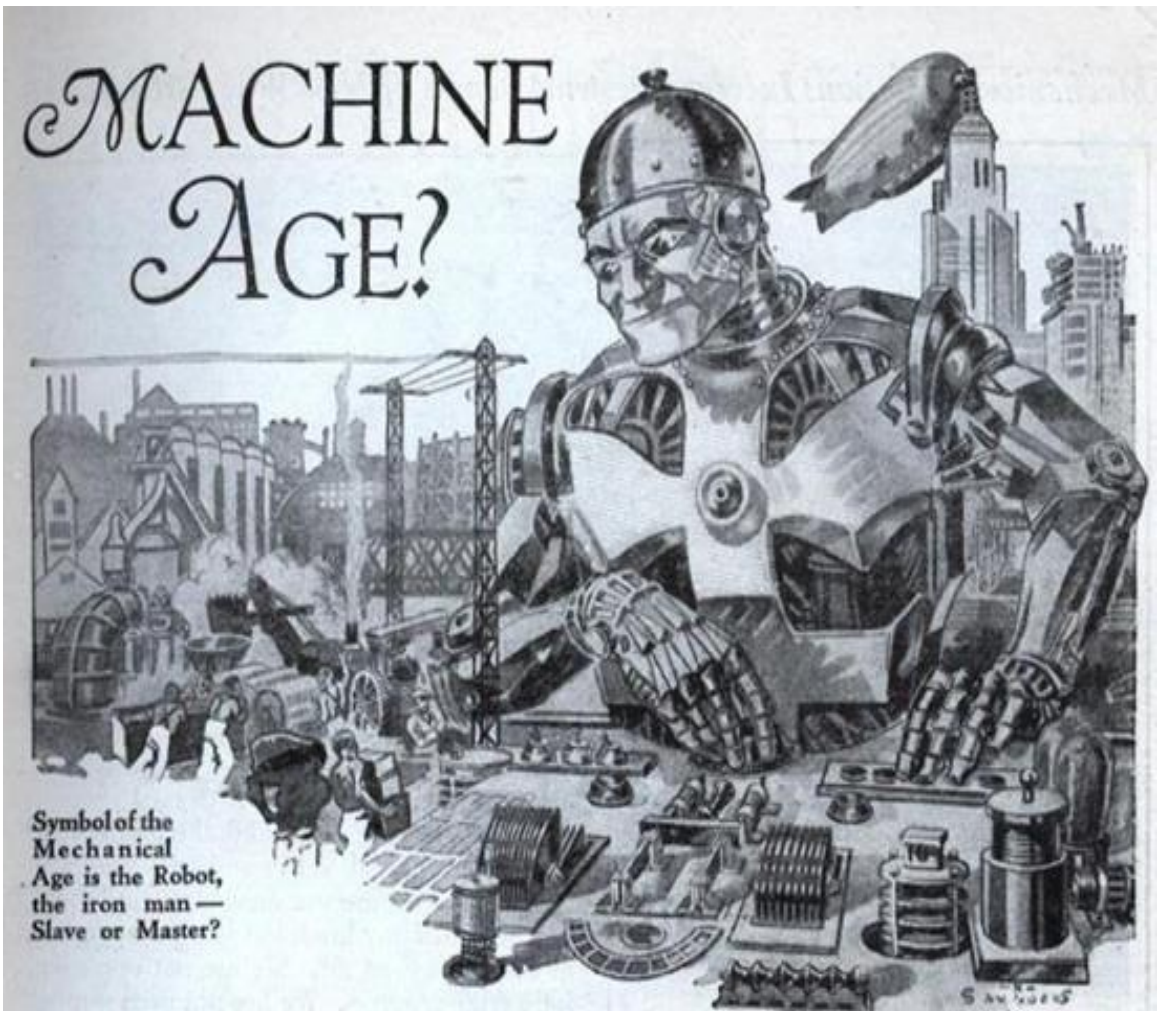
THE NEW MACHINE AGE



LANGUAGE&SKILLS
More Than English

WHAT IS TECHNOLOGY?

“Any sufficiently advanced technology is indistinguishable from magic.”
— Arthur C. Clarke

“You never change things by fighting the existing reality.
To change something, build a new model that makes the existing model obsolete.”
— R. Buckminster Fuller

“Computers are useless. They can only give you answers.”
— Pablo Picasso

“What a computer is to me is the most remarkable tool that we have ever come up with. It's the equivalent of a bicycle for our minds.”
— Steve Jobs

“There will come a time when it isn't 'They're spying on me through my phone' anymore. Eventually, it will be 'My phone is spying on me'.”
— Philip K. Dick

“Technological progress has merely provided us with more efficient means for going backwards.”
— Aldous Huxley, *Ends and Means*

“The Internet is like alcohol in some sense. It accentuates what you would do anyway. If you want to be a loner, you can be more alone. If you want to connect, it makes it easier to connect.”
— Esther Dyson

“As technology accumulates and people in more parts of the planet become interdependent, the hatred between them tends to decrease, for the simple reason that you can't kill someone and trade with him too.”
— Steven Pinker, *The Blank Slate: The Modern Denial of Human Nature*

“Our inventions are wont to be pretty toys, which distract our attention from serious things. They are but improved means to an unimproved end, an end which it was already but too easy to arrive at; as railroads lead to Boston or New York. We are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate.”
— Henry David Thoreau, *Walden*

WHAT IS TECHNOLOGY?

“Our mission as humans is not only to discover our fullest selves in the technium, and to find full contentment, but to expand the possibilities for others. Greater technology will selfishly unleash our talents, but it will also unselfishly unleash others: our children, and all children to come.”
— Kevin Kelly, *What Technology Wants*

“Progress is made by lazy men looking for easier ways to do things.”

— Robert A. Heinlein

“The attribution of intelligence to machines, crowds of fragments, or other nerd deities obscures more than it illuminates. When people are told that a computer is intelligent, they become prone to changing themselves in order to make the computer appear to work better, instead of demanding that the computer be changed to become more useful.”
— Jaron Lanier, *You Are Not a Gadget*

“We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.”
— Roy Amara

“Unfortunately robots capable of manufacturing robots do not exist. That would be the philosopher's stone, the squaring of the circle.”
— Ernst Jünger, *The Glass Bees*

“If we don't understand our tools, then there is a danger we will become the tool of our tools. We think of ourselves as Google's customers, but really we're its products.”
— Rebecca Goldstein, *Plato at the Googleplex: Why Philosophy Won't Go Away*

“Technology isn’t what makes us “post-human” or “transhuman,” as some writers and scholars have recently suggested. It’s what makes us human. Technology is in our nature. Through our tools we give our dreams form. We bring them into the world. The practicality of technology may distinguish it from art, but both spring from a similar, distinctly human yearning.”
— Nicholas Carr, *The Glass Cage: Automation and Us*

“When we think about the future, we hope for a future of progress. That progress can take one of two forms. Horizontal or extensive progress means copying things that work—going from 1 to n. Horizontal progress is easy to imagine because we already know what it looks like. Vertical or intensive progress means doing new things—going from 0 to 1. Vertical progress is harder to imagine because it requires doing something nobody else has ever done. If you take one typewriter and build 100, you have made horizontal progress. If you have a typewriter and build a word processor, you have made vertical progress.”
— Peter Thiel, *Zero to One: Notes on Startups, or How to Build the Future*

KEY CONCEPTS

1. Automation

Automation or automatic control, is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching in telephone networks, steering and stabilization of ships, aircraft and other applications with minimal or reduced human intervention. Some processes have been completely automated.

The biggest benefit of automation is that it saves labor, however, it is also used to save energy and materials and to improve quality, accuracy and precision.
The term automation, inspired by the earlier word automatic (coming from automaton), was not widely used before 1947, when General Motors established the automation department.It was during this time that industry was rapidly adopting feedback controllers, which were introduced in the 1930s.

Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic and computers, usually in combination. Complicated systems, such as modern factories, airplanes and ships typically use all these combined techniques.

2. Moore’s Law

"Moore's law" is the observation that the number of transistors in a dense integrated circuit has doubled approximately every two years. The observation is named after Gordon E. Moore, co-founder of Intel and Fairchild Semiconductor, whose 1965 paper described a **doubling** every year in the number of components per integrated circuit and projected this rate of growth would continue for at least another decade.

In 1975, looking forward to the next decade, he revised the forecast to doubling every two years. His prediction proved accurate, in part because the law now is used in the semiconductor industry to guide long-term planning and to set targets for research and development. The capabilities of many digital electronic devices are strongly linked to Moore's law: quality-adjusted microprocessor prices, memory capacity, sensors and even the number and size of pixels in digital cameras. All of these are improving at roughly exponential rates.

"Moore's law" should be considered an observation or projection and not a physical or natural law. Although the rate held steady during the last four decades, the rate was faster during the first decade. Doubts about the validity of extrapolating the historical growth rate into the indefinite future have been expressed. For example, the 2010 update to the International Technology Roadmap for Semiconductors predicted that growth would slow around 2013, and Gordon Moore in 2015 foresaw that the rate of progress would reach saturation: "I see Moore’s law dying here in the next decade or so."

3. Industrial Revolution

The Industrial Revolution was the transition to new manufacturing processes in the period from about 1760 to sometime between 1820 and 1840. This transition included going from hand production methods to machines, new chemical manufacturing and iron production processes, improved efficiency of water power, the increasing use of steam power, and the development of machine tools. It also included the change from wood and other bio-fuels to coal. Textiles were the dominant industry of the Industrial Revolution in terms of employment, value of output and capital invested; the textile industry was also the first to use modern production methods.

The Industrial Revolution marks a major turning point in history; almost every aspect of daily life was influenced in some way. In particular, average income and population began to exhibit unprecedented sustained growth. Some economists say that the major impact of the Industrial Revolution was that the standard of living for the general population began to increase consistently for the first time in history, although others have said that it did not begin to meaningfully improve until the late 19th and 20th centuries. Economic historians are in agreement that the onset of the Industrial Revolution is the most important event in the history of humanity since the domestication of animals, plants and fire.

The First Industrial Revolution evolved into the Second Industrial Revolution in the transition years between 1840 and 1870, when technological and economic progress continued with the increasing adoption of steam transport (steam-powered railways, boats and ships), the large-scale manufacture of machine tools and the increasing use of machinery in steam-powered factories

4. Productivity

Productivity is an economic measure of output per unit of input. Inputs include labor and capital, while output is typically measured in revenues and other GDP components such as business inventories. Productivity measures may be examined collectively (across the whole economy) or viewed industry by industry to examine trends in labor growth, wage levels and technological improvement.

Productivity gains are vital to the economy because they allow us to accomplish more with less. Capital and labor are both scarce resources, so maximizing their impact is always a core concern of modern business. Productivity enhancements come from technology advances, such as computers and the internet, supply chain and logistics improvements, and increased skill levels within the workforce.

Productivity is measured and tracked by many economists as a clue for predicting future levels of GDP growth. The productivity measure commonly reported through the media is based on the ratio of GDP to total hours worked in the economy during a measuring period; this productivity measure is produced by the Bureau of Labor Statistics four times per year.

5. Exponential Growth

Exponential Growth is an immensely powerful concept. To help us grasp it better let us use an ancient Indian chess legend as an example: the legend goes that the tradition of serving Paal Paysam to visiting pilgrims started after a game of chess between the local king and the lord Krishna himself.

The king was a big chess enthusiast and had the habit of challenging wise visitors to a game of chess. One day a traveling sage was challenged by the king. To motivate his opponent the king offered any reward that the sage could name. The sage modestly asked just for a few grains of rice in the following manner: the king was to put a single grain of rice on the first chess square and double it on every consequent one.

Having lost the game and being a man of his word the king ordered a bag of rice to be brought to the chess board. Then he started placing rice grains according to the arrangement: 1 grain on the first square, 2 on the second, 4 on the third, 8 on the fourth and so on:

Following the exponential growth of the rice payment the king quickly realized that he was unable to fulfill his promise because on the twentieth square the king would have had to put 1,000,000 grains of rice. On the fortieth square the king would have had to put 1,000,000,000 grains of rice. And, finally on the sixty fourth square the king would have had to put more than 18,000,000,000,000,000,000 grains of rice which is equal to about 210 billion tons and is allegedly sufficient to cover the whole territory of India with a meter thick layer of rice. At ten grains of rice per square inch, the above amount requires rice fields covering twice the surface area of the Earth, oceans included.

