

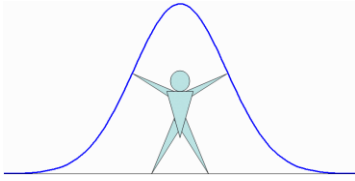
Inside the Bell

Automatons, Robots and Money

For over four decades various computer scientists and thinkers have pondered the rapid growth of computing into the realm of artificial intelligence (AI) and when, rather than if, computers will become “smarter” than humans. There is considerable agreement that AI entities will eventually be able to perform actions humans will be unable to comprehend and significant agreement on when this occurs – sometime in the next 30 years.

Today, we are surrounded by unique automatons; machines that do one specific task; and do it better than a human could. We have factories with computer driven machines that assemble almost everything. Our homes are slowly filling with computerized appliances; vacuums, ovens, dishwashers, televisions and others; that relieve humans of simple, but time consuming tasks, that we are more than willing to delegate. Restaurants, and other service establishments, are employing kiosk order takers and we’re informed daily of the development, and soon to be common, self-driven automobiles. Most of us carry a small device, we euphemistically call a “phone,” that has more power than the original space shuttle and communicates, remembers appointments, gives directions, manages multiple social group memberships, maintains our physical fitness, monitors our security, watches our children, plays our music, streams our favorite sports or movies, and provides access to unlimited games when the rest of it gives us a break.

These are automatons, trained in singular tasks. However, we are on the edge of true robots, computerized machines that can do multiple tasks well and learn on the job to do existing tasks better and develop new ones, and they will operate independently of human direction or supervision. We already have software that designs new machines and buildings better than a human can and programmers that use software to write new software using code that the “programmer” frequently cannot comprehend. We will soon have, if we don’t already have, software that will analyze other software, including itself, for efficiency and either provide recommendations for improvement or immediately install the improvements without human intervention or knowledge. How long before we have software that will write new software to solve problems that humans are unaware of, and extend the knowledge base faster and larger than humans can follow. Humans learn from the advances of other humans through written documentation and other forms of communication. Each human must desire to learn interesting and significant information and undertake to learn it individually. Most humans are uneducated in most of human knowledge and no human is educated in all of it. Robots on the other hand can learn independently, as do humans, but, once learned, can communicate the information instantly to



Inside the Bell

every other robot. Every robot in the network will know everything every other robot knows and that's pretty much everything.

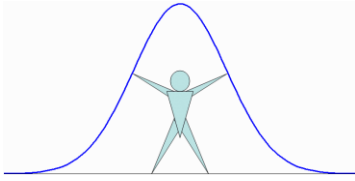
These robots, will design and build new robots, repair older robots, and eventually perform all tasks necessary for their existence, and possibly, humans as well. These changes will develop exponentially from today's technology. Hans Moravec, in his 1988 book "Mind Children" predicted robots will evolve into a new artificial species sometime between 2030 and 2040. Ray Kurzweil, an American computer scientist and inventor, working for Google, agrees. Here is the beginning of Kurzweil's March 7, 2001 essay entitled "The Law of Accelerating Returns".

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 nonbiological intelligence, immortal software-based humans, and ultra-high levels of intelligence that expand outward in the universe at the speed of light.

Kurzweil defines his "Singularity" to be when humans adopt computerized enhancements that allow them to communicate and share information with nonbiological intelligence and predicts it to happen by the mid 2040's.

However, why would these merged man/machine entities be necessary? I wonder if the human portion of these composites could withstand the intensity and speed of the machine portion. I also wonder what benefit the evolutionarily advanced artificial species will obtain from the continued existence of humans. These robots will eventually perform every task currently performed by humans and do them more efficiently and more cheaply. Robots will design and build new and more advanced robots and repair existing robots as necessary. In short, human labor will become unnecessary. The disruption to human society will be unimaginable. Given unlimited free time, how will the human animal adapt? Will humans experience a renaissance of the arts and sciences for the sheer enjoyment it brings? Will humans submit to the lure of drugs, sex, virtual reality, games, or other forms of depravity and debauchery? Will the human race just become extinct as have other species when faced with an evolutionarily superior species or will human society become the Borg?

Whatever the final outcome, I'm fairly confident that human society will experience severe short term disruption. With the possible exception of aborigines, every human society will need to adapt. The value of money will



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decline to near zero. Not just a few western currencies like the dollar, but all currencies everywhere.

The value of money is directly related to labor. Political differences aside, people earn money, in general, based on the value society places on their form of labor and proportional to how much of that labor they provide. Also, in general, the cost of goods and services is related to the value they provide to society and the cost of their production. If robots assume all human tasks, providing all the goods and services humans require, there is no human labor required and no way to value money. Simultaneously, the cost of goods and services will decline to near zero since the cost of production, provided by robots at no cost to society, is virtually zero and everything people desire, and would have spent money to get, will be available for free.

Can that last statement be true? Let's examine the production of an automobile. Automobiles will be assembled in a factory built by robots, by robots using parts manufactured by robots. The steel material for the parts is smelted by robots from ore mined by robots with machines built by robots. Both the ore and the parts are transported in trucks manufactured and driven by robots over roads and bridges built and maintained by robots using fuel refined from petroleum discovered and pumped from wells by robots. The robots use energy provided by robots generating electricity in plants built and maintained by robots. Robots handle the trash, recycling, and manage the pollution. Damaged robots are repaired by robots using parts manufactured by robots. The robots themselves are designed and built by robots. The robots work 24 hours a day, every day, without weekends or holidays, without pay. Nowhere is there any cost in real terms to the goods they produce. Every measure governments use to measure the health of society will become useless. Statistical information such as unemployment (100%), labor participation rate (0%), inflation (what does this even mean), and gross domestic product (ditto) become meaningless.

This scenario offers the possibility of a dark and dreary future or Utopia. For either outcome, the chasm from where we are to either is extremely difficult to transverse and promises a new dark age of human history that will last until the availability of "things" balances the human desire to "own" them. We are certainly going to take the path down into the chasm. The character of the future is dependent on whether we can climb up the other side and reverse the darkness of the journey.

Russ

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