

Prepare to be Scanned:

When Mind-Reading Machines Take Over

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picture: robotarmageddon.com

Overview

- **The Technology**
 - Recent developments
 - Why mind-reading technology?
 - What is it? How does it work?
 - Where might it lead?
- **Social Considerations**
 - Amalgam of possibilities
 - A new language
 - A whole new world of safety and security

Overview (continued)

- **Ethical Inferences**
 - Privacy: the usual suspect
 - Surveillance compels loss of ego, identity
 - Surveillance in the workplace
- **Legal Perceptions**
 - Constitutional violations?
 - Thoughts as evidence
- **Conclusion**
 - Did we overlook anything?

The Technology

- **Recent Developments** [1,2]
 - Intel, Carnegie Mellon develop brain-pattern recognition software
 - Can discern between objects like bear and hammer, 90% of the time
 - Next generation of lie detector being developed by No Lie MRI, Inc. and Cephos Corp.
- **Why Mind-Reading Technology?**
 - Age of Terror (propaganda?)
 - 9/11: Loose Change
 - preparation for energy crisis / economic collapse?
 - are industries running out of fresh ideas?
 - Replacement for unreliable/unpopular methods
 - lie detectors, water-boarding, truth serums?

The Technology

- **What is it? How does it work?**
 - Functional Magnetic Resonance Imaging (fMRI) ^[3]
 - derivative of bulky wall-sized MRI technology where a patient essentially passes through a narrow shallow tunnel, being exposed to a magnetic field that interacts with hydrogen atoms. An RF scanner detects magnetized hydrogen nuclei.
 - dates back to 1970's; fMRI began in early 1990's
 - “safe” – no radiation
 - neuroimaging - captures data images of brain and spinal cord “activity”



The Technology

- **What is it? How does it work? (continued)**

- Related: Electroencephalography (EEG) ^[4]

- used to record electrical signals at the scalp, produced by neural activity in the brain
- a kind of head harness having various straps with sensors attached
- being engineered to be used as a more portable interface for fMRI applications



pictures: sciencemuseum.org.uk



The Technology

- **Where might it lead?**
 - Highly intrusive surveillance, interrogation
 - Poses serious ethical and legal questions
 - loss of ultimate privacy: no more secrets
 - Constitutional violations?
 - mind control?
 - Social implications are astounding
 - devices controlled by mere thought
 - human productivity the highest it's ever been
 - unimaginable conveniences
 - adverse intentions/lying hard to conceal
 - a new form of communication

Social Considerations

- **Amalgam of Possibilities**
 - Checking email, changing channels on TV, realizing it's time to pay the electric bill, driving your car
 - Instantly happen just by thing about them
- **A New Language**
 - Natural language is cumbersome, ambiguous
 - A language of sensory data more direct, efficient
 - Images and sounds pop up on a computer
 - New technologies supporting taste, smell arise

Social Considerations

- **A New Language (continued)**
 - Communication for the blind/deaf
 - new level of dignity for those suffering mentally/physically
 - woman in apparent vegetative state with severe brain damage discovered to be fully conscious and could finally communicate her thoughts ^[5]
 - Can lead to mind-writing technology
 - tiny implants relay data to brain from external sources
 - Eventual mind-to-mind communication?
 - Problems resulting from poor communication disappear or decrease in frequency

Social Considerations

- **A Whole New World**
 - New age of safety and security
 - criminals trapped by surveillance dragnet
 - police investigations, courtroom proceedings, probationary review boards, air passenger safety
 - Dr. Andrew Kozel, University of Texas
 - “when you tell a lie, particular areas in your brain become more active because lying is more complex than telling the truth” [6]
 - Prevention
 - parents could regularly scan their children

Social Considerations

- **A Whole New World (continued)**
 - Education
 - striking implications
 - everyone sits in front of a computer and downloads knowledge directly into their brains
 - those with great thirst for knowledge could propel the rest of us forward (into Kurzweil's Singularity?)

