COSC1147: PCP

Professional Computing Practice

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Lecture 4

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Professional Ethics

- What is Professional Ethics?
- When applied to computing and information technology (IT), *professional ethics* is

> a field of applied ethics concerned with moral issues that impact computer/IT professionals.

Why a Separate Category of Professional Ethics?

- The same ethical rules involving honesty, fairness, and so forth that apply to ordinary individuals should apply to professionals as well.
- So, if it is wrong for ordinary people to steal, cheat, lie, and so forth, then it is wrong for professionals to do so as well.
- Why, then, is a separate field of study called "professional ethics“ needed?

What is a Profession?

- The term “profession” has evolved from a concept that was once associated with people professing a religious or monastic life to one that now has a more secular meaning.
- At one time, “profession” was used to describe a vocation where a person made a public promise to enter a “distinct way of life” with allegiance to “**high moral ideals**.”
- Later, the term came to refer to anyone who “professed to be duly qualified.”
- “Profession” has now come to mean an “occupation in which one professes to be skilled in and to follow.”

Who is a Professional?

- *Professionals* who comprise a given profession also tend to have certain defining attributes and requirements.
- For example, medical doctors, lawyers, etc., often find themselves in situations in which their decisions and actions can have significant social effects; their roles and responsibilities can exceed those of ordinary individuals.

Who is a Computer/IT Professional?

- A computer/IT professional might be viewed as anyone who is employed in the computer, IT, or information /communications fields.
- A computer/IT professional might be also be viewed in more narrow terms, in which case only software engineers would be included.
- There are various gradients in between the two ends of this spectrum.

Definition of a Computer/IT Professional

- A computer/IT professional could be defined in a way that includes mainly software engineers and their teams.
- Eg, teams comprising software quality analysts, technical writers, network administrators, and software managers and supervisors.
- A *software engineering team can* include those who participate directly in the analysis, specification, design, testing, development, and maintenance of software systems.

Do Computer/IT Professionals Have Special Responsibilities?

- Software Engineers and their teams have significant opportunities to do good or cause harm.
- the roles and responsibilities involved in the development of *safety-critical systems* is a factor *differentiating* them from other professionals.
- A "safety-critical system“ refers to computer systems that can have a direct life-threatening impact.

Safety-Critical Software

- Examples of safety-critical software systems and applications typically include:
- aircraft and air traffic control systems
- mass transportation systems
- nuclear reactors missile systems
- medical treatment systems.

Professional Codes of Ethics

- Many professions have established professional societies, which, have adopted *codes of conduct*.
- In Australia, we have ACS (*Australian Computer Society*) for IT professionals.
- Its objects are "*to advance professional excellence in information technology" and "to promote the development of Australian information and communications technology resources*"

Professional Codes for Computer/IT Societies

- The computing/IT profession also has professional societies, which include:
- The Association for Computing (ACM);
- The Australian Computer Society (ACS);
- The British Computer Society;
- The Institute for Electrical and Electronics Engineers (IEEE);
- IEEE Computer Society (IEEE-CS).

Purpose of Professional Codes

- Professional codes of ethics are often designed to motivate members of an association to behave in certain ways.
- Four primary functions of codes are to:

1) *inspire*,
2) *guide*,
3) *educate*,
4) *discipline* the members.

Criticisms of Ethical Codes

- Ladd (1995) argues that ethical codes rest on a series of “confusions” that are both "intellectual and moral." His argument can be analyzed in terms of three main criticisms of codes:

1) ethics is basically an "open-ended, reflective, and critical intellectual activity“ (that cannot be simply codified);
2) specific codes of ethics introduce confusions with respect to *micro-ethics* vs. *macro-ethics* (within a profession);
3) because codes can have a disciplinary function, they become more like legal requirements than ethical rules.

In Defence of Professional Codes

- *Codes of ethics* are "aspirational," because they often serve as **mission statements** for the profession and thus can provide vision and objectives.
- *Codes of conduct* are oriented more toward the professional and the professional's attitude and **behaviour**.
- *Codes of practice* relate to **operational activities** within a profession.

