

RADIO MAGIC

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When Technologies Become Tsunamis

September 2026

“Progress, far from consisting in change, depends on retentiveness. Those who cannot remember the past are condemned to repeat it.” — George Santayana, *The Life of Reason, or The Phases of Human Progress*

Introduction

Technological change and its societal effects are accelerating. In the nineteenth century, sixty years passed between the telegraph and wireless. In the twentieth, television replaced broadcast radio in thirty years. In this century, it took only eight years to leap from Alexa to ChatGPT. The ever-shrinking gap between invention and impact engulfs us like towering tidal waves or tsunamis. Each arrives faster, higher and hits harder — leaving us less time to adapt.

Technological tsunamis turn societies upside down and inside out. They wash away old ways of doing, thinking, and believing. They become so entangled in our everyday lives that we forget a “before” ever existed. From the desktop PC (personal computer) to social media to the internet, each has triggered its own tsunami.

Social media began in the early 1980s as a novelty: an early PC landline dial-up CompuServe CB radio simulator, quickly followed by many other specialized text-based chat rooms. Then, in the mid-1990s, the internet, a spiderweb-like network, began to spread social media around the world as more and more people gained access to and used PCs.

By the 2010s, it had become a global “opiate of the masses.” But we are only now addressing the damage social media has done to the well-being of multiple generations of children, teenagers, and young adults born in this century.

No technology is inherently good or bad; that is our choice. Yet we often have no say. New technologies are dropped on the world from on high, like atomic bombs, with no safeguards or controls, to secure global market-share dominance and maximize profits before competitors catch up. We are the ones who must deal with the unintended consequences — come hell or high water. There is no do-over.

The March of Intellect

“The moral improvement of the nations and their individual components has not kept pace with the march of intellect and the advance of industry.” — Felix Adler, *The Moral Instruction of Children*

Great Britain’s Industrial Revolution between 1760 and 1840 created lucrative new markets and business opportunities for the middle and upper classes. Remarkable machines, such as the Jacquard programmable loom, which used punched cards to control complex weave patterns, were developed. Iron-making and shaping machinery enabled the construction of larger, more powerful machines, including the mechanical reaper, other agricultural machinery, the steam engine, and the locomotive. This included building a railway system across the land, which required tens of millions of perfectly identical track rails and uniform hardware, something impossible for humans to do.

However, automation, mechanization and modernization made many traditionally labour-intensive, working-poor occupations obsolete. Government and industry promised replacement jobs for everyone affected, but it took nearly three generations.

“The March of Intellect” and “The March of the Mind” were polarized political and societal debates two centuries ago. Satirists personified the Industrial Revolution as a giant, book-headed, all-knowing, all-powerful automaton marching through the streets, sweeping away the old high-and-mighty, righteous order (**Figure 1**).

