ILLINOIS TECH | College of Computing

ITMM 485 / 585
Dr. Gurram Gopal

Legal and Ethical Issues in Information Technology

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Ch1: Introduction to Ethics and the Law
Part I: The History and Evolution of Cyberethics

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Learning Objectives:

- Define the term cyberethics
- Recall and summarize the four phases of the development of cyberethics

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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.

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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.

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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:
  - computing machines
  - 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… "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:
  - continue to be miniaturized and integrated into ordinary objects,
  - 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.

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The Evolution of Cybertechnology and Cyberethics (Continued)

Additional ethical/social concerns associated with Phase IV include controversies that are made possible by the following kinds of technologies:

- autonomous machines and sophisticated robots (used in warfare, transportation, care for the elderly, etc.);
- nanocomputing and nano-scale devices;
- artificial agents (including "soft bots") that act on behalf of humans and corporations;
- AI-induced bionic chip implants (that can cause us to question what it means to be human vs. cyborg).

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Table 1-1: Summary of Four Phases of Cyberethics

Phase	Time Period	Technological Features	Associated Issues
1	1950s-1960s	Stand-alone machines (large mainframe computers)	Artificial intelligence (AI), database privacy ("Big Brother")
2	1970s-1980s	Minicomputers and PCs interconnected via privately owned networks	Issues from Phase 1 plus concerns involving intellectual property and software piracy, computer crime, privacy and the exchange of records.
3	1990s-Present	Internet and World Wide Web	Issues from Phases 1 and 2 plus concerns about free speech, anonymity, legal jurisdiction, virtual communities, etc.
4	Present to Near Future	Convergence of information and communication technologies with nanotechnology research and bioinformatics research, etc.	Issues from Phases 1-3 plus concerns about artificial agents ("bots") with decision-making capabilities, AI-induced bionic chip implants, nanocomputing, pervasive computing, etc.

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