Digital Footprints: The Web, Social Media, and your privacy!

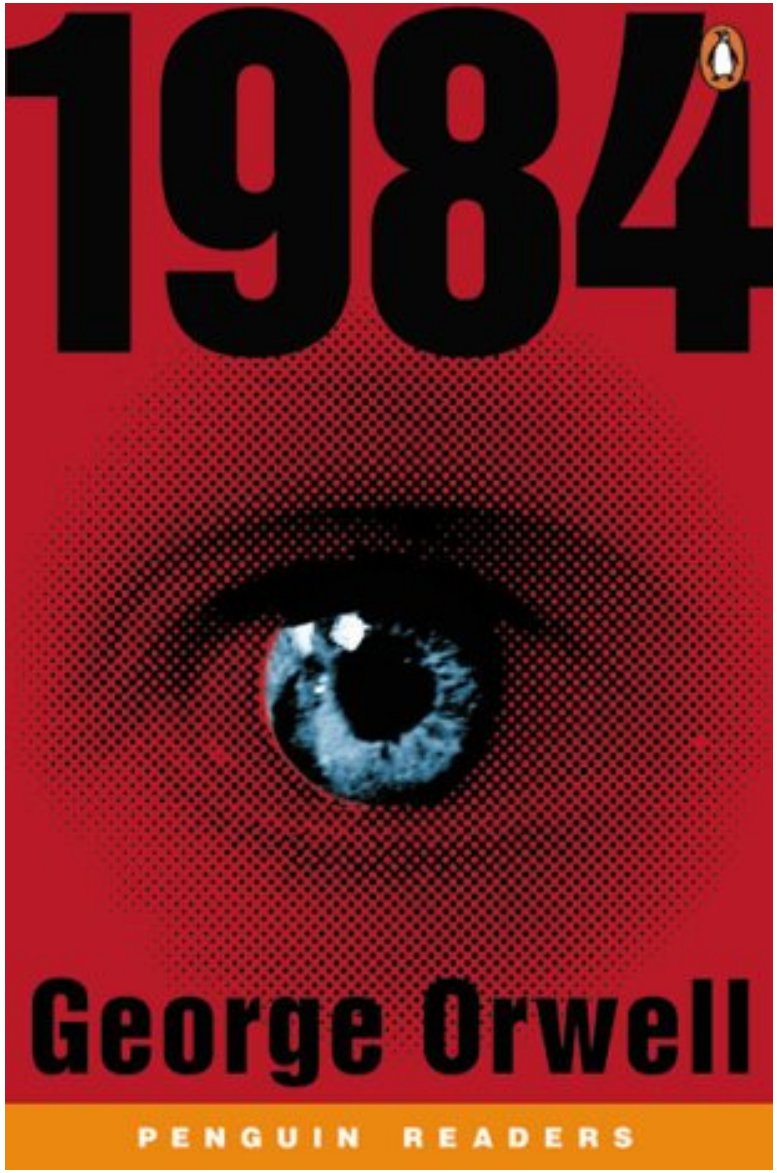
CS Concepts

- meta data
- RFID
- cookies
- IP address
- re-identification
- bio-metric data

Social Issues

- cameras everywhere
- electronic monitoring
- social networking
- making money from our data
- vigilante justice
- gps tracking
- rfid in people
- edr in cars (black box)
- connecting the dots
- taking over your phone mic or laptop camera
- surreptitious posting

Blown 2 Bits. Ch. 2. 1984 is here & we like it



What is the scariest thing in the chapter?

- vigilante justice
- cameras everywhere
- RFID tags in everything
- GPS tracking of cars and people
- event data recorders in cars
- color printer markings
- loss of anonymity
- re-identification (connecting the dots)

How many times have you posted something to a semi-public site that you wished you could retract?

- A. never
- B. one or twice
- C. a lot

What are you supposed to learn?

- What was the TIA program?
- What kind of data was TIA interested in?
- What do the TIA program and computational advertising companies have in common?
- How do computational advertising companies get paid?
- How is privacy defined in the United States?
- How are security cameras being used in law enforcement?
- How is the web being used in the democratic process?