It was at that point that the lord Krishna revealed his true identity to the king and told him that he doesn't have to pay the debt immediately but can do so over time. That is why to this day visiting pilgrims are still feasting on Paal Paysam and the king's debt to lord Krishna is still being repaid.

6. Digital Revolution

The Digital Revolution, known as the Third Industrial Revolution, is the change from analog, mechanical, and electronic technology to digital technology which began anywhere from the late 1950s to the late 1970s with the adoption and proliferation of digital computers and digital record keeping that continues to the present day. Implicitly, the term also refers to the sweeping changes brought about by digital computing and communication technology during (and after) the latter half of the 20th century. Analogous to the Agricultural Revolution and Industrial Revolution, the Digital Revolution marked the beginning of the Information Age.

Central to this revolution is the mass production and widespread use of digital logic circuits, and its derived technologies, including the computer, digital cellular phone, and the Internet. The underlying technology was invented in the later half of the 19th century, including Babbage's analytical engine and the telegraph. Digital communication became economical for widespread adoption after the invention of the personal computer. Claude

Shannon, a Bell Labs mathematician, is credited for having laid out the foundations of digitalization in his pioneering 1948 article, A Mathematical Theory of Communication

The digital revolution converted technology that previously was analog into a digital format. By doing this, it became possible to make copies that were identical to the original. In digital communications, for example, repeating hardware was able to amplify the digital signal and pass it on with no loss of information in the signal. Of equal importance to the revolution was the ability to easily move the digital information between media, and to access or distribute it remotely.

A major landmark in the revolution was the transition from analog to digital recorded music. In the 1980s, the digital format of optical compact discs supplanted analog formats, such as vinyl records and cassette tapes, as the popular medium of choice.

Partner 1) Read 1,2,3

Ask your partner:

What is the digital revolution? Where did it start? Ask him to provide examples.

What is exponential growth? Ask him to provide an example.

What is productivity? Ask for examples of increases/decreases in productivity.

Partner 2) Read 4,5,6

Ask your partner:

What is automation? Who coined the phrase? Ask for examples.

What is Moore's Law? Is it a real law? Will it always be true?

What is the industrial revolution? When did it start? Has it ever stopped?

BOTS STEALING JOBS

Image Source: Shutterstock/Salon

"According to our estimates, about 47 percent of total US employment is at risk."

THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS TO COMPUTERISATION? Carl Benedikt Frey and Michael A. Osborne

"At the height of its power, the photography company Kodak employed more than 140,000 people and was worth $28 billion. They even invented the first digital camera. But today Kodak is bankrupt, and the new face of digital photography has become Instagram. When Instagram was sold to Facebook for a billion dollars in 2012, it employed only 13 people. Where did all those jobs disappear?"

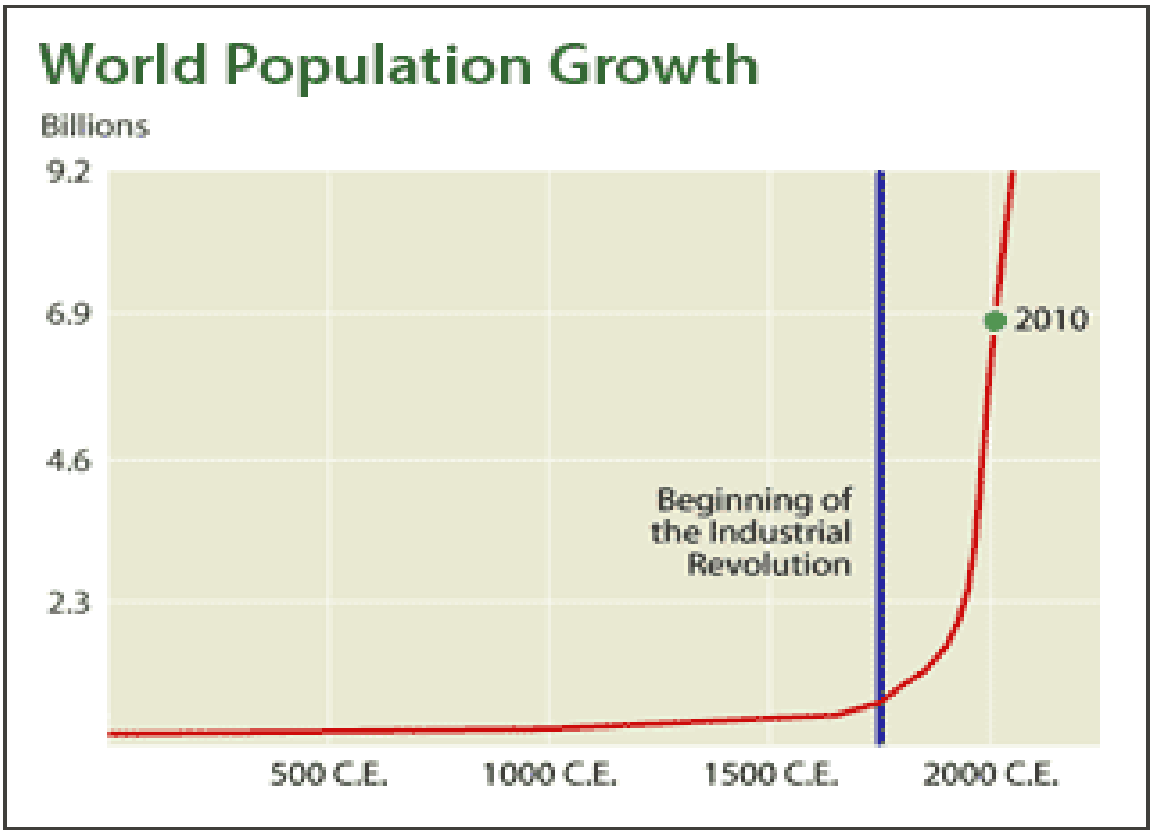
Jaron Lanier "Who owns the future"

TED Presentation Background

Andrew Paul McAfee, is co-director of the MIT Initiative on the Digital Economy and the associate director of the Center for Digital Business at the MIT Sloan School of Management, studying the ways information technology (IT) affects businesses and business as a whole.

His research investigates how IT changes the way companies perform, organize themselves, and compete, and at a higher level, how computerization affects competition, society, the economy, and the workforce. He was previously a professor at Harvard Business School and a fellow at Harvard's Berkman Center for Internet and Society.

In The Second Machine Age MIT's Erik Brynjolfsson and Andrew McAfee make the case that we should be optimistic about the future because technological progress, 'the only free lunch that economists believe in,' is accelerating quickly past our intuitions and expectations.
Source: Wikipedia



For many thousands of years, humanity was a very gradual upward trajectory. Progress was achingly slow, almost invisible. Animals and farms, wars and empires, philosophies and religions all failed to exert much influence. But just over two hundred years ago, something sudden and profound arrived and bent the curve of human history—of population and social development—almost ninety degrees.

Now comes the second machine age. Computers and other digital advances are doing for mental power—the ability to use our brains to understand and shape our environments—what the steam engine and its descendants did for muscle power. They're allowing us to blow past previous limitations and taking us into new territory. How exactly this transition will play out remains unknown, but whether or not the new machine age bends the curve as dramatically as Watt's steam engine, it is a very big deal indeed. This book explains how and why.

For now, a very short and simple answer: mental power is at least as important for progress and development—for mastering our physical and intellectual environment to get things done—as physical power. So a vast and unprecedented boost to mental power should be a great boost to humanity, just as the ealier boost to physical power so clearly was.
Source: "The Second Machine Age" by A. McAfee or E. Brynjolfsson

Discuss with a partner how likely it is that the occupations below are susceptible to computerization and assign a figure from 0 -100 percent:

Order Clerks

Brokerage Clerks

Insurance Claims and Policy Processing Clerks

Timing Device Assemblers and Adjusters

Data Entry Keyers

Library Technicians

New Accounts Clerks

Photographic Process Workers and Processing Machine Operators

Tax Preparers

Cargo and Freight Agents

Watch Repairers

Insurance Underwriters

Mathematical Technicians

Telemarketers

Bookkeeping, Accounting, and Auditing Clerks

Legal Secretaries

Radio Operators

Driver/Sales Workers

Claims Adjusters, Examiners, and Investigators

Parts Salespersons

Credit Analysts

Shipping, Receiving, and Traffic Clerks

Procurement Clerks

Packaging and Filling Machine Operators and Tenders

Etchers and Engravers

Tellers

Umpires, Referees, and Other Sports Officials

Insurance Appraisers, Auto Damage

Loan Officers

Image Source: cs.toronto.edu

MACHINE LEARNING

Machine learning is a subfield of computer science that evolved from the study of pattern recognition and computational learning theory in artificial intelligence. Machine learning explores the construction and study of algorithms that can learn from and make predictions on data. Such algorithms operate by building a model from example inputs in order to make data-driven predictions or decisions, rather than following strictly static program instructions.

Machine learning is closely related to and often overlaps with computational statistics; a discipline that also specializes in prediction-making. It has strong ties to mathematical optimization, which delivers methods, theory and application domains to the field. Machine learning is employed in a range of computing tasks where designing and programming explicit algorithms is infeasible. Example applications include spam filtering, optical character recognition search engines and computer vision. Machine learning is sometimes conflated with data mining, although that focuses more on exploratory data analysis. Machine learning and pattern recognition "can be viewed as two facets of the same field." When employed in industrial contexts, machine learning methods may be referred to as predictive analytics or predictive modelling.
Source: Wikipedia

Neural networks and Deep Learning

Neural networks are one of the most beautiful programming paradigms ever invented. In the conventional approach to programming, we tell the computer what to do, breaking big problems up into many small, precisely defined tasks that the computer can easily perform. By contrast, in a neural network we don't tell the computer how to solve our problem. Instead, it learns from observational data, figuring out its own solution to the problem at hand.

Automatically learning from data sounds promising. However, until 2006 we didn't know how to train neural networks to surpass more traditional approaches, except for a few specialized problems. What changed in 2006 was the discovery of techniques for learning in so-called deep neural networks. These techniques are now known as deep learning. They've been developed further, and today deep neural networks and deep learning achieve outstanding performance on many important problems in computer vision, speech recognition, and natural language processing. They're being deployed on a large scale by companies such as Google, Microsoft, and Facebook

Source: http://neuralnetworksanddeeplearning.com/

TED Presentation Background

Jeremy Howard (born 1973) is an Australian data scientist and entrepreneur. He is the CEO and Founder at Enlitic, an advanced machine learning company in San Francisco, California. Previously, Howard was the President and Chief Scientist at Kaggle, a community and competition platform of over 200,000 data scientists. Howard is the youngest faculty member at Singularity University, where he teaches data science. He is also a Young Global Leader with the World Economic Forum, and spoke at the World Economic Forum Annual Meeting 2014 on "Jobs For The Machines." Howard advised Khosla Ventures as their Data Strategist, identifying the biggest opportunities for investing in data driven startups and mentoring their portfolio companies to build data-driven businesses. Howard was the founding CEO of two successful Australian startups, FastMail and Optimal Decisions Group.

Before that, he spent eight years in management consulting, at McKinsey & Company and AT Kearney. Howard started his career in management consulting, working at some of the world’s most exclusive firms. Described as a “wunderkind”, he was earning over $200,000 while still a 19-year-old student in the Australian offices of McKinsey & Company. Later, he became the youngest Engagement Manager world-wide at AT Kearney, creating a new global practice in what is now referred to as Big Data. He remained in management consulting for eight years before becoming an entrepreneur.