Ethical Inferences

- **Privacy: the Usual Suspect**
 - Reading the mind is as intrusive as it gets
 - What if you were scanned...
 - at a stoplight?
 - while passing through the front door of a retail establishment?
 - while being questioned by police?
 - How to protect sensitive information?
 - bank account, social security number, our very identities
- **No One's Thoughts Will Be Their Own**
 - Surveillance compels loss of ego, identity
 - May stifle one's ability to think freely, critically
 - A form of control by those with power

Ethical Inferences

- **What About Work?**

- Technology would likely be incorporated into business processes
- Employers could mimic their employees' thoughts with thought-generating software and then do away with their employees
- More creative professions won't be affected
 - Not! Anything doable has an associated algorithm
 - complex algorithms difficult to realize—for humans
- Kurzweil's Singularity
 - people vastly outnumber jobs available
 - new paradigm needed for survival
 - technology creep in the form of mind-control prevents revolution

Legal Perceptions

- **Violation of 1st Amendment?** [7]
 - “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.”
 - System would likely extend freedom of expression to “thought”; common sense
 - So as not to trigger any red flags while we’re being scanned, we have to be careful not to think about anything illegal
 - Influencing people to think this way seems restrictive, coercive

Legal Perceptions

- **Violation of 1st Amendment? (continued)**
 - “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.”
 - Does “influence” = “coerce?”
 - Someone can give me gun, but only I can decide to fire it
 - A brain security scan isn’t intended to influence
 - Any restricting effect is perceived, incidental, only temporary

Legal Perceptions

- **Violation of 4th Amendment? [8]**
 - “The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.”
 - Scanning a person’s brain seems “unreasonable”
 - Individuals can be searched at any time! –circumstances must be reasonable, not necessarily the act of searching
 - airports, courthouses, schools
 - places where many people may be affected by an act of violence
 - For unreasonable circumstances, warrant must be obtained

Legal Perceptions

- **Violation of 14th Amendment?** [9]
 - “...nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws...”
 - What about “fair” and “equal” treatment?
 - out of context
 - they refer to how justice is dispensed
 - “fair” = due process
 - “equal” = disregard for socioeconomic status

Legal Perceptions

- **Violation of 5th Amendment?** [10]
 - “No person shall... be compelled in any criminal case to be a witness against himself...”
 - Scanning a person’s brain seems like a form of self-incrimination
 - Counterintuitive because only applies to someone who’s been arrested, and yet still can’t truly be forced to self-incriminate before being arrested
 - Extraneous either way; scanning is meant to be a reasonable search—not intended to get someone to admit to wrongdoing
 - Out of context

Legal Perceptions

- **Violation of Any Kind?**
 - No, but the inexplicable nature of thoughts being used as evidence is found more and more to be legally inadmissible as the technology makes its way into courtrooms—just like polygraph results
 - As recent as a few weeks ago, a Judge in Brooklyn ruled fMRI lie-detection evidence as inadmissible under the technicality that the jury alone is supposed to determine the credibility of a witness (without the help of technology) ^[11]

Legal Perceptions

- **Violation of Any Kind? (continued)**
 - Steven Rose, neurobiology “expert,” the Open University
 - “Innocent people under stress can show guilty brain patterns while well-trained guilty people can look innocent. I don't believe such tests could ever be reliably used in court.” [2]
 - Obviously thoughts are too random, erratic to be considered useful in a legal context
 - Mind wanders and even conducts “experiments” on its data (during sleep – UC, San Diego School of Medicine, June 2009)
 - Too much cognitive “noise”

Conclusion

- Mind-reading can be an impressive tool for society
- First impressions are worrisome (privacy, mind control), but legally on a par with polygraph machines
- Brains scans will likely be used to point authorities in direction of real evidence
- At the end of the day, mind-reading technology will become just as routine and boring as the rest of it
- Did we overlook anything?
- There's a strong potential for many more criminals to be caught, and prisons are already overcrowded; so the real problem becomes: where are we going to put them all?

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