Big Brother?

- Have you read George Orwell's 1984?
  - How does today's data gathering and constant surveillance differ from Orwell's vision?
- We can each be our own little "Big Brother" watching our kids, friends, neighbors ... (iPhone find friends app)
- Vigilante justice with cell phone cameras and web postings
- Cameras everywhere
- RFID tags in humans?

Big Brother?

- Event Data Recorders in cars - mandatory starting 2011 (pushed back to 2014)
  - Supreme court ruling on gps stuck on car without a warrant (www.gps.gov/news/2012/01/supremecourt/)
- Many color printers encode date/time/serial number on every page printed

How was George Orwell's vision of "Big Brother" surveillance different from the surveillance being done today?

A. The technology he imagined would be considered "amateurish" today.
B. Today most people "willingly accept" the surveillance in exchange for efficiency and convenience (among other things).
C. Both A and B
D. None of the above. He painted an amazingly accurate picture of our constantly surveilled society, albeit he was off by a few years.

Connecting the dots

- How does the loss of anonymity in the digital age impact free speech and dissidents/whistle-blowers and the like?
- Re-identification of supposedly de-identified medical records.

Giving up privacy

- Saves time
- Saves money
- For convenience
- Just for fun

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Ch. 2 BTB – Footprints and Fingerprints

What are you supposed to learn?

- What is a digital footprint?
- What technology advances in the last ten years have made 'Big Brother' possible
- Which **organizations** try to protect your privacy.
- Why you should read the "**Terms and Conditions**" for every app you download
  - You never know what they might say. Example: Pulse App asks you to give permission for them to track every number you call
- Why you should **consider what you put onto public sites** like Facebook.
  - Are you sure your privacy settings are as you want?

What are examples of the types of digital monitoring going on today?

Privacy: A Definition

- **Privacy**: The right of people to choose freely under what circumstances and to what extent they will reveal themselves, their attitude, and their behavior to others.
  - It's a human right – explicit in many countries
  - You do the revealing, no one else
  - You can't live like a hermit; you must reveal
  - With strong privacy protections – the US has almost none – it's OK to reveal, because the receivers of the information must keep it private

Data Aggregators: Computational Advertising is getting to be a big business

Who is making money from your data?

Who is making money from your data?

- Facebook
- Google
- Amazon
- Netflix
- ?????

What is YOUR digital footprint?

- Where are you revealing stuff you'd rather not have open to the world?
- Facebook
- Credit card information
- Cookies tracking transaction data
- Amazon purchases
- Embarrassing stuff. Facebook youtube
- Downloads tracking

What is YOUR digital footprint?

- Where are you revealing stuff you'd rather not have open to the world?
- Location information
- General search and site history
- Tracking cookies in general
- Email
- Every app you download on your phone
- Tumblr

