

Intrusive Tools of the Future.

Simson L. Garfinkel, Ph.D.
June 2005

“In the past, personal and political liberty depended to a considerable extent upon governmental inefficiency. The spirit of tyranny was always willing; but its organization and material equipment were generally weak.

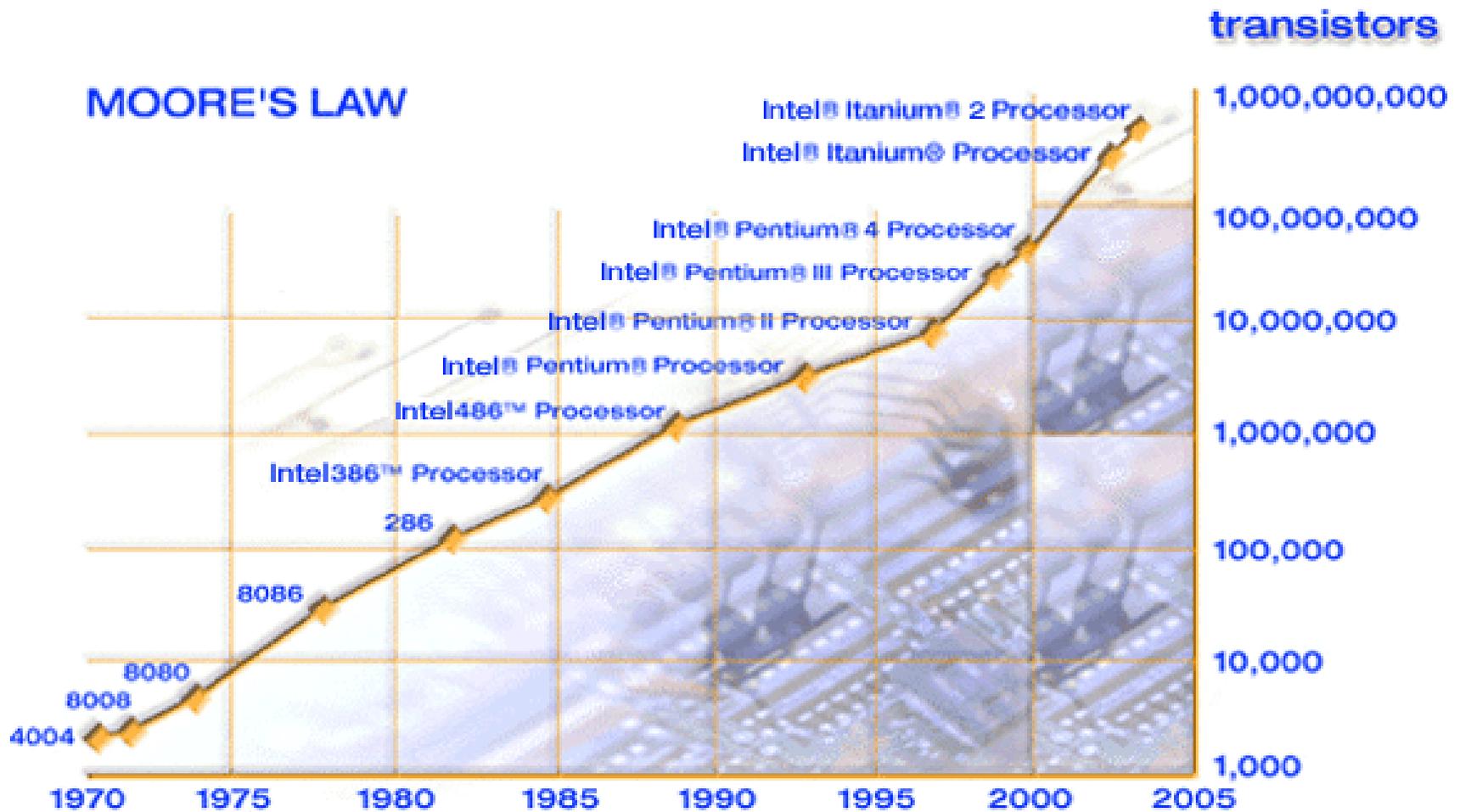
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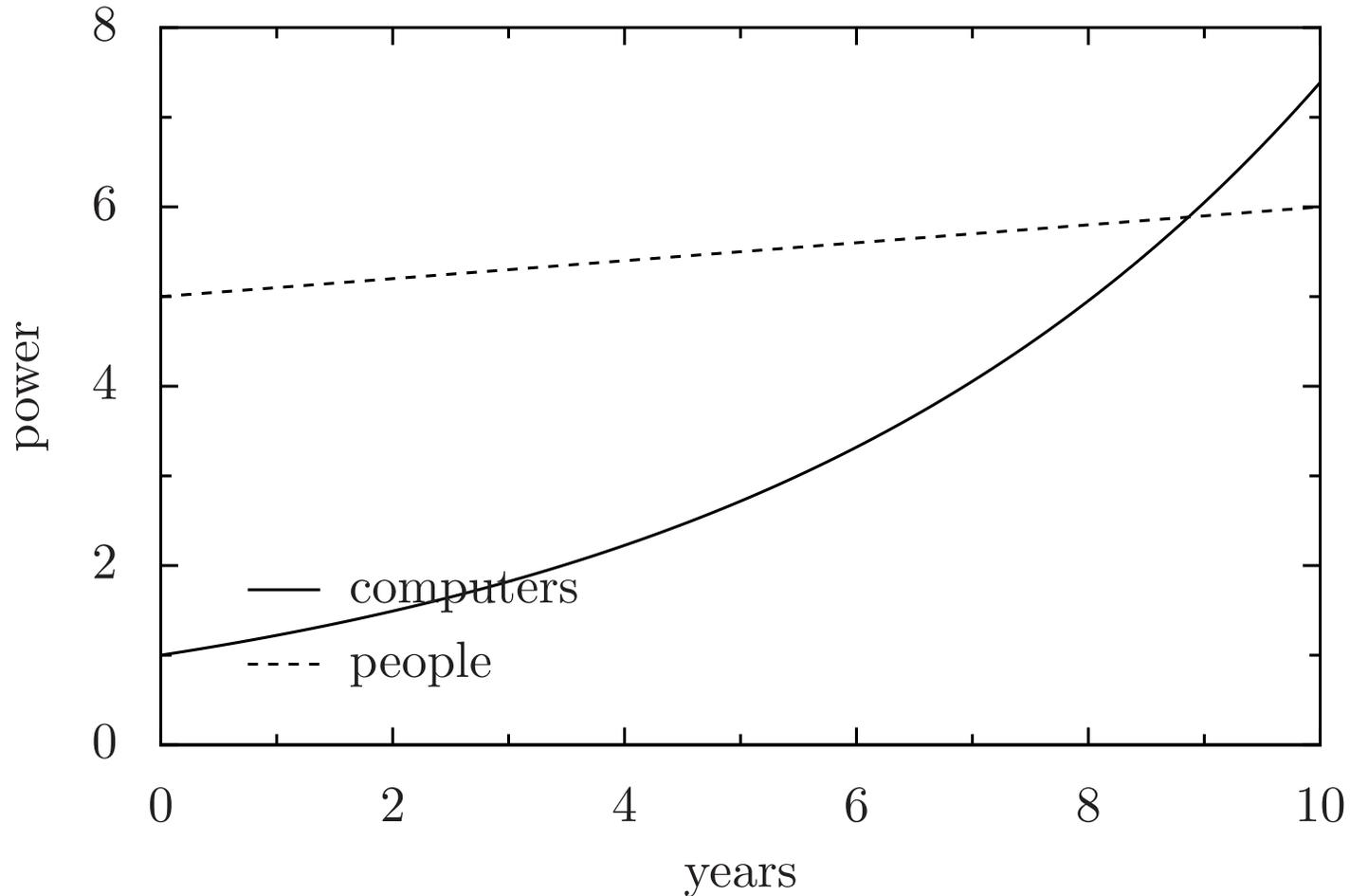
Science, Liberty and Peace, Aldous Huxley, 1948

