The Doctor of Efficiency: Philosophical Reflections on Knowledge and Meaning in the Age of AI

Article history
Received
2 November 2025
Received in revised form
2 December 2025
Accepted
8 December 2025
Published online
27 December 2025

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Abstract
Artificial intelligence has accelerated knowledge production while quietly redefining what counts as knowing. Within universities, this transformation is most visible in the PhD; traditionally a Doctor of Philosophy devoted to slow inquiry and reflective understanding. As AI systems generate research outputs, structure arguments, and even simulate reasoning, the doctoral identity risks mutating into that of a Doctor of Efficiency: a figure of technical productivity optimized for metrics rather than meaning. This essay traces the philosophical genealogy of that shift, from Weber's instrumental rationality to contemporary algorithmic epistemology, arguing that AI represents the culmination, not the cause, of a long drift from wisdom to calculation. Drawing on Arendt, Simondon and Floridi, it diagnoses how automation displaces comprehension and how academia's fixation on speed undermines intellectual responsibility. The paper concludes by proposing an alternative ethos for the digital university grounded in cognitive authenticity, epistemic humility and reflective effort; the virtues through which intelligence regains its human depth.

Keywords: Artificial Intelligence, PhD, Knowledge, Cognitive authenticity.

Introduction: The Paradox of Intelligence

Artificial intelligence promises cognition without consciousness and reasoning without reflection. The very term intelligence, once bound to deliberation and meaning, has become shorthand for computational capacity. In laboratories and lecture halls alike, algorithms now accomplish tasks that once defined human scholarship: summarising texts, generating code, reviewing literature, simulating arguments. Yet as machines appear to think, human thought risks being redefined as what machines do efficiently. The paradox is not that AI thinks, but that it teaches us to value thinking less.

The modern PhD sits at the centre of this paradox. Conceived in nineteenth-century Germany as a Doctor of Philosophy, it symbolised the unity of disciplined inquiry and reflective judgement. Today, under the pressure of metrics and automation, it risks becoming the Doctor of Efficiency; an expert in accelerating knowledge production through computational means. The transformation is not merely pedagogical; it is civilisational. When universities equate learning with throughput, they convert understanding into a performance indicator. The question therefore arises: what remains of philosophy when intelligence is measured in iterations per second?

Within engineering doctoral education, the tension becomes decisive. The PhD has never been merely a credential of expertise but a commitment to understand the consequences of one's own knowledge. When automation accelerates inquiry, comprehension risks being displaced by output, as if knowing why could be postponed until after the results are achieved. But a scholar who produces without understanding risks contributing to a future they cannot interpret. If efficiency becomes the primary virtue of research, intelligence collapses into performance. Preserving the depth of the doctorate therefore means defending the spaces where understanding remains the measure of work, where reflection is not a delay but the condition of knowledge. The future of the doctorate will not be secured by faster thinking machines but by researchers who refuse to let speed outrun meaning.

The Figure of the Doctor of Efficiency

To speak of a Doctor of Efficiency is to describe a new scholarly archetype. This figure is fluent in the languages of automation, able to manipulate code and data, yet often estranged from the slower arts of reasoning. The doctoral candidate who relies on large language models to draft reviews or summarise theories gains speed but loses apprenticeship in thought. The machine becomes the first reader of every text, the silent co-author of every idea.

Academic structures reinforce this metamorphosis. Funding cycles reward deliverables; citation indices quantify influence. The culture of publish-or-perish treats knowledge as a continuous

Mnif, F. (2025), The Doctor of Efficiency: Philosophical Reflections on Knowledge and Meaning in the Age of AI, *ASEAN Journal of Engineering Education*, 9(2), 121-124. https://doi.org/10.11113/ajee2025.9n2.204

production line. Within such a system, AI does not corrupt scholarship, it completes it. Automation becomes the final form of the logic universities already serve.

The ethical consequence is profound. The scholar's responsibility shifts from truth to throughput. Where the philosopher once asked whether an argument was valid, the efficient researcher asks whether it is accepted. In the mirror of AI, academia confronts its own mechanisation.

Automation and the Erosion of Understanding

Understanding differs from information as listening differs from hearing. It requires duration, hesitation, and error; the very qualities automation is designed to eliminate. AI systems such as large neural networks excel at correlation, not comprehension; they operate within statistical rather than semantic space. Their successes seduce us into mistaking prediction for explanation. When researchers delegate interpretation to algorithms, they inherit that epistemic shallowness.

The philosopher Gilbert Simondon (1958) viewed technology as the concretisation of human thought: each machine embodies a schema of reasoning. Yet when machines begin to reason autonomously, they mirror not our understanding but our abstraction. The opacity of deep learning, described by Burrell (2016), makes results reproducible but not interpretable. In science and scholarship alike, reproducibility without intelligibility undermines the very notion of knowledge.

Efficiency thereby becomes an epistemic criterion: if it works, it is true. The consequence, as Judea Pearl and Dana Mackenzie (2018) observe, is the eclipse of causality by correlation. Knowledge shifts from knowing why to knowing how well. This epistemic inversion, caused by the cult of efficiency, marks the true revolution of AI.

