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# Does Evaluating Research Still Need Virtues in the Age of ChatGPT?

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## Abstract

In the era of Artificial Intelligence (AI)-driven research, the evaluation of scientific work must go beyond the assessment of results and consider the intellectual virtues of researchers. This article explores the role of intellectual virtues - such as open-mindedness, courage and conscientiousness - in ensuring ethical and epistemically sound research. Drawing on key philosophical perspectives, including those of Sosa, Zagzebski, and Pritchard, we argue that intellectual virtues remain essential even as AI tools, such as ChatGPT, reshape cognitive processes. While AI may reduce reliance on internal cognitive skills, it need not diminish intellectual virtues; rather, these virtues guide the responsible and reflective use of AI in research. We also propose a virtue-based framework for research evaluation that distinguishes between different researcher archetypes and emphasises the role of practical wisdom (*phronesis*) in dealing with ethical dilemmas. Ultimately, we argue that research evaluation in the AI era must prioritise intellectual virtues in order to maintain integrity, foster innovation, and ensure that AI tools serve as supportive tools rather than replacing human intellectual effort.

## Introduction

The increasing integration of Artificial Intelligence (AI) in research practices is reshaping the landscape of academic inquiry, challenging traditional paradigms of knowledge production, evaluation, and intellectual engagement. AI-powered tools like ChatGPT have demonstrated their capacity to assist researchers in a variety of tasks, from literature review and data synthesis to writing and argumentation. While these advancements hold the potential to accelerate research processes and enhance accessibility, they also raise significant epistemological and ethical concerns. One pressing issue is whether the reliance on AI in academic work risks undermining the intellectual virtues that have historically underpinned rigorous and ethical research.

Intellectual virtues—such as open-mindedness, intellectual courage, conscientiousness, and epistemic humility—have long been regarded as essential qualities of good scholarship. These virtues guide researchers in critically evaluating evidence, engaging with diverse perspectives, and exercising sound judgment in the pursuit of knowledge. However, as AI increasingly automates cognitive tasks, there is a growing concern that it may foster intellectual passivity, reducing the researcher's engagement in deep, reflective thinking. This raises fundamental questions: Can intellectual virtues survive in an AI-dominated research

environment? How should research evaluation adapt to ensure that AI tools support rather than replace human intellectual effort?

This paper explores these questions through the lens of virtue epistemology, drawing on the philosophical perspectives of thinkers such as Ernest Sosa, Linda Zagzebski, and Duncan Pritchard. These scholars argue that intellectual virtues are not merely instrumental to knowledge acquisition but are constitutive of a well-functioning intellectual character. Their insights provide a valuable framework for understanding how researchers can engage with AI in ways that preserve and even enhance intellectual virtues, rather than allowing technology to erode them. We argue that while AI can alter cognitive processes by reducing reliance on certain internal skills, it does not inherently threaten intellectual virtues. Instead, the responsible and reflective use of AI—guided by virtues—can ensure that these technologies serve as powerful tools for knowledge advancement rather than as substitutes for human intellectual effort.

To address these concerns, we propose a virtue-based framework for research evaluation that extends beyond traditional metrics of output assessment. This framework distinguishes between different researcher archetypes—such as the Good Researcher, who exemplifies intellectual virtues in creative knowledge advancement; the Leader Researcher, who combines intellectual and social virtues to inspire ethical research practices; and the Honest Researcher, who upholds integrity and reliability, often at the early stages of their academic career. By incorporating intellectual virtues into research evaluation, we advocate for an approach that prioritizes not only the validity and impact of research but also the ethical and epistemic character of those who produce it.

By engaging with these themes, we seek to contribute to the ongoing debate on the ethical and epistemic challenges of AI in research. We argue that, rather than diminishing intellectual virtues, AI should be integrated into academic practices in a way that fosters critical engagement, intellectual responsibility, and ethical integrity.

