PROFESSIONAL ISSUES

COMPUTER ETHICS

What Is Cyberethics?

- *Cyberethics* is the study of moral, legal, and social issues involving cybertechnology.

- As a field of *applied ethics*, it:

- examines the impact that cybertechnology has for our social, legal, and moral systems.

- evaluates the social policies and laws that we frame in response to issues generated by the development and use of cybertechnology.

What Is Cybertechnology?

- *Cybertechnology* refers to a wide range of computing and communications devices
    - from standalone computers, to "connected" or networked computing and communications technologies, to the Internet itself.
- Cybertechnologies include:
- ➢ digital electronic devices;
- ➢ networked computers (including servers, desktops, laptops, etc.);
- ➢ stand-alone computers.

Cybertechnology (Continued)

- Networked devices can be connected directly to the Internet.

- They also can be connected to other devices through one or more privately owned computer networks.

- Privately owned networks include both:

  ➢ *Local Area Networks (LANs)*,

  ➢ *Wide Area Networks (WANs)*.

Why the term *cyberethics*?

- *Cyberethics* is a more accurate label than *computer ethics*, which can suggest the study of ethical issues limited either to:
  a) computing machines,
  b) computing professionals.

- *Cyberethics* is also more accurate than *Internet ethics*, which is limited only to ethical issues affecting (only) networked computers and devices.

The Evolution of Cybertechnology and Cyberethics: Four Phases

- Computer technology emerged in the late 1940s, when some analysts confidently predicted that no more than six computers would ever need to be built.
- The first phase of computing technology (1950s and 1960s) consisted mainly of huge mainframe computers that were unconnected (i.e., stand-alone machines).
- One ethical/social question that arose during *Phase 1* dealt with the impact of computing machines as "giant brains" and what that meant for being human.
- Another question raised during this phase concerned privacy threats and the fear of Big Brother.

The Evolution of Cybertechnology and Cyberethics (Continued)

- In *Phase 2* (1970s and 1980s), computing machines and communications devices began to converge.
- Mainframe computers and personal computers could be linked together via privately owned networks, which generated three kinds of ethical/social issues:

1) *privacy* concerns (introduced in Phase 1) were exacerbated because confidential information could easily be exchanged between networked databases.

2) *intellectual property* issues emerged because personal computers could easily be used to duplicate and exchange proprietary software programs.

3) *computer crime* emerged because "hackers" could break into the computers of large organizations.

The Evolution of Cybertechnology and Cyberethics (Continued)

- During *Phase 3* (1990-present), the availability of Internet access to the general public has increased significantly.

- This has been facilitated by the phenomenal growth of the World Wide Web.

- The proliferation of Internet- and Web-based technologies in this phase has raised ethical and social concerns affecting:

  ➢ free speech,
  ➢ anonymity,
  ➢ jurisdiction.

The Evolution of Cybertechnology and Cyberethics (Continued)

- In *Phase 4* (present to near future), "Web 2.0" has made possible the proliferation of social networking sites (SNSs), such as Facebook and Twitter.

- As cybertechnology continues to evolve in Phase 4, computers will likely become more and more a part of who or what we are as human beings.

- For example, Moor (2005) notes that computing devices will soon be a part of our clothing, and even our bodies.

- Computers are already becoming *ubiquitous*, and are beginning to "pervade" both our work and recreational environments.

- Objects in these environments already exhibit what Brey (2005) calls "ambient intelligence," which enables "smart objects" to be connected via wireless technology.
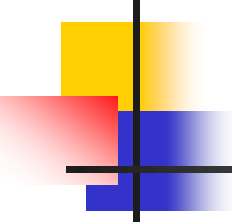
The Evolution of Cybertechnology and Cyberethics (Continued)

- In Phase 4, computers are becoming *less visible* as distinct entities, as they:

a) continue to be miniaturized and integrated into ordinary objects,

b) blend unobtrusively into our surroundings.

- Cybertechnology is also becoming *less distinguishable* from other technologies as boundaries that have previously separated them begin to blur because of convergence.

Debate about the Uniqueness of Cyberethics Issues

- There are two points of view on whether cybertechnology has generated any new or unique ethical issues:

1. *Traditionalists* argue that nothing is new – crime is crime, and murder is murder.

2. *Uniqueness Proponents* argue that cybertechnology has introduced (at least some) new and unique ethical issues that could not have existed before computers.

The Uniqueness Debate (Continued)

- Both sides seem correct on some claims, and both seem to be wrong on others.

- Traditionalists underestimate the role that issues of *scale* and *scope* that apply because of the impact of computer technology.

- For example, cyberbullies can bully multiple victims simultaneously (scale) and globally (because of the scope or reach of the Internet).