Source: Wikipedia

Read the article and divide it into paragraphs

MIT Technology Review 14.9.2015
Deep Learning Machine Teaches Itself Chess in 72 Hours, Plays at International Master Level In a world first, an artificial intelligence machine plays chess by evaluating the board rather than using brute force to work out every possible move.
It's been almost 20 years since IBM's Deep Blue supercomputer beat the reigning world chess champion, Gary Kasparov, for the first time under standard tournament rules. Since then, chess-playing computers have become significantly stronger, leaving the best humans little chance even against a modern chess engine running on a smartphone. But while computers have become faster, the way chess engines work has not changed. Their power relies on brute force, the process of searching through all possible future moves to find the best next one. Of course, no human can match that or come anywhere close. While Deep Blue was searching some 200 million positions per second, Kasparov was probably searching no more than five a second. And yet he played at essentially the same level. Clearly, humans have a trick up their sleeve that computers have yet to master. This trick is in evaluating chess positions and narrowing down the most profitable avenues of search. That dramatically simplifies the computational task because it prunes the tree of all possible moves to just a few branches. Computers have never been good at this, but today that changes thanks to the work of Matthew Lai at Imperial College London. Lai has created an artificial intelligence machine called Giraffe that has taught itself to play chess by evaluating positions much more like humans and in an entirely different way to conventional chess engines. Straight out of the box, the new machine plays at the same level as the best conventional chess engines, many of which have been fine-tuned over many years. On a human level, it is equivalent to FIDE International Master status, placing it within the top 2.2 percent of tournament chess players. The technology behind Lai's new machine is a neural network. This is a way of processing information inspired by the human brain. It consists of several layers of nodes that are connected in a way that change as the system is trained. This training process uses lots of examples to fine-tune the connections so that the network produces a specific output given a certain input, to recognize the presence of face in a picture, for example. In the last few years, neural networks have become hugely powerful thanks to two advances. The first is a better understanding of how to fine-tune these networks as they learn, thanks in part to much faster computers. The second is the availability of massive annotated datasets to train the networks. That has allowed computer scientists to train much bigger networks organized into many layers. These so-called deep neural networks have become hugely powerful and now routinely outperform humans in pattern recognition tasks such as face recognition and handwriting recognition. So it's no surprise that deep neural networks ought to be able to spot patterns in chess and that's exactly the approach Lai has taken. His network consists of four layers that together examine each position on the board in three different ways. The first looks at the global state of the game, such as the number and type of pieces on each side, which side is to move, castling rights and so on. The second looks at piece-centric features such as the location of each piece on each side, while the final aspect is to map the squares that each piece attacks and defends. Lai trains his network with a carefully generated set of data taken from real chess games. This data set must have the correct distribution of positions. "For example, it doesn't make sense to train the system on positions with three queens per side, because those positions virtually never come up in actual games," he says. It must also have plenty of variety of unequal positions beyond those that usually occur in top level chess games. That's because although unequal positions rarely arise in real chess games, they crop up

all the time in the searches that the computer performs internally. And this data set must be huge. The massive number of connections inside a neural network have to be fine-tuned during training and this can only be done with a vast dataset. Use a dataset that is too small and the network can settle into a state that fails to recognize the wide variety of patterns that occur in the real world. Lai generated his dataset by randomly choosing five million positions from a database of computer chess games. He then created greater variety by adding a random legal move to each position before using it for training. In total he generated 175 million positions in this way. The usual way of training these machines is to manually evaluate every position and use this information to teach the machine to recognize those that are strong and those that are weak. But this is a huge task for 175 million positions. It could be done by another chess engine but Lai's goal was more ambitious. He wanted the machine to learn itself. Instead, he used a bootstrapping technique in which Giraffe played against itself with the goal of improving its prediction of its own evaluation of a future position. That works because there are fixed reference points that ultimately determine the value of a position—whether the game is later won, lost or drawn. In this way, the computer learns which positions are strong and which are weak. Having trained Giraffe, the final step is to test it and here the results make for interesting reading. Lai tested his machine on a standard database called the Strategic Test Suite, which consists of 1,500 positions that are chosen to test an engine's ability to recognize different strategic ideas. "For example, one theme tests the understanding of control of open files, another tests the understanding of how bishop and knight's values change relative to each other in different situations, and yet another tests the understanding of center control," he says. The results of this test are scored out of 15,000. Lai uses this to test the machine at various stages during its training. As the bootstrapping process begins, Giraffe quickly reaches a score of 6,000 and eventually peaks at 9,700 after only 72 hours. Lai says that matches the best chess engines in the world. "[That] is remarkable because their evaluation functions are all carefully hand-designed behemoths with hundreds of parameters that have been tuned both manually and automatically over several years, and many of them have been worked on by human grandmasters," he adds. Lai goes on to use the same kind of machine learning approach to determine the probability that a given move is likely to be worth pursuing. That's important because it prevents unnecessary searches down unprofitable branches of the tree and dramatically improves computational efficiency. Tagged: Computing Reprints and Permissions | Send feedback to the editor Lai says this probabilistic approach predicts the best move 46 percent of the time and places the best move in its top three ranking, 70 percent of the time. So the computer doesn't have to bother with the other moves. That's interesting work that represents a major change in the way chess engines work. It is not perfect, of course. One disadvantage of Giraffe is that neural networks are much slower than other types of data processing. Lai says Giraffe takes about 10 times longer than a conventional chess engine to search the same number of positions. But even with this disadvantage, it is competitive. "Giraffe is able to play at the level of an FIDE International Master on a modern mainstream PC," says Lai. By comparison, the top engines play at super-Grandmaster level. That's still impressive. "Unlike most chess engines in existence today, Giraffe derives its playing strength not from being able to see very far ahead, but from being able to evaluate tricky positions accurately, and understanding complicated positional concepts that are intuitive to humans, but have been elusive to chess engines for a long time," says Lai. "This is especially important in the opening and end game phases, where it plays exceptionally well." And this is only the start. Lai says it should be straightforward to apply the same approach to other games. One that stands out is the traditional Chinese game of Go, where humans still hold an impressive advantage over their silicon competitors. Perhaps Lai could have a crack at that next time.

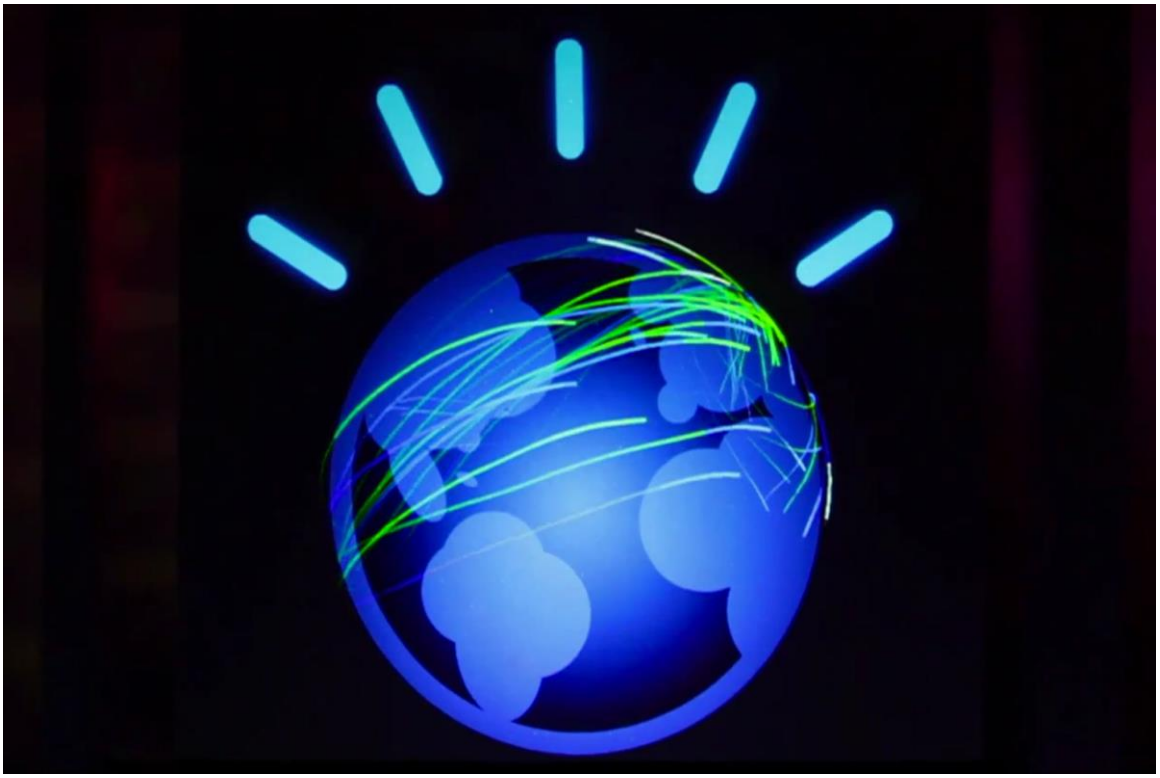


Image Source: IBM

Watson – IMB Cognitive Computing System

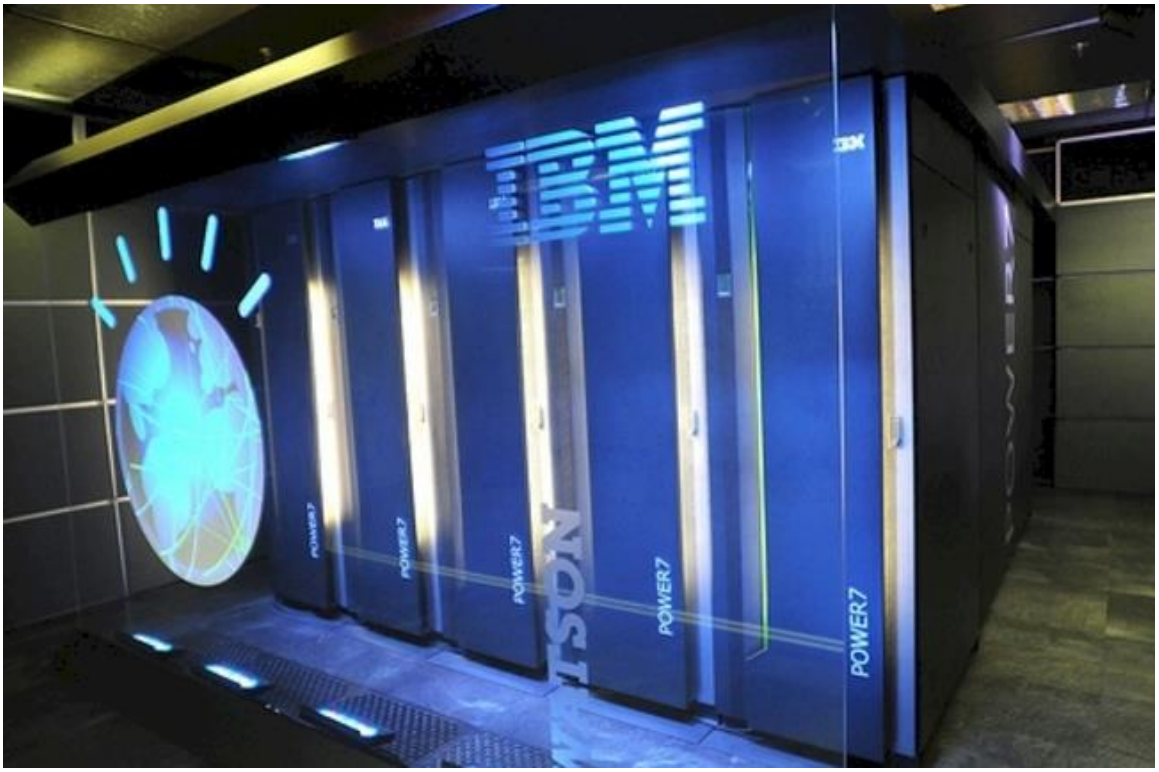
The system is named after Thomas John Watson Sr. (February 17, 1874 – June 19, 1956). Watson was an American businessman who served as the chairman and CEO of International Business Machines and oversaw the company's growth into an international force from 1914 to 1956. Watson developed IBM's distinctive management style and corporate culture, and turned the company into a highly-effective selling organization, based largely on punched card tabulating machines. A leading self-made industrialist he was one of the richest men of his time and was called the world's greatest salesman when he died in 1956.

Source: Wikipedia

Follow the path of the unsafe, independent thinker. Expose your ideas to the danger of controversy. Speak your mind and fear less the label of 'crackpot' than the stigma of conformity.