The paper is structured as follows. Section 2 examines the role of intellectual virtues in research, outlining key philosophical perspectives on virtue epistemology and their relevance to academic inquiry. Section 3 explores the challenges posed by AI technologies in research practices, particularly the potential risks of cognitive diminishment and ethical dilemmas in AI-assisted scholarship. Section 4 introduces a virtue-based framework for research evaluation, distinguishing between different researcher archetypes and emphasizing the importance of practical wisdom (*phronesis*) in navigating ethical challenges. Section 5 discusses the implications of AI in research evaluation, considering how AI tools can support the exercise of intellectual virtues rather than undermine them. Section 6 concludes the paper by reaffirming the necessity of intellectual virtues in research evaluation and proposing directions for future research on the ethical integration of AI in academia.

## Intellectual Virtues and Research Evaluation

The evaluation of research practices should extend beyond assessing research outputs alone. It must also consider the moral and intellectual character of researchers, who play a crucial role in the research process. Intellectual virtues—such as courage, open-mindedness, and conscientiousness—are essential for

advancing knowledge and maintaining ethical research standards. Integrating these virtues into the evaluation framework contributes to a more comprehensive and meaningful assessment, i.e., a 'good' evaluation, of research practices (Daraio & Vaccari, 2020; 2022).

*Challenges Posed by AI Technologies*

The rise of generative AI tools like ChatGPT introduces potential risks of cognitive diminishment, where overreliance on technology undermines critical cognitive abilities. This raises pressing questions: Can intellectual virtues survive in an age dominated by AI? And how can research evaluation systems adapt to ensure these virtues remain central?

To address these challenges, we propose to use the theory of intellectual virtues as articulated by thinkers like Ernest Sosa, Linda Zagzebski, and Duncan Pritchard. These theories emphasize that intellectual virtues are not merely instrumental but are constitutive of the good human life, offering a pathway to deeper understanding rather than just factual knowledge (Pritchard 2015, Zagzebski 1996, Sosa 1980).

*Key Philosophical Perspectives on Intellectual Virtues and Their Role in Research Evaluation*

Three distinct perspectives on intellectual virtues merit examination. In this section, we will explore the first two, while the third will be discussed separately. The first influential model is that developed by Ernest Sosa (Sosa, 1980, 1981, 1985; Greco, 2002). According to Sosa, intellectual virtues are innate or acquired dispositions that reliably lead to grasping truth and avoiding falsehood. He used this concept to develop a theory of epistemic justification that overcomes the challenges posed by foundationalism and coherentism. In his model

- A belief B(p) is epistemically justified for a person S (justified in the sense required for knowledge) if and only if B(p) is produced by one or more intellectual virtues of S (Sosa, 1985, p. 290).

Epistemic principles become dispositions to form true beliefs about the environment on the basis of sensory inputs of different modalities. Because these powers and capacities are reliable (memory, introspection, logical intuition), they give rise to epistemic justifications for their respective products.

Similarly, he argues that various kinds of deductive or inductive reasoning - together with coherence-seeking reason - are virtuous because they reliably lead one from true belief to further true belief.

A second line of research has instead identified intellectual virtues with personality traits or qualities of character. According to Montmarquet, the intellectual virtues - such as intellectual courage and intellectual prudence - are analogous to the moral virtues (such as moral temperance and moral courage) in at least two ways:

1. The intellectual virtues have a passionate and motivational component, they are constitutively linked to the desire for truth (Montmarquet, 1993).

2. The exercise of the intellectual virtues is under our control: although we cannot control our perceptual impressions, we can control whether or not we take an idea seriously or whether or not we choose to consider a line of argument accurately (Montmarquet, 1993).
3. Intellectual virtues, like moral virtues, are appropriate objects of praise and blame (Montmarquet, 1993).

Along the same theoretical line is the position of Zagzebski, who, more than Montmarquet, emphasised the closeness of the moral and intellectual virtues. Like the moral virtues, the intellectual virtues involve a general motivation to achieve true belief and are reliably successful in doing so. But because the true is a component of the good, Zagzebski argues, the intellectual virtues can be understood as a subset of the moral virtues.
According to Zagzebski, an advantage of understanding intellectual virtue in this way is that it allows for an understanding of knowledge. She argues that:

- An act of intellectual virtue A is an act that arises from the motivational component of A, is something that a person with virtue A would (probably) do in the circumstances, is successful in achieving the end of A's motivation, and is such that the agent acquires a true belief through these features of the act (Zagzebski, 1996, p. 270).

