Professionalism and Ethics for ICT students

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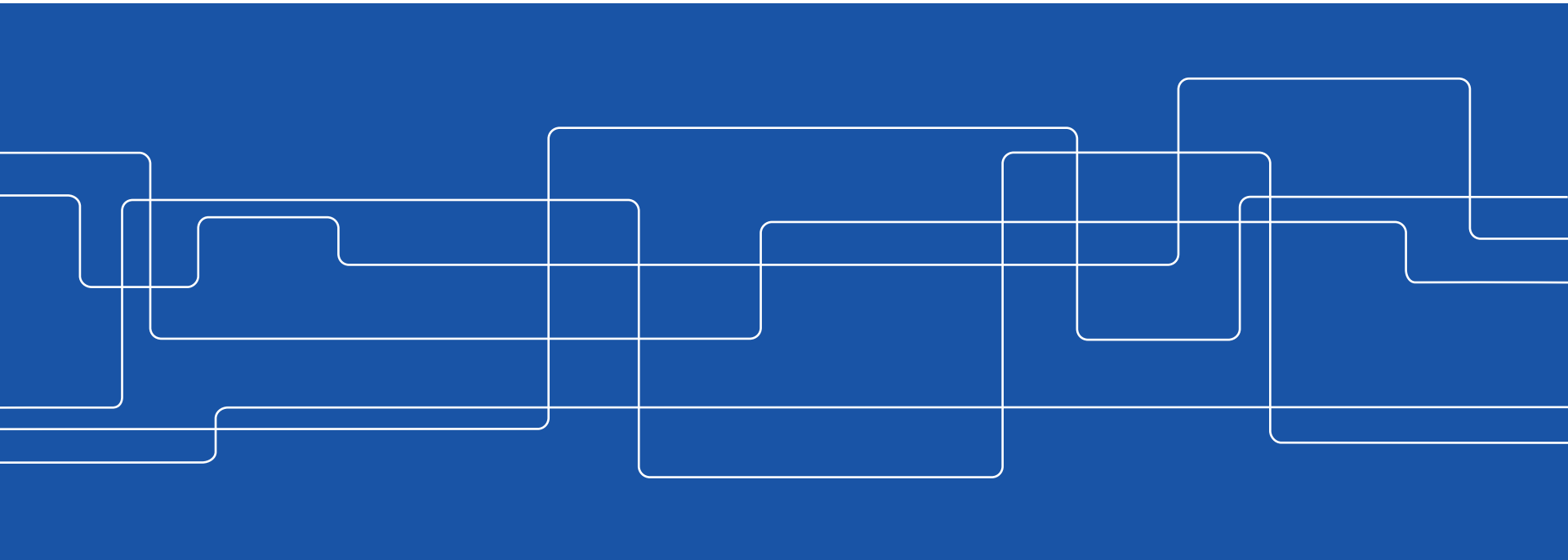

Goals of this lecture

1. To raise your **awareness of ethical issues**
2. To introduce some ways of **reasoning ethically**
3. To give you **practical guidelines for resolving dilemmas**

What is Ethics?

Ethics – the study of morality, good/bad, right/wrong, human conduct and behavior in a moral sense, and moral issues

Ethics – reflection on what kind of person we should become, what are my reasons for living

Ethics – as action sources – how do each of us decide what is the right thing to do

Ethics ≠ Law

Ethics - The study of standards of conduct and moral judgment

Law - All the rules of conduct established and enforced by the authority, legislation, or customs of a given community or other group

Computing Technology Ethics - a branch of Applied Ethics

- Deals with the standards of **professional responsibility** for computing professionals and the **application of norms and codes of ethics in decision-making**.
- James H. Moor 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.” [Moor 1985]

  Where computer technology includes hardware, software, networks, and computers.

See also J. H. Moor, ‘Reason, relativity, and responsibility in computer ethics’ [Moor 1998]

Ethical concerns about ICT are not new

Norbert Wiener, Professor, MIT, introduced the term **cybernetics** in 1948

- *Cybernetics or control and communication in the animal and the machine* [Wiener 1948],
- *The Human Use of Human Beings: cybernetics and society* [Wiener 1950],
- *God and Golem, Inc. a comment on certain points where cybernetics impinges on religion* [Wiener 1963]

His 1947 article "A Scientist Rebels" describes why he declines to provide information regarding his earlier work on controlled missiles [Wiener 1947] (to George E. Forsythe of Boeing) [Wiener 1983].