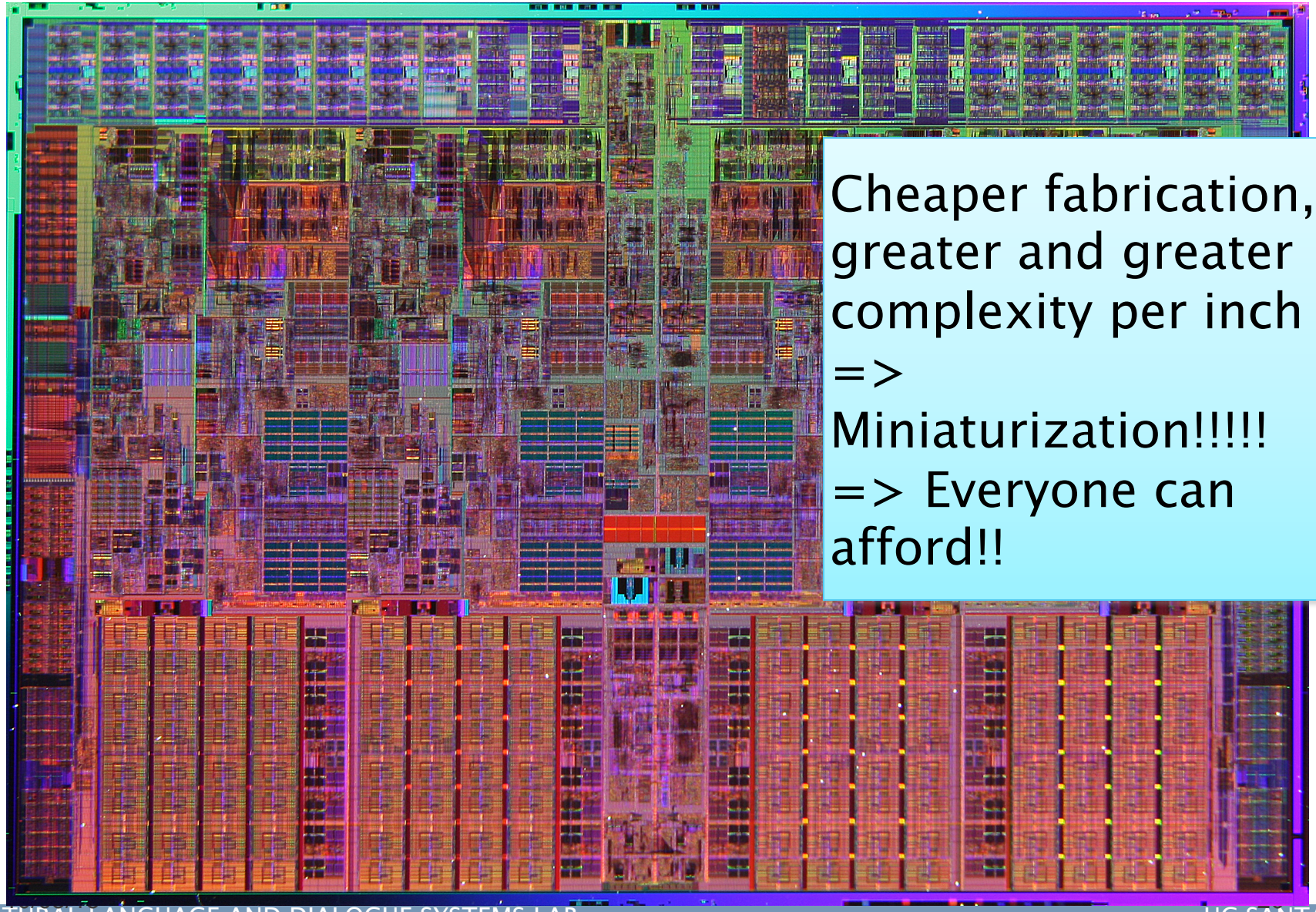
If you complete a survey that does not ask for your name, address, phone number, or other obvious forms of identification, can you safely assume that your answers are truly anonymous?

A. True
B. False

…. How did we get here?

What technological innovations have brought us where we are today?

Integrated Circuits: Millions of logical gates

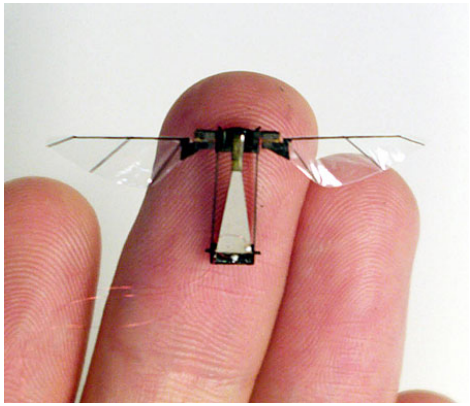


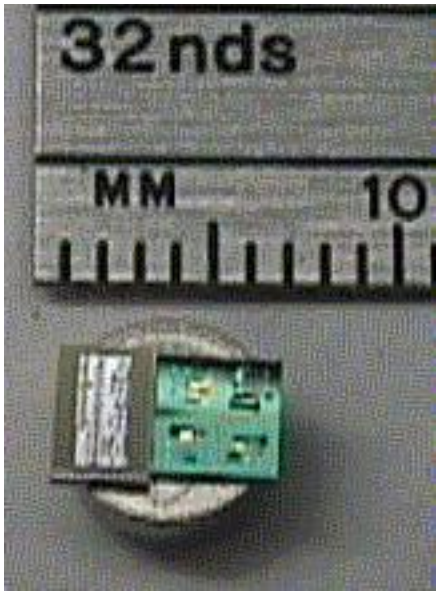
Cheaper fabrication, greater and greater complexity per inch
=>
Miniaturization!!!!!
=> Everyone can afford!!

