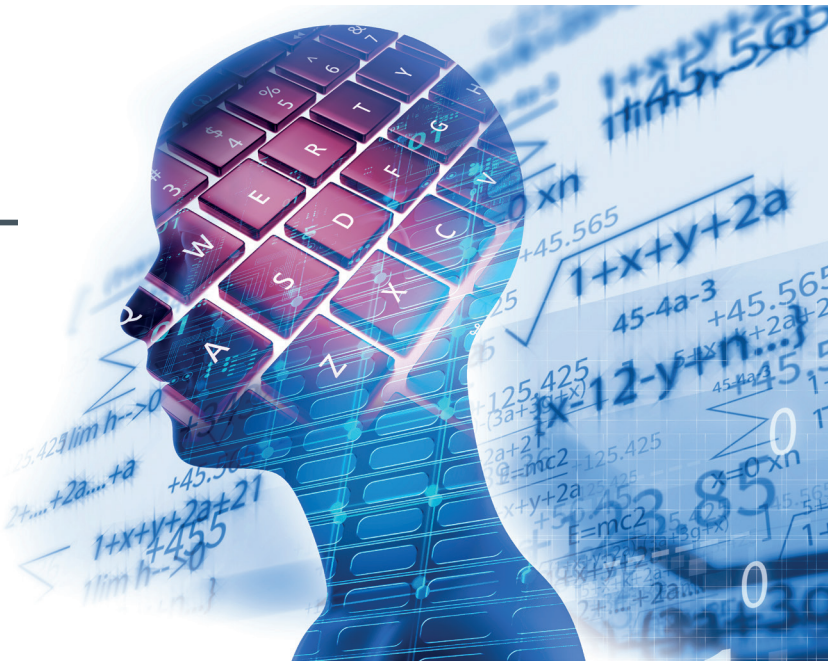


# THE INCONVENIENT TRUTH OF ARTIFICIAL INTELLIGENCE



**In 1941, Issac Asimov wrote the short science fiction story Runaround about mining on other planets and the use of a robot with AI capabilities. I believe the Runaround story may be re-classified as non-fiction in the next 30 to 40 years.**



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Last month, Russian President Vladimir Putin said the development of AI raises both “colossal opportunities” and “threats that are difficult to predict”, and that “whoever becomes the leader in this sphere will become the ruler of the world.”<sup>1</sup>

The power of AI to transform the world is overwhelming: more efficient use of natural resources and environment regulation, better healthcare at lower cost, more equitable access to knowledge, the ability to explore our galaxy, improved communication, cheaper and better quality food, more leisure and entertainment. At the same time, there are concerns about social inequity, loss of our humanity, privacy and employment, and concern about our ability to adapt and, perhaps most importantly, fear of abuse.

The issues surrounding the use of AI - how to exploit the potential benefits fairly and mitigate the threats - need the full consideration of our sharpest minds working together alongside AI itself over the next few years. I see five key areas that we need to watch carefully.

## 1. SPEED OF CHANGE

The speed of change in technology is exponential, not linear. As humans, most of us tend to think linearly. Intel co-founder Gordon Moore noticed in 1965 that the number of transistors per square inch on integrated circuits had doubled every year since their invention and then through Moore’s Law, predicted that this trend would continue into the foreseeable future. Futurist and Author Gerd Leonhard believes we are currently on a factor of four on the exponential combinatorial curve of science and technology. If he is correct, this matters a lot because doubling from that level brings change very fast.

Futurist Ray Kurzweil has predicted that computers will have human level intelligence by 2029 and the Singularity may happen as soon as 2047, when humans will multiply our effective intelligence a billion fold by merging with the intelligence we have created.<sup>2</sup>

According to Kurzweil, by around 2020 a USD1,000 computer will at least match the processing power of the human brain. By 2029 the software for intelligence will have been largely mastered, and the average personal computer will be equivalent to 1,000 brains.<sup>3</sup>

## 2. HOMO TECHNOLOGO VS HOMO SAPIENS 2.0

What happens to our humanity when we are machines or part machine? According to Kurzweil and others, as our minds and senses become aided by prosthetics, there will no longer be a clear distinction between human and machine. Will humans be augmented by technology in such a way that they will turn into “Homo technolo” or will computers enhanced with machine learning develop perception, creativity and potentially intuition to become “homo sapiens 2.0”?

There are already computers—neural implants—being placed into people’s brains to counteract Parkinson’s disease and tremors from multiple sclerosis. We have cochlear implants that restore hearing. A retinal implant is being developed in the U.S. that is intended to provide at least some visual perception for some blind individuals, basically by replacing certain visual-processing circuits of the brain.