For Zagzebski, an advantage of understanding intellectual virtue in this way is that it allows an understanding of the knowledge. More precisely: S has knowledge of P if

1. p is true, and
2. The true belief B (p) of p arises from the acts of an intellectual virtue.

Therefore, S has knowledge of p if belief p arises from actions of intellectual virtues (Zagzebski, 1996, pp. 264-3).
Having outlined - albeit schematically - the main positions on the nature of the intellectual virtues, let us make some general points on the nature of intellectual virtues:

1. Despite the differences between these two models, none seems to explicitly identify the virtues with cognitive abilities, understood as something that is clearly distinct from the motivational components of virtue.
2. The desiderative components seem to be constitutive elements of the intellectual virtues. Although Sosa does not explicitly include them, it seems implausible not to include something of the sort in his characterisation of the search for consistency between perceptions.

*Intellectual Virtues and Cognitive Abilities. Pritchard's Model*

Based on these general considerations, we believe that the conception of the intellectual virtues as recently articulated by Duncan Pritchard captures the essential elements of these virtues. Pritchard is one of the most authoritative proponents of the

so-called virtue responsibility conception, which places the cognitive character of the agent at the centre of his analysis. He claims:

"Virtue epistemology puts the cognitive character of the subject centre-stage, where this means the interconnected web of the subject's integrated cognitive faculties, cognitive abilities and intellectual virtues" (Pritchard, 2015, p. 3; see also Axtell, 1997; Kvanvig, 2010, and Greco, 2011).

According to Pritchard, the cognitive character of the subject is not reducible to virtues, but is identified with "an integrated network of cognitive skills, cognitive abilities and intellectual virtues". Let us distinguish these elements and see how they relate to each other.

1. *Cognitive faculties*: these are the innate cognitive abilities that individuals possess, such as those involved in perception or memory. They can be improved through training, which usually involves integrating the faculty with other cognitive traits.
2. *Cognitive abilities*, on the other hand, are acquired rather than innate and involve specific skills - such as the facility to do arithmetic. Acquired cognitive skills draw on existing cognitive abilities and are used to perform specific cognitive tasks.
3. *Intellectual virtues*: Although they are similar to cognitive skills in that they are acquired cognitive traits that draw on innate cognitive faculties, they differ significantly from them. For example, the exercise of an intellectual virtue not only facilitates access to truths, but also manifests the subject's motivation to acquire truth. Similar to Montmarchet and Zag, intellectual virtues express our love of truth (Pritchard, 2016; see also Zagzebski, 1996). Cognitive virtues are typically not accompanied by such a motivational component, but rather are associated with the desire to be better at a particular task than a competitor.

Pritchard highlights two important distinctions between cognitive abilities and intellectual virtues:

A. Intellectual Virtues - like moral virtues - are constitutive elements of the good human life. They therefore possess a special axiological status that cognitive abilities do not. The latter have only an instrumental value. Virtues, on the contrary, have value for those who possess them, regardless of their «practical usefulness» (Pritchard, 2014, p. 4). Intellectual virtues thus have value for themselves as manifestations of cognitive agency (Pritchard, 2014, p. 4; Roberts & Wood, 2007).

> <<… while the wise person would not willingly give up an intellectual virtue, he might choose to give up a cognitive skill if it ceased to be practically useful>> (Pritchard & Turri, 2011; see also Pritchard, 2007).

B. A further axis of differentiation is in terms of specificity. Cognitive skills tend to be understood in a narrow sense, in the sense that they are often abilities to reliably perform specific cognitive tasks (e.g. simple arithmetic). Intellectual virtues, on the other hand, are very broad cognitive traits of the

agent, such as conscientiousness, open-mindedness, etc.. This reflects the general regulative function that intellectual virtues tend to play within a subject's cognitive economy, in that they guide the employment of one's cognitive abilities and faculties, rather than vice versa.

