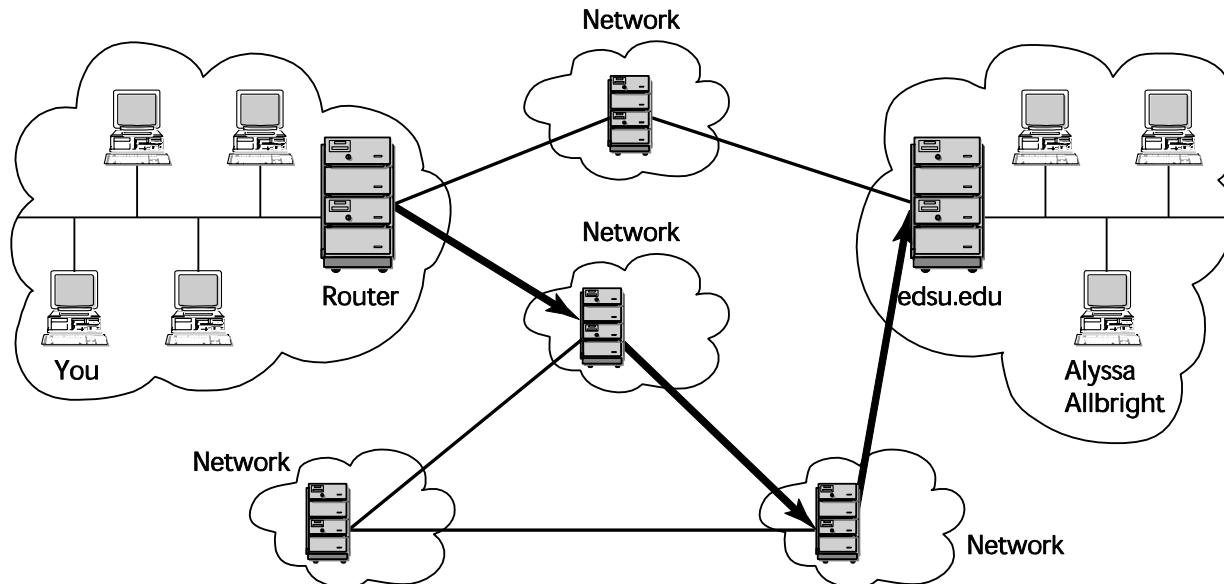# Lecture 9
Networked Communications

Participation Quiz

Which of these things is the least like the others?

