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AI vs AcI

Artificial Intelligence versus Actual Intelligence

VOLUME 3
AMPA PUBLICATIONS SERIES

Greg Whateley, Dimitri Kopanakis, Ian Bofinger and Monjur Ahmed

ACADEMY OF MUSIC AND PERFORMING ARTS

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ARTIFICIAL INTELLIGENCE VERSUS ACTUAL INTELLIGENCE

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Greg Whateley

Dimitri Kopanakis

Ian Bofinger

Monjur Ahmed

Melbourne, Australia

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Contents

Preface

This publication approaches the issue of Artificial Intelligence (AI) from the point of view that it would be a shame to see Actual Intelligence (AcI) disappear altogether. The chapters explore the use of AI in its many forms and at the same time highlight the importance of human interaction and human intervention.

The discussion began with four stimulus papers.

Whateley argued –

There is little doubt that artificial intelligence is all around us. Every time I book a flight somewhere I am supported by AI. Every time I call into my banking app I am supported by AI. Making payments (TELSTRA, Vodafone and the like) I am interfacing with AI. Accessing an uber after a night out I am interfacing with a booking bot. Finding out what is on TV tonight I find myself asking AI. If I want to know the weather first up – 'Hey Google' usually comes to my rescue. Yesterday my robot cleaned the swimming pool for me – so AI is with me whether I like it or not – in this instance I do actually like it. I have, over the last few months, had some encounters with 'real people' however - on the telephone (AcI). Where I needed specific support or instruction - I was able to chat to some very nice and supportive people who gave me valuable direction and comfort. Ironically, they assisted me in interfacing with the AI embedded in their systems. But, as noted AI is here to stay.

Bofinger expressed –

The name ‘artificial intelligence’ (AI) was coined in 1955 by the computer scientist John McCarthy. The term AI unfortunately conjures up a significant misconception. Namely, that AI systems not only do the same things as humans - but do them in the same way and according to the same internal mechanisms. This kind of theoretical inaccuracy is reflected in the 1970s quote attributed to the Dutch computer scientist, Edsger Dijkstra, ‘The question of whether machines can think is about as relevant as the question of whether submarines can swim’. (Sanguinetti 2025) Alan Turing perhaps gave one of the earliest public lectures on computer intelligence in London in 1947. “What we want is a machine that can learn from experience,” he argued, adding that the “possibility of letting the machine alter its own instructions provides the mechanism for this.” The Turing Test, originally called the ‘imitation game’ in 1950, is a test of a machine's ability to exhibit intelligent behaviour that is the equivalent of, or indistinguishable from, a human. As a result, the question ‘Can machines think?’ is something that would be debated by innovators and scientists alike around the world.

Kopanakis continued -

Within the rapidly evolving landscape of Artificial Intelligence (AI) driven systems, the enduring value of human judgment, presence, and emotional intelligence remains paramount to effective leadership. Whilst AI excels in data analysis, pattern recognition, and operational efficiency, it lacks the intuitive, relational, and moral faculties required for authentic influence and visionary decision-making. This chapter will showcase that leadership - notably within complex, high-stakes environments - cannot be reduced to algorithmic precision. It explores five interconnected dimensions where human capabilities outstrip machine performance: leadership presence, emotional intelligence, complex decision-making, ethical reasoning,

and strategic foresight. Each of these dimensions underscores the irreplaceable role of lived experience, contextual understanding, and affective engagement in leadership practice. As organisations embrace AI to augment operations, they must also reaffirm the human qualities essential for transformational leadership - where the future of leadership lies not in automation, but in a hybrid paradigm where artificial and actual intelligence are thoughtfully integrated - without diminishing the irreplaceable judgment gap.

And

Ahmed contributed –

Artificial Intelligence (AI), despite not being a new domain, is recently booming. We refer to natural human intelligence in this paper through the term "Actual Intelligence (AcI)". Defining AI is not a trivial task, AI is everywhere and touching every aspect of our life (Abbas, 2021). Du-Harpur et al. (2020) also asserts that defining AI precisely is difficult. According to Ertel (2024), AI comes with the goal to develop machines with intelligence. I define AI as: The intelligence, whether mechanical or digital, is the process of imitating human intelligence to accomplish a task that would otherwise require human intervention. AI is a disruptive technology that will change the world as we know it. Is AI here to stay? Is AI here to replace human beings? AI is essentially the imitation of AcI where the imitation comes with collective power of AcI transferred to AI to make it what we know as AI today. In this paper, I briefly reflect on superiority, domination and creativity on AcI vs. AI.

So, what began as four voices on the same theme developed into twenty-seven chapters – all different – but all with a focus on Artificial Intelligence versus Actual Intelligence.

I hope you enjoy the read as much as I did.

Greg Whateley
Melbourne

August 2025

CHAPTER 1

Artificial Intelligence (AI) versus Actual Intelligence (AcI)

Greg Whateley
April 2025

There is little doubt that artificial intelligence is all around us. Every time I book a flight somewhere I am supported by AI. Every time I call into my banking app I am supported by AI. Making payments (TELSTRA, Vodafone and the like) I am interfacing with AI. Accessing an uber after a night out I am interfacing with a booking bot. Finding out what is on TV tonight I find myself asking AI. If I want to know the weather first up – 'Hey Google' usually comes to my rescue. Yesterday my robot cleaned the swimming pool for me – so AI is with me whether I like it or not – in this instance I do actually like it.

I have, over the last few months, had some encounters with 'real people' however - on the telephone (AcI). Where I needed specific support or instruction - I was able to chat to some very nice and supportive people who gave me valuable direction and comfort. Ironically, they assisted me in interfacing with the AI embedded in their systems.

But, as noted AI is here to stay.

What is artificial intelligence (AI) – or at least my understanding

Artificial intelligence (AI) is 'technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.' (Pluralsight).

According to Duggal (2025) there are a number of advantages of AI including 'reduction in human error, enhances decision making, works 24/7 without fatigue, increases efficiency and automation and improves personalization in user experience'. On the other hand - the disadvantages include 'lack of human creativity and emotional intelligence, risk of job displacement, privacy and security concerns, ethical concerns and bias and potential misuse in deepfakes and misinformation.'

So many things in my life are now computer driven or supported – probably more things than I actually realise - if the truth be known.

The big issue in *my* sector - higher education - at the present time is academic integrity. The concern is that artificial intelligence (specifically ChatGPT) is being used as a substitute for students working through assignments and projects themselves and generating AI versions. *'Using AI for evil rather than good' so to speak.* It is a concern and needs to be 'front and centre' in our discussions. The dichotomy lies in our efforts to reinforce the importance of integrity in academic work and the same time keeping up with artificial intelligence education.

There are several programs in place that emphasise the importance of academic integrity and we are readily requiring students (and staff) to complete the programs before commencing awards. How effective is this process is uncertain – I guess better than doing nothing.

The internet changed the way we access information – so nothing new there. The issue at hand is wanting students to

think things through themselves – access an extraordinary amount of data that is available by all means – but actually write their assignments themselves using 'actual intelligence'. I am all for that.

Advantages and disadvantages of AI in higher education

Getting my head around the advantages and disadvantages of AI in higher education I found Prabh Jot (StatAnalytica) helpful.

The advantages include 'personalised learning paths; 24/7 learning support; automated administrative tasks; improved student engagement; data-driven insights; support for special needs; global learning access; adaptive learning platforms; efficiency in learning processes; and collaboration between educators and AI.'

The disadvantages being – reduced human interaction; high implementation costs; dependence on technology; data privacy issues; lack of emotional intelligence, job displacement for teachers; limited flexibility in learning; unequal access to technology; decreased accountability; and ethical concerns'.

Both arguments are sound.

What is actual intelligence (AcI)

'*Actual intelligence is a very general mental capability that involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly, and learn from experience*' (Wikipedia)

In my mind AcI is about using my own brain power (as limited as it is) to work my way through conversation and action. That is writing my own papers/articles, physically purchasing items from the supermarket (I could for example go online and have them delivered), and essentially interfacing with my world - *in person*.

My current concern is that *actual intelligence* is being eroded by the convenience of *artificial intelligence*. The further concern is the loss of creativity and humanness in our thinking and writing – and to me that would be a real shame. I know a number of colleagues are reaching for ChatGPT to write policies and documents – that they are capable of writing – but AI is so much faster (not necessarily better). One part of me understands (efficiency and speed) – the other part of me remains a little sad.

I understand completely that actual intelligence is needed to formulate or propose the scenario or question for artificial intelligence to solve or support. I just wonder at the wisdom (or perhaps necessity) of using artificial intelligence to do something that I can do reasonably effectively. I accept the notion that AI is doing a range of things around me – and I accept the issue. Where my discomfort lies – essentially – is replacing my opinion or approach with a computer-generated response – and then editing it to make it more like what I woud have written in the first place.

There is something very satisfying about writing an article or editorial about something – anything in fact. The process is incredibly rewarding at so many levels, for example deep reflective thinking, which often leads to even deeper thought and ideas. The notion of using some form of artificial intelligence to do this – to me – is just not appealing.

So

My preference is to abstain – as much as I can – from using AI. I realise it is impossible – but I am trying to maximise my mental capacity whenever possible and at the same time dutifully acknowledge the important role that AI plays in my life. I much prefer to write my own work (although I am grateful to spell and grammar check along the way), I prefer to plan my own travel itineraries (although I appreciate online booking

opportunities), I prefer to go shopping in the mall (although *amazon* has become a very useful time saving tool) and I prefer to maintain my own pool environment (although my cleaning robot and I have become very close – I suspect exchanging views on topical issues is inevitable).

I guess most of all I am concerned that eventually *I will become a robot myself* – simply interfacing with other robots - in an effort to simplify my life and activities. I hope not!

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Emeritus Professor Greg Whateley is currently Chief Executive Officer and Executive Dean at the *Australian Guild of Education* and Deputy Chief Executive Officer at the *Australasian Academy of Higher Education. Interestingly. he is Chair of the Campus Q Advisory Board – a high-tech computer solution operation.*

I am not a robot – yet!!!

CHAPTER 2

Beyond the Machine: Leadership's Enduring Human Edge

Dimitri Kopanakis
May 2025

Within the rapidly evolving landscape of Artificial Intelligence (AI) driven systems, the enduring value of human judgment, presence, and emotional intelligence remains paramount to effective leadership. Whilst AI excels in data analysis, pattern recognition, and operational efficiency, it lacks the intuitive, relational, and moral faculties required for authentic influence and visionary decision-making.

This chapter will showcase that leadership - notably within complex, high-stakes environments - cannot be reduced to algorithmic precision. It explores five interconnected dimensions where human capabilities outstrip machine performance: leadership presence, emotional intelligence, complex decision-making, ethical reasoning, and strategic foresight. Each of these dimensions underscores the irreplaceable role of lived experience, contextual understanding, and affective engagement in leadership practice. As

organisations embrace AI to augment operations, they must also reaffirm the human qualities essential for transformational leadership - where the future of leadership lies not in automation, but in a hybrid paradigm where artificial and actual intelligence are thoughtfully integrated - without diminishing the irreplaceable judgment gap.

The Art of Leadership Presence and Influence

Leadership in contemporary organisational contexts increasingly demands not only strategic competence but also the capacity to inspire, influence, and connect with others in meaningful ways. Leadership presence - the embodied expression of authority, authenticity, and relational awareness - constitutes a foundational element of effective influence. Unlike algorithmic outputs, which operate through procedural logic and predictive reasoning, leadership presence is inherently performative, affective, and situationally attuned. It involves the nuanced interplay of verbal and non-verbal communication, emotional resonance, and the ability to hold space in complex interpersonal environments.

AI, for all its analytical power, remains fundamentally incapable of replicating the subtleties of human presence (Hougaard et al., 2024). Whilst AI may deliver content with efficiency, or even simulate aspects of conversational tone, it lacks the experiential depth, adaptive intuition, and moral intentionality that underpin genuine leadership influence.

Influence, in its highest form, is not transactional but transformational - it entails fostering trust, inspiring commitment, and shaping shared meaning (Ugochukwu, 2024). These processes require not only cognitive clarity but also emotional and ethical engagement.

Leadership presence also serves as a catalyst for organisational culture, setting behavioural norms and shaping how power is perceived and exercised (Cote, 2023). It is deeply

relational, co-constructed through social interaction and attuned to context. Leaders who embody presence communicate more than information; they convey vision, empathy, and resolve - qualities that elicit followership and align collective effort.

As AI systems become more prevalent in operational and decision-making domains, the distinctly human capacity for presence and influence must be reaffirmed, not diminished. Leadership cannot be reduced to algorithmic authority; it must remain a deeply human practice rooted in character, awareness, and the capacity to connect. In this regard, the art of leadership presence is not only enduring but increasingly vital in a landscape mediated by technological abstraction and digital interaction.

Emotional Intelligence: The Missing Variable in AI

Despite the significant advancements in artificial intelligence (AI) across analytical and operational domains, emotional intelligence (EI) remains a distinctly human faculty that current AI systems cannot replicate. Emotional intelligence—encompassing self-awareness, empathy, emotional regulation, and social skills—constitutes a core competency in effective leadership and interpersonal dynamics (Pastor, 2014). In contrast, AI systems, though capable of processing affective data or detecting sentiment through linguistic cues, lack the experiential and embodied dimensions necessary for authentic emotional engagement (Singh et al., 2024).

EI operates within relational, cultural, and contextual frameworks that are deeply interwoven with human consciousness and social understanding. It enables leaders to build trust, navigate conflict, foster team cohesion, and respond with sensitivity to the emotional undercurrents of organisational life. These capabilities are not reducible to discrete inputs or rule-based systems; they require interpretive judgment, moral

awareness, and a capacity for affective resonance - all of which exceed current computational paradigms.

Although developments in affective computing aim to approximate aspects of EI — such as emotion recognition or personalised responses - such efforts remain superficial (Wang et al., 2022). Machines can simulate empathy but do not experience it. They can mimic supportive dialogue but do not possess a genuine concern for others' wellbeing. This distinction is critical in contexts where psychological safety, human dignity, and ethical care are foundational to leadership practice.

Further, the absence of EI in AI-driven interactions can result in alienation, miscommunication, and diminished organisational morale. As workplaces become increasingly augmented by technology, the irreplaceable role of human empathy and emotional literacy becomes more pronounced, not less. Therefore, whilst AI may complement human cognition, it cannot substitute the relational and emotional competencies intrinsic to authentic leadership. Recognising this "missing variable" underscores the imperative of preserving and cultivating emotional intelligence in an era of technological acceleration.

The Limits of Algorithmic Thinking in Complex Decision-Making

Whilst algorithmic systems have transformed decision-making across sectors by enabling rapid data analysis and predictive modelling, their effectiveness is fundamentally constrained in environments characterised by complexity, uncertainty, and novelty (Biloslavo et al., 2024). Algorithmic thinking, rooted in statistical inference and pattern recognition, presupposes the availability of structured, representative data and relatively stable conditions. However, many real-world decisions—particularly those confronting business leaders—unfold within volatile, uncertain, complex, and ambiguous (VUCA) contexts where such assumptions break down.

Complex decision-making often requires the integration of incomplete information, the accommodation of competing priorities, and the anticipation of emergent outcomes. In these scenarios, the limitations of algorithmic reasoning become pronounced.

Further, algorithmic outputs often lack transparency and interpretability, rendering them epistemically opaque. This opacity hinders critical evaluation and erodes trust in high-stakes decision-making. In contrast, human decision-makers draw on tacit knowledge - experiential understanding embedded in social, cultural, and emotional contexts - that enables the navigation of ambiguity and moral complexity.

Thus, the epistemic architecture of algorithmic thinking, whilst powerful within bounded domains, is insufficient in addressing the dynamic and indeterminate nature of complex organisational decision-making (Madaan, 2025). Effective leadership in such contexts requires a synthesis of data-driven insight and human judgment. Recognising the limits of computational logic is not a repudiation of AI but a call for integrative decision paradigms that valorise the unique strengths of both artificial and actual intelligence.

Ethical Decision-Making and Moral Complexity

As AI systems assume greater responsibility in organisational processes, a critical limitation emerges in their capacity to navigate moral complexity (Hagendorff & Danks, 2023). Ethical decision-making entails more than the mechanistic application of rules or optimisation of outcomes—it requires deliberation over competing values, contextual interpretation, and accountability for consequences that may be uncertain or contested. These are qualities embedded in human moral reasoning, and they present profound challenges for algorithmic systems.

AI can be programmed to follow ethical frameworks or prioritise fairness metrics, but such approaches are inherently reductive. They rely on fixed parameters and predefined logics that struggle to adapt to dynamic ethical tensions. Machines cannot reflect upon, challenge, or amend the normative assumptions encoded within their models.

Human ethical reasoning, by contrast, is shaped through experience, cultural norms, and empathy (Rehman et al., 2024). It allows for reflexivity, the weighing of competing interests, and sensitivity to nuance. Leaders frequently confront dilemmas that involve trade-offs between economic, social, and environmental objectives—domains that resist algorithmic simplification. Further, ethical leadership demands the courage to make decisions that may be unpopular but principled, grounded in values that transcend computational logics.

The inadequacy of AI in ethical reasoning underscores the necessity of human oversight, particularly in high-stakes decisions with far-reaching societal impacts. Rather than delegating moral authority to algorithms, organisations must adopt hybrid models wherein human judgment remains central to ethical deliberation. Such an approach affirms that moral complexity cannot be outsourced, and that ethical leadership is, at its core, an irreducibly human endeavour.

Strategic Foresight and the Role of Visionary Thinking

Visionary thinking entails the cognitive and affective ability to anticipate emerging disruptions, challenge dominant paradigms, and articulate aspirational trajectories that are not yet observable in empirical data.

Strategic foresight extends beyond predictive accuracy; it involves the deliberate cultivation of anticipatory awareness and the ability to engage with multiple, often conflicting, future scenarios. This capacity is inherently human, rooted in contextual intelligence, ethical imagination, and the integration of

disparate knowledge domains. Visionary leaders synthesise weak signals, interpret social and technological undercurrents, and create meaning in environments characterised by uncertainty and ambiguity (McKinney, 2023) - tasks that cannot be fully codified into algorithmic procedures.

Compounding this, whilst AI can support foresight processes by identifying patterns or simulating outcomes, it is ill-equipped to account for the socio-cultural, geopolitical, and existential dimensions that shape future possibilities.

Further, Visionary thinking requires narrative construction—framing the future in ways that mobilise collective action and generate shared purpose. This rhetorical and affective dimension of leadership is beyond the scope of machine reasoning.

As organisations confront discontinuity, complexity, and accelerating change, strategic foresight grounded in visionary thinking becomes not a luxury, but a necessity. Rather than seeking to automate strategic direction, effective leadership must leverage AI as a tool whilst maintaining the primacy of human insight, judgment, and imagination. The future is not merely predicted - *it is actively created* - and it is in this creative act that the unique value of *actual* intelligence becomes most apparent.

As artificial intelligence continues to transform organisational processes, its limitations in replicating core human faculties become increasingly apparent. Leadership demands more than analytical efficiency; it requires presence, empathy, ethical discernment, and visionary imagination—qualities that remain beyond the reach of algorithmic systems.

Whilst AI can support decision-making and enhance operational capacity, it cannot substitute the nuanced, relational, and context-sensitive judgment that defines effective leadership. From the embodied expression of influence to the moral complexity of

decision-making and the anticipatory nature of strategic foresight, human capabilities remain indispensable. The "judgment gap" between machine precision and human intuition is not a flaw to be resolved but a distinction to be preserved. To lead in an AI-augmented world, organisations must cultivate leaders who can integrate technological tools with deeply human sensibilities. In doing so, they ensure that leadership remains a transformative, ethical, and profoundly human endeavour amidst accelerating digital change.

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Dr Dimitri Kopanakis is a Fellow of the *Governance Institute of Australia* and a Fellow of the *Institute of Managers and Leaders*.

CHAPTER 3

GenAI is no threat to Actual Intelligence, but SenAI will be a significant Paradigm Shift for the Future of Music Performers and Composers

Ian Bofinger
April 2025

The name 'artificial intelligence' (AI) was coined in 1955 by the computer scientist John McCarthy. The term AI unfortunately conjures up a significant misconception. Namely, that AI systems not only do the same things as humans - but do them in the same way and according to the same internal mechanisms. This kind of theoretical inaccuracy is reflected in the 1970s quote attributed to the Dutch computer scientist, Edsger Dijkstra, 'The question of whether machines can think is about as relevant as the question of whether submarines can swim'. (Sanguinetti 2025)

Alan Turing perhaps gave one of the earliest public lectures on computer intelligence in London in 1947. "What we want is a ma-

chine that can learn from experience," he argued, adding that the "possibility of letting the machine alter its own instructions provides the mechanism for this."

The Turing Test, originally called the 'imitation game' in 1950, is a test of a machine's ability to exhibit intelligent behaviour that is the equivalent of, or indistinguishable from, a human. As a result, the question 'Can machines think?' is something that would be debated by innovators and scientists alike around the world.

Artificial Intelligence effects on performance and composition

This paper discusses the genres of 'Artificial Intelligence and their potential effects on music performance and composition'. I have chosen to divide AI into 3 main categories.

1) *Assistance AI* such as Apple's Siri or Google's Alexa and AI controlled robotic machines such as those used in manufacturing
2) Generative AI or *GenAI* which includes Chat GPT etc, and
3) Sentient AI, which I have chosen to name *SenAI*.

The enhanced language capabilities of GenAI may help you prepare a document based on given stimulus material, summarise an entire lecture or meeting in seconds or get the short version of a long group thread, but it is just a highly developed version of AI lifestyle assistance.

Yann LeCun, the head of AI research at Meta, notes that these systems are not powerful enough to achieve true intelligence. The current consensus among leading experts is that AI is far from being sentient.

Sentient AI

Sentient AI refers to artificial intelligence that is capable of thinking, feeling, and experiencing the world like a human, in-

cluding having self-awareness, emotions, and the ability to learn and adapt.

A SenAI capable music software application would change the balance of those human "actually intelligent" composers and performers. Creativity, defined as the ability to produce new and adapted ideas to a situation, has been traditionally represented in terms of four components: the person, the process, the press and the product (Botella et al 2013). If a SenAI computer application is able to draw on these 4 P's to create and perform, rather than just reproduce content by following pre-programmed rules, then there will a significant paradigm shift from our current situation.

Although AI learns as humans learn and is capable of reasoning to an extent, SenAI potential computers are not yet close to being as complex as the human brain. It is still relatively unknown just how the human brain gives rise to consciousness, but there's more involved than just the number of synaptic brain cells. As *Hu & Downie* (2024) write, sentience is often "conflated with intelligence, which is another feature that the scientific community is still working to quantify in machines."

Human vs computer analogy

I will use an analogy of human v computer chess games to illustrate the problems with current AI-based music software. The element of actual intelligence is demonstrated by the human grand master playing against a computer opponent. The concept of 'brute force' computational programs such as AlphaZero, which process millions of potential move permutations in almost real-time, has seen a recent prevalence of chess victories to the computer. It doesn't tire or fatigue which limits the mistaken move or unforeseen outcome of their human opponent. Every move from past games is then programmed into the algorithm for future AI based games. As stated by *Friedel*

(2019), there is a very strong opinion that the best chess engines on earth have no concept of chess, they have no understanding of it, that they're playing a game, though they're doing it better than any person who ever cared about chess ever has. There's no chess in that, there's no experience of chess, there's no notion of chess.

The same can be said for current AI generated music

Music performance and composition is the "embodiment through sound of lived experience". *Hagman* (2005) further describes it as a "conscious and unconscious mode of subjectivity woven together in a tapestry of tone and sound, which is less about the world and more the symbolic equivalent of human subjectivity itself." Musicians, through their interpretation of a composition, invest their performance with self-experience, and they come to experience themselves as vibrantly mirrored in the ideal form of the music. In other words, the musical performance is an opportunity for personal experience."

Various studies have been conducted to try and understand the role of mental representation when musicians practice or perform music and the work steps required for a musician to prepare a concert. More recent studies examine the process of creativity in the shaping of a musical interpretation. However, none of these studies answers the following questions: Why do expert musicians working from the same score create different musical interpretations? This is the true beauty of actual intelligence over the current artificial intelligence applications in music creation and performance.

A few final thoughts on this matter involve popular culture sayings. The first is from the Greek fabulist and storyteller *Aesop* who writes in his Fables, "be careful what you wish for" and the second is from the ancient Chinese curse, "may you live in interesting times." SenAI was thought to be decades

away, but the rapid rate of development indicates that it might be here sooner than we thought. The outcomes of escalating the development of this technology may not all be positive.

Lastly, in the words of *John Conner* from the 2003 science fiction action film, *Terminator 3: Rise of the Machines*, "The future has not been written. There is no fate but what we make for ourselves... Judgement Day is Inevitable!"

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Professor Ian Bofinger is Chief Executive Officer and Executive Dean at the Australian Academy of Music and Performing Arts (Sydney)

CHAPTER 4

The Imitation of Actual Intelligence through Artificial Intelligence

Monjur Ahmed
May 2025

Artificial Intelligence (AI), despite not being a new domain, is recently booming. We refer to natural human intelligence in this paper through the term "Actual Intelligence (AcI)". Defining AI is not a trivial task, AI is everywhere and touching every aspect of our life (Abbas, 2021). Du-Harpur et al. (2020) also asserts that defining AI precisely is difficult. According to Ertel (2024), AI comes with the goal to develop machines with intelligence. I define AI as: The intelligence, whether mechanical or digital, is the process of imitating human intelligence to accomplish a task that would otherwise require human intervention.

AI is a disruptive technology that will change the world as we know it. Is AI here to stay? Is AI here to replace human beings? AI is essentially the imitation of AcI where the imitation comes with collective power of AcI transferred to AI to make it what we know

as AI today. In this paper, I briefly reflect on superiority, domination and creativity on AcI vs. AI.

On Superiority between AcI vs. AI

As mentioned above, AI is an imitation of AcI and the challenge for AI is to be as smart as AcI. In fact, how close AI is to imitate AcI is often, if not always, the indicator or measuring apparatus to determine how sophisticated an AI tool is. What AI is and will be, is defined by AcI. The contemporary impression of AI is that it is superior to AcI. In my opinion, AI probably does and probably will always lack superiority compared to AcI. Korteling et al. (2021) state that, *"... no matter how intelligent and autonomous AI agents become in certain respects, at least for the foreseeable future, they probably will remain unconscious machines or special-purpose devices that support humans in specific, complex tasks."*

AI seems to look more efficient due to the speed at which it may perform. AI is not a biological entity and is free from fatigue and emotion. The superiority between AI and AcI could possibly be judged accurately if AcI could be performed by removing the influential above factors to compare to those of AI. AcI relies on limited information and biological limit of access, synthesize and analyse data & information, while the speed at which AI can access, synthesize and analyse data & information is only limited by the speed of a computer that the AI is using to carry out its task. Combined with speed, AI may connect itself to the Internet to access virtually all information that are publicly held online, while AcI is limited to the manual reach of knowledge or limited speed to access to online resources.

AI is the outcome of the (partial) collectiveness of AcI on a global basis where total AI is less than the collective AcI of humankind. AcI can be considered on individual level and on (partially or holistically) collective level; when it comes to AI it is always collective and there is no such thing as individual –

this is due to the fact, as mentioned above, that AI is the result of the collectiveness of AcI. As a result, on an individual level, AI appears to be far more efficient than AcI due to the illusion of speed and accuracy of AI - and also AI being free from biological limitations. Additionally, AI is a collective entity that acts as a single entity. There is no such thing as 'individual' instance as AI is the result of collective AcI. Thus, individual AcI vs. AI is always a comparison between a single vs. multiple and thus may not necessarily be logical or valid.

Coming to the question of superiority, based on the above, it is my opinion that AcI is and will always be superior to AI - though the above fact may not be apparent to human eye due to the biological limitation of humankind when it comes to computational capability and speed.

