

So Many Ways to See the Elephant

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In the next half-century, the Internet will be everywhere, in everything, from toilets to clothes and reading glasses. We're a society that wants everything, and we want it now. I think that's what the Internet is responding to. -- Vinton Cerf, widely considered the "father of the Internet."

Predicting the future is a chancy business, particularly in a hyper-accelerating field like technology, but we humans feel compelled to make predictions, some of which -- aided by a fortuitous mix of skill, intuition and luck -- turns out to be right.

This past March, some of technology's most prominent pioneers and visionaries gathered for the 50th anniversary conference of the Association for Computing Machinery¹ to offer educated speculation on the world to come. Gordon Bell, a Microsoft researcher who is viewed as the father of the minicomputer, opened the conference that focused on our next 50 years by exploring the hazards of making predictions, commenting that the challenge is both simple and daunting: "What can we say that people will not laugh at in 50 years?"

It Depends on Who You Talk to

By the year 2047, the "father" of the Internet, Vinton Cerf, believes the "baby" he helped bring into the world will outgrow desktop computers. He thinks that the Internet will be everywhere, in everything.

"People will expect that when you wake up in the morning, you will be able to talk to your house," predicted Cerf, as he spoke at the ACM conference. "The faucets will turn on and off. The bathtub will fill itself."

In Cerf's world, your kitchen will prepare your breakfast while you exercise, unless, that is, your networked scale indicates that you are overweight, in which case it automatically locks the fridge. And a whole series of smart sensors around the house will assist with such functions as noninvasive medical diagnoses. (Medical diagnoses? Will that mean the health insurance industry will have the computer industry's Bill Gates to deal with?)

Some of Cerf's visions are today's reality. "There's already an intelligent toilet in Japan," Cerf told conference-goers, "that analyzes body waste and lets you know if there's anything unusual going on with your health. I really do wish I were eight years old again. I will not be alive in 2047. But I will likely live to regret the timidity of all the predictions I've made."

In all of Cerf's scenarios, the Internet is something that will seamlessly enhance our lives, like the automatic doors of today. He predicts that in the next half century, dramatic computer-enhanced changes will take place inside the home. Our appliances will be networked to wake us up, fill the bathtub upon command, and prepare breakfast while we exercise. A variety of networked "sensor systems," like the automatic door, will turn on room lights when we enter, and even analyze sugar levels in our urine every time we flush.

For business and communication purposes, the Internet will be everywhere, just like electricity. Personal computers will be wrist-sized, accompanied by a pair of reading glasses that present high-

resolution images at a comfortable "virtual" distance. A small, fitted earpiece and a "finger mouse" will be linked to the other devices with low-power radio signals.

Cerf believes that these devices will not so much displace as "augment" the present work environment. "The arrival of cellular telephones did not displace other modalities. For example, trust is often established face-to-face and then reinforced via e-mail, telephone and snail mail. I see the advent of the Internet as an augmenting force, not so much a displacing one, although it may subsume earlier separate means of delivering information by becoming a universal carrier."

For Some, Predictions are Predicaments

With the digital age producing an "immense sea of data that threatens to drown humanity," people need to adapt how they think "so that true knowledge can be distilled from the deluge," cautions 1996 Nobel Prize-winning physicist Murray Gell-Mann in the final speech of ACM's conference.

"We hear in this dawn of the so-called "information age" a great deal of talk about the explosion of information and new methods for its dissemination," he said. "It is important to realize, however, that most of what is disseminated is misinformation, badly organized information, or irrelevant information."

"The vast amount of information available digitally is creating a need for people with interdisciplinary skills. In the long run, it is creative work in the sciences, the humanities, the arts and the professions that will help the most to extract knowledge and understanding from the immense sea of data that threatens to drown humanity."

Gell-Mann raises the question: How can we establish a system such that many competing but skillful processors of information, acting as intermediaries, will arise to interpret for us this mass of unorganized, partially false material? He advises that there has to be a way to reward people who can convert information into knowledge and understanding, instead of what he calls propaganda and pure entertainment. "We can easily see that the reward system today is not appropriate," he said. For example, in academic work and in some other walks of life, the principal incentives are for adding little bits of knowledge or understanding at the frontier of science or scholarship."

"What about clarifying the material in a whole area, synthesizing it, distinguishing, at least in part, the true from the false and the reasonable from the unreasonable, offering the world a clear and reasonably accurate picture of what is understood and what is not?"

For Others, a Cure Is Wanted for the Headache!

When I hear the local digital elite exclaim, "Here in Silicon Valley, you can almost feel the information!" ... well, I feel a migraine coming on. I don't know how much more information and interaction I can stand. It's not that I want to deprive people of their right to communicate and find information, but I do miss some of the comforts of oblivion. Sometimes I'd like to reach out and touch nothing (and often, I wish people could not reach out and touch me -- especially telemarketing people.) I wish experiences could not be simulated. I wish you still had to be there. And sometimes it's very comforting to declare, "I don't know and know I can't find out, so I might as well just quit and crack open a beer."²

No, I'm not a technophobe or a member of the latest species of "Luddites."³ I've come to appreciate computers much more than I care to admit (you could even say I've become addicted to them.) I'm all for time-saving devices, advances in health care, and world peace through technology. But all I really care about is that in 50 years, we'll be able to be left alone if that's what we want. So will someone please see to it that I don't have to have a conversation with my toaster?

References

1. Association for Computing Machinery (ACM) is the oldest and most prominent membership organization in technology. 1997 marks the group's 50th anniversary.
2. expressed in the last section are paraphrased from an article from one of my favorite newspaper columnists: Sue Hutchison. Wanted: cure for Internet headache. San Jose Mercury. March 8, 1997.
3. are those notorious machine-wreckers of the early industrial revolution remembered in textbooks as mindless enemies of progress.

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