

Tibor Gyula Balogh

From: "Globalresearch.ca" <crgeditor@yahoo.com>
To: <tibor_g_balogh@att.net>
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Intrusive Brain Reading Surveillance Technology: Hacking the Mind

By Carole Smith

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"We need a program of psychosurgery for political control of our society. The purpose is physical control of the mind. Everyone who deviates from the given norm can be surgically mutilated.

The individual may think that the most important reality is his own existence, but this is only his personal point of view. This lacks historical perspective. Man does not have the right to develop his own mind. This kind of liberal orientation has great appeal. We must electronically control the brain. Someday armies and generals will be controlled by electric stimulation of the brain.

Dr José Delgado. Director of Neuropsychiatry, Yale University Medical School Congressional Record, No. 26, Vol. 118 February 24, 1974.

The *Guardian* newspaper, that defender of truth in the [United Kingdom](#), published an article by the Science Correspondent, Ian Sample, on 9 February 2007 entitled:

'The Brain Scan that can read people's intentions', with the sub-heading: 'Call for ethical debate over possible use of new technology in interrogation'.

"Using the scanner, we could look around the brain for this information and read out something that from the outside there's no way you could possibly tell is in there. It's like shining a torch around, looking for writing on a wall", the scientists were reported as saying.

At the same time, [London's](#) Science Museum was holding an exhibition entitled 'Neurobotics: The Future of Thinking'. This venue had been chosen for the launch in October 2006 of the news that human thoughts could be read using a scanner. Dr Geraint Rees' smiling face could be seen in a photograph at the Neurobotics website, under the heading "The Mind Reader". Dr Rees is one of the scientists who have apparently cracked the problem which has preoccupied philosophers and scientists since before Plato: they had made entry into the conscious mind. Such a reversal of human historical evolution, announced in such a pedestrian fashion, makes one wonder what factors have been in play, and what omissions made, in getting together this show, at once banal and extraordinary. The announcement arrives as if out of a vacuum. The neuroscientist - modern-style hunter-gatherer of information and darling of the "Need to Know" policies of modern government - does little to explain how he achieved this goal of entering the conscious mind, nor does he put his work into any historical context. Instead, we are asked in the Science Museum's programme notes:

How would you feel if someone could read your innermost thoughts? Geraint Rees of UCL says he can. By using brain-imaging technology he's beginning to decode thought and explore the difference between the conscious and unconscious mind. But how far will it go? And shouldn't your thoughts remain your personal business?

If Dr Rees has decoded the mind sufficiently for such an announcement to be made in an exhibition devoted to it, presumably somewhere is the mind which has been, and is continuing to be, decoded. He is not merely continuing his experiments using functional magnetic resonance scanning (fMRI) in the way neuroscientists have been observing their subjects under scanning devices for years, asking them to explain what they feel or think while the scientists watch to see which area lights up, and what the cerebral flow in the brain indicates for various brain areas. Dr Rees is decoding the mind in terms of conscious and unconscious processes. For that, one must have accessed consciousness itself. Whose consciousness? Where is the owner of that consciousness – and unconsciousness? How did he/she feel? Why not ask them to tell us how it feels, instead of asking us.

The Neurobotics Exhibition was clearly set up to make these exciting new discoveries an occasion for family fun, and there were lots of games for visitors to play. One gets the distinct impression that we are being softened up for the introduction of radical new technology which will, perhaps, make the mind a communal pool rather than an individual possession. Information technology seeks to connect us all to each other in as many ways as possible, but also, presumably, to those vast data banks which allow government control not only to access all information about our lives, but now also to our thoughts, even to our unconscious processing. Does anyone care?