Thomas J. Watson

Source: Brainy Quotes



Source: IBM

What is Watson?

From hospitals to kitchens, Watson has clocked in to work and is already taking impressive strides across industries. But to understand the power of Watson, we must first understand cognitive computing and how it enhances, scales, and accelerates human expertise.

How cognition works

Watson is built to mirror the same learning process that we have—through the power of cognition. What drives this process is a common cognitive framework that humans use to inform their decisions: Observe, Interpret, Evaluate, and Decide.

Unlike other computing systems, Watson takes in data from all sorts of sources, from research reports to Tweets. All the information humans produce for other humans to consume. However, Watson is not bound by volume or memory; Watson can read millions of unstructured documents in seconds.

Next, Watson interprets data to expose patterns, connections, and insights. Watson pre-processes the information – organizing data that makes working with content more efficient. Now that Watson has ingested the corpus, or collection of information, it needs to be trained by a human expert to learn how to interpret the information.

How expertise works

Like experts in their respective fields, Watson uses this same cognitive framework to achieve mastery over a given subject and develop expertise – all at incredible scale. Through experience and meaningful feedback over time, experts learn a body of knowledge and apply it to make decisions. Whereas conventional computing systems are programmed based on rules and logic and follow a rigid decision tree approach, Watson is different.

Scaling Expertise

Experts are struggling to keep up with an overwhelming sea of information, but Watson can understand that information and bridge gaps in our knowledge, helping us to glean better insights. With Watson, discoveries and advances happen more quickly and decisions are made faster and with more confidence.

What's more, Watson democratizes enterprise expertise by scaling knowledge, experience, and intuition that once was limited to a select few. In other words, rather than having a single expert or group of experts, Watson ingests that expertise, giving easy access to knowledge to everyone across the enterprise

Engagement

Of the hundreds of calls that come into call centers every day, 50% of the questions go unanswered. These negative experiences alienate customers and cause unwanted churn.

Imagine redefining these outcomes and resolving things on your customers' terms. So how does your best employee perform on any given day? She has the answers to nearly all of the questions she gets, and she knows exactly where to go for others. She's the one all your customers want to talk to. With Watson Engagement Advisor, every employee is their best employee and every customer experience the best experience.

Source: IBM

Case Study

Image Source: joecephus.com

Case Study “Smarter Life”

Situation:
Smarter Life is a small subsidiary of a large US insurance company. Smarter Life focuses exclusively on unit linked insurance contracts which are more risky than conventional life insurance contracts but also offer higher rewards. Within the large mother company, Smarter Life with a staff of just a 100 full-time employees, half of which work in the call center, has always been a laboratory to try out new things before adopting them on a larger scale.

For the last six months, it has been running a trial using the Watson system to handle customer queries. A couple of senior call center employees took on the special project of feeding Watson all the relevant information and after two months, Watson started taking calls independently. There was always a human standing by to take over just in case something went wrong, but in the five months that the project has run up to now this has never been necessary. Watson’s performance has been outstanding and customer satisfaction with the service provided by the system on average been higher than with human customer service agents. It seems very feasible to scale up the system and reduce the number of human customer agents.

Case Study “Smarter Life”

You are having a decision meeting about implementing the Watson solution. It’s the only topic on the agenda because it is a decision with very far reaching consequences. The mother company has given you permission to go forward if the initial costs don’t run overboard. There is concern from some of the mother company’s board members that the move will damage Smarter Life’s reputation as socially responsible company, but the industry has a tradition of managing change slowly and cautiously, i.e. there would be no need to fire a large number of employees in the short term. The life insurance industry is going through a difficult phase due to the low interest environment and operating cost will have to be reduced in any case. This seems a very promising way of reducing personnel cost in the long-term.

Role Cards

CEO

You want to go ahead with implementing Watson. You have been struggling to meet the savings target you have been set and Watson is the answer to your prayers, even though it might be somewhat costly and painful in the short-term. The customer service agents are already wary of what’s going to happen next, even though the official line up to now has been that the system is there to support, not to replace them. You have knowingly hired a dozen workers on temporary contracts for the call center and you are confident that you can find civilized solutions for the majority of the others, so that in the end you will be left with a core staff of ten people. You are on a five year contract and you are confident that the savings will materialize during your tenure, underlining your Wunderkind status in the mother company. You will pioneer a solution that industry will eventually adapt as a whole, but you were there first.

Your management style is collaborative, primus inter pares, however, and you know that this will only work if your whole top management team is on board with the decision, otherwise, it will poison the atmosphere in the company, which would negatively affect your bottom-line. So you manage the meeting patiently and make sure that everybody has their say before you make your case. You are also willing to discuss your point of view because you are confident that you can convince the others.

Head of IT

You are excited about this opportunity and you would have Watson taking over today rather than tomorrow. You are the only one in the top management team that hasn't spent the majority of his career in the somewhat conservative and slow-moving insurance industry. The insurance business has become very IT dependent, that's why the CEO has paid a premium to lure you away from the minor Silicon Valley player that you had been working for. This is a fantastic opportunity to work with cutting-edge technology and boost your CV, prepping you for bigger and better things. From a technical perspective the implementation is challenging but definitely doable, you will probably need to hire two more full time specialists in addition to a couple of consultants for the first year.

You feel that the lifelong insurance employees have been living a too sheltered life and don't overflow with compassion with the plight of the customer service agents. They needed a reality check anyhow and now it's here.

You are careful not to be to callous when you present your point of view, however and you don't dislike the customer service people, even though some of them are annoying due to their complete lack of technical understanding. You consider the fact that customer service will improve significantly as a very important argument in favor of going with Watson, since at the end of the day a business is about the customers, not the employees.

Head of Marketing

You are totally against this idea. The mother company has suffered major reputation damage a couple of years ago because some sales reps had been throwing huge parties with hookers in Budapest on company dime. After this debacle, the mother has slowly and painfully rebranded itself as the different insurance company, the company that cares, listens and speaks plain English rather than garbled insurance jargon. This campaign has cost millions and was reasonably successful. Being seen as the first insurance company that replaces workers with software bots could easily destroy all the progress that has been made. Furthermore, as Head of Marketing, you are responsible for the customer service department. The customer service agents are Smarter Life's only direct contact with customers; you dread the prospect of having to sell this idea to your reports. You know that losing this job would be a disaster for many of them and you even consider quitting your job if the decision doesn't go your way.

Head of Finance

You are against this idea even though you understand that this change will come eventually and the CEO is probably right to believe that it will become industry standard sooner or later. You don't like the way the business has changed during your long career, when you started firms looked after the employees and didn't treat them as disposable human resources.

Due to your position and your age, you are only three years away from retirement, you are the informal second in command and not afraid at all to have controversial discussion with the boss. Just looking at the numbers, you have to admit that it will save cost in the long-run, but as a conservative skeptic, you know that no project ever comes in on budget and what looks good on paper can look very different in reality. This would be the worst case scenario, a controversial move that doesn't even pay off and this is a risk you wish to highlight. You also feel that it will make the company atmosphere toxic and disrupt the positive harmonious climate that you have fostered.

Head of Project Management

You are the youngest member of the team and you see this job as a stepping stone for moving up to board level yourself. Top level management is not for the soft hearted and as far as you are concerned, people should leave their inner social worker at home when they enter the board room. You have a huge amount of work on your plate already, however, so your focus is rather on how this should be done, not if. If the Watson project does go ahead, you would share the responsibility with the Head of IT and you have insufficient resources as it is. If this fails, it would be a stain on your otherwise stellar track-record. You focus on asking difficult questions and playing devil's advocate. What would be the reputation damage exactly, for example? What can be done to prevent it from happening? How can this be communicated in a way that people will stay motivated? For example, many of the employees in customer service would have to work on writing protocols for Watson and work with the system to prepare it to take over. How can this be arranged without people sabotaging this task?

THE END OF WORK?

The Lottery Question

Imagine you win the lottery and never have to work again. What would you with the rest of your life?

Work and Happiness

The Importance of Flow and the Paradox of Work

The argument centres around the concept of the ‘flow state’. This is something that was brought to popular attention by the psychologist Mihaly Csikszentmihalyi. It is a state of mental concentration and immersion that is characterised by a strong positive affective experience (sometimes described as ‘rapture’ or ‘joy’). It is distinct from states of extreme mental concentration that are characterised by negative affective experience. A flow state is something you have probably experienced at some point in your life. I know I sometimes get it while writing.

The interesting thing is that the flow state seems to be an important component of well-being and fulfillment. And, perhaps more importantly, that we aren’t very good at identifying the activities that help us to bring it about. This is due to the ‘paradox of work’, which was also described by Csikszentmihalyi.

Source: http://www.theperformanceinstitute.com.au

In a series of experiments, Csikszentmihalyi used something called the Experience Sampling Method (ESM) to gauge what sorts of activities most increased people’s feelings of subjective well-being and happiness. The ESM tries to sample experimental subjects’ moods at separate intervals during the course of a typical day. The subjects’ wear a device (in the original studies it was a pager) that beeps them at certain times and asks them to complete a short survey. The survey itself asks them to explain what they were doing at that moment in time, what skills they were deploying, the challenges they faced and their psychological state.

In the 1980s, Csikszentmihalyi used this method on groups of workers from around Chicago. The workers came from different industries. Some were in skilled jobs; some were in unskilled jobs. Some were blue-collar; some were white collar. They were given pagers that beeped on seven occasions during the course of the day, and complete the associated surveys.

The results were interesting. Csikszentmihalyi and his colleagues found that people were happier working than they were during leisure time. People felt fulfilled and challenged by work-related activities; whereas they felt bored and anxious during their time off. And yet, despite this, people said that they didn't like working and that they would prefer to be taking time off. This is where the so-called 'paradox of work' comes into play. According to the results of the ESM, people are happier at work than they are at leisure; and yet people still express a desire not to be working.

What are we to make of this? The results of Csikszentmihalyi's study provide an example of a broader psychological phenomenon: the problem of miswanting. This is something that has been documented by the psychologists Daniel Gilbert and Timothy Wilson: people often want things that they think will make them happy but end up having the opposite effect. In this respect, certain social conventions surrounding the importance of spending time with one's friends and families may be encouraging people to block-out the positive feelings associated with work, and biasing them in favour of activities that don't really make them happy.

But why is it that leisure time is not as fulfilling as work? The answer comes from the importance of having some level of challenge and pressure in one's life. Csikszentmihalyi identifies nine different factors that contribute to the attainment of the flow state. These include achieving the right balance of mental exertion and anxiety. Too much external pressure, arousal and anxiety and you won't be able to enter a flow state; too little and you will also miss it. The problem is that during 'down time' we often fail to have the right amount of pressure, arousal and anxiety. Consequently, we lapse into the bored and listless state that Csikszentmihalyi found amongst his experimental subjects. Work has the benefit of imposing a structure and schedule that encourages the right level of arousal and anxiety.

Source: http://philosophicaldisquisitions.blogspot.de

Presentation

Mihaly Csikszentmihalyi (/ˈmiːhaɪ ˌtʃiːksɛntməˈhaɪ.iː/ mee-hy cheek-sent-mə-hy-ee; Hungarian: Csíkszentmihályi Mihály Hungarian: [ˈtʃiːksɛntmihaːji ˈmihaːj] (listen); born 29 September 1934) is the Distinguished Professor of Psychology and Management at Claremont Graduate University. Csikszentmihalyi is noted for his work in the study of happiness and creativity, but is best known as the architect of the notion of flow and for his years of research and writing on the topic. He is the author of many books and over 120 articles or book chapters.

Csikszentmihalyi once said: "Repression is not the way to virtue. When people restrain themselves out of fear, their lives are by necessity diminished. Only through freely chosen discipline can life be enjoyed and still kept within the bounds of reason." His works are influential and are widely cited

“Work is meaning for all of us. It’s relevance and our place is society is dictated by what we contribute and what we are paid to do.”

David Simon, creator of “The Wire”

Adam Smith believed that work forces the worker to sacrifice “his tranquility, his freedom, and his happiness.” Karl Marx criticized Smith’s view and believed that labor in the form of creative problem solving could indeed provide “self-realization.” (To Marx, the problem lay not in labor itself, but in the system of wage labor that exploited workers and alienated them from the creation of the final product.)

