

The Implications of Recent Developments in Online Artificial Intelligence Apps for Interdisciplinary Studies in the Humanities*

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Abstract

The recent developments in Artificial Intelligence (AI) have produced varied types of global impact over the last year. In that context, one might ask the following questions: (a) why has AI become (bad) news so suddenly? (b) what is the prehistory of present concerns? By way of answering these questions, this essay will, first, discuss the various negative implications of AI and the spread of various applications that use AI for a variety of tasks and functions. It will then narrow its focus to address the more specific negative implications of AI as they are likely to affect Asia as a region with its own specific socio-economic and political matrix for its educational institutions. The focus narrows further to address the likely impact of AI on the Humanities. The third and final part of the essay stands back from the focus on education in Asia to look at two mitigating features of the case: (a) the various checks and balances that are currently being proposed globally regarding how the negative aspects of AI might be controlled, and (b) a consideration, on a more sanguine if cautious note, of the various ways in which developments in AI, when used with proper caution and with certain controls in place, could benefit mankind, and more specifically, education in the Humanities, especially in the specific contexts of Asia (its social formations, educational needs and pitfalls), and the ways in which AI applications are likely to play a central role in how we study, teach, learn, and work in the future. To take stock of what is just round the corner might prepare us better, as individuals, groups and institutions to work with and around rather than against the growth of AI.

Keywords: Artificial Intelligence (AI), Interdisciplinary studies, Humanities, Education, Negative influences of AI

Introduction

“The future is already here – it's just not very evenly distributed.” William Gibson

As rapid advancements in Artificial Intelligence (AI) shape global societies in multiple ways, both enthusiasm and apprehension can be found about its usage and scope. Increasingly, attempts can be discerned which explore the ways AI affects profoundly various facets of our lives. In this changing scenario, questions are often available about AI's immediate ramifications but also about the historical evolution that has led to today's concentrated emphasis on its opportunities and possible perils. This essay, addressing this tension, comprises three parts. The first provides a context of information and ideas concerning recent developments in Artificial Intelligence (AI) as they have produced varied types of global impact over the last year. The questions tackled here will include the following: (a) why has AI become (bad) news so suddenly? (b) what is the prehistory of present concerns? Answers to these questions will lead to the second part. The second part will discuss the various

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negative implications of AI and the spread of various applications that use AI for a variety of tasks and functions. The essay then narrows its focus to address the more specific negative implications of AI as they are likely to affect Asia as a region with its own specific socio-economic and political matrix for its educational institutions. The focus narrows further to address the likely impact of AI on the Humanities. The third and final part of the essay stands back from the focus on education in Asia to look at two mitigating features of the case: (a) the various checks and balances that are currently being proposed globally regarding how the negative aspects of AI might be controlled, and (b) a consideration, on a more sanguine if cautious note, of the various ways in which developments in AI, when used with proper caution and with certain controls in place, could benefit mankind, and more specifically, education in the Humanities, especially in the specific contexts of Asia (its social formations, educational needs and pitfalls), and the ways in which AI applications are likely to play a central role in how we study, teach, learn, and work in the future. To take stock of what is just around the corner might prepare us better, as individuals, groups, and institutions to work with and around rather than against the growth of AI.

The Current Sense of Crisis Concerning AI

We hear a lot these days about how the entire world is in a state of crisis. That has probably been said during every moment in human history. But what makes the current global crisis distinctive is how the cumulative effect of natural disasters (such as fires, floods, tsunamis, typhoons, as well as famines, drought, and the ongoing global pandemic), and man-made disasters (such as economic exploitation, ethnic violence, and war) is made so much worse by two other developments, both with origins far back in the industrial revolution: global warming, and the dangers attendant upon the latest developments in AI (artificial intelligence). Many now claim that AI represents the gravest danger to humanity. The three common fears that spring from such alarm are summarized succinctly by Wooldridge (2021) in *A Brief History of Artificial Intelligence*, “AI will take all our jobs; AI will get smarter than we are, and then it will be out of control; super-intelligent AI might go wrong and eliminate humanity” (p. 8). He further argues that we might focus instead on the first and fourth concerns: “the nature of employment in the age of AI and how AI technologies might affect human rights” (p. 13). How and why have such apprehensions come about? And what are the socio-economic as well as ethical problems that arise from the growing applications of AI? A concise recitation of key facts should prove useful.