One of the most popular exhibits was the 'Mindball' game, which required two players to go literally head-to-head in a battle for brainpower, and used 'brainpower' alone. Strapped up with headbands which pick up brain waves, the game uses neurofeedback, but the person who is calm and relaxed wins the game. One received the impression that this calmness was the spirit that the organisers wished to reinforce, to deflect any undue public panic that might arise from the news that private thoughts could now be read with a scanner. The ingress into the mind as a private place was primarily an event to be enjoyed with the family on an afternoon out:

Imagine being able to control a computer with only the power of your mind. Or read people's thoughts and know if they're lying. And what if a magnetic shock to the brain could make you more creative but should we be able to engineer our minds?

Think your thoughts are private? Ever told a lie and been caught red-handed? Using brain-scanning technology, scientists are beginning to probe our minds and tell if we're lying. Other scientists are decoding our desires and exploring the difference between our conscious and unconscious mind. But can you really trust the technology?

Other searching questions are raised in the program notes, and more games:

Find out if you've got what it takes to be a modern-day spy in this new interactive family exhibition. After being recruited as a trainee spy, explore the skills and abilities required by real agents and use some of the latest technologies that help spies gather and analyse information. Later go on and discover what it's like to be spied upon. Uncover a secret store of prototype gadgets that give you a glimpse into the future of spy technologies and finally use everything you've learnt to escape before qualifying as a fully-fledged agent!

There were also demonstrations of grateful paraplegics and quadriplegics showing how the gods of science have so unselfishly liberated them from their prisons: this was the serious Nobel Prize side of the show. But there was no-one representing Her Majesty's government to demonstrate how these very same devices can be used quite freely, and with relative ease, in our wireless age, to conduct experiments on free-ranging civilians tracked anywhere in the world, and using an infinitely extendable form of electrode which doesn't require visible contact with the scalp at all. Electrodes, like electricity, can also take an invisible form – an electrode is a terminal of an electric source through which electrical energy or current may flow in or out. The brain itself is an electrical circuit. Every brain has its own unique resonating frequency. The brain is an infinitely more sensitive receiver and transmitter than the computer, and even in the wireless age, the comprehension of how wireless networks operate appears not to extend to the workings of the brain. The monotonous demonstration of scalps with electrodes attached to them, in order to demonstrate the contained conduction of electrical charges, is a scientific fatuity, in so far as it is intended to demonstrate comprehensively the capability of conveying charges to the brain, or for that matter, to any nerve in the body, as a form of invisible torture.

As Neurobotics claims: 'Your brain is amazing', but the power and control over brains and nervous systems achieved by targeting brain frequencies with radiowaves must have been secretly amazing government scientists for many years. The problem that now arises, at the point of readiness when so much has been achieved, is how to put the technology into action in such a way, as it will be acceptable in the public domain. This requires getting it through wider government and legal bodies, and for that, it

must be seen to spring from the unbiased scientific investigations into the workings of the brain, in the best tradition of the leading universities. It is given over to Dr Rees and his colleague, Professor Haynes, endowed with the disclosure for weightier *Guardian* readers, to carry the torch for the government. Those involved may also have noted the need to show the neuroscientist in a more responsible light, following US neuroengineer for government sponsored [Lockheed Martin](#), John Norseen's, ingenuous comment, in 2000, about his belief about the consequences of his work in fMRI:

'If this research pans out', said Norseen, 'you can begin to manipulate what someone is thinking even before they know it.' And added: "The ethics don't concern me, but they should concern someone else."

While the neuroscientists report their discovery (without even so much as the specific frequency of the light employed by this scanner/torch), issuing ethical warnings while incongruously continuing with their mind-blowing work, the government which sponsors them, remains absolutely mute. The present probing of people's intentions, minds, background thoughts, hopes and emotions is being expanded into the more complex and subtle aspects of thinking and feeling. We have, however, next to no technical information about their methods. The description of 'shining a torch around the brain' is as absurd a report as one could read of a scientific endeavour, especially one that carries such enormous implications for the future of mankind. What is this announcement, with its technical obfuscation, preparing us for?