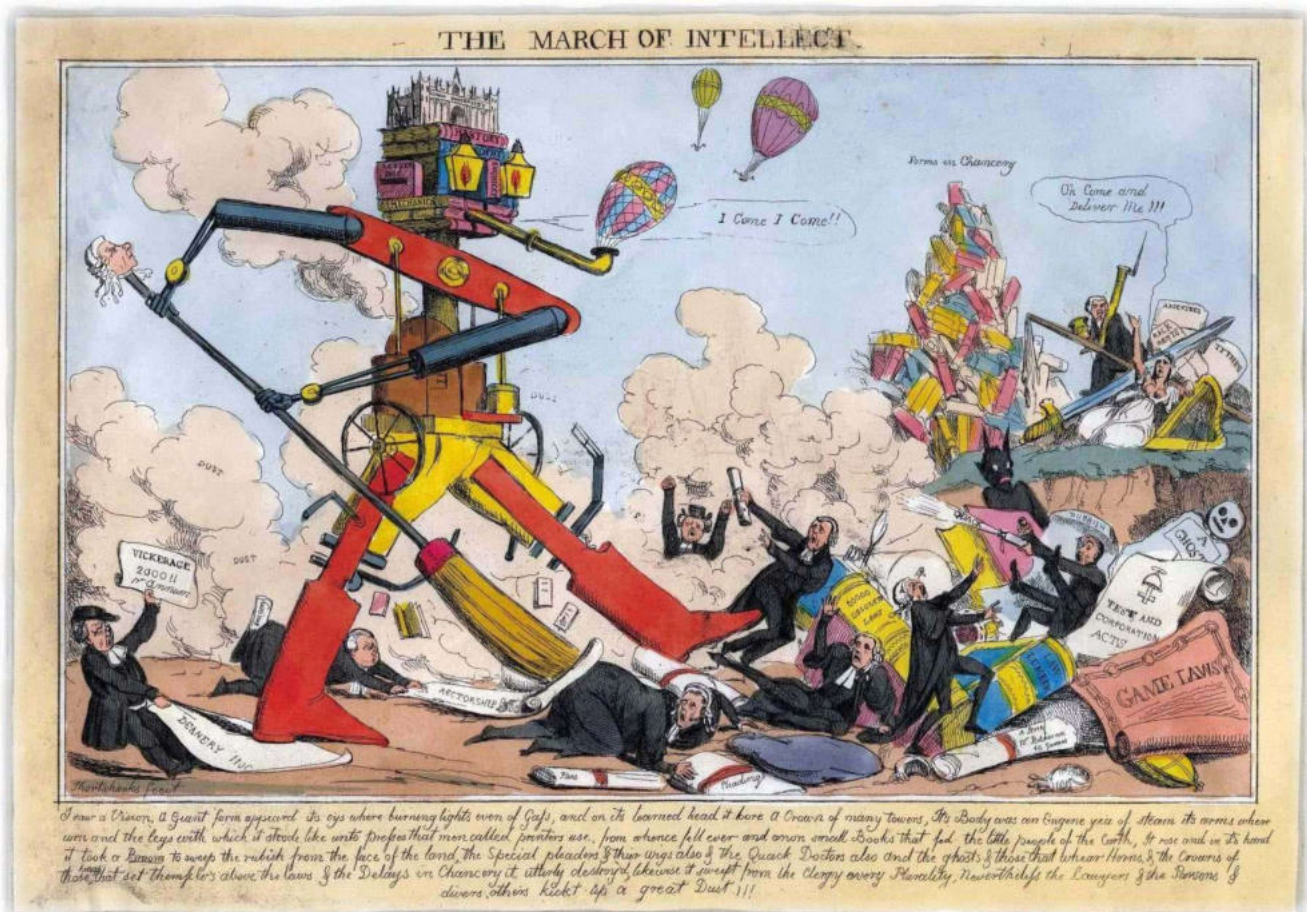


Figure 1 — Even Satan (all black, far mid-right) cowers before this greater evil. Credit: Wikipedia, Robert Seymour, 1828. Public domain image.

The Wonderful World of Wireless

“The coming of the wireless Era will make war impossible, because it will make war ridiculous.” — Guglielmo Marconi, *Technical World Magazine*

When radio signals first flew across the Atlantic in the early twentieth century, the world instantly became smaller. Information now travelled at the speed of light; geography was no longer a barrier; an interconnected world without wires or “wireless.”

Wireless (radio) development and use ran wild and unchecked for over a decade until the RMS *Titanic* disaster. That one event finally forced countries to set aside their petty squabbles and work together, at least temporarily. With a common goal, they created new international land, maritime, and Amateur radio regulations in months, not years.

In October 1912, Marconi shared his utopian vision in *Technical World Magazine*. He believed wireless technology would benefit agriculture, provide free energy, and make the world more equal and connected — ending international conflicts by encouraging cooperation through better communication. This reflected his enthusiasm and technological idealism — the belief that new inventions would automatically bring about social and political progress.

Like many before and after him, Marconi was wrong. In mid-1915, Italy joined the Allies in the “war to end all wars.” He worked with the Italian Army Corps of Engineers to help develop the passive-aggressive system known as RDF (radio direction finding). Its details were so closely guarded that German military intelligence failed to recognize its tactical and strategic value. British and French RDF stations homed in on enemy Morse code transmissions and coordinated attacks and counterattacks against land, sea, and air targets (**Figure 2**). Wireless had become a deadly weapon of war; its consequences were no longer theoretical.

