

The Future

Extra Office Hours

Fri 2:00-7:00 Nicks' office -- one stop shopping for all problems

Privacy vs. Transparency

Information as Light

(editorial)

Information/truth is like light. Where it shines, things tend to go better. Most of the evil/crime in the world comes from acts committed in the darkness of anonymity.

Information as light example: what if all police had to carry a live microphones which recorded or transmitted all the sounds around them at all times? They certainly end up with less privacy. How would that effect police beatings? (and false accusations)

Reality: people will gradually give up privacy when it enables a service which is convenient to them...

EG. A credit card which uses a fingerprint security mechanism, but where the interest is only 9% because it is so much more fraud resistant. You are losing privacy, but come out ahead.

Privacy vs. Transparency

Privacy is not always great -- it's useful in some cases, but harmful in others. There is, I believe, a misplaced popular belief that privacy is always good, and you should always advocate having more of it.

"Privacy" is basically: something happens (the truth), but knowledge of that occurrence is not stored, spread, etc.

"Transparency" -- the truth is recorded, available, etc. "In the light" (

"In darkness" / "In the light" -- This is the metaphore used by Amnesty International -- privacy/anonymity of action aids dictator abuse and torture it turns out.

Transparency Examples

Car license plates -- reduce privacy/increase transparency -- what incentives do license plates set up for people as they drive?

Anonymous email vs. email where the sender is apparent

Guns that resist fingerprints (these exist)

Numbered Swiss Bank Accounts allowing the anonymous transfer and storage of money -- do you suppose anonymous bank accounts are a force for good or evil?

Photo ID's -- you could outlaw photo-ID's and fingerprinting, creating a more anonymous day-to-day world. Would that be an improvement?

eBay identity -- you are going to send a check to someone you don't know -- ebay tracks and publishes every comment every made about you -- this allows dealers to build up a long list of good references. Effective and cheap.

Conclusion: transparency frequently creates an environment for healthy interaction, and ironically, reduces law enforcement needs since it operates through incentives. You can

think of scenarios where transparency is bad, but they tend to be a little weird such as governments run amok or health insurance companies making unfair distinctions. Those problems need to be addressed, but not by cloaking everything in privacy.

==Future Effects

DSL / Cable Model

Phone companies and cable companies coming to provide digital service.

Bits are fundamentally cheap to handle, so expect prices to trend down forever (as long as there's some competition).

Wireless

Wireless will probably always have lower bandwidth and higher cost than wired -- high convenience / low bandwidth applications will go wireless. Others will remain wired.

Privacy vs. Marketing

Companies and people you interact with will be better able to recognize you and keep a history.

This will result in more targeted marketing at you.

This is not that big a deal.

Credit card companies have had this sort of information about you for years.

Things like SPAM blocking software and legislation will keep them from bothering you too much without your permission -- e.g. we passed a law outlawing junk faxes -- end of problem

More Advertising / Scarce Eyeballs

There will be more and more advertising.

As publishing becomes trivially cheap, what's scarce (valuable) is reader attention.

Optimistic: the highest quality, cheapest content will get the most attention

Pessimistic: the content with the biggest budget to advertise itself will get the most attention.

More Confusion

As publishing becomes trivially cheap, it gets easier to feel "lost" in the volume of information.

Business such as Yahoo and Alta Vista ("portal" businesses) may be the most important.

The current DNS system where you guess that information about Apple is at www.apple.com will soon be drowned by the volume and variety of information.

Another meta-traversal mechanism must arise either from the IETF/W3C or from private enterprise.

Evolutionary Protocols

TCP/IP NG (Next Generation) -- providing more address space and allows for better routing. This change should be relatively transparent for end users.

New DNS scheme allowing more than just ".com", ".edu" ... -- this change is just now happening.. See the articles at www.w3c.org.

HTTP NG -- for efficiency, revise the HTTP dialog so it uses one connection to retrieve many parts of the content from the server, instead of a separate connection for each.

== 20 Year Predictions

Information like Air

Information technology is basically cheap and getting cheaper.

Storage and retrieval of bits will become the most ubiquitous, inexpensive activity imaginable. Like watching TV now.

Imagine it's 1915 and the telephone is coming into its own— Who can imagine how much this will change society?

Who benefited more from the telephone— AT&T? or all the people and organizations throughout the planet who were able to operate 50% more effectively?

Advertising will continue to be important.

Schemes where money goes directly from the consumer to the producer may emerge. The scaling is so good, an author could charge a fraction of a penny to see their page and still make money. The advertisers hate this idea.

Obvious

Internet will very likely change these by being better and cheaper...

Telephone

Newspapers

Possible

Internet could change these...

Television

Books

Libraries

Education

Speculative

Internet might change these...

Socializing

College

Challenges and Questions

Democratic Internet?

The Internet is currently expensive -- can we afford digital connectivity for everyone?

I think yes. Telephone and Television were complex in their day, and now basically all US. citizens have them. Digital technology is getting cheaper all the time, and is not natural resource intensive as it is used.

Internet vs. TV?

Could the Internet replace TV?

TV has real appeal for passive entertainment + advertisers like it and are used to it.

But the Internet can ship bits just effectively really.

Most likely people will have a device which looks somewhat like TV, but where the guts are more like the current Internet

Internet and the Legal System

Can the legal system (1st amendment, copyright law, ...) adapt to allow us to take full advantage?

For copyright, I think yes, for the following reason:

Content creators (authors, actors, publishers, ...) can make **more money** with an efficient information infrastructure. Currently most of the dollars are soaked up by the costly (atom based) distribution. This basic fact sets up the incentive for the legal system to change.

Internet and Education — cslibrary.stanford.edu

(my opinion)

In my opinion, the most interesting possible social effect of well developed information infrastructure. I'm working on the CS Education library project to provide free educational material.

You cannot afford to provide every child with an individual teacher. You can provide every child with access to the world's library of information for a fraction of the cost of our current book/video based materials.

Will not replace the personal training and socializing role of teachers.

But for 10% more cost, could make the book/article/video side of education more effective.

In our society, education is the single key to success of the individual and society as a whole.

An excellent education system can do more to create a healthy democratic society more than anything politicians have done since the abolition of slavery.

Closing Thoughts

Information touches everything

Information technology will continue to get cheaper and more widespread— thereby changing all of the processes it touches.

The basic cheapness of information technology matches well with a host information problems/interests in our society. The future is bright.

Books

Just Java 1.2, by van der Linden

Apache (a popular HTTPd)-- O'Reilly

CGI Programming in Perl -- O'Reilly

Web and E-Commerce Security -- O'Reilly

How To Set Up And Run A World Wide Web Server, by Lincoln Stein