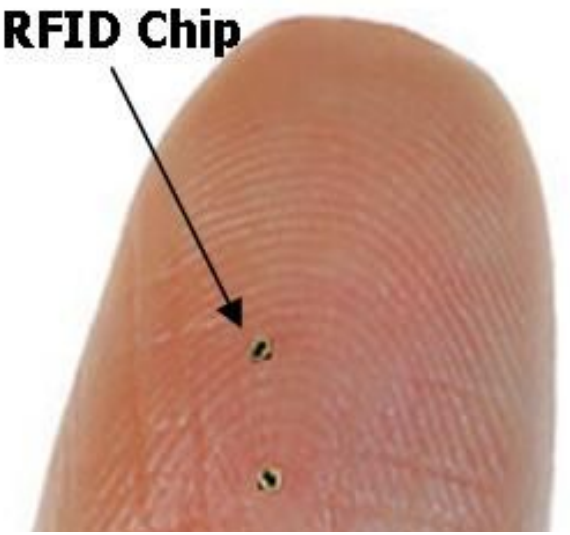
This made possible the personal computer

- Ken Olsen, Founder of DEC "There is no reason for any individual to have a computer in their home [1977]"
- Xerox Star, 1981. First PC. First mouse. Failed
- Apple Macintosh, 1984: first commercially successful personal computer to feature a mouse and a graphical user interface rather than a command-line interface.
- But only YOUR data on YOUR hard drive. Transfer with Floppys. LAN

