COMMENTARY

Intelligence inside?

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*I*mplant lets people control computer by power of thought.' *The Times* recently gave front-page space to the news that an American laboratory has implanted electrodes into the brains of disabled people, who can use them to 'amplify' their thoughts in order to move a cursor on a computer screen. Many other papers carried the story. *The Independent* added to the days of (techno-logically inflicted) miracles and wonder, slightly later in the month, with another front-page story, claiming recent experiments with particles of light mean that teleporting is no longer in the realm of science fiction.

Beneath the headlines, the caveat in both cases is that this is early research. Beaming up, *Star Trek* style, is not expected imminently in the realm of real life. In the case of brain implants, we are told that this work, too, is in its early stages. Only two patients have been implanted, and the vocabulary they can access with the aid of so much technology, and so much effort, remains painfully limited. Using the implants, it is possible to communicate simple things such as asking for a light to be switched off, or indicating that one is thirsty. It will be some years before more complex communication is possible. The headlines under which these stories run, however, contradict the official caution. Even the *New Scientist*, where the implants story originated, and where it is most carefully explained, claims that this is 'a radical new way of interacting with the world'. We are left in no doubt that these are real breakthroughs, and not only because they open a conduit, however narrow, for severely disabled people to communicate with the world. Brain implants, we are told, have wider ramifications. The 'benefits' they offer, in other words, will reach well beyond the sphere of disability.

Beyond the medical arena, the advances this technology represents can be placed within the context of work on the human–computer interface. This kind of work, dealing with hardware and software (metal and metaphors, if you like), is carried on at US centres like the Media Lab at MIT, but also in Britain, notably at BT's laboratories. In case we missed the connection, *The Times* quotes BT laboratory chief Peter Cochrane, whose lab has done some of this work, on the 'wonderful benefits' of bringing chips inside humans.

How would brain implants fit into this work? In a sense they could be viewed as its logical extension. Work in human–computer interaction has focused on achieving a tighter, smoother, more transparent coupling of the human to the information machine (and thereby to 'information' itself; MIT's 'Me Paper', a newspaper that assembles itself around your interests, is a good example of this). Work on new interfaces has been pursued partly by way of efforts to extend the range of input options on the human side (to include voice commands and eye movements as well as typed keyboard commands, for instance), partly by work to extend the reach, precision and sensitivity of those interfaces (the full body suit

used for some forms of virtual reality might be compared with the single, non-pressure-sensitive, point of contact the impoverished mouse provides), and partly also by improving the 'grammar' of interaction (the most obvious example is the graphical user interface, which was an advance over the command-line interface offered by older systems).

The finicky, often difficult, business of improving on clumsy, keypad-based human–computer interaction has transformed computing, which has certainly moved a long way from its earliest days of time-lapsed input and paper-based printouts. Voice-input, eye-tracking and 3-D environments are all now becoming viable. But advances are constrained by the input/output capacities of the body – and the computer. Enter brain-implant research; the possibility of the ultimate bypass operation.

Love it/fear it

Technophilia looms. How much more convenient, how much more efficient, how much more *personal*, our relations with information – and perhaps with each other – might be if we could use a direct line to the mind. Blinking on the horizon is the dream – or the nightmare – of total communication. Not to mention, of course, the allure of achieving the power to move mountains – or at least cursors on-screen. In a sense, it doesn't matter which; the ability to move anything 'by power of thought alone' is a pretty powerful capability. Our forebears would have placed it in the category of the miraculous.