## Addressing the Challenges of AI Technologies: Implications for Research Evaluation

Through these lenses, we propose that the decline in cognitive abilities from AI use does not necessarily erode intellectual virtues. Instead, these tools can complement virtues by facilitating reflective and critical engagement with AI outputs (Cassinadri, 2024).

More precisely, while it is true that the use of ChatGPT and other generative AI tools can have the effect of weakening internal cognitive abilities, this does not necessarily have a negative impact on intellectual virtues:

1. Although virtues and cognitive capacities cooperate with each other in the construction of true representations of the world - and in this sense they are concomitant factors. They are different psychological factors. Summarising Pritchard's lesson: whereas the function of cognitive abilities is to enable the acquisition of a set of true factual information (Cassinadri, 2024, p. 4), the function of virtues is to acquire 'understanding' (Cassinadri, 2024, p. 4; Pricthard, 2013, 2016; Mollick & Mollick, 2022).
2. In contrast to the mere possession of true beliefs, 'undestanding' denotes the knowledge that the agent possesses when (a) he is aware that the sources of his beliefs are reliable and (b) he knows the reasons why this is so. In this way, the virtuous subject is a cognitive agent and not merely a subject who holds true beliefs.
3. Although the use of ChatGPT could in principle lead to cognitive diminishment due to the fact that we overuse technology at the expense of exercising cognitive skills, this may not be as disastrous an outcome as it seems. After all, once the outputs from these technological tools are screened by the intellectual virtues, these outputs can become a potentially useful source of information to be evaluated reflectively and critically like any other cognitive output.
4. The development of intellectual virtue need not depend on the outputs of pure cognitive abilities, but may also derive from the outputs of AI-supported technologies. In both case, they are a starting point for the understanding of reality made possible by the intellectual virtues.

If intellectual virtues remain intact through the use of AI, then concerns about AI-induced cognitive decline may be less troubling than they appear. This has significant implications for how we assess the quality and integrity of research practices in an AI-driven landscape.

## The proper use of AI tools and the intellectual virtues

Having shown how intellectual virtues are not undermined by the use of AI, it is possible to argue that the proper use of these tools requires the possession of applying intellectual virtues.

In doing so, we intend to extend Kristjánsson and Fowers' approach (Kristjánsson and Fowers, 2024), in particular their exploration of *phronesis* (practical wisdom) in professional ethics, to ethical considerations of AI tools in research.

Kristjánsson and Fowers' approach emphasises the importance of cultivating intellectual virtues in professional ethics, particularly when navigating complex and morally charged situations. They argue that *phronesis* should guide professionals in making ethical decisions, especially in situations where shared rules may not suffice. In this context, we can apply this framework to the ethical use of AI tools such as ChatGPT in research.

Intellectual virtues - such as open-mindedness, intellectual courage, intellectual humility and intellectual perseverance- can offer a lens through which to evaluate the use of AI tools in academic practices. When using ChatGPT for research, these virtues help to ensure that AI tools are exploited ethically and improve the overall quality of research, rather than reducing it.

For instance, researchers may need open-mindedness, being receptive to the new knowledge that AI tools can provide, without relying on them as the sole source of information. Furthermore, they should possess intellectual perseverance, continuing to rigorously evaluate, cross-reference and verify AI-assisted results in the research process, ensuring that AI does not merely simplify tasks, but instead contributes significantly to the discovery and understanding of knowledge. Another fundamental virtue is transparency, which requires researchers to clearly disclose how AI tools were used in their research process (methodology, data analysis, etc.).