Eventually ICs => Miniaturization: Phones, Smartdust

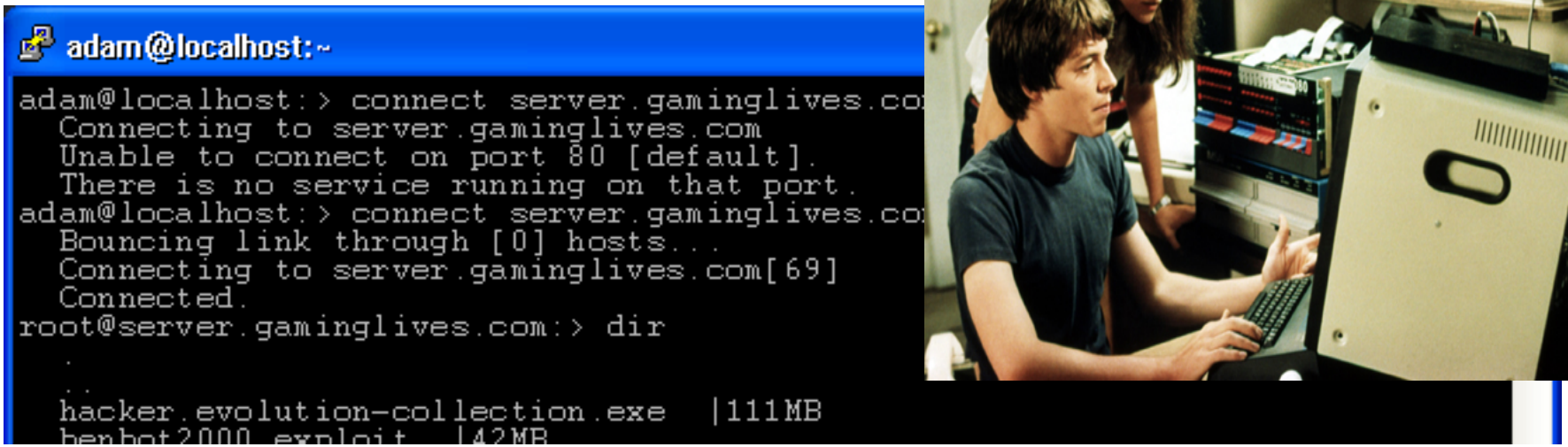






The Internet

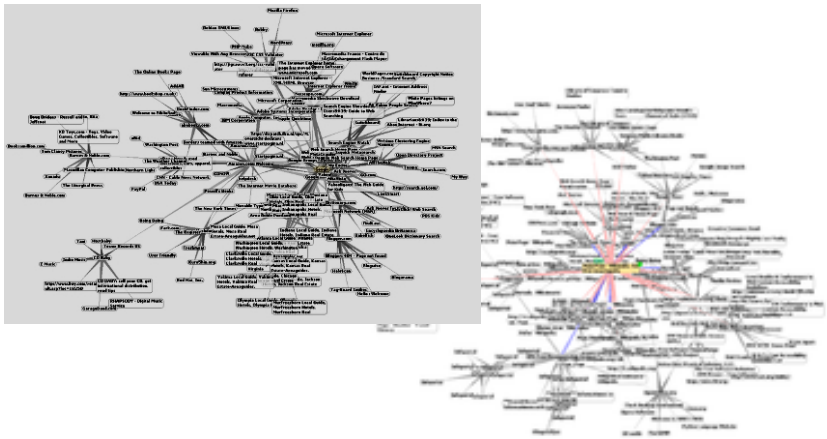
- Invented in 1969 for military purposes, it took almost 20 years to get out of the lab
- Communication by FTP (file transfer protocol).
- Ascii Terminal interface
- E.g. 1983 War Games Film



Connectivity to Change the World

WWW + http: Early 90's changed everything

- WWW: An INTERFACE!!
- All computers "speak" a common language: hyper-text transfer protocol. HTTP
- Content points to other content
  - (Google page rank, later)
  - UTF ensures content of pages in any language can be displayed



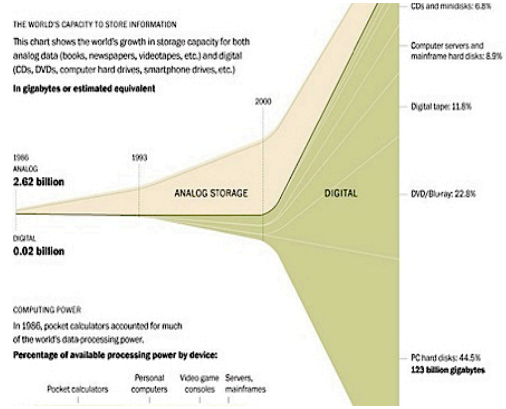
Everything that humanity knows is now online!!

- Newspapers
- Scientific Articles
- Books
- Encyclopedias (Wikipedia)
- Dictionaries and Thesauri (Wordnet, Framenet, Sentiwordnet, Freebase)
- Penn Treebank: a million words of parsed and semantically labelled news, books etc.
- Plus current and historic (10 years) opinions, reactions, emotions (opinion mining)