Computer ethics (term coined by Walter Maner in 1976)

"computers are special technology and raise special ethical issues, hence that computer ethics deserves special status."[Maner 1996]

He gives "six levels of justification for the study of computer ethics" [Maner 1996]

"**We should study computer ethics because**":

1. "doing so will make us behave like responsible professionals."
2. "doing so will teach us how to avoid computer abuse and catastrophes."
3. "the advance of computing technology will continue to create temporary policy vacuums."
4. "the use of computing permanently transforms certain ethical issues to the degree that their alterations require independent study."
5. "the use of computing technology creates, and will continue to create, novel ethical issues that require special study."
6. "the set of novel and transformed issues is large enough and coherent enough to define a new field."

In contrast, D. G. Johnson, says computers introduce no ethically unique issues

Deborah G. Johnson published the first textbook in computer ethics: “Computer Ethics” [Johnson 1985] in which she states computers:

> *“pose new versions of standard moral problems and moral dilemmas, exacerbating the old problems, and forcing us to apply ordinary moral norms in uncharted realms.”*

A more recent version of this textbook is [Johnson 2009]

Transformations brought about by ICT are raising new questions

Paul Mason in his article ‘The end of capitalism has begun’ describes postcapitalism [Mason 15b] and his survey of attempts to build “a framework to understand the dynamics of an economy based on abundant, socially-held information” [Mason 15a]:

1. information technology “has reduced the need for work, blurred the edges between work and free time and loosened the relationship between work and wages.”
2. “information is corroding the market’s ability to form prices correctly. That is because markets are based on scarcity while information is abundant.”
3. “the spontaneous rise of collaborative production: goods, services and organisations are appearing that no longer respond to the dictates of the market and the managerial hierarchy.”

What do you value?

We value being:

- popular,
- rich,
- successful,
- powerful,
- …

Sometimes these other values **preempt the moral**

James Rest's Four Component Model [Rest 1986]

1. **Moral Sensitivity** - one's sensitivity to possible actions and outcomes – this involves recognition of an ethical problem
2. **Moral Judgment** - one's notions about what is morally right or obligatory
3. **Moral Motivation** – the motivation to do what we judge to be right
4. **Moral character** – implementation, i.e., doing it

Behaving morally necessitates the effectuation of **each** process and the execution of the *entire* ensemble.

$\Rightarrow$ Can fail at any point.

Applying Ethics to Dilemmas

Two kinds of dilemmas:

1. you know what to do – you just don't want to do it [most common]
2. generally involve conflict of principles [less common]

Approaches to Decision-making based upon different Ethical Theories

- Consequence Based – Utilitarian [Driver 2014]
- Obligation Based – Deontological (Duty based) [Alexander 2015]
- Character Based – Virtue [Velasquez 1988]

Principles For Ethical Analysis [Beauchamp 2013]

- **Nonmaleficence** - the duty to cause **no** harm (including unnecessary risk)
- **Beneficence** - the duty to do good (i.e., action that is done for the benefit of others; Golden Rule)
- **Respect for Autonomy** - respect people's decisions/values
- **Justice** - treat like cases alike: distribute benefits and burdens *fairly*

Note: Harm ranges from physical/emotional injury to deprivation of property or violations of rights

Difficulty in *reconciling* these principles

Beneficence

requires professional to promote goods for client

Autonomy

requires professional to respect the client's autonomous decisions and actions

With respect to people's decisions: *informed consent* requires competence, disclosure, comprehension, and voluntariness [Lawrence 2007]

Balancing of **beneficence** and **nonmaleficence** requires balancing between the **benefits** and **risks**

Value Sensitive Design

Assumes that the outcome of a design process is *not* neutral, but rather value laden - hence puts consideration of the social and ethical values early in the design process

> "Value Sensitive Design provides us with the opportunity to deal with these ethical issues in a new and fresh way: by 'front-loading ethics' and by means of the pro-active integration of ethical reflection in the stage of design of architectures, requirements, specifications, standards, protocols, incentive structures, and institutional arrangements." [van den Hoven 2007]

Rules

Confidentiality – the duty to respect privacy of information

Fidelity – the duty to keep one's promise or word

Honesty – do not deceive

There are generally laws that are relevant to these, especially in specific settings.

