

Space, the Genome and the Computer: My Vision of the Future

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I have become interested in the future of our world only recently, but for all my life I have been eager to understand the world we live in. From childhood on, I wanted to know more about nature, how the world came about, what makes it tick, what's the purpose of it all. As a young teenager, I was taught about evolution by an older brother, and the realization that all living things, including humans, were created through slow evolution over millions of years, had a deep influence on my philosophical view of the world. Soon my early strong religious views had to make place for the sharper, more logical, but also colder, view of life and the world based on science. As a teenager, I kept reading and reading, books on physics, on astronomy and cosmology, on biology and medicine. My two heroes of those days were Isaac Newton, who opened up our understanding of the material world and Louis Pasteur, who made us understand the cause of illness and the workings of the biological world.

After completing studies in physics and chemistry, after a life working in science and business, and having been successful in acquiring considerable wealth, I now have time to think. I felt that at this point I had now acquired reasonable understanding of the questions that had originally driven me to study the sciences and I felt that I could best use my abilities and knowledge to create a foundation that would study the forces that will form and determine the future of the human race. I felt that humanity has now come of age and is no longer at the mercy of blind Darwinian forces of nature. It is now able to control its own destiny. However, to do this properly, humans better get some thorough understanding of the forces of nature that they will have to deal with, so they know what they are doing. It is my sincere feeling that our leaders in academia, in government, and in the press, are not only in total confusion about those matters, but don't even seem to be aware of the fact that humanity has a

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future, and that we should be concerned about it. Doing the right things now will prevent possible catastrophes that might lurk in a hazy future. We certainly want to give our children and our children's children the chance to live in a better world.

Three great scientific/technical achievements took place in this 20th Century that will largely shape and determine humanity's future over the coming millennium. They are: (A) The conquest of Space; (B) The deciphering of the human genome and the arrival of genetic engineering; (C) The development of the semi-conductor chip and the creation of the electronic computer.

(A) All through human history new plateaus of knowledge and of achievement were attained whenever the human race expanded into new lands, across new frontiers. Looking back over the history of life on Earth, we are dealing with time scales of hundreds of millions of years. Our predecessors, the dinosaurs, reined over this planet for more than 150 million years. Humanity can look forward to an existence of many more hundreds of millions of years. It is inconceivable that it would just remain stagnant on this earth without any great new tasks to accomplish any new frontier to conquer. I am convinced that it is humanity's destiny to reach way beyond this planet to conquer new lands meaning other inhabitable planets in our galaxy and to extend the presence of intelligent life all over our galaxy. Such experience is bound to immensely advance our knowledge, our science and technology. It will also give new impetus in the fields of psychology, sociology and art and open new vistas we cannot today imagine. This I feel is humanity's long-range vision, its ultimate destiny.

(B) Thanks to the many advances in science and technology, in medicine and in agriculture, most of humanity today is no longer subjected to the cruel laws of Darwinian nature, where only the fittest can survive while the less fit will be recklessly eliminated, where child mortality is so great that only a minority of children would survive to adulthood. This, however, has also eliminated the natural conditions which are necessary for keeping any species of animals (including humans) genetically healthy. A worrisome increase of congenital diseases including mental problems like depression and ADHD in school children is already noted by psychologists and teachers. Such conditions which are most noticeable in the more advanced countries would slowly lead to the complete deterioration and eventual disappearance of any strain of living being.

It is a most fortuitous coincidence that just at the time when humanity has succeeded to free itself from the shackles of Darwinian survival conditions, it is now learning to handle its genetic survival on its own. Through the great genome project we are gaining the knowledge about our most secret, most hidden inner self. There is no doubt that, in the relatively near future, we will be able to intervene and correct our genetic defects through more benign means than nature has done in the past through its cruel laws of survival.

Without the necessary knowledge in genetics that has been acquired rather recently, some dictatorships hoped in the past to improve human beings through forced action. This brought the concept of genetic engineering and especially of eugenics into disrepute. Today it would be totally inconceivable for a government in a free country to encroach on the private sphere of an individual and try to control his/her private action, especially in the field of procreation. Any type of genetic intervention will be decided by the family, the couple or the individual according to their own wishes and decision.

(C) From Chip to Computer

The recent development of digital technology, from the silicon chip to the most sophisticated super computer, has been nothing short of phenomenal. From a toy 50 years ago, an entire new technology, supporting a huge industry, has been created. There is no indication that this development is slowing down. On the contrary, new extensions of this technology keep coming up. One of the more recent and most important ones is the worldwide web, which is growing in size and range and is becoming the basis for worldwide interchange of information between groups and individuals.

The Industrial Revolution, created by the steam engine and its successor, the internal-combustion engine, has played an extremely important role in the development of human societies over the last two centuries. In fact, it has changed the face of the earth, which is now covered with a huge net of blacktop roads, highways, and superhighways, and also with fertile fields that are plowed, seeded and harvested through the help of powerful farm machinery. It has enabled the human race to surge in numbers way beyond what was considered possible 150 years ago, when the English bishop Maltus made his dire predictions.

Well, I feel the revolution brought about by the silicon chip will be of even greater importance and of more far-reaching consequences. In the age of dinosaurs, muscle power was the decisive element of superiority,

but today, in human societies, the power of the brain is more decisive. Nobody asks and nobody will care how good a weightlifter Einstein was, it's the creations of his brain that were decisive. Similarly, it is likely that the computer, with its silicon chips and its ever more-complex software, will play an even more decisive role in the future of humanity than the Industrial Revolution has done. Today, a small laptop computer has become an extension of the user's brainpower, putting amazing amounts of information at his fingertips and providing him with an almost unlimited memory. Through the worldwide web, people all over the world can be in intimate contact, exchange ideas, and cooperate on projects. You could envision the whole humanity becoming a super individual in the long-range future as this technology develops further.