

Side Effects of Digital Technology

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It is said that travel broadens the mind. A recent trip to Italy for a conference in the Apennines and a workshop in Turin sponsored by the Institute for Scientific Interchange certainly provoked me into some broadening if unsettling thoughts.

The first week's largish conference broadened my thinking incrementally, as do good conferences everywhere—with lots of interesting people and thought-provoking discussions. The second week's more intimate workshop, also very stimulating, added more increments of mental breadth. It took an unexpected by-product of the workshop to move me beyond incremental enlightenment.

E-LOQUENCE

Fewer than a score of people attended the workshop, engaging in presentations, discussion, speculation, and planning. All this activity took place in a classroom with benches, chairs, and a scattering of desktop computers.

Compared to conferences, workshops offer more integrated topics and more interaction between participants. To be successful, a workshop must move to a distinct conclusion through the participation and cooperation of the attendees, as this workshop did.

I was disturbed by one common activity at this workshop, however. During the daily sessions, many participants used the classroom computers or



Digital technology tempts with empowering connectivity while it threatens our privacy and leisure time.

their own laptops to deal with e-mail or, less frequently, to search the Web for items relevant to the current discussion. I found this unfamiliar behavior distracting and a little dismaying. Group activity, in my experience, must be given undivided attention.

The other attendees, however, didn't seem to notice anything unusual. It dawned on me gradually that the most active e-mailers were also among the more voluble and imaginative debaters. These people could concentrate effectively on two things at once. Although I still felt somewhat uncomfortable with their style, my critical attitude gave way to admiration and a slight feeling of inadequacy. This revelation broadened my mind in a most unincremental way.

The following Saturday morning, while reading the *Financial Times*, I discovered a delightful article by Jonathan Margolis ("Do You Really Have Time to Read This?" *Weekend FT*, Feb. 2002, pp. 8-10) that shed further light on this topic. Margolis

described what he called the "busy-all-the-time" syndrome. In a discursive and reflective review of three books on time pressures, he observed that the technology designed to liberate us has actually made our lives busier. The time pressure we face "spans both our working and social life, the ubiquitous, and cheap, text message having put everyone in the world permanently in touch with everybody they know." True enough, depending on what you mean by "everyone." Then came his insight: "And because you're in touch, you have to be responsive to other people's needs the entire time."

GOING MOBILE

The next day, my mind broadened again as I traveled by train to Rome. I had the compartment to myself at first, but after a few stops I had acquired four fellow passengers who traveled with me all the way to Rome: a solidly built matron dressed plainly in dark clothes, a young lass stylishly dressed in what looked like business attire, and a mother with a young daughter five or six years old.

What startled me about this disparate group was that each of the three adults used a mobile phone almost constantly. The matron seemed to be running a large family or business or both by phone, making and receiving many short calls, all of which she handled with brisk authority. The businesswoman spent her time compiling some kind of report in longhand, supplemented occasionally with figures derived from her pocket calculator. The many calls she made apparently solicited more information for her

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report. In contrast, the mother received a succession of social calls.

Until that episode, I had never felt the need to buy a mobile telephone. Watching these three in use, and recalling Margolis's remarks about being "in touch all the time," my mind broadened again.

Turning to my Sunday newspaper, I came upon a small item by John Naughton ("Just Kidding, We Thought. Then We Got the Message," *The Observer*, 3 Feb. 2002, p. 7) in which he describes the unexpected popularity of Short Message Service on mobile telephones. Naughton predicts even greater popularity for Internet instant messaging via mobile phone as a means of avoiding e-mail fatigue.

As a sufferer from such fatigue, I was now almost enthusiastic about mobile phones, but my fellow travelers' example showed me a drawback. A prehensile thumb seemed all but essential for easy dialing and speedy messaging on a mobile phone, but my own thumbs are distinctly posthensile.

At this point, my momentarily narrowing mind recalled a speech recognition demonstration given at the Turin workshop. David Petty had read from a newspaper into a microphone attached to an ordinary laptop computer. The phrases appeared as text on the screen as fast as Petty read them. Clearly, speech recognition would soon make prehensile thumbs unnecessary and mobile phones highly desirable.

LITERACY AND LARCENY

On the plane back to Australia, my thoughts strayed to misgivings I'd had about the consequences of successful speech recognition. I feared that its cheap availability could lead back to an oral society—not necessarily a bad thing, were illiteracy *universal*. But I suspect that governments would simply use the technology as an excuse to avoid the considerable cost of inculcating literacy through government-funded education. They would likely do so, however, *without* banning the practice in private education, thereby

creating a literate elite. But surely, I chided myself, this was a hypercritical view of government.

I set the matter aside and began reading *New Scientist* (19 Jan. 2002, pp. 3, 6-7). I started with the editorial "Dial M for Mugger," which addressed the large-scale organized larceny of mobile phones made profitable by disingenuous phone companies. Recently in Britain, criminals absconded with 710,000 cell phones in a single year.