## Research Practices, Intellectual Virtues and AI

The crucial role that virtues play in the correct use of AI tools becomes even more apparent if we address the question of what constitutes a good evaluation of research itself. Again, we can extend Kristjánsson and Fowers' phronesis-focused framework to emphasise the evaluation of the research practices they use: how AI tools help to evaluate the practices behind the research, not just the research results themselves. This is particularly congenial to our approach to evaluating scientific research. Building on the theoretical foundations of intellectual virtues, we have characterized academic/scientific research as a socially established cooperative human activity (Daraio and Vaccari 2020). Following MacIntyre, we define a good social practice as

> - "[…] any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers

to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended" (MacIntyre, 1981 first ed.; pp. 1985, 187).

On the basis of the definition of good social practice, we characterize a good research practice as

- "[…] any coherent and complex form of socially established cooperative human activity through which its participants, through the exercise of a set of refined human psychological qualities or virtues, contribute to the advancement of the body of knowledge that is constitutive of that practice in a way that has a positive impact on the lives of researchers and society as a whole" (Daraio and Vaccari 2020, p. 1059).

Good evaluation of research practices must use a holistic approach to the evaluation of research practices that examines methodological soundness, ethical rigour and validity of conclusions. AI can support this by offering quick access to related literature, providing computational assistance for data analysis and highlighting potential flaws or inconsistencies. It can be argued that the overall quality of this evaluation depends on the way AI tools are integrated and the intellectual virtues applied to their use.
Evaluators should use AI not only to assess individual research projects, but also to reflect on broader trends in research practices, such as the use of AI itself.
This includes examining the impact of AI on ethical decision-making, research design and data processing. Intellectual virtues such as intellectual courage can help evaluators ask difficult questions about the ethical use of AI tools in the research process.
Furthermore, the integration of AI tools such as ChatGPT into research evaluation can improve the process by providing computational assistance and expanding access to information. However, the quality of the evaluation of research practices depends significantly on how these tools are used. By applying intellectual virtues such as open-mindedness, intellectual humility, integrity, accountability and critical thinking, researchers and evaluators can ensure that AI tools support, rather than undermine, the ethical rigor and methodological soundness of research evaluation.

**Using virtues in AI: Three Types of Researchers**

Building on the three types of researchers outlined in our previous work (Daraio & Vaccari, 2020; 2022), we apply them to the challenges of integrating artificial intelligence into research practices:

1. *The Leader Researcher*: This role combines intellectual and social virtues to inspire excellence and collaboration. The Leader sets ethical standards for the use of AI within their teams and, together with the Good Researcher, embodies virtues such as conscientiousness and open-mindedness. They ensure that AI tools like ChatGPT are integrated in ways that align with both the ethical and epistemic goals of the research teams.

2. *The Good Researcher*: A model of intellectual virtues, the Good Researcher advances knowledge creatively while adhering to ethical and epistemic standards. Alongside the Leader, they embody virtues such as conscientiousness and open-mindedness, ensuring that AI tools like ChatGPT complement—not replace—the intellectual effort. They maintain a reflective and critical engagement with AI outputs, ensuring these tools align with the broader goals set by the Leader.
3. *The Honest Researcher*: Committed to upholding ethical standards, the Honest Researcher is a reliable contributor, typically early in their career. They assist the Leader and Good Researcher in applying these principles, learning from their guidance and experience.

These roles illustrate how intellectual virtues translate into tangible contributions to research practices. However, the integration of AI in research raises important ethical dilemmas. For example, does reliance on tools like ChatGPT undermine intellectual rigor, or can it enhance inclusivity and creativity? Tools for detecting AI-generated content underscore the increasing need for ethical guidelines in research practices (Mateos-Sanchez et al., 2022).

Virtuous researchers navigate these dilemmas by critically evaluating AI-generated outputs and ensuring their use aligns with the pursuit of deeper understanding, rather than simply serving utility-driven goals.

## Conclusion

Intellectual virtues enable researchers to make ethical and effective use of tools such as ChatGPT, thereby fostering understanding and innovation. By aligning theoretical insights with practical applications, we can ensure that research practices continue to meet the highest standards of excellence and integrity.