A Brief Historical Context for Current Concerns

That new technologies and new machines might make human labour redundant or marginalized is a consequence that has been with humanity ever since the first industrial revolution. Resistance to this development began with what has become known as the Luddite movement. The Industrial Revolution originated in England, and its uneven spread across a world dominated first by European colonialism and then by American neo-colonialism resulted in asymmetrical patterns of growth that are with us to this day, dividing humanity into First, Second, and Third World societies. The global history of the world since the mid-18th century is spoken of as having undergone four industrial revolutions. Schwab, in his 2016 book *The Fourth Industrial Revolution*, summarizes a narrative of the first three as follows:

The first industrial revolution spanned from about 1760 to around 1840. Triggered by the construction of railroads and the invention of the steam engine, it ushered in mechanical production. The second industrial revolution, which started in the late 19th century and into the early 20th century, made mass production possible, fostered by the advent of electricity and the assembly line. The third industrial revolution began in the 1960s. It is usually called the computer or digital revolution because it was catalysed by the development of semiconductors, mainframe computing (1960s), personal computing (1970s and 80s) and the internet (1990s). (p. 11).

As for the fourth industrial revolution, Schwab describes it thus:

The fourth industrial revolution, however, is not only about smart and connected machines and systems. Its scope is much wider. Occurring simultaneously are waves of further breakthroughs in areas ranging from gene sequencing to nanotechnology, from renewables to quantum computing. It is the fusion of these technologies and their interaction across the physical, digital and biological domains that make the fourth industrial revolution fundamentally different from previous revolutions (2016, p. 12).

Another take on enumerating the four revolutions is provided by Nicholas Davis, who wrote in 2016 on the World Economic Forum site:

The First Industrial Revolution is widely taken to be the shift from our reliance on animals, human effort and biomass as primary sources of energy to the use of fossil fuels and the mechanical power this enabled. The Second Industrial Revolution occurred between the end of the 19th century and the first two decades of the 20th century, and brought major breakthroughs in the form of electricity distribution, both wireless and wired communication, the synthesis of ammonia and new forms of power generation. The Third Industrial Revolution began in the 1950s with the development of digital systems, communication and rapid advances in computing power, which have enabled new ways of generating, processing and sharing information. (para. 3)

The Fourth Industrial Revolution can be described as the advent of “cyber-physical systems” involving entirely new capabilities for people and machines. While these capabilities are reliant on the technologies and infrastructure of the Third Industrial Revolution, the Fourth Industrial Revolution represents entirely new ways in which technology becomes embedded within societies and even our human bodies. Examples include genome editing, new forms of machine intelligence, breakthrough materials, and approaches to governance that rely on cryptographic methods such as the blockchain (Davis, 2016).

Where are we now? Sharma, in his 2023 book *The Next New*, argues that we are already at the end of the fourth and at the start of the fifth industrial revolution, with AI in its vanguard. How AI has a significant place in this history has to do with the development of computers, machine learning, and the quest for sentience in machines, a topic dear to the speculative fictionist.

From Computers to the Dream of Sentient Machines

Human history is rich in narratives of man-made mechanical or quasi-biological entities seemingly endowed with a degree of sentience: from Talos and Pygmalion in Greek mythology to Golems in medieval alchemy to Mary Shelley's *Frankenstein* (1818) and Karel Čapek's “robots” (1920). We also read of humanoid automata in several ancient civilizations. There is also a long history of philosophers developing systems of logic, deduction and formal reasoning that would prove amenable to what has now become known as “machine learning”. The modern origins of research into Artificial Intelligence begin with the British pioneer in machine learning, Alan Turing. In 1935 he envisioned a machine that would have limitless memory which could be used in problem-solving and in improving its own programme (Turing, 2004, p. 470). In 1950 he formulated what is well-known as the Turing Test, which can establish if a machine can be recognized as a “thinking machine”. All modern computers are descendants of his idea of a Turing Machine. Concurrent and subsequent work by several other researchers converged on research based on the premise that “the manipulation of symbols could well be the essence of human thought” (Wikipedia, 2024a). In 1956 a young mathematics professor at Dartmouth College, John McCarthy, organized a summer workshop which was the beginning of research in the area for which he coined the term “AI”. The aim was “to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves” (McCarthy & Minsky,