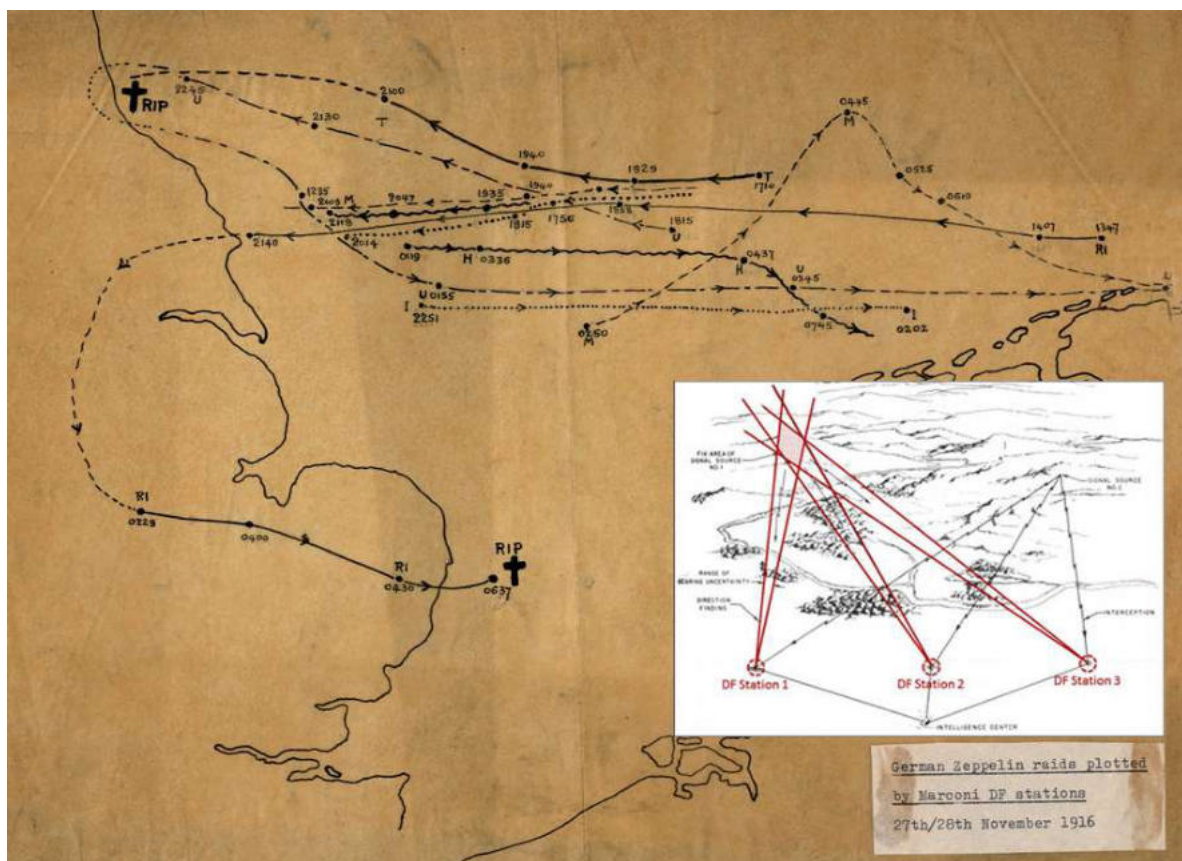


Figure 2 — Zeppelin raid RDF tracks from a failed six-Zeppelin bombing raid on London in late 1916. Two raiders were shot down with incendiary rounds; each carried a crew of about twenty men. Credit: University of Oxford, History of Science Museum archives. Insert: U.S. Army Dept. Technical Manual No. 11-688 (1955).

