

CSE312/ISE312

Gift of Fire, Fourth edition by Sara Baase

Read: Chapter 1 (1.1 – 1.3)

Class Web site at
<http://www3.cs.stonybrook.edu/~cse312/Section01/>


Slides prepared by Cyndi Chie and Sarah Frye. Fourth edition revisions by Sharon Gray.



What We Will Cover

- The Pace of Change
- Change and Unexpected Developments
- Themes

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Session Objectives

- Review historical changes and their impact on society
- Understand that change can have positive and negative consequences
- Recognize the time lag in adapting to the negative consequences of change
- Recognize the need for life-long learning to readily accommodate to future changes

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The Pace of Change

“In a way not seen since Gutenberg’s printing press that ended the Dark Ages and ignited the Renaissance, the microchip is an epochal technology with unimaginably far-reaching economic, social, and political consequences.”

– Michael Rothschild¹

Consider changes resulting from the printing press

Discussion question: How do you best acquire knowledge (reading, listening, doing, etc.?)

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The Pace of Change

- 1940s: First computer was built.
- 1956: First hard-drive disk weighed a ton and stored five megabytes.
- 1991: Space shuttle had a one-megahertz computer. Ten years later, some automobiles had 100-megahertz computers. Speeds of several gigahertz are now common.

Discussion question:

Do you find differences in the ways that you use computers compared to older members of your family?

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Change and Unexpected Developments


Cell Phones

- Relatively few in 1990s. Approximately five billion worldwide in 2011.
- Used for conversations and messaging, but also for:
 - taking and sharing pictures
 - downloading music and watching videos
 - checking email and playing games
 - banking and managing investments
 - finding maps

Discussion question:

How has the prevalence of cell phone cameras change police citizen interaction?

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Change and Unexpected Developments


Cell Phones (cont.):

- Location tracking raises privacy concerns.
- Cameras in cell phones affect privacy in public and non-public places.
- Cell phones can interfere with solitude, quiet and concentration.
- Talking on cell phones while driving is dangerous.
- Other unanticipated negative applications: terrorists detonating bombs, rioters organizing

Discussion question:
Do you view location monitoring as an invasion of your privacy?

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Change and Unexpected Developments

Kill switches

- Allow a remote entity to disable applications and delete files.
- Are in operating systems for smartphones, tablets and some computers.
- Used mainly for security, but raise concerns about user autonomy.

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Change and Unexpected Developments

“While all this razzle-dazzle connects us electronically, it disconnects us from each other, having us “interfacing” more with computers and TV screens than looking in the face of our fellow human beings. Is this progress?”

– Jim Hightower, radio commentator, 1995⁷

Discussion question:
Do you primarily interact with friends electronically or face-to-face?


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Change and Unexpected Developments

Social Networking:

- First online social networking site was www.classmates.com in 1995.
- Founded in 2003, [Myspace](http://www.myspace.com) had roughly 100 million member profiles by 2006.
- Facebook was started at Harvard as an online version of student directories
- Social networking is popular with hundreds of millions of people because of the ease with which they can share aspects of their lives.

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Change and Unexpected Developments

Social Networking (cont.):

- Businesses connect with customers.
- Organizations seek donations.
- Groups organize volunteers.
- Protesters organize demonstrations and revolutions.
- Individuals pool resources through “crowd funding”.

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Change and Unexpected Developments

Social Networking (cont.):

- Stalkers and bullies stalk and bully.
- Jurors tweet about court cases during trials.
- Socialbots simulate humans.

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Change and Unexpected Developments

Communication and the Web

- In the 1980s, email messages were short and contained only text.
- People worldwide still use email, but texting, tweeting , and other social media are now preferred.

Discussion question:
What are your communication preferences?

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Change and Unexpected Developments


Communication and the Web

- Blogs (“Web log”) have become significant source of news and entertainment.
- Inexpensive video cameras and video tools have resulted in a burst of amateur videos.
- Many videos on the Web can infringe copyrights owned by entertainment companies
- Classical news organizations are less prevalent

Discussion question:
What is the impact of reduced fact-checking on news dissemination

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Change and Unexpected Developments


Telemedicine

- Remote performance of medical exams and procedures, including surgery
- Global medical networks now feasible (e.g., radiology)

Discussion question:
What is your opinion of medical off-shoring of medical work when it leads to employment changes in the US?

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Change and Unexpected Developments

Collaboration

- Wikipedia: The online, collaborative encyclopedia written by volunteers.
- Informal communities of programmers create and maintain free software.
- Watch-dogs on the Web: Informal, decentralized groups of people help investigate crimes.

Discussion question: What is your opinion of proposal of Texas governor to set up night vision web cams along the Mexican border?

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Change and Unexpected Developments

E-commerce

- Amazon.com started in 1994 selling books on the Web. It has grown to be one of the most popular, reliable, and user-friendly commercial sites.
- Traditional brick-and-mortar business have established Web sites.
- Online sales in the United States now total hundreds of billions of dollars a year.
- Sellers can sell directly to buyers, resulting in a peer-to-peer economy.

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Change and Unexpected Developments


E-commerce

- Encryption and secure servers made payments safer.
- Auction sites implemented rating systems.

Class question: Do you think that on-line retailing is an overall benefit to US citizens?

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Change and Unexpected Developments

Free stuff

- Email programs and email accounts, browsers, filters, firewalls, encryption software, word processors, spreadsheets, software for viewing documents, software to manipulate photos and video, and much more
- But the services usually have value to the provider
- In order for companies to earn ad revenue to fund multimillion-dollar services, many free sites collect information about our online activities and sell it to advertisers.

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Change and Unexpected Developments

Artificial intelligence

- A branch of computer science that makes computers perform tasks normally requiring human intelligence.
- Researchers realized that narrow, specialized skills were easier for computers than what a five-year-old does: recognize people, carry on a conversation, respond intelligently to the environment.

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Change and Unexpected Developments

Artificial intelligence (cont.)

- Many AI applications involve pattern recognition.
- Speech recognition is now a common tool.

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Change and Unexpected Developments

Artificial intelligence (cont.)

- Turing Test: If the computer convinces the human subject that the computer is human, the computer is said to “pass”.

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Change and Unexpected Developments

Robots

- Mechanical devices that perform physical tasks traditionally done by humans
- Can operate in environments that are hazardous for people
- Associate loss of jobs
 - Automotive industry
 - Fast food industry

Class question:
How does society adapt to the loss of jobs due to automation?

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Themes

- Old problems in a new context: crime, pornography, violent fiction
- Adapting to new technology: laws, social institutions, business policies, skills, etc.
- Varied sources of solutions to problems: natural part of change and life
- Global reach of Net:
 - ease of communication with distant countries
 - Fluidity of labor and capital

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Themes (cont.)

- Trade-offs and controversy: Increasing security might mean reducing privacy.
- Perfection is a direction, not an option.
- There is a difference between personal choices, business policies, and law.

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