Arguing that work is inherently unpleasant reinforces one of the more insidious assumptions in mainstream economics and one of the more cynical claims in our culture: that people are merely consumers trying to maximize their pleasure and minimize their pain. That sort of thinking leads managers to assume that workers are bound to shirk responsibility whenever possible, and are only motivated by money. It breeds extremely dysfunctional work environments with high surveillance and competition among co-workers. The polymath Herbert Simon has written about how workers’ sense of identification with the mission of an organization explains why employees actually perform the duties necessary to promote the institution’s goals, and not just pursue their self-interest as economic theory would expect.

For many of us, our motivation behind work may not be “love” or “pleasure,” but a desire for a sense of meaning that we cannot shake during working hours. That is probably most obvious among the academic set; the reality is that no one pursues a Ph.D. as part of a get-rich-quick scheme.

To talk about “meaning” as a motivation for work may still err on the side of elitism, but is actually a more inclusive benchmark, because while it is hard to imagine that one loves to clean up the messes of other people, it is actually quite presumptuous and patronizing to assume that the worker sees no meaning in it. The concept of “meaningfulness” is less objective and more open to rationalizations than the idea of enjoyment, and makes us vulnerable to being taken advantage of by employers both inside and outside of academia.

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Source: https://chroniclevitae.com/news/781-working-out-the-meaning-of-meaningful-work

Task: Work in groups of four. You work as consultants on a government project that will be rolled out which are expected to experience extremely high technological unemployment.

IMPORTANT THINKER – Jaron Lanier

www.jaronlanier.com

Jaron Zepel Lanier (/ˈdʒɛərɨn lɨˈnɪər/, born May 3, 1960) is an American computer philosophy writer, computer scientist, and composer of classical music. A pioneer in the field of virtual reality (a term he is credited with popularizing), Lanier and Thomas G. Zimmerman left Atari in 1985 to found VPL Research, Inc., the first company to sell VR goggles and gloves. In the late 1990s, Lanier worked on applications for Internet2, and in the 2000s, he was a visiting scholar at Silicon Graphics and various universities. From 2006 he began to work at Microsoft, and from 2009 forward he works at Microsoft Research as Interdisciplinary Scientist.

Lanier has composed classical music and is a collector of rare instruments; his acoustic album, Instruments of Change (1994) features Asian wind and string instruments such as the khene mouth organ, the suling flute, and the sitar-like esraj. Lanier was the director of an experimental short film, and teamed with Mario Grigorov to compose the soundtrack to the documentary film, The Third Wave (2007). In 2010, Lanier was nominated in the TIME 100 list of most influential people.

Important Thinker – Jaron Lanier

You Are Not a Gadget (2010)

In his book *You Are Not a Gadget* (2010), Lanier criticizes what he perceives as the hive mind of Web 2.0 (wisdom of the crowd) and describes the open source and open content expropriation of intellectual production as a form of "Digital Maoism".[19] Lanier argues that Web 2.0 developments have retarded progress and innovation and glorified the collective at the expense of the individual. He criticizes Wikipedia andLinux as examples of this problem; Wikipedia for what he sees as: its "mob rule" by anonymous editors, the weakness of its non-scientific content, and its bullying of experts. Lanier also argues that there are limitations to certain aspects of the open source and content movement in that they lack the ability to create anything truly new and innovative.

For example, Lanier argues that the open source movement didn't create the iPhone. In another example, Lanier claims that Web 2.0 makes search engines lazy, destroys the potential of innovative websites like Thinkquest, and hampers the communication of ideas like mathematics to a wider audience. Lanier further argues that the open source approach has destroyed opportunities for the middle class to finance content creation, and results in the concentration of wealth in a few individuals—"the lords of the clouds"—people who, more by virtue of luck rather than true innovation, manage to insert themselves as content concentrators at strategic times and locations in the cloud.

Who Owns the Future (2013)

In his book Who Owns the Future? (2013), Lanier posits that the middle class is increasingly disenfranchised from online economies. By convincing users to give away valuable information about themselves in exchange for free services, firms can accrue large amounts of data at virtually no cost. Lanier calls these firms “Siren Servers,” alluding to the Sirens of Ulysses. Instead of paying each individual for their contribution to the data pool, the Siren Servers concentrate wealth in the hands of the few who control the data centers.

For example, he points to Google’s translation algorithm, which amalgamates previous translations uploaded by people online, giving the user its best guess. The people behind the source translations receive no payment for their work, while Google profits from increased ad visibility as a powerful Siren Server. As a solution to this problem, Lanier puts forth an alternative structure to the web based on Ted Nelson’s Project Xanadu. He proposes a two-way linking system that would point to the source of any piece of information, creating an economy of micropayments that compensates people for original material they post to the web.

COUNTERPOINT
“THE LUDDITE FALLACY”

A Luddite is a term used (usually pejoratively) to describe people who oppose the introduction of new technology. Yet, the idea that new technology leads to job losses has persisted, despite the fact that economists are almost universally united in stating that new technology will not increase the long-term unemployment rate.

The Luddite fallacy is the simple observation that new technology does not lead to higher overall unemployment in the economy. New technology doesn’t destroy jobs – it only changes the composition of jobs in the economy.

Why do economists say that new technology does not cause unemployment?

Firstly, rapid technological change may cause some short-term temporary unemployment. However, economic theory suggests that jobs lost as a result of technological change will be created in different, new industries.

When automated looms were built, it became cheaper to manufacturer clothes. Therefore, consumers buying clothes would have experienced lower prices, and therefore, after buying the same amount of clothes, they would have more disposable income to buy other goods.

For example, they may now be able to afford a train ticket to go and buy a silk scarf in town. With technological change, we see increased demand for new products; therefore new jobs are created on the railways and shops selling more luxury items, such as scarves and hats. Also, there will be some jobs created in the building of the automated looms.

With new technology, firms selling clothes will also be more profitable. This profit may be used to fund future investment and job creation. Over time, improved technology would mean that even automated looms become outdated. New technology may enable clothes to be mass produced with even fewer workers. Again, this would cause a relative fall in the price of clothes, and consumers would have more disposable income to buy goods, but also spend on labour intensive services.

This is what has happened over the past 200 years: new technology has enabled the economy to move towards a more service sector based economy. Lower costs of manufactured goods, enables us to be able to afford a wider range of goods and services.

But, what happens when robots are created that can do service sector jobs?

Suppose we can build robots which are able to cut hair, serve coffee and clean. Will this not finally cause technological unemployment?

The principle will be the same. If robots can cut our hair, the price of haircuts,will fall – leading to higher disposable income. We can spend money on other services which require human service or we can use the higher disposable income to work less hours, but still maintain the living standards. To some extent, we could say we could already build robots to serve coffee and serve meals at restaurants. But, which would you prefer being served by a robot or a human?
In a sense it doesn't matter, improved technology which enables lower costs, enables us to have higher disposable income and better living standards.

Can technological change occur quicker than our ability to create and fill new jobs?

In the long-term, there has never been any evidence that technological advances have increased the overall unemployment rate. Despite the rapid technological change of the past 20 years, we can't say that technology has left thousands of unemployed skilled weavers. In 1920, there were 1.3 million coal miners, now there are less than 6,000. That doesn't mean we have 1.3 million unemployed coal miners. Those jobs get absorbed into new areas of the economy.

However, technological change can cause fairly significant levels of unemployment, especially amongst unskilled workers. For example, technological improvements led to the relative decline of heavy British manufacturing (e.g. coal industry). Many unskilled manual workers lost their jobs. At the same time, new jobs were being created in the service sector, and for more high tech skilled jobs. However, because coal miners and steel workers were often concentrated in certain geographical areas and had limited skills, it was often very difficult for them to get a new job.

The coal miners who lost their job because of technological change found themselves unemployed because of:

- occupational immobilities (lack of skills to work in service sector)
- geographical immobilities (difficulties of moving to areas where new jobs are created)

In the long-term, the unemployed should be able to take new jobs which are created. But, if the labour market is inflexible, then this time period may be considerably long. Therefore, if workers are threatened with job losses as a result of new technology, the solution is not to stop technological change, but to overcome market failure in removing labour market inflexibilities. Education and retraining to help the unemployed find new jobs.

Technological change and Pareto Improvement
Technological change leads to higher economic welfare, however it is not necessarily a Pareto improvement. The mass of the population see a small rise in living standards. But, some workers may see a dramatic drop in living standards, whilst they seek to to find a new job.

Therefore, to attain an overall Pareto improvement, there is a strong case for a government providing unemployment insurance relief to the unemployed.
So yes, the luddites were wrong. But, the total laissez faire approach of the government was also misplaced. It was wrong to smash the machines, but it was also wrong for the government to completely ignore the plight of skilled artisans finding themselves without any income.
Source: http://www.economicshelp.org/

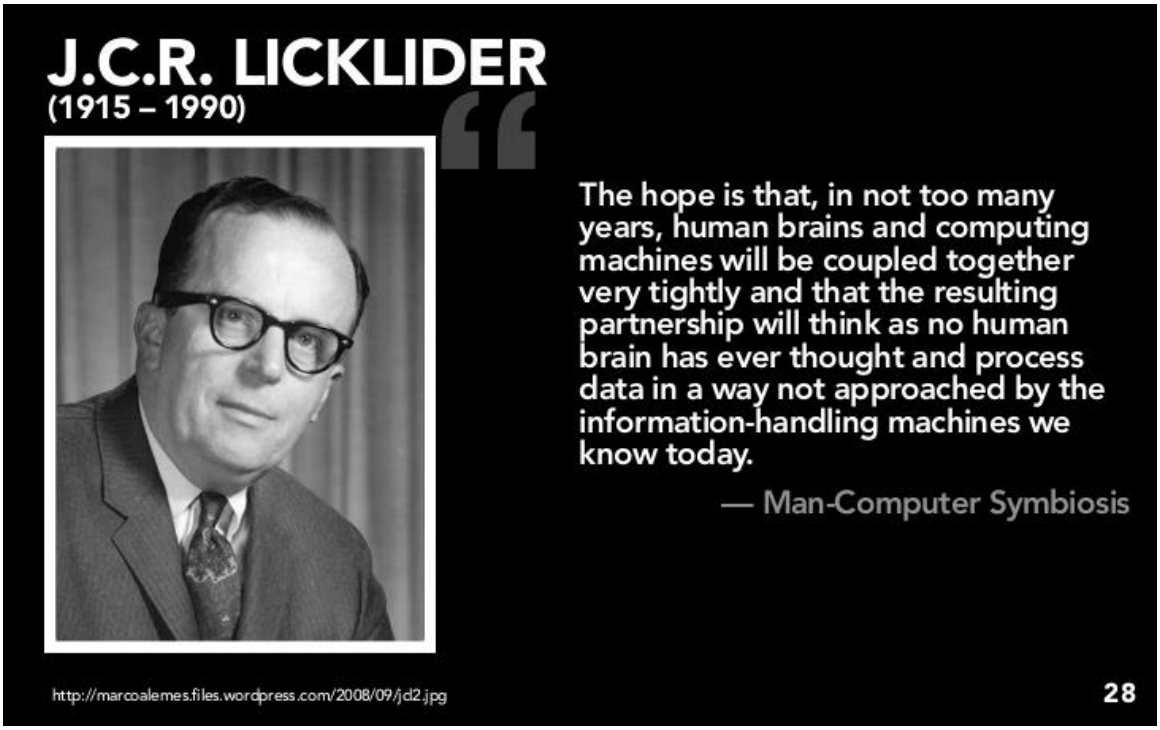
Pareto Optimality
Essentially, Pareto optimality describes a state of affairs in which resources are distributed such that it is not possible to improve a single individual without also causing at least one other individual to become worse off than before the change.

It provides those studying economics with a certain perspective and criteria for judging the efficiency of a distribution system. Additionally, this way of looking at economic efficiency and income distribution helped Pareto and other contemporary economists develop microeconomics as a field and discipline of study.

What Is a Pareto Improvement?
Related to the idea of Pareto optimality is that of a Pareto improvement. A Pareto improvement is a term used when looking at a distribution of goods within a system from the perspective of Pareto optimality.