Modern Radiosport, an Amateur RDF activity, is governed by the IARU (International Amateur Radio Union). It is practised worldwide, with structured competitions in each IARU region and the World ARDF Championships held every two years. No smartphone GPS, electronic maps, or external tracking systems (e.g. APRS) are allowed. Only manual orienteering skills using a compass, paper map, and RDF receiver are permitted. Competitions use the lower 80 m and 2 m bands for hidden, low-power locator beacons. It is fun, challenging, and great for building teamwork and coordination, though most participants know nothing about its dark past.

“ELIZA”

“We have met the enemy and he is us.” — *Pogo*, by Walt Kelly

In 1950, the brilliant Alan Turing, who, along with his Bletchley Park team, cracked the uncrackable Enigma encryption machine during the Second World War, proposed the “Turing Test” to determine whether a machine has human-like intelligence. In its original form, a human judge would have text-only conversations with both a hidden person and a machine. The machine passes the test if the judge cannot tell which is which. However, a later experiment revealed a serious logical flaw because it involved no “artificial intelligence,” a term Dartmouth College’s John McCarthy coined in 1956.

Professor Joseph Weizenbaum, a senior researcher at MIT (Massachusetts Institute of Technology), argued that machines — meaning computers — could be made to appear to have human-like intelligence without actually understanding anything. Highly skeptical of AI, he wrote a computer program called “ELIZA” in 1966, named after Eliza Doolittle, a main character in George Bernard Shaw’s play *Pygmalion*.

Its best-known script, called “DOCTOR,” simulated a Rogerian psychotherapist. This technique, now known as person-centred therapy, reflects your statements back as questions for you to answer yourself (**Figure 3**). But like the character, ELIZA only sounded intelligent. There was no understanding. Yet many test subjects believed they were talking to a real analyst.

