

**Everything, everywhere is going to change all at once as AI hits us like a tornado**

**Latest version of artificial intelligence chatbot ChatGPT is modern-day equivalent of the invention of printing press**

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I had a most remarkable but unsettling experience last week. Craig Mundie, the former chief research, and strategy officer for Microsoft, was giving me a demonstration of GPT-4, the most advanced version of the artificial intelligence chatbot ChatGPT, developed by OpenAI and launched in November. Craig was preparing to brief the board of my wife's museum, Planet Word, of which he is a member, about the effect ChatGPT will have on words, language and innovation.

"You need to understand," Craig warned me before he started his demo, "this is going to change *everything* about how we do *everything*. I think that it represents mankind's greatest invention to date. It is qualitatively different — and it will be transformational."

Large language modules like ChatGPT will steadily increase in their capabilities, Craig added, and take us "toward a form of artificial general intelligence," delivering efficiencies in operations, ideas, discoveries and insights "that have never been attainable before across every domain."

Then he did a demonstration. And I realized Craig's words were an understatement.

First, he asked GPT-4 — for which Craig was a selected advanced tester and which was just released to the public — to summarize Planet Word and its mission in 400 words. It did so perfectly — in a few seconds.

Then he asked it to do the same in 200 words. Another few seconds.

Then he asked it to do the same in Arabic. Just as quickly. Then in Mandarin. Two more seconds. Then in English again — but in the form of a Shakespearean sonnet. A few more seconds.

Then Craig asked GPT-4 to write the same description in an abecedarian verse — where the first line begins with the letter A, the second with B and so on through the alphabet. It did it with stunning creativity, beginning:

*Alluring in Washington, is a museum so grand,  
Built to teach, inspire, and help us understand.  
Curious minds Planet flock to Word's embrace,*

*Delving into language and its intricate grace  
Every exhibit here has a story to tell,  
From the origins of speech to the art of the quill.*

And so on, through Z.

I could barely sleep that night. To observe an AI system — its software, microchips and connectivity — produce that level of originality in multiple languages in just seconds each time, well, the first thing that came to mind was the observation by science fiction writer Arthur C. Clarke that “any sufficiently advanced technology is indistinguishable from magic.”

The second thing that came to mind was a moment at the start of *The Wizard of Oz* — the tornado scene where everything and everyone are lifted into a swirling gyre, including Dorothy and Toto, and then swept away from mundane, black-and-white Kansas to the gleaming futuristic Land of Oz, where everything is in colour.

We are about to be hit by such a tornado. This is a Promethean moment we’ve entered — one of those moments in history when certain new tools, ways of thinking or energy sources are introduced that are such a departure and advance on what existed before that you can’t just change one thing, you have to change everything. That is, how you create, how you compete, how you collaborate, how you work, how you learn, how you govern and, yes, how you cheat, commit crimes and fight wars.

We know the key Promethean eras of the last 600 years: the invention of the printing press, the scientific revolution, the agricultural revolution combined with the industrial revolution, the nuclear power revolution, personal computing and the internet and ... now this moment.

Only this Promethean moment is not driven by a single invention, like a printing press or a steam engine, but rather by a technology supercycle. It is our ability to sense, digitise, process, learn, share and act, all increasingly with the help of AI. That loop is being put into everything — from your car to your fridge to your smartphone to fighter jets — and it’s driving more and more processes every day.

It’s why I call our Promethean era “The Age of Acceleration, Amplification and Democratization.” Never have more humans had access to more cheap tools that amplify their power at a steadily accelerating rate — while being diffused into the personal and working lives of more and more people all at once. And it’s happening faster than most anyone anticipated.

The potential to use these tools to solve seemingly impossible problems — from human biology to fusion energy to climate change — is awe-inspiring. Consider just one example that most people probably haven’t even heard of — the way DeepMind, an AI lab owned by Google parent Alphabet, recently used its AlphaFold AI system to solve one of the most wicked problems in science — at a speed and scope that was stunning to the scientists who had spent their careers slowly, painstakingly creeping closer to a solution.

The problem is known as “protein folding.” Proteins are large complex molecules, made up of strings of amino acids. And as my Times colleague Cade Metz explained in a story on AlphaFold, proteins are “the microscopic mechanisms that drive the behaviour of the human body and all other living things.”

What each protein can do, though, largely depends on its unique three-dimensional structure. Once scientists can “identify the shapes of proteins,” added Metz, “they can accelerate the ability to understand diseases, create new medicines and otherwise probe the mysteries of life on Earth.”

But, Science News noted, it has taken “decades of slow-going experiments” to reveal “the structure of more than 194,000 proteins, all housed in the Protein Data Bank.” In 2022, though, “the AlphaFold database exploded with predicted structures for more than 200 million proteins.” For a human that would be worthy of a Nobel Prize. Maybe two.

And with that our understanding of the human body took a giant leap forward. As a 2021 scientific paper, “Unfolding AI’s Potential,” published by the Bipartisan Policy Center, put it, AlphaFold is a meta technology: “Meta technologies have the capacity to ... help find patterns that aid discoveries in virtually every discipline.”

ChatGPT is another such meta technology.

But as Dorothy discovered when she was suddenly transported to Oz, there was a good witch and a bad witch there, both struggling for her soul. So, it will be with the likes of ChatGPT, Google’s Bard and AlphaFold.

Are we ready? It’s not looking that way: We’re debating whether to ban books at the dawn of a technology that can summarize or answer questions about virtually every book for everyone everywhere in a second.

**Like so many modern digital technologies based on software and chips, AI is “dual use” — it can be a tool or a weapon.**

The last time we invented a technology this powerful we created nuclear energy — it could be used to light up your whole country or obliterate the whole planet. But the thing about nuclear energy is that it was developed by governments, which collectively created a system of controls to curb its proliferation to bad actors — not perfectly but not bad.

AI, by contrast, is being pioneered by private companies for profit. The question we have to ask, Craig argued, is how do we govern a country, and a world, where these AI technologies “can be weapons or tools in every domain,” while they are controlled by private companies and are accelerating in power every day? And do it in a way that you don’t throw the baby out with the bathwater.

We are going to need to develop what I call “complex adaptive coalitions” — where business, government, social entrepreneurs, educators, competing superpowers and moral philosophers all come together to define how we get the best and cushion the worst of AI. No one player in this coalition can fix the problem alone. It requires a very different governing model from traditional left-right politics. And we will have to transition to it amid the worst great-power tensions since the end of the Cold War and culture wars breaking out inside virtually every democracy.

We better figure this out fast because, Toto, we’re not in Kansas anymore.

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