Moore's Law is the friend of intrusive tools.



<http://www.intel.com/research/silicon/mooreslaw.htm>

**Human brains are slowly becoming more powerful,
but computers will eventually outpace us.**



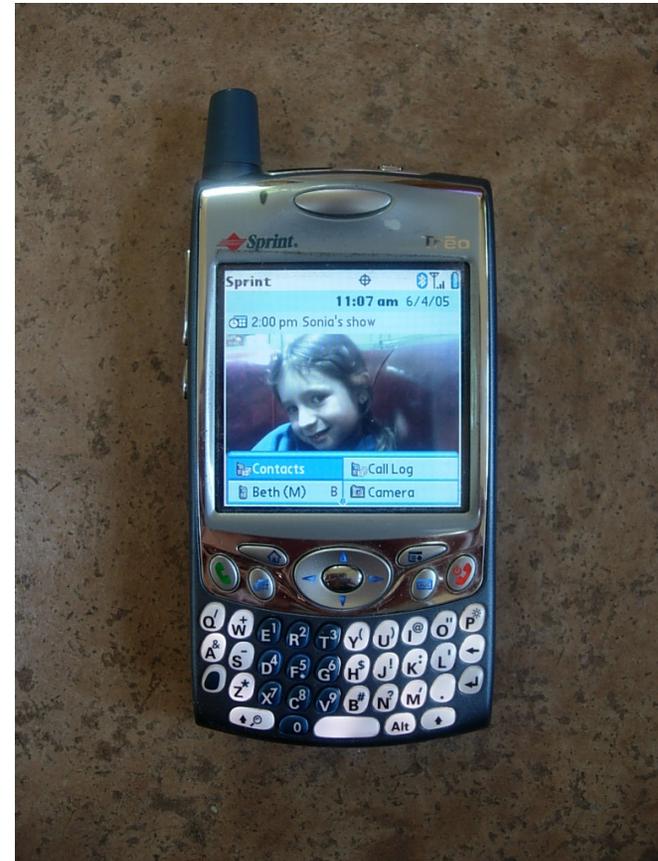
**If we limit intrusiveness by what is technically possible,
there will be no limits to intrusiveness.**

**In 1997 a CDMA cell phone required 3 chips.
In 2004, CDMA requires 30% of a single chip.**

— Irwin M. Jacobs, co-founder, Qualcomm, June 3, 2005



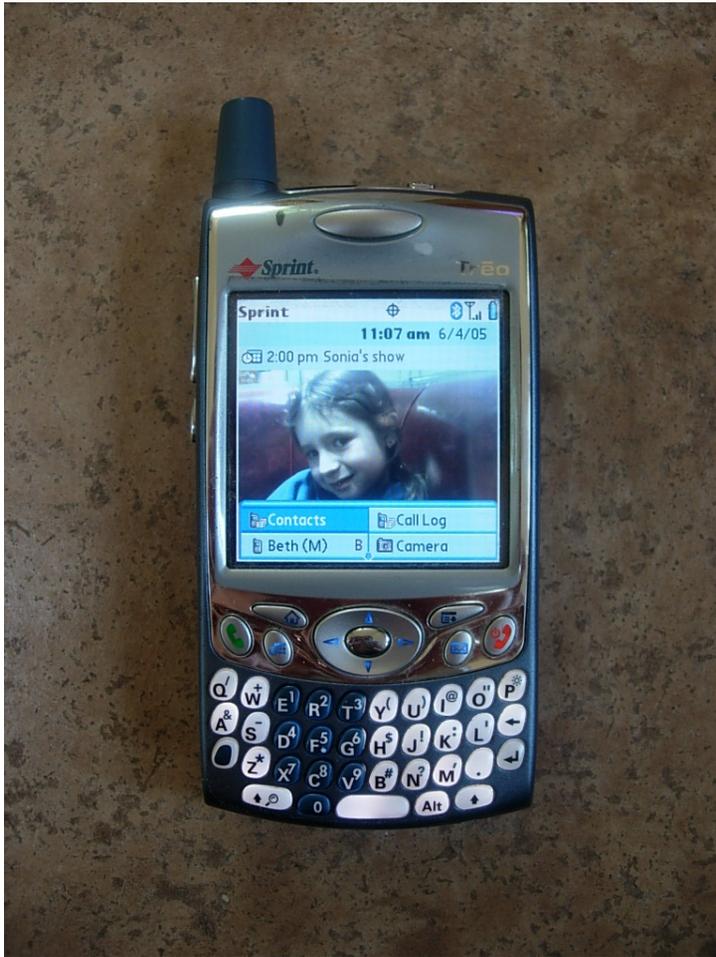
1997



2004

You can do a lot with that extra silicon.