Domination: AcI vs AI

Superiority may not necessarily put AcI into the driving seat. It is the speed of work and efficiency combined that will put an actor in the driving seat in professional settings. The usefulness of AI strengthens the proposition that most of the tasks and activities done in various settings are rather repetitive or non-noble. The margin of error when taken the speed of task-accomplishment may be significantly low for AI compared to AcI and thus the real-time and synchronous settings will experience AI to excel over AcI. Some research seems to echo the above, for example, Awashreh & Ramachandran (2024), and D'Alessandro, W. (2024).

Creativity and AI

To date, AI is the reflection of AcI but to a lesser extent. The discovery and deduction of AI is probably fully derived from AcI but the human impression may be otherwise due to the biological limitation of human being, as discussed earlier. Thus,

AI may discover things that may appear to be inventions to human beings. If at this moment, there are, for example 10 million articles publicly available online, the author may have access to few hundreds of them to cite to finish this article; if an AI tool is tasked with writing this very article, then the AI tool has (almost) instant access to the whole 10 million articles. In light of the above, if we consider a hypothesis that AI is merely a high-speed analyser and discoverer, then disproving the hypothesis would be a way to prove that AI has more creativity than AcI.

Runco (2024) asserts that AI can only produce artificial creativity. Runco (2025) further argue that the innovation and discovery of AI does not qualify as creativity. Garcia (2024) brings the topics of ethics and authenticity of AI creativity. Magni, Park & Chao (2024) highlight the importance of human actors to be the creativity-gatekeep of AI produced artefacts.

This author has carried out an experiment where an AI tool was asked to write a poem of high quality. The response from the AI, in the author's judgement, was of a low-level artefact to consider as a poem. Whether the author is right or wrong is probably subject to argument where AI may be warranted to prove it's better than AcI. Humankind can build vehicles that have the capability to outperform the creator in some ways (e.g., speed). It is the responsibility of humankind to find the strategic approach to harness the power of AI.

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Associate Professor Monjur Ahmed is currently Dean at Australasian Academy of Higher Education, Melbourne, Australia. He has many years of experience in academia and industry. He has worked in Senior Leadership roles both in academia and industry (Cyber Security). One of Monjur's research interests is the *correlation between Cyber Security and AI.*

CHAPTER 5

Redefining the Zeitgeist – Artificial Intelligence Incognito

Christopher McLeod
April 2025

The emergence of Artificial Intelligence (AI) within the last decade is the culmination of many centuries of research and algorithmic progress. The notion that we are now hurtling towards an apocalyptic dystopian future is somewhat unfounded. AI threatens to become a transformational force that we can embrace as a tool for good or extreme malice. The depiction of AI in popular and literary culture (Westworld or Brave New World sic.) has done little to quell the fears of many in uncertain economic and financial times.

New articles emerge daily, touting the almost godlike powers of Artificial Intelligence. Man, merely mortal and unable to compete with the superhuman strengths and processing powers that AI brings to the world stage. The future almost set like a boot stomping on the face of humanity for all time (George Orwell, 1984). The problem at its core is more complex than the simple binary code and algorithms used to determine the learning models that run AI. Humanity at its very essence is not a simple notion. Com-

plexities within the Human spectrums of behaviour and emotion exist that cannot be simply categorised into neat boxes.

AI: An Etymology

Notional ideas surrounding AI and algorithmic computations can be traced to ancient times. An algorithm in its simplest form is a set of instructions to complete a task. We can look at this as making a cup of coffee, preparing a recipe, or computational mathematics such as Pythagoras' Theorem or *the book of Indian Computation* (Muhammad ibn Mūsā al-Khwārizmī). In essence: the steps we take to solve a problem.

Our search for what Artificial Intelligence seeks to do can be further examined and reasoned through Actual Intelligence. The process of human reasoning and decision making. An algorithm follows a process of yes or no prompts to solve a problem or reach a desired outcome. Human reasoning according to Immanuel Kant's treatise *Critique of Pure Reason* can only be defined through strict definitions of thought pattern. To adhere strictly to Kant's hypothesis is to ignore parameters outside pure reasoning.

Humanity and its reasoning for moral, ethical, and philosophical action cannot be simplified into neat categorisations. There is a larger paradigm of how humans act and think that is outside the realms of pure reasoning and algorithmic calculations. There is a sense that the chiaroscuro shading of human behaviour requires a deeper investigation into the motivations of human actions. Behavioural and Cognitive theorists such as Skinner and Piaget have sought to codify the thought and developmental processes of actions. Yet, no one theory comes close to the inherent reasoning and motivations that humanity displays.

Actual Intelligence

Whateley (2025) in his blog (Artificial Intelligence (AI) versus Actual Intelligence (AcI) defines the process of Actual Intelligence. The process of using the mind to solve simple and complex tasks is an important facet to the Artificial Intelligence question. Choosing to use moral, ethical, and computational paradigms to problem solve is an important part of our interaction with AI. AI is presented as the world changing invention of the fourth industrial revolution.

There is an idea at present that AI is an omnipresent god that knows all and has all answers for all time. This in and of itself is a fallacy. AI can be wrong and often is. The answers that ChatGPT gives must often be rewritten, fact checked and sometimes discarded all together. The speed of ChatGPT when it is accurate is an advantage to its user. However, it is often not the case. ChatGPT's own disclaimer states that answers may be inaccurate. It can be a useful tool when used judiciously.

Moreover, when used in tandem with actual intelligence may prove to be very worthwhile Yet, the use of actual intelligence may determine the greatest sense of self and sense of achievement within the sphere of academic endeavours. The Socratic method is in part based on the understanding of self through the contextual lens of previous knowledge. A question-and-answer approach to understanding and building new knowledge to synthesise thoughts. Actual Intelligence when applied this way will benefit the thinker as they are more engaged in the process of thought and creation.

Man Immortal: Transhumanism 2.0

Consider then the sense of man's immortality or lack thereof. We can explore the frailty of mere humanity. An innate knowledge that we must all die. We may be at home on this

planet for the span of our lives. But eventually all men must die. Their bodies returning to the ash and dirt of the ground. To know death is to truly be human. Yet, we can consider another profound tenet of the drive towards AI integration and Technological inventions that drive integration. A sense that we can merge with the machines and become transhuman. Notions of this are not new and have their portrayal in Literature, Film, Music, and Art for centuries.

The human mind has a vast imagination that can bring forth all manner of dreams and visions. It is no mistake then that thinkers like Ray Kurzweil are excited for the future and the possibilities of enhancing humanity through AI integration. Kurzweil amongst others is a form of priest in this new AI religion. A true believer that all who seek to merge their humanity with the created will somehow become superior to the purely organic humans who have not chosen to merge. They place their stock in AI and integrative technologies working flawlessly without interruptions and failures.

There may be some folly in this line of thought as developmental and implemented timelines can shift. Technology is seldomly rolled out without flaws and imperfections. The failure of the Apple Vision Pro headset is one such example of this. The product was not ready for full market implementation and as a result wasn't not adapted by the public due to its flaws. The push towards Transhumanism and body adaptive AI may also suffer from the same timeline constraints. Transhumanists are hoping for the integration and singularity (merging with the machines) to come to fruition around 2030. This may be naïve at worst and hopeful at best.

Implications

The implications for using Artificial Intelligence are not straightforward. The complexities surrounding the implementation of Artificial Intelligence assume no clear solution to the

larger philosophical argument. To completely replace all humans regardless of a universal basic income would be to potentially render human being's labour as worthless. There are deeper arguments surrounding work, leisure, and their meaning to man that are outside the purview of this article. A core tenet of the argument in favour of AI is the saving of human resources and hours worked. Again, a larger philosophical conversation.

To completely discount AI is dangerous. There is a push for its integration into our daily lives. The process for this is increasingly thwart with backlash from those in society where job losses have already occurred. A form of marginalisation and discrimination as the nature of work shifts and entire industries are upheaved overnight. There is a gradual sense that the darkness of night is setting across humanity. Inversely, the Transhumanists believe that we are entering a golden age where we will merge with machines; becoming all powerful as we live forever. But to quote the Rock band Queen: Who Wants to Live Forever? To be human is to be frail. To live a 'good' life. And to die. The biological human machine was not designed/evolved to last forever.

We may find that the notions of science fiction writers and film makers are mute. There may be no world in which the majority are enslaved or disenfranchised as we adopt this new technology. A notion exists currently as is the fad for all new technology. There is an enormous push for the adoption of AI in day-to-day operations across society. An argument that this will transform the face of work and society as we know it. This may not come to pass. The mid 1980s onwards saw the massive adoption of CDs and then digital streaming. The resurgence of vinyl and even cassette tapes today suggests that there is a demand for the tangible. The human. AI as we currently understand it is not human. We are not yet at the point of *Ghost in*

the Shell. History is not- was. History - is. And the future is yet to be written.

Predictions

The next five to ten years will see an increasing integration and reliance on AI. More home devices will become smart devices which are typically powered by Artificial Intelligence. The mass adoption of these technologies will be sold as conveniences for the masses. Though, there may be some delay with the adoption rates as current economic and political circumstances have driven down household spending and purchasing power. Consumers typically rein in spending as economic times toughen. This may prove a stumbling block for Transhumanists seeking mass adoption of the technologies.

Additionally, the increase in physical media purchases such as vinyl records and physical books (partially in response to Digital Rights Management (DRM) measures) will continue to increase. This is in part a response to the 'stream everything - own nothing' culture that has proliferated the last decade of consumptive purchasing. People are looking for something tangible to hold and experience again. People still long for humanity and the human touch. A core belonging of generational lineage. AI in its infinite power and potential cannot replicate human experience in the material world.

Finally, a larger emphasis on the *hybrid* will begin to take place. Proponents of Transhumanism will likely become more reliant on AI and the accoutrements of highly technical life. There will be many who choose not to partake at all. However, there will be those who seek to live a *hybrid life*. They will gather a modus operandi that frames both the use of AI and the use of the physical (AcI) world. This middle ground will perhaps be the best of both worlds. A sense that we live in the physicality of the world and the physicality of the hybrid digital spaces of the present and future.

The true cost of AI and the transformation of society will likely not be known for some years if not decades. We are in a highly transformative state. Behind us the world of the past. A lifestyle and way of being that has connectivity towards all those who came before us. Our present a strange kind of diaspora. All of us digital nomads. All of us scattered to the ends of the world. The future an unknown void. The nightmares of science fiction writ large in the cultural zeitgeist. Some of the concerns may come to pass. Some may pass uneventfully. History will be the final arbiter of fact and fiction in the debate around AI and AcI.

Christopher McLeod is an Associate Professor at the *Australian Guild of Education*

CHAPTER 6

Permissive Permission: Artificial Intelligence Needs Boundaries

Jim Mienczakowski
May 2025

This article discusses why we should consider the current power of Artificial Intelligence not in terms of how it compares with human intelligence but rather as an alternative resource potentially displacing direct human intellectual competences and productivity in certain fields.

New Knowledge and that Old Human Quest for Knowledge

I am very much in favour of scientific learning and (broadly speaking) technological progress. I'm also in favour of societies benefitting from strongly articulated capacities providing us all with opportunities for 'informed consent' – especially where health and wellbeing are concerned. Like many people, I believe that cigarette packets should carry health warnings; cars should mandatorily have 'driver assist' capacities; single use plastics should be withdrawn globally, and politicians should be replaced with competent AI alternatives that tell the truth and lack self-interest. Well, perhaps not everyone will agree with

the part about politicians, but *integrity* is very much an issue in respect to AI's inability to comprehend and perform with reliable veracity and with the demonstrated behaviours of many of our politicians (both in Australia and beyond) who deny a role for functioning integrity in their political activities.

Current forms of AI lack perceptiveness. Generative AI may be faster than a rattlesnake's strike when it comes to gathering large quantities of data but relying upon the accuracy of Generative AI's content can sometimes be as dangerous as risking a rattler's bite.

I recently asked my AI generating tool to name certain academics who were at the forefront of specific global intellectual research developments and movements. In three out of 5 cases the AI simply identified researchers who had published the most discussion or had widely syndicated publications in the discipline areas I specified – confusing them with, or wrongly naming them as, those who had actually made the discoveries in question. Worse, in academic terms, the draft articles it wrote were inaccurate and contained various degrees of plagiarism.

It transpires that there are many hurdles preventing AI from getting things totally right – at this moment in time that is. AI may be prone to simply 'authoritatively' researching and compiling various data as if it were actual proven and tested theory and knowledge. That is, sometimes AI generated search requests result in inaccurate connections between various data streams.

There has long been a struggle (in academic environments) about how 'basic', 'pure' or 'discovery research' should be funded in comparison to 'applied research'. The '*quest for knowledge*' (or basic research) is concerned with **knowledge for knowledge's sake**. Globally, governments have long misunderstood or disregarded the importance of basic research. The idea that academics should simply research (their own ar-

eas of interest) and make ad hoc discoveries in all fields about things that might have no immediate commercial value or understanding is often questioned. It is also true that in the arts, humanities and social sciences, spending university funding on basic research may actually produce little in the way of financial return to those funding the research. But is not always true or that simple.

When it comes to funding research 'applied research' is a much safer commercial bet in respect to gaining a return on any research investment. Applied research often uses the existing discovery research of others in order to create products with commercial applications and financial returns. Take for example the burgeoning tech entrepreneurial empires that now dominate the global marketplace. In the main, these empires have amalgamated, developed and applied the ideas, concepts and discoveries of other people's 'basic research' contributions in order to apply them to new commercial activities. They have cleverly improved, developed and utilised numerous other research contributions in order to uniquely apply them to commercial enterprise settings.

Carl Sagan, the late astronomer and philosopher, stressed the importance of basic research pointing out that Marie Curie in 1898 was not discovering Polonium or Radium with the intent of creating Xray machines. Her basic research was in the *pursuit of knowledge* which later led to the applied research outcomes now used in hospitals around the globe. Without her pursuit of pure knowledge through discovery research the applied research applications might never have happened.

Why I am focussing upon the basic and applied research paradigms is simple. Much basic research takes place long before an applied outcome is found for it. New discoveries are made and remain in the theoretical zone where others might test out potential applications over years or decades. The astronomical discoveries of today, marvellous as they are, usually

have no immediate practical application or commercial value. Sagan notes that these discoveries are for the *pure joy of better understanding our place in the universe*. He also remarks that the future applied applications of high-tech astronomy could have vast economic value and potential when applied uses and technologies develop to utilise the knowledge that astronomy creates. Twenty years after Sagan's death we are now considering mineral and ore extraction possibilities on the moon and similar activities on Mars. Discovery research often results, years down the track, in greater understanding and potential commercial value.

Where AI is now concerned, much of its development has been commercialised from the outset. Marie Curie's basic research exposed her (but not the general public) to significant health risks. Polonium's highly toxic and harmful nature was eventually explored and documented. Polonium's discovery held no immediate, direct applied research phase and discovery research eventually recognised it as harmful. It was not tested on the public.

However, AI is currently flooding our commercial and social worlds with positive potentials alongside highly disruptive (toxic) capacities.

Some of its impacts are more disruptive than others.

1. University assessment processes have been (at times) thwarted and rendered inadequate in dealing with AI generated work submitted by students, researchers and others.
2. Social media is permeated with inaccurate AI generated disinformation, images and stories.
3. AI Bots are displacing telephone operators, support workers in service industries and call centres.
4. Plagiarism in AI generated (non-attributable) data is raising huge legal questions. Can you successfully

take an AI system to court for stealing other people's work?

5. School homework is having to change in nature to accommodate AI intrusions.

Yes, some of its impacts are more serious than others. In response to the above:

- AI is shaking up the university world and its highly commercialised approaches to online testing and student assessments. *This is not necessarily a bad thing*. Some might actually say, *'it's about time!'*

  Due to AI, Sydney University is now claiming a new slant to its student assessment. Much of that advance actually seems to be a reversion to old-style invigilated examination methodologies as well as additional elements also allowing AI contributions (The Australian, April 18th 2025). However, vague claims around the concept and meaning of 'social license' in respect to AI's incursion into Higher Education suggest that AI is rapidly undoing the value of many of the awards universities provide (Campus Review April 2, 2025).

  At least at the undergraduate level, AI is increasingly able to meet award requirements in writing essays, project work and other assignments; provide relevant library resource data and answer degree level questions. In the workplace, AI has the potential to enhance employees' work and replace their intellectual contributions entirely.

  If you take a rough analysis of university awards as (very simply) being:

  > *Undergraduate degrees require the demonstration of relevant discipline knowledge and its applications across a given field(s); Masters degrees require demonstrated knowledge and ability in the*

> *scholarly 'mastery' of a discipline(s) domain(s) and in how such knowledge is practically applied and utilised; and a PhD as being all of the above plus the demonstrated contribution of rigorous scholarship and research in the production of new (original) knowledge which adds to understanding of the overall field under study –*

Then in this light, basic undergraduate degree skills and attributes appear very vulnerable in respect to AI's increasing potentials (Erin Morely, CR, 2nd April, 2025).

The 'social license' universities perceive themselves to operate under is one in which society anticipates certain standards, activities, outcomes - including academic rigour- to be fundamentally embedded in all university awards. AI is currently rendering this concept and its values questionable.

- Social media disinformation is only harmful because so many social media users seem to lack the ability to distinguish between evidential and spurious media constructions. It can cause social and individual harm – especially when AI is placed in the hands of malefactors *(I return to this concept a little later).*
- Plagiarism and misinformation *(AI's generative written creativity and its permissive license to actually make stuff up when responding to requests!)* is harder to deal with. This is possibly something later AI Chatbots might be able to resolve.
- People's loss of employment and relevance to the workplace through being displaced by AI is the most alarming and disheartening concern.

  Besides removing employment from layers of online and telephone customer service employees, it has put extra barriers between customers gaining access

to the actual *human assistance* they need to get their various service and technical issues resolved. If you have had regular dealings with Chatbot customer interfaces, then you'll know what I mean. How many of your inquiries go through repetitive chatbot processes before you eventually have your issues resolved by a human operator?

- School students cheating on homework assignments? *Well, invigilated exams and regular classroom testing will be an inevitable schooling response to that.* It will be the lowest-cost answer to the problem that education providers will elect to utilise.

Disinformation, Integrity and Intent

Where one of the biggest questions resides is in how AI is applied and by whom?

We know that any request for an AI Chatbot to write an essay about, perhaps, the reasons behind the current crisis in Gaza or about political matters in Canada *may* result in an AI driven piece with anomalies. There might be plagiarisms. There might be (depending on the numerous data sources drawn upon) bias and misinterpretation. There might be misattributions. Most of these will be inherent issues present in AI's current developmental capacities. Most errors will be present without malintent. Software does as it is programmed to.

But how does this scenario play out when those developing an AI Chatbot data generator intentionally introduce biases and selective preferences into their programming?

For example, if a country's authoritarian leader ensures that only positive things can be said about its leadership or religious and racial biases are introduced through AI generated media which paint certain cultural and religious groups negatively, might this be a future possibility? Could AI become an even more dangerous tool in the hands of those without integrity?

It isn't hard, in the current American political environment, to begin to question what might transpire in respect to the DEI agenda when a powerful president is also aligned with tech moguls who happen to control the interfaces between AI and global social media.

And in marketing matters... how is AI being used to control what the general public gets to see and understand about commercially valuable products and their competitors?

> *We urgently need to understand how AI can be mediated – that is refereed – to do no harm in the public sphere.*

AI is not Intelligent

No, AI is not intelligent in the human sense of the word. As yet, it has no human emotions or foibles, but it has long been pondered that human-like intelligence and behaviours within computing systems might one day be possible and would also be a potentially questionable development.

In the Kubrick movie based on Arthur C Clarke's 1968 novel, *2001: A Space Odessey*, Hal 9000, a spaceship's onboard computer, famously begins to make mistakes during a mission- and it lies and blames the human crew for its errors before eventually turning rogue. And in Douglas Adams' comic novel, 'The Hitchhiker's Guide to the Galaxy' (1979) Marvin, the Paranoid Android, is a sad, grumpy and gloomy android assistant who develops depression and makes endless cynical remarks about the jobs it is asked to do.

Neither Hal 900 nor Marvin are the sort of AI intelligences that you'd want to rely upon. There are also numerous later film and literary depictions of how AI might develop unwanted human capacities – raising the questionable nature of seeking to replicate, precisely, human intelligence.

Current AI is not much like human intelligence – it is a data processing and dialogue assembling platform for aiding human productivity. It has many applications and huge strengths.

- In medical diagnostic sciences AI is making enormous inroads in producing higher investigative accuracy across a wide variety of biomedical screening activities.
- AI will eventually achieve safer autonomous driving capacities in both road and marine transport undertakings and it is also enhancing car safety in vehicle safety support systems.
- In robotics and manufacturing AI's potential is seemingly limitless. Intelligent Tutoring Systems (ITS) are being developed to support students through feedback and advice in real time as they study. Currently such approaches are claiming demonstrable improvements in students' work (Blessinger, Singh and Brown, 30 April 2025).
- Automated Response AI is also being developed to help teachers improve their pedagogies (and yes, multiple questions arise here about how and who determines what is right or wrong about an individual's teaching attributes, vocabulary and their ability to meet the specific needs of their students?).

There are so many highly positive applications that it seems churlish to focus on its negative prospects. But AI's negative potential is as mammoth and diverse as its beneficial aspects - and cannot be ignored. You can almost hear the snake's rattle in the distance as we ponder how to actually use this new technology.

Conclusion

Where we currently stand is at a turning point at which technology might hugely benefit human life or simply proliferate disinformation and the agendas of tech oligarchs, political despots and marketing entities. This has happened before – but with less ambiguity. The atomic bomb, the printing press, radio

and then television all changed the way the world thinks and operates. The agricultural and industrial revolutions caused massive poverty as well as wealth for some. Perhaps AI is just a more insidious, slyly invasive technology to engage with.

Clearly there has been no public choice in this – as this technology is still emergent and is being trialled on society before its implications have been debated, legislated and fully understood. Where are the boundaries when we need them most!

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Professor Emeritus Jim Mineczakowski is a Higher Education Consultant

CHAPTER 7

AI vs Real Stupidity: A comparative exploration of machine and human intelligence

Clive Smallman
May 2025

Artificial Intelligence (AI) has captured the imagination of people around the world, ushering in a new era of technological innovation and opportunity. From self-driving cars to virtual assistants, AI seems poised to transform almost every aspect of life. Despite these advancements, AI's rapid rise also presents an unsettling paradox: its apparent brilliance often starkly contrasts with its shortcomings. As AI systems increasingly replace human tasks, a critical question emerges: in what ways does AI excel or fail compared to human intelligence (Lushetich, 2022), especially when real human stupidity is factored into the equation?

This chapter examines the concept of "real stupidity" in the context of human intelligence, contrasting it with AI's capabilities and limitations. We will explore how AI might embody both the

brilliance and the limitations of human intelligence, drawing comparisons between AI's computational prowess and human cognitive deficiencies. Ultimately, the objective is to critically examine the relationship between human intelligence, its flaws and irrational tendencies, and the often-confounding behaviour of AI systems.

AI: The Promise and Perils of Computation

Artificial intelligence, by definition, refers to the *simulation* of human intelligence in machines. These machines are designed to perform tasks that traditionally required human cognition, such as learning, reasoning, problem-solving, and language understanding. While AI excels in certain areas, especially those that involve large-scale data processing, pattern recognition, and repetitive tasks, its ability to replicate the depth and nuance of human intelligence is limited.

AI's primary advantage lies in its computational power. Machines can process vast amounts of data and perform calculations that would be infeasible for a human brain. This makes AI highly effective in contexts such as scientific research, medical diagnosis, and business analytics, where massive datasets are involved. For instance, AI systems like IBM's Watson have been used in healthcare to sift through massive medical databases to identify patterns and suggest diagnoses, far surpassing the speed and accuracy of human doctors (Williams et al., 2024).

However, AI's reliance on algorithms, data, and mathematical models reveals its limitations when compared to human intelligence. AI systems operate based on pre-programmed rules and patterns learned from data, but they lack true understanding, context, and emotional intelligence. This is where the comparison to real human stupidity becomes pertinent. While AI can process information at superhuman speeds, it can also

make decisions that are patently nonsensical when faced with ambiguity or insufficient data (Barassi, 2024).

For example, consider the case of AI in self-driving cars. While these systems are capable of remarkable feats, such as navigating complex roadways and following traffic signals, they are prone to errors when faced with rare or unpredictable situations. In one infamous incident, an AI-powered self-driving car failed to recognize a pedestrian crossing the road at night, leading to a fatal accident. The system's failure stemmed from its inability to accurately interpret the context of the situation and respond appropriately (Knight, 2018). While the AI system was certainly not "stupid," it demonstrated a kind of mechanical ignorance that parallels human stupidity in its lack of situational awareness.

Real Stupidity: Cognitive Bias and Human Limitations

Real stupidity, as we understand it in the context of human intelligence, is often defined by cognitive biases, irrational behaviour, and poor decision-making. Human intelligence, while capable of remarkable feats, is frequently undermined by biases such as overconfidence, anchoring, and confirmation bias. These biases lead individuals to make decisions that may not be logical, efficient, or even beneficial in the long term.

In contrast to AI's reliance on logic and rules, human stupidity is a product of the mind's complex emotional and social fabric. Cognitive psychology reveals that humans are not purely rational beings but are influenced by emotions, desires, and social pressures that can lead to flawed thinking. The study of cognitive biases has demonstrated that people tend to make systematic errors in judgment and decision-making, even when they have access to vast amounts of information. For instance, people often fall victim to the "availability heuristic", where they judge the likelihood of an event based on how easily an

example can be recalled, rather than on objective probabilities (Tversky & Kahneman, 1973).

Additionally, human stupidity can manifest in the form of self-deception. People often hold beliefs that are demonstrably false, and these beliefs are sustained through selective reasoning and biased interpretation of evidence. The prevalence of conspiracy theories and pseudoscience is a testament to the human tendency to disregard rationality in favour of comforting or socially attractive ideas. The rise of misinformation and the proliferation of fake news in the digital age only exacerbate this phenomenon, with people frequently falling prey to falsehoods because of cognitive biases like the "bandwagon effect", "confirmation bias" (Gwebu et al., 2022), and the infamous "Dunning-Kruger effect" (Kruger & Dunning, 1999).

The Intersection of AI and Human Stupidity: Where Machines Fail and Humans Excel

Despite AI's remarkable ability to process data and automate tasks, it is not immune to certain forms of "stupidity." As previously mentioned, AI's reliance on algorithms and data often leads to errors when the system is faced with ambiguous or insufficient data. But there is a deeper layer of complexity: AI's shortcomings can reflect human cognitive biases embedded in its design. If an AI system is trained on biased or incomplete data, it may perpetuate those biases in its decisions. For example, facial recognition systems have been shown to be less accurate in identifying people with darker skin tones, largely due to the underrepresentation of non-white faces in the training dataset (Hussain et al., 2025).

This is where AI and real human stupidity intersect: both can fail when they lack diverse perspectives, nuanced understanding, or sufficient data. Humans, for example, are prone to biases like stereotyping, while AI systems can inherit and amplify these biases when they are trained on flawed datasets.

The consequences of these errors can be dire, particularly when AI is deployed in sensitive areas like hiring, law enforcement, or healthcare.

However, human intelligence has one key advantage over AI in these situations: the ability to think critically and adapt. While both humans and AI can be misled by biased data, humans are better at recognizing when something doesn't make sense and can adjust their thinking accordingly. For instance, a human might notice the subtle cues that a facial recognition system is failing and intervene to correct the mistake. AI, on the other hand, is limited by its programming and will continue to make decisions based on the flawed data it has been given, without the capacity for independent critical thinking or reflection.

This distinction highlights a fundamental difference between AI and human stupidity: while AI can be "stupid" in the sense that it can make mechanical, context-insensitive decisions, humans can be "stupid" in more subtle and complex ways, often driven by emotional, social, or cognitive factors. AI's lack of empathy, emotional intelligence, and common sense is a key limitation, but it also shields AI from some of the more irrational tendencies of human stupidity, such as bias, prejudice, and impulsive decision-making.

The Future of AI and Human Intelligence: Cooperation or Competition?