Reclaiming Philosophy in the Age of Automation

If automation reveals the limits of comprehension, philosophy reveals its necessity. The remedy to mechanised intelligence is not romantic rejection but reflective integration. To philosophise amid machines is to recover the human capacity for understanding as responsibility; to insist that knowing entails answering for what one knows. The modern university, if it is to remain more than a knowledge factory, must transform AI from an instrument of acceleration into a mirror for reflection.

Reclaiming philosophy therefore begins with epistemic humility. Where AI produces certainty by volume, philosophy cultivates uncertainty by design. To recognise the boundaries of one's understanding is to reopen the space of wonder that automation tends to close. Humility is not the absence of knowledge but its condition of possibility: only those aware of ignorance can meaningfully inquire. In an environment saturated with computational assurance, humility becomes a revolutionary virtue.

A second virtue is cognitive authenticity; the alignment between what the scholar produces and what the scholar truly understands. In an age of automated authorship, authenticity requires explicit reflection on how digital tools participate in thought. When a doctoral candidate uses AI to draft, simulate or analyse, the ethical question is not whether such use is legitimate but whether it is understood. Authenticity thus redefines originality: not as independence from tools but as transparency in reasoning with them.

Finally, there is reflective effort. The ease of automation tempts intellectual passivity. Reflection resists this by reinstating effort as a moral value. The time taken to understand, to wrestle with ambiguity and failure, is not inefficiency; it is the very process through which meaning emerges. To think slowly in the age of AI is not nostalgia but resistance to superficiality. It is the deliberate preservation of depth in an accelerating world.

The University as Moral Technology

The call to re-philosophise knowledge cannot remain abstract. Universities are not neutral infrastructures; they are moral technologies; systems that encode particular visions of the good. When they prioritise metrics over meaning, they operationalise instrumental reason. When they cultivate reflection, they embody ethical intelligence. The curriculum, assessment, and doctoral training are therefore sites of moral engineering.

Within doctoral education, this means redefining success. Instead of measuring progress by publication counts or algorithmic performance, institutions might evaluate the quality of understanding. Supervisory dialogues could include not only technical feedback but ethical questioning: What does this model assume? What does it exclude? Who benefits from its accuracy? Such questions return the human dimension to inquiry. They also make visible what automation conceals; the interpretive choices behind every dataset and the moral weight of every conclusion.

Philosophy in this sense becomes the conscience of research. It does not slow science; it stabilises it. Just as engineers build safety factors into bridges, scholars must build epistemic safety factors into knowledge; margins of reflection that prevent collapse under the weight of efficiency.

Beyond Efficiency: Re-Humanising Intelligence

To re-humanise intelligence is not to diminish machines but to elevate humanity. AI extends human capability; it should not replace human curiosity. The challenge is to maintain a dialogue between machine precision and human purpose. As Luciano Floridi (2023) argues, the digital revolution demands an

infosphere ethics: a framework where information processes are judged by their contribution to human flourishing. Efficiency, within such an ethic, becomes secondary to significance.

Hannah Arendt's warning in The Human Condition (1958) resonates here. When thought becomes labour and labour becomes automatic, action, the realm of freedom and meaning, disappears. The Doctor of Efficiency embodies that disappearance: an intellect that acts without thinking, producing without reflecting. Re-humanising intelligence means restoring action to thought; reintroducing deliberation where automation offers completion.

This restoration is not merely individual but collective. The community of scholars must cultivate slow spaces; seminars, retreats, and colloquia where ideas are developed without immediate deliverables. Slowness is not resistance to technology but architecture for wisdom. In a world where AI compresses time, philosophy must expand it.

The Ethics of Understanding

The ultimate task of philosophy in the digital university is to transform understanding from an epistemic achievement into an ethical obligation. Knowledge divorced from responsibility becomes power without direction. The doctoral oath, implicit or explicit, should therefore include not only commitment to truth but commitment to meaning; to ensure that the expansion of intelligence serves human comprehension rather than eclipses it.

Miranda Fricker's (2016) notion of epistemic injustice, the harm done when someone's capacity as a knower is undermined, extends poignantly to AI. When algorithms mediate what counts as knowledge, they risk committing systemic epistemic injustice by excluding interpretive depth itself. The Doctor of Efficiency participates unwittingly in this harm by valuing performance over understanding. Philosophical reflection becomes an act of repair, restoring the dignity of knowing as a human practice.

Håvard Sætra (2022) identifies an "ethics of effort" as essential in automated societies: moral worth arises not from outcomes alone but from the commitment of attention. This insight reframes doctoral work. The candidate who labours to comprehend, even inefficiently, performs an ethical act. In contrast, effortless mastery, whether delivered by machine or borrowed text, diminishes moral agency. Understanding is valuable not because it is productive, but because it is earned.