A Pareto improvement is said to have taken place if a change is made in the distribution of goods or resources that results in at least one individual being better off than before the change while not making any other individual worse.
Another way of describing Pareto optimality is to describe any state as Pareto optimal when no Pareto improvement is possible. This effectively means that it is impossible to improve the condition of any single individual without harming the condition of another individual.
Source: http://www.economyprofessor.com/

IMPORTANT THINKER – J.C.R. Licklider



Licklider advocated in 1960 the construction of computers capable of working symbiotically with humans to address problems not easily addressed by humans working alone. Since that time, many of the advances that he envisioned have been achieved, yet the time spent by human problem solvers in mundane activities remains large. I propose here four areas in which improved tools can further advance the goal of enhancing human intellect: services, provenance, knowledge communities, and automation of problem-solving protocols.

In his classic 1960 paper, Man-Computer Symbiosis, L.C.R Licklider wrote of how monitoring his time spent at work led him to discover that: About 85 per cent of my “thinking” time was spent getting into a position to think, to make a decision, to learn something I needed to know. Much more time went into finding or obtaining information than into digesting it. Hours went into the plotting of graphs, and other hours into instructing an assistant how to plot. When the graphs were finished, the relations were obvious at once, but the plotting had to be done in order to make them so. At one point, it was necessary to compare six experimental determinations of a function relating speech-intelligibility to speech-to-noise ratio. No two experimenters had used the same definition or measure of speech-to-noise ratio.

Several hours of calculating were required to get the data into comparable form. When they were in comparable form, it took only a few seconds to determine what I needed to know. Throughout the period I examined, in short, my “thinking” time was devoted mainly to activities that were essentially clerical or mechanical: searching, calculating, plotting, transforming, determining the logical or dynamic consequences of a set of assumptions or hypotheses, preparing the way for a decision or an insight. Moreover, my choices of what to attempt and what not to attempt were determined to an embarrassingly great extent by considerations of clerical feasibility, not intellectual capability. These observations led him to advocate the use of computers to, in essence, “augment human intellect by freeing it from mundane tasks”—

IMPORTANT THINKER – W. Brian Arthur

William Brian Arthur (born 21 July 1946) is an economist credited with influencing and describing the modern theory of increasing returns. He has lived and worked in Northern California for many years. He is an authority on economics in relation to complexity theory, technology and financial markets. Presently, he is on the external faculty at the Santa Fe Institute, and a Visiting Researcher at the Intelligent Systems Lab at PARC. He is credited with the invention of the El Farol Bar problem.

In *The Nature of Technology* , Arthur sets out to establish a coherent theory describing fundamentally what technology is, how it evolves, and how it spurs innovation and industry. Technology, he finds, "builds itself organically from itself" in a process that resembles chemistry and in some ways even recalls life itself. Currently a professor at the Santa Fe Institute, Arthur taught economics at Stanford for 13 years. His work has won the Schumpeter Prize in economics and the Lagrange Prize in complexity science.

TNMA REPORT – SILICON VALLEY

Who is Who?

1)

2)

3)

Who is Who?

4)

5)

6)

a) Peter Thiel

As a venture capitalist and entrepreneur, Peter has been involved with some of the most dynamic companies to emerge from Silicon Valley in the past decade. Peter's first start-up was PAYPAL, which he co-founded in 1998, and led as Chairman and CEO. Peter's tenure culminated in PayPal's sale to eBay for $1.5 billion in 2002. After the eBay acquisition, Peter founded Clarium Capital Management, a global macro hedge fund. Peter also helped launch PALANTIR TECHNOLOGIES, an analytical software company, and serves as the chairman of that company's board.

Before launching Founders Fund with his PayPal partners KEN HOWERY and LUKE NOSEK, Peter was an active venture capitalist in his personal capacity, funding companies like FACEBOOK, where Peter was that company's first outside investor and director. Peter's contributions to technology, entrepreneurship, and finance have been widely recognized, including by the World Economic Forum, which honored Peter as a Young Global Leader, and by BusinessWeek, which named him one of the 25 most influential people on the Web.
Source: http://www.foundersfund.com/

b) Travis Kalanick

Travis Cordell Kalanick is an American entrepreneur. He is the co-founder of the peer-to-peer file-sharing company Red Swoosh and the transportation network company, Uber. In 2014, he entered the Forbes list of the 400 richest Americans at position 290, with an estimated net worth of $5.3 billion.

In 1998, Travis Kalanick dropped out of UCLA with some of his classmates to found Scour Inc., a multimedia search engine, and Scour Exchange, a Peer-to-peer file sharing service. In 2000, the Motion Picture Association of America, the Recording Industry Association of America and the National Music Publishers Association (NMPA) brought a lawsuit against Scour, alleging copyright infringement. In September of that year Scour filed for bankruptcy to protect itself from the lawsuit. In 2009, along with Garrett Camp, Kalanick founded Uber, a mobile application that connects passengers with drivers of vehicles for hire and ridesharing services. Uber operates in 58 countries and in more than 300 cities around the world.
Source:Wikipedia

c) Marc Andreesen

Marc Lowell Andreessen is an American entrepreneur, investor, and software engineer. He is best known as coauthor of Mosaic, the first widely used Web browser; as cofounder of Netscape and as cofounder and general partner of Silicon Valley venture capital firm Andreessen Horowitz. He founded and later sold the software company Opsware to Hewlett-Packard. Andreessen is also a cofounder of Ning, a company that provides a platform for social networking websites. Hesits on the board of directors of Facebook, eBay, and HP, among others. A frequent keynote speaker and guest at Silicon Valley conferences, Andreessen is one of only six inductees in the World Wide Web Hall of Fame announced at the first international conference on the World Wide Web in 1994

On September 1, 2009, an investor group that included Andreessen Horowitz acquired a majority stake in Skype for $2.75 billion which was considered risky.The deal paid off in May 2011 when Microsoft bought Skype for $8.5 billion. Additionally, Andreessen and Horowitz made personal investments in headset maker Jawbone in 2006. The firm announced a $49-million investment in Jawbone in March 2011. In February 2011, Andreessen Horowitz's $80-million investment in Twitter made it the first venture firm to hold stock in all four of the highest-valued, privately held social-media companies (at that time): Facebook, Groupon, Twitter, and Zynga
Source: Wikipedia

d) Sebastian Thrun

Sebastian Thrun, is an educator, programmer, robotics developer and computer scientist from Germany. He is CEO and cofounder of Udacity, an institution he cofounded with David Stavens and Mike Sokolsky. He was a Google VP and Fellow, and a part-time Research Professor of Computer Science at Stanford University.

Thrun led development of the robotic vehicle Stanley, which won the 2005 DARPA Grand Challenge, and which has since been placed on exhibit in the Smithsonian Institution's National Museum of American History. His team also developed a vehicle called Junior which placed second at the DARPA Grand Challenge. Thrun led the development of the Google self-driving car. Thrun is also known for his work on probabilistic algorithms for robotics with applications including robotic mapping. In recognition of his contributions, and at age 39, Thrun was elected into the National Academy of Engineering and also into the Academy of Sciences Leopoldina in 2007.Fast Company selected Thrun as the fifth most creative person in business in the world.

e) Larry Page

Lawrence "Larry" Page is an American computer scientist and internet entrepreneur who cofounded Google Inc. with Sergey Brin, and is the corporation's current CEO. Page is the inventor of PageRank, Google's best-known search ranking algorithm. As of November 2014, Page leads a global organization that consists of 55,600 employees operating in more than 40 countries.

In January 2013, Page participated in a rare interview with Wired magazine, in which writer Steven Levy discussed Page's "10X" mentality—Google employees are expected to create products and services that are at least 10 times better than those of its competitors—in the introductory blurb. Astro Teller, the head of Google X, explained to Levy that 10X is "just core to who he [Page] is," while Page's "focus is on where the next 10X will come from.] In his interview with Levy, Page referred to the success of YouTube and Android as examples of "crazy" ideas that investors were not initially interested in, saying: "If you're not doing some things that are crazy, then you're doing the wrong things."

f) Marc Benioff

Marc Russell Benioff (born September 25, 1964) is an American internet entrepreneur, author and philanthropist. He is the founder, chairman and CEO ofsalesforce.com, a cloud computing company. As of February 2015, he owns approximately $3 billion worth of Salesforce shares,[3] although the company has never reported a profit.

Benioff started salesforce.com in March 1999 in a rented San Francisco apartment[4] and defined its mission as The End of Software®. He is "credited with turning the software industry on its head" by using the Internet to "revamp the way software programs are designed and distributed."[5] He has long evangelized software as a service as the model that would replace traditional enterprise software. He is the creator of the term "platform as a service" and has extended salesforce.com's reach by allowing customers to build their own applications on the company's architecture, or in the salesforce.com "cloud."[6] He is the author of three books, including the national best seller *Behind the Cloud*.[7] He currently serves on the board of Cisco Systems.

Silicon Valley is a nickname for the southern portion of the San Francisco Bay Area in California, United States. It is home to many of the world's largest high-tech corporations, as well as thousands of tech startup companies. The region occupies roughly the same area as the Santa Clara Valley where it is centered, including San Jose and surrounding cities and towns. The term originally referred to the large number of silicon chip innovators and manufacturers in the region, but eventually came to refer to all high tech businesses in the area, and is now generally used as a metonym for the American high-technology economic sector.

Silicon Valley is a leading hub and startup ecosystem for high-tech innovation and development, accounting for one-third of all of the venture capital investment in the United States. Geographically, Silicon Valley is generally thought to encompass all of the Santa Clara Valley, San Francisco, the San Francisco Peninsula, and southern portions of the East Bay

Stanford University, its affiliates, and graduates have played a major role in the development of this area.[2] Some examples include the work of Lee De Forest with his invention of a pioneering vacuum tube called the Audion and the oscilloscopes of Hewlett-Packard.

Americans were brokenhearted when Russia beat the United States in the space race with the launch of Sputnik 1. NASA was created, and NASA needed high-powered components to be developed in order to put the first person on the moon. Fulfilling that need was Fairchild Semiconductor, which was founded in the Bay Area in the midst of Cold War competition.

A very powerful sense of regional solidarity accompanied the rise of Silicon Valley. From the 1890s, Stanford University's leaders saw its mission as service to the West and shaped the school accordingly. At the same time, the perceived exploitation of the West at the hands of eastern interests fueled booster-like attempts to build self-sufficient indigenous local industry. Thus, regionalism helped align Stanford's interests with those of the area's high-tech firms for the first fifty years of Silicon Valley's development.[3]

During the 1940s and 1950s, Frederick Terman, as Stanford's dean of engineering and provost, encouraged faculty and graduates to start their own companies. He is credited with nurturing Hewlett-Packard, Varian Associates, and other high-tech firms, until what would become Silicon Valley grew up around the Stanford campus. Terman is often called "the father of Silicon Valley".[4]

In 1956 William Shockley, the creator of the transistor, moved from New Jersey to Mountain View, California, to start Shockley Semiconductor Laboratory to live closer to his ailing mother in Palo Alto. Shockley's work served as the basis for many electronic developments for decades.[5][6] During 1955–85, solid state technology research and development at Stanford University followed three waves of industrial innovation made possible by support from private corporations, mainly Bell Telephone Laboratories, Shockley Semiconductor, Fairchild Semiconductor, and Xerox PARC. In 1969, the Stanford Research Institute (now SRI International), operated one of the four original nodes that comprised ARPANET, predecessor to the Internet.[7]
Source:Wikipedia/Entrepreneur