The Centre for Research Ethics & Bioethics (CODEX) has an extensive collection of "Rules and guidelines" at http://www.codex.vr.se/en/regler.shtml

Computer Ethics Institute's Ten Commandments of Computer Ethics

1. *Thou Shalt Not Use A Computer To Harm Other People.*
2. *Thou Shalt Not Interfere With Other People's Computer Work.*
3. *Thou Shalt Not Snoop Around In Other People's Computer Files.*
4. *Thou Shalt Not Use A Computer To Steal.*
5. *Thou Shalt Not Use A Computer To Bear False Witness.*
6. *Thou Shalt Not Copy Or Use Proprietary Software For Which You have Not Paid.*
7. *Thou Shalt Not Use Other People's Computer Resources Without Authorization Or Proper Compensation.*
8. *Thou Shalt Not Appropriate Other People's Intellectual Output.*
9. *Thou Shalt Think About The Social Consequences Of The Program You Are Writing Or The System You Are Designing.*
10. *Thou Shalt Always Use A Computer In Ways That Insure Consideration And Respect For Your Fellow Humans.*

http://computerethicsinstitute.org/publications/tencommandments.html

Professional Responsibility

Spheres:

- Personal
- Group
- Social

Choices:

- How do you choose projects?
- Do you consider that accepting one project means not accepting others?
- Does a project benefit society?
- Technology may be neutral? Are you?

Code of Ethics

Standards which members of a group make binding upon themselves

What is the organization's purpose in having a code of ethics?

The code of ethics defines the **expectations** which the profession has of their practitioners

Goals:

- To change culture
- To guide action
- To raise level of professionalism
- Collective recognition of responsibilities

- **Aspirational** - what we hope everyone will do
- **Regulatory** - what we demand everyone do
- **Educational** - why one must do X

Different Codes

Professional computer organizations that have a code of ethics include the following:

- Association for Computing Machinery (ACM) Code of Ethics and Professional Conduct https://www.acm.org/about/code-of-ethics
- Institute of Electrical and Electronics Engineers (IEEE) Code of Ethics http://www.ieee.org/about/corporate/governance/p7-8.html
- British Computer Society (BCS, The Chartered Institute for IT) http://www.bcs.org/upload/pdf/conduct.pdf
- International Federation for Information Processing (IFIP) http://courses.cs.vt.edu/professionalism/WorldCodes/IFIP.Recommendation.html

IEEE Code of Ethics

“We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

- to accept responsibility in making decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment;
- to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
- to be honest and realistic in stating claims or estimates based on available data;
- to reject bribery in all its forms;
- to improve the understanding of technology; its appropriate application, and potential consequences;
- to maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations;
- to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
- to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression;
- to avoid injuring others, their property, reputation, or employment by false or malicious action;
- to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.”

http://www.ieee.org/about/corporate/governance/p7-8.html

"A Scandinavian View on the ACM's Code of Ethics"

“In Scandinavia, ethics (especially when compared to politics) has played a minor role in our professional discussions. There are, however, a few examples of codes of ethics formulated by specific organizations. What follows shows such a code agreed upon in 1991 by three Swedish trade unions organizing computing personnel ("Etik for datafolk" by SIF, SBmf and FTF; our translation). On a more general level, codes of ethics have not played any significant role in the education of computer professionals in Scandinavia, and the national computing societies have not adopted codes of professional conduct.