Writing in *Wired* contributing editor Steve Silberman points out that the lie-detection capability of fMRI is 'poised to transform the security system, the judicial system, and our fundamental notions of privacy'. He quotes Cephos founder, Steven Laken, whose company plans to market the new technology for lie detection. Laken cites detainees held without charge at [Guantanamo Bay](#) as a potential example. 'If these detainees have information we haven't been able to extract that could prevent another 9/11, I think most Americans would agree that we should be doing whatever it takes to extract it'. Silberman also quotes Paul Root Wolpe, a senior fellow at the Center for Bioethics at the [University of Pennsylvania](#), who describes the accelerated advances in fMRI as 'a textbook example of how something can be pushed forward by the convergence of basic science, the government directing research through funding, and special interests who desire a particular technology'. Are we to believe that with the implied capability to scan jurors' brains, the judiciary, the accused and the defendant alike, influencing one at the expense of the other, that the legal implications alone of mind-accessing scanners on university campuses, would not rouse the Minister for Justice from his bench to say a few words about these potential mind weapons?

So what of the ethical debate called for by the busy scientists and the *Guardian's* science reporter? Can this technology- more powerful in subverting thought itself than anything in prior history – really be confined to deciding whether the ubiquitously invoked terrorist has had the serious intention of blowing up the train, or whether it was perhaps a foolish prank to make a bomb out of chapatti flour? We can assume that the government would certainly not give the go-ahead to the Science Museum Exhibition, linked to Imperial College, a major government-sponsored institution in laser-physics, if it was detrimental to surveillance programs. It is salutary to bear in mind that government intelligence research is at least ten years ahead of any public disclosure. It is implicit from history that whatever affords the undetectable entry by the gatekeepers of society into the brain and mind, will not only be sanctioned, but funded and employed by the State, more specifically by trained operatives in the security forces, given powers over defenceless citizens, and unaccountable to them.

The actual technology which is now said to be honing the technique 'to distinguish between passing thoughts and genuine intentions' is described by Professor John-Dylan Haynes in the *Guardian* in the most disarmingly untechnical language which must surely not have been intended to enlighten.

The *Guardian* piece ran as follows:

A team of world-leading neuroscientists has developed a powerful technique that allows them to look deep inside a person's brain and read their intentions before they act.

The research breaks controversial new ground in scientists' ability to probe people's minds and eavesdrop on their thoughts, and raises serious ethical issues over how brain-reading technology may be used in the future.

'Using the scanner, we could look around the brain for this information and read out something that from the outside there's no way you could possibly tell is in there. It's like shining a torch around, looking for writing on a wall,' said John-Dylan Haynes at the Max Planck Institute for Human Cognitive and Brain Sciences in [Germany](#), who led the study

with colleagues at University College [London](#) and [Oxford University](#).

We know therefore that they are using light, but fMRI has been used for many years to attempt the unravelling of neuronal activity, and while there have been many efforts to record conscious and unconscious processes, with particular emphasis on the visual cortex, there has been no progress into consciousness itself. We can be sure that we are not being told the real story.

Just as rats and chimpanzees have been used to demonstrate findings from remote experiments on humans, electrode implants used on cockroaches to remotely control them, lasers used to steer fruit-flies, and worms engineered so that their nerves and muscles can be controlled with pinpricks of light, the information and techniques that have been ruthlessly forged using opportunistic onslaughts on defenceless humans as guinea pigs - used for myriad purposes from creating 3D haptic gloves in [computer games](#) to creating artificial intelligence to send visual processing into outer space - require appropriate replication for peer group approval and to meet ethical demands for scientific and public probity.

The use of light to peer into the brain is almost certainly that of terahertz, which occurs in the wavelengths which lie between 30mm and 1mm of the electromagnetic spectrum. Terahertz has the ability to penetrate deep into organic materials, without (it is said) the damage associated with ionising radiation such as x-rays. It can distinguish between materials with varying water content - for example fat versus lean meat. These properties lend themselves to applications in process and quality control as well as biomedical imaging. Terahertz can penetrate bricks, and also human skulls. Other applications can be learnt from the major developer of terahertz in the [UK](#), Teraview, which is in [Cambridge](#), and partially owned by Toshiba.