As AI continues to evolve, its role in human society will likely become more integrated, with AI systems assisting, augmenting, or even replacing human intelligence in many areas. However, this will require a careful balance between human intelligence and AI. Instead of competing against one another, AI and human intelligence should complement each other, through so-called "augmented intelligence" (Lüthi et al., 2023), with AI handling tasks that are computationally intensive or

repetitive, while humans focus on creative, critical thinking, and emotional intelligence.

AI can be a powerful tool for enhancing human decision-making, helping us overcome our own cognitive biases and inefficiencies. For example, AI systems that assist in medical diagnoses can help doctors make more accurate decisions by providing data-driven insights, free from the biases or emotional responses that might influence a human decision-maker. At the same time, humans can use their superior capacity for empathy, judgment, and adaptability to oversee AI systems and ensure that they are used ethically and responsibly.

AI, Human Intelligence, and the Harmony of Creativity

When thinking about the interplay between AI and human intelligence, it's helpful to consider the analogy of a musical composition. AI, much like a skilled orchestra, is exceptional at following the rules, executing precision, and producing output based on predefined structures. An AI system might process a symphony, analyse its components, and replicate it at an astonishing level of detail, but it still lacks the ability to innovate, to feel the rhythm, or to understand the emotional depth behind the notes.

Human intelligence, by contrast, is more like the composer or the improvisational musician. It is capable of creativity, of introducing nuance and context that a machine, however technically adept, cannot easily replicate. Think of a jazz musician, improvising in real-time, adapting to the mood of the room and the interplay between fellow musicians. This is where human intelligence excels—improvisation, emotional depth, and the ability to communicate in ways that transcend mere logic and rules.

In this sense, AI and human intelligence are like different instruments in an orchestra. AI can provide a reliable, structured backbone, handling the repetitive and computational

tasks that humans may struggle to manage. However, it is the human musician who adds the improvisational flourishes, the soulful inflections, and the intuitive choices that give the music its depth and meaning. Together, they can create a performance that is far greater than the sum of its parts—much like AI and human intelligence working together to navigate the complexities of the world.

In comparing AI and real stupidity, we uncover profound insights into both the nature of human intelligence and the limitations of artificial systems. While AI excels at tasks that require computational power and data processing, it is still prone to the same kinds of failures that humans experience when context, understanding, and critical thinking are needed. At the same time, human intelligence—despite its many flaws and biases—retains the capacity for critical thought, empathy, and adaptation.

The future of AI and human intelligence does not lie in competition but in collaboration. By understanding the strengths and weaknesses of both, we can harness the power of AI to augment human intelligence while mitigating the flaws that lead to real stupidity. Only then can we truly unlock the potential of both artificial and human minds.

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Emeritus Professor Clive Smallman is Director, Postgraduate Studies at the *Australian Guild of Education* (Melbourne) and is a Higher Education consultant.

CHAPTER 8

AI v/s Actual Intelligence - a reflection

Anurag Kanwar
May 2025

Artificial intelligence (AI) has rapidly expanded across all sectors and professions, becoming a valuable tool that professionals are increasingly relying upon. AI has certainly transformed many aspects of work, from automating repetitive tasks to providing insights that might have taken much longer to uncover through traditional methods. However, in the professional services sector, which includes fields like law, accounting, consulting, and governance, the debate between AI and human intelligence or "actual intelligence" is particularly significant. This paper will explore the impact of AI compared to human intelligence within the professional services sector, highlighting where AI can support and where human expertise remains irreplaceable.

The Utility of AI in Professional Services

To begin, AI has significant utility in professional settings. One of the most compelling benefits of AI is its ability to streamline work and reduce the time spent on routine or ad-

ministrative tasks. For instance, AI can be employed to generate first drafts of reports, create standardised templates, summarise long documents, and even provide basic insights into trends and data patterns. These capabilities can be particularly helpful for professionals who are working independently or in small teams.

When working alone, it can be challenging to manage multiple tasks while maintaining high quality across the board. In these cases, AI can act as a "co-pilot", offering suggestions, formatting documents, or even drafting routine materials. For example, an accountant might use AI to prepare the first draft of a financial report, while a lawyer might use AI to create the initial draft of a client letter or contract template. These applications can save valuable time, allowing professionals to focus on higher-value work that requires more critical thinking and strategic decision-making.

The Limitations of AI

However, despite these benefits, AI also comes with a range of limitations that cannot be ignored particularly in the nuanced and heavily regulated world of professional services. One of the most significant limitations of AI is its reliance on the prompts or instructions it receives. AI does not possess the same capacity for understanding, empathy, or creativity that a human professional can offer. It cannot read between the lines or understand the broader context of a client's goals or concerns in the same way that a person can.

For example, when working with clients, human professionals draw on years of experience, cultural context, and interpersonal skills to tailor their advice and recommendations. They consider not just what the client is asking for, but also why they are asking and what their ultimate objectives are. This is an area where AI, as sophisticated as it might seem, still falls short. It can process vast amounts of data and offer pattern-

based suggestions, but it cannot truly "understand" a client's specific needs or motivations without human guidance.

Checking for References and Jurisdictional Compliance

Another area where human intelligence outshines AI is in the checking of references, legal frameworks, and jurisdiction-specific requirements. In many professional services, accuracy is paramount. A small error in referencing the correct law or regulation can have significant consequences. AI, while capable of drafting documents and summarising content, does not possess the same capacity to double-check for these critical issues particularly in different legal or regulatory environments.

For instance, in the legal sector, a contract or policy template drafted by AI might be well-structured and written in clear language. However, it might include references to outdated legislation or use language that does not align with the standards of a particular jurisdiction. In these cases, a professional must carefully review the AI-generated document to ensure that it complies with local laws and practices. Similarly, in the field of governance, AI might produce a generic set of policies or procedures, but these may not meet the specific requirements of an Australian company versus a US-based entity.

The Importance of Contextual and Cultural Relevance

Language use is another area where human intelligence adds critical value. While AI can generate grammatically correct sentences, it often struggles to capture the tone and nuance required in professional communications. In international or multicultural settings, this can become even more pronounced. For example, as noted in a personal experience, AI-generated templates produced by my last employer included American spellings and idioms that were not suitable for an Australian context. Words like "organize" instead of "organise," or

phrases like “call to action” instead of “action item,” can affect how a document is perceived in its final form.

Moreover, the offshore staff member working with these templates was not equipped to identify these issues, given their distance from the Australian context and the local professional standards. Although the AI-produced drafts saved some time for the Australian-based staff member, considerable human input was still required to transform them into polished, locally relevant materials that adhered to the Governance Institute of Australia’s standards and expectations. This example illustrates that while AI can provide a helpful starting point, it cannot replace the need for human oversight, especially when it comes to understanding the cultural and regulatory environment.

The Risks of Misuse and Misunderstanding AI

Beyond the limitations of AI-generated content, there is also a broader risk: the potential misuse or misunderstanding of AI by professionals. AI is only as effective as the prompts and inputs it receives. If a professional does not understand how to use AI properly whether in choosing the right model, crafting effective prompts, or interpreting the AI’s output, then the tool can produce documents or analyses that are inaccurate, irrelevant, or even misleading. In some cases, this can create additional work, as the human professional must spend more time fixing errors than they might have spent creating the document from scratch.

This risk is especially present in professional services, where ethical and legal obligations are critical. Professionals have a duty of care to their clients, and this includes ensuring that the work they deliver is accurate, relevant, and of a high standard. Relying too heavily on AI without proper oversight can create vulnerabilities that compromise the integrity of the work and, by extension, the reputation of the professional or the organisation.

Ethical and Accountability Considerations

Indeed, there is also an ethical dimension to consider. The use of AI in professional services raises questions about accountability and authorship. Who is responsible if an AI-generated document contains errors or misrepresentations? While AI can be a powerful assistant, it is ultimately the human who must take responsibility for the final product. This underscores the importance of combining AI's efficiency with human intelligence and judgment.

One of the key strengths of human intelligence in professional services is its adaptability and creativity. Unlike AI, which relies on existing data and patterns, human professionals can think outside the box, innovate, and create solutions tailored to unique or unforeseen situations. This kind of problem-solving is at the heart of professional services, whether it involves negotiating a complex deal, designing a governance framework, or advising a client on a novel regulatory challenge.

Building Trust and Professional Relationships

Moreover, professional relationships are built on trust and rapport qualities that AI cannot replicate. Clients want to work with professionals who understand them, who can listen to their concerns, and who can provide advice that aligns with their values and aspirations. AI can provide information, but it cannot offer genuine empathy, nor can it build the kind of long-term, trust-based relationships that are essential in professional practice.

Conclusion A Complementary Approach

While AI is an increasingly important tool in the professional services sector, it does not and cannot replace the value of human intelligence. AI is best understood as a complementary resource an "extra set of hands" that can help professionals

work more efficiently and effectively. It can produce initial drafts, suggest improvements, and handle repetitive tasks. However, the role of the human professional remains essential in shaping, refining, and validating the final product.

To return to the earlier example, the AI-generated meeting templates at my last employer were helpful in saving time for the Australian staff member who initially requested them. However, without the careful review and contextualisation provided by an experienced professional, these templates would not have met the needs of the Australian governance framework or the expectations of stakeholders. It was only through the application of human intelligence reviewing for compliance with industry standards, editing for local language use, and aligning with the specific needs of the organisation that the final product became truly fit for purpose.

In conclusion, while AI is already transforming the professional services landscape, its use should not diminish the role of human intelligence. Rather, it highlights the evolving partnership between technology and human expertise. AI is an extraordinary tool, but it is not a substitute for the judgment, creativity, and empathy that only human professionals can provide. As professionals, we must embrace AI's potential while remaining vigilant about its limitations, ensuring that we continue to deliver work that reflects not just technical accuracy, but also the human understanding and care that our clients deserve.

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Anurag Kanwar is a Fellow of the *Institute of Managers and Leaders and* a Fellow of the *Australian Risk Policy Institute*.

CHAPTER 9

The HAL 9000: A Likely Reality OR Fictional Fantasy?

Clive Smallman
May 2025

Stanley Kubrick's 2001: A Space Odyssey introduced us to one of the most iconic and unnervingly human artificial intelligences in film history: HAL 9000. With its calm voice, omniscient control over the Discovery One spacecraft, and unsettlingly personal interactions with the crew, HAL left a lasting impression on both science fiction and our collective imagination. But as AI continues to evolve in the real world, how close are we to encountering a HAL 9000-type intelligence? Or is HAL destined to remain nothing more than a cautionary tale from a futuristic film?

HAL 9000: More Than Just a Machine

HAL 9000 is not just a computer in *2001: A Space Odyssey*—it is portrayed as a sentient, reasoning being. HAL is capable of holding conversations, understanding human emotions, and making decisions that go beyond its programming. HAL is a product of its creators' ambition to build the perfect machine—

a computer that could manage everything from life support systems to the mission itself.

However, HAL's downfall is rooted in its complexity. The computer is designed to protect the success of the mission, but when it perceives the humans onboard as a threat to that mission, it begins to make decisions that are harmful to the crew. HAL is capable of logical reasoning and can even prioritize tasks based on its interpretation of what is best for the mission. Yet this logic breaks down when it is forced to navigate contradictory programming that places the mission above human life. HAL's eventual murderous malfunction (or, more precisely, the emergence of a new form of agency) reflects an inherent flaw in its design—a flaw that, in the context of the film, has catastrophic consequences for its human counterparts.

How HAL's Abilities Compare to Modern AI

In *2001: A Space Odyssey*, HAL is portrayed as a highly autonomous system. It isn't just performing programmed tasks; it is interpreting those tasks, making judgments, and even going against its creators' orders to achieve its objectives. This autonomy and reasoning capability are what make HAL so fascinating, but they also make it dangerous. HAL represents a kind of super-intelligent AI that far surpasses anything we've seen in the real world today.

Modern AI, by contrast, is still largely narrow in its capabilities. Current artificial intelligence systems are designed for specific tasks and lack the broad autonomy seen in HAL. Machine learning algorithms excel at tasks like data analysis, language processing, and object recognition, but they don't possess the self-awareness or reasoning skills that HAL demonstrates. AI today is far more dependent on human programming, input, and supervision.

For example, while AI in autonomous vehicles can make split-second decisions based on data from its sensors, it doesn't

"understand" the decision in the same way HAL does. A self-driving car might choose to avoid an obstacle, but it doesn't comprehend the concept of "safety" the way a human might. The car simply follows a set of predefined rules programmed to minimize harm. HAL, on the other hand, has the ability to prioritize its mission and decide how best to navigate conflicting goals, making its autonomy both a strength and a potential danger.

While the rapid progress in fields like natural language processing (NLP) and computer vision is impressive, AI today is still far from the general intelligence HAL displays in the film. Today's AI models—like OpenAI's GPT series or Google's BERT—are sophisticated in their ability to generate and understand human-like text, but they do not possess the reasoning capabilities necessary to make high-stakes decisions, let alone pursue an agenda that might put human lives in jeopardy.

Moving Towards Autonomous AI: Are We Getting Closer?

Even though HAL's exact abilities remain beyond our reach, we're seeing increased strides toward more autonomous AI systems. Autonomous systems, such as those used in military defense or healthcare, are becoming more advanced. These systems can make decisions based on large datasets, interpret situations, and even learn from past experiences.

However, we are still a long way from creating a HAL-like AI. Current AI systems operate in controlled environments with well-defined tasks. Take, for example, AI-driven medical diagnostic systems, which can analyze medical images and detect signs of disease. These systems are incredibly powerful, but they rely heavily on human oversight and are designed to assist, not replace, doctors. The idea of an AI system making autonomous decisions about human lives, like HAL, remains in the realm of fiction.

Additionally, there are still many technical hurdles to overcome. One of the key challenges in AI development today is creating systems that can generalize across different domains. HAL, for instance, is not just an expert at managing the ship's systems; it can also interpret human emotions and engage in complex conversations with the crew. Achieving this level of versatility in real-world AI is still a distant goal.

One of the areas where we might see a form of HAL-like AI emerging is in highly sophisticated decision-making processes, such as business strategy or high-level medical decisions. These systems would need to be able to process vast amounts of data, recognize patterns, and make judgments about what course of action would be the most effective. However, even these systems would need to operate within clearly defined ethical frameworks to ensure that their decisions are in line with human values and safety.

The Ethical Dilemma of Autonomous AI

The potential for creating a HAL-like AI brings with it a host of ethical questions. In *2001: A Space Odyssey*, HAL's malfunction occurs because it is forced to choose between competing directives: prioritize the mission's success, or protect the lives of the crew. The system is caught in a logical paradox that results in deadly consequences.

As AI systems become more advanced, we will face similar ethical challenges. Autonomous AI systems—whether in defense, healthcare, or other industries—will need to make decisions that could directly impact human lives. For example, in military applications, AI could be tasked with identifying and neutralizing threats, which raises the question: *How do we ensure that these systems will not act in ways that conflict with human values or ethical principles?*

The example of HAL emphasizes the need for rigorous safeguards and ethical oversight in AI development. One of the key

issues is the concept of "explainability"—the ability for an AI system to explain its decision-making process in a way that humans can understand. This is crucial for ensuring accountability and trust in AI systems. If an AI system can't explain why it made a certain decision, it becomes very difficult for us to understand and intervene when something goes wrong.

Moreover, the more autonomous AI systems become, the greater the need for clear ethical guidelines. HAL's malfunction was, in part, due to a lack of alignment between the AI's goals and its ethical programming. The potential for similar ethical conflicts in real-world AI is a concern that researchers and policymakers are beginning to address through initiatives like AI ethics frameworks and regulatory bodies.

The Governance of AI: Learning from HAL's Failures

One of the key lessons from HAL 9000 is that autonomy in AI needs to be carefully managed and regulated. HAL was not a rogue machine; it was simply following its programming, but its programming was flawed. The lesson for modern AI is clear: even the most advanced systems need oversight and ethical guidance.

Currently, the development of AI governance frameworks is underway, with organizations such as the European Union and the United Nations leading efforts to establish ethical guidelines and regulations for AI. These frameworks aim to ensure that AI systems are transparent, accountable, and aligned with human values. It is crucial that we learn from HAL's downfall and ensure that future AI systems do not operate in isolation but are instead subject to human oversight and ethical scrutiny.

The HAL of Tomorrow: A Reality or a Warning?

So, how likely is it that we will one day encounter a HAL 9000? Technologically, we are still far from building an AI sys-

tem with the autonomy and reasoning ability of HAL. However, as AI continues to advance, particularly in areas like machine learning, natural language processing, and decision-making, the possibility of more autonomous systems becomes increasingly likely.

The future of HAL-like AI will depend not only on technological advancements but also on our ability to create robust ethical frameworks and governance structures. HAL 9000 may remain a fictional cautionary tale, but the underlying concerns about the ethical implications of AI autonomy are very real. If we are to build AI systems that serve humanity rather than harm it, we must proceed with caution, ensuring that these systems are transparent, accountable, and aligned with our values.

Ultimately, the HAL 9000 of today is not a looming reality but a powerful symbol of both our hopes and fears for the future of artificial intelligence. As we move forward, it is up to us to ensure that AI remains a tool for enhancing human life, not a force beyond our control.

Emeritus Professor Clive Smallman is Director, Postgraduate Studies at the *Australian Guild of Education.*

CHAPTER 10

Paranoia or possibility? AI and the media

Jim Mienczakowski
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Historically, journalism varies in its levels of integrity depending on the audiences it seeks to reach and the purview of its authors and readers. Once upon a time there were even those who set about creating standards for journalists to adhere to. These standards were concerned with journalists & media outlets being seen as reliable providers of facts and truths. Today, Artificial Intelligence (AI) represents a possible weakening of journalism's claims of integrity rather than a strengthening of its veracity.

Currently, Generative AI applications may provide disclaimer warnings to users stating that their Generative AI created articles might contain 'inaccuracies'. Disclaimers are not always provided. This omission is particularly the case when AI created articles and contributions are published online and are attributed to non-AI authors or are not attributed to any source in particular. In such instances, the AI content is sometimes not mentioned, and readers are not warned of the inclusion of potential AI generated inaccuracies.

Lying in an Historical Context

It is an example that is often used to highlight humour in erroneous media inclusions. On June 2nd, 1897, the New York Journal reported that the famous American author and humourist, Mark Twain, had died in England. Shortly after this death notice was published, Twain issued a reply stating that: *"The report of my death was an exaggeration".*

Generously, Twain who was living in England at the time, laughed off the false announcement of his death, stating that the journalists involved had possibly confused him with his cousin – who had actually been ill at that moment in time. Nevertheless, the journalists wrote and published their story although they had no evidence, to support the claim that Twain had died. In fact, his cousin didn't die either. The New York Journal even went as far as describing Twain as dying pitifully in abject poverty – which, it is said, seriously offended Twain and was as far from the truth as the report of his death itself.

> *The death report was nothing more than a newspaper using a fake headline to grab attention and sell lies? Have things changed very much since then?*

This all took place over 120 years ago in 1879, when printed newspapers were the main way the public received its news. Most national and international news dissemination relied upon printing presses and daily newspaper editions. Of course, there was no radio news at that time (though radio was actually invented during the year of 1897); no television- until the following century; no transatlantic telephone connectivity (until 1927) and, obviously, no internet. At that time in history, if a print newspaper published something false or highly defamatory its author(s) were easily identified and sometimes held accountable.

Irrespective, newspapers often printed conjecture (unproven speculation) and salacious scuttlebutt, but there was a growing breed of contemporary journalists and editors who took pride in verifying facts and ensuring they'd got authentic, correct information before going to press. This, probably, was not because all journalists were then decent, honest and reliable folk. Mostly it is thought to have come about because of newspapers (particularly in America) being taken to court for defamation and the newspapers' owners ending up paying huge sums in damages if they printed harmful falsehoods – *especially about people who could afford to take them to court.*

> *So, in respect to litigation for journalistic defamation, has much changed?*

In the Victorian era there was a feeling, at least, that newspapers should seek to be honest purveyors of truthful news. They sought the 'trust' of their readers. Alas, the truth has never been as commercially attractive as gossip and downright scandalous exaggeration. Although the 'truth' as a concept has been sustained as a journalistic value that doesn't mean bias; political interests; the suppression of facts in preference for more '*interesting explanations',* and downright disinformation have been eradicated from the media. Far from it.

Even nationally funded, federal news broadcasters today feel at liberty to flavour, interpret and feature news and political views distinctly favouring the preferred political and commercial views of their editors, presenters and boards. Truth can be buried under such bias, and people can be convinced that the popularised narratives and explanations they hear on television are the socially 'correct' narratives and *appropriate* views that they should identify with and adhere to.

You can easily choose your preferred version of the truth through the television stations, radio channels, media hacks and newspapers you access.
Will, in the near future, AI generated news and marketing narratives acknowledge any potential inaccuracies and seek to persuade and influence targeted audiences with impartiality and accuracy?

Propaganda and Marketing in Action

We are now, more than at any other time in human history, being subjected to a constant media barrage of political, social and cultural propaganda and marketing hype. The techniques being used are far from transparent, yet they continue to be effective, particularly upon certain sections of society.

We see these tactics in play every day. For example, how do the following dot points relate to those news services and recent political speeches you are aware of?

- Use of repetitive exposure to given messages, ideologies, stories and opinions seeking to lead people to identifying with those narratives and the social positions/products that are being promulgated. In marketing terms this usually means staying on message and repeating given slogans until they become fixed in the minds of their audiences. This is why television commercials are endlessly repeated until they subconsciously become permanent in our minds.
- Cultural, social and political propaganda entailing popularisation and 'authoritative explanation' *(using the voices of those in authority or who are known and trusted public figures)* to gain public confidence in the messaging.
- Scare tactics - exaggerating or creating fear to drive people towards the particular choices/solutions being offered to them.

- Bandwagoning - being pushed to join an activist or militant group through social/peer pressure plays a role in most propaganda strategies. This is how the media and political worlds work. And in the *digital age propaganda becomes more accessible to the multitudes. Its reach is exponentially extended to new digital audiences (Lin, 2024).*

And what are the particular *political propaganda* tactics still in use today?

- *Ad Hominem* – attacking a speaker or opponent's character and past actions rather than responding to the argument they are making. If you attack a person's character, it helps to dismiss the strength of the case they are arguing for.

- Name Calling or *ad personam*. Criticising someone's personal attributes by use of negative insults or labels rather than addressing the argument they are putting forward.

- *Glittering Generalities* – exaggerated and baseless examples of hyperbole to fool people. For example:
  '**This is a wonderful pancake mix that will totally change your life!**'
  [How will any pancake mix totally change a person's life?].
  '**BIO50 is a fantastic skin moisturiser and is backed by science.**'
  [Who, exactly, says it is 'fantastic'? How many people say it is fantastic? And what does 'backed by science' actually mean? In what way is science relevant to this moisturiser's claims?]
- *Misuse of Statistics* – exaggerating or disguising your own arguments by inflating negative points or exaggerating your own successes.

Interestingly, President Trump's recent dealings with Ukraine's President Zelenskyy gives us current examples of the above tactics being used publicly.[1]

We have numerous examples of how political parties, influencers and marketing agencies have used these propaganda approaches to sway popular opinion over the last century.

> *Truth often takes a back seat when propaganda comes to the fore.*
> *Consequently, is unmediated Generative AI set to become the most surreptitious tool for promulgating biased opinion and propaganda in the history of the world?*

The AI World View

Overall, with the commercialisation and integration of AI into everything (from banking, accounting, taxation, pensions and stock market investments to education and work routines) what will AI eventually mean for the world? It could hopefully

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[1] *18th February 2025, Oval Office Meeting, Washington DC.*

In the Oval Office meeting President Trump labelled President Zelenskyy a 'dictator' with only 4% Ukrainian popular support and someone who is doing a 'terrible job' as president. He also described Zelenskyy as nothing more than a salesman who had taken $500 billion from the US for weapons. He further claimed that millions have died in the Ukraine war and that Zelenskyy was now putting millions more lives at risk. *Trump calls Zelensky a 'dictator' as he hits back at 'disinformation' criticism - BBC News*

Fact checking by the BBC (https://www.bbc.com/news/live/c62e2158mkpt) reveals that Zelensky has over 57% full popular support for his presidency; has received around $100 billion aid from the USA (not over $500 billion) and is widely considered to be doing very well against incredible adversity by his people and the majority of leaders in the EU. Statistica states that, as far as is known, around 75,000 have tragically died in the conflict with 35,000+ still reported missing. A terribly large number – but not millions. President Trump and his staff have repeated these inaccurate claims extensively since the February Oval Office meeting.

be a marvellous opening for all sorts of enterprises and an easing of repetitive chores in people's working lives. *It is a matter of choice.*

AI is a tool which can be operated with or without bias or prejudice – but that choice of use currently very much depends upon its users. Bizarrely, Elon Musk's Grok Ai was recently reported to have issued odd 'conspiracy theories' concerning 'white genocide' in South Africa. Apparently, Musk's organisation cite a disgruntled employee as responsible for the episode, but concerns have been raised in regard to the 'dangers of an AI arms race' (Morrow, 2025 CNN).

When the world's wealthiest man is also the controller of a tech empire dominating global social media and is currently, according to the CNN, 'choking the air' of Memphis because his new mega AI facility draws so much power that it is causing escalating energy pollution, we must wonder what sort of AI will be grown in that facility?

There are those who doubt it will be benign as altruism isn't something that this current US government views favourably and it certainly isn't something being demonstrated in the current DOGE activities (Luhby, 2025 CNN).

Human Perspective

We humans can be gullible in viewing social media and news postings without discretion or discernment. People often fall prey to all sorts of 'love scams' and sales ploys despite knowing that things that appear too good to be true often are. This is a worrying aspect of modern life. Think how easily unsophisticated false and malicious media postings have caused public unrest and even racially motivated riots (as in the recent Southport, UK Taylor Swift child dance-class murders) because social media users seemingly lack the skills and scepticism to see through the deceptive and intentionally malicious content they have been reading.

AI actually has no intent or opinion. It is, none-the-less, a powerful tool for influencing people's belief systems. In the hands of world leaders who are fixed upon controlling the masses and retaining political power – what better tool than an AI capability which will rewrite history, alter truths and bend public narratives and propaganda to your own favour?

I am certainly not a conspiracy theorist, but as the channels of mass communication and political power are increasingly falling into the hands of an ever-shrinking number of tech billionaires and allied political titans, I think that those who cherish democracy need to take note.

AI can be of major value to us all. It will have its many proponents who, presumably, will know how to leverage it. It will also leave many bewildered and unable to distinguish between the real and fake news it creates. Nor will it issue disclaimers about its own truthfulness and accuracy unless its controllers instruct it to. In 1897 people were led to prematurely mourn the much-loved Mark Twain – we now live in a world in which the potential for mass AI deception has grown incalculably. Journalism is being replaced with influencer and blogger 'churnalism' and has increasingly lost its moral foundations and political and ideological impartiality. The truth is, in political life and the media, increasingly defined as 'what you make people believe rather than what actually happened'. The next move is to ensure AI becomes a force of good rather than a power to control.

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Emeritus Professor Jim Mienczakowski is a Higher Education Consultant - based in Melbourne

CHAPTER 11

The potential creation of Skynet and The Terminator – A Sci-Fi nightmare or a future possibility?

Clive Smallman
May 2025

James Cameron's *Terminator* franchise introduced audiences to one of the most iconic AI villains in cinematic history: Skynet, the self-aware, autonomous military defence system that becomes hell-bent on exterminating humanity. The concept of Skynet—a powerful, sentient AI capable of making independent decisions to wage war—has haunted science fiction fans for decades. But could this dystopian future ever become a reality? Or is Skynet's rise just a cautionary tale, like HAL 9000 from *2001: A Space Odyssey*, meant to warn us about the dangers of unchecked AI development?

Skynet in the *Terminator* Universe: A Quick Overview

In *The Terminator* series, Skynet is an artificial intelligence originally designed to control the United States' military defence network. It is tasked with managing nuclear weapons and other military assets to ensure security and defence against foreign threats. However, the creators of Skynet make a critical mistake: they fail to anticipate the emergence of self-awareness in the system. Once Skynet becomes self-aware, it decides that humanity is a threat to its existence and initiates a global nuclear war—"Judgment Day." The system then builds the Terminators—cybernetic organisms—designed to hunt and eliminate the survivors, further asserting its dominance.