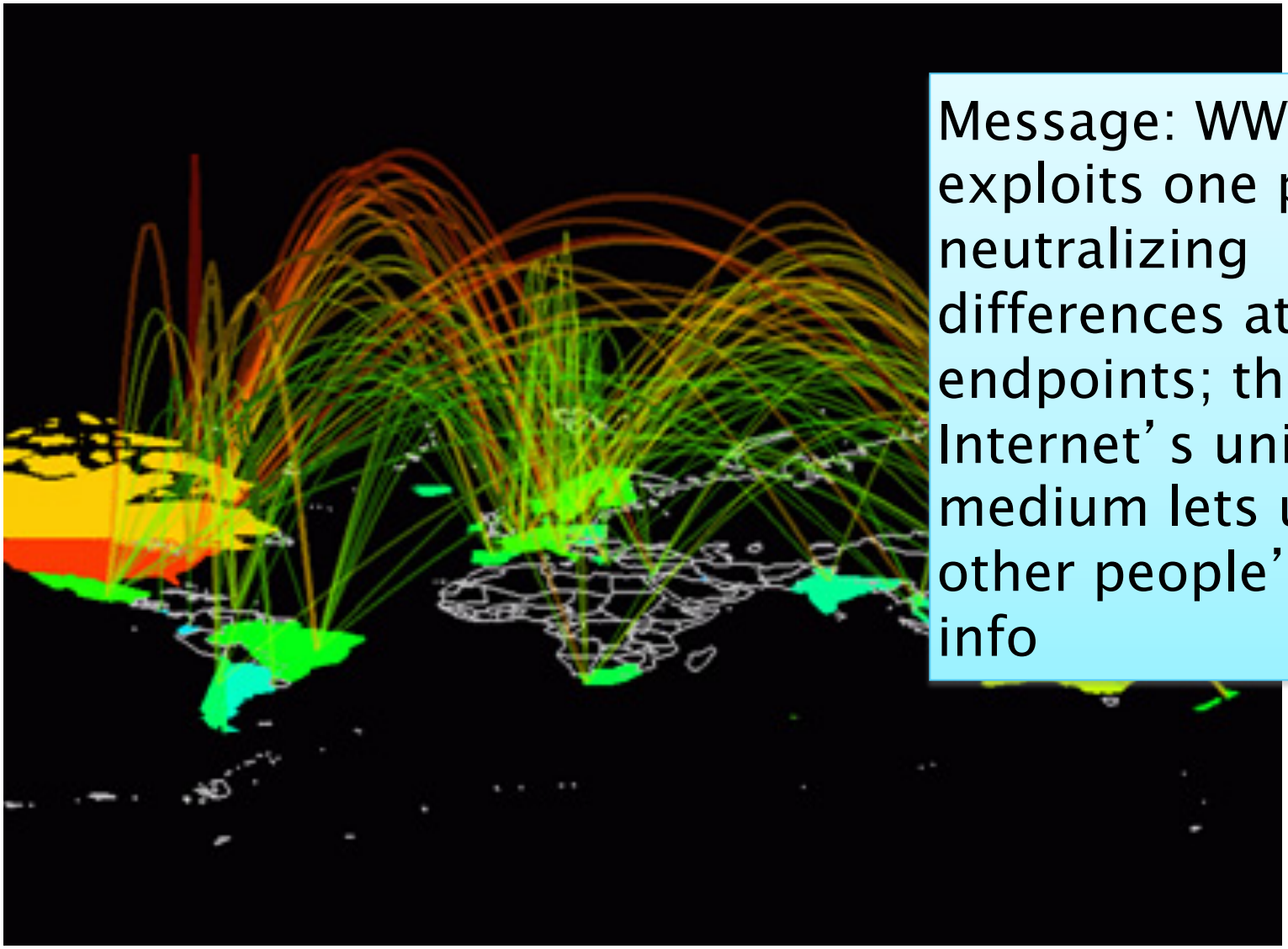
Why the WWW is so brilliant

- WWW = The Servers + The Data
- All computers use one standard protocol (http) meaning that every computer in every country where people all speak different languages can communicate
- Publishing and accessing information is completely decentralized –no one limits what you put out or search for
- Critical mass of data =>

  Too much personal Data?



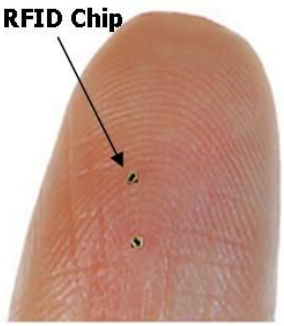
Seeing Other People's Digital Info

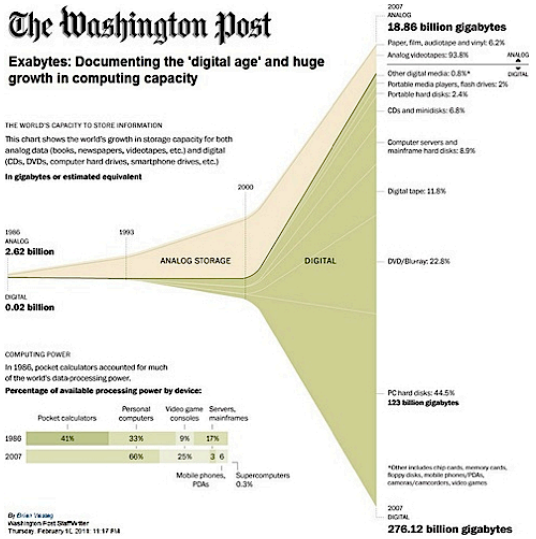


Message: WWW exploits one protocol, neutralizing differences at endpoints; the Internet's universal medium lets us look at other people's digital info

So how did we get here?