Strengths and Weaknesses of Professional Codes

Strengths	Weaknesses
Codes inspire the members of a profession to behave ethically.	Directives included in many codes tend to be too general and too vague.
Codes guide the members of a profession in ethical choices.	Codes are not always helpful when two or more directives conflict.
Codes educate the members of a profession about their professional obligations.	A professional code's directives are never complete or exhaustive.
Codes discipline members when they violate one or more of the code's directives.	Codes are ineffective (have no "teeth") in disciplinary matters.
Codes "sensitize" members of a profession to ethical issues and alert them to ethical aspects they otherwise might overlook.	Directives in codes are sometimes inconsistent with one another.
Codes inform the public about the nature and roles of the profession.	Codes do not help us distinguish between micro-ethics issues and macro-ethics issues.
Codes enhance the profession in the eyes of the public.	Codes can be self-serving for the profession.

Conflicts of Professional Responsibility: Employee Loyalty and Whistle-blowing

- What, exactly, is *employee loyalty*?
- Do employees and employers have a special obligation of loyalty to each other?
- Should loyalty to one's employer ever preclude an employee from "blowing the whistle" in critical situations?
- In which cases can whistle-blowing be justified?

Do Employees Have a Special Obligation to Employers?

- Some believe we have a *prima facie* obligation of loyalty in employment contexts.
- In other words, all things being equal, an employee should be loyal to his or her employer and *vice versa*.

Employee Loyalty and the Outsourcing of Programming Jobs

- Many computer programming jobs in the U.S. are now being "outsourced" by major corporations to countries where programmers are willing to write the code for much lower wages.
- Not only does this practice raise questions for employee loyalty, but it could also affect the future of the computer profession in the U.S.
- For example, young people may become discouraged from entering the programming field if high-skilled jobs in this field are eliminated via outsourcing (Baker and Kripalani, 2005).

Employer Loyalty (Continued)

- Consider some examples of employer loyalty where an employer either:

a) keeps an employee on the payroll even though that employee has a chronic illness, which causes them to miss several months of work.

b) retains several employees, despite the fact that their medical conditions have caused the corporation's health insurance costs to increase significantly, thereby reducing the company's overall earnings.

Employer Loyalty

- ANZ has been in controversy - "*ANZ threatened to discipline pregnant worker over medical examination*"- let us discuss the ethics of this volatile case.
- http://www.theage.com.au/victoria/anz-threatened-to-discipline-pregnant-worker-over-pelvic-exam-court-told-20140807-101m53.html

Do Employees Have Special Obligations of Loyalty to Their Employers?

- Employees have to balance their obligation of loyalty owed to an employer against other obligations of loyalty they also may have?
- Loyalty is not something that an employee must give exclusively or blindly to one's employer.
- Loyalty should also be seen as an obligation that employees, as ordinary individuals, have to society as a whole, especially where safety and health issues are at stake.

Divided Loyalties

- Divided loyalties can result in serious conflicts for employees.
- In certain cases, the moral dilemmas these conflicts generate are so profound that an employee must determine whether or not to "blow the whistle."

Whistle-blowing

- What, exactly, is whistle-blowing?
- Bok (2003) defines a whistle blower as an individual who makes

> "revelations meant to call attention to negligence, abuses, or dangers that threaten the public interest."

Whistle-blowing

- Bok notes that whistle blowers "sound an alarm" from ***within*** the organizations in which they work.
- She also notes that whistle blowing can be viewed as a form of ***dissent***, because those who blow the whistle make public their disagreement with their employers or with some authority.
- While dissent can include all forms of disagreement (e.g., religious, political, etc.), whistle blowing has the "narrower aim of casting light on negligence or abuse, or of alerting the public to a risk."

Whistle-blowing (Continued)

- In the context of engineering, whistle-blowing incidents often occur in attempts to alert the public to a potentially unsafe product.
- They can occur because of either:

a) *overt wrongdoing* (where an employee informs the public about the immoral or illegal behavior of an employee or supervisor);

b) *negligence* (e.g., where one or more individuals in an organization have failed to act).

When Should an Employee "Blow the Whistle"

- Should individuals in positions of authority in corporations such as Enron and WorldCom have blown the corporate whistle about the illegal accounting practices in those firms?
- One could argue that failing to blow the whistle in the Enron incident resulted in thousands of individuals losing their retirement savings, and in some cases their entire life savings.

Cases Where Whistle-blowing Could Have Saved Human Lives

- Consider two (now) classic cases where whistle blowing could have saved lives:
  - The Challenger Space Shuttle (problems with faulty O-rings);
  - Ford Pinto (problems with a faulty gas tank).

Controversial Political Issues Involving Whistle-blowing

- Review Scenario 4-1 (in the textbook) on the Strategic Defence Initiative (SDI).
- David Parnas blew the whistle on SDI because of three factors (Bowyer, 2001):

1. The specifications for the software could not be known with any confidence.
2. The software could not undergo realistic testing.
3. There would not be sufficient time during an attack to repair and reinstall failing software (no "real-time" debugging).