As AI becomes increasingly embedded in research practices, it is imperative to reassess the criteria by which scholarly work is evaluated. This paper has argued that research evaluation must extend beyond output-based metrics to consider the intellectual virtues that shape ethical and epistemically responsible inquiry. Intellectual virtues—such as open-mindedness, intellectual courage, conscientiousness, and epistemic humility—are not only fundamental to sound research but also serve as safeguards against the risks posed by the growing reliance on AI in academic work.

Through an engagement with virtue epistemology, particularly the perspectives of Ernest Sosa, Linda Zagzebski, and Duncan Pritchard, we have highlighted the distinction between cognitive abilities and intellectual virtues. While AI can enhance cognitive abilities by providing rapid access to information, generating text, and automating certain tasks, it does not cultivate intellectual virtues on its own. Instead, the responsible and reflective use of AI requires researchers to exercise virtues that ensure AI tools support, rather than replace, human intellectual effort. The ethical integration of AI in research thus depends on fostering a culture of intellectual virtue, where researchers remain actively engaged in critical thinking, methodological rigor, and ethical accountability.

A key contribution of this paper is the virtue-based framework for research evaluation, which proposes a holistic approach to assessing research. By distinguishing between different researcher archetypes—the Good Researcher, the Leader Researcher, and the Honest Researcher—we have emphasized that scholarly excellence is not solely determined by knowledge production but also by the intellectual character and ethical integrity of researchers. These archetypes illustrate how intellectual virtues manifest in academic work, shaping both individual research practices and the broader research community. Moreover, the concept of practical wisdom (*phronesis*) has been introduced as a guiding principle for navigating the ethical dilemmas posed by AI in academic settings.

In response to the question posed in the title—*Does evaluating research still need virtues in the age of ChatGPT?*—our answer is a clear and affirmative yes. Even though AI can assist in cognitive tasks and streamline the research process, the evaluation of research still requires human judgment guided by intellectual virtues. These virtues ensure that the use of AI remains critical, ethically aware, and epistemically responsible, thereby safeguarding the integrity and meaningfulness of academic work.

Beyond its theoretical contributions, this paper also raises critical questions about the future of AI-assisted research. As AI continues to advance, it is likely to play an even more significant role in shaping academic inquiry. This evolution presents both opportunities and challenges. On one hand, AI has the potential to democratize access to knowledge, reduce cognitive load, and facilitate interdisciplinary collaboration. On the other hand, the overreliance on AI could lead to intellectual complacency, where researchers passively accept AI-generated outputs without critical engagement. Ensuring that AI remains a tool for augmentation rather than replacement requires active reflection on the principles that govern its use.

The practical implications of our argument suggest that research institutions, funding bodies, and academic journals should revise their evaluation criteria to include the demonstration of intellectual virtues. This might include explicit guidelines for ethical AI use, reflective commentary on methodological choices, or assessments of epistemic responsibility.

Given the profound impact of AI on research practices, future studies should further investigate the following aspects.

While this paper has provided a theoretical foundation, empirical research is needed to assess whether AI affects researchers' intellectual virtues in practice. Studies could explore whether frequent reliance on AI tools correlates with changes in researchers' critical thinking skills, epistemic humility, or intellectual perseverance.

As AI becomes increasingly integrated into research methodologies, academic institutions and funding bodies should consider incorporating virtue-based principles into research evaluation criteria. Future research could contribute by formulating guidelines on how intellectual virtues should be assessed in AI-assisted research environments.

Beyond theoretical discussions, it is essential to explore concrete strategies for fostering intellectual virtues among researchers who engage with AI. Educational programs, mentorship models, and institutional policies could be designed to

encourage the cultivation of virtues such as open-mindedness, conscientiousness, and intellectual humility.

While AI can enhance research productivity, it also introduces ethical dilemmas regarding authorship, plagiarism, and the reliability of AI-generated content. Further exploration is needed to develop mechanisms that ensure transparency, accountability, and fairness in AI-assisted research.

In sum, we conclude that evaluating research still unequivocally requires intellectual virtues—even, and especially, in the age of ChatGPT. By embedding these virtues into research evaluation, we uphold not only the epistemic but also the moral foundations of academic inquiry.

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