- ICs =>
  - Personal
  - Miniaturization
- Internet
- WWW
- Digitization of Content
- Mobile
- The same technology that is **incredibly useful and often fun! (so we like it)**, also affords 'Big Brother'





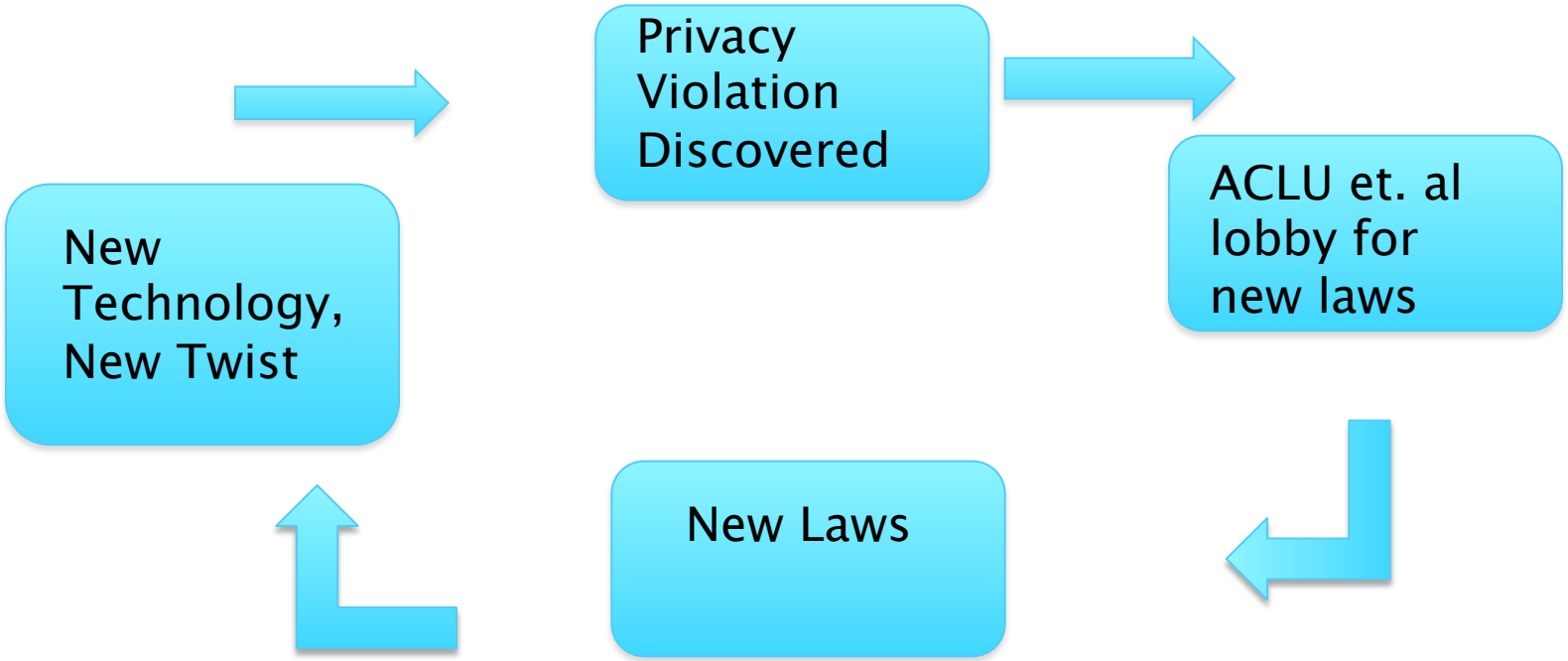
It’s easier than you think for your privacy to be violated without you knowing it.

