



The Singularity

FUTURE MAN

Future Man

The development of technology, from the discovery of fire, the invention of the wheel to the Industrial Revolution, is a story that spans many thousands of years but it is only since the late 18th century that the pace of discovery and invention had begun to accelerate and now almost seems exponential.

I hope to examine and discuss some of the technologies that are currently out there, where this is leading and how they may affect human beings of the future.

I will begin by trying to get some perspective of where we come from and an idea of the time it has taken.

How Long? – A Little Perspective

- The Earth Forms 4 Billion Years Ago
- Man appears 5 – 7 Million Years Ago
- The Stone Age and Fire 2 – 3 Million Years Ago
- Modern Man 200,000 Years Ago
- The Wheel 3,500 BC
- Bronze Age 3,000 BC
- Iron Age 1,200 BC
- Industrial Revolution 18th Century

The Revolution Begins

- 1712 – Thomas Newcomen: Atmospheric steam engine
- 1775 – James Watt: Improved on Newcomen's design
- 1800 – Alessandro Volta: The first Electric Battery
- 1821 – Michael Faraday: demonstrates electromagnetism
- 1829 – Robert Stevenson: Stevenson's Rocket
- 1834 – Charles Babbage: Analytic Engine
- 1837 – Samuel Morse: Telegraph and Morse Code

The Revolution Continues

- 1858 – Trans-Atlantic Cable finished & Cathode Rays Discovered
- 1876 – Alexander Graham Bell: Invents the telephone
- 1879 – Thomas Edison: Invents the Lightbulb
- 1885 – Karl Benz: Developed first Internal Combustion Car
- 1888 – Heinrich Hertz: produces Radio Waves
- 1901 – Guglielmo Marconi: Transmits first trans-Atlantic message
- 1904 – John Fleming: invents the first Thermionic Valve

The Age of the Computer

1947 – William Shockley, John Bardeen and Walter Brattain demonstrated the Transistor at Bell Labs.



1958 – Jack Kilby of Texas Instruments demonstrates the first Integrated Circuit

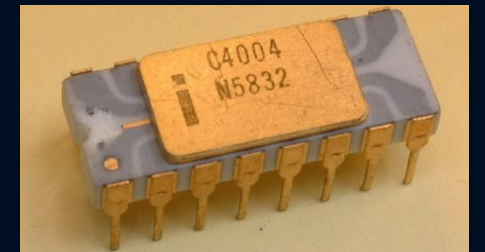


1971- Intel engineers Ted Hoff, Federico Faggin and Stan Mazor invented the first Microprocessor the Intel 4004 which contained 2,300 transistors

1904 – John Ambrose Fleming invented the Thermionic valve
1907 – Lee De Forest invented the Triode Valve



Today, the very latest microprocessors contain over one billion transistors, like the Intel Core i7



What about Biological & Medical Advances?

- 460 BC – Hippocrates, Greek physician. The Father of Medicine
- 130 BC – Galen, physician to Roman gladiators and emperors
- 1590 – Zacharius Jannssen, Dutch lens grinder invents the Microscope
- 1628 – William Harvey, outlined Blood Circulatory System
- 1670 – Anton van Leeuwenhaok, refines the Microscope
- 1796 – Edward Jenner, invents vaccination, father of immunology
- 1800 – Sir Humphry Davy, nitrous oxide as Anaesthetic
- 1859 – Charles Darwin, publishes "The Origin of the Species"