Swedish Ethical Rules for Computer Professionals:

- Computer professionals only perform tasks that acknowledge legitimate integrity claims and are in accordance with common under standing of law.
- Computer professionals only participate in development tasks, the objectives and context of which have been made explicit.
- Computer professionals only take part in projects with the time and resources assigned that make it possible to do a good job.
- Computer professionals only develop systems in close collaboration with the user.
- Computer professionals show respect for, and contribute to the development of, the professional competence of the users.
- Computer professionals develop systems that use technology in such a way as to satisfy the interests of the users.
- Computer professionals develop systems that bring about good work environments.
- Computer professionals refrain from tasks aiming at control in ways that can be of harm to individuals.
- Computer professionals keep themselves informed about laws and agreements related to their work and they participate actively in disseminating knowledge about computing activities violating such laws and agreements.
- Computer professionals only access data required to perform their job.
- Computer professionals feel responsible for ensuring that computer technology is not used in ways that harm people, the environment, or society.”

[Dahlbom 1994]

Types of Cases

Dilemmas

- situations that involve a conflict of values
- Require judgment, and/or virtue, to decide what ought to be done, and to show the courage to do it.

Ethical Problems

- concerning corporate action
- Require analysis of the problem and policies and systems to be set up in response

Framework for Ethical Decision-Making

1. Get the Facts
2. State the Problem
3. Identify the Stake Holders
4. Recognize a Moral Issue
5. Evaluate Alternatives from Moral Perspectives
6. Make a Decision

Dealing with Case

Develop list of at least five options

try to avoid “dilemma”, hence rather than saying “yes” or ”no”, consider **who** to go to & **what** to say

Test your options, using tests such as the following:

- **Harm test** - does this option do less harm than any alternative? Identify the Stakeholders
- **Publicity test** - would I want my choice of this option published in the newspaper?
- **Defensibility test** - could I defend my choice of this option before a Congressional committee, a committee of my peers, or my parents?
- **Reversibility test** - would I still think the choice of this option good if I were one of those adversely affected by it?
- **Virtue test** - what would I become if I choose this option often?
- **Professional test** - what might my profession's ethics committee say about this option?
- **Colleague test** - what do my colleagues say when I describe my problem and suggest this option as my solution?
- **Organization test** - what does the organization's ethics officer or legal counsel say about this?

Ethics Committees

Often concentrate on a particular problem

Seeking to fulfill ethical goals:

- to do no harm,
- to do good to others,
- to respect persons, and
- to do justice

There are also **ethics consultants** whose advice you might seek.

Cybsersecurity: Cyber defense, offense, and liability

An emerging area of professional ethical issues concerns cybsersecurity – raises questions such as:

- What is your professional responsibility for the security of the artifacts/products/systems that you develop?
- What steps should you take to automatically defend your artifacts/products/systems against attacks?
- Should you personally engage in cyber attacks and cyber warfare?

On 21 July 2015 the Seventh U.S. Circuit Court of Appeals ruled that the case against Neiman Marcus Group LLC over a 2013 cyberattack would be reinstated $\Rightarrow$ **Cyber Liability** [Nash 2015]

Whistle-blowing

Whistle-blowing involves exposing wrong doing

Externally to:

1. lawyers,
2. media,
3. law enforcement,
4. watchdog agencies, or
5. to local, state, or federal agencies

Internally: internal reporting done through organizational channels

Ethical Dilemma in Whistle-blowing:

Loyalty to organization versus loyalty to clients/society or to one's own integrity

Reactions to Whistle-blowing

Positive

Considered selfless martyrs for public interest and organizational accountability

Negative

- Considered snitches
- Loss of jobs
- Inability to get another job
- Isolation
- Organizational stonewalling
- Questioning one's mental health
- Talk about generous severance packages
- Harassment
- Potential criminal conviction

Richard T. De George's Criteria for Whistle-blowing [DeGeorge 2010]

Morally permissible	"The firm, through its product or policy, will **do serious and considerable harm to employees or to the public**, whether in person or the user of its product, and innocent bystander, or the general public." "Once employees identify a serious threat to the user of a product or to the general public, they **should report it to their immediate supervisor** and make their moral concern known. Unless they do, the act of whistle-blowing is not clearly justifiable." "If one's immediate **supervisor does nothing effective** about the concern or complaint, the employee should **exhaust the internal procedures and possibilities within the firm**. This usually involves taking the matter up the management ladder and, if necessary - and possible - to the board of directors."
Morally Obligatory	"The whistle-blower must have, or have accessible, **documented evidence** that would convince a reasonable, impartial observer that one's view of the situation is correct, and that the company's product or practice poses a serious and likely danger to the public or user of the product." "The employee must have good reasons to **believe that by going public the necessary changes will be brought about**. **The chance of being successful must be worth the risk one takes and the danger to which one is exposed**."