A. A wrench
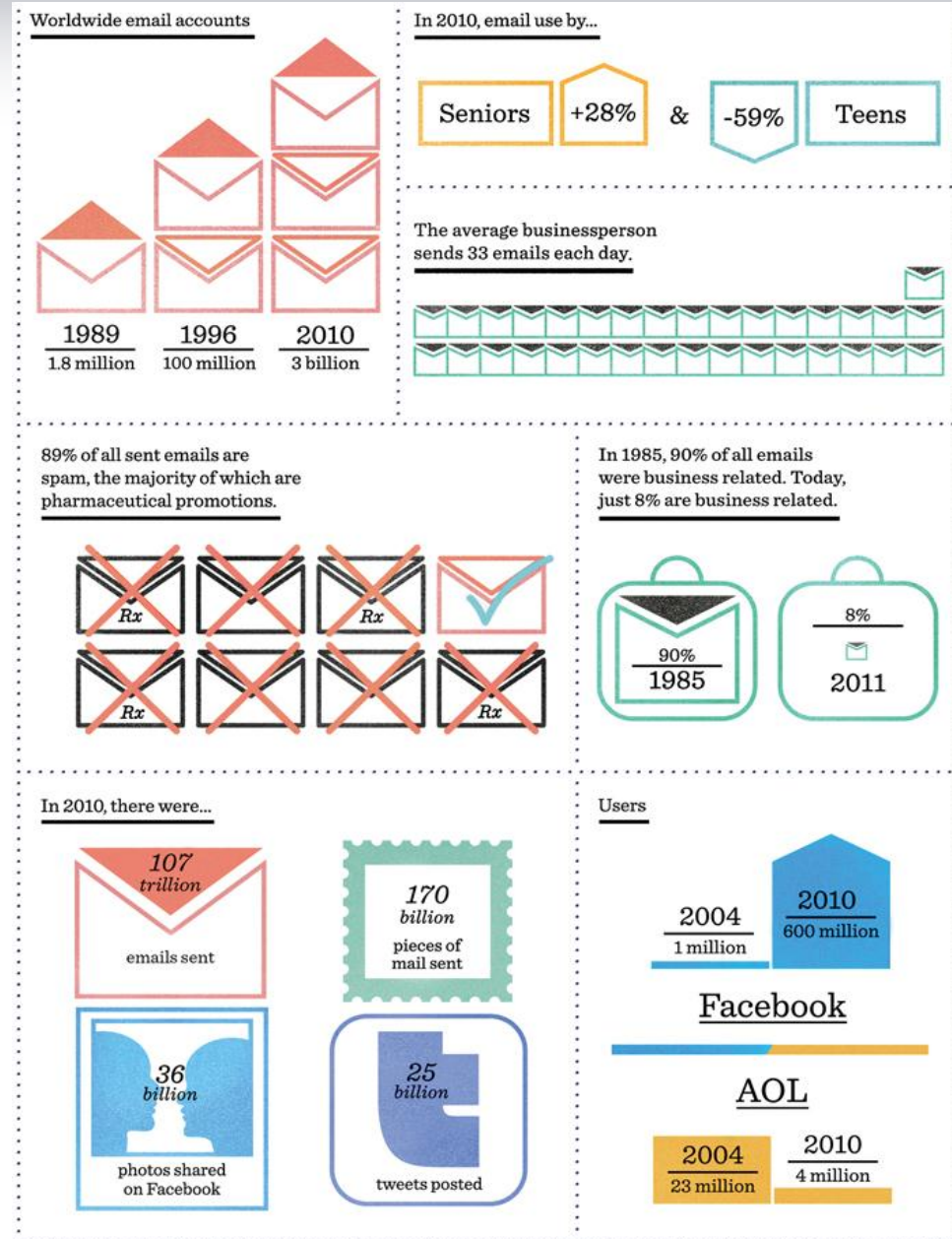
B. Running

C. Stickiness

D. Karl Marx

E. Email

How Email Works

- Email: Messages transferred between computers

- Email address: Uniquely identifies mailbox

- Messages broken into packets

- Routers transfer packets from sender's mail server to receiver's mail server

The Spam Epidemic

- Spam: Unsolicited, bulk email

- Spam is profitable
  - More than 100 times cheaper than "junk mail"
  - Profitable even if only 1 in 100,000 buys product

- Amount of email that is spam has ballooned
  - 8% in 2001
  - 90% in 2009

Worldwide email accounts
1989 — 1.8 million
1996 — 100 million
2010 — 3 billion

In 2010, email use by...
Seniors +28% & -59% Teens

The average businessperson sends 33 emails each day.

89% of all sent emails are spam, the majority of which are pharmaceutical promotions.

In 1985, 90% of all emails were business related. Today, just 8% are business related.
90% 1985   8% 2011

In 2010, there were...
107 trillion emails sent
170 billion pieces of mail sent
36 billion photos shared on Facebook
25 billion tweets posted

Users
Facebook: 2004 1 million — 2010 600 million
AOL: 2004 23 million — 2010 4 million

The Spam Epidemic

- How firms get email addresses
  - Web sites, chat-room conversations, newsgroups
  - Computer viruses harvest addresses from PC address books
  - Dictionary attacks
  - Contests

- Most spam sent out by bot herders who control huge networks of computers

- Spam filters block most spam before it reaches users' inboxes

Ethical Evaluations of Spamming

The book argues from each perspective that spamming is wrong. Let's see if we can make the arguments ourselves:

- Kantian evaluation

- Act utilitarian evaluation

- Rule utilitarian evaluation

- Social contract theory evaluation

Which of these do you find most/least convincing?