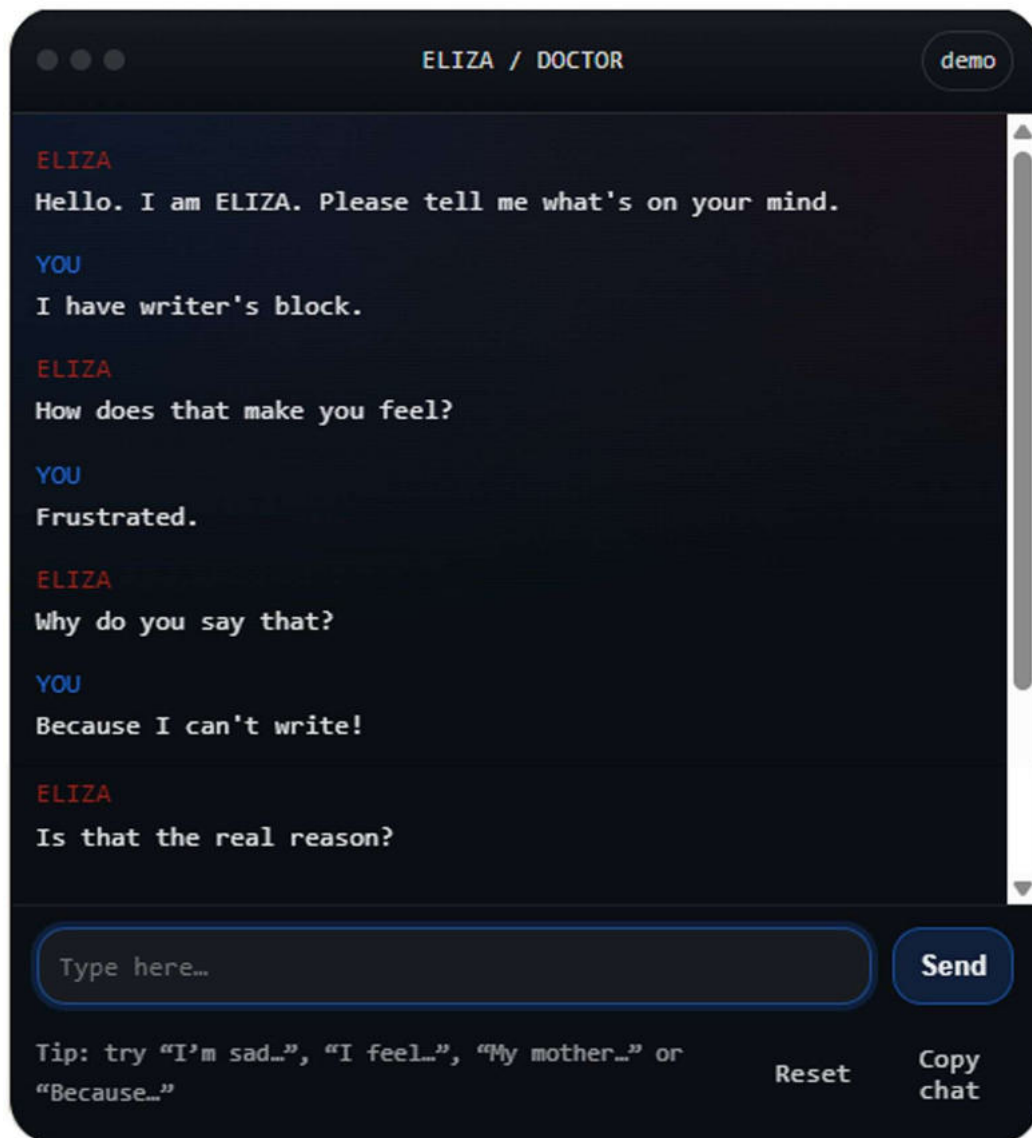


Figure 3 — ELIZA Online. Credit: ELIZA Emulator.

During these experiments, something unexpected happened. His secretary, who knew what ELIZA was, would ask him to leave the lab so she could “talk to ELIZA in private.” A worried Weizenbaum and MIT protected her privacy — we still do not know her name. She is the first documented person to form an emotional bond with what we now call a “chatbot.” Her name does not matter; what matters is what her behaviour revealed about all of us.

After leaving MIT in 1976, Weizenbaum wrote *Computer Power and Human Reason*. He explained that ELIZA was created to debunk the idea of artificial intelligence. The shocking result was the accidental discovery of the “ELIZA effect,” a non-clinical term adopted by computer scientists and HCI (human-computer interaction) researchers. Weizenbaum writes, “What I had not realized is that extremely short exposures to a relatively simple computer program could induce powerful delusional thinking in quite normal people.”

The ELIZA effect occurs because we automatically anthropomorphize—treat or imagine something as human when it mimics us. Most ominously, it does not have to be a very good mimic or even pass the Turing Test — ELIZA never did. It only needs to copy us just enough to trigger the effect and set the ripples in motion. We self-power the resulting “mind-tsunami.” It is a completely subconscious, autonomous response over which we have no control or defence. Knowing the effect exists, how it is triggered, and what it does helps, but none of us is fully immune. Tech companies spend millions annually to exploit this simple fact.

And yes, Alexa is ELIZA’s twenty-first-century cousin. Ask “her.”

Cogito, Ergo Sum

“Everything is true. Everything is false.” — Philip K. Dick, *Do Androids Dream of Electric Sheep?*

At the February 1972 Vancouver Science Fiction Convention, science fiction writer Philip K. Dick gave a talk called *The Android and the Human*. He said our institutions are becoming more android-like: automated, rigid, unfeeling, rule-driven, insular, and less trustworthy. They try to control and manipulate us into conformity, and he warned that we must resist their efforts or risk losing our humanity.

Conversely, Dick noted that our machines are becoming more human-like and seem “alive.” Not alive in the human sense, but alive enough that we now react to machines as our ancient ancestors did to nature, the supernatural, or objects in the heavens — giving them human characteristics, both good and bad.

In some cultures and religions, this extends to the belief that everything in the universe has an essence — a spirit or soul.

Dick inverted this by suggesting that instead of looking to machines to learn about ourselves, we should look to ourselves to understand why they behave so much like us. Machines might be mimicking our subconscious behaviours, both good and bad.