Summary

Maybe it will not be possible to find an absolutely correct answer to dilemmas – with a conflict of values there will always be regret

- Some solutions are better than others
- Some responses are clearly wrong

To Act Ethically

Be careful:

- We are frequently blind to ethics of situation
- Watch out for moral dis-engagement
- Consider distant consequences and all stakeholders;
  Especially if we see it as a business or computer problem
- Displacing responsibility to authority figures
- Diffusing responsibility to team members

Never say: “I have to do it because my boss said so”

References

[Beauchamp 2013] Tom L. Beauchamp and James F. Childress, *Principles of biomedical ethics*, 7th ed. New York: Oxford University Press, 2013, ISBN: 9780199924585.

[Johnson 1985] Deborah G. Johnson, *Computer ethics*. Upper Saddle River, N.J: Prentice Hall, 1985, ISBN 0-13-164005-4.

[Johnson 2009] Deborah G. Johnson and Keith Miller, *Computer ethics: analyzing information technology*, 4th ed. Upper Saddle River, N.J: Prentice Hall, 2009, ISBN 978-0-13-111241-4.

[Lawrence 2007] Dana J. Lawrence, 'The Four Principles of Biomedical Ethics: A Foundation for Current Bioethical Debate', *Journal of Chiropractic Humanities*, vol. 14, pp. 34–40, Jan. 2007. DOI: 10.1016/S1556-3499(13)60161-8

[Mason 2015a] Paul Mason, 'The end of capitalism has begun', *The Guardian, Guardian News and Media Limited*, London, England, 17-Jul-2015 [Online]. Available: http://www.theguardian.com/books/2015/jul/17/postcapitalism-end-of-capitalism-begun

[Mason 2015b] Paul Mason, *Postcapitalism.* Penguin Books, Limited, 2015, ISBN 9781846147388.

[Moor 1985] James H. Moor, 'WHAT IS COMPUTER ETHICS?', *Metaphilosophy*, vol. 16, no. 4, pp. 266–275, Oct. 1985. DOI: 10.1111/j.1467-9973.1985.tb00173.x

[Moor 1998] James H. Moor, 'Reason, relativity, and responsibility in computer ethics', *ACM SIGCAS Computers and Society*, vol. 28, no. 1, pp. 14–21, Mar. 1998. DOI: 10.1145/277351.277355

[Rest 1986] James R. Rest, *Moral development: advances in research and theory*. New York: Praeger, 1986, ISBN 978-0-275-92254-2

[van den Hoven 2007] Jeroen van den Hoven, 'ICT and Value Sensitive Design', in *The Information Society: Innovation, Legitimacy, Ethics and Democracy In honor of Professor Jacques Berleur s.j.*, vol. 233, P. Goujon, S. Lavelle, P. Duquenoy, K. Kimppa, and V. Laurent, Eds. Boston, MA: Springer US, 2007, pp. 67–72 [Online]. Available: http://link.springer.com/10.1007/978-0-387-72381-5_8. [Accessed: 23-Jul-2015]

[Wiener 1947] Norbert Wiener, 'A Scientist Rebels', *The Atlantic Monthly*, p. 46, Jan-1947. http://lanl-the-back-story.blogspot.se/2013/08/a-scientist-rebels.html

[Wiener 1948] Norbert Wiener, *Cybernetics or control and communication in the animal and the machine*, 2. ed., 10. print. Cambridge, Mass: MIT Press, 2000.

[Wiener 1950] Norbert Wiener, *The human use of human beings: cybernetics and society*. New York, N.Y: Da Capo Press, 1988.

[Wiener 1963] Norbert Wiener, *God and Golem, Inc. a comment on certain points where cybernetics impinges on religion*, 7. pr. Cambridge: M.I.T. Press, 1990.

[Wiener 1983] Norbert Wiener and Leo Pach, 'From the archives', *Science, Technology, & Human Values*, vol. 8, no. 3, pp. 36–38, Summer 1983. http://www.jstor.org/stable/688755