

Keeping an "Open Mind..."

Jeffrey R. Harrow
Principal Technologist, The Harrow Group

Ah, the joys of winter. If you live in the northern U.S. it's the crisp cold days, the far crisper nights, and the beautiful mantle of snow as seen from behind your snow blower (you in warmer climes quit chuckling.) But it also means that this is the beginning of a new year with many a pundit caroling of things to come.

Me? Punditing is a chancy thing at best as the constantly accelerating exponential growth of most things technological continues unabated. It seems to even be hard for the best of science fiction writers to lead us in challenging new directions that seem beyond the pale of our technologies. Yet their difficulty is quite understandable considering that so many of the "impossible" things that formed the basis of "future" stories keep falling to the realities of science like tenpins at a bowling alley.

For example, consider that it's already the case that in certain ways, your very thoughts are no longer your own!

Red Vs. Blue.

Prior to the last presidential election, Drs. Freedman and Iacoboni at UCLA showed pictures of both George W. Bush and John Kerry to two groups of people - one group of staunch Democrats and the other group of similarly staunch Republicans. Using an adaptation of the typical MRI you may have experienced in a hospital, called "Functional MRI" (fMRI) which can watch real-time processes such as blood flow, the good doctors tracked the blood flow in the test subjects' brains as they watched the pictures.

Each subject was shown pictures of both candidates. Simply by observing how much blood was flowing through the brain regions associated with empathy, or through its antithesis regions while the pictures were viewed, the researchers could glean the subjects' political leanings -- at the level of their thoughts! Without the opportunity for "editing" that a subject might perform when answering verbal or written questions on the subject.

It's not exactly "mind reading," but when refined and used for broader purposes, it could be a pollster's and a marketer's dream -- a new term for us called "Neuromarketing." The researchers expect that *"fMRI -- will be a campaign staple [in the next presidential election]."*

Truth Or Consequences.

Of course MRI technology, and its resolution, continues to improve, which constantly opens new doors of opportunity.

In the previous example, it may be tempting to think of that use of fMRI as a lie detector (at least in the broad stroke of someone who might choose to alter their true thoughts in a verbal or written response), although that wasn't the intent of the work.

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Now though, today's further improved fMRI machines have led other researchers to specifically explore if fMRI can act as a general lie detector that is as, or more effective than today's polygraph.

As described at the recent meeting of the Radiological Society of North America, Dr. Scott Faro of Temple University has demonstrated that the "deception" process in the brain can be identified -- again without the opportunity for conscious "editing" by the subject!

In this [test](#) six volunteers fired a toy gun containing "blanks." They were then asked to lie about this as the researchers watched their brain activity with the new "higher resolution" fMRI machine. Another five volunteers who did *not* shoot a gun were told to tell the truth. The most active regions of the brain were different in the group telling a lie, compared to those in the group telling the truth, which allowed Dr. Faro to identify which subjects were telling a lie! A polygraph was also used as a "control" experiment, and its results matched that of the fMRI "lie detector."

Again, this is still early in this game. It's not yet clear if this fMRI technique might be better at detecting lies than a polygraph, or if people who have been trained to "beat" a polygraph might also be able to learn to fool an fMRI system. But we do know that fMRI technology, as with so many other technologies, will continue to benefit from the increasing rate of technological growth.

On the other hand, even if still in its infancy, these new forms of "truth machines" may be on the market far sooner than you might imagine. According to an excellent article on this subject in Wired Magazine, ["Don't Even Think About Lying,"](#) the first commercial implementations are due this year! One company, NoLieMRI, plans to inaugurate its first "VeraCenter" in Philadelphia, later expanding its network of fMRI-based "truth or consequences" centers to other cities. Similarly, Cephos's approach to this technique should be on the market before the end of this year.

Pretty good. But additional fMRI capabilities will be sure to develop. As resolution and speed continue to improve it's likely that scientists will be able to deduce ever-finer details of how the brain works, and how that brain is reacting to its wearer's senses, thoughts, and desires.

However, you don't have to worry today. Although, under these special research conditions, it appears that your thoughts *might* "give you away," at least you'd know that this was happening since it's hard to disguise an MRI machine, or the very loud banging noises it makes while operating. No one could surreptitiously "scan" you to see if you were telling a little white, or a big fat lie... Right?

Well -- Don't Be Too Sure.

Because the Department of Defense, according to a [New Scientist article](#) mentioned in the Jan. 6, 2006 Future Brief, describes plans to develop a Remote Personnel Assessment tool that may use lasers, microwaves, or other remote sensing techniques to determine the same physical characteristics as a polygraph (such as skin conductance and respiration and pulse rates), but remotely -- hence unknown by the subject.

One military use might be to help detect if a possible human target is or is not a combatant, based on certain elevated body responses of a combatant compared to a "civilian" (although I have to think that a non-combatant caught in a combat situation might score farther outside the norm than a trained soldier.) It might also be used as a *"remote or concealed lie detector during prisoner interrogation."* Which makes me think that every law enforcement organization, every business, every courtroom, every school, and perhaps homes might be just as eager to sift everyone's "truth



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wheat" from the chaff. And wouldn't it be interesting to point such a device at participants in the recent Samuel Alito hearings. Or at any political speaker. Or at any CEO describing her company's performance. Or at...

A scary scenario indeed that, if it becomes possible, would have far-reaching implications for the social and business and political fabric of every society.

As with so many technologies, an effective "remote lie detector" could be beneficial in certain appropriate and controlled circumstances. But it would surely also be open to abuse. That would keep the courts and the legislatures busy for many years.

But -- rest easy. All of these efforts are still in their infancy. Your thoughts are safe. You are still king of your mental castle.

Today...

Don't Blink!