For technophiliacs this might be understood as the end of interface and the beginning of true cyborgization; the beginning of humans as operators within integrated circuits, actors amongst other (non-human) actors within self-aware networks. Advances less momentous (or less invasive) than this one, for example the Internet, have already been heralded as *delivering* precisely such a shift. Among the various technocultural theorists, the cyber-feminist Sadie Plant, to name just one, has declared an alliance between 'downloaded' women and today's new machines.
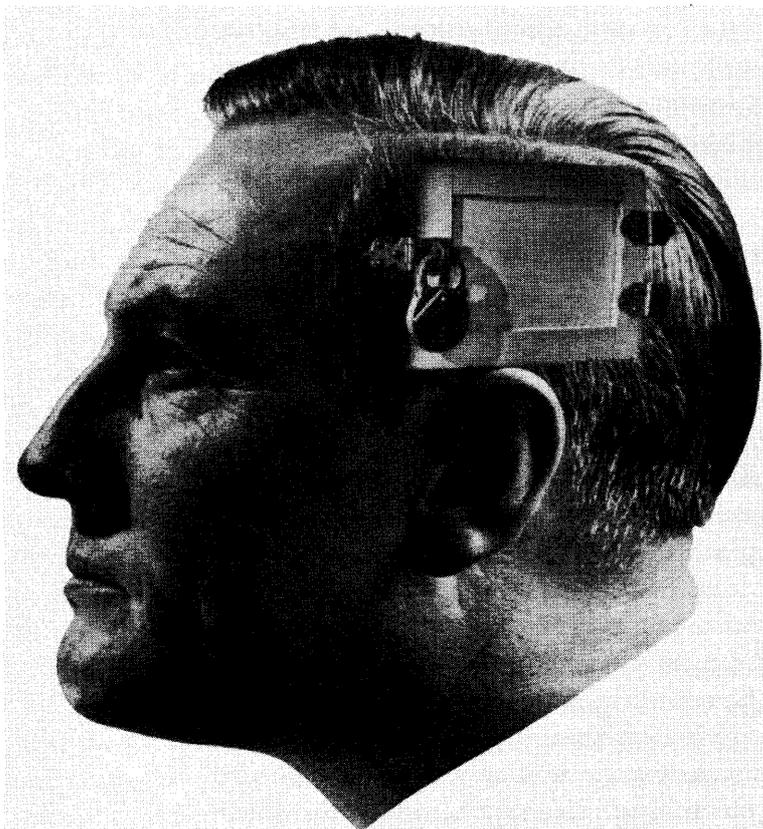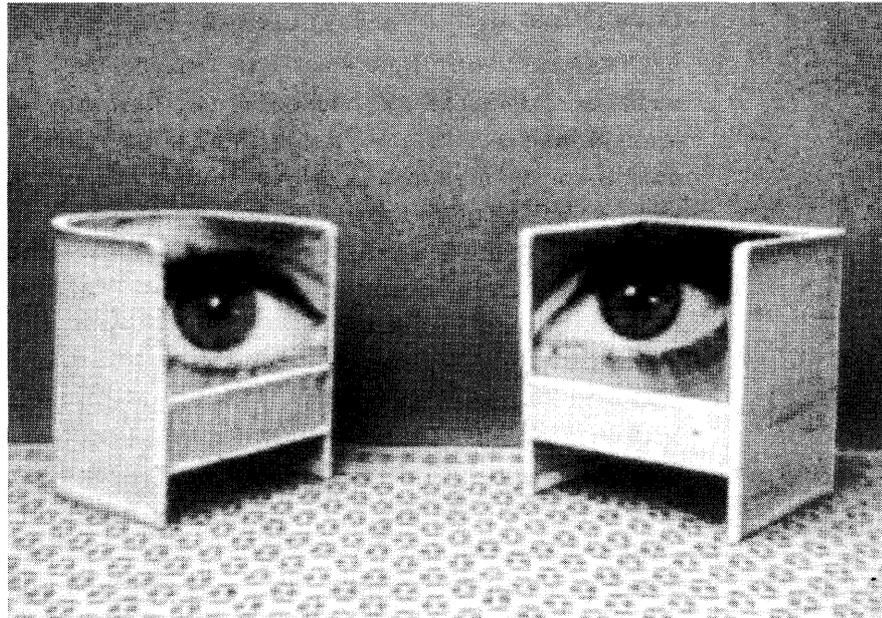

The seductiveness of the idea of implants might be understood as being about the promise of 'intelligence inside'; of a subcutaneous relationship with information technology. We may not like it, of course. True, it means you have it (IT) under your skin, but the reverse could also be the case. Seen from a different perspective, *it* has *you*. The threat of subcutaneous control attending in the form of brain implants might strike a chill in the heart.

Join the technophobes. In *Open Sky*, Paul Virilio, the French cultural theorist, makes his own connections between disability and virtual technology. But his is not a good-news story. On the contrary, Virilio argues that the pervasive spread of virtual technology means

that disability has become the desired model for life. In the non-space of virtual technology – which is replacing real world geographies, and which is becoming a general condition, he claims – immobility replaces mobility, and interaction replaces action. Movement is reduced to the gestural residue of pointing and clicking. 'Prostheticized to the eyeballs' as Virilio puts it, humans willingly surrender mobility for the attenuated possibilities of re-rendering a simulated environment. If we believe Virilio, we are all being dis-abled, enmeshed in the ungrounded immediacy of an enveloping 'real time'. Disability, in this sense, is Virilio's 'general accident' of technology. Clearly, this account does have some resonances with one popular techno-aesthetic. *Wired* magazine, for instance, can be seen to embrace precisely the kind of consensual prostheticization that Virilio fears. In one of its regular *Fetish* columns, the magazine earlier this year featured the UR Gear headset, 'invented for the physically challenged as an alternative to the mouse', offering games players a piece of equipment 'providing no-hands control over PC games' (May 1998).