**For example,
the phone can monitor the user for subversive activity.**



“...bomb...”

“...anthrax...”

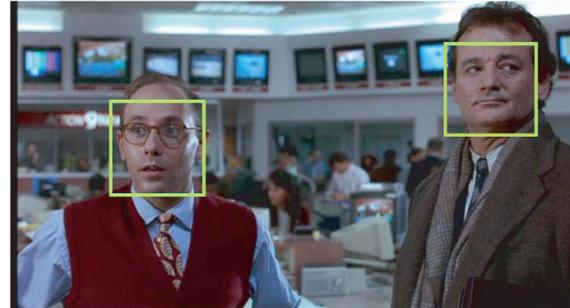
“...kill the president...”

Frequent trips to nuclear power plants. (Scouting?)

Physical meetings with individuals on watch lists.

Phones can be tracked. Microphones can be turned on and monitored locally or remotely.

Increasing computer power makes it possible to *search*, *classify*, and *archive* data that was traditionally opaque.



Automatic Face Recognition

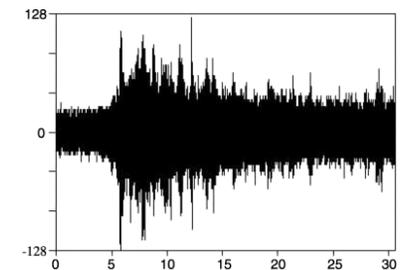
http://mi.eng.cam.ac.uk/~oa214/academic/publications/2005_CVPR_paper2.pdf



Automatic Plate Recognition

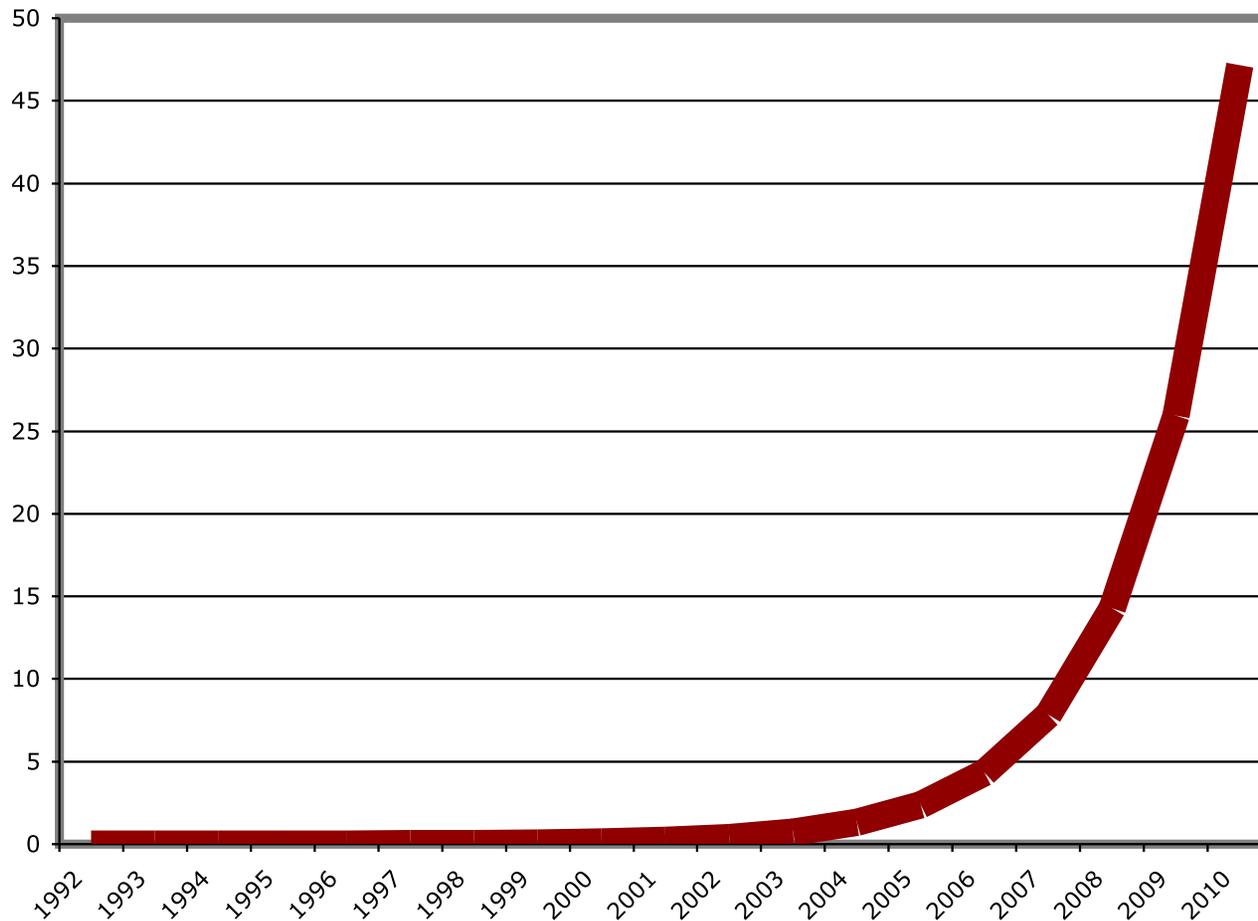
<http://www.htsol.com/Products/SeeFilm.html>