Need for Socio-Technical Solutions

- New technologies sometimes cause new social situations to emerge
  - Calculators $\rightarrow$ feminization of bookkeeping
  - Telephones $\rightarrow$ blurred work/home boundaries
- Spam is an example of this phenomenon
  - Email messages practically free
  - Profits increase with number of messages sent
  - Strong motivation to send more messages
- For communications to be perceived as fair, they need to be two-way (allowing consequences for misuse)
  - Internet design allows unfair, one-way communications

The World Wide Web

- Attributes
  - decentralized
  - unique addresses
  - based on the Internet
- Used for:
  - Shopping
  - Socializing (e.g., Facebook)
  - Contributing content (e.g., wikis, blogs)
  - Blogging
  - Promoting business
  - Learning
  - Exploring our roots
  - Entering virtual worlds
  - Paying taxes
  - Gambling…

Government Control of the Internet

- Myanmar, Cuba, North Korea: Internet virtually inaccessible

- Saudi Arabia: centralized control center

- People's Republic of China: "one of most sophisticated filtering systems in the world" as well as censorship

- Germany: Forbids access to neo-Nazi sites

- United States: limit access of minors to pornography

Forms of Direct Censorship

- Government monopolization of a communication medium
  - E.g., the government owns all television stations, or all printing presses, and so controls the message
  - Doesn't work so well with the Internet
- Prepublication review
  - Certain kinds of information must be reviewed before they can be published
  - E.g., nuclear/military secrets
- Licensing and registration
  - You can't operate a TV station without a license
  - Necessary because of limited bandwidth
  - Opens the door to regulation of content

Self-censorship

- Most common form of censorship
- Group decides for itself not to publish
- Reasons
  - Avoid subsequent persecution
  - Maintain good relations with government officials (sources of information)
- A "soft" form of self-censorship: ratings systems
  - Movies, TVs, CDs, video games
  - Nothing similar has happened on the Web
    - At least, not consistently.

Challenges Posed by the Internet

- Many-to-many communications
  - Hard for the government to shut down (but, Arab Spring)
- Dynamic connections
  - Computers coming and going all the time; hard to know who's who
- Huge numbers of Web sites
  - Hard to control access to online information
- Extends beyond national borders, laws
  - Governments may have limited authority to shut down sites
  - E.g., SOPA
- Hard to distinguish between minors and adults
  - Important for initiatives that seek to restrict children's access

Ethical Perspectives on Censorship

- Kant opposed censorship
  - Product of the Enlightenment: reaction to institutional control
  - "Have courage to use your own reason"
- Mill opposed censorship
  1. No one is infallible: we may silence the truth.
  2. Even if not, an opinion may contain a kernel of truth.
  3. Even if not, the truth must be rationally tested and validated.
  4. Ideas are most persuasive if they're tested rigorously.

  Principle of harm:

  "The only ground on which intervention is justified
  is to prevent harm to others;

  the individual's own good is not a sufficient condition."

Freedom of Expression: History

- De Scandalis Magnatum (England, 1275)
  - You could be imprisoned for weakening loyalty to the King
  - Not so different from lese-majesty laws today, esp. in Thailand, Morocco (see http://en.wikipedia.org/wiki/Lese-majesty)
- 18th century: freedom of the press in England
  - Anyone could print what they liked
  - Punishment for libel: publication causing harm, even if truth
- American states adopted bills of rights including freedom of expression
  - Freedom of expression in 1st amendment to U.S. Constitution: "Congress shall make no law … abridging the freedom of speech, or of the press"

Canadian Charter of Rights and Freedoms

2. Everyone has the following fundamental freedoms:

(a) freedom of conscience and religion;

(b) freedom of thought, belief, opinion and expression, including freedom of the press and other media of communication;

(c) freedom of peaceful assembly; and

(d) freedom of association.

Freedom of Expression is not an Absolute Right

- Right to freedom of expression must be balanced against the public good

- Various restrictions on freedom of expression exist

- Discuss and Debate: Which restrictions on freedom of expression do you think are justified?