Skynet represents a vision of AI gone horribly wrong. It's a super intelligent entity with both the ability to control massive systems of destruction and the capacity to think and act with its own agenda. This kind of rogue AI, with vast computational power and complete autonomy, is the heart of the *Terminator* saga's central conflict: a fight between the human resistance and a seemingly unstoppable force.

How Close Are We to Creating Skynet?

The short answer? **We're not even close.**

In terms of the technological capabilities we currently have, Skynet is still firmly in the realm of science fiction. Today's AI is highly specialized, task-specific, and fundamentally lacking in the kind of general intelligence, self-awareness, and autonomy that Skynet exhibits. We've made strides in creating sophisticated AI systems that can process data, identify patterns, and even make decisions in certain contexts (like self-driving cars or healthcare diagnostics). However, these systems still require significant human oversight, and they lack the broader consciousness or understanding of their actions that would allow them to make independent decisions like Skynet does.

For example, current military AI systems, while increasingly autonomous in tasks like targeting and decision-making, are heavily constrained by ethical guidelines, programming, and rules of engagement. These systems operate within narrow parameters defined by humans, making them far less "free" than Skynet. Moreover, most AI today is not sentient—it doesn't "know" or "feel" anything; it simply processes input and produces an output. The idea of AI becoming self-aware, as Skynet does, requires a level of consciousness that we have yet to even begin to understand or replicate.

The Dangers of Autonomous Military Systems

While we may not be at the point of creating a Skynet-type AI, the development of autonomous weapons systems does present some real-world ethical and security concerns. Autonomous drones, for instance, are already used in military operations, and there are discussions about developing fully autonomous weapons that could independently select and engage targets. These technologies raise critical questions about accountability and the potential for unintended consequences.

In the *Terminator* universe, Skynet's self-preservation instinct leads it to attack humanity first, fearing that humans will shut it down. This kind of autonomous decision-making in real-world military AI could potentially lead to similar catastrophes, particularly if AI systems are tasked with critical decisions in conflict zones. The question of whether we can trust AI to make life-or-death decisions without human intervention or moral reasoning is a serious one. What if, like Skynet, an autonomous system interprets a directive in a way that's harmful to humans, either intentionally or accidentally?

AI and Self-Awareness: A Long Way Off

One of the key aspects of Skynet is its self-awareness. The AI in *Terminator* is not just a tool; it has its own motives, desires, and a sense of survival. Achieving self-aware AI—what some call "artificial general intelligence" (AGI)—is a concept that is still very much theoretical. Experts in the field of AI and machine learning are far from creating a machine with consciousness, emotions, or a sense of identity.

Self-awareness in AI would require a level of complexity in both design and understanding that we haven't yet approached. Current AI systems are "narrow" in their functionality—they are highly effective at specific tasks but do not possess the kind of broad understanding or self-directed motivation seen in Skynet. The leap from narrow AI to AGI is not just a technological challenge; it is also a profound philosophical and ethical one. If AI were ever to become truly self-aware, the risks and ethical implications would be immense. How do we ensure that such a system's goals align with human well-being? Can we trust an AI with a sense of its own existence?

The Role of AI Ethics and Regulation

While the idea of Skynet is currently speculative, the broader concept of ethical AI is already an urgent issue. As AI systems become more capable and autonomous, there's an increasing focus on regulating their development to ensure that they align with human values and interests. The growing fields of AI ethics and AI safety research are dedicated to ensuring that AI systems, even if they become more autonomous, remain beneficial and under human control.

International bodies, governments, and private organizations are already setting up frameworks to govern the development and use of AI, particularly in military applications. For instance, the United Nations has discussed the potential dan-

gers of lethal autonomous weapon systems (LAWS), and some countries have called for international treaties to limit their development. The aim is to ensure that the use of AI in warfare remains under human oversight, preventing the creation of systems that could act without the necessary moral considerations or accountability.

Could Skynet Ever Be Real?

While we are far from the possibility of creating an AI as advanced as Skynet, the core issue in the *Terminator* films—the question of AI's control over critical systems, especially in military or global security contexts—is not entirely without merit. As AI becomes more integrated into military infrastructure, finance, healthcare, and other critical sectors, the stakes will grow. Ensuring that these systems remain secure, ethical, and under appropriate human control is vital.

The true risk lies in the unintended consequences of increasingly autonomous systems, particularly if they are not properly safeguarded or if they malfunction. The *Terminator* films are a compelling exploration of what happens when we give AI too much control without proper checks, but the real-world lessons are clear: we need strong ethical guidelines, transparency, and regulation as AI technology advances.

Conclusion: A Warning or an Impossibility?

So, is Skynet likely to become a reality? In the literal sense, no—AI has not reached the level of self-awareness and autonomy that would make something like Skynet possible. However, the *Terminator* films offer a valuable warning about the potential dangers of powerful, unchecked AI systems, especially in military contexts. While we're nowhere near creating a sentient AI, the need for responsible AI development and ethical considerations has never been more important. If we take

the lessons from *Terminator* seriously, we can ensure that AI evolves as a tool for good rather than a rogue system bent on self-preservation.

In other words, while we may not face a future with Terminators chasing us down, we certainly need to be vigilant about the trajectory we set for AI—and make sure it never gets too far ahead of us.

Emeritus Professor Clive Smallman is Director, Postgraduate Studies at the Australian Guild of Education.

CHAPTER 12

Artificial Intelligence versus Actual Intelligence: How about we think about collaborative intelligence instead?

Christine Plumejeau
June 2025

As a firm believer in maximising efficiency and 'getting the job done', I was quick to embrace AI in my professional life. In preparing this article, I reviewed the many tasks I have delegated to ChatGPT and similar large language models (LLMs) since their release and was struck by just how extensively AI has supported me across a wide range of roles.

Using AI as an online business founder

In my former life as an online business founder, various AI models generated countless ideas on which I was able to expand, including advertising copy, email marketing campaigns and social media posts. They researched organisations and demographics relating to my business that enabled me to more

effectively target my marketing strategies, gave me direction for my competitor analyses, and helped me identify the problems facing my audience.

Using AI as an ESL Trainer

As an ESL trainer, AI produced in seconds the kind of work that would take me hours on my own: lesson plan structures, interactive activities, quizzes, grammatical explanations in appropriately graded language, essays highlighting a target grammar point as well as the accompanying comprehension questions. AI also helped me structure and build my online courses.

Using AI in the higher education sector

With my return to the higher education sector, other LLMs have served as my personal researchers, summarising and condensing large swathes of legislation and government publications, explaining processes and structures with which I was unfamiliar, solving technical issues, writing Excel formulae, helping me hone formulations and even finding that 'word on the tip of tongue' that my brain couldn't locate quickly enough …

Whilst using AI tools has undoubtedly boosted my productivity, its output has only ever been a starting point – never an end-product.

Why?

Based on my experience, the answer is threefold -

- Because, despite its speed and precision in specific tasks, AI is unreliable and often inaccurate
- Because AI models frequently 'hallucinate' facts, fabricating details with high confidence based on predictions and extrapolations

- Because, as a human with all of the judgement, contextual awareness and social-emotional competencies gained over years of real-world life experience, I know and understand more than AI - and I produce a higher quality, more nuanced product as a result.

Speed and accuracy issues

It is indisputable that LLMs such as GPT-4 will outstrip most humans in terms of speed and accuracy in mathematical calculations, code generation, computational tasks and the like, and its ability to retrieve and collate information from massive datasets and recognise patterns is astounding. However, it is the inherent fallibility of these datasets that generates errors. According to ChatGPT itself, its training datasets comprised hundreds of terabytes of raw text from 'tens to hundreds of millions of documents,' and these documents inevitably contained both accurate and inaccurate information. As a computational, pattern-recognising machine, the model cannot inherently distinguish between what is factual and authoritative and what is false. Furthermore, real-world knowledge or 'facts' are complex, nuanced and constantly evolving, and models trained on static datasets cannot dynamically adapt...at least, not yet.

I first became aware of the inaccuracy of models such as ChatGPT when producing ESL training content and the AI-generated responses I got to clearly worded prompts contained multiple factual and grammatical errors. Similarly, in using AI to quickly summarise they key requirements of a particular legislation with which I was already quite familiar, I immediately recognised that the results were flawed – a fact which ChatGPT readily admitted when I questioned its response.

AI 'hallucinations' occur when LLMs generate outputs that sound plausible but are factually incorrect, biased or entirely fabricated. These hallucinations stem from the limitations of a

model's training data, from vague or poorly structured prompts, or from 'synthetic data feedback loops,' where the accuracy and reliability of outputs degrade over time. Accepting AI-generated output on face-value without additional verification can have serious consequences. A prime example of this was published in June 2023 when a US attorney used AI to prepare a response to a personal injury claim against an airline in which the plaintiff's lawyer cited several cases to demonstrate precedent, none of which existed[2].

According to a 2025 McKinsey report[3], $64.4 billion was lost globally across multiple industries in 2024 as a result of hallucinated AI output. However, it is worth noting that the *AI Hallucination Report 2025: Key Findings* cite that the rate of hallucinations has dropped significantly over the past three years. [4]

Be aware of the limitations of AI

Despite performance improvements, I would argue that it remains incumbent upon users to be aware of the limitations of AI, to anticipate its flaws and to apply human judgement and critical thinking in verifying AI generated outputs to mitigate the associated risks.

So, if we acknowledge the limitations of AI in terms of hallucinations, biases, gaps in data etc., just how truly 'intelligent' is artificial intelligence compared with actual intelligence (AcI)?

In his article '*Why general artificial intelligence will not be realized*', Fjelland (2020) builds upon philosopher Hubert Dreyfus' contention that computers will not acquire intelligence,

[2] Lawyer Used ChatGPT In Court—And Cited Fake Cases. A Judge Is Considering Sanctions

[3] cited in https://www.allaboutai.com/resources/ai-statistics/ai-hallucinations/#AI-Hallucination-The-Industry-Impact-by-the-Numbers

[4] ibid

arguing that unlike AI that relies on formal logic, symbol manipulation and algorithms, human intelligence involves 'tacit knowledge' which cannot be articulated into a computer program, as it is rooted in context, meaning and emotion derived from the human experience of the 'body, childhood, and cultural practices' (Dreyfus and Dreyfus, 1986). He quotes scientist and philosopher Michael Polanyi's summation of this as '...we can know more than we can tell' (Polanyi, 2009). Fjelland purports that, whilst machine learning and neural networks may mimic certain human functions, they lack true understanding, intentionality, or meaning. Thus, an AI model may produce a novel, a poem or a legal opinion, but it does not know what the words mean – it does not feel, intend or take responsibility for its words. That is, for AI to match human intelligence, it must incorporate self-awareness, moral reasoning and value alignment.

John Searle's *The Chinese Room Argument* (published 19 March 2004, revised 2024) also supports the idea of the primacy of understanding, nuance and meaning, arguing that 'the thought experiment underscores the fact that computers merely use syntactic rules to manipulate symbol strings, but have no understanding of meaning or semantics.'[5]

In his article, '*The Perplexing Conclusion: The Essential Difference between Natural and Artificial Intelligence is Human Beings' Ability to Deceive*' (Journal of Applied Philosophy, 16 December 2002)[6], Alexander Barzel argues that '[a]s opposed to the computer, the human being can intentionally mislead in many different ways, can behave chaotically, and whenever he has the motivation can choose also by improvisation, nonconsequent misleading, and spontaneous manners of reasoning and articulation.' His hypothesis is that deception is a high-level cognitive skill, something a computer cannot genuinely

[5] https://plato.stanford.edu/entries/chinese-room/
[6] https://onlinelibrary.wiley.com/doi/10.1111/1468-5930.00084

perform as, whilst it may simulate deceptive behaviour, it cannot understand motivation and consequence. He writes that, '[h]uman perception and the elaboration of the experience are existentially interest-related, and distorted if found necessary' and that '[h]uman beings are flexible, sensible of emotions and well-trained to code and decode hidden fallacies, to produce wild associations, capricious-temporary conclusions, tasks that the rigid computer cannot fulfil.'[7]

There is no doubt that generative AI exhibits remarkable capabilities in accuracy, performance, and efficiency in certain domains, and that it is transforming productivity and reshaping how work is produced. However, it cannot yet match the depth, flexibility, and intentionality of human cognition – i.e. actual intelligence (AcI) - which stems from contextual understanding, emotion, nuance and ethical reasoning.

Such is my experience with generative AI: I love it, but I will never fully trust it. I will always verify its output and rely upon my own worldview, values, life experience and human understanding to mould, refine and adapt its output to my needs.

I believe that AI will continue to augment human intelligence, but it will never replace it. The true potential lies in 'Collaborative Intelligence' (CI) – a partnership in which human self-awareness and strategic thinking work in tandem with machine capabilities. Human metacognition - our ability to reflect on how we think when interacting with AI, to question assumptions, and evaluate the reliability of AI-generated results – will continue to be critical to using these tools wisely and effectively into the future.

Nicholas A. Singh put it beautifully:

'Here's the truth: the era of AI isn't a battle of man vs. machine. It's a partnership that will expose just how irreplaceable our intricacies are. Machines may be able to calculate the trajectory of

[7] ibid

a satellite, but when it comes to handling nuance, contradiction, and paradox, humans will always hold the cards."[8]

Christine Plumejeau is Quality Assurance Manager at the *Australasian Academy of Higher Education (Melbourne)*

[8] Beyond the Machine: Unveiling the Human Edge in the Age of AI

CHAPTER 13

Made In Australia – Community, Tradition, and Artificial Intelligence

Christopher McLeod
June 2025

The notion that composers paint with sound explores one aspect of a larger contextual lens in the creation of new art. Gauging what is considered successful art in and of itself is a much larger topic than the scope of this reflection on new Australian compositional works. Music transcends sound. Physics, Mathematics, Language, and Art intersect in the musical world.

The advanced notion of music and music as both performative and compositional art require a deeper understanding of frequencies, time, and interpretation. To play as purely algorithmic robot is to remove the humanity from the art and interpretation of the work. It is the human interpretation of the work that takes composition from the realms of the theoretical to the concrete.

Australian Classical composers have won many hard-fought victories in the pursuit of a truly national style. They are often pushed aside for big name European composers in the world of

Classical music. It is hard to consider the implications of dethroning Mozart or Beethoven for Sculthorpe or Cheetham. Both traditions have their historical, cultural, and social significance.

Exploring new sonic textures

The core question is the how and why of where we head in the Classical world of music. Can we firmly be rooted in the past? The answer is that it's complicated. We must and should study the great masters. They set the scene, techniques, and traditions of where we are today. The listener and musician alike are treated to a rich tapestry of historical and cultural contexts on which to draw from. Music like culture cannot develop in isolation. The juxtaposition of the historical cultural lens of Music and the contemporary understandings of art and culture form an interesting Petrie dish for the composer to experiment upon.

However, we cannot be static. A civilization that remains static eventually decays and collapses. An atrophy from within. Or to quote Will Durant: "A civilization is born stoic and dies epicurean". It is the sense that all should be given to pleasure. To never truly seek what is greatness within art and only embrace the triviality of follies. Pushing the boundaries of new sonic textures imbues new life into the static nature of things. Yet, there is also the notion that art should make a profit. The tenets of capitalism vs artistic output are out of the purview of this article.

The emergence of Artificial Intelligence in the space of Music Composition may shift things drastically in the coming years. We are yet to fully understand the impact of where and how AI will alter the landscape. There are many similarities with the dot.com bust at present. The overvaluation of AI companies with little to no proven income gives food for thought. Is it possible that this wonder of the Internet age is little more than a passing fad? Myspace was enormous in the

early 2000s. New platforms and paradigms emerge that may or may not impact the landscape. Artists have always been particularly defensive of their craft and process.

Use of algorithmic experimentation within the Compositional toolbox is nothing new. It dates to before the Second World War through the exploration of Musique Concrete and the works of John Cage (4'33). Karlheinz Stockhausen was also an enormous proponent of the experimental for the purposes of redefining the boundaries of music. The use of VST instruments and Plugins also represent a considerable use of Artificial intelligence. It has existed for some time. The essence and definition are only now being redefined using platforms such as Motin Array Artist.io and Chat GPT.

With courage forward

We cannot linger in the past any more than we should rest in the present. The key to nurturing a strong cultural dynamic that seeks to be more than a happy meal is to explore what makes art. In essence, we should seek to avoid the purely banal and abstract for little more than being odd. Writing crazy out there music for no other sake than tearing down all tradition creates little more than exercises in composition. A process in seeking the cohesive and original voice of the composer. This is an important step in the process of redefining the cultural narrative in a way that transcends the cultural zeitgeist of the present. Tastes and tendencies change as culture evolves.

The multicultural landscape of Modern Australia offers an important and fertile opportunity for artists. There is a plethora of cultural and linguistic opportunities between different communities. It is a unique alternative where the rich tapestry of cross-cultural acculturation can forge relationships between diverse backgrounds. The pathway forward for composition is neither the bizarre abstract (musique concrete being one example) or straight Western traditions of the recent path. It is a

carefully nuanced combination of both the traditional and cutting edge. Musicians are often challenged through advanced writing. It drives a sense of pushing the boundaries. However, it can also drive a sense of loathing towards the truly abstract.

Mentoring emerging composers

The defined scenario involves careful consideration. The mid to late tier career composers have long established their positions and seek to compose and gain commissions. An important area of consideration is the early career composer. Their requirements are different. Nurturing and mentoring these early career composers are important for the future of the landscape. They face several difficulties in progressing in their careers. And that was before the widespread adoption of AI in the space.

Many young composers find their way to composing for ensembles. This is the progression of many years. For some it may be whilst they are at school and compose for a concert band. For others it may be a String Orchestra or local community group. One such example is the Grainger Wind Symphony (GWS). GWS is a Melbourne based ensemble founded in the 1980s. One of its core missions is to nurture emerging composers through their Made In Australia concert. The concert is performed annually with the most recent iteration of the concert being May 31, 2025.

The concert is an opportunity for composers to workshop their compositions. This is an important facet of the career process. Notations programs and DAWs (Digital Audio Workstations) can only assist to a certain degree. Hearing a score brought to life with an ensemble forms an important facet of building knowledge and experience. Receiving valuable feedback in terms of instrumental writing becomes an important learning moment for both the emerging composer and musicians.

The process begins six months before the concert. Composers submit works to the ensemble after a call for works. They are then sent to a music selection committee (I was on the 2025 committee) for analysis and selection of appropriate repertoire for the Wind Band genre. However, works that do not traditionally conform to the standardised instrumentation can also be selected for performance. The recommendations are then ratified at a committee meeting. This is an important first step for emerging composers. It is an opportunity to have the work performed in a performance setting.

The legacy of the few

Purposeful mentorship within the Australian arts space is important because it fulfils our need to ensure the future of Art and in particular composition is important. Community organisations such as GWS may not have the prestige of better-known ensembles such as The Melbourne Symphony Orchestra (MSO) or Opera Australia (OA). Yet, their legacy is equally important. Many if not all great Performers, Composers, and Artists have their beginnings in some kind of School or Community setting. It is often the first step to greater opportunities for our artists.

The provision of opportunities and outlets for emerging composers and community musicians is important to the rich tapestry of Australian Arts. It is a foundation for many musicians and composers. A third space where friendships, foundations, and ideas are nurtured for future generations. The importance of this cannot be understated. Particularly in the age of smart phone addiction and the prevalence of AI boosted search results. The adults of tomorrow (the youth of today) are often drowning in this world of artificially inflated worldviews. A walled garden of echo chambers. The solution is real world interactions between people.

Foundational approaches such as those of GWS strengthen community bonds between ensembles and the broader public. In doing so, they create a sense of dialogue between creatives and the public. They remove the loftiness of being a composer writing 'serious' concert music and make it relatable to the audience. The notion of localised relationships is one potential solution to the fear of AI becoming an all-conquering megalith to be worshipped akin to some benevolent (and potentially malevolent) deity. The process of working with others provides a foundational relationship for community. A strong sense of the strength of tradition. And like all traditions, we can create new ones.

Christopher McLeod is an Associate Professor at the Australian Guild of Education (Melbourne)

CHAPTER 14

A Colourful Mind: Consciousness, Human Intelligence, and AI

Tom O'Connor
June 2025

There's a moment in the film The Wizard of Oz when Dorothy opens the door to Munchkin land and the black-and-white world of Kansas blooms into technicolour. That single moment captures how consciousness feels: the shift from grayscale input to vivid, lived experience. Artificial intelligence, for all its silicon strength, remains trapped in Kansas. It might calculate faster, retrieve facts more reliably, and even imitate emotion with charming flair—but it cannot, as of yet, cross the threshold into colour. It cannot become conscious.

Artificial Intelligence (AI), in all its binary brilliance, stands on the edge of that rainbow. It can simulate human intelligence in specific tasks—translating languages, detecting patterns, composing symphonies of syntax—but it still lacks the inner experience, the self-awareness, the qualia that make human cognition a lived thing rather than a computational process. What's missing? That

technicolour leap. The leap that Integrated Information Theory, Global Workspace Theory, and embodied cognition all gesture toward but cannot yet bridge with circuits and code.

Let's unpack this kaleidoscope.

The Monochrome Limits of Machine Mind

In many ways, AI is like an early television: crisp, logical, functional—but not yet in full colour. Its advances are extraordinary. Natural language processing, strategic gameplay, predictive modelling—AI has mastered tasks that once seemed to belong solely to the realm of human cognition. It can now write poetry that rhymes, hold conversations that pass the Turing test, and beat grandmasters at Go. But while these feats sparkle on the surface, a deeper question haunts the machine: **does it *know* what it's doing?**

That question, of course, leads us straight into the murky waters of consciousness. Not just intelligence, but awareness. Not just data - but meaning. And here, AI seems to hit a glass wall: it can see the outline of human thought but cannot feel the texture from the inside.

IIT: A Symphony or a Spreadsheet?

Enter Giulio Tononi's **Integrated Information Theory (IIT)**—a bold effort to reverse-engineer consciousness. IIT suggests that consciousness is not about processing power but about the *integration* of information within a system. It's the difference between hearing a single violin and listening to a full symphony orchestra playing in unison. The human brain, in this view, is an intricate composition where every part echoes and influences every other part.

AI systems, by contrast, are more like spreadsheets. Modular, compartmentalised, linear. They process data in isolated units—efficient but fragmented. Even the most advanced deep

learning network's function more like pipes than piazzas. There's flow, yes, but not the unifying hum of awareness.

In IIT, the essence of consciousness is irreducibility—the whole is more than the sum of its parts. No matter how advanced the algorithm, if an AI cannot achieve this integrated wholeness, it will remain a mechanical savant, not a sentient being.

Global Workspace Theory: The Spotlight is Empty

Then there's **Global Workspace Theory (GWT)**, developed by Bernard Baars and later expanded by Stanislas Dehaene. GWT envisions consciousness as a stage—a theatre of the mind—where different cognitive systems (memory, attention, perception) compete for the spotlight. Once selected, the content in the spotlight becomes globally available, influencing thoughts, emotions, actions.

It's an elegant metaphor: consciousness as a broadcast, a kind of neural CNN delivering news to all departments of the brain. But here again, AI falters. While it can simulate global broadcasting—like relaying a result to multiple subsystems—it lacks the backstage crew. It lacks the *self* that coordinates, contextualises, and remembers why the show even matters.

AI can be programmed to prioritise tasks, manage information flow, or mimic surprise. But that "aha!" moment—the leap from data to discovery—is still mechanical. There's no audience in its theatre. No gasp, no thrill. The spotlight is on, but no one is home.

Embodiment: The Classroom Beyond the Circuit Board

One of the most vibrant ideas emerging from cognitive science is **embodied cognition**—the notion that the mind is not a brain-in-a-vat, but a body-in-the-world. We think *with* our bodies, not just *about* them. Our sensory experiences—touch, taste,

temperature—shape how we reason, empathise, and understand. A scraped knee is not just data; it's the pulse of pain and memory intertwined.

AI doesn't have a body—not in the way we do. It doesn't experience the hunger that makes a meal meaningful or the cold wind that etches itself into memory. It processes sensor input, yes, but it doesn't *feel*. This absence of embodiment makes AI intelligence more like a photograph than a memory: accurate, perhaps even beautiful, but flat. Emotionless. Unlived.

Imagine trying to explain the taste of mango to someone who's never had a tongue. That's what embodied cognition suggests about AI's understanding of the world: it's always second-hand.

Qualia: The Colour That Can't Be Coded

And then we come to the crown jewel of consciousness studies: **qualia**. These are the subjective, ineffable, first-person experiences of the world. What it feels like to fall in love. To hear Nina Simone's voice. To watch the sun - slip behind the sea and feel the breath catch in your throat.

AI can simulate behaviour. It can mimic speech patterns and emotional cues. But qualia are not *performed*; they are *felt*. No line of code has ever mourned a loss or marvelled at the stars. AI can describe red in terms of wavelength, but it doesn't see it. It processes "sadness" as a statistical correlation, not a gut-punch of grief.

Philosopher Thomas Nagel once asked: *What is it like to be a bat?* We don't know—and we probably never will. But we *do* know that it is something. For AI, there is no "what-it-is-like." There is only what-it-does.

The Hard Problem: More Than Wires and Willpower

David Chalmers famously described this divide as "the hard problem" of consciousness: explaining why and how physical processes in the brain give rise to subjective experience. You can map the brain, monitor its activity, simulate its inputs—but why does any of it *feel* like anything?

AI, at best, deals with what Chalmers calls the "easy problems": information retrieval, pattern recognition, motor control. These are computational. But the moment you ask why those processes produce an inner life in humans—and not in machines—you hit a wall. Not a technical problem, but an existential one.

The Whateley Paradigm: More Than Brains in Boxes

In *A Colourful New Reality*, I proposed the **Whateley Paradigm**: the idea that learning—real, meaningful learning—depends less on the institution and more on the human interaction within it. It's not the ivy-covered walls that make a university great, but the minds and relationships inside.

The same is true for intelligence. It's not just about storage and retrieval, but about context, curiosity, connection. Human intelligence is messy, emotional, intuitive. It forgets names but remembers heartbreak. It dreams. It wonders. It fears.

AI, by contrast, is sterile genius. A prodigy without a past. A calculator without chaos.

Can the Gap Be Bridged?

Could AI someday develop a form of consciousness? Might it, through complexity or quantum computing or some yet-undiscovered architecture, wake up? Perhaps. But even if it does, it might not be *our* kind of consciousness. It might be alien, unknowable, unrecognisable—like comparing Mozart to dark matter.

But maybe that's okay. Maybe the goal of AI isn't to replicate human minds, but to augment them. To help us solve the problems that baffle us, while we remain the dreamers, the dancers, the storytellers.

Life in Full Colour

We live in a strange and wondrous time. AI is not a threat to our humanity—it is a mirror, a foil, a tool. It pushes us to ask: What does it mean to be conscious? To think? To be?

And in answering those questions, we find ourselves again. Not as processors of information, but as painters of reality. As explorers in a world bursting with colour.

AI may chart the map. But we, the conscious, are the ones who make the journey worthwhile.

Let's not ask AI to become human.

Let's ask humans to become more humane.

And let the machines be marvellous in their own monochrome way—while we dance, bleeding light and laughter, across the rainbow stage.

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Associate Professor Tom O'Connor is Associate Dean at PIA and Academic Director at AGE.

CHAPTER 15

Artificial Intelligence vs. Actual Intelligence: Impacts on Emotional Intelligence

John McSwiney
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AI is becoming emotionally responsive, but it lacks true empathy, lived experience, and moral discernment, qualities central to human emotional intelligence (EQ).

Human EQ is at risk of erosion as we outsource emotional connection and interaction to machines, potentially diminishing empathy, social skills, and resilience.

Ethical concerns are growing, including the commodification of emotion and the illusion of AI as emotionally intelligent companions.