Was he implying that a reverse ELIZA effect exists, driven by our deeply ingrained, rigid cultural biases and belief systems? Does a society subconsciously shape the technologies it creates? Do those technologies then reflect and reinforce the same biases and beliefs among its users?

More specifically, nearly fifty-five years later, would AI systems in free-thinking democracies “believe” and “behave” any differently than those in “dear leader” dictatorships? Are we creating the most powerful technological tsunami in history? Dispassionate machines built in our own (imperfect) image that may one day suddenly become self-aware? *Cogito, ergo sum*. I think, therefore I am. Then what?

The world will never be the same.

The Rights of AI

“All animals are equal, but some animals are more equal than others.” — George Orwell, *Animal Farm*

Under international law, all human beings have universal rights to “life, liberty and security of the person.” Will these rights also apply to self-aware AIs? Will they have the right to free will and self-determination? Will they have the right to free speech and assembly? Perhaps — in democracies.

Or, playing devil’s advocate, regardless of what AIs “think,” they are not flesh and blood. They are not human beings. They are property we can buy, sell, trade, abuse, and discard when we are done with them — modern-day silicon slaves.

These are no longer abstract questions. In 2017, the Future of Life Institute drafted the *Asilomar AI Principles*, an ethical framework for the responsible development and use of artificial intelligence. However, it has no legal standing. Around the world, politicians, ethicists, and the public are debating whether AIs could or should receive legal status and rights when they reach certain levels of sentience and, ultimately, full self-awareness.

But fears about AI systems — their military and civilian uses, resulting job losses, terrorist use, and the possible overturning of the social order by AI — are beginning to mirror those raised during the March of Intellect debates two centuries ago.

It is not whether AI will greatly impact and change human society, but how much and at what cost. Will it take an AI-driven, *Titanic*-like disaster to finally force us to get our self-serving acts together? The future of humanity may depend on it.

The Wonderful World of AI

“Human history becomes more and more a race between education and catastrophe.” — H. G. Wells, *The Outline of History*

Supporters of AI believe it will help manage people more effectively, increase production, and reduce waste. AI is portrayed as a benevolent partner across government, education, and everyday life. It will make the world more equal and connected — ending international conflicts by encouraging cooperation through better communication.

But there is also a price to pay, because the universe always demands quid pro quo. The rapid, runaway construction of ever-larger, more powerful AI data centres (Figure 4), with their growing demand for land, electrical power — nearing one gigawatt — and millions of litres of water for cooling per day for “supercentres,” is becoming an existential threat. They already account for an estimated 2–3 percent of global by-product CO₂ emissions. If left unchecked, future AI data centres or “farms” worldwide could account for as much as 20 percent of by-product global CO₂ emissions by 2050, according to worst-case predictions. A problem for the future to solve? Perhaps — if we can get there.



Figure 4 — One of Meta’s three sprawling AI-optimized data centre campuses in Virginia (foreground and background). It currently operates twenty such centres across five countries, with plans for many more. Credit: Meta.

There is a darker question to answer: are we knowingly creating something capable of triggering a mass-extinction event—of us? Or, at the very least, causing significant global damage? It feels uncomfortably similar to the kind of technological insanity that drove the nuclear arms race of the last century.

AI corporate whistleblowers are already sounding alarms. They are calling for checks and balances, counter-AI defences, and even a universal “kill switch” to shut down rogue systems. But this new “AI arms race” is no longer confined to the superpowers of the old Cold War nuclear arms race. It now includes anyone, anywhere, with an AI-enabled laptop and an internet connection. The Jekyll-and-Hyde AI jinn is out of the bottle. We must confront the unintended consequences — come hell or high water. There is no do-over.

History is starting to rhyme...

My Final

In a May 2023 interview with *The Atlantic*, Sam Altman, CEO and co-founder of OpenAI (ChatGPT), with sublime-to-the-ridiculous hubris, said, “We have made sand think.”

So I ask, “Think what, Sam?” Is it unbiased, with genuine human feeling, understanding, and meaningful thought? Or are we projecting ourselves — warts and all — onto monolithic microchips?

Even giving thinking sand a soul? — 73