

Future Computers

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Imagine an episode from *Star Trek*: exciting and imaginative drama (at least for *Star Trek* fans)! Yet much of what is imagined on television is already happening in laboratories somewhere around the world. If science fiction is even half true, we will soon have tiny nanocomputers surging around in our blood stream fighting illnesses. In fact, some of us are already wearing computers or having them implanted inside us. As computers get smaller and more personal, we will not be so blasé about them going wrong as we are now with desktop PCs. We might not be able to reboot them. What would happen if we needed a general anaesthetic to sort out some rogue programming let loose inside us?

We had better get computers sorted out today while we have the chance. We don't want more over-complicated, unreliable, difficult-to-use things, nor even ones requiring us to continually upgrade hoping to take advantage of fixes to current problems and limitations. Once computers are off the desktop, they have to be as reliable and easy to use as everything else is.

The lecture goes on to closely examine the familiar problems with today's computer systems and shows how they can be solved with "personal technologies" — tiny chips that can be easily put in jewellery, credit cards, clothes or, if we are willing, inside us as implants.

Nobody really knows what the future will hold, but just as today's wallets full of credit cards and identification cards would have been unimaginable to most people only a few years ago, it's very likely we'll get to implants via developments to mobile phones, because they are things we already find completely indispensable. There will be obvious benefits, such as easy travel and purchasing. Shops (or hospitals, schools, sports centres — or anything we care about) will know who we are and what we want before we are inside. Everything will seem better. Say hello to the global village, where everyone knows everyone else!

Crucially it's now possible to get huge advantages of this sort *and avoid* some of the conventional problems of unusable computers: in particular, personal technologies won't use screens, windows, keyboards or mice. We won't get dialogue boxes appearing, telling us that the computer has snarled up again. Usually all new technology has been more complicated, but there is a chance — if we grasp it — to make personal technologies simpler, easier to use and more reliable.

Even so, the flip side of future computers is that we will have to exchange our privacy for the benefits. If shops are going to be more helpful, they will have to know a lot more about us. We may not be too happy with that.

More likely, in the future we won't worry. We'll be happy even when companies (like our credit card companies) know exactly where we are and what we are doing. For a minority it might be a scary future with privacy problems (as well as potential human rights problems and social exclusion problems for those who can't afford to buy into it); but for others the problems will be completely offset by the gains: life will be easier.

In short we cannot be sure about the future, except that it will be very different and will strain our imaginations. Some of today's old people can remember when the first car came to their village; my grandfather made the first television in his town. What will our grandchildren be amazed at? — that we can remember things like MP3 players, obsolete technologies that they will never have heard about? Or will they be amazed that we grasped the nettle of design, and for once made the world a better place, with appropriate technologies that seamlessly integrate with everyday life?

Further reading

Peter Denning, editor, *The Invisible Future*, McGraw-Hill, 2002.

Lois Gresh & Robert Weinberg, *The Computers of Star Trek*, Basic Books, 1999.

Don Norman, *The Invisible Computer*, MIT Press, 1998.

Harold Thimbleby, Ann Blandford, Paul Cairns, Paul Curzon & Matt Jones, "User interface design as systems design," <http://www.cs.mdx.ac.uk/harold/tvm/tvm.pdf>, 2002.

Two future Gresham lectures (Thursday 21 February: *Conventional Cryptography*; Thursday 28 February: *Modern Cryptography*) will explore the basis and potential of cryptography, sharing secrets. Only by using cryptography will be able to ensure we get some of the benefits of personal technologies without giving away our souls along with the useful information about us. The final lecture of this year's series will look at what happens when computers start doing things on their own: the problems of computer viruses.