1955). In 1972 researchers at Waseda University in Japan created the first humanoid robot. Academic research into AI has been led by many universities, including MIT, Carnegie Mellon University, Stanford, and the University of Edinburgh. Contrary to excessive optimism about AI in the 1970s and 1980s, progress was slow, and things improved only by the 1990s. Chess programs such as *Deep Thought* and later *Deep Blue* became good enough to beat the best human chess players. Given the ever-increasing production capacity in the semiconductor industry, a law known as *Moore's Law* predicts that "the speed and memory capacity of computers doubles every two years" (Wikipedia, 2024a). Given such rapid progress in how computers can tackle ever-increasingly complex tasks, humanity has been hard put to it to catch up. More has changed about how humans live and work from the days of the first electric lights to *ChatGPT* than in all of previous human history.

Computers, research into artificial neural networks, and their role in what has come to be known as machine learning (and its subset Deep Learning), as well as the application of Big Data management to solving a wide range of complex problems have combined to create a new global environment in which talk of AI and applications such as *ChatGPT* have become ubiquitous.

The Applications of AI: *ChatGPT*

Let us zoom in now on the latest developments in the practical applications of AI. For that, we focus on the company *OpenAI* and its most widely known application: *ChatGPT* (Chat Generative Pre-Trained Transformer) which is an artificial intelligence chatbot developed by *OpenAI*. It had a preview launch on November 30, 2022 (followed by the launch of its commercial model *ChatGPT Plus* on February 1, 2023, and the free *ChatGPT4* on March 14, 2023). *OpenAI* is an American artificial intelligence research laboratory founded in 2015, chaired by Greg Brockman, with Sam Altman as its CEO. It is reported to have raised many billions in funding, with prospects of much more, and with Microsoft as one of its main current financial supporters. Other companies busy developing comparable software include *Google*, *Baidu*, and *Meta*. Our world is changing even more rapidly than in previous times; and we are hard put to it to keep catching up with what continually new technologies bring us as a mixed bag of benefits and dangers.

What can *ChatGPT* do? Here is one summary answer:

[...] it can write and debug computer programs, compose music, teleplays, fairy tales and student essays, answer test questions (sometimes, depending on the test, at a level above the average human test-taker), generate business ideas, write poetry and song lyrics, translate and summarize text, emulate a Linux system, simulate entire chat rooms, play games like tic-tac-toe, or simulate an ATM. (Wikipedia, 2024a)

And what are some of its current limitations, as acknowledged by its creators, some of which the heuristic process of its self-monitored growth might overcome?

OpenAI acknowledges that *ChatGPT* "sometimes writes plausible-sounding but incorrect or nonsensical answers." (Wikipedia, 2024b)

ChatGPT has built-in protocols that are meant to inhibit or prohibit misuse, but as has been widely remarked, the software can be infiltrated by experts, who can then out the program to uses not meant by its creators.

Such, in brief, are some of its current limitations. The greatest dangers, however, come not from its limitations, but as the potential for collateral damage from its capabilities, especially through the ways in which it can do better than humans at many kinds of tasks, thus rendering humans increasingly redundant for those tasks.

General Negative Implications of AI for Now and the Future

The media are flooded currently with dire prophecies about how AI and its

applications will make humans increasingly redundant in many jobs. Here is one example that has received wide circulation worldwide: a certain *Future of Jobs Report* dated May 2023, based on a survey by the World Economic Forum of 803 companies collectively employing more than 11.3 million workers. It claims,

[T]he majority of fastest declining roles are clerical or secretarial roles, with Bank Tellers and Related Clerks, Postal Service Clerks, Cashiers and Ticket Clerks, and Data Entry Clerks expected to decline fastest [...] The largest losses are expected in administrative roles and in traditional security, factory and commerce roles. (p. 6)

The report adds, "Employers estimate that 44% of workers' skills will be disrupted in the next five years" (World Economic Forum, 2023). A similar and widely circulated report from Goldman Sachs economists Briggs and Kodnani projects both a positive and a negative outcome from the increasing use of generative AI. On the one hand, they write, "A new wave of AI systems may [...] have a major impact on employment markets around the world. Shifts in workflows triggered by these advances could expose the equivalent of 300 million full-time jobs to automation" (para. 3); but they also declare that generative AI "could drive a 7% (or almost \$7 trillion) increase in global GDP and lift productivity growth by 1.5 percentage points over a 10-year period" (para. 1).