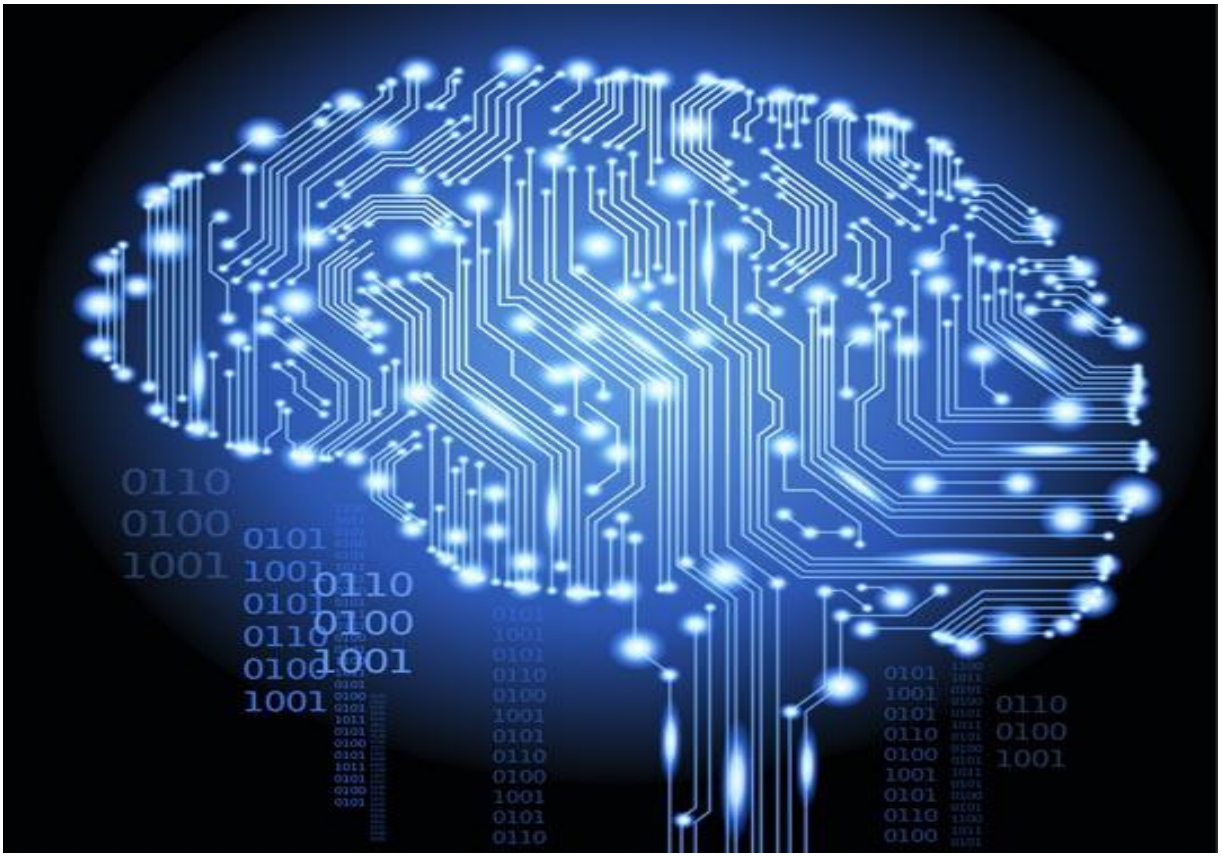
Source: Wired

LIBERTARIANISM

“Taxation of earnings from labor is on a par with forced labor. Seizing the results of someone's labor is equivalent to seizing hours from him and directing him to carry on various activities.” R. Nozick

“Libertarianism is the view that each person has the right to live his life in any way he chooses so long as he respects the equal rights of others. Libertarians defend each person's right to life, liberty, and property-rights that people have naturally, before governments are created. In the libertarian view, all human relationships should be voluntary; the only actions that should be forbidden by law are those that involve the initiation of force against those who have not themselves used force-actions like murder, rape, robbery, kidnapping, and fraud.”

THE SINGULARITY



"… a future period during which the pace of technological change will be so rapid, its impact so deep, that human life will be irreversibly transformed. Although neither utopian nor dystopian, this epoch will transform the concepts that we rely on to give meaning to our lives, from our business models to the cycle of human life, including death itself."

R. Kurzweil

"Singularity is the point at which all the change in the last million years will be superseded by the change in the next five minutes."

K. Kelly

IMPORTANT THINKER – R. KURZWEIL

Ray Kurzweil has been described as “the restless genius” by *The Wall Street Journal*, and “the ultimate thinking machine” by *Forbes. Inc.* magazine ranked him #8 among entrepreneurs in the United States, calling him the “rightful heir to Thomas Edison,” and PBS selected Ray as one of 16 “revolutionaries who made America,” along with other inventors of the past two centuries.

He is considered one of the world’s leading inventors, thinkers, and futurists, with a 30-year track record of accurate predictions. Kurzweil was the principal inventor of the first CCD flatbed scanner, the first omni-font optical character recognition, the first print-to-speech reading machine for the blind, the first text-to-speech synthesizer, the first music synthesizer capable of recreating the grand piano and other orchestral instruments, and the first commercially marketed large-vocabulary speech recognition.

In 2012, Ray Kurzweil was appointed a Director of Engineering at Google, heading up a team developing machine intelligence and natural language understanding.
Source:

Q& A with Ray Kurzweil

So what is the Singularity?

Within a quarter century, nonbiological intelligence will match the range and subtlety of human intelligence. It will then soar past it because of the continuing acceleration of information-based technologies, as well as the ability of machines to instantly share their knowledge. Intelligent nanorobots will be deeply integrated in our bodies, our brains, and our environment, overcoming pollution and poverty, providing vastly extended longevity, full-immersion virtual reality incorporating all of the senses (like “The Matrix”), “experience beaming” (like “Being John Malkovich”), and vastly enhanced human intelligence. The result will be an intimate merger

between the technology-creating species and the technological evolutionary process it spawned.

And that's the Singularity?

No, that's just the precursor. Nonbiological intelligence will have access to its own design and will be able to improve itself in an increasingly rapid redesign cycle. We'll get to a point where technical progress will be so fast that unenhanced human intelligence will be unable to follow it. That will mark the Singularity.

When will that occur?

I set the date for the Singularity—representing a profound and disruptive transformation in human capability—as 2045. The nonbiological intelligence created in that year will be one billion times more powerful than all human intelligence today.

Why is this called the Singularity?

The term "Singularity" in my book is comparable to the use of this term by the physics community. Just as we find it hard to see beyond the event horizon of a black hole, we also find it difficult to see beyond the event horizon of the historical Singularity. How can we, with our limited biological brains, imagine what our future civilization, with its intelligence multiplied trillions-fold, be capable of thinking and doing? Nevertheless, just as we can draw conclusions about the nature of black holes through our conceptual thinking, despite never having actually been inside one, our thinking today is powerful enough to have meaningful insights into the implications of the Singularity. That's what I've tried to do in this book.

Okay, let's break this down. It seems a key part of your thesis is that we will be able to capture the intelligence of our brains in a machine.

Indeed.

So how are we going to achieve that?

We can break this down further into hardware and software requirements. In the book, I show how we need about 10 quadrillion (10^{16}) calculations per second (cps) to provide a functional equivalent to all the regions of the brain. Some estimates are lower than this by a factor of 100. Supercomputers are already at 100 trillion (10^{14}) cps, and will hit 10^{16} cps around the end of this decade. Several supercomputers with 1 quadrillion cps are already on the drawing board, with two Japanese efforts targeting 10 quadrillion cps around the end of the decade. By 2020, 10 quadrillion cps will be available for around $1,000. Achieving the hardware requirement was controversial when my last book on this topic, *The Age of Spiritual Machines,* came out in 1999, but is now pretty much of a mainstream view among informed observers. Now the controversy is focused on the algorithms.

And how will we recreate the algorithms of human intelligence?

To understand the principles of human intelligence we need to reverse-engineer the human brain. Here, progress is far greater than most people realize. The spatial and temporal (time) resolution of brain scanning is also progressing at an exponential rate, roughly doubling each year, like most everything else having to do with information. Just recently, scanning tools can see individual interneuronal connections, and watch them fire in real time. Already, we have mathematical models and simulations of a couple dozen regions of the brain, including the cerebellum, which comprises more than half the neurons in the brain. IBM is now creating a simulation of about 10,000 cortical neurons, including tens of millions of connections. The first version will simulate the electrical activity, and a future version will also simulate the relevant chemical activity. By the mid 2020s, it's conservative to conclude that we will have effective models for all of the brain.

So at that point we'll just copy a human brain into a supercomputer?

I would rather put it this way: At that point, we'll have a full understanding of the methods of the human brain. One benefit will be a deep understanding of ourselves, but the key implication is that it will expand the toolkit of techniques we can apply to create artificial intelligence. We will then be able to create nonbiological systems that match human intelligence in the ways that humans are now superior, for example, our pattern- recognition abilities. These superintelligent computers will be able to do things we are not able to do, such as share knowledge and skills at electronic speeds.

By 2030, a thousand dollars of computation will be about a thousand times more powerful than a human brain. Keep in mind also that computers will not be organized as discrete objects as they are today. There will be a web of computing deeply integrated into the environment, our bodies and brains.

You mentioned the AI tool kit. Hasn't AI failed to live up to its expectations?

There was a boom and bust cycle in AI during the 1980s, similar to what we saw recently in e-commerce and telecommunications. Such boom-bust cycles are often harbingers of true revolutions; recall the railroad boom and bust in the 19th century. But just as the Internet "bust" was not the end of the Internet, the so-called "AI Winter" was not the end of the story for AI either. There are hundreds of applications of "narrow AI" (machine intelligence that equals or exceeds human intelligence for specific tasks) now permeating our modern infrastructure.

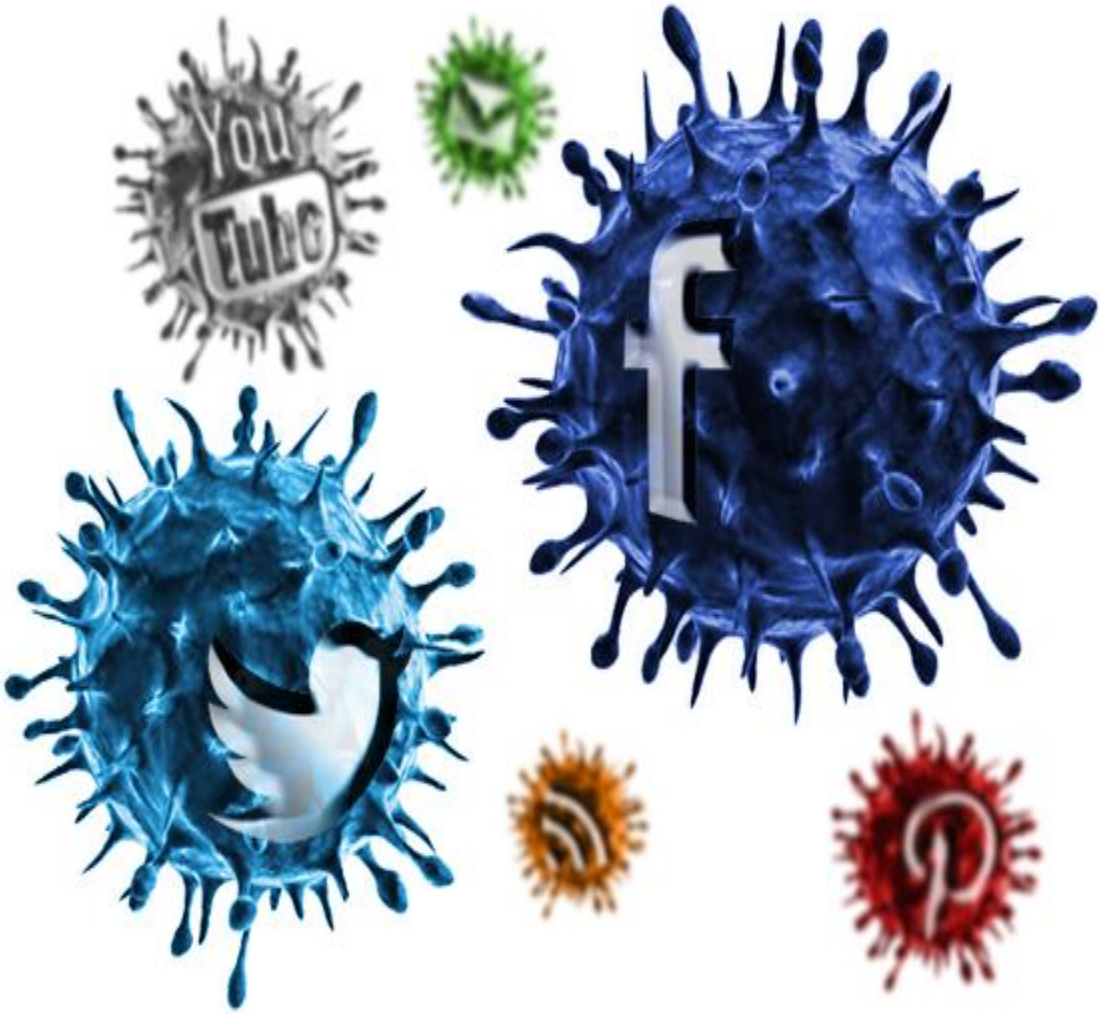
Every time you send an email or make a cell phone call, intelligent algorithms route the information. AI programs diagnose electrocardiograms with an accuracy rivaling doctors, evaluate medical images, fly and land airplanes, guide intelligent autonomous weapons, make automated investment decisions for over a trillion dollars of funds, and guide industrial processes. These were all research projects a couple of decades ago. If all the intelligent software in the world were to suddenly stop functioning, modern civilization would grind to a halt. Of course, our AI programs are not intelligent enough to organize such a conspiracy, at least not yet.