Automatic Speaker Identification



The amount of data that can be economically stored is also dramatically increasing.

TB per \$1000



Belghell Associates, 2001.

<http://www.berghell.com/whitepapers/>

As a result of these trends, policymakers will be faced with choices:

- Record large amounts of data for replay, reconstruction, and investigations?
- Data mine for terrorist “indicators?”
- Use computing technology to penetrate potential terrorists?

In the remainder of this presentation, I will explore some of these possibilities.

Today's computers can easily record everything typed or sent over the Internet.



- \$349 w/ 40GB disk.
- \$419 w/ 160GB disk.

Fastest typist: 0.1 GB/year.

Typical Internet user: 4-8 GB/month

**It is reasonable to consider PCs that archive everything.
Many users might want such a service.**

“Archive everything” is GMail’s model.

The screenshot shows the Gmail web interface in a browser window titled "Gmail - Sent Mail". The address bar contains the URL: http://gmail.google.com/gmail?auth=DQAAAGcAAABCb2S7QNWjFUO4jR_kPUE. The browser's address bar also shows "dell dimension" and an RSS icon. The page header includes the Gmail logo, a search bar, and navigation links: [Settings](#), [Help](#), and [Sign out](#). The user's email address, simsong@gmail.com, is displayed. The main content area shows the "Sent Mail" folder selected in the left sidebar. The email list contains four entries:

Select	To	Subject	Date
<input type="checkbox"/>	grautman	Simson Garfinkel has invited you to open a Google mail account - Simson Garfin...	Apr 9
<input type="checkbox"/>	Shreepal (Exchang. (5) » Shreepal (Exchange), Simson Garfinkel has invited you to open a Google mail a...		Apr 9
<input type="checkbox"/>	Shah, Shreepal (E. (2) » RE: Netscape S-1 - I got it. I just was very bad about checking my gmail accoun...		Apr 1
<input type="checkbox"/>	Shah, Shreepal (E. (3) » Netscape.pdf - Thank you so much! -Simson Garfinkel On Mar 24, 2005 10:18 A...		Apr 1

Below the email list, there are shortcuts: **o** - open **y** - archive **c** - compose **j** - older **k** - newer [more »](#). A status bar indicates: **You are currently using 14 MB (1%) of your 2261 MB.** Below this, there are links for [Gmail view: standard](#), [basic HTML](#), and [Learn more](#). At the bottom, there are links for [Terms of Use](#), [Privacy Policy](#), [Program Policies](#), and [Google Home](#). The footer shows the copyright notice: ©2005 Google.