Technophilia/techno-phobia, then, offers us two stark choices, two ways of reading the story of implants: empowerment or further enmeshment. So why aren't we out there, celebrating our imminent thought extensions, or mourning the end of our independence? Presumably because we (most of us) don't think things will pan out in quite this way. We understand technology in less absolute, less black-and-white terms. And in addition perhaps, we understand it to be less powerful, less determining in its effects, and more sensitive to the political, social and economic context, than the arguments of technophobes and technophiliacs would seem to suggest.

This, of course, is a simple argument. It is obvious, for instance, that in the context of disability, the implants will increase, not decrease, mobility. Indeed, they may eventually be used to help disabled people control artificial limbs. It is equally obvious that in the context of the general spread of information technology, the notion of technological prosthesis might be seen differently, and might indeed be understood as an attenuation of our ability to experience an ecological relation with the 'real' world, with 'real' nature (whatever that is). This sensitivity to contexts is precisely what Virilio's abstract, absolutist account of technology and prosthesis can't take on board, despite its power, and despite the acuity of his vision.

Reading the future

I have suggested that extreme technophile/technophobe analyses of technology are not adequate to account for one particular technological innovation, that they don't help us think about the possible impacts of developments like brain implants. But, in another twist of the tale, it also makes sense to ask how such stories about technological breakthroughs come to be written into these kinds of analyses, how

they come to be deployed in specific ways; in particular, as real-world 'proof' of certain assertions.

First, then, let us note that news about technological innovation is as much about what has come before as about the achievement of the new. The net result is that the stories we read about information technology are in part stories we already know. They will tend to make certain claims in relation to certain pre-defined 'breakthroughs'. The result is a kind of inflation, which comes about through the peculiar fusion of futurology, science fiction and grounded prediction in which the digital industry is currently enmeshed.

The news about brain-implant research touches a collective nerve. But if this is so, it is partly because it draws extensively from a shared cultural resource, a shared cultural memory. The implant story connects with old stories about technology and the human (for example, Mary Shelley's *Frankenstein*), but also with that contemporary tangle of hopes and fears centred on the increasing fusion of technological and human circuitry, which includes the prophesied, the imagined, and the fictional, along with the predicted and the real. The story is partly shaped by these elements and gains much of its force from them. Simply stated, we understand the significance of advances in 'teleporting' in relation to the paraphernalia of *Star Trek*.

Stories about 'real innovations', then, are also cultural constructions; webs of the futorological, the hoped-for and the actual. Integral to new machines are their imagined biographies. What happens, though, when these imagined biographies are deployed as 'evidence' in accounts of 'information revolution'? Particularly when these are accounts which gain their currency, their force, from their presumed (declared) connection with real events, from the assumption they encourage in their readers that the technological advances they refer to are *real*, existing in the here and now.

In Sadie Plant's writings on cyber-feminism, for example, the contention is that digital networks have become self-organizing systems, slipping thereby ouf of the control of the specular economy of the male, and in the process producing a new space for the female to speak and act. (Again technology gives voice, this time by routing around phallogocentrism.) As evidence of this shift, we are variously presented with nanotechnology, the Internet, and AL (artificial life), delivered to us as 'real life' examples of this phenomenon. The problem is that many of the kinds of technologies to which Plant refers, and upon which she pins her hopes, do not yet exist, or not in the way she implies.

In this way, the rhetoric surrounding information, the story of information, reads into itself, producing a self-fulfilling circuit which relies on the invocation of 'real' advances for the force of its analysis of a certain technological condition, but without grappling with the questions raised by particular innovations, within actually existing circumstances.

To think about the social, political and cultural contexts of technological innovation requires a reaching beyond this sealed loop – something that is surely *required* if the full implications of those brain implants are to be grasped. Looking beyond the abstract possibilities of implanting humans with electrodes, for instance, allows us to take a closer, but also broader, look at who benefits from this particular research, and how. It is, remember, not only the supposedly disinterested medical 'boffins' (as the *Mirror* had them), but also a BT Lab chief, who believes that there are 'wonderful benefits' to be had by bringing chips inside human beings. It is this fact that should give one pause for thought. Certainly it is good to be able to talk, but I am less than entranced by the prospect of a (multinational-managed) 'friends and family' circuit inside my head.