Why don't more people see these profound changes ahead?

Hopefully after they read my new book, they will. But the primary failure is the inability of many observers to think in exponential terms. Most long-range forecasts of what is technically feasible in future time periods dramatically underestimate the power of future developments because they are based on what I call the "intuitive linear" view of history rather than the "historical exponential" view. My models show that we are doubling the paradigm-shift rate every decade. Thus the 20th century was gradually speeding up to the rate of progress at the end of the century; its achievements, therefore, were equivalent to about twenty years of progress at the rate in 2000. We'll make another twenty years of progress in just fourteen years (by 2014), and then do the same again in only seven years. To express this another way, we won't experience one hundred years of technological advance in the 21st century; we will witness on the order of 20,000 years of progress (again, when measured by the rate of progress in 2000), or about 1,000 times greater than what was achieved in the 20th century.

The exponential growth of information technologies is even greater: we're doubling the power of information technologies, as measured by price-performance, bandwidth, capacity and many other types of measures, about every year. That's a factor of a thousand in ten years, a million in twenty years, and a billion in thirty years. This goes far beyond Moore's law (the shrinking of transistors on an integrated circuit, allowing us to double the price-performance of electronics each year). Electronics is just one example of many. As another example, it took us 14 years to sequence HIV; we recently sequenced SARS in only 31 days.
Source: http://www.singularity.com/

SOCIAL MEDIA



Going Viral

Zuck: Yeah so if you ever need info about anyone at Harvard
Zuck: Just ask
Zuck: I have over 4,000 emails, pictures, addresses, SNS
[Redacted Friend's Name]: What? How'd you manage that one?
Zuck: People just submitted it.
Zuck: I don't know why.
Zuck: They "trust me"
Zuck: Dumb fucks

Instant messages sent by Zuckerberg during Facebook's early days, reported by *Business Insider*

“A lot of us are sort of forced to act like public figures without really reaping many of the benefits. It is part of how the culture has developed. We know anything we say could suddenly go viral or get attention — often for the wrong reason.” J. Silverman “Terms of Service”

Are you on Facebook? What information do you share about your life?

41 Up-to-Date Facebook Facts and Stats

If you have a business with an online presence, you can't afford to be out of the loop with Facebook.

But with a constantly evolving platform, a generation of kids always looking for the next best thing, and statistics that are always changing, it’s hard to know where Facebook stands sometimes. We’ve compiled 40 up-to-date Facebook Facts and Stats to give you the scoop on the current state of Facebook, what its users are doing, and the impact it's is having on the wider community. Here's 40 up-to-date statistics that will bring you up to speed:

Userbase

1 . Facebook has over 1.393 billion monthly active users.
2 . The country with the most active Facebook users is Canada
3 . 890 million people log into Facebook daily.
4 . There are 157 million daily users in the US and Canada.
5 . There's a whopping 253 million daily active users in Asia. (Impressive, considering that Facebook is banned in China.)
6 . There are over 217 million active daily users in Europe.
7 . 72% percent of adults online visit Facebook at least once a month.
8 . The average time spent on Facebook per user per day is 21 minutes.

Key Takeaway:

Facebook's audience is both massive and loyal. As the internet and technology continue to spread across the globe in the coming years, we can expect to see increases in both overall users, and daily active users.

Connections

9 . The Median number of Facebook friends for Millennials is 250.
10 . The Median number of Facebook friends for GenX is 200.
11 . The Median number of Facebook friends for Younger Boomers is 98.
12 . The Median number of Facebook friends for Older Boomers is 50.
13 . The Average number of Facebook friends for US females is 250.
14 . 70 percent of teens say that they are friends with their parents on Facebook.

Key Takeaway:

While people of all ages use Facebook, it's the younger generations that have the most connections overall. Understanding your target audience and how they are connected can pay dividends when leveraging the power of a network.

Data

15 . Facebook stores more than 300 petabytes of user data. (To put that in context, a single petabyte made up of average- length songs would require 2000 years to play back to back...)
16 . In total there have been 1.13 trillion likes on Facebook since its launch in 2004.
17 . There are 4.5 billion Facebook likes every day.
18 . Each minute there are 3,125,000 new likes.
19 . There are 17 billion location-tagged Facebook posts today.
20 . The total number of uploaded Facebook photos is 250 billion.
21 . On average 350 million photos are uploaded daily to Facebook.
22 . 243,055 new photos are uploaded to Facebook every minute.

23 . There are 127 photos uploaded on average per Facebook user.
24 . There are 1,500 average number of posts that are eligible to appear in a Facebook user's feed each day.
25 . On average, there are 4.75 billion items shared by Facebook users each day.
26 . 10 billion Facebook messages are sent each day.

Key Takeaway:

The incredible amount of user data being collected by Facebook presents an unprecedented opportunity for marketers looking to target specific users online. If you haven't done so already, take the time to brush up on your Facebook Ad knowledge by taking Wishpond's free course.
User Interactions

27 . 66% percent of teenage girls claim to have been bullied on Facebook.
28 . Users see a 225% increase in average volume of Facebook post interactions on the day a user changes their relationship status.
29 . 28% Percent of newlyweds change their Facebook status within hours of getting married.
30 . There are 100,000 new friend requests made on Facebook every minute.
31 . High school friends are the most common type of Facebook friend to get unfriended.
32 . Inappropriate or polarizing posts is the most common reason for unfriending someone on Facebook
33 . 19.4% percent of Americans cannot access Facebook in the workplace.
34 . 29.29% percent of Americans use Facebook during the work day.
35 . 30% of all US senior citizens currently use Facebook.
36 . 87% percentage of the Class of 2014 (high school) say that they "still" use Facebook.

Economic Impact

37 . The reported global economic impact of Facebook in 2014 was $227 billion.
38 . Facebook currently employees 9,199 people.
39 . Its estimated that Facebook indirectly created 4.5 million jobs in 2014.
40 . Facebook's (currency neutral) revenue rose by 49% in the first quarter of 2015.
41 . During the first quarter of 2015, Facebook's (currency neutral) advertising revenues grew 55%.
Source: http://blog.wishpond.com/

Facebook a top cause of relationship trouble, say US lawyers

Social networking site becoming primary source of evidence in divorce proceedings and custody battles, lawyers say

When Facebook gets involved, relationships can quickly fall apart – as Hosni Mubarak and Muammar Gaddafi have discovered. But dictatorships are not the only ties being dissolved by social networking sites: now Facebook is increasingly being blamed for undermining American marriages.

Even though the rate of divorce in the US has remained largely stable in recent years, American divorce lawyers and academics have joined Middle East analysts in picking out Facebook as a leading cause of relationship trouble, with American lawyers now demanding to see their clients' Facebook pages as a matter of course before the start of proceedings.

"We're coming across it more and more. One spouse connects online with someone they knew from school. The person is emotionally available and they start communicating through Facebook," said Dr Steven Kimmons, a clinical psychologist and marriage counsellor at Loyola University Medical Centre near Chicago.

Yet while the US media has been quick to trumpet any evidence of Facebook as the country's leading marriage-wrecker, the truth is "It's complicated," as the site's relationship status would have it.

A 2010 survey by the American Academy of Matrimonial Lawyers (AAML) found that four out of five lawyers reported an increasing number of divorce cases citing evidence derived from social networking sites in the past five years, with Facebook being the market leader.

Two-thirds of the lawyers surveyed said that Facebook was the "primary source" of evidence in divorce proceedings, while MySpace with 15% and Twitter with 5% lagged far behind.

Those statistics included not just evidence of infidelity but other legal battles, such as child custody cases in which parents deny using illicit drugs but boast of smoking marijuana on their Facebook pages.

Photographs harvested from social networking sites – including those posted by friends or colleagues on their own pages – are a particularly rich source of damning evidence, according to divorce lawyers.

"This sort of evidence has gone from nothing to a large percentage of my cases coming in," Linda Lea Vicken, a member of the divorce lawyers' group from South Dakota, told the Associated Press.

Marlene Eskind Moses, president of the AAML, said the openness and sharing of social networking sites left their users' public and private lives more exposed.

"If you publicly post any contradictions to previously made statements and promises, an estranged spouse will certainly be one of the first people to notice and make use of that evidence," said Moses.

Statistics for January from online analysts Nielsen showed 135 million people in the US visiting Facebook during the month – nearly 70% of the country's internet users. On average, users spent more than seven hours a month visiting the site, far longer than the less than half an hour spent on visits to Amazon or the average of two hours and 15 minutes on Google, America's most popular web destination.

The overall rate of divorce, however, appears to be unaffected by the advent of social networking. The most recent published data – from 2009 – shows the overall divorce rate declining, slightly more slowly than the shrinking percentage of Americans who get married every year.

A spokesperson for Facebook said: "It's ridiculous to suggest that Facebook leads to divorce. Whether you're breaking up or just getting together, Facebook is just a way to communicate, like letters, phone calls and emails. Facebook doesn't cause divorces, people do."

But given its popularity, it is little wonder that negotiating "Facebook divorce" status updates has become another unhappy event for failed romances, over when to launch the site's broken-heart icon out into the glare of the world's news feed.

Cecil the Lion

“In regard to propaganda the early advocates of universal literacy and a free press envisaged only two possibilities: the propaganda might be true, or the propaganda might be false. They did not foresee what in fact has happened, above all in our Western capitalist democracies - the development of a vast mass communications industry, concerned in the main neither with the true nor the false, but with the unreal, the more or less totally irrelevant. In a word, they failed to take into account man's almost infinite appetite for distractions.”

A. Huxley

A memorial to Cecil the lion outside Dr. Walter J. Palmer's closed dental office in Bloomington, Minn. *Source: Renee Jones Schneider/Star Tribune, via Associated Press*

Definition - What does *Internet Vigilantism* mean?
Internet vigilantism describes online actions that are oriented toward monitoring the actions of others. It refers to individuals or groups that take grassroots action, rather than work through regional or national justice systems.
Internet vigilantism is also known as digilantism.

Techopedia explains *Internet Vigilantism*
Internet vigilantism raises questions about the role of the citizen in a modern, digitized society. Many different kinds of Internet vigilantism work toward various goals involving criminal justice and retribution.

As with "real-time" vigilantism, many cases of Internet vigilantism are a response to particularly objectionable crimes involving murder, injury or sexual assault. In the United States, a very prominent form is applied to the high number of sexual assault cases that work their way through the American justice system annually. With high-profile rape or sexual assault cases, Internet vigilantism can dramatically change the consequences for offenders.

Often, offenders benefit from sealed legal records, private trials and juries that are instructed not to discuss a case, while victims are even urged to keep details private in the interest of legal resolutions. When individuals start revealing details to a community, it may react dramatically, potentially resulting in altered sentences and other outcomes for defendants who would have otherwise benefited from a closed trial.

One principle of Internet vigilantism is that this type of activity tends to happen in a medium that inherently lacks centralized control. With the digital age, we have experienced a gradual emergence of consumer journalists and others reporting to the world from places where crimes happen, rather than from behind a news desk. *Source:Techopedia*

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