Biology & Medicine into the 21st Century

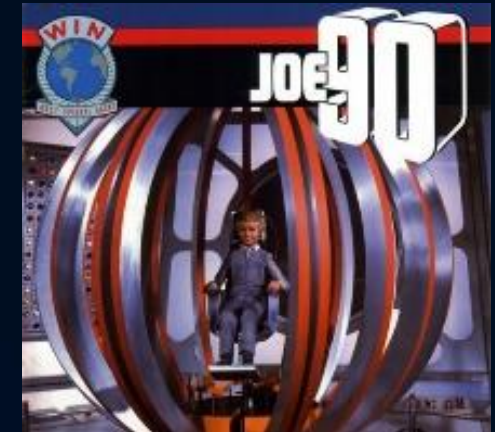
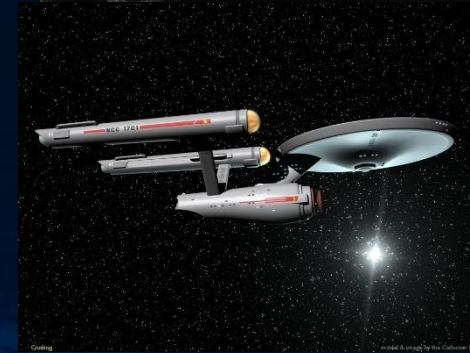
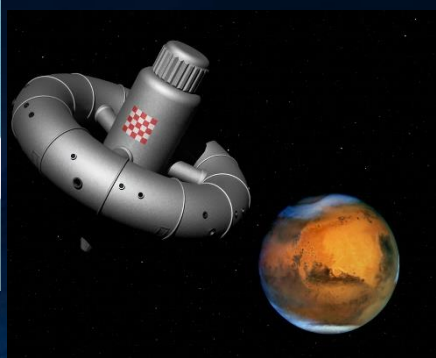
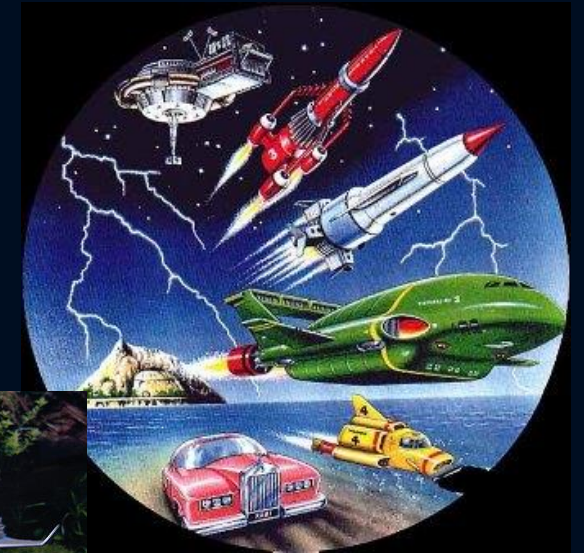
- 1865 – Gregor Mendel gave lectures “Experiments on Plant Hybrids”
- 1867 – Joseph Lister, developed Antiseptic surgical methods
- 1870’s – Louis Pasteur & Robert Koch, develop Germ Theory
- 1922 – Insulin used to treat Diabetes
- 1928 – Sir Alexander Fleming, discovers Penicillin
- 1953 – James Watson, Francis Crick, Maurice Wilkins & Rosalind Franklin describe structure of DNA
- 1982 – First patient implanted with an Artificial Heart
- 2000 – First draft of human Genome is announced

The Height of Progress



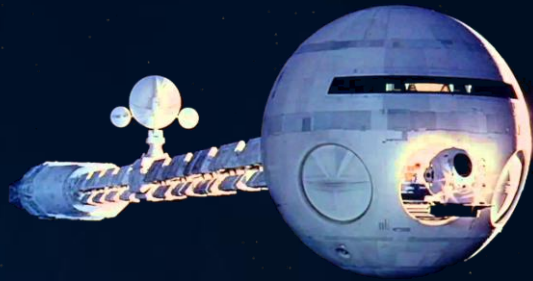
Back to the Future

Back in the 60's when we were all a lot younger what did we think the future would look like? One way to try and get a feel would be to take a look at some of the TV programs we viewed back then:-





A More Modern Take



The 1960's were very positive where the future of technology was concerned however things started to change mainly in the 80's. The themes explored by the Scifi films of the time were much darker, dealing with such topics as out of control AI, Bio-engineered human slaves and the rise of AI to the level where it could compete, enslave and even destroy human civilization.