- Cyberbullies can also operate without ever having to leave the comfort of their homes.

Alternative Strategy for Analyzing the Uniqueness Issue

- Moor (2000) argues that computer technology generates "new possibilities for human action" because computers are *logically malleable*.

- Logical malleability in computers means that they can be molded in ways that allow for many different kinds of uses.

- Some of the unanticipated uses of computers have introduced *policy vacuums*.

Policy Vacuums and Conceptual Muddles

- Policy vacuums are "voids" or gaps in our laws and policies.

- One solution might seem simply to fill the voids with new or revised policies.

- Some policy vacuums cannot easily be filled because of *conceptual muddles*.

- In these cases, conceptual muddles first need to be elucidated before clear policies can be formulated and justified.
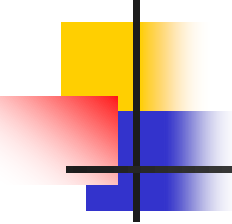
A Policy Vacuum in Duplicating Software

- Consider again Scenario 1-5 (in the textbook) involving the duplication of software.

- In the early 1980s, there were still no clear laws regarding the duplication of software programs, which had been made easy because of the avaioability of personal computers.

- Because there were no clear rules for copying programs, a policy vacuum arose.

- Before the policy vacuum could be filled, a conceptual muddle had to be elucidated: What, exactly, is software?

Cyberethics as a Branch of Applied Ethics

- *Applied ethics*, unlike theoretical ethics, examines "practical" ethical issues.

- It analyzes moral issues from the vantage-point of one or more ethical theories.

- Ethicists working in fields of applied ethics are more interested in applying ethical theories to the analysis of specific moral problems than in debating the ethical theories themselves.

Cyberethics as a Branch of Applied Ethics (continued)

- Three distinct perspectives of applied ethics (as applied to cyberethics):

  - Professional Ethics;

  - Philosophical Ethics;

  - Sociological/Descriptive Ethics.

Professional Ethics

- Gotterbarn (1995) has suggested that computer ethics issues are *professional ethics* issues.

- Computer ethics, for Gotterbarn, is similar to medical ethics and legal ethics, which are tied to issues involving specific professions.

- He notes that computer ethics issues aren't, strictly speaking, about technology per se.

- For example, he point out that we don't have automobile ethics, airplane ethics, etc.

Some Criticisms of the Professional Ethics Perspective

- Is Gotterbarn's model for computer ethics too narrow for cyberethics?

- Consider that cyberethics issues affect not only computer professionals; they effect evirtually veryone.

- Before the widespread use of the Internet, Gotterbarn's professional-ethics model may have been adequate.
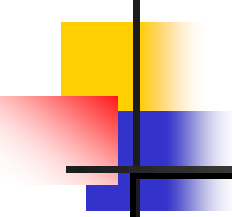
Perspective # 2: Philosophical Ethics

- From this perspective, cyberethics is a field of philosophical analysis and inquiry that goes beyond professional ethics.

- Moor (2000) defines computer ethics as:

  ...the analysis of the nature and social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology. [Italics Added.]

Some Benefits of Using the Sociological/Descriptive Approach

- Huff and Finholt (1994) claim that when we understand the descriptive aspect of social effects of technology, the normative ethical issues become clearer.

- The descriptive/sociological perspective can prepare us for our subsequent (normative) analysis of the ethical issues that affect our system of policies and laws.

Summary of Cyberethics Perspectives

Type of Perspective	Associated Disciplines	Issues Examined
Professional	Computer Science Engineering Library/Information Science	Professional Responsibility System Reliability/Safety Codes of Conduct
Philosophical	Philosophy Law	Privacy & Anonymity Intellectual Property Free Speech
Sociological/Descriptive	Sociology Behavioral Sciences	Impact of cybertechnology on governmental/financial/educational institutions and socio-demographic groups

A Multi-Disciplinary and Multi-Level Method for Cyberethics

- Brey's disclosive method is *multidisciplinary* because it requires the collaboration of:
  - computer scientists,
  - philosophers,
  - social scientists.

A Multi-Disciplinary & Multi-Level Method for Cyberethics (Continued)

- Brey's scheme is also *multi-level* because the method for conducting computer ethics research requires three levels of analysis, i.e., a:

  ➤ *disclosure level,*

  ➤ *theoretical level,*

  ➤ *application level.*

Three Levels in Brey's Model of Computer Ethics

Level	Disciplines Involved	Task/Function
Disclosive	Computer Science Social Science (optional)	Disclose embedded features in computer technology that have moral import
Theoretical	Philosophy	Test newly disclosed features against standard ethical theories
Application	Computer Science Philosophy Social Science	Apply standard or newly revised/ formulated ethical theories to the issues