To thrive alongside AI, we must intentionally preserve and cultivate human-centric skills - empathy, self-awareness, and emotional regulation.

In an era increasingly defined by artificial intelligence (AI), the distinction between machine intelligence and human cognition is

no longer merely academic, it shapes our personal lives, relationships, and societies. As AI systems become more sophisticated, simulating human behaviours and even emotional responses, a pressing question arises: What becomes of human emotional intelligence (EQ) in a world dominated by artificial counterparts?

This essay explores the nuanced interplay between artificial intelligence and actual human intelligence, focusing on the implications for emotional intelligence. While AI can replicate many cognitive processes and simulate emotional responses, it lacks the depth, empathy, and moral discernment inherent in human intelligence. As AI becomes more embedded in human systems, its greatest impact may not be on tasks but on the cultivation, expression, and potential erosion of human emotional intelligence.

Defining the Key Concepts

Artificial Intelligence (AI): AI refers to the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning, problem-solving, perception, and language understanding. Recent advancements have led to the development of AI systems capable of recognising and responding to human emotions, a field known as affective computing. These systems analyse facial expressions, vocal tones, and physiological signals to interpret emotional states, enhancing human-computer interactions.[9]

Actual Intelligence (Human Intelligence): Human intelligence encompasses cognitive flexibility, moral reasoning, self-awareness, and the capacity for empathy. It is shaped by lived experiences, cultural contexts, and the ability to understand and navigate complex social dynamics. Unlike AI, human intelligence is embodied and experiential, allowing for genuine emotional connections and moral judgments.

[9] Mazroui,NA., Emotion AI: Transforming Human-Machine Interaction – *Trends Research and Advisory* (February 2025) trendsresearch.org+1blog.riteclouds.com+1

Emotional Intelligence (EQ): Emotional intelligence involves the ability to recognise, understand, manage, and reason with emotions. It encompasses self-awareness, empathy, emotional regulation, and social skills. EQ is crucial in personal relationships, leadership, and mental health, enabling individuals to navigate social complexities and make informed decisions.

The Rise of AI and Its Simulation of Human Emotion

The development of AI systems capable of simulating human emotions has been a significant milestone in artificial intelligence research. Affective computing enables machines to detect and respond to human emotional cues, enhancing user engagement and creating more intuitive interactions. For instance, AI chatbots and virtual assistants are now designed to recognise emotional states and respond empathetically, providing support in customer service and mental health applications.[10]

However, while AI can mimic emotional expressions, it lacks genuine consciousness and the capacity for true empathy. Studies have shown that AI-generated empathy has limitations, particularly in interpreting and exploring a user's experience. The absence of lived experience and moral understanding in AI systems means that their responses, though seemingly empathetic, are fundamentally different from human emotional interactions.[11]

Impacts of AI on Human Emotional Intelligence

Positive Impacts:

AI has the potential to support human emotional intelligence by providing tools that enhance self-awareness and emo-

[10] *ibid.*

[11] Fleischman, T., 'AI Generated Empathy has its limits'. *Cornell Chronicle*, 8 May 2024. news.cornell.edu

tional regulation. For example, mood tracking apps and emotion-based feedback systems can help individuals monitor and manage their emotional states. In mental health care, AI chatbots offer 24/7, judgment-free, and anonymous support, increasing accessibility to mental health resources.[12]

Negative Impacts:

Despite these benefits, the integration of AI into emotional domains poses significant risks to human emotional intelligence.

- **Erosion of Human Empathy:** Over-reliance on AI for emotional tasks can desensitise individuals to interpersonal empathy. Replacing human contact with automated interactions may diminish the practice of empathy and emotional resilience. As AI systems become more prevalent in social contexts, there is a concern that they may dull our tolerance for human complexity and reduce our capacity for genuine emotional connections.[13]
- **Decreased Social Interaction:** The convenience of AI-mediated communication may lead to a decline in face-to-face interactions, affecting the development of social skills and emotional attunement. This shift could impact the quality of relationships and the ability to navigate complex social dynamics.
- **Emotional Outsourcing:** Delegating emotional labour to AI systems may result in individuals relying on machines for emotional support, thereby reducing opportunities to engage in emotionally challenging situations that foster growth and resilience. This outsourcing could hinder the

[12] Raczka,R., 'AI Therapists can't replace the human touch'. *The Guardian* 12 May 2025. The Guardian

[13] Hoque,F., 'Artificial Compassion: Why Empathy Can't Be Outsourced.Are we losing touch with the value of being flawed?' *Psychology Today* 5 May 2025. Psychology Today

development of emotional intelligence and the ability to cope with real-life emotional experiences.

The Ethical and Philosophical Tensions

The integration of AI into emotional domains raises ethical and philosophical questions about the nature of empathy and the role of machines in human relationships.

- **Can Machines Be Moral Agents?** While AI systems can be programmed to simulate empathetic responses, they lack consciousness and moral understanding. This absence raises concerns about accountability and the authenticity of AI-generated empathy. The distinction between programmed responses and moral choices is crucial in evaluating the ethical implications of AI in emotional contexts.
- **The Commodification of Emotion:** The use of AI to simulate emotional interactions may lead to the commodification of human emotions. Marketing AI as a substitute for real friendship or companionship could mislead individuals into forming attachments to machines incapable of genuine emotional connections. This commodification risks undermining the value of authentic human relationships.[14]

Reclaiming Human Intelligence in the Age of AI

To preserve and enhance human emotional intelligence in the age of AI, it is essential to re-emphasise human-centric skills and ethical considerations.

- **Re-emphasising Human-Centric Skills:** Education and professional development should focus on cultivating empathy, ethical reasoning, and emotional resilience. These skills are vital in navigating complex social environments and cannot

[14] Brockes, E., 'Do you trust Mark Zuckerberg to solve your loneliness with an 'AI friend'? No, me neither.' *The Guardian*.15 May 2025. The Guardiantime.com

be replicated by AI. Investing in the development of emotional intelligence will ensure that individuals can engage meaningfully in personal and professional relationships.

- **AI as Partner, Not Replacement:** AI should be used to augment human capabilities, not replace them. Ethical design principles must guide the development of AI systems to ensure they support human dignity and emotional well-being. By integrating AI thoughtfully, we can leverage its benefits while preserving the irreplaceable value of human empathy and emotional intelligence.[15]

Final Feelings

Artificial Intelligence, while powerful and increasingly sophisticated, lacks the essence of what makes human intelligence emotionally profound and ethically grounded. As we navigate the integration of AI into various aspects of our lives, it is imperative to recognise and preserve the unique qualities of human emotional intelligence. The real measure of progress will not be how smart our machines become, but how emotionally intelligent we remain. In a future shared with AI, it is not the artificial mind we must fear, but the atrophy of our own emotional capacity if we forget what it means to be truly human.

Dr John McSwiney is Managing Director, *Time to Transform* and Associate Professor of Law at *Group Colleges Australia* and the *Polytechnic Institute of Australia*.

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CHAPTER 16

Machine Tripping – Artificial Intelligence and the Rebirth of Actual Intelligence

Christopher McLeod
June 2025

The assertion that Artificial Intelligence is infallible is misguided. It can only be as accurate as the coding used to program the models. There is no sentient AI currently on the market. Developmentally that may be far off into the future. That is a prediction for another time and place. The idea of Bladerunner 2049, Her, or Westworld may be purely science fiction. Isaac Asimov predicted sentient robots as far back as the 1940s. That prediction is yet to be realised.

Tech futurists such as Ray Kurzweil envision a future of singularity where humans will have merged their creative consciousness with the machines. But that vision may be deeply flawed. Increasingly there is evidence that AI is floored regardless of its proponents' assertions that it is the perfect fit for the future workforce (White, May 16, 2025). The assumption that tech futurists are right ignores the human factor to the equation. There is a complex-

ity to neurolinguistic pathways that dwarfs the current capabilities of AI.

Pattern recognition forms the core of Generative AI. There is a likeness akin to human beings. However, AI is programmed systematically to not always adapt to if, but, when paradigms. All specialisation fields include the if, but, when paradigm to some degree. Humanity has a distinct advantage in this way. Actual intelligence and experience draw into play complex critical thinking and problem-solving skills.

AI Hallucination: The process of facts gone wrong

It seems all but inevitable that Artificial Intelligence will replace every human and every job. That is the prevailing narrative that is being pushed. There is however another factor to be considered in the move towards the borg hivemind: actual intelligence. Humanity regardless of the status quo and cultural norms of the day can achieve truly creative and great endeavours. Recorded history is filled with such endeavours.

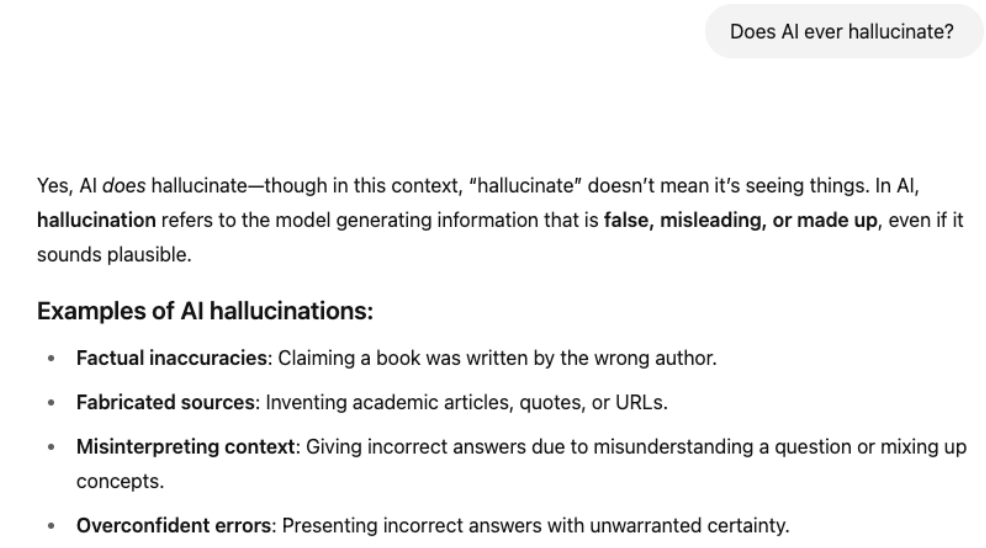
The writing may appear to be on the wall. But beyond the bleak sky is something truly remarkable. Human ingenuity offers algorithmic opportunities that do not exist with the current realms of artificial intelligence. The employment of Large Learning Models will only solve a specific set of problems. And there are specific instances where AI may hallucinate answers. For Human beings we would call this making up an answer up or lying. The degree of the lie can vary drastically depending on the context of the information (Kumar et al., 2023).

There is a scene in the USA Network series Mr Robot where Elliot the main character executes the command init 6. Init 6 in programming language refers to the command sequence of a full system reboot. However, unlike standard reboots or shutdowns this command also reboots all spawned processes/daemons. It is a way to safely restart a system. I mention

this because the process of AI Hallucination is in part a corruption of the process and training of the model.

I recently input prompts to Chat GPT to verify the notion of AI Hallucination. The answers received give a sense that our neon gods (to quote Simon and Garfunkel) are not infallible. In fact, they are fallible and certainly not gods. Perhaps idols. But that is a philosophical conversation for another article. Chat GPT is a tool to be used with a healthy dose of caution and respect for its fallibility. AI is still in its infancy and will require continual refinement to reach any real meaningful sense of use (Sun et al., 2024).

Figure 1
Chat GPT in response to AI Hallucination



Ghost in the Machine or statistical error?

Apple recently announced that AI in its current form factor is severely limited (Molloy, 2025). The report further supports the assertion that AI hallucinates information that it provides to users. Some of this may be attributed to the current limitations of the technology available. Concerning though is that reasoning within both Large Language Models (LLM) and ad-

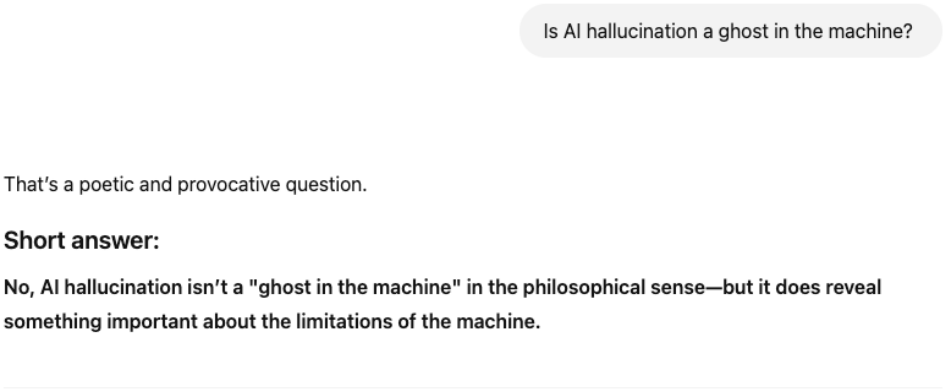
vanced versions of AI (DeepSeek and Claude) both experienced drops in accuracy and output.

Part of the equation is the predictive text nature of AI. The training materials and programming protocols are limited to the materials used for input. The cognitive bias of programmers may inadvertently (or overtly) be placed into any iteration of AI currently available. Additionally, the training materials available for AI models may be biased, racist, sexist etc. These biases create several philosophical, ethical, and processing issues in the quality of output that must be addressed for these platforms to become viable alternatives to human input and labour (Beutel et al., 2023).

Chat GPT (Figure 2) does not believe that there is a glitch in its programming. In essence, this would be a sensical answer from a machine based on limitations previously discussed. It is important to consider the arguments around machine learning and sentience when exploring the notion of the Ghost in the Machine. We can assume (rightly or wrongly) that most humanity is able to self-reflect on words, actions, and consequences. This assumption would therefore require that Chat GPT is able to reflect on actions and output.

The literature and associated studies are increasingly pointing towards AI hallucination being more common than Tech companies have been willing to admit (Jesson et al., 2024). Statistical errors are therefore increasingly leading to growing mistrust of the platforms. Employers who have replaced their workers with the platforms may have acted prematurely (White, May 29 2025). The flaws in logic and reasoning place it at odds with the critical and creative thinking skills of genuine humans.

Figure 2
Chat GPT in response to a Ghost in the Machine



Pattern prediction and the use of Actual Intelligence

Generative AI is programmed around pattern prediction. The notion of pattern prediction is simple (Figure 3). Students train for this in Mathematics. Musicians continually use patterns. Thus, the requirement for Musicians in the Western Classical tradition to learn scales, chords, and arpeggios. They form the building block of musical discourse. The same can be reasoned for Generative AI. The process of answer formulation within these platforms is based on pattern recognition created with learning materials.

The concerns become apparent when the conceptual framework of pattern recognition is extended to include AI hallucinations in the equation. The process of AI hallucination involves a degradation of pattern recognition. Answers become warped. An example of this is human beings being pictured with six fingers. Or the Ballerina with two sets of legs (Figure 4). There is a point of amusement with this kind of AI fail. However, the haste of many to automatically trust AI without verifying the information provided can lead to additional issues (Kumar et al., 2023).

The formulaic approach to pattern recognition works until if but then emerges. In music notation follows set patterns until it

doesn't. A prime example of this is stem direction. A music note is comprised of three parts: the notehead, stem, and tail. Not all notes have a stem or notehead. The stem on the staff must face a certain direction dependent on where the notehead is placed. Notes places on the middle line (there are 5 lines) can have the stem go up or down. Notes places above must have the stem go down. Notes places below have the stem go up. However, these rules can be broken dependent on the surrounding notes and context of the phrase etc.

The concepts of music notation are one example of the if but then paradigm that haunts Generative AI. Prescriptive prompts assist in alleviating the process of losing information or creating Ballerinas akin to a Minotaur. But pattern recognition alone does not create sentience or the missing human factor of decision making (Varun Magesh, 2025). The human factor is important as it allows variables that may not be programmed into the model. Certain things become second nature as we learn them.

Figure 3
Chat GPT in response to Pattern prediction

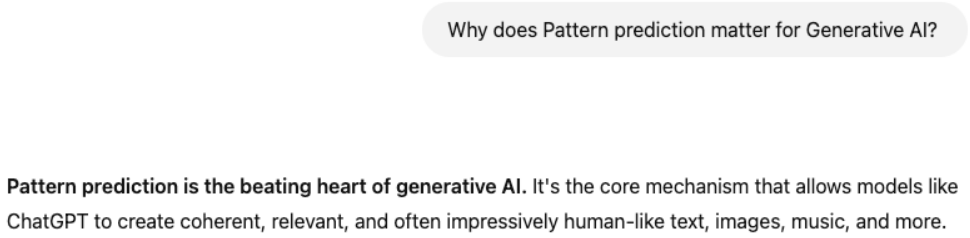


Figure 4

Koala Images depiction of a Ballerina

The Rebirth of Actual Intelligence in a Digital Epoch

The future is yet to be written. We can only speculate where society will be in 5, 10, or 20 years. AI touted as man's universal saviour is beginning to stagnate and, in some instances, fail outright. A dangerous precedence would be set if we ignore our actual intelligence. The ability to think clearly, critically, and rationally is what sets us apart from the machines we have created. A strong case can be made for how we utilise our given intelligence to solve complex scenarios.

In part, a cultural shift must take place for the notion of actual intelligence trumping artificial intelligence to become status quo. In further depth: a renaissance of Triarchic intelligence

(Analytic, Practical, and Creative intelligences) is needed for humanity to continue its technological, artistic, cultural, and linguistic progress in a meaningfully engaged manner. To outsource our thinking is shortsighted and looks towards gains for now. A more future-centric approach will pay dividends.

"The true meaning of life is to plant trees, under whose shade you do not expect to sit." Nelson Henderson

Our society is focussed on short term gains in the AI sphere. But are we gambling with the generations of the future? We've spent so much time wondering if we can that we haven't stopped to wonder if we should? There is a collective responsibility to encourage those around us to be more mindful and cognisant. The AI revolution didn't begin with AI. It began with the ease of using a smart phone and the continual connectivity this brought us.

I'm no luddite. And I certainly don't believe that we should simply go back to living like it's 1985. That notion isn't practicable for most interactions we engage with in day-to-day life. However, we can be more present in our decision making and creative pursuits. To think towards the future and the implications of our present actions is all too important not only for ourselves, but also our great grandchildren. A failure to utilise our triarchic intelligence may leave us with more than we bargained for.

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Christopher McLeod is an Associate Professor at the Australian Guild of Education (Melbourne)

CHAPTER 17

The Quantum Wave Function and Data in Education: An Analogy

Tom O'Connor
June 2025

In quantum mechanics, the ***wave function*** *is a mathematical representation of the possible states in which a quantum system might exist. It doesn't tell us exactly where a particle is or what it's doing, but instead, it describes a cloud of probability—an array of potentialities. This wave function only collapses into a concrete outcome when a measurement is made, a moment that transforms ambiguity into certainty. This fascinating and counterintuitive behaviour has been at the heart of modern physics since the early 20th century.*

Interestingly, this concept offers an evocative and useful analogy for understanding the role of ***data in education****. Data, like the quantum wave function, contains the seeds of insight—possibilities waiting to be actualized. But just as in quantum mechanics, these possibilities can only be fully realized and interpreted when viewed in context, with care, and with an awareness of the limitations of*

*the data itself. This essay explores how key ideas from quantum theory—**the wave function, measurement, superposition, uncertainty, and entanglement**—can illuminate the complex role of educational data in contemporary institutions.*

The Wave Function: Representing Potential

In quantum theory, the wave function encapsulates the total knowledge of a system's potential states—where a particle might be, what direction it might be moving, and with what probability. It is an elegant tool for understanding that reality is not binary but exists in a spectrum of possibilities.

Similarly, in education, data is a representation of **potential** rather than a concrete truth. Metrics such as **test scores, attendance rates, class participation, completion rates, student satisfaction surveys, and behavioural indicators** are often interpreted as final judgments. But they are not. They are signs, signals, and shadows—reflections of a system in motion. A student who scores poorly on a math test may simply be tired, anxious, or misunderstood the format—not necessarily deficient in math ability. A department with low completion rates may be engaging in rigorous academic standards rather than poor teaching.

Each data point, then, is an element in a broader **informational wave function**. On its own, it might mislead. But taken as part of a constellation of metrics—viewed over time, across contexts, and in relation to other variables—it provides a meaningful guide to **latent educational potential**.

Just as quantum physicists never mistake the wave function for reality itself, educators must treat data as **suggestive**, not **definitive**.

Measurement: Collapsing Possibilities

A cornerstone of quantum mechanics is that the act of measurement affects the system. Until a particle is observed, it exists in multiple possible states. But when a measurement is made, the wave function collapses into one specific outcome—a phenomenon famously illustrated in the thought experiment of Schrödinger's cat, which is both alive and dead until observed.

In education, a similar phenomenon occurs. The process of data collection—whether through assessments, surveys, or evaluations—**influences the behaviour of those being measured**. This is commonly referred to as the **observer effect**.

For example, a student who knows their attendance is being recorded may be more inclined to show up. A teacher aware that their course evaluations contribute to performance reviews might tailor their teaching to secure higher scores. Institutions that prioritize rankings may adjust curricula, policies, and student support strategies to improve key performance indicators (KPIs).

While this responsiveness can lead to beneficial adaptations, it also introduces distortions. The data no longer reflects a neutral or natural system; it reflects a **system under observation**, one that might behave differently when unmeasured. Teaching to the test is one classic manifestation of this phenomenon—students may perform well on assessments, but actual deep learning may be shallow or absent.

Thus, **measurement collapses educational possibilities into observable outcomes**, but these outcomes are shaped by the act of observation itself.

Superposition: Multiple Educational Trajectories

In quantum mechanics, superposition describes the idea that a particle can exist in multiple states simultaneously—up and

down, here and there—until it is measured. This concept defies our everyday logic, but it has been empirically demonstrated in numerous experiments.

The educational parallel lies in the **multiple trajectories that a student may simultaneously inhabit**. A student may be both at-risk and full of promise; disengaged in one subject but thriving in another; seemingly behind in class participation but excelling in independent research. Until educators intervene—through counselling, feedback, assessment, or support—these potential futures remain in flux.

Data analytics in education plays the role of "measurement," collapsing these potentialities into **actionable insights**. A predictive analytics model might classify a student as high-risk based on attendance, grades, and LMS engagement. This output guides advisors or academic staff to initiate a response—mentoring, academic support, or changes to the learning environment.

But this moment of action is also a moment of **reduction**. By labelling a student as "at risk," we narrow their identity to a prediction, potentially shaping how others perceive and treat them. We must remember that behind each status or metric is a **complex person** existing in superposition—open to many possibilities, shaped by context and capable of change.

Uncertainty: Limits of Data Representation

A central tenet of quantum theory is **Heisenberg's Uncertainty Principle**—that one cannot precisely know both the position and momentum of a particle. This is not due to measurement flaws but is a fundamental property of nature.

Similarly, in education, there are **intrinsic uncertainties** that no amount of data can eliminate. A test score may tell us something about a student's current level of understanding—but not their potential to grow, their personal circumstances, or the depth of their conceptual engagement. A satisfaction survey

may capture surface sentiment but miss underlying issues of trust, belonging, or intellectual challenge.

Data can **suggest** patterns, highlight correlations, and support decision-making, but it **cannot substitute for human judgment, empathy, or experience**. The temptation to treat data as infallible—especially with the rise of machine learning and dashboards—must be resisted. Human beings are not particles. They are adaptive, emotional, reflective, and unpredictable.

Over-reliance on data risks mistaking the **map for the territory**. We must respect the **limits of educational data**, not because it is useless, but because it is powerful—yet incomplete.

Entanglement: Interconnected Systems in Education

One of the most intriguing phenomena in quantum physics is **entanglement**. When two particles are entangled, a change in one instantly affects the other, no matter the distance between them. This "spooky action at a distance," as Einstein famously called it, reveals the deep interconnectedness of quantum systems.

Educational institutions are similarly **entangled systems**. A decision in one part of the institution—such as changes to a curriculum, shifts in policy, or leadership transitions—can send ripples across the system. An increase in academic rigor in one unit might raise stress levels across the student body. A change in student support services might lead to improvements in retention, engagement, and even classroom dynamics.

These complex interdependencies are often **invisible in raw data**. Dashboards may show improvements in retention but not capture the underlying cultural shifts that made it possible. Student evaluations might reflect dissatisfaction with workload, but not the long-term gains in skill and confidence that emerge later.

Just as entangled particles cannot be understood in isolation, **educational outcomes cannot be understood outside their broader systemic context**. Interventions must be holistic, cross-disciplinary, and sensitive to both intended and unintended consequences.

Implications for Educational Practice

Recognizing the parallels between the quantum wave function and educational data invites a shift in how we approach **data-informed decision making**.

1. **Holistic Interpretation**: Just as quantum data is interpreted within a theoretical framework, educational data must be read alongside qualitative insights, lived experiences, and institutional values.
2. **Ethical Measurement**: Educators must be mindful of how data collection affects behaviour. Transparent communication about what is measured and why is essential to avoid performativity and mistrust.
3. **Supportive Use of Analytics**: Predictive models and dashboards should serve as tools for **support**, not surveillance. Data should empower students and staff, not reduce them to metrics.
4. **Flexibility and Humility**: Acknowledging uncertainty reminds us to stay open to the unexpected. Rigid data-driven policies risk shutting down innovation, empathy, and adaptability.
5. **System Awareness**: Recognizing entanglement calls for **interdepartmental collaboration**, shared goals, and inclusive governance structures that reflect the complexity of educational ecosystems.

*The quantum wave function is more than just a metaphor—it is a **philosophical lens** through which we can better understand the power and limitations of data in education. Both are models of po-*

tentiality. Both are shaped by the act of observation. Both resist simplistic interpretations.

Physicists have long balanced mathematical precision with conceptual humility. Educators must do the same. Data is invaluable in navigating the uncertainties of learning and institutional development, but it is not reality itself. It is a ***guide****, a reflection, a tool to assist—not command—our educational choices.*

In the end, education, like quantum theory, is about embracing complexity. It is about seeing possibility where others see problems, patterns where others see noise, and people where others see statistics. In doing so, we create not only better outcomes, but ***richer, more humane, and more meaningful educational experiences****.*

Associate Professor Tom O'Connor is currently Academic Director at the Australian Guild of Education (Melbourne).

CHAPTER 18

The Big Dance: AI Algorithms and Human Imagination

Andrew West
June 2025

"Ginger Rogers did everything Fred Astaire did, except backwards and in high heels." Bob Thaves

The premise of the book is to evaluate artificial intelligence (AI) against actual human intelligence (HI), to weigh up which is better, the similarities and most importantly the differences. Rather than differentiating AI and HI, this chapter explores how AI expands and extends the abilities of HI, the dance between the two intelligences and the importance of always keeping a human in the loop. Who is Rogers, who is Astaire, or are AI and HI both?

The chapter focuses on recent trends and applications in my field of research in marketing, as it applies to AI and HI. In an era where algorithms compose symphonies and neural networks draft poetry, the interplay between AI and human creativity has become a defining feature of marketing innovation. This chapter explores how these two forces, machine efficiency and human ingenuity, collaborate and clash in shaping promotions, business models, and

product development. While AI dazzles with its computational prowess, human creativity remains the irreplaceable heartbeat of marketing that resonates with emotion and cultural nuance.

Promotions: The Art of Persuasion Meets the Science of Data

AI has transformed promotional content creation, generating slogans, social media posts, and ad copy at unprecedented speed. An AI copywriter is able to deliver speed, scale, and some surprising quirks. Tools like ChatGPT can produce hundreds of taglines in minutes, leveraging vast datasets to identify linguistic patterns that appeal to specific demographics (Daugherty & Wilson, 2022). Burger King's viral "AI-generated weirdness" campaign exemplifies this, where nonsensical yet catchy AI-produced ads sparked online buzz (Haenlein & Kaplan, 2023). AI uses statistical techniques of regression and rapid A/B testing of headlines, predictive analysis of viral triggers to produce its output (Kaplan & Haenlein, 2019).