We have an almost equal mix of optimism and anxiety. On the one hand, we read of Bill Gates declaring in a blogpost of March 21, 2023, that "The Age of AI has begun". But on the other hand, it is no small irony that the creators of AI applications such as *ChatGPT4* warn against its unregulated growth. The anticipated dangers resulting from technology outpacing regulations were heard during a hearing of the US Senate Judiciary Committee on May 16, 2023, as including: "the unbridled exploitation of personal data, the proliferation of disinformation, and the deepening of societal inequalities" (*Time*, 2023). And all these – it is feared – might be followed by an entire Pandora's box of additional risks and fallouts. Recent months have seen worldwide publicity for scores of similar alarms from most AI research leaders. For example, Hinton (2023), a pioneering figure in the field of AI, has warned about AI in a widely reported interview with *The New York Times* that "[i]t is hard to see how you can prevent the bad actors from using it for bad things". And Elon Musk, one of the original funding contributors to *OpenAI*, from which company he has since fallen out, said in an April 18, 2023 interview on the American *Fox News* television channel that "it is a danger to the public".

Musk has recently announced the creation of a new company, *xAI*, which it is claimed will be particularly mindful of the ethical obligations in developing AI. Meanwhile, the current US administration has also secured voluntary assurances from seven American companies that are at the vanguard of developments in AI to help create new regulatory protocols applicable to current and future uses of generative AI (*Amazon, Anthropic, Google, Inflection, Meta, Microsoft, and OpenAI*). This can be seen as a necessary first step in what is likely to prove a long and complex process of trying to prevent AI from being used for all manners of nefarious purposes.

Specific Implications of Applications Such as *ChatGPT* for the Humanities

There is, thus, both a plus and a minus side to what is being anticipated. The job losses feared from the growth of AI applications are expected to be offset by an increasing role for analytical and critical thinking. Meanwhile, the implications for the educational sector are clear: the need to move away from teaching that emphasizes mastery over sheer (or mere) data – something that AI is vastly better equipped to tap – and to turn towards enhanced skills in critical analysis. How we teach, and what we expect our students to practice learning, will have to change. Many academic institutions have rushed to formulate guidelines on how applications such as *ChatGPT4* might be used while guarding against pitfalls.

For example, the key points urged upon instructors at the University of Washington by its *Center for Teaching and Learning* (2023) read as follows:

- Set expectations
- Communicate the importance of college learning
- Acknowledge that struggle is part of learning
- Assess process as much as (or more than) product
- Design assignments that ask students to connect course content, class conversations, and lived experience

Responses to *ChatGPT* from Singapore

Nearer home, the National University of Singapore has recently (2023) issued general guidelines concerning the use of applications such as *ChatGPT*, from which I excerpt the following:

Consider, for instance, the different levels of capability involved in the following three scenarios:

1. Using a tool to generate an output wholesale from inputs.
2. Using a tool to generate intermediate outputs that are then developed into a final output through further human intervention without the use of the tool.
3. Evaluating the output of a tool to confirm its accuracy, relevance, objectivity, and completeness.

You will need a higher level of capability in yourself to be able to do (2) and (3), as compared with doing (1), and conversely, functions that only require (1) are at a higher risk of being completely replaced by AI. The implication is that you are only cheating your future selves if you go straight to using such tools before learning the actual subject matter. If you, as a learner, take shortcuts today, you risk becoming first in line to be replaced by bots! (Online document for internal circulation, 2023)

The most immediate issue of concern for teaching in disciplines like the humanities is the risk of varying degrees of plagiarism. *ChatGPT* can currently write essays that can be passed off as if written by a student. As it improves, it might get even better at that. A Princeton University webpage reports that a “Princeton undergraduate Edward Tian quickly developed an app detecting whether *ChatGPT* has been used, and several companies will monetize these AI-detecting technologies in the future” (2023). However, developments in AI could well outrun such detection methods. The more radical change that all of us who are teachers will need to implement is to re-examine what the traditional essay is supposed to accomplish as learning outcomes and find ways of accomplishing those without the risk of plagiarism, or to realign those and similar learning outcomes with modified teaching methods.