When an Engineer is *Permitted* to Blow the Whistle

- In De George's model, one is permitted to blow the whistle when the:

1) harm that will be done by the product to the public is serious and considerable.
2) engineers (or employees) have made their concerns known to their superiors.
3) engineers (or employees) have received no satisfaction from their immediate supervisors and they have exhausted the channels available within the corporation, including going to the board of directors.

“Blow the Whistle” classic cases

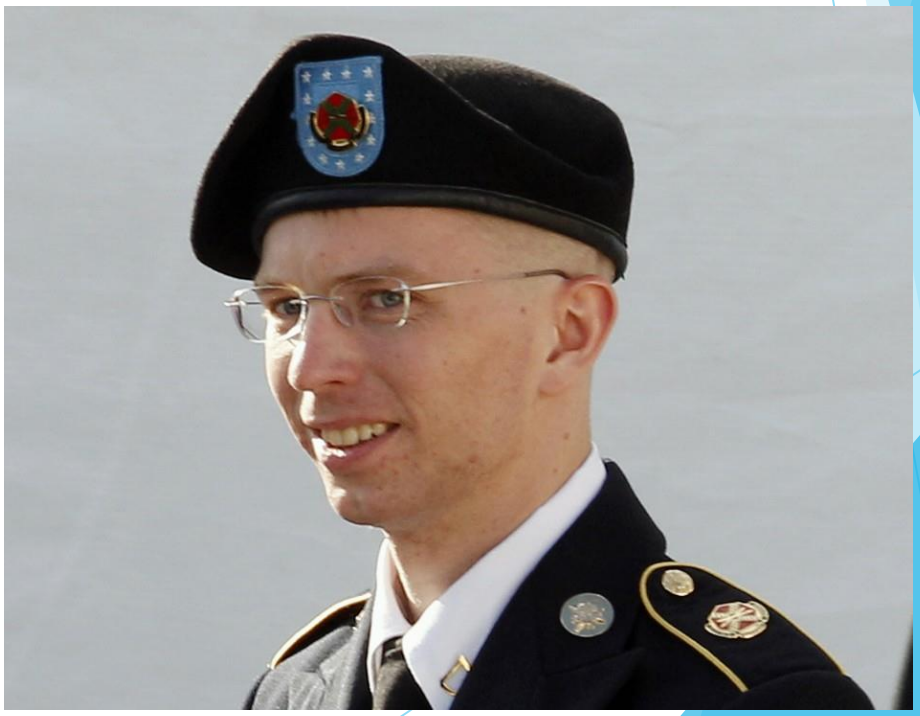
- Consider the ever controversial cases of
  - Edward Snowden
  - Bradley Manning and
  - Julian Assange and Wikileaks
- *Why have they been in news? Who was in news very recently and why?*

Edward Snowden

- What did he do?
- Do you think it was ethical of him to do so?
- Does he deserve to be punished?

Bradley Manning

- What did he do?
- Was it ethical to do so?



Julian Assange & Wikileaks

- Why have they been in news?
- What did they do recently?
- Are their actions ethical?

Responsibility, Liability, and Accountability

- *Traditional models of responsibility* require that two conditions be satisfied:

i. *causality*,

ii. *intent*.

- For example, some agent, *X*, is held morally responsible for an act, *Y*, if *X* caused *Y* (or intended to cause *Y*).

Responsibility (Continued)

- A person could be held responsible for causing some outcome, even if he or she did not intend the outcome.
- For example, a person who carelessly left a camp fire burning, which started a major forest fire, could be held responsible for causing the fire.

Responsibility (continued)

- Agents can also be held responsible when they *intend* for something to happen, even if they ultimately fail to cause (or bring about) the intended outcome.
- For example, suppose a disgruntled student intends to blow up a computer lab, but is discovered at the last minute and prevented from doing so; even though the student failed to carry out his objective, we hold him morally culpable because of his intentions.

Liability vs. Responsibility

- *Liability* is a legal concept.
- It is sometimes used in the narrow sense of "strict liability."
- To be strictly liable for harm is to be liable to compensate for it even though the party that is liable one did not necessarily bring it about through faulty action (e.g., when a someone is injured on a person's property).
- In liability incidents, the moral notion of "blame" may be left out.