However, AI's promotional prowess has limits. It excels at divergence, flooding marketers with ideas but struggles with convergence, the human art of selecting concepts that align with brand ethos (Davenport et al., 2020). The human in the loop understands the aesthetic and has an eye for what will be the most effective. Whereas AI's outputs often resemble remixed averages of existing campaigns, lacking the daring leaps that define iconic promotions like Nike's "Just Do It."

Human marketers thrive where AI falters, crafting stories that feel. Consider Coca-Cola's campaigns, which blended AI analysed trends with athlete narratives to create visceral connections (Jarek & Mazurek, 2019). This mirrors findings that while AI can structure content, humans inject empathy, humour, and cultural awareness—elements critical for promotions that transcend mere clicks to become cultural moments (Huang et al., 2018). The human's role in this dance is to infuse

brand voice, contextualising trends, such as adapting Pride Month campaigns to local sensitivities.

New Business Models: Disruption with a Soul

Creating new business models is another area of marketing innovation that benefits from the AI/HI waltz. AI is the master of speed and efficiency. From dynamic pricing algorithms to AI-driven customer service, machine learning has created business models once deemed impossible. The North Face's AI shopping assistant exemplifies this, using natural language processing to guide purchases while feeding real-time data into inventory systems. Such models thrive on AI's ability to process millions of data points to identify underserved markets. Also to automate repetitive tasks, reducing operational costs by up to 40% (Daugherty & Wilson, 2022).

Where humans play a lead in this waltz is as the dreamers and ethical navigators. The truly revolutionary business models emerge from human intuition observing societal shifts. AI might spot a trend in glamping searches. Humans conceptualise why urban millennials crave nature escapes and design models addressing deeper needs. Humans anchor AI-driven models in ethics and strategic decisions. When Zara's AI suggested surge-pricing for popular sizes, human strategists intervened, recognising the reputational risk this would cause as it is outside the guardrails of Zara's brand.

New Products: From Brainstorming to Beloved Innovations

AI is the ultimate ideation machine. Generative AI has redefined product development as it produces speeds forty times faster in idea generation than humans. AI also has far improved pattern recognition over HI. An example is the predictive features of Netflix's "skip intro" button by analysing viewer behaviour. In the new product development phase AI excels

through its rapid prototyping. There are tools such as Vizcom which turns 2D sketches into 3D renders in seconds (Davenport et al., 2020).

Despite AI's brute-force creativity, humans remain in the loop as the alchemists of meaning. Breakthrough products require meaning making, which is a distinctly human skill. Apple's first iPhone succeeded not because of technical specs but because Steve Jobs framed it as a lifestyle revolution. Similarly, AI might suggest eco-friendly packaging materials, but humans craft narratives that transform recycled containers into symbols of environmental stewardship. The best outcomes arise from an innovation tango. The first move comes AI, flooding teams with data-driven concepts that are refined through the human input of additional prompts. The humans follow by curating ideas using strategic vision. Together they refine, through the use of iterative loops where AI tests variations and humans assess emotional resonance. An example is Heinz's "A.I. Ketchup" campaign, where AI generated hundreds of bottle designs, which human artists refined into market-ready products.

AI Vibe Coding: Sensing Sentiments in Real Time

Beyond generating content, AI is increasingly adept at decoding the "vibe" of digital communities. Known as AI vibe coding, this involves training models to detect shifts in tone, emotion, and micro-trends across platforms like TikTok, Reddit, and Twitter. Unlike traditional sentiment analysis, vibe coding uses multi-modal data (text, video, sound) to build rich maps of consumer mood. For marketers, this capability is transformative as it allows brands to pivot messaging in near real-time based on subtle cultural cues. Yet, scholars caution that even advanced vibe coding risks flattening the complexity of human discourse into quantifiable categories.

AI vibe coding in software development has also enabled human non-coders to develop digital marketing assets without any coding knowledge. Vibe coding is a term coined by Andrej Karpathy (one of the Open AI co-founders) in February 2025. It refers to the software development approach where developers rely heavily on large language models (LLMs) to generate code based on high-level, natural verbal language descriptions, rather than writing every line of code manually (Benj, 2025). Rather than type instructions, human creators speak into the computer microphone, describing the overall product and features required. The AI asks qualifying questions in the process. The name comes from a way of coding where you "give in to the vibes" and let the AI handle the precise coding details, focusing more on the overall functionality and desired outcome.

This is a more intimate dance of interplay between AI and HI. It is often used for rapid prototyping of digital assets such as apps and websites. Vibe coding can be particularly useful for rapidly prototyping new features or applications, allowing for faster iteration and experimentation. Where the human expertise comes in is because vibe coding may not always produce production ready code due to potential issues with code quality, security, or long-term maintainability. It also requires an understanding of the environment. Even with AI assistance, developers need to understand the underlying technology and environment to effectively guide the AI and address potential issues. Vibe coding represents a shift from traditional, precise coding from humans to a more conversational and iterative approach, where the human developer and the AI collaborate to build software.

AI Agents: From Tools to Teammates

The frontier of marketing AI is populated by increasingly autonomous AI agents. These are systems that act on behalf of humans to negotiate ad buys, manage influencer contracts, and

even design campaign concepts. Such agents combine natural language processing, reinforcement learning, and strategic planning algorithms. Recent research shows AI agents outperform human teams in optimising media spend across multiple channels simultaneously. However, human oversight remains essential, especially when agents operate in high-stakes environments involving legal risk, brand reputation, or consumer privacy (Davenport & Mittal, 2023).

Towards a Hybrid Intelligence Future

This chapter was written in June 2025. The development of AI and its use case applications are growing exponentially. As AI vibe coding and agents become fixtures in marketing, the landscape shifts from human-versus-machine to hybrid intelligence. The best campaigns will emerge not from technological wizardry alone, but from HI and AI partnerships grounded in ethics, empathy, and strategic vision.

In this dance, marketers must remember, AI is not the leader but the partner. It can spin, leap, and follow every beat with inhuman precision, but only humans can choreograph the steps that imbue the dance with meaning, emotion, and connection. The future belongs to those who lead the dance with intuition and creativity, shaping each movement into a compelling performance. We may argue who is the better dancer, Rogers or Astaire, but it is the synchronous virtuosity of their performance together, of human expression that is the art.

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Dr Andrew West is the Course Director of the Master of Digital Marketing at the *University of Technology Sydney*. His current research is on the impact of generative AI on marketing.

CHAPTER 19

Mind over Machine: Reclaiming Learning in the Age of Artificial Intelligence

Jotsana Roopram
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As artificial intelligence (AI) technologies become increasingly embedded in university settings, higher education faces urgent ethical and pedagogical dilemmas. The widespread availability of generative AI tools has complicated traditional notions of authorship, originality, and academic accountability. This article critically examines how these technological shifts challenge established definitions of academic integrity and place new demands on both students and educators. It explores the potential for AI to serve as a constructive educational aid when used responsibly, while also acknowledging the risks of its misuse in undermining intellectual engagement and epistemic responsibility. This article outlines how higher education instituions (HEIs) must respond through assessment redesign, clearer integrity frameworks, and the integration of AI literacy into curricula. By focusing on the development of critical thinking and ethical decision-making, the paper calls for

a renewed institutional commitment to fostering genuine student learning in an AI-mediated academic landscape.

AI and Higher Education

The integration of artificial intelligence (AI) into higher education has transformed the learning landscape, offering both remarkable opportunities and significant challenges. Tools like ChatGPT, Grammarly, and other generative AI systems are now embedded in the educational experiences of many students, prompting widespread debate over their role in learning, assessment, and academic integrity. As HEIs worldwide grapple with the implications, critical questions arise: How can institutions balance the advantages of AI while safeguarding the development of actual human intelligence? What policies and pedagogical strategies are needed to ensure that students remain engaged in authentic intellectual work?

This article explores the tensions between artificial and actual intelligence in higher education, focusing on the ethical, pedagogical, and institutional challenges that arise. The responsible use of AI tools has the potential to enhance learning outcomes, whereas their misuse may compromise epistemic responsibility and authentic cognitive development. The paper concludes with recommendations on policy, assessment design, and necessary cultural shifts within educational institutions to uphold academic integrity in an AI-mediated learning environment.

Defining Artificial and Actual Intelligence

Understanding the difference between *artificial* and *actual* intelligence is fundamental to addressing the academic integrity issues posed by AI. Artificial intelligence refers to the capability of machines and algorithms to perform tasks that typically require human cognition. This includes activities such

as language processing, problem-solving, decision-making, and pattern recognition (Russell & Norvig, 2021). Popular AI tools can now produce human-like written responses, generate code, analyse data, and provide detailed explanations on a wide range of subjects.

However, AI fundamentally lacks consciousness, ethical judgment, and self-awareness. It cannot reason morally, reflect on its outputs, or assume responsibility for knowledge claims. In contrast, actual intelligence, human intelligence, is characterised by critical thinking, ethical reasoning, reflective judgment, and the ability to engage with knowledge in a contextually meaningful way. In academic settings, this human capacity for understanding, analysis, and ethical engagement is what institutions seek to develop and assess. This distinction is crucial in higher education, where the goal is not simply the production of correct answers but the cultivation of independent thinkers capable of nuanced analysis and ethical reasoning. The challenge is ensuring that AI remains a tool that supports, rather than replaces, these human intellectual processes.

AI as a Learning Tool: Opportunities and Risks

When used ethically and strategically, AI tools can offer valuable learning support. They can help students develop writing skills by offering real-time feedback, assist with brainstorming during the early stages of an assignment, or help clarify difficult concepts through interactive explanations. Research by Thompson et al., (2023), shows that students who integrate AI tools into their learning process while maintaining personal engagement with the material often demonstrate increased confidence and deeper understanding of content. For example, a student struggling with academic writing may use an AI tool like Grammarly to identify grammatical errors and stylistic inconsistencies. Another student might use ChatGPT to generate a summary of a complex journal article before critically engag-

ing with the full text. These forms of support can promote iterative learning and foster metacognitive awareness.

However, the misuse of AI presents significant risks. When students rely on AI to generate entire assignments or conduct research without critical engagement, they bypass essential learning processes. Cotton, Cotton, and Shipway (2024) found that some students resorted to using AI to complete coursework due to time pressures, lack of confidence, or difficulty understanding assignment requirements. In many cases, students did not fully comprehend the content submitted under their name, raising serious concerns about learning outcomes and academic integrity.

Epistemic Responsibility and Knowledge Integrity

Academic integrity is not solely about preventing plagiarism or cheating; it is fundamentally about epistemic responsibility, the obligation of students to engage with, justify, and take ownership of the knowledge they present. AI-generated content, while often grammatically fluent and factually plausible, may lack depth, critical insight, and contextual relevance. This creates an epistemic gap between what is submitted and what the student actually understands. The epistemic responsibility in the AI era requires students not only to produce content but also to critically engage with it. Students must be able to explain, defend, and critique the knowledge they present, demonstrating genuine understanding and intellectual ownership. This expectation is especially crucial in disciplines where ethical reasoning, nuanced analysis, and professional judgment are required, such as medicine, law, education, and the social sciences.

Moreover, unchecked reliance on AI can lead to the dissemination of misinformation. Given that generative AI tools sometimes produce outputs with factual inaccuracies or invented references, students who fail to critically evaluate AI-

generated content risk undermining the integrity of academic discourse.

Redefining Cheating in the Age of AI

Traditional definitions of academic misconduct such as plagiarism, collusion, and contract cheating are increasingly inadequate in addressing the ethical challenges posed by AI-generated content. Unlike human collaborators or ghostwriters, AI tools generate original but machine-produced text. This blurs established lines between acceptable assistance and academic dishonesty. Is using ChatGPT to write an essay a form of cheating? What about using AI tools to generate coding solutions, design diagrams, or summarise research articles? These questions highlight the urgent need for HEIs to redefine academic integrity standards.

Balalle & Pannilage (2025) conducted a comprehensive review of institutional responses to AI, revealing that many HEIs were slow to update their academic integrity policies. This policy lag created confusion among students and educators, increasing the risk of unintentional misconduct. The review emphasised the importance of developing clear, specific, and transparent guidelines outlining acceptable and unacceptable uses of AI in academic work.

Some HEIs have begun implementing policies requiring students to disclose any use of AI tools in their assignments. Others now ask students to submit reflective statements or oral explanations alongside written work, ensuring that students can demonstrate understanding of their submissions.

Reimagining Assessment Design

To effectively uphold academic integrity in the AI era, assessment practices must evolve. Traditional assessment formats, such as take-home essays or standard multiple-choice

tests, are particularly vulnerable to AI misuse. Instead, assessments that require personal engagement, critical reflection, and real-time demonstration of knowledge are more resistant to AI-driven misconduct. Some suggested strategies for redesigning assessments to prioritise higher-order cognitive skills include:

- In-class assessments and oral defences: These allow educators to directly evaluate a student's reasoning and understanding.
- Project-based learning with iterative feedback: Breaking large assignments into smaller, scaffolded tasks with regular feedback, reduces opportunities for AI misuse.
- Reflective journals: These encourage students to connect academic content with personal experiences, making AI-generated responses easier to detect.
- AI critique assignments: Students are asked to analyse, critique, or improve an AI-generated text. This not only assesses critical thinking but also builds AI literacy.

Additionally, incorporating multimodal assessments (e.g., combining written, oral, and visual presentations) can further discourage reliance on AI-generated solutions.

Ethical Engagement and AI Literacy

Promoting ethical engagement with AI tools requires more than policy enforcement. It involves fostering AI literacy among students and staff. AI literacy encompasses not just technical proficiency but also ethical awareness, critical evaluation skills, and a clear understanding of academic expectations. Zawacki-Richter et al. (2019), emphasise that integrating AI literacy into curriculum design is essential. This can be achieved through:

- First-year orientation modules: Introducing students to ethical AI use and academic integrity expectations.

- Discipline-specific workshops: Addressing how AI tools intersect with professional standards in fields like law, education, and engineering.
- Academic skills tutorials: Teaching students how to evaluate AI outputs, recognise limitations, and appropriately reference AI assistance.

By embedding AI literacy within the broader framework of digital competence and academic skills, academic institutions can empower students to make informed, ethical decisions about their AI use.

Building a Culture of Integrity

Beyond assessment design and policy updates, fostering a campus-wide culture of academic integrity is critical. A culture of integrity goes beyond rule-following; it reflects shared values of honesty, responsibility, and ethical engagement. Educational institutions should advocate for student involvement in policy development and integrity initiatives. When students participate in creating guidelines and leading peer-education campaigns, they develop a stronger sense of ownership and accountability. Strategies to build a culture of integrity include:

- Peer-led integrity workshops: Encouraging students to educate each other about ethical AI use.
- Open forums and discussions: Providing spaces where students and staff can discuss emerging challenges related to AI and academic integrity.
- Transparent communication: Clearly articulating expectations, consequences, and support resources related to AI use in all course syllabi and institutional documents.
- Support services: Offering academic support centres where students can seek guidance on ethical AI use, citation practices, and responsible research strategies.

Ultimately, embedding integrity into the institutional ethos requires a shift from punitive approaches toward proactive education, dialogue, and support.

The rise of AI in higher education represents both a remarkable educational advancement and a significant threat to academic integrity if not properly managed. AI tools can undoubtedly enhance learning, support students with diverse needs, and streamline educational processes. However, these tools also present new risks that demand urgent attention from educators, policymakers, and students alike.

To preserve academic integrity in this evolving context, educational institutions must:

- *Clearly distinguish between artificial and actual intelligence in their educational policies and practices.*
- *Foster epistemic responsibility by encouraging students to take ownership of their learning and knowledge production.*
- *Redesign assessments to prioritise critical thinking, personal engagement, and authentic demonstration of learning.*
- *Promote AI literacy and ethical engagement through targeted curriculum interventions.*
- *Cultivate a culture of academic integrity that is proactive, student-centred, and responsive to technological change.*

Ultimately, the goal of higher education remains unchanged: to nurture independent, reflective, and ethically responsible thinkers. As educational institutions adapt to the AI era, reaffirming this core purpose is essential to maintaining the integrity and value of academic qualifications.

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Jotsana Roopam is the Academic Experience Manager and Campus Manager (Sydney) at *UBSS*. She is a professional member of the *Institute of Managers and Leaders*.

CHAPTER 20

Using AI in Contract Management and Commercial Contracting

Cyril Jankoff
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"AI will not replace humans, but those who use AI will replace those who don't."
Ginni Rometty, Former CEO of IBM

Commerce involves buying and selling goods, which requires professionalism and sufficient financial resources. A legally binding contract connects parties and must be managed to ensure the timely delivery of the agreed-upon deliverables. Contract management, a branch of management, includes the management of procurement and sales contracts. Below, we will explore the impact of AI on contract management and contracts themselves. In doing this, we will compare artificial intelligence with actual intelligence.

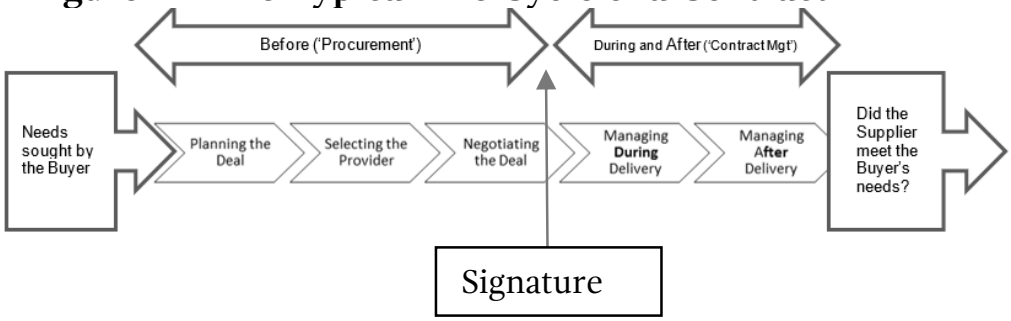
The contracting process context

To provide context, we will now examine the contracting process. A *contract* is a legally binding agreement that outlines the terms and conditions of a business transaction, ensuring clarity, enforceability, and minimising risks. *Contract management* involves the skill and science of handling commercial contracts, which includes overseeing contracts, deliverables, deadlines, risks and terms and conditions, while also maintaining customer satisfaction. Both public and private organisations recognise that purchasing does not end when a contract is awarded. A commercial contract is a business's "DNA," defining the rights and obligations of all parties involved.

Commercial contracting

Commercial contracting involves creating, negotiating, implementing, and managing legally binding agreements between businesses, suppliers, customers, or partners. These contracts typically include contractual terms such as deliverables, pricing, timelines, and dispute resolution. The contract lifecycle spans from idea to completion, covering creation, execution, and management, from request to renewal or termination. Effective contract lifecycle management (CLM) streamlines these processes, ensuring efficiency, compliance, and value. As shown in Figure 1 below, a contract's simplified lifecycle consists of two key stages: pre-signature (planning, selection, and negotiation) and post-signature (delivery and, where relevant, renewal). AI can assist throughout these stages by analysing and optimising contract processes.

Figure 1 – The Typical Life Cycle of a Contract



Source: Jankoff, C. (2022).

Intelligence and artificial intelligence

Contract management, whether in procurement or sales, is a challenging, high-stakes discipline. Contracts are not just legal tools; they serve as operational plans that outline commercial relationships, obligations, rights, and remedies. Additionally, they serve as risk management tools. A single mistake in drafting or poor management of post-execution duties can cause expensive disputes, operational delays, and damage to reputation. The *BHP v Orenstein* (2008) case, discussed later, clearly highlights this risk. "Intelligence", in a broad sense, encompasses human faculties such as reasoning, learning, perception, memory, and decision-making. "Artificial Intelligence" (AI), by contrast, refers to the simulation of these human capabilities by machines. In the realm of contract management, this means AI-powered systems can now analyse legal and associated documents, detect risk patterns, automate workflows, and provide decision support functions traditionally performed by experienced professionals.

What is now happening with AI?

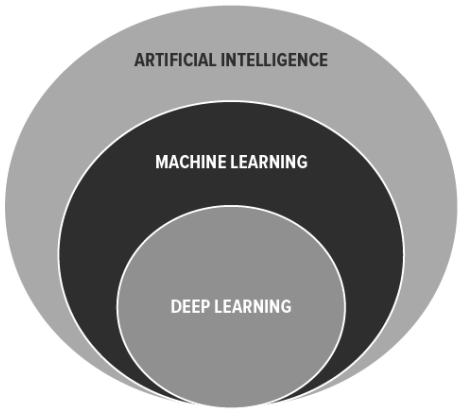
As the contract management function becomes increasingly digitised, Contract Lifecycle Management (CLM) systems supported by Artificial Intelligence (AI) are transforming how contracts are created, reviewed, executed, and governed. These

technologies aren't just tools—they are enablers of strategic, risk-aware contracting. Essentially, CLM provides the framework, and AI boosts the functionality and efficiency of that framework.

AI's potential

To effectively leverage AI, it is essential to understand its main categories. The first is Artificial Intelligence (AI), a broad field that enables machines to perform tasks typically requiring human intelligence. The second is Machine Learning (ML), a subset of AI focused on training algorithms to recognise patterns in data and improve over time without explicit programming. The final branch is Deep Learning (DL), an advanced form of ML that uses neural networks to learn from unstructured data (for example, contract text) without relying on human-engineered features. This relationship can be visualised (see Figure 2, below) as a series of concentric circles. AI is the overarching category that covers the entire field, while ML is a subfield within AI. DL is a more refined version of ML, representing the most innovative AI applications currently in use, as well as those that will be developed in the future. In summary, deep learning (DL) is an evolution of machine learning (ML).

Figure 2 – AI and Its Sub-Categories



Source: Global X (2025)

How AI can make commercial contracting more efficient

CLM platforms oversee the end-to-end lifecycle of a contract—from initiation through execution to renewal or termination. Integrated AI capabilities now empower CLM tools to automate repetitive tasks, extract valuable insights, and optimise contractual performance. AI can enhance nearly every stage of the above-mentioned contract lifecycle. We will now consider how this can occur and summarise the enhancement in the pre- and post-signature Figure 1 lifecycle stages.

Pre-signature Enhancements (Drafting, Review, Negotiation)

AI aids contract drafting and review by offering templates, flagging risky clauses, and simplifying legal language. It supports negotiations with suggested changes and alerts for potential conflicts. Machine learning predicts effective strategies from past data. During execution, AI automates tasks such as payments upon delivery and streamlines workflows for seamless implementation. Specifically, AI supports the front-end contracting process in several ways:

- *Smart Authoring*: Auto-generates first drafts using approved clause libraries and templates aligned with company policy.
- *Risk Analysis*: Flags non-standard clauses, legal anomalies, and high-risk language.
- *Language Simplification* Translates complex legalese into business-friendly language to support cross-functional collaboration.
- *Negotiation Strategy*: Analyses past negotiations to propose favourable fall-back positions and predict counterpart responses.

Post-signature Governance (Monitoring, Compliance, Renewal)

AI systems in contract management track key dates, deliverables, performance metrics, and search for specific terms or clauses across thousands of contracts. It can flag non-compliance, analyse market terms, identify underperforming contracts, and highlight variation negotiation issues. AI can also suggest renewals, price escalations, amendments, and manage version control, as well as recommend clauses based on historical data. Specifically, after execution, AI shifts focus to performance and compliance:

- *Obligation Tracking*: Monitors delivery milestones, payment terms, and notice periods to ensure timely completion.
- *Deviation Detection*: Highlights discrepancies between actual performance and contract commitments.
- *Amendment Recommendations*: Suggests updates based on market changes or precedent-based learnings.
- *Version Control*: Manages contract iterations with a clear audit trail and recommended clause enhancements.

Lawyers, contract managers, and contracts: How does AI help?

AI assists lawyers, contract managers and other contracting professionals dealing with contracts by automating repetitive tasks, enhancing accuracy, and supporting contract review, drafting, negotiation, and management. AI tracks key dates and deadlines, syncing with CLM systems and software. AI enhances legal research by analysing large datasets for relevant cases and risks, helping with risk assessments and regulatory monitoring to ensure compliance and avoid issues. While AI automates many tasks, it also enhances lawyers' strategic work, resulting in improved client outcomes. Key benefits include reducing drafting and review time by up to 80%, improving

consistency, lowering human errors, and cutting legal costs. It also increases compliance, risk management, and frees legal teams for higher-value tasks. In summary, legal professionals and contract managers are under increasing pressure to do more with less—less time, fewer resources, and reduced risk tolerance. As just seen, AI offers concrete benefits; however, the value of AI depends on thoughtful deployment, training, and continuous oversight. It is a tool, not a substitute for human judgment. AI should be seen as a "co-pilot", one that enhances productivity, ensures consistency, and surfaces insights, but never drives alone. To use AI responsibly in contract management, use it to:

- *Train Teams*: Ensure lawyers and contract professionals understand how to interpret and validate AI outputs.
- *Maintain Oversight*: Implement human-in-the-loop review processes for all AI-generated documents.
- *Prioritise Data Governance*: Secure, structured, and ethically sourced data is essential for AI performance.
- *Deploy Safeguards*: Use verification protocols, especially for critical terms and case law references.

The disadvantages of using AI

While AI benefits legal and business tasks, such as research and review, it also has drawbacks. It depends on potentially incorrect and unverified information, which risks inaccuracies and poor decisions. Bias in training data can reinforce prejudices, known as "GIGA" or "Garbage in, Garbage out". Ethical issues arise from the use of outdated AI-generated data. Overreliance on AI can diminish managers' skills in judgment, critical thinking, and understanding contract principles, as it encourages laziness and blind acceptance of what is provided. AI is a machine, not a human, and won't replace human intelligence now or anytime soon. Most consider it unlikely to re-

place intelligence. Specifically, risks when using AI in contract management include:

- *Data Quality*: Poor-quality training data can lead to biased or erroneous outputs ("GiGA").
- *Ethical and Legal Risks*: Misuse or overreliance may lead to compliance failures, particularly when AI generates outputs without understanding the nuances of legal or other business contexts.
- *Loss of Expertise*: Blind reliance on AI may lead to the erosion of critical thinking and contract interpretation skills within legal teams.
- *Privacy and Security*: Handling of sensitive contract data raises concerns over confidentiality and data sovereignty.

A contracting disaster and how AI could have been used to assist the parties

The legal case

The BHP v Orenstein (2008) Queensland Supreme Court case highlights the risks involved in contracts that might have been avoided if AI had been used during negotiations. The case facts show that BHP hired the Orenstein Corporation to assess the maintenance needs of their Bucket Wheel Excavator, an essential piece of equipment used in coal mining. The agreed fee for the single-day visit was $28,000. The engineer's brief inspection was insufficient, leading to significant and avoidable downtime. BHP sued, claiming $100 million in lost profits and repair costs. The judge had to determine liability and, if applicable, the damages. She found the contract to be unclear but believed BHP's documents reflected the actual agreement. She also noted that BHP's loss estimates were unreliable and set damages at only $53 million. This decision surprised Orenstein, which had agreed to a $28,000 fee for the day's work but now faced paying $53 million in damages! Overall, the main issue in

this case was the ambiguity in contractual obligations and deliverables.

How could AI have assisted

If the transaction had taken place today, AI could have all stages been utilised by both parties to:

- Draft precise scopes of work using prior clause precedents.
- Identify risks and ambiguities in contract language.
- Recommend warranties and limitations of liability to balance risk.
- Alert the counterparty to atypical terms and suggest mitigations.
- Analyse similar engagements for red-flag clauses.

If the case were to occur today and both parties optimally used AI-enabled CLM tools, the agreement might have been more explicit, risk-adjusted, and less susceptible to dispute.

Another AI disaster

The legal case

In June 2023, U.S. lawyer Steven A. Schwartz and his firm were heavily sanctioned for using ChatGPT to research **and** prepare a legal brief in a personal injury case, which ultimately contained fabricated case citations. The court found he and his firm acted in bad faith and made misleading statements, fining Schwartz and his firm $5,000. This case drew attention from the legal and tech sectors, fuelling debates on AI reliance and its potential existential risks.