Efforts to alert human rights' groups about the loss of the mind as a place to call your own, have met with little discernible reaction, in spite of reports about over decades of the dangers of remote manipulation using technology to access the mind, Dr Nick Begich's book, *Controlling the human mind*, being an important recent contribution. A different approach did in fact, elicit a response. When informed of the use of terahertz at [Heathrow](#) and Luton airports in the [UK](#) to scan passengers, the news that passengers would be revealed naked by a machine which looked directly through their clothes produced a small, but highly indignant, article in the spring 2007 edition of the leading human rights organisation, Liberty. If the reading of the mind met with no protest, seeing through one's clothes certainly did. It seems humans' assumption of the mind as a private place has been so secured by evolution that it will take a sustained battle to convince the public that, through events of which we are not yet fully informed, such former innocence has been lost.

Trained light, targeted atomic spectroscopy, the use of powerful magnets to absorb moisture from human tissues, the transfer of radiative energy - these have replaced the microwave harassment which was used to transmit auditory messages directly into the hearing. With the discovery of light to disentangle thousands of neurons and encode signals from the complex circuitry of the brain, present programs will not even present the symptoms which simulated schizoid states. Medically, even if terahertz does not ionise, we do not yet know how the sustained application of intense light will affect the delicate workings of the brain and how cells might be damaged, dehydrated, stretched, obliterated.

This year, 2007, has also brought the news that terahertz lasers small enough to incorporate into portable devices had been developed.

Sandia National Laboratories in the US in collaboration with MIT have produced a transmitter-receiver (transceiver) that enables a number of applications. In addition to scanning for explosives, we may also assume their integration into hand-held communication systems. 'These semiconductor devices have output powers which previously could only be obtained by molecular gas lasers occupying cubic meters and weighing more than 100kg, or free electron lasers weighing tons and occupying buildings.' As far back as 1996 the US Air Force Scientific Advisory Board predicted that the development of electromagnetic energy sources would 'open the door for the development of some novel capabilities that can be used in armed conflict, in terrorist/hostage situations, and in training' and 'new weapons that offer the opportunity of control of an adversary can be developed around this concept'.

The surveillance technology of today is the surveillance of the human mind and, through access to the brain and nervous system, the control of behaviour and the body's functions. The messaging of auditory hallucinations has given way to silent techniques of influencing and implanting thoughts. The development of the terahertz technologies has illuminated the workings of the brain, facilitated the capture of emitted photons which are derived from the visual cortex which processes picture formation in the brain, and enabled the microelectronic receiver which has, in turn, been developed by growing

unique semi-conductor crystals. In this way, the technology is now in place for the detection and reading of spectral 'signatures' of gases. All humans emit gases. Humans, like explosives, emit their own spectral signature in the form of a gas. With the reading of the brain's electrical frequency, and of the spectral gas signature, the systems have been established for the control of populations – and with the necessary technology integrated into a cell-phone.

'We are very optimistic about working in the terahertz electromagnetic spectrum,' says the principal investigator of the Terahertz Microelectronics Transceiver at [Sandia](#): 'This is an unexplored area, and a lot of science can come out of it. We are just beginning to scratch the surface of what THz can do to improve national security'.

Carole Smith was born and educated in [Australia](#), where she gained a Bachelor of Arts degree at [Sydney University](#). She trained as a psychoanalyst in [London](#) where she has had a private practice. In recent years she has been a researcher into the invasive methods of accessing minds using technological means, and has published papers on the subject.

*She has written the first draft of a book entitled: "The Controlled Society". **The ethical implications of building machines to read people's minds**, *DISSENT*, Issue 25, <http://www.dissent.com.au/index.htm>*

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