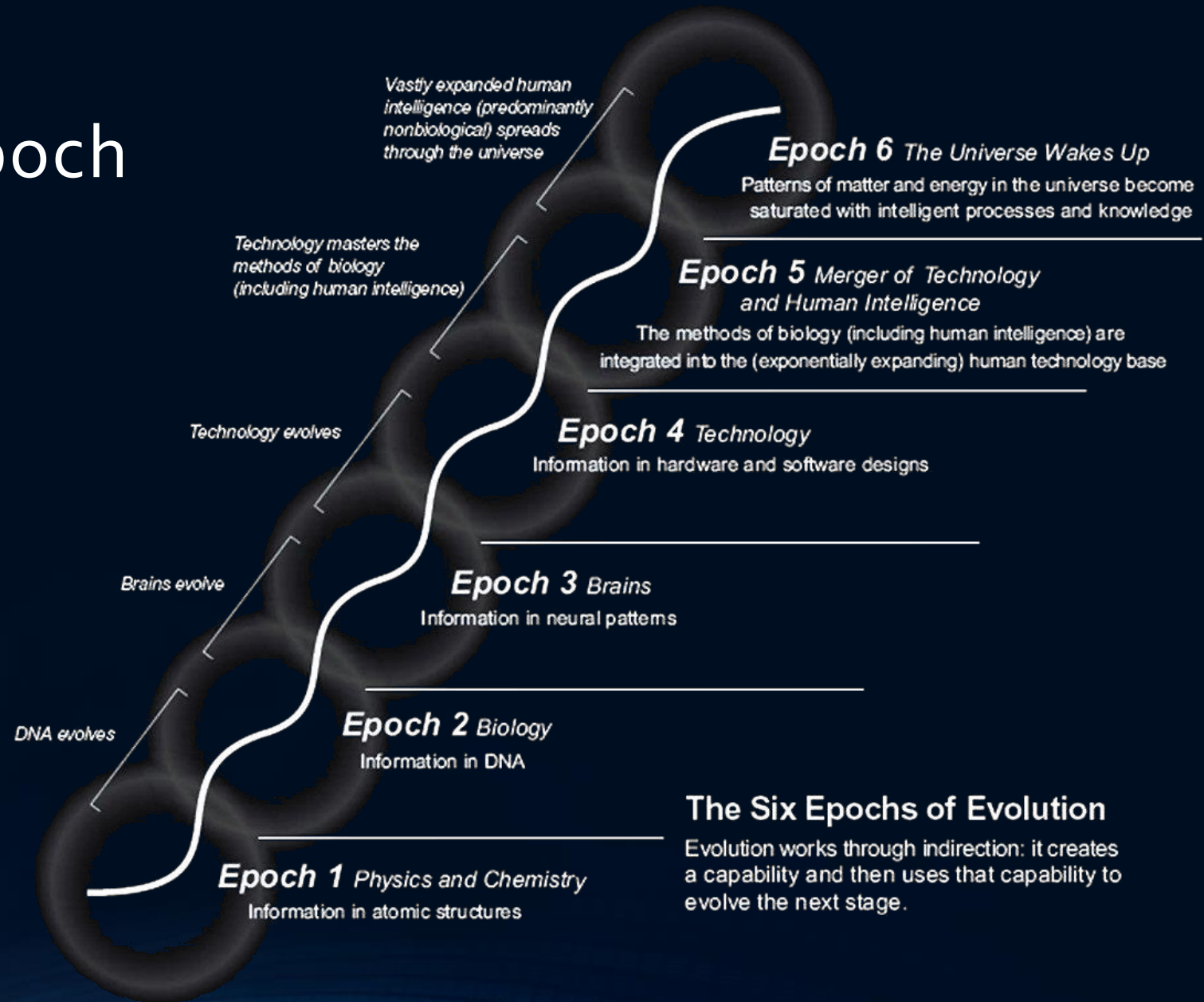


So, what is the Singularity?

THE SINGULARITY IS NEAR

- "First we build the tools, then they build us." - Marshall McLuhan (1911-1980)
- 5th Epoch: Merger of human tech with human intelligence
- Moore's Law
- Succeed in simulating the brain by 2020
- Self replicating technologies: genetics, nanotechnology, robotics

The 5th Epoch



The Six Epochs of Evolution

Evolution works through indirection: it creates a capability and then uses that capability to evolve the next stage.

Convergence

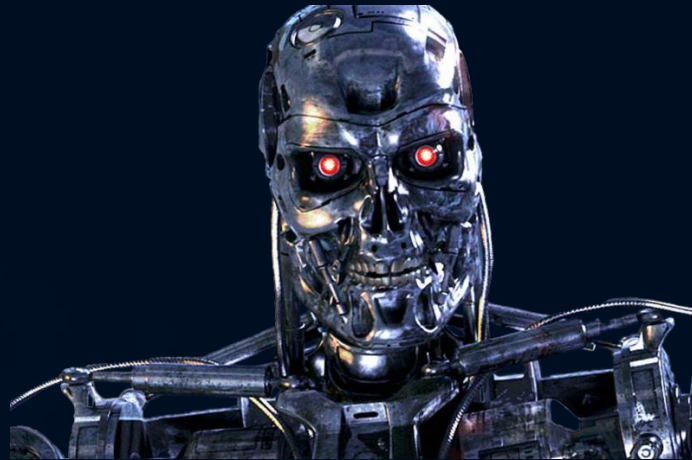
- [Artificial Limbs & Exoskeletons](#)
- Bio Implants
- Artificial Intelligence
- Big Data
- Human Brain Project
- Synthetic Biology/Genomics/[CRISPR](#)
- Epigenetics
- DNA Origami



Is this the Future?



OR



OR