Cell phone mics can be remotely activated

- Cell Phone Tap story on you tube

Who tries to protect your privacy?

- American Civil Liberties Union
- Electronic Privacy information Center
- Electronic Frontier Foundation
- Center for Democracy and Technology
- Cycle of surprising privacy violation, lobbying for laws, new laws, but new technology or new twist, then cycle…



Edward Snowden

- Revealed widescale operations of the NSA to collect data on US citizens
- Revealed government collecting metadata from major phone companies
- PRISM, XKeyscore, and Tempora Internet surveillance programs
- Caused controversy and mixed reviews

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Is he a hero or an enemy?

Are you revealing only what you want to reveal?

Facebook Privacy: A Timeline

Facebook Privacy Policy circa 2005:

No personal information that you submit to Thefacebook will be available to any user of the Web Site who does not belong to at least one of the groups specified by you in your privacy settings.

Facebook Privacy Policy circa 2006:

We understand you may not want everyone in the world to have the information you share on Facebook; that is why we give you control of your information. Our default privacy settings limit the information displayed in your profile to your school, your specified local area, and other reasonable community limitations that we tell you about.

Facebook Privacy: A Timeline

Facebook Privacy Policy circa 2007:

Profile information you submit to Facebook will be available to users of Facebook who belong to at least one of the networks you allow to access the information through your privacy settings (e.g., school, geography, friends of friends). Your name, school name, and profile picture thumbnail will be available in search results across the Facebook network unless you alter your privacy settings.

Facebook Privacy: A Timeline

Facebook Privacy Policy circa November 2009:

Facebook is designed to make it easy for you to share your information with anyone you want. You decide how much information you feel comfortable sharing on Facebook and you control how it is distributed through your privacy settings. You should review the default privacy settings and change them if necessary to reflect your preferences. You should also consider your settings whenever you share information. ...

Information set to "everyone" is publicly available information, may be accessed by everyone on the Internet (including people not logged into Facebook), is subject to indexing by third party search engines, may be associated with you outside of Facebook (such as when you visit other sites on the internet), and may be imported and exported by us and others without privacy limitations. The default privacy setting for certain types of information you post on Facebook is set to "everyone." You can review and change the default settings in your privacy settings.

Facebook Privacy: A Timeline

Facebook Privacy Policy circa December 2009:

Certain categories of information such as your name, profile photo, list of friends and pages you are a fan of, gender, geographic region, and networks you belong to are considered publicly available to everyone, including Facebook-enhanced applications, and therefore do not have privacy settings. You can, however, limit the ability of others to find this information through search using your search privacy settings.

Facebook Privacy: A Timeline

Facebook Privacy Policy, circa April 2010:

When you connect with an application or website it will have access to General Information about you. The term General Information includes your and your friends' names, profile pictures, gender, user IDs, connections, and any content shared using the Everyone privacy setting. ... The default privacy setting for certain types of information you post on Facebook is set to "everyone." ... Because it takes two to connect, your privacy settings only control who can see the connection on your profile page. If you are uncomfortable with the connection being publicly available, you should consider removing (or not making) the connection.

When was this written?

"Instantaneous photographs and newspaper enterprise have invaded the sacred precincts of private and domestic life; and numerous … devices threaten to make good the prediction that "what is whispered in the closet shall be proclaimed from the house-tops."

Surreptitious Recordings

- Can public distribution of surreptitiously obtained information ever be justified?
  - Surreptitious: obtained, done, made, by stealth;
    - secret or unauthorized
  - Information taken without knowledge of subject or creator
  - Information is video recordings, audio, documents, pictures

Issues

- Surreptitiously capturing behavior => privacy violations
- Capturing potentially criminal behavior => evidence
- But what about innocent until proven guilty?
- What about classic methods for ensuring a fair trial, like change of venue?
  - When the internet is involved, changing the venue doesn't help
- People do something stupid/bad
  - Retribution? --- it can never really be deleted
  - Reveal their private details online – where they live, their family, pictures, bikini model experience, etc.
  - Alexandra Wallace had to change her name, drop out of UCLA

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