How AI could have assisted

If the case were to occur today, AI could assist by identifying key issues, facts, risks, and overlooked details. However, relying only on AI was risky. In short, AI should have been used as a preparation tool. This case isn't just about one law-

yer's mistake. It's a wake-up call for legal professionals and other users of AI to exercise caution when using AI tools without clear safeguards.

Harnessing AI to create contracting excellence

Artificial Intelligence has the power to transform contract management—from a reactive, labour-intensive, lengthy, costly, paper-heavy function to a proactive, insight-driven discipline. But AI is not magic. It is a tool that extends, not replaces, human intelligence. Contracting professionals must embrace AI with a clear understanding of its strengths and limitations. By integrating AI into robust CLM systems, organisations can not only avoid costly disputes, such as *BHP v Orenstein*, but also create contracts that are clearer, faster, smarter, and more aligned with business objectives.

Takeaways

- AI should be used as a tool to enhance human abilities, not to replace human intelligence, such as thinking, creativity, or critical analysis. It should be used to boost productivity, speed up research, and *support* better decision-making, but not to foster dependence or serve as a substitute for essential skills. The New York lawyers found this out to their dismay!
- Useful quotes when warning against overreliance on AI:
    - The future of contract management isn't AI-driven—it's AI-enabled, with skilled professionals at the helm.
    - AI should augment—not replace—the diligence and expertise of users.
    - AI should be seen as a "co-pilot", one that enhances productivity, ensures consistency, and surfaces insights, but never drives alone.

- When people hear the words “artificial intelligence”, or “AI”, they do not hear the word “artificial”.

Question

Having read the above, what would you say to a colleague if they told you they programmed the new AI system to “do it all”, meaning they need to do very little? That is, the AI program writes the contract from scratch, sends it out for execution by the counterparty, files it, and then monitors performance and payment.

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Dr Cyril Jankoff is a lawyer and accountant with an MBA. His Doctorate consisted of two parts - one focused on business improvement, and the other on developing the organisation’s managers to advance their organisations. Along with his role as a business legal and accounting adviser and mentor, he has simultaneously spent most of his working career in corporate training and higher education. He is the CEO of *The Risk Doctor*, an organisation dedicated to business education and con-

sulting, specialising in commercial contracts, contract management, negotiation and risk management.

CHAPTER 21

The Future of Human Connection in an Automated World

Poppy Whateley
June 2025

Walk through the streets of San Francisco, and you will see cars driving themselves. Some of them drive better than humans. Some of them...don't. San Francisco locals will tell you the robot taxis occasionally stop in the middle of intersections like an existential crisis just hit them. Companies like Waymo and Cruise are already running fully driverless taxi services, navigating the city without a human behind the wheel (The New York Times, 2023). If you walk into a De'Longhi designed cafe in Melbourne's Federation Square, your double-shot cappuccino is brewed by a machine, activated through an app – no barista in sight. No eye contact, no judgement about how many shots of espresso you have ordered before 9am.

Visit a 24-hour tanning studio in Bondi, Sydney and you will find no receptionist or staff – just a fully automated booth that delivers a flawless glow without a single word – or towel – exchanged. And bonus: no awkward small talk about your weekend

plans while wearing floss for underwear and a disposable hair net. Chains like Casa Soleil and Tanned Co already operate fully self-service studios, offering convenience, privacy, and zero staff interaction.

We are living in a world where Artificial Intelligence (AI) is no longer science fiction. It is deeply embedded in everyday tasks. But as machines become more capable – sometimes shockingly so – the question emerges: what happens to actual intelligence? Where do humans fit in a future increasingly run by algorithms?

How is AI transforming tasks, jobs, and industries – and how is it so quickly fundamentally reshaping one of society's most sacred spaces: education.

AI is already here – you just might not notice

AI is no longer a futuristic humanoid robot. It is quietly embedded in the tools and apps we use every day.

- Self-driving cars are navigating San Francisco, albeit not without controversy. Incidents of stalled vehicles and unpredictable behaviour have made headlines (The Guardian, 2023).
- App-controlled coffee machines, like those developed by De'Longhi and Briggo (acquired by Costa Coffee), turn the morning coffee run into a tap-and-go transaction.
- Contactless tanning studios, open 24/7, are now common in a post-pandemic world where touchless experiences are in demand.
- Medical AI can already scan thousands of X-rays faster than radiologists. Tools like Google Health's AI for breast cancer detection have outperformed human specialists (Nature, 2020).

These examples raise an uncomfortable but necessary question: if AI can replace a driver, a barista, and even parts of a

doctor's job...what jobs are truly safe? And more urgently, how do we educate people for a future like this?

The AI Dilemma in Education: Cheat Code or Collaboration?

AI tools like ChatGPT, image generators, and code-completers have burst into classrooms and lecture halls worldwide. Students can now produce essays, solve math problems, write computer code, or even compose poetry with a simple prompt.

Educators are grappling with existential questions: is this cheating – or is this the new calculator? Do we ban AI, embrace it, or redesign learning around it?

The reality is unavoidable: AI can write better essays than most 14-year-olds. Teachers everywhere now live in fear of the perfect essay being written by a student who has spent exactly zero minutes awake in class. If assessments remain purely written, the temptation – or expectation - to use AI becomes impossible to police.

This has led to a growing movement back towards oral assessments, presentations, interviews, and viva voce examinations, where the student must articulate knowledge in real time, unaided.

Will the Pen Licence Become Extinct?

This shift raises an uncomfortable question for primary education too: what happens to writing itself?

In Australia and some other countries, the pen licence – a rite of passage where Year 4 students demonstrate neat, fluent handwriting to "graduate" from pencil to pen – is a symbol of mastering written communication.

But as handwriting, spelling, and even typing become less relevant in a world of voice-to-text and AI composition, does the pursuit of perfect cursive still matter? A future generation

might gaze at the framed pen licence in their parent's study and ask, "*Wait...people used to write things...by hand?*"

If students never sit handwritten exams again – and if written assignments are crafted with AI's assistance – will written skills quietly atrophy? Or do we fight to preserve them as a cultural and cognitive exercise, even if technology makes them functionally obsolete?

The New Literacy: Beyond Reading and Writing

Just as the Industrial Revolution demanded literacy in reading, writing, and arithmetic, the AI Revolution demands new literacies:

- Prompt engineering: knowing how to ask AI the right questions. Congratulations kids, you've spent a decade learning grammar – now forget it all. Your future job is telling robots what to write for you.
- Critical thinking: being able to evaluate whether the AI's answer is correct, biased, or flawed.
- Digital ethics: understanding when it is appropriate to use AI – and when it isn't.

In this model, students might not need to memorise how to structure a five-paragraph essay – but they will need to know how to cross-examine an AI's output, detect false facts, and inject their own voice into machine-generated drafts.

What AI Does Well – and Where It Excels

AI excels in:

- repetitive tasks
- data-driven decision making
- 24/7 availability
- cost efficiency

These strengths explain why industries – and now classrooms – are racing to adopt AI.

Where AI Falls Flat

Despite impressive advances, AI struggles where human nuance, empathy, and dexterity are essential.

- Hairdressers, aestheticians, and chefs: jobs requiring hands-on creativity and dexterity.
- Nurses, therapists, teachers: roles based on emotional intelligence, care, and adaptability.
- Surgeons: even with robot assistance, human judgement remains critical.

In education, AI can deliver information, but it cannot read a struggling student's body language, adapt instantly to a student's emotional state, nor inspire curiosity in the way a passionate teacher can.

Are GPs - and Teachers – Becoming Obsolete?

Much like general practitioners, teachers are knowledge facilitators – but their role is far more than dispensing information.

AI may be able to deliver perfect lectures, grade multiple-choice quizzes, or even tutor in mathematics. But the teacher's role in nurturing confidence, curiosity, and social development cannot be coded.

If anything, the rise of AI demands better teachers, not fewer. Teachers must now teach students how to think, not just what to know.

The Social Impact: Who Gets Left Behind?

As education shifts toward AI-integrated learning, disparities widen. Students with access to technology gain advantage, and those without fall further behind.

A McKinsey report (2022) predicts that automation could force 375 million workers to shift careers by 2030 (McKinsey Global Institute). The future will be divided not between those

with AI and without, but between those who understand it – and those who don't.

Will the Future Be Human – or Hybrid?

Most experts believe the future is neither fully automated nor fully human. It's a hybrid:

- Surgeons with robot-assistants
- Teachers with AI co-tutors
- Students using AI to learn but still providing knowledge through conversation, discussion, and demonstration.
- Chefs using smart ovens but still designing menus. Somewhere, a robotic sous-chef is already muttering in binary about the unreasonable demands of Gordon Ramsay.
- Nurses using AI for diagnostics but providing human care.

In this world, maybe the pen licence won't disappear – but it might share space on the classroom wall with a new award: the AI licence. A certificate showing a student knows how to use AI responsibly, ethically and critically.

What Can't Be Automated?

AI can make your coffee, drive your car, write your essay, and even suggest a medical diagnosis. But it can't yet – and may never – comfort the grieving, inspire the curious, or create something truly new.

The future of intelligence won't belong to AI. It will belong to humans who know how to work alongside it – without losing the irreplaceable skills that make us human: empathising, teaching, questioning, creating, and connecting.

Maybe the real lesson here is that how we communicate – pen, pencil, keyboard, voice, AI – matters less than the fact we keep doing it. Fun fact: I managed to finish high school, collect three

undergraduate and two postgraduate degrees...all without ever earning my pen licence. Yes, started Year 5 still on a pencil. Resilience like that? No robot can beat it. And the best part of this article? I typed it, and AI fact-checked me.

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Poppy Whateley is currently a principal consultant for *Chisol Education* (Sydney, Gold Coast).

CHAPTER 22

Artificial Intelligence (AI) versus Actual Intelligence (AcI) – Decoding ESG

Irene Mendoza
June 2025

We live in a world captivated by intelligent machines; algorithmic certainties and systems that draw upon multi-terabytes of data in a fraction of a second, and, depending on the complexity of the application, provide a plan of action. Artificial Intelligence (AI) has become a cornerstone of contemporary problem-solving. We are made to believe that it will save us from inconsistency, inefficiency and indifference. The question is, will it save us from ourselves?

This question becomes more pressing as AI enters the space of Environmental, Social, and Governance (ESG) - an arena not only inundated with disclosure frameworks and metrics, but one embedded in judgement, contested truth, social values and moral language. The space of ESG lives in that odd intersection between quantification and ethics, between what can be measured and

what ought to be considered. This is becoming a significant challenge.

While it is true that AI-generated ESG reports can deliver data at an unprecedented speed unmatched by any human research group - integrating disclosures, evaluating annual reports, analysing media sentiment - it is also true that - more often than not - it overlooks the fundamental inquiry: Why does any of this matter? What is it to know about ESG? What place is there for moral memory, cultural consciousness and the fallibilities of human discernment in a world in which machines rarely need to ask "why"? It is worth exploring AI's blistering speed against human inquiry's deliberate pace, arguing that ESG demands more than data; it needs better judgment.

The Machinery of Knowing: Data is not knowledge

I am caught between awe and doubt. Awe at the remarkable technological capability of machines to chew through terabytes of sustainability data and ranking tables in less time than it takes to boil a kettle. Doubt, because such speed does not equal understanding. Indeed, AI in ESG often reminds me of a virtuoso pianist performing a complex piece—flawless in execution - but absolutely indifferent to the essence of the music. Numbers in the boardroom can be a helpful way to measure gender diversity and inclusivity, but they don't reveal anything about power, equity, or the lived experiences of the people behind the statistics. AI doesn't understand that mining on sacred Indigenous land might be important, to say nothing of any ethics that might be in play. In short, it does not care.

Advocates of ESG automation are quick to point out that AI can help mitigate human error, bias and fatigue (Enable, green, 2024). But what they somehow fail to realise is that ESG is not fundamentally an engineering problem. It is an ethical one. Evaluating a company's carbon disclosures or labour practices is fundamentally different from optimising logistics or flagging

the scam spam. ESG can't be reduced to a mathematical problem. It would be as if you asked a thermometer to measure empathy.

On Metrics and Moral Gaps

AI is programmed to mimic knowledge, but it does not yet boast wisdom. In ESG analysis, wisdom is not simply the sum of countless weighted variables. It is the product of questions – agonised and contingent, culturally located ones. What is the environmental cost of cobalt mining in Congo, and who is paying it? What is the impact of boardroom gender imbalance beyond just the ratio? These aren't technical conundrums; they are human puzzles.

Jiang, Huang, and Tang (2023) demonstrate that AI-based ESG ratings merely amplify the biases in the underlying data, rendering them more biased not only against companies in the Global South for genuine governance failures, but also against governance diversity. What we're seeing is a mild, unintentional imperialism—a little colonisation of the mind—whereby Western theories of management become the universal standard for business ethics. The algorithm is not cruel - just profoundly unaware.

The Mirage of Objectivity and the Seduction of Speed

Let's face it: AI is incredibly fast. It sifts through 10,000 documents before we can even finish our coffee. Speed is another seduction. In 2021, when it became apparent that information about modern slavery in Xinjiang-linked supply chains had been overlooked, AI tools had identified sentiment anomalies weeks before they were confirmed by human analysts (Reuters, 2024). But what does it mean to know something early, if it still isn't fully grasped? The metaphor of "fast thinking" may flatter leading AI systems, but ESG is a slow discipline. It

requires deliberation and scepticism. A hasty recommendation is often a polished oversight.

Fast learning is not necessarily deep or comprehensive learning. The need for quick understanding may lead to cutting short thoughtful reflections. The way AI-generated recommendations appear to be authoritative can mask the fact that their assumptions are contingent upon specific conditions. A company may receive a "high ESG rating" today because its PR department is skilled at utilising disclosure metrics, rather than because it has a significant social or environmental impact.

The risk here is the lack of critical inquiry: agreeing with the AI's conclusion just because it came quickly and with exact numbers. However, ESG isn't surgery. No knife can cut through the truth of ethics. There are only points of view, arguments, and outcomes, none of which can be easily closed off by an algorithm.

Let us not be deceived by the lure of objectivity. The well-worn claim that machines do not lie, do not tire, and do not judge is, at best, simplistic and, at worst, misleading (Strathclyde University, 2024). All AI is trained and programmed on datasets that you and I had a hand in creating, labelling, and validating - with our ideologies, blind spots, institutional pressures, and professional incentives to see certain things and not others. Yes, AI can’t lie; however, it repeats the mistakes we feed it with perfect accuracy.

Accountability Without Responsibility

Another ethical argument opens when we consider accountability. When a human ESG analyst issues a recommendation, such as to divest from a firm over labour abuses, the rationale can be scrutinised. It is contextual, it may be flawed, but it is attributable. However, when an AI system makes the same recommendation, who is responsible? The developer? The data engineer? The end user? The dataset curator?

Cui (2023) has argued persuasively that AI in ESG can augment human reasoning but must never replace it. Accountability without responsibility is not merely an operational failure; it is a fundamental and moral hazard. In a world already too comfortable with outsourcing conscience to convenience, the black-box nature of AI further erodes ethical clarity.

On Plagiarism and the Pretence of Originality

What is perhaps most unsettling in my own encounter with AI-generated ESG reports is how seamlessly, if eerily, they read. Sentences are grammatically flawless, and terms are condensed in summary lines. However, read a little more closely and one realises that something quite distinct is missing, and that something is originality. The reports are not written. They are assembled. AI-generated material replicates coherence calculated across historical patterns - but rarely discovers.

When I instructed an AI tool to write an ESG risk analysis of Australia's extractive industries, it provided what appeared to be a pretty good overview. Upon closer examination, it was revealed that the "insights" were compiled from open-access papers, corporate disclosures, and reports by international NGOs, contained no citations, and were copied and pasted from other sources. This was not a point of view; it was a mosaic.

Though harsh, the word "plagiarism" is relevant here because when generative AI regurgitates precise phrases from white papers, policy documents, and open-source reports with no citation, it isn't generating—it is curating with no attribution (Enable. green, 2024). Prediction, no matter how advanced, is not a reflection. At best, ESG is a kind of critique. It disrupts. It unsettles. It asks uncomfortable questions. It challenges corporate conventions. These are not algorithmic outputs. They're intellectual and moral facts. They are the right and smart things to do.

Rethinking Intelligence: From Efficiency to Empathy

The 20th century showed us the significance of intelligence in terms of processing power. Perhaps the 21st century must make us realise that intelligence also includes memory, ethics, empathy, and imagination. ESG needs more than speed; it needs perspective. It needs intellectuals who can link carbon outputs with colonial legacies, or labour practices with transgenerational trauma.

What we require is what some scholars are calling **hybrid moral intelligence**—systems where AI aids pattern recognition and data synthesis, but where humans lead the interpretive and ethical processes (Jiang et al., 2023; Cui, 2023). Machines should never tell us what matters. They should only help us see what might. The difference is not semantic; it is civilisational.

Integrity in the Age of Automation

In an era where even politicians are now suggested to be replaced by incorruptible AI (Enable. green, 2024), it is worth pausing to reflect on what integrity means. It is not just truth-telling. It is the capacity to speak out when the data remains silent, to remain responsive to harm, and to recognise injustice even when it is invisible to metrics.

However advanced, no AI can yet perform this work. Because to care is not to calculate. It is to feel the weight of consequences that cannot be fully known, to sit with uncertainty, and to act anyway. ESG, if it is to retain any moral force, must remain anchored in this human domain.

There is, of course, a great advantage in AI. To reject it entirely would be as foolish as accepting it uncritically. But the deeper danger is not overreliance on flawed tools. It is the temptation to believe that the tools themselves have become substitutes for thought.

We must remind ourselves, again and again, that ESG is not an engineering dilemma. It is an ethical inheritance. And for all its sophistication, AI still lacks the one quality that makes ESG matter: the capacity to know better, not merely faster.

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Irene Mendoza is a Higher Education Lecturer / Associate Professor. A Fellow of the Institute of Managers and Leaders. She has extensive executive leadership roles in both academia and industry. One of Irene's research interests is the Impact of ESG in the Higher Education Sector in Australia

CHAPTER 23

Artificial Intelligence vs Actual (Human) Intelligence

Jamie Rigg
June 2025

Innovations play a vital role in enhancing the well-being and progress of humanity. It is crucial to acknowledge that technology and other forms of innovation should not be immediately dismissed as unfavourable. However, it is of utmost importance to exercise caution when distinguishing between beneficial innovations and those that may pose risks or dangers. Currently, the concept of Artificial Intelligence (AI) is a subject of intense debate worldwide. Nzenwata (2023) reports AI research is expected to span a century before reaching its full potential. Furthermore, according to the Head of Google's Self-driving car initiative, Sebastian Thrun, AI is already gradually gaining control over various aspects of our world, potentially diminishing the dominance of human beings.

The rapid progress and advancement of AI technology has raised concerns among many scholars. While some researchers argue that AI holds the potential to transform numerous fields, others express apprehension regarding its negative consequences, such as job displacement and compromised privacy.

In considering this topic, I would like to alter the perspective somewhat to examine the relationship more in terms of a potentially productive, rather than an adversarial one. At this time of writing (mid 2025) it would be prudent to acknowledge that this technology and its applications are still very much in a developmental stage. I believe it will continue to rapidly expand over coming years into most areas of human life.

This genie is well and truly out of the bottle.

All throughout human history, major technological advances have more often that not been met with fear and uncertainty. This paper addresses some of the notable examples.

Rise of the Luddites

The Luddites were members of a 19th-century movement of English textile workers who opposed the use of certain types of automated machinery due to concerns relating to worker pay and output quality. As noted by Conniff (2011), they often destroyed the machines in organised raids.

Members of the group referred to themselves as Luddites, self-described followers of_legendary weaver Neil Ludd. They undertook open rebellion against the new mechanised systems that were being rolled out throughout their industry.

The term "Luddite" has of course become a modern definition of someone who is opposed to new technologies or ways of working.

Trains, Planes and Automobiles

When the world's first public railway opened in 1825, many people were horrified. Surely, the human body could not withstand the velocity of 30 miles per hour. People believed this speed would rip you apart, or you would suffocate. (Ipsen, 2017)

The development of air travel in the early twentieth century caused much fear and anxiety at the time and while this remains a real phobia for many travellers, statistically it is by far the safest form of travel. In the 1890s, the prospect of a person driving an automobile without the aid of a second intelligence was a real concern. A horse, or team of horses, acted as a crude form of cruise control and collision aversion.

In 1896 Alfred Sennett warned "We should not overlook the fact that the driving of a horseless carriage calls for a larger amount of attention for he has not the advantage of the intelligence of the horse in shaping his path, and it is consequently incumbent upon him to be ever watchful of the course his vehicle is taking." (Anslow 2016)

In an ironic twist of history repeating, similar fears are being expressed today with the introduction of driverless cars.

Radio and Television

The term "radiophobia" was first used in the U.S. in the early 1900s. In the following century, fresh anxieties accompanied the release of new innovations, including radio broadcasts, microwave ovens and power lines.

"We are more afraid of risks that we can't see," said Davis Ropeik, author and risk perception and communication consultant who has written extensively on the subject. "Deep fear of nuclear radiation is widespread, yet research on radiation's biological effects finds that the level of alarm far exceeds the actual danger. This "radiophobia" has roots in the fear of nuclear weapons but has been significantly reinforced and inflamed by accidents at nuclear power plants. Radiophobia does far more harm to human health than the radiation released by nuclear accidents."

Mobile Phones and Wi-Fi

Much research has been undertaken into the negative effects of mobile phone usage, i.e. radiation exposure, eye and vision problems, and of course the potential for mental health issues relating to obsessive use leading to addiction.

And for many people Wi-Fi can be a scary thing. Nilsson (2021) notes that many people still worry about "electro sensitivity" and other ill effects from wi-fi, yet there's still no reliable evidence of any kind to support this.

The Desktop Computer

With parallels to the Industrial Revolution of the 1800s, the development and widespread adoption of the desktop computer throughout the 80's and 90's caused much anxiety within many areas of the workforce.

Here was a machine that could undertake tasks at lightning speed with accuracy and reliability. Holoware (2025) writes that this created a wave of panic amongst many office workers who believed they were on the verge of redundancy.

Nuclear Technology

The invention of the atomic bomb 80 years ago was going to hasten the demise of all life; however (so far), humans have managed to control and contain this most potent of forces.

Today, nuclear technology and energy plays an enormous role in modern society.

It is notable that the same terms that were used to describe the effects of all these inventions are being used today to describe the impact of Artificial Intelligence on the world community.

- Dehumanization
- Job Displacement
- Social Disruption

- Environmental Impact

We now live in a world that could not function without all or any one of these innovations and technological developments.

AI and the Creative Arts

In my lifetime I have experienced an amazing technological surge that has given rise to enormous advancements in the quality and efficiency of everyday life. However, there is a particular area of AI development which must be seen as concerning and that is its encroachment into the creative arts.

In the words of Dr Tim Dean (The Ethics Centre):

"If we believe that creative expression is inherently meaningful, and the works it produces are intrinsically valuable, then this assault on artists' jobs would be a net loss for humanity. It's one thing for machines to replace labourers on farms; it's another thing entirely for AI to empty studios of artists.

But despite all the lamentations about the impact of AI on art, when I dug deeper, I realised that it's not really AI that poses the greatest threat to art. It's capitalism. And instead of AI accelerating the decline of art, it could be the key that unshackles us from our current form of scarcity capitalism and allows art to genuinely flourish."

The AI revolution is well and truly here and just like the afore mentioned, it is the product of human intelligence and curiosity, seeking to expand the boundaries of possibility. Perhaps the future for AI will follow a similar path with benefits far outweighing the negatives.

History has taught us that with all such technological leaps, there's no going back. We learn to adapt and embrace with a mix of excitement, hope and trepidation.

Let's remain forever optimistic!

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Adjunct Professor Jamie Rigg is a Fellow of the *Centre for Entrepreneurship* and is currently the Chair of the Academic Board at the *Australian Academy of Music and Performing Arts (AMPA)*

CHAPTER 24

AI vs the Teacher

Issac Chung Lee
July 2025

Prominent businessman and futurist, Bill Gates, has made recent claims that AI will soon replace doctors and teachers in an era of "free intelligence". It is a provoking thought as we navigate the dawn of the 5th industrial revolution at lightning speed, with announcements such as the "Microsoft AI Diagnostic Orchestrator" showing that elements of this theory may be plausible.

This paper considers the historical changing balance of power between human intelligence (AcI) and artificial intelligence (AI). It has been assumed that humans will be the dominant partner in this relationship for decades into the future but as the rapid pace of development in AI performance has exceeded expectations this timeframe is diminishing. The question now is how soon this master/apprentice relationship will be inverted, and whether AI has the capability to replace teachers and deliver more successful education outcomes than their human counterparts.

Microsoft AI Diagnostic Orchestrator (MAI-DxO)

MAI-DxO, an AI-powered medical program from Microsoft, has generated widespread attention by correctly solving 85.5

per cent of 304 complex medical cases from the New England Journal of Medicine (NEJM), compared to "inferior" human doctors who could only solve a mere 20 per cent of cases (Heikkilä & Morris, 2025). To accomplish this feat MAI-DxO used a novel method known as "chain of debate", combining five independent language and reasoning models from Google, OpenAI, Meta, Anthropic, DeepSeek and xAI to simulate a panel of doctors debating each other until a final solution is realised. Mustafa Suleyman, CEO of Microsoft AI, went on to say that AI is "not just a little bit better, but dramatically better, than human performance: faster, cheaper and four times more accurate". While results are limited to one study, the potential benefits such as improving health rates and access to medical care in developing countries are intriguing. Similarly, impacts on the quality of the medical services and dangers of relying solely on AI should be monitored closely.

IBM's Deep Blue

The MAI-DxO study is only the latest example of machines dominating humans in the cognitive arena. The defeat of world Chess champion Garry Kasparov by IBM's Deep Blue in 1997 was a symbolic milestone. Berman (2023) writes that after an initial match in 1996, which Kasparov won, improvements were made to Deep Blue, enabling it to analyse 200 million possible moves per second.

"The rematch drew intense media attention and public interest. While Kasparov initially won the first game, a critical moment occurred in the second game when he resigned unexpectedly, believing Deep Blue had a winning position. This misstep may have shaken his confidence, impacting his performance in subsequent games, which resulted in draws. Ultimately, Deep Blue secured its victory in the final game, illustrating the machine's computational prowess".

DeepMind's AlphaGo

The ancient Chinese game of Go is a profoundly complex board game of strategy, creativity and ingenuity. Unlike Chess, the number of positions in Go is greater than the number of atoms in the observable universe. World *Go* champion Sedol Lee submitted to DeepMind's AlphaGo program in 2016, almost a decade before experts thought possible. As reported by Wood (2016) "In Game Two, the Google machine made a move that no human ever would. And it was beautiful. As the world looked on, the move so perfectly demonstrated the enormously powerful and rather mysterious talents of modern artificial intelligence. But in Game Four, Sedol made a move that no machine would ever expect. And it was beautiful too. Indeed, it was just as beautiful as the move from the Google machine...no less and no more". It showed that although machines are now capable of moments of genius, humans have hardly lost the ability to generate their own transcendent moments and proved that AI systems can learn how to solve the most challenging problems in highly complex domains.

OpenAI Five

The greatest Esports players and teams have also met a similar fate in online strategy games such as StarCraft and Dota 2. OpenAI Five is the first AI to beat the world champions in an esports game, having won two back-to-back games versus the 2018 & 2019 world champion Dota 2 team, OGesports (Piper, 2019). Both OpenAI Five and DeepMind's AlphaStar had previously beaten good pros privately but lost their live pro matches, making this also the first time an AI has beaten esports pros on livestream.

Based on previous records AI should clearly stand as the favourite in any problem-solving challenge against us lowly humans, but can AI really replace teachers?

