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## Artificial intelligence vs the world.

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'Deep Blue versus Garry Kasparov' was a clashing of six game chess matches between World Chess Champion Garry Kasparov and IBM supercomputer Deep Blue. Kasparov, considered to be the best chess player of all time, was ranked No. 1 for 225 consecutive months from 1984 until his retirement in 2005. At age 22, he became the youngest ever undisputed World Chess Champion, defeating the former champion Anatoly Karpov.

Deep Blue beat Kasparov 2 - 1 (3 games being drawn by mutual consent): signaling that Artificial Intelligence (AI) could outsmart one of humanity's great intellectual champions. AI's capricious history has been shrouded in uncertainty, hope and fear. Collectively, humanity has asked, "Where is AI taking us?" and "Are we prepared?"

Innovation has long been regarded as invention born out of necessity. This was the case at Bletchley Park, the secret headquarters of British codebreakers during the Second World War. Alan Turing, one of the great mathematicians and cryptanalysts of his time, was tasked by the British military to decipher an unbreakable Nazi code encrypted by the infamous Enigma machine. Turing's own cryptanalytic machine, Bombe, effectively automated and optimized the trial of various code-breaking possibilities and consequently cracked the Enigma code – saving thousands of lives.

Although Bombe could not store or retrieve data (two critical functions of modern computers), the history of AI starts with these early manifestations of digital electronic computers.

Following a prosperous and auspicious period of AI research from the mid 1950s to the late 1960s, an era dubbed the "AI Winter" ensued. This era marked a steady decline in both public interest and investment into AI research among business and academic communities. Feelings of pessimism toward AI did not wane until multi-layered neural networks (capable of deep learning) emerged, thanks in no small part to a group of devoted and dogged Canadian researchers.

At its most conceptual level, neural networks learn through processing numerous inputs and adjusting the translation of data based on the relevance of the output to a desired result. This is what makes machine learning so powerful: the ability to self-correct without the need for continuous human intervention.

In the late 1990s and early 2000s, big business and mainstream media began to take AI seriously. The exhibition chess match between Deep Blue and Kasparov captured the imagination of over 70 million television viewers – arguably the first-time laymen acknowledged the potential for computers to mimic human intelligence.

Following Deep Blue's win, AI research resembled a phoenix from the ashes. This culminated in the development of Watson, a computer which beat two Jeopardy champions in an exhibition game show. AI was no longer limited to number crunching: it could understand complicated context in the real world.

Major advances in AI took place under our collective noses. Vast strides in AI are prominent in the technology and software we use every day, on our smartphones and laptops. Big-tech firms such as Google, Apple, Facebook and Amazon make it almost impossible to avoid AI in our daily lives. As Big-tech ushered AI in through the front door, uncertainty and fear crept in through the back.

Much like our reliance on our phones and the Internet for a variety of daily tasks, the Oracle of Delphi was a respected source of advice for ancient Greeks. Delphi would often be found in the temple of Apollo, built around a sacred spring considered to be the center of the world. Perched above a crevice where the divine spirit was said to radiate, Delphi would deliver messages from the Gods. Delphi's advice was taken as absolute truth and no major decision regarding war or life

would be taken without consultation. Yet, in lieu of supernatural events, historians have found evidence to suggest that the divine spirit emitted through Delphi's crevice was actually a combination of gasses capable of inducing a high. In all likelihood, ancient Greeks basing their most important decisions on the word of an intoxicated mystic.

The oracle we consult today requires less of an introduction: a reach into one's pocket proves far more convenient than a trip up a mountain. There is no need to travel far for consultation; we simply input large amounts of data, coded in a way that makes sense to our medium and wait for a response. Similar to ancient Greeks, however, the layman does not fully understand how conclusions are reached. Can we assume that AI machines will always make decisions that align with the formal and informal ethical codes we have established? Centrally, can we trust the machines we have created?

**This is the crux of our discomfort.**

When individuals do not understand basic principles of causality, intent and meaning, their actions they are labelled insane. We would not let such individuals make decisions about war or home loans. As AI is incorporated into these important decisions, there has been no demonstration that it will adhere to the social constructs that govern our lives.

As a consequence of AI's "Black Box Problem" (any artificial intelligence system whose inputs and operations are not visible to the user or another interested party), the sentiment that it should be a legal right to interrogate AI about how it reaches the decisions that it makes, is gaining momentum. Regulations such as the Equal Credit Opportunity Act in the USA and the General Data Protection Act in the EU are trying to solve these questions around trust.

However, are we misdiagnosing the source of our fear? Does the source of mistrust sit with AI itself? Or is AI nothing more than an algorithmic extension of the data we feed it. Similar to the fumes inhaled by Delphi all those years ago, any bias inherent in our data will manifest in the conclusions reached by AI.

Artificial Intelligence will always be governed by the data humans collect, process and use. It is undeniably important for humans to minimize the biases in that data. Only then will AI be able to make sober, rational conclusions. For now we are left to conclude that AI is headed in the direction that governments, big-tech and us, the consumer, guide it.