

SOCIETY IN THE INFORMATION AGE:  
ON THE FUTURE OF MANKIND AND TECHNOLOGY

by

MATHIAS RICKEN

Computer Science 300, Rice University

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*Several of the course readings, including Brown and Duguid, Kurzweil, Bertman, Moravec, and Lanier, consider the ways we should confront the “new.” Discuss some of the different perspectives and attitudes regarding new information technology from these or other readings.*

The authors represented in the course readings have introduced different perspectives on technology and how we should react to it.

Stephen Bertman noticed that society today is caught up in the now and neglects both the past and the future. The failure to respect the past lets us lose our culture, he claims; it is responsible for the breakdown of family values, for pollution of the environment, unbounded commercialism and the continuous stress everyone is subjected to today. The neglect of the future leads to a technological blind flight. We embrace technology immediately and see it as a mean to alleviate the pains induced by current technology. Unfortunately, new technology brings new, severe problems with it. The only way to break this cycle is to forcibly slow it down.

John Seely Brown in his paper "Learning, Working and Playing in the Digital Age", on the other hand, had a positive view on information technology and how it influences learning. He saw it as a way to break old, rigid structures and to put more

people in power. In his experience, the Internet and technology in general lead to more exploration and willingness to try new things.

This changes the way information is passed on in a fundamental way: The unidirectional way with a teacher and many students is replaced by a multidirectional learning ecology in that everyone can be a teacher, not only experts. Brown sees information technology as a tool to move from supporting individuals to supporting relationships, thus strengthening the entire community.

Hans Moravec did not focus on the effects of information technology on learning, but had an equally positive view on it. He predicts that the next decades will show major advances in robotics and artificial intelligence and that we will witness household robots at first, and robotic humans shortly after. This prognosis is based on the assumptions that behavior and consciousness arise from physical laws, and nothing else, and the results of such laws are computable. If this is indeed true, then a very powerful computer should be capable of simulating human reactions.

Moravec does not feel threatened by the development of human, or even super-human computers and robots, though. He sees a future in which entire corporations are run by computers, without necessary interaction or supervision by humans. He admits our current society will be transformed in a major way, but he claims humanity will be in control. At the end, Moravec seems to envision man's return to Eden, when intelligent machines will work for him and he has time to indulge in recreational activities. The

thought that, for machines, humans might not be necessary or even be annoying does not seem to cross his mind; I hope the machines of his utopia will make the same oversight.

Ray Kurzweil presents a vision that is different from Moravec's, but which is based on the same assumptions. He does not see humans and machines coexisting, though; he believes they will merge. Humans will integrate more and more technological devices into their body, a process that has already begun. The interface between biological and artificial parts will be broadened to a point where human consciousness can be downloaded into a powerful computer that simulates all aspects of a brain.

When this happens, computers will also become conscious. According to Moore's Law, computer evolution will continue at a fast pace, one that is much greater than that of natural evolution, and computers will become more powerful than humans. Kurzweil claims that we have replaced natural evolution, and that machines might replace us.

Bill Joy, Chief Scientist at Sun Microsystems, shares this fear. He states that inferior species rarely survive contact with more developed ones and asks for caution in our progress. He compares today's technologies to nuclear technology in the last century, but points out that technologies for artificial life are different in that they are developed for commercial purposes. The only raw material needed is ubiquitous: knowledge. This makes uses harder to control and abuses much harder to prevent. Joy's major fear is such an abuse by a single person. He finds it ironic that humanity's quest for knowledge will put a weapon of the scale of the hydrogen bomb in the hands of anyone interested.

The computer scientist Jaron Lanier, on the other hand, does not believe this future, or any one close to it will happen. Despite breakthrough advances in many areas of technology, especially the history of computer science is full of examples where the benefits of new developments are eaten up completely by more complicated challenges. Lanier believes an increasing number of support staff is necessary to maintain information technology, and that friction will eventually cause advances to largely stop. Intelligence on the level of humans will remain out of reach.

Even though the threat of being exterminated by our robot offspring, Lanier sees potential for major changes in our society, transformations that might not be good. In the past, computer technology has streamlined capitalism so that a few can earn fortunes very fast so that, while the standard of living is improving for everyone, the gap between the rich and the poor widens. He claims that the use of computer technology to further improve our lives and maybe even to reach some kind of immortality will remain expensive and thus available only to the elites. The question arises whether the rich and the poor can still be considered to belong to the same species after these advanced technologies have been used for some time. The largest worry to Lanier therefore is how to integrate the limited availability of these technologies into our society.

*How do you think we should respond to advances in computing and related technologies? Should we regulate or otherwise control these developments?*

As a Computer Scientist, I find myself in a dilemma similar to that of Bill Joy. On the one hand, I am excited about technology, and I like using and creating it. On the other hand, I share some of the skeptical views brought forward by many of the authors. There is no real reason for me to believe it is impossible for us to create artificial intelligence, nothing I see that would necessarily stop the improvement of computers to a point where they become more capable than we are. Having witnessed human ruthlessness, why should I believe our creations should be kinder? I am even torn between Bertman's and Brown's views: A part of me rejects the new ways of living and sees old, linear learning in a somewhat romantic way; a different part, however, recognizes the tremendous opportunities that learning using today's and tomorrow's technology brings.

My views on technology are divided, and this is probably even a good thing. I support technological advances and even view them as necessary. I am skeptical at the same time, though, and believe that the results of technology should be evaluated as well, if possible before it becomes mainstream.

I think that research in some areas such as bio- and nanotechnology should definitely continue, but in a more controlled environment, and that their results on society and our entire planet should be studied in detail before a decision to commercialize and

release them is made. This is practical, devices for these developments are expensive and rare.

With information technology, this is not the case. Computers are available to virtually anyone, and while cutting-edge systems might not be available to the public, today's supercomputers are tomorrow's Dells and Compaqs. Even if world leaders decided to regulate research in certain areas of artificial intelligence, a decade later a small, private group could circumvent this without any problems.

I just hope that such groups will not abuse the technologies they develop, or that they get developed only after the world community has had a chance to study them in a controlled, safe environment. Unfortunately, there is no guarantee.

(Question by Dr. Gorry)