Disingenuous phone companies have made profitable the large-scale organized larceny of mobile phones.

This scale of theft was unsettling enough, but the following article by Ian Sample and Duncan Graham-Rowe, "Mobile Targets," proved downright frightening. It seems the British government had "resolutely ignored" repeated warnings of "astonishing blunders by the networks and handset manufacturers."

Although the manufacturers program serial numbers into every handset, those numbers are commonly duplicated. In any case, some network companies have not installed the software that identifies stolen phones and bars their use, while those that have installed this software don't share the numbers of their stolen phones, so they can bar their use only on the one network.

The forthcoming third-generation handsets have new security features, but Sample and Graham-Rowe consider them of only questionable value. Their article went on to describe the use of a program called the IMSI Catcher as a possible technique for policing theft of the more expensive 3G handsets. One version of the Catcher "captures conversations as well as serial numbers," which—as you might imagine—has caused adverse comment.

The article concluded ominously: "Without firm action from cell phone companies,"—which action the article had elsewhere demonstrated to be conspicuously absent so far—"governments may well see the IMSI Catcher as the most convenient way to crack down on cell phone theft. But their implications for privacy are far reaching. The price may be letting Big Brother in by the back door." I could feel my mind narrowing as I went to sleep.

AD NAUSEAM

The next morning I faced several hours in the Melbourne airport waiting for a connecting flight, which prompted me to buy an *Australian Financial Review*. Bringing myself up-to-date on the local happenings was quite a heartwarming homecoming—until I came face-to-face with a full-page ad for software that "gives you the clearest, most in-depth view of your customers." I found this claim particularly significant because quite a bit had been written in the newspapers recently about the new Australian federal *Privacy Amendment (Private Sector) Act* and how it would protect the public's privacy.

A sequence of four photographs took up most of the page. The first photo presented an unrecognizable blur captioned with only a name and identification number. The two succeeding photos showed a clearer image and more personal information. Finally, the fourth photo revealed a face with all the clarity high-resolution imagery can achieve in newsprint, under which a detailed caption included many lines of family, employment, and financial data, the last line of which read "Spent \$250 on theatre tickets last week."

I found this ad mind-boggling in the context of my previous few days' reading. Certainly, I wouldn't want software like this pointed at me, nor at my not-so-private-after-all mobile phone.

I assumed this ad had been published by mistake and looked in several subsequent issues of the *Financial*

Review for an apology or retraction—or at the very least the subsequent absence of the offending ad. Alas, no. It appeared repeatedly, in all its full-page glory. Eventually, I noticed the fine print appended to the copyright notice, which told users that they “should obtain advice to ensure compliance with any applicable privacy laws.”

Did this disclaimer mean that merely obtaining advice would ensure compliance? Surely not! In any case, I looked up recent legislation and discovered that our lawmakers based the new amendment on *The 10 National Privacy Principles*. With hopeful anticipation, I called up the principles (<http://www.fms.gov.au/services/html/nnp.html>), the first of which read as follows:

1.1 An organisation must not collect personal information unless the information is necessary for one or more of its functions or activities.

That passage—an exclusion that excludes nothing—explained everything. Rendered into plain English, the very first of the principles requires organizations, which include businesses, to collect only personal data for which they have a need. This forms more of a management maxim than an ethical principle, I would have thought, and one not just applicable to personal data.

Somehow or other, I could not sustain my broad-minded trust in government to do the right thing. And I no longer felt any desire to own a mobile telephone.

As digital technology gets more and more personal, so do its personal effects. The obvious personal effect is communication by snapshot, which might or might not banish e-mail fatigue. This trend will certainly bring snapshot *marketing* to consumers in its wake, particularly with digital speech and location processing.

But the side effects could be more significant than the direct ones. The benefits of digital technology fall equally on the good and the bad. Already, organized crime uses digital telephony and the Web to promote their products, control distribution, and launder their revenue. They even employ “IT warriors” to launch cyber attacks on law enforcement agencies.” (Steven Morris, “Web Drug Dealers Rattle Cyber Cops,” *Guardian*, 2 Mar. 2002, <http://www.guardian.co.uk/>). In a spiral of measure versus countermeasure, digital technology will increasingly be used for surveillance and control in the struggle against crime and terror.

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Given our special knowledge and skills, we computing professionals must be even more alert to the possible side effects of the digital systems we design and manufacture than we are to these systems’ direct effects. We must persuade our employers to avoid or counteract these side effects, and we must inform the public of anticipated side effects outside our employers’ control.

After all, throughout history side effects have proven more dangerous than direct effects. If, for example, global warming makes digital technology’s side effects irrelevant, our concerns will have been obliterated by the side effect of a much older technology: industrialization (Jeremy Rifkin, “Goodbye Cruel World,” *Guardian*, 1 Mar. 2002, <http://www.guardian.co.uk/>). ■

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