Accountability (vs. Liability and Responsibility)

- Responsibility is only part of what is covered by the (broader) notion of *accountability*.
- For Nissenbaum, accountability means that someone, or some group of individuals, or even an entire organization is *answerable*.

Accountability (Continued)

- Nissenbaum points out that in cases of accountability,

  ...there will be someone, or several people *to answer* not only for malfunctions in life-critical systems that cause or risk grave injuries and cause infrastructure and large monetary losses, but even for the malfunctions that cause individual losses of time, convenience, and contentment.

The Problem of “Many Hands” in a computing Context

- Because computer systems are the products of engineering teams or of corporations, as opposed to the products of a single programmer working in isolation, “many hands" are involved in their development (Nissenbaum, 2007).
- It is difficult to determine who, exactly, is responsible whenever one of these computer or safety-critical system failures/accidents results in personal injury/harm to individuals.

The Problem of Assigning Responsibility when "Many Hands" are Involved

- Two problems for assigning responsibility using the classic model of responsibility (as apparent in the classic Therac-25 incident described in Scenario 4-2 in the textbook) are that we tend to think of responsibility:

I. as something that applies (only) to *individuals* but not to groups (or "collectivities" such as organizations);

II. in *exclusionary* terms, such that: If X is responsible, then Y is not, and *vice versa*.

Accountability vs. Responsibility

- *Accountability* is a broader concept than responsibility because it:

a) is non-exclusionary,

b) can apply to groups, as well as to individuals.

Responsibility, Liability, and Accountability

Moral Responsibility	Legal Liability	Accountability
Attributes of blame (or praise) to individuals.	Does not attribute blame or fault to those held liable.	Does not necessarily attribute blame
Usually attributed to individuals rather than "collectivities" or groups.	Typically applies in the case of corporations and property owners.	Can apply to individuals, groups of individuals, and corporations.
Notions of guilt and shame apply, but no legal punishment or compensation need result.	Compensation can be required even when responsibility in a formal sense is not admitted.	Someone or some group is answerable (i.e., it goes beyond mere liability).

Do Some Computer Corporations Have Special Moral Obligations?

- Computer corporations, by virtue of the scope and impact of their products and services, have some special moral obligations to society.
- Consider two very different kinds of computer corporations in terms of specific moral responsibilities they may have, given their profound societal impact:

i. search engine companies,

ii. companies that develop autonomous systems and robots.

Special Responsibilities for Search Engine Companies

- Hinman (2005) notes that search engine companies are "gatekeepers of the Web" and so should shoulder significant responsibility because:

1. play a "crucial role in the access to information" and that without them, the Web would "be inaccessible to us" and thus "almost useless."
2. provide "access to information that is crucial for responsible citizenship" (and "citizens in a democracy cannot make informed decisions without access to accurate information").
3. are now "central to education" (and students now search on Google and other major search engines more frequently than they visit libraries).
4. are owned by private corporations – i.e., by businesses that are mostly interested in making a profit.

Special Responsibilities for Companies that Develop Autonomous Systems

- The Royal Academy of Engineering's 2009 Report notes that *autonomous systems* – from "unmanned vehicles and robots on the battlefield, to autonomous robotic surgery devices, applications for technologies that can operate without human control, learn as they function and ostensibly make decisions" – will soon be available.
- The report also points out that these systems raise a number of "social, legal, and ethical issues."
- Arguably, these systems also raise some *professional-responsibility-related* issues.

Responsibilities for Companies that Develop Autonomous Systems (Continued)

- Wallach and Allen (2009) describe an actual case that closely mirrors one kind of concern anticipated in the Royal Academy's report.
- They describe an incident in which a prototype of an autonomous system (designed to make decisions "independent of human oversight") has already malfunctioned and resulted in human casualties.
- Arguably, companies that develop these machines should be held responsible for "moral-decision-making software code" that they build into them.

Do Other Kinds of Computer Corporations also have any Special Responsibilities?

- There may indeed be other kinds of computer corporations that also have special responsibilities to society in light of the significant social impacts of their products and services.
- In some ways, concerns of this type are more appropriately analysed under the category “business ethics.”
- But to the extent that these concerns particularly affect computer/IT professionals, they also warrant discussion within the context of cyberethics-and-professional-responsibility-issues as well.

Do Other Kinds of Computer Corporations also have any Special Responsibilities?

- Consider Uber, AirBnB, Airtasker
- Should they have special responsibilities?

Textbook suggested reading

- Please read these-
  - Chapter 4: Professional Ethics…
  - Pages 101-125