At the institution where I work – Yale-NUS College (which is a collaboration between the National University of Singapore and Yale University) – a select committee reviewed the implications of *ChatGPT* for pedagogy. It is early days yet in terms of the impact of AI on student behaviour, so some of the current findings might change in time, but for 2023, what the committee noted was that “students appear to be using AI for localized, specific tasks, and integrating the results into a larger assignment that includes some of their own original work” (Yale-NUS College, 2023). Students also seemed to be using *ChatGPT* a lot for advice on non-academic matters. As for academic assignments, this is what the committee reports as their findings regarding the use made by students of online AI resources:

- the ideation of a larger structure or argument of an essay, which the student then populated with mostly original work;
- the generation of individual paragraphs that were then incorporated alongside originally-authored paragraphs;
- the generation of bibliographies or lists of references that were then appended to a completed essay or assignment;

- the generation of definitions of terms that were then memorized in preparation for an examination;
- the generation of possible free-response answers that were then memorized in preparation for an examination;
- the use of AI to translate into English an entire essay written by the author in their first language. (Yale-NUS College, 2023, AI note)

From the point of view of ensuring academic integrity in the use by students of AI resources, the committee highlights the following:

Key principles of ethical student conduct include the obligation to:

(1) do one's own work,

(2) not interfere with the work of others, and

(3) accurately and honestly represent the content of one's own work while making proper attribution of the work of others. (Yale-NUS College, 2023, AI note)

The conclusion proffered by the committee goes to the heart of the matter and has applicability to all institutions teaching in and beyond the Humanities:

The more effective way to “deal with” the onset of this technology and its effects on our pedagogy, is to think carefully about how we are structuring our assignments, and how students are working through them. What AI effectively does is devalue the process of producing knowledge and becoming a producer of knowledge, in favor of immediate results. Attuning our teaching and assignments to be more emphatic of the “process” of scholarly work and discovery will be the best way to ensure that our students continue to learn the kinds of skills that we want them to have by the time they leave Yale-NUS. (Yale-NUS College, 2023, AI Note)

The Need for Balance and Perspective

An additional document generated at Yale-NUS College (2023) suggests a path forward, that can balance vigilance with cautious optimism. Its advice:

[...] is not to demonize AI – it is a ‘tool’ that is with us to stay.

[...] The overwhelming majority of our students are not cheats and will not be using AI as a replacement for their own work, industry, and imagination. They will, however, be intrigued as to its value as an academic tool, and they may have misconceptions about what it can and cannot do (in particular, it is currently very bad in its engagement with primary and secondary sources, and cannot be treated as a reliable citation indicator) (AI Note).

This document has some specific suggestions that apply to teaching:

[...] as AI technology improves, the simplest response may be to increase the proportion of non-take-home assessment within a course (such as in-class tests or exams).

[... and] to tailor your assignment prompts in a way that does not allow for a competent AI response (AI Note).

This is what my colleagues at Yale-NUS have to share on the specific implications of AI for teaching and learning.

A Review of the Potential and Benefits of AI

Not everything about AI is bad news. Its applications can tap vast amounts of data. That in turn can prove time-saving for humans, and add to the range of coverage on any given topic or area of investigation. It can help plan and project. It can help in making useful comparisons. It also has more specific pedagogical value as a learning tool.

For example, a Psychology professor at Cornell, Morten Christiansen (who, together with a colleague in Comparative Literature, Professor Laurent Dubreuil, is doing funded research on AI systems like *ChatGPT* writing poetry) reports,

One positive pedagogical use of *ChatGPT* is to have students ask the software-specific questions and then for the students to criticize the answers. He also explained that *ChatGPT* may help with the planning process of writing, which he noted many students frequently discount. (*The Cornell Daily Sun*, 2023, para. 38)

The inference to be stressed is that a lot will depend on how we teach ourselves to harness AI towards rewarding outcomes for humans while remaining mindful of all the re-training of human abilities that will be needed if AI is not to displace humans at the workplace in large numbers while also raising economic growth at the cost of human employability.

Conclusions for Here and Now

We stand on the cusp of momentous change. Perhaps more so than at any previous time in human history. It behooves us to try and sift what is good about the changes and revolutions that are already with us while working out the measures needed to mitigate the harm that these revolutions can also bring about. And when it comes to teaching – right from kindergarten to university – we have to be vigilant, creative, and adaptable when confronted with all the real and potential uses and abuses of AI, and what it portends and promises for the near and the distant future.

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