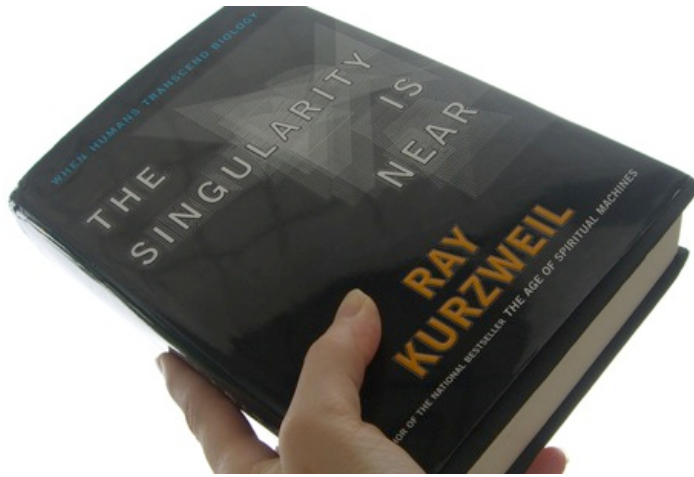


AFRICAN SINGULARITY

by Jon Gosier



Evolution is the natural progression of biology over time when the inherited traits of a population of organisms is passed from one generation to the next. In theory, unfavorable traits are eliminated, while only the favorable ones (traits helpful to survival) are passed on. Barring genetic mutations that occur because of sheer odds and probability, the cycle repeats unbroken as long as life exists. The word 'singularity' refers to the evolution of technology.

The term was arguably coined by Vernor Vinge, a computer scientist, author and professor of mathematics in 1993 when he wrote an essay entitled, "The Coming Technological Singularity", in which he argued that exponential growth in technology would reach a point beyond what we can even speculate right now. Could this point be a period in the future where humans are enslaved and 'farmed' by machines like in the movie THE MATRIX (1998)? Or perhaps a future where biology is used to police society as demonstrated in the movie GATTICA (1997)? The very point Vance makes is that we can't possibly know because this new world will be so drastically different from the one in which we live today.

MOORE'S LAW

Ray Kurzweil has more famously championed the term singularity as simply referring to a period of extremely rapid technological progress as suggested by **Moore's Law**.

Moore's law describes an important trend in the history of computer hardware: that the number of transistors that can be inexpensively placed on an integrated circuit is increasing exponentially, doubling approximately every two years. The observation was first made by Intel co-founder Gordon E. Moore in a 1965 paper. The trend has continued for more than half a century and is not expected to stop for another decade at least and perhaps much longer. [4]

If this theory holds, it also means the power of computing is exponentially increasing as the price of creating computing technology decreases exponentially. In “Historical Notes About the Cost of Hard Drive Storage Space” (<http://www.alts.net/ns1625/winchest.html>), the author demonstrates how Moore’s Law has either been affirmed or even outpaced by the cost of data storage technology. The table notes that in 1956 a 5 megabyte, IBM hard drive cost \$50,000 or \$10,000 per megabyte. By 1980 that price had already come down substantially, Morrow Designs was offering a 26 megabyte hard drive for \$5,000 or \$193 per megabyte. By March 1989 Western Digital had introduced a 20 megabyte drive for \$899, or \$53 per megabyte. By 1996 hard drives were selling at prices that put the cost of the megabyte well below the value of a U.S. quarter.

Around the same time the rise of new mediums for storage started to become the preferred method. 3.5” Floppy disks reigned supreme in consumer machines but slowly gave way to CD and DVD storage. By the turn of the century, it became the custom to price hard drives by cost per gigabyte, instead of megabytes. This is because the cost per megabyte was quickly approaching \$0.01! A \$175 hard drive gave 10 gigabytes of storage which equaled \$20 per gigabyte or approximately \$0.02 per megabyte! Over the next four years, the trend seemed to accelerate and a 250 gigabyte drive sold for \$1 per gigabyte! That meant for \$0.01 in 2004 in the U.S. you could theoretically purchase \$80,000 worth of 1950’s computer storage with no adjustment for inflation!!!!

Those examples demonstrate the rate at which computing power is accelerating versus the rate at which costs of manufacturing are decreasing. This means the power to create advanced computational machines and technologies is increasing. What Vinge and Kurzweil are referring to is a period where the production of technology reaches a level beyond of what we are capable of fathoming now. Thus, the singularity would a point at which machines become capable of rapidly reproducing without direct human influence.

ADAPTING CULTURES

The danger of this to Africa and other developing regions of the world is that as machines outpace humans, manual labor will become useless. If a machine can be put in place to do it; then it will. In this environment, only ‘knowledge based’ economies can hope to flourish while areas without advanced skills will fall to the wayside. Rates of unemployment and poverty will increase exponentially. It would be the ‘digital divide’ to the nth degree and people all over the world would suffer.

The answer, however, is not to try and slow this rapid progress. To make a mild sci-fi reference, ‘resistance is futile’. The economics of business drive down costs and prices to the consumer as technology improves. This is a good thing. The only way to prepare for these changes is if Africa and other developing regions rapidly adapt now, because in a decade or so it will be well beyond too late.