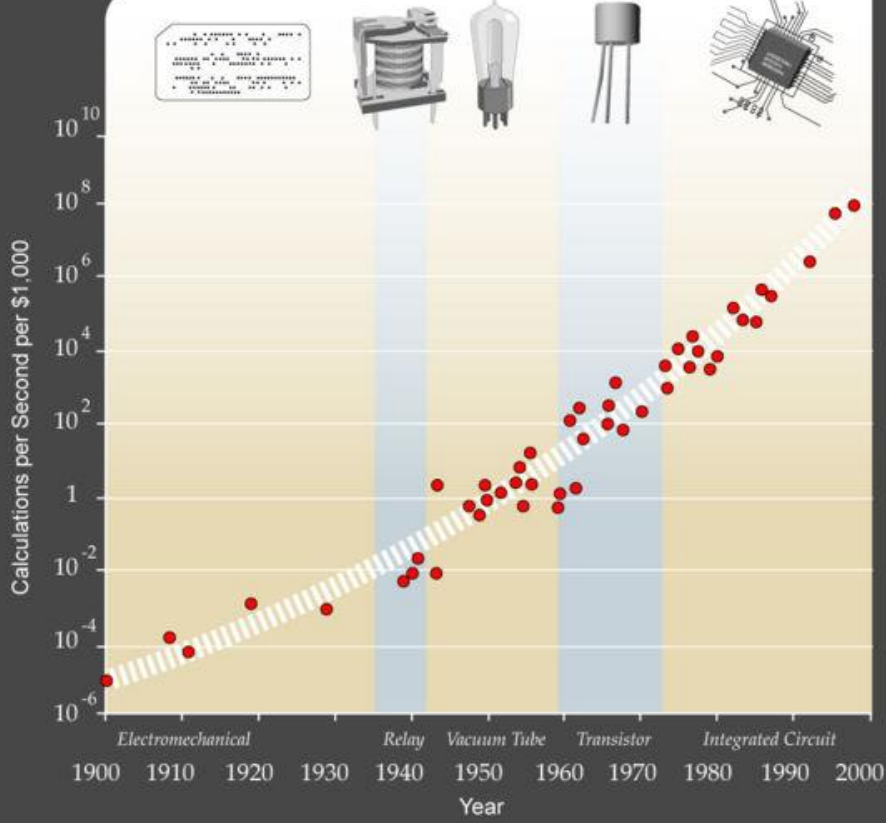


Kurzweil's - The Law of Accelerating Returns (with acknowledgement to Moore.)

An analysis of the history of technology shows that technological change is exponential, contrary to the common-sense 'intuitive linear' view. So we won't experience 100 years of progress in the 21st century—it will be more like 20,000 years of progress (at today's rate). The 'returns,' such as chip speed and cost-effectiveness, also increase exponentially. There's even exponential growth in the rate of exponential growth. Within a few decades, machine intelligence will surpass human intelligence, leading to the Singularity—technological change so rapid and profound it represents a rupture in the fabric of human history. The implications include the merger of biological and non-biological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light.

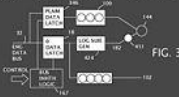
Moore's Law The Fifth Paradigm

Logarithmic Plot



U.S. Patents Granted

U.S. Patent May 30, 1989 Sheet 2 of 5 5,646,990



Logarithmic Plot



According to Kurzweil, since the beginning of evolution, more complex life forms have been evolving exponentially faster, with shorter and shorter intervals between the emergence of radically new life forms, such as human beings, who have the capacity to engineer (intentionally to design with efficiency) a new trait which replaces relatively blind evolutionary mechanisms of selection for efficiency. By extension, the rate of technical progress amongst humans has also been exponentially increasing, as we discover more effective ways to do things, we also discover more effective ways to learn, i.e. language, numbers, written language, philosophy, scientific method, instruments of observation, tallying devices, mechanical calculators, computers, each of these major advances in our ability to account for information occur increasingly close together. Already within the past sixty years, life in the industrialized world has changed almost beyond recognition except for living memories from the first half of the 20th century. This pattern will culminate in unimaginable technological progress in the 21st century, leading to a singularity. Kurzweil elaborates on his views in his books *The Age of Spiritual Machines* and *The Singularity Is Near*.

