CS305 Topic – Other Impacts

- Productivity and jobs
- Work environment
- Globalization
- Society
- Environmental

Sources: Baase: A Gift of Fire and Quinn: Ethics for the Information Age
Impact on Productivity

Mostly positive impacts:

- **Automation**
  - A human pharmacist fills <20 prescriptions per hour; an online pharmacy uses robots to dispense 8,000 prescriptions per hour

- **Streamlining**
  - Middle layers in some organizations become unnecessary (e.g., creating and processing purchase orders)
Productivity (cont.)

Productivity in the U.S. doubled between 1948 and 1990.

*Implications:*

- We could have maintained our 1948 standard of living and gone to a four-hour work day!

*...but, instead:*

- People in 1990 worked harder than those in 1948 – They owned and consumed twice as much as in 1948.
Impact on Jobs

*Job Elimination* –

Automation reduces or eliminates demands in certain job categories:

- Telephone operators
- Utility meter readers
- Records processing staff
- Secretaries and clerks
- …
Jobs (cont.)

Job Creation –

- New products and new industries create new jobs:
  - DVDs, iPods, ...
  - Cellphone industry
- Higher productivity lowers product prices; lower prices increase demand, which in turn create more jobs
Supply & Demand

Price

Demand

Supply

Quantity
Supply & Demand

Price

Demand

Supply

Quantity

CS305 F'09, J. Li

Other Impacts 7
What is the overall impact?

- “The empirical evidence suggests overall that computers have not replaced workers or destroyed jobs; if anything, they have created jobs” [Larry Hirschhorn]
- “There will be plenty of jobs in the future, and most of them will be high-paying jobs” [Martin Carnoy]
Impact on Work Environment

- Business organizational changes
- Telecommuting
- Temporary work
- Employee monitoring
Organizational Changes

- Increase in smaller businesses and independent consultants
  - Information entrepreneurs
  - “Mom and pop” shops on the Web
- IT integration into firms
  - Automating back office functions (e.g., payroll)
  - Improving communication among business units

Results:
- Flattened organizational structures
- Eliminating transactional middlemen
Telecommuting

- Work away from traditional place of work:
  - Home office
  - Customer sites
  - Mobile office (e.g. salesmen)
- About 20% of Americans do some telecommuting
Telecommuting (cont.)

**Benefits:**
- Reduces overhead for employers
- Reduces need for large offices
- Employees are more productive and satisfied
- Reduces traffic congestion, pollution, and stress
- Reduces expenses for commuting and work clothes
- Allows work to continue after blizzards, hurricanes, etc.
Telecommuting (cont.)

Problems:

- Threatens managers’ control and authority
- Makes face-to-face meetings (e.g. with clients) impossible
- Team meetings more difficult (e.g. different schedules)
- Sensitive information less secure
- Tele-workers less visible, and “out of the loop”
- Tele-workers work longer hours for same pay
Temporary Work

- Companies less committed to employees
- Lay-offs not taboo as they once were
- Companies hiring more temporary employees
  - Saves money on benefits
  - Makes it easier to downsize
- Long-term employment for one firm less common
Employee Monitoring

82% of companies monitor employees in some way.

Main purpose:
- Identify inappropriate use of company resources

Other uses:
- Detect illegal activities
- Gauge and improve productivity
- Improve security
Employee Crimes

- **Embezzlement** – fraudulent appropriation of company property
  - Trusted employees have stolen millions of dollars
- **Logic bomb** – software that destroys critical files (payroll and inventory records) after employee leaves
  - Angry fired employees sabotage company systems
Monitoring Approaches

- **Old “Blue-Collar” Approaches:**
  - Time-clocks and logs
  - Output counts at the end of the day
  - Bosses patrolled the aisles watching workers
  - Camera surveillance in workplace

- **Location Monitoring:**
  - Electronic badge tracking
  - GPS tracking (e.g. in hospitals, long-haul trucks)
Monitoring Approaches (cont.)

- **E-Mail, Voice Mail, and Web-Use Monitoring:**
  - Roughly half of major companies in the U.S. monitor or search employee e-mail, voice mail, or computer files
  - Some companies block specific web sites
  - Many employers have privacy policies regarding e-mail and voice mail
Law and Court Cases

- Electronic Communications Privacy Act (ECPA) prohibits interception of e-mail and reading stored e-mail without a court order, but makes an exception for business systems.
- Courts put heavy weight on the fact that computers, mail, and phone systems are owned by the employer who provides them for business purposes.
- However, courts have ruled against monitoring done to snoop on personal and union activities or to track down whistle blowers.
- The National Labor Relation Board (NLRB) sets rules and decides cases about worker-employer relations.
Globalization

Refer to the process of creating a worldwide network of businesses and markets.

- *Reduce Trade Barriers:*
  - WTO and NAFTA

- *Global Workforce:*
  - Outsourcing
  - Offshoring
  - Foreign IT workers
  - Working for foreign companies (Insourcing?)
Globalization (cont.)

Arguments For:
- Increases competition; produces better products
- Increases everyone’s standard of living
- Global jobs reduce unrest and increase stability

Arguments Against:
- Forces American workers to compete with foreigners who do not get decent wages and benefits
- Accelerates exporting of manufacturing and white-collar jobs from United States
- Hurts workers in foreign countries
Impact on Society

The Digital Divide – Some people have access to modern IT while others do not.

- **Global digital divide:**
  - Access higher in wealthy countries
  - Access higher where IT infrastructure good
  - Access higher in English-speaking countries

- **Social digital divide:**
  - Access higher for young people
  - Access higher for well-educated people
Critiques of the Digital Divide

- DD talk suggests the difference between “haves” and “have nots” is simply about access; It implies lack of access leads to less advantaged social position

Counter:
- Social and culture change are more important
- Internet is not the pinnacle of IT
- DD talk puts everyone in two categories, but reality is a continuum
Environmental Impacts

- Resource Consumption
  - Power and materials
  - Both in production and in operation
- E-Waste

*EPA Statistics (2006-2007):*

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<th>Disposed (mil of units)</th>
<th>Recycled (mil of units)</th>
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<td>157.3</td>
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<td>126.3</td>
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Green(er) Computers?

The XO by One Laptop per Child (OLPC):

Claims to be the most eco-green laptop.
Discussion Questions

- What jobs that were once considered high-skill jobs are now low-skill due to technology?
- Would you want to telecommute? Why or why not?
- How much privacy is reasonable for an employee to expect in the workplace?
- Under what circumstances is it appropriate for an employer to read an employee's e-mail?