

TAKING THE HIGH ROAD

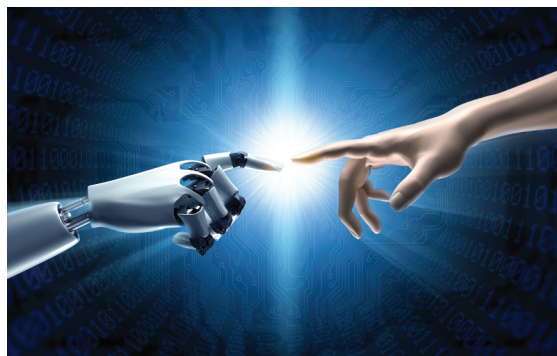
C. Dianne
Martin

Digital Dreams: Public Perceptions about Computers

DURING MY FIRST SABBATICAL IN 1990, I became interested in the role the media had on public attitudes about digital computers. Using the ENIAC press conference of 14 February 1946 as a starting point, I did an analysis of newspaper headlines from around the country that appeared the next day [5,6]. In bold headlines seen around the world, metaphors such as electronic brain, magic brain, wonder brain, wizard, and man-made robot brain were used to describe the new calculating machine to an awestruck public. Rather than showing a picture of the eight men in the posed group photo for the press conference, the newspapers published pictures showing a huge room with wires, switches, and lights. Humans were seen walking around inside and looking very small and fragile by comparison. In those pictures the humans, who were entering the data and examining the results, appeared to be serving the demands of the machine rather than vice versa, much like the images seen previously in science fiction classics, such as the 1927 Fritz Lang film, *Metropolis*. The characterization of computers by the press as superhuman calculating brains continued for several decades as new generations of computers were developed.

Subsequent research examining public attitudes about computers revealed an interesting phenomenon. As late as four

decades after the ENIAC announcement, researchers examining the public perception of computers continued to find vestiges of a phenomenon they characterized



as an “awesome machine” view of computers. Surveys of public attitudes about computers conducted in 1963 by Lee [4], in 1971 by AFIPS and Time Magazine [8], in 1981 by Morrison [7], and in 1991 by Turnipseed and Burns [9] all revealed that a significant number of people continued to think of computers as “awesome thinking machines.” They would respond affirmatively to such statements about computers as a) they can think like a human being thinks, b) they sort of make you feel that machines can be smarter than people, c) there is no limit to what these machines can do, d) electronic brain machines are kind of strange and frightening, and e) they are so amazing that they stagger your imagination [4].

These are exactly the images of computers that the press had consistently presented to the public from 1946-1966. Further, the computer attitude research conducted during that period suggests that the perception of computers as awesome thinking machines may have in fact retarded public acceptance of computers in the work environment [2]. Some people were so intimidated by computers that they quit their jobs or had severe psychological problems due to computer phobia. At the same time the media depiction of computers raised unrealistic expectations for easy solutions to difficult social problems. Twenty years after the first attitude research done by Lee in 1963 [4], the editors of Time Magazine chose the computer to be the “Machine of the Year” on its January 1983 cover: *The Computer Moves In* [1]. The image depicted a sculpted human form slumped back in a chair in front of a monitor and keyboard as if pondering what to do next. Public attitudes about computing seemed to be stuck in a time warp of unfounded fears and expectations.

Thirty years later (about the amount of time needed to usher in a new generation of narcissistic humans) we find that a sea change has occurred with the human-machine relationship. In 2006 the Time Magazine “Person of the Year” was no longer the machine, but the human, *You! Yes, you. You control the Information Age. Welcome to your world.* The cover featured a flat computer screen and keyboard.

The article written by Lev Grossman stated,

“It’s a story about community and collaboration on a scale never seen before. It’s about the cosmic compendium of knowledge Wikipedia and the million-channel people’s network YouTube and the online metropolis MySpace. It’s about the many wresting power from the few and helping one another for nothing and how that will not only change the world, but also change the way the world changes. The tool that makes this possible is the World Wide Web... It’s a tool for bringing together the small contributions of millions of people

and making them matter...it's really a revolution...a massive social experiment, and like any experiment worth trying, it could fail. There's no road map for how an organism that's not a bacterium lives and works together on this planet in numbers in excess of 6 billion. But

fied to the status of a mere tool with the focus on the vast sources of information available and the unlimited capability to communicate. Whereas in the past, people had to focus on learning how to use the machine; now the actual devices have become so intuitive to use, they are no longer the focus of attention.

technologies they create, however, will be appropriated by the public more quickly and may veer into unexpected directions causing unanticipated consequences more quickly as well. Who could have anticipated revolutions in the Middle East fueled by cell phones? As educators our challenge is to make sure the future technologists

This new way of thinking about computer technology as a basic commodity is very important for computer science students to grasp. ... As educators our challenge is to make sure the future technologists we are creating are so well grounded in an understanding of ethics and social impact that they have internalized a deep sense of social responsibility along with their technical expertise.

2006 gave us some ideas. This is an opportunity to build a new kind of international understanding, not politician to politician, great man to great man, but citizen to citizen, person to person. It's a chance for people to look at a computer screen and really, genuinely wonder who's out there looking back at them [3]."

This new generation of computer users would probably be bemused if asked what their attitudes are about computers. The fact is, they no longer think about computers per se at all, but instead they think about a variety of devices that perform computing tasks for them – telephones, iPods, Xboxes, tablets, and all manner of other computing platforms that respond to touch, voice, and movement more often than a keyboard. It is just a matter of time before computing becomes imbedded in humans in a true cyborg symbiosis. A related irony is that the space where the actual computing is taking place is more and more centralized in the cloud, rather than decentralized in individual desktops or devices.

This change in the relationship between humans and computer technology is taking place in all institutions of society – homes, schools, offices, and governments. Even though the computer now has the power to connect and empower people worldwide, it has been demysti-

Once again the media, much more broadly defined in the 21st century than it was in the 20th century, has had a huge impact on how people have come to view and interact with computing devices. The ubiquitous depiction of computer devices in advertising, television, movies and on the internet itself has driven public demand for them and created new uses for them. The extreme proliferation of new computing devices has both increased and decreased the digital divide between those who have and those who do not have access to technology. With the rapid development of new, lower cost technologies, people in developing countries have access to the internet through such devices, but they still lack access to more powerful computing capabilities needed to improve the quality of their lives. Wide social disparity often leads to widespread social upheaval. Taking Grossman's comments to their logical conclusion, the new technologies have the potential to upend existing social order.

This new way of thinking about computer technology as a basic commodity is very important for computer science students to grasp. In the past, computer scientists had to be concerned about public computer literacy and public misconceptions about computer technology. In the future, computer scientists will continue to be the "people behind the curtain" making the magic happen. The new

we are creating are so well grounded in an understanding of ethics and social impact that they have internalized a deep sense of social responsibility along with their technical expertise. This will be the best insurance that society's digital dreams will not turn into dystopic nightmares. **Ir**

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C. Dianne Martin
The George Washington University
2121 I Street, NW
Washington, DC 20052 USA
dmartin@gwu.edu

DOI: 10.1145/2505990.2505993

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