Policy questions for archiving:

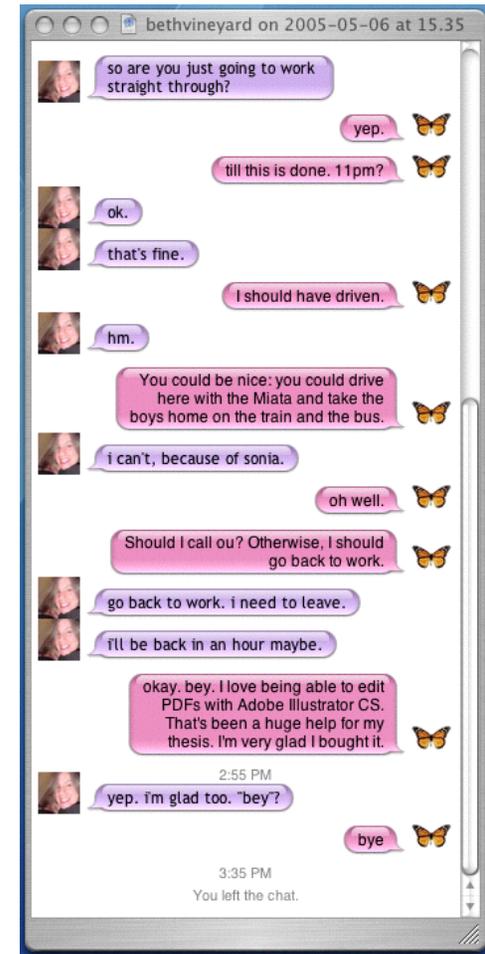
- Should users be told of the archive?
- Can they turn the archive off?
- Should the archive be kept on user machines, or at a service provider?
- Can the archive be accessed remotely, and by whom?
- Once the archive is created, can it be used for law enforcement? For marketing?



Michelle Theer

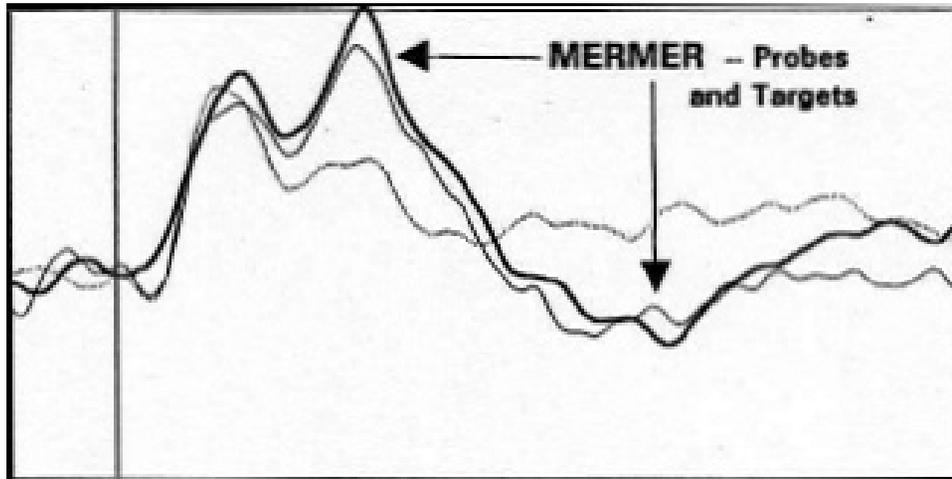
Data mining the human consciousness with bots.

- Bots can be helpful!
- Bots can ask questions!
- Bots can track when you are in!
- Bots can be your friends!



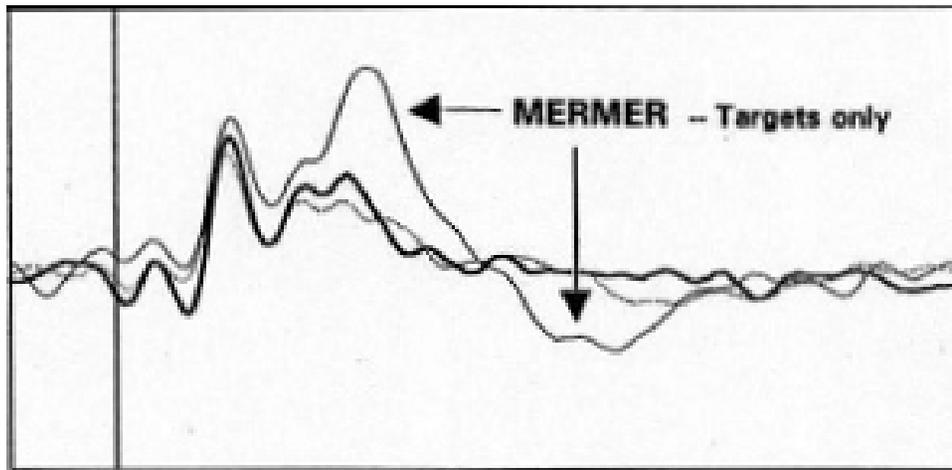
If you think that spam is bad, just wait until it has AI.