Augmented intellect and sensory perceptions powered through chips communicating with communal networked cloud computing could turn us into one large collective hive.

## 3. WORKING THE BIG DATA

As much as 90% of data has been created in the last two years at a rate of at 2.5 quintillion bytes of data a day.<sup>4</sup> Many data analysts are suggesting the digital universe will be 40 times bigger by 2020. This is largely due to the vast increase of dark data, meaning all the unstructured data from the Internet, social media, voice and information from connected devices.

As new channels are brought online, more and more data becomes available. Unfortunately,



experts estimate only 0.5% of the data gets analysed and that USD10-15 trillion could be added to the global GDP over the next few decades, just by identifying efficiencies created by the convergence of machines, data, and analytics.<sup>5</sup>

Most of the data is free but very few organizations have the computing power and tools to mine it effectively for insights and action to extract value. Concerns about privacy and misuse of consumer and corporate data have escalated. As some have called it, data is new “new oil”. Looking forward, we should expect the cost of acquiring data to increase dramatically.

## 4. DIGITAL DARWINISM

The impact on business from AI will be important and is still under estimated. A recent study suggested 50% of current job roles will disappear by 2025<sup>6</sup>, as will many companies and industries. In 2013, Carl Benedikt Frey and Michael Osborne examined the probability of computerisation for 702 occupations and found that 47% of workers in America had jobs at high risk of potential automation. Subsequent studies put the equivalent figure at 35% of the workforce for Britain (where more people work in creative fields less susceptible

to automation) and 49% for Japan.<sup>7</sup>

While change in itself is not to be feared (half of the US population worked in the agriculture sector in the 1890s vs 2% today), the speed of change in the jobs in demand will create potentially profound social disruptions.

According to The Economist, as knowledge becomes obsolete more quickly, the most important thing will be learning to relearn, rather than learning how to do one thing very well.<sup>8</sup> Flexibility and adaptability will be prized.

New digital business models are the principal reason why just over half of the names of companies on the Fortune 500 have disappeared since the year 2000. According to Pierre Nanterme of Accenture, we are only at the beginning of the fourth industrial revolution, which began with the digital consumer, who enjoys more interactive and personalized experiences thanks to SMAC (social, mobile, analytics and cloud) technologies; the digital enterprise, which leverages SMAC technologies to optimize the cost of corporate functions and to transform enterprise collaboration for greater productivity; and the emerging digital operations wave, in which companies are truly revolutionizing business with the use of artificial intelligence, robotics, cognitive computing and the Industrial Internet of Things.<sup>9</sup>

## 5. ASYMMETRY OF RISK AND REWARD

AI will increase productivity but given that not many of us have the ability to assimilate millions of lines of code and ascertain what the underlying assumptions mean, can we even presume to have reasonable control over it?

More importantly how do we prevent cyberattacks and thefts by governments, individuals and groups with control agendas? A report sponsored by Intel's cybersecurity solutions provider McAfee, "Net Losses – Estimating the global cost of cybercrime" released by the Centre of Strategic and International Studies (CSIS), estimated that cybercrime costs businesses USD400bn worldwide. "The effect of cybercrime is to shift employment

away from jobs that create the most value."<sup>10</sup>

Ultimately as more data and information move to the cloud, the "global brain" will reside in the cloud. Cyberattacks will become increasingly impactful. Blockchain has been put forward as a potential solution. However, with Quantum computers potentially hackable, it is not clear that the prospective security offered by blockchain is as high as people expect.

## THE NEED FOR CLEAR FRAMEWORKS

Accepting that we cannot stop the progress of AI, how do we move forward? How do we override the AI decisions we do not agree with? Efforts have been made to design rules of the road for developers and owners of AI.

At the moment, there is very little governance or transparency associated with the AI black boxes being built by business, states and rogue groups. As AI will redefine global competition, pricing power and profits—who will be winners and who will lose – more is needed. For example, ultimately new legal frameworks will have to be developed around developers of algorithms. The role of ethics across disciplines should increase to help guide humans through this escalating revolution.

The Asilomar principles<sup>11</sup> on AI as developed by Elon Musk, Stephen Hawking and others are a good beginning and need to be converted to policy at the UN level with standards and rights to inspection. In addition, we will need standards for the use of AI in business and monitoring by some international board of professionals and through AI itself.

From an investor's perspective the competitive environment will evolve very fast. AI will be an incredible enabler for people and businesses and will require ongoing learning from investors as the competitive landscape evolves. The key will be to understand where pricing pressure and power will be found as well as to spot innovation and disruption early. These will affect the corporate environment across all sectors. Discovering the "inconvenient truth" about AI will be paramount going forward to find sustainable investments and assess ESG characteristics.

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