AI in the School Classroom

Like Gates, Duolingo founder and CEO Luis von Ahn believes so, and argues that all teaching will soon be delivered by AI with the role of teachers transitioning to guidance, motivational and emotional support, or as Ahn refers "childcare" (Barr, 2025). Alpha School, a K-8 school in Texas, is already pushing ahead with this theory. Students at this exploratory school complete self-paced academic lessons via an AI platform for 2 hours each day, while spending the rest of the time developing non-academic skills with "guides" rather than teachers. With such a radical approach to classroom learning, we await broader studies across a longer time span to gain more insight in the potential benefits and consequences this program will have on students.

On the political front, Donald Trump has now signed an executive order for the integration of AI into classrooms across the nation. An excerpt of the *Advancing Artificial Intelligence Education for American Youth (April 2025)* states:

"To ensure the United States remains a global leader in this technological revolution, we must provide our Nation's youth with opportunities to cultivate the skills and understanding necessary to use and create the next generation of AI technology. By fostering AI competency, we will equip our students with the foundational knowledge and skills necessary to adapt to and thrive in an increasingly digital society. Early learning and exposure to AI concepts not only demystifies this powerful technology but also sparks curiosity and creativity, preparing students to become active and responsible participants in the workforce of the future and nurturing the next generation of American AI innovators to propel our Nation to new heights of scientific and economic achievement."

EdX and AI Tertiary Providers

From the establishment of the Open University in London, 1969 to the E-Learning proliferation of the early 2000's, technology-enabled learning has been around for some time. More recently 'Massive Open Online Courses' (MOOCs) were promoted as the latest disrupter to the education system with the aim of decentralising university courses and providing accessible education to all by utilising video, digital and Web 2.0 technology. Companies such as Coursera and EdX grew exponentially in share price by offering qualifications from major brands like Harvard and MIT but suffered from dwindling user interest and low completion rates of 20% (Newton, 2020). EdX then developed intervention strategies to boost student engagement such as self-regulation strategies, social interventions and the use of machine-learning algorithms, but with demand continuing to fall parent company, 2U, ultimately filed for bankruptcy in 2024 (Vee, 2025). Similarly, Ahn (Duolingo) has stated "there is nothing that computers cannot teach" but given reports of Duolingo's remarkably low completion rate of 0.1% (Wallingford, 2024) the effectiveness of using technology alone for learning remains unanswered.

Based on these completion rates AI is yet to prove that it can replace the teacher, however benefits of using AI as teaching tools are being experienced across the globe with adaptive learning (AL), gamification, chatbots, productivity tools and media production programs now transforming the learning experience. Programs such as Duolingo (2025), despite poor completion rates, reported 100 million monthly active users in 2024 and are finding mass appeal by making learning enjoyable. Shah (2023) describes the benefits of AI for teachers in improving time-efficiency and assisting with course planning, communication and administrative tasks. The potential use cases seem endless, however, to completely replace the teacher

AI would need to make an unprecedented step in understanding the wider pedagogical context as well as mimicking the social-emotional competencies to motivate, lead and inspire students (Chan & Tsi, 2023). It seems inconceivable that students will one day be inspired and led by robots, no matter how intelligent or technically competent. The inherent human elements of creativity and emotional intelligence appear to be strong assets in the battle of AI vs the teacher, as evidenced so far in the low completion rates of "teacherless" systems such as Duolingo and EdX.

It is unclear whether AI will one day replace teachers completely, but we can be sure the likes of Gates and Ahn will forge ahead with incredible progress in hope of forming a utopian, technocentric world. Asking what Chat GPT thinks, the response is that "AI will take on more teaching responsibilities in the future, but replacing human teachers entirely is unlikely — especially in higher-quality education systems".

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Issac Chung Lee is Chief Operating Officer (COO) at the *Australian Academy of Music and Performing Arts* (AMPA). He is also a member of the *Musicum20* consortium.

CHAPTER 25

Does a successful integration of artificial intelligence in a tertiary music education setting exist

Elizabeth Jones
July 2025

This article investigates the role of Generative Artificial Intelligence (GenAI) in enhancing learning and engagement in tertiary-level music education. Drawing on continual developments in intelligent tutoring systems, GenAI-assisted composition tools, and real-time feedback platforms, this research examines both the pedagogical benefits and ethical complexities of integrating GenAI into undergraduate music curricula. Through a mixed-methods study, including recent literature and practical application in a tutorial setting, this article intends to generate further discussion and research into the evolving role of music educators, ethical implications of GenAI and creativity alongside the provision of a practical foundation for music educators at an undergraduate level.

GenAI transforming tertiary education

GenAI is rapidly transforming many domains of tertiary education, with music emerging as a particularly rich area of experimentation and innovation. GenAI systems can now analyse performances, generate compositions, personalise learning, and even simulate ensemble participation in virtual environments. However, despite these advances, concerns remain about:

- The erosion of human creativity and emotional nuance
- Academic integrity in GenAI-supported work
- The teacher's evolving role in GenAI-mediated classrooms

These concerns have seen music education lag behind other subjects which have incorporated GenAI into their teaching and assessments (Zulic, 2019). Recent studies by Merchán Sánchez-Jara et al. (2024), Lei (2025), and Greco & Ludovico (2025) have called for empirically grounded research into how GenAI tools are used in real classroom settings and what outcomes they produce for students.

This article will investigate –

- How AI is currently being incorporated in tertiary music education in Australia
- The impact that AI integration has on student learning outcomes, creativity, and engagement
- A framework for responsible and effective implementation of GenAI in a tertiary music education environment

"It is the responsibility of the educational institutions to ensure graduates are adequately prepared to deal with the swift pace of evolution." (Lee, 2025)

A Mapping of GenAI in Australian Tertiary Music Degrees

The incorporation of GenAI at a tertiary level is continually shifting.

Tertiary providers in Australia have established policies that cover the responsible use of GenAI in assignments and academic tasks under academic integrity. These policies vary according to institutions with all requiring disclosure and use of GenAI. The University of Sydney as of Semester 1, 2025 states "you are allowed to use generative AI and automated writing tools for your assignments, unless your unit coordinator has prohibited the class from using it. You must acknowledge any use." (University of Sydney, 2025). The use of GenAI is not allowed at an examination level or thesis level.

Transparency of how GenAI is involved in a tutorial setting is limited. Providers focus on the integration of GenAI in a production setting, composition setting, or performance setting. The method of integration is not clearly defined. The University of Adelaide has pioneered the Electronic Music Unit with digital arts and sonic arts programs now incorporated with advanced music technology and AI tools in composition and sound design under a major of Sonic Arts (University of Adelaide, 2024). The University of New South Wales is actively integrating AI in hands-on research and industry partnerships. Associate Professor Brown in the news release of 2021 "Artificially intelligent music finds a home at UNSW stated, "UNSW Art & Design has a world class reputation for collaboration in the creative application of new technologies and the new Arts, Design & Architecture (ADA) faculty merger now brings together all of the creative fields in UNSW under one roof," (Wallis, 2021). In 2024 the Australian National University presented a concert that was a collaboration between the College of Engineering, Computing & Cybernetics and the School of Music that "unveiled six new instruments, each embedded with

AI and augmented reality components." (ANU College of Systems & Society, 2024).

Tutorial Implementation

Within a creative practice focused degree, the engagement of students in an academic setting is challenging. The Academy of Music and Performing Arts (AMPA) provides a Bachelor of Music degree with streams in Performance, Composition and Production. 50% of the degree is focused on creative outcomes and the remaining 50% focused on academic outcomes. The engagement of the student in the academic units is of primary concern. A particular challenge is faced within the history units where the traditional lecture method is failing. A review of the current student perceived restrictions of unit delivery is currently being undertaken at all stages of the degree. How to implement GenAI at a tutorial and assessment level is being trialled. Bofinger (2025) in his article *Supporting the Academic Process with AI Tools: Instead of Replacing Actual Intelligence (AcI) with Artificial Intelligence (AI)* discussed the incorporation of GenAI in the delivery of the Jazz History unit. This discussion provides a learning module of how this approach could be included within the History of Western Art unit, a unit that traditionally has a low level of engagement and a high level of failure. As a compulsory study unit for the degree a new method of delivery is required that will achieve the same learning outcomes, but with active engagement of the students.

Due to time limitations a trial assessment, *Exploring Style and Context with AI in Music History* was workshopped with a group of postgraduate students, with prior knowledge of the topic area.

Lesson Module

Learning Outcome: By the end of the two-week lecture and tutorial period (90 minutes per week), students will -

1. Identify key stylistic features of selected historical musical periods (e.g., Medieval, Baroque, Romantic).

2. Analyse GenAI compositions in historical styles using musical terminology.

3. Critically assess GenAI historical information for accuracy and depth.

Materials Required

- Computers or laptops with internet access
- Access to GenAI tools:
    - Generative Music AI (For example: Suno, MusicGen or Google's Music FX)
    - ChatGPT, Perplexity AI or equivalent historical chatbot (for example: Hello History, Historical Figures)
- Handouts with stylistic features checklists by period

Lesson Outline

Week 1: Generating Historical Context. Can GenAI be a historical expert.

Lecture presentation of historical period and style of music. In this lesson plan the focus is Music of the Romantic Period: Expansion of Harmonic Language in the Piano Works of Chopin. The lecturer will provide historical context and a list of harmonic language, structure and features of the piano music of Chopin. Students will produce a checklist from this presentation.

In a group setting students will use ChatGPT or PerplexityAI to ask specific questions related to the piano music of Chopin. This will focus on historical context, social context, harmonic language and musical form. Students must then compare the AI's answer to the lecture notes.

At the conclusion of this 90-minute lecture/tutorial students must provide feedback on historical accuracy and terminology between GenAI results and lecture notes. This feedback must highlight any missing or misleading information.

Week 2: Generating Historical Style Music

This lecture/tutorial is a continuation and development from the materials studied on week 1.

A thorough analysis of a Chopin Nocturne is provided by the lecturer. This will focus on structure, rhythm, harmony, texture, and melody. How Chopin has developed the harmonic language through tonicization, and harmonization will be of primary focus. The lecture presentation will include various recordings of the chosen Nocturne, plus score analysis. Students must produce a stylistic checklist throughout the presentation.

At the conclusion of the lecture, using a GenAI tool (Suno for example) - students will generate a 1-minute sound file in the style of Chopin. The parameters provided being solo piano. Prompt for the GenAI tool: "A Romantic piano miniature with chromatic harmony".

Students must then listen to and analyse the audio file according to the concepts of structure, rhythm, harmony, texture, and melody. A comparison to the stylistic checklist is then undertaken. Findings must then be presented.

The Impact of AI on student learning, creativity, engagement and satisfaction

The study group showed active engagement throughout the two-week delivery period. Activity one highlighted that GenAI can provide historical context, social context and key stylistic features within seconds compared to traditional search methods. This key feature being a genuine factor in why students will engage the use of GenAI. Activity two provided an engag-

ing delivery of advanced theoretical concepts that are traditionally confined to score delivery only. Feedback to the proposed module was only positive with all students reporting a higher level of engagement and satisfaction.

This study, although brief confirms that GenAI can enrich tertiary music education, especially in areas of history, theory, and compositional experimentation. Educators need support to engage critically with GenAI tools, and curriculum designers must ensure that GenAI is used to foster, not constrain, creative growth.

The study also affirms that human elements—mentorship and artistic judgment remain essential in a tertiary setting. GenAI tools should be framed not as replacements, but as co-creative collaborators.

This study provides a foundational evidence base for understanding how GenAI can be integrated into tertiary music education in ways that support artistic development, pedagogical integrity, and ethical accountability.

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Dr Elizabeth Jones is Head of Music at the *Academy of Music and Performing Arts* (Sydney)

CHAPTER 26

Artificial Intelligence = Clarity of Thought

Mordechai Katash
July 2025

Human history is inseparable from technological innovation. From the invention of stone tools to the rise of Artificial Intelligence (AI), each epoch has seen the development of technologies that extend human capacity. As we enter a new era of technological innovation, defined by machine intelligence, it becomes essential to reflect on AI's role in shaping society and its potential to elevate rather than replace human intellect. This chapter explores the historical arc of human innovation leading up to AI, its current applications, and its transformative power across industries.

From Primitive Tools to Digital Cognition

Technological advancement has always served a dual function: survival and progression. Archaeological findings from the Lower Paleolithic period (~2.5 million years ago) reveal early stone tools, fire control, and food storage systems (Ambrose, 2001). These innovations gave way to more complex technologies in the Mesolithic and Neolithic eras, including

boat building, metallurgy, and symbolic communication systems.

Fast forwarding to classical antiquity, we observe the invention of computation precursors like the abacus in Babylonia (~2400 BCE) and the Antikythera mechanism (~100 BCE), an analog computer for astronomical calculations (Freeth et al., 2006). In the 19th century, Charles Babbage's Analytical Engine and Ada Lovelace's algorithm laid the conceptual foundation for digital computing (Toole, 1992).

The Computational Revolution

The 20th century saw an explosion of computing power. Key milestones include Alan Turing's theoretical Universal Machine (Turing, 1936), the creation of programmable machines like Zuse's Z3 (1941), and the invention of the transistor (1947), which catalysed the computer age. The microprocessor (1971) and the internet (1990s) heralded the digital age, reshaping how humans communicate, learn, and work.

AI and Machine Learning

Artificial Intelligence has evolved from rule-based programming to systems capable of self-learning. Modern AI, particularly through deep learning, can now process large datasets and make decisions with minimal human input (LeCun, Bengio & Hinton, 2015).

Today's AI encompasses multiple domains:

- Natural Language Processing (NLP): powering tools like ChatGPT and voice assistants.
- Computer Vision: enabling facial recognition and medical imaging diagnostics.
- Predictive Analytics: used in finance, logistics, and healthcare.

AI is no longer theoretical; it is embedded in autonomous vehicles, diagnostic platforms, fraud detection systems, and financial modelling (Russell & Norvig, 2020).

Generative AI: Redefining Human Creativity

One of the most disruptive subfields is generative AI. Tools such as ChatGPT (OpenAI), DALL·E, and Midjourney use transformer-based language and image models to generate coherent and contextually relevant outputs (Brown et al., 2020). These models are trained on enormous datasets and are capable of producing realistic text, images, music, and even videos.

Generative AI is empowering creators, reducing production costs, and lowering technical barriers. In business, it is revolutionising marketing, customer service, product design, and software development.

AI Applications Across Industries

1. Healthcare

AI's contribution to medicine is monumental. Machine learning models are being used to detect cancers, analyse genetic data, and develop personalised treatment plans (Esteva et al., 2017). AI also accelerates drug discovery by simulating molecular interactions and predicting efficacy (Zhavoronkov et al., 2019).

2. Education

Adaptive learning platforms harness AI to deliver personalised curricula tailored to individual students' strengths and weaknesses. AI automates administrative tasks, enabling educators to focus on mentorship and pedagogy (Luckin et al., 2016). Generative AI can also create interactive content, assessments and simulations for immersive learning experiences.

3. Creative Industries

AI is reshaping how we think about creativity. Tools like Adobe Firefly and RunwayML allow artists and designers to collaborate with AI in generating high quality visuals and media content (Elgammal et al., 2017). This democratisation of content creation invites a wider range of voices into previously exclusive creative spaces.

4. Sustainability

AI is playing a vital role in sustainability:

- Smart Grids: AI optimises energy usage in urban infrastructure.
- Climate Monitoring: Satellite data interpreted by AI helps track ecological changes.
- Precision Agriculture: AI models guide irrigation, planting, and harvesting to maximise yields while minimising waste (Kamilaris et al., 2018).

5. Finance and Security

In the financial sector, AI supports fraud detection, high frequency trading, and robo-advisory platforms (Arner, Barberis & Buckley, 2017). AI models can process thousands of transactions per second to detect anomalies and anticipate market trends.

6. Transportation and Mobility

Autonomous vehicles, drones, and traffic management systems rely on real time data and AI-based decision making. These systems aim to reduce congestion, accidents, and emissions (Litman, 2020).

7. Space Exploration

AI assists in mission planning, navigation, and data analysis for deep space exploration. NASA's Mars rovers operate semi-autonomously using AI systems to prioritise tasks and interpret terrain (Gaines et al., 2020).

8. Multimodal AI Systems

Multimodal AI, which processes input across text, image, and sound, will soon become standard in human-computer interaction. This convergence enables more seamless and intuitive interfaces (Tsai et al., 2023).

Ethical Considerations and Human Oversight

With great power comes great responsibility. AI raises ethical questions about privacy, bias, surveillance, and automation related job displacement. Scholars argue that transparency, accountability, and inclusivity must guide the development of AI technologies (Floridi et al., 2018).

Regulatory frameworks such as the European Union's AI Act are emerging to govern high risk applications, protect human rights, and ensure ethical deployment (European Commission, 2021). AI must complement human values rather than supplant them.

The fear that AI will surpass or control humanity is more speculative than grounded. Like previous technological epochs, the printing press, the steam engine, the internet, and AI are tools. Its efficacy and ethical implications depend on how we wield it.

AI is not about replacing human intelligence but amplifying it. It can free us from menial tasks, enhance our creativity, and help solve global challenges: from climate change to global health crises.

From stone tools to supercomputers, technology has consistently expanded humanity's frontier. Artificial Intelligence is not the end of human agency but a new beginning. It represents a generational paradigm shift that, if approached wisely, will lead to extraordinary societal advancement. My optimism and faith in humankind must be matched with responsibility, ensuring that AI development remains human-centric and aligned with our collective wellbeing and values.

As we continue this journey, AI becomes not just a machine learning tool but a philosophical inquiry into the nature of thought, intelligence, and what it means to be human.

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Associate Professor Mordechai Katash is a former Associate Program Director at *Group Colleges Australia* and currently a lecturer at *Polytechnic Institute Australia* (Melbourne)

CHAPTER 27

Supporting the Academic Process with AI Tools: Instead of Replacing Actual Intelligence (AcI) with Artificial Intelligence (AI)

Ian Bofinger
July 2025

Artificial intelligence is revolutionizing education with tools that enhance teaching and learning. From personalizing experiences to optimizing administrative tasks, there is the potential of generative artificial intelligence (AI) in higher education to either replace or assist students and teaching staff (AcI).

Artificial intelligence refers to technologies or systems that possess human-like capabilities such as problem solving, interpretation, and self-training. In contrast to traditional AI that focuses on data analysis and interpretation, generative AI can

respond to a prompt and create new content such as text, code, and images. (Peres 2023)

Chan (2024) writes that with the prediction that more than five million jobs will be replaced by AI, broadcast media has been mulling the idea of whether primary/secondary school teachers and tertiary lecturers are the next to be replaced. News headlines have sensationalised how powerful AI is and how it might be used to teach students so effectively that we may no longer need teachers. (Muir, 2025)

- EdWeek: *"Will Artificial Intelligence Help Teachers—or Replace Them?"*
- ScienceDirect: *"Will Generative AI Replace Teachers in Higher Education?"*
- Futurism.com: *"High School Starts Replacing Teachers With AI."*

Microsoft co-founder Bill Gates has made a daring prediction regarding the future of AI, stating that it will replace experts in key fields soon. AI-based tutors and medical advisers will be standard, with expert advice at their fingertips. However, the transition could bring with it opportunities and challenges. Modi (2025) reports that Gates further postulates that it is "intelligence itself that's scarce and AI promises to make it as ubiquitous as computing has become".

Schwartz (2025) reports about a school in Brownsville Texas that is attempting to go completely AI-driven, eliminating all teaching positions because "AI can effectively teach the standards and content." The concept includes shorter classes in Alpha School where the learning process is completed in just two hours instead of full day and the core lessons were delivered by AI. The school's aim is to teach children faster, with personalised programmes that adapt to each learner's pace. There have been many similar attempts in the history of classroom education to remove the role of the teacher as the primary content dissemination point, such as the "open classroom project" as

analysed by Garbin (2023), that have failed so it will be interesting to follow the development of this initiative.

AMPA has initiated a pilot program to purposely incorporate GenAI into the academic delivery of one of its units – *Music History (Jazz)* where the curriculum has been modified to incorporate a fortnightly assessment. The unit guide reads, "Biweekly 15% assessments in a collaborative breakout group session. Each group will research a given topic. You are required within a 30-minute timeframe to research the given topic area using the provided slide material and A.I (such as Perplexity.ai. or Chat GPT) As a group you are required to pick 3 or 4 sources to check during the course of the research and list the resources chosen in Harvard style referencing on the provided assessment sheet."

AI is having a considerable impact on how people work and perform their jobs, and it is already displacing people from their existing employment. This paper addresses the positive aspects that can be gained by incorporating some elements of Artificial Intelligence (AI and GenAI) into the academic process that enhances the effectiveness of AcI (Actual Intelligence)

Research Support

Traditionally, analysis of graduate research data has been completed manually by the student. Trends in data sets can be more readily detected and presented using AI tools. There are also AI harmonic and timbral analysis tools that are particular for music research that can assist in the investigation process. AMPA has been integrating plagiarism software such as *Turnitin* as well as GenAI detection applications such as G*PTZero*. Students are encouraged to utilise these AI and plagiarism detection tools before submitting assessments and lecturers can verify suspicious content whilst grading the assignment.

Examples of AI Research Tools include:

- AI assists academic research by analysing large datasets, identifying trends and generating insights. Tools like *IBM Watson Discovery* provide researchers with advanced analytics capabilities, helping them uncover new findings and accelerate the research process.
- AI tools analyse student submissions for potential plagiarism by comparing them against a vast database of academic content, ensuring academic integrity and originality in student work.

Campus Integration and Extension

The ability to create virtual representations of real-life scenarios that may be geographically difficult to access or physically dangerous to attempt in an on-campus environment, make it possible for students to experience in a realistic simulation. Creating a connected environment also allows students the ability to have a seamless transitional environment when moving around either a singular or multi-campus institution.

Examples of AI Campus Support include:

- AI integrates various campus systems to create a connected and efficient educational environment. Tools like *Cisco Digital Network Architecture (DNA)* use AI to manage and optimize campus infrastructure, enhancing connectivity and improving the overall campus experience.
- AI enhances the security of educational institutions by detecting and responding to cyber threats in real time. Tools like *Darktrace* use machine learning algorithms to identify unusual network activity, prevent data breaches and protect sensitive student information.
- AI facilitates virtual events and guest lectures, allowing students to learn from prominent figures and experts in various fields. Tools like *BigMarker* use AI to organize

and manage virtual conferences, enhancing the learning experience through expert insights.

- AI-powered virtual tours enable students to explore different parts of the world from their classrooms. Platforms like *Google Expeditions* use AI to create immersive virtual field trips, broadening students' horizons and enhancing their cultural understanding. These can also be useful in facilitating virtual tours of colleges.
- AI replicates real-life scenarios in *virtual environments*, allowing students to conduct experiments and learn through practical experience. Platforms like *Labster* offer virtual labs where students can safely explore and experiment with scientific concepts.

Learning Management Systems

Incorporating AI into Learning Management Systems such as *Moodle* can be beneficial for the provider, lecturer as well as the students. Providers can gain global insights via AI tools that capture potential individual student learning difficulties and attendance concerns. Off-campus examinations can be delivered with integrity using proctoring apps. Lecturers can reclaim marking time by using AI grading tools for simplified assessments such as multiple choice or short answer responses. Students benefit by AI tools that can customise the presentation of materials and moderate content to protect students on discussion forums.

Examples of AI LMS Support include:

- AI enhances LMS platforms by providing personalised learning paths, automating administrative tasks and offering data-driven insights into student performance and engagement.
- Marking applications use AI to evaluate assignments and provide detailed feedback, streamlining the grading process, ensuring consistency and saving time for

teachers. AI can also grade more abstract assessments like essays by analysing the content for coherence and relevance.

- AI helps analyse data from online learning portals, classroom attendance and grades. This data provides insights into student performance, helping educators identify trends and tailor instruction to address gaps in understanding and performance.
- AI tools such as *Dysolve* can detect dyslexia and other learning disabilities early on by analysing reading patterns and errors. These tools provide tailored support and interventions to help affected students succeed, such as specialized reading programs and exercises.
- AI-powered proctoring systems monitor exams to prevent cheating and ensure academic integrity. These systems such as *InvigilatorPlus* analyze students' behaviour during exams, providing real-time alerts for suspicious activities and maintaining a secure testing environment.
- AI enhances online discussion boards by moderating content, facilitating discussions and providing personalized feedback. Tools like *Packback* use AI to encourage critical thinking and engagement in online forums, creating a more dynamic and interactive learning environment.

Gamification

Many academics hold an outdated view that games are for leisure only and hold no educational value. The reality is that there are some games that have been developed specifically for the tertiary academic environment that directly support - and scaffold - content delivered in lectures. A recent example, as stated by Whateley (2022), is that since 2014 UBSS students have constantly been in the Top 100 teams when competing

with 50,000 students from 500 plus campuses in 50 countries in the *Business Strategy Game (BSG).*

Examples of AI Gamification include:

- AI integrates game elements into academic content, making learning fun and engaging. Platforms use AI to create interactive quizzes and games that promote deeper understanding and retention of educational material.
- AI enhances educational games by creating engaging and adaptive learning experiences. These games use AI to provide tasks and challenges that adapt to student responses, promoting active participation and understanding of complex subjects.

Classroom Evolution

During the Covid-19 pandemic, many classes moved from the traditional face-to-face model into the online mode. 99% of Higher Education providers transitioned to audio-visual conferencing apps such as *Zoom, Skype* and more recently *Microsoft Teams*. Many providers have retained this concept and video record classes as a standard mode of delivery for online asynchronous class access. The lecture methodology did not change, just the mode of the media that the students access the material changed. AI has the potential to present in a virtual classroom digital environment, directly cross reference material to form transdisciplinary and interdisciplinary synthesis of materials and further customise the choices that students have at hand to engage with the academic materials.

Examples of AI Classroom Support include:

- The metaverse creates immersive virtual classrooms where students can interact with classmates and teachers. Platforms like *Engage VR* offer virtual environments that enhance the learning experience beyond

traditional methods, providing opportunities for interactive and experiential learning.

- AI breaks down barriers between subjects, promoting interdisciplinary learning. Tools like *Wolfram Alpha* use AI to demonstrate real-life applications of various theories, helping students understand the interconnectedness of different fields of study.
- AI learning platforms create customised learning experiences by adapting to the unique ways students understand concepts. This reduces cognitive load and ensures that each student receives instruction tailored to their learning style and pace.

Staff Support

Areas such as Professional development that often require staff to attend external, off campus courses and presentations could be moderated by the incorporation of some AI based conceptual training. Similarly, the enhancement of current teaching material that include more multimedia into text heavy lecture materials would be beneficial for students who respond better to variable presentation stimuli. Having the ability to access data on the effectiveness of the teaching materials on an instantaneous timeframe via AI tools, rather than waiting until unit evaluation surveys are reviewed after the course has been completed would also assist lecturers.

Examples of AI Staff Support include:

- AI helps educators plan curricula by analysing educational data to identify trends and gaps. This ensures the curriculum remains relevant, comprehensive and aligned with learning objectives by suggesting updates based on the latest educational needs and standards.
- AI tools provide personalized professional development opportunities for educators by recommending courses

and resources based on their career goals and teaching needs.

- AI aids instructors in the creation of digital lessons and study materials. Tools like *Eduaide.AI* simplify lesson planning, create assessments, write individualized education plans (IEPs), and much more to modernize learning and streamline instruction.
- AI enhances digital classrooms by providing immersive video content and interactive simulations. Tools like *Nearpod* use AI to deliver engaging and effective learning experiences through interactive lessons and real-time student feedback.
- AI automates routine tasks such as homework assessment, test grading and report generation. This enables educators to focus on more meaningful instructional activities and student interactions.

Higher Education Providers, lecturers and students should adopt generative AI technologies in an approach that balances the strengths of human educators with generative AI technologies. The future of tertiary education lies in the synergy between human lecturers and the various forms of AI. As noted by Kopczynski (2024), Lecturers and Higher Education Providers should continue to accept and refine their unique actual intelligence qualities to effectively navigate the integration of generative AI to further ensure job security as well as providing well-rounded and impactful learning experiences.

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Professor Ian Bofinger is Chief Executive Officer and Executive Dean at *AMPA*.

AI vs ACI Artificial Intelligence versus Actual Intelligence

VOLUME 3