Philosophy's Technological Turn

If the nineteenth century industrialised matter, the twenty-first industrialises thought. Philosophy's task is therefore no longer to interpret technology from without but to think through it. The digital medium reshapes not only what we know but how we think; philosophy must inhabit this new terrain without surrendering its critical distance. This means using AI as a philosophical instrument; testing its reasoning, exposing its assumptions, and learning from its failures.

Such engagement transforms both partners. AI becomes a lens through which philosophy re-examines its own claims about reason, mind and autonomy. Conversely, philosophy becomes a means by which AI research confronts questions it cannot compute: What is meaning? What is responsibility? The encounter between philosophy and AI thus revives the very dialogue that the Doctor of Efficiency had silenced.

Gilbert Simondon's concept of individuation offers a useful metaphor. Just as a machine evolves through successive concretisations, so knowledge evolves through successive reflections. Each iteration of understanding refines not only what is known but who knows. The doctoral journey, when re-philosophised, mirrors this process: it is not the production of data but the formation of self through thought.

Efficiency in Engineering Doctoral Education

In engineering doctoral education, the transformation of scholarship into efficiency becomes starkly visible. The closer research is tied to technological progress and industrial expectation, the more the doctoral journey is recast as a race; toward publications, toward patents, toward measurable innovation. Artificial intelligence intensifies this logic by accelerating the very tasks that once defined intellectual apprenticeship: reading, modelling, composing, even critiquing. What once demanded patience and reflection now appears as mere friction. When speed becomes proof of intelligence, the doctoral scholar risks being trained not to understand more, but simply to achieve faster.

This acceleration reshapes supervision itself. The apprentice model, grounded in dialogue and slow maturation of ideas, is pressured by timelines, grants, deliverables. The machine increasingly becomes the silent supervisor; offering suggestions, rewriting sentences, simulating outcomes, while the human mentor becomes a project manager tracking milestones. The doctoral candidate may emerge technically skilled yet epistemically fragile, able to operate with tools whose meanings they no longer have time to grasp. Knowledge risks becoming a form of automation; functional, impressive, and strangely hollow.

The danger is not that engineers will become ignorant, but that they will become successful without understanding. Efficiency promises mastery without reflection, capability without conscience. Engineering doctoral education therefore stands at a threshold: either it defends the intellectual depth that gives technology meaning, or it allows automation to define intelligence as throughput alone. The doctoral engineer, entrusted with shaping the world, must

remain capable of questioning what the machine performs; otherwise, innovation becomes a momentum without direction, and progress itself loses its purpose.

The pressures driving this acceleration are acutely felt in ASEAN universities, where engineering research is often tied to national development agendas and the rapid expansion of technological capacity. Doctoral candidates are encouraged to deliver outcomes that advance industry, infrastructure, and innovation, leaving little time to dwell on the meaning of what is produced. As AI becomes embedded in research practices, the temptation grows to value productivity over comprehension, speed over synthesis. Here, the question of what it means to understand is not abstract; it is a matter that shapes the foundations on which emerging societies build their futures.

Towards an Ethos of Reflective Intelligence

What, then, might replace efficiency as the governing value of intelligence? An ethos of reflection; a disposition that prizes comprehension over completion and dialogue over data. In practical terms, this ethos would cultivate interdisciplinary literacy, ethical deliberation and the patience to dwell with complexity. It would celebrate curiosity as much as competence.

Such an ethos does not oppose AI but orients it. Machines can accelerate discovery; they cannot supply direction. Direction arises from value, and value is a human invention. When the Doctor of Efficiency remembers this, efficiency itself regains moral significance; it becomes the means by which understanding travels, not the measure of its worth.

Conclusion: The Return of Philosophy

Artificial intelligence has not abolished thinking; it has revealed how fragile thinking is. The danger lies not in machines that know too much, but in humans who forget why they know at all. The cure is reflection slower, deeper, more deliberate engagement with the meanings that computation cannot reach. The next revolution in intelligence will not be artificial; it will be reflective.

The future of the doctorate, and by extension of knowledge, depends on restoring philosophy to its rightful place as the conscience of intelligence. The Doctor of Philosophy and the Doctor of Efficiency are not enemies but phases of the same evolution. Efficiency made possible the scientific progress that now threatens to overwhelm understanding; philosophy must provide the counter-force that keeps progress human.

The modern doctorate stands where thought becomes action, where ideas acquire material force in the world. Its task is not only to extend knowledge but to shape the very structures through which society moves, communicates and lives. When understanding gives way to acceleration, creation risks outpacing comprehension, and innovation arrives unaccompanied by meaning. What is produced begins to matter more than what is understood. To preserve the dignity of research, the doctorate must remain a place where the power to transform the world is always met by the responsibility to interpret it; where the ability to build is inseparable from the obligation to know why and for whom we build.

Acknowledgments

This work was supported by Sultan Qaboos University. The authors take full responsibility for the views and arguments expressed herein. Assistance from AI tools (e.g., ChatGPT) was limited strictly to language refinement and did not contribute to the intellectual content or structure of the manuscript.

Conflict of Interest

The author declares no conflict of interest.

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