasingly blurred.

Ultimately, rather than marking the end of scientific authorship, the emergence of GAI demands a new conceptualization: no longer as the exclusive domain of manual action, but as the sovereignty of thought and critical judgment. By fully embracing this transformation, the

academic community can enter this new era of knowledge production ethically, lucidly, and fruitfully.

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