Brain Fingerprinting Laboratories has developed a system that can infer if a person has seen a scene before.



“Aid in determining who has participated in terrorist acts, directly or indirectly.”

“Aid in identifying trained terrorists... in a “sleeper” cell...”



“Identify people who have knowledge or training in banking... and who are associated with terrorist teams and acts.”

Acclair is a fictional exploration of how brain fingerprinting could be used in airport security.



“...people willingly accept a highly invasive, highly authoritative manipulation in return for tangible rewards and an upgraded social status.”

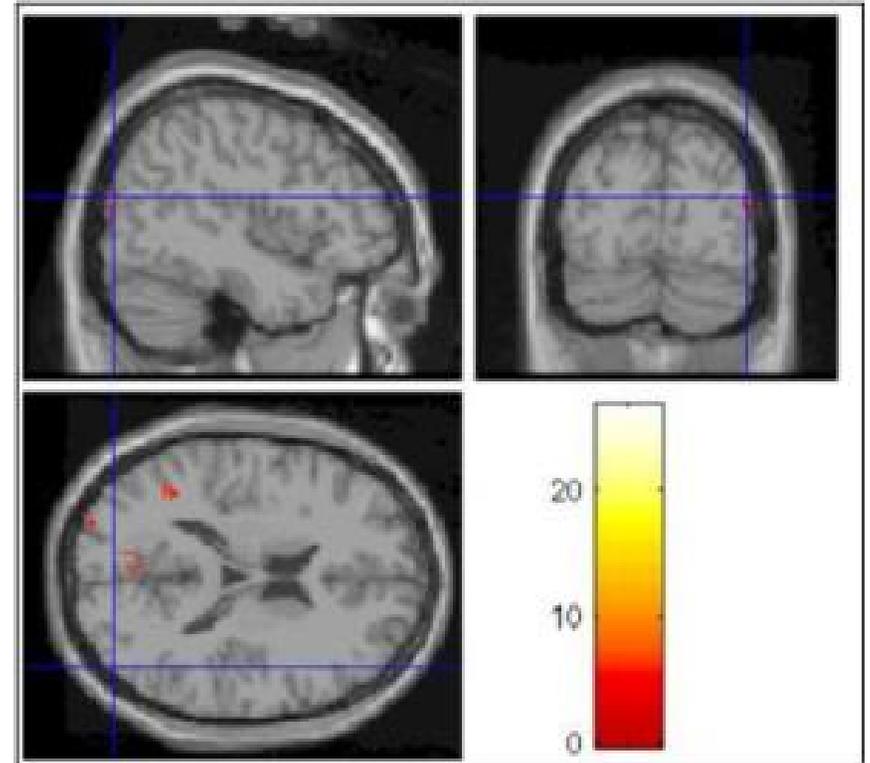
<http://www.acclair.co.uk/>

<http://www.acclair.co.uk/acclairism/>

“Brain Imaging With MRI Could Replace Lie Detector”

A study at Temple University School of Medicine found “unique areas in the brain involved in deception.”

December 2, 2004



Lie Activation Temporal Lobe
(middle temporal)

<http://www.sciencedaily.com/releases/2004/11/041130235442.htm>

Study: hormone oxytocin induces trust

- Study at University of Zurich.
- Oxytocin sprayed in nose made male students more trusting of other people, but not of computers.



<http://abcnews.go.com/Technology/wireStory?id=809992>

“But it was all right, everything was all right, the struggle was finished. He had won the victory over himself.”

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<http://abcnews.go.com/Technology/wireStory?id=809992>

“But it was all right, everything was all right, the struggle was finished. He had won the victory over himself. He loved Big Brother.” — George Orwell, 1984

In Summary

- Technical limitations have traditionally protected privacy.
- In the future, those limitations will become less important.
- If we will have limits in the future, we need to understand:

Where the limits are being set.

Why the limits are set.

Who is setting the limits.

Questions?