# Computer Ethics (English)

Spring 2014

BLG412E

# Week 3: Professional Ethics

**Lecturer:** Damien Jade Duff.
**Office:** 4307 (BAAL).
**Office hour:** Wednesdays 1.30pm – 5pm.

**Contents of today's Lecture**

**Catch up on theories:**

- Virtue ethics.
- Consequentialism & utilitarianism.
- Deontological ethics.
- Social contract.
- Rights-based approaches.

**Professional ethics:**

- What and why professional ethics.
- Codes of ethics.
- Problems with codes.
- Loyalty & whistle-blowing.
- Responsibility.

# What is a profession?

| Professionals | Computer professionals |
| --- | --- |
| Doctors | Software engineers |
| Lawyers | Quality analysts |
| Architects | Technical Documenters |
| Pilots | Project managers |
| Clinical Psychologists | Educators |
| Anyone with a calling or a special skill or education who uses that ability to provide a service. | Anyone involved with analysis, certification, design, specification, development, maintenance & testing of software systems. |

# What is a profession?

- Special skills → service.
- Characteristics (Greenwood, 1957):
  - Systematic theory.
  - Authority.
  - Community Sanction.
  - Ethical Codes.
  - Culture.
- Computer Engineering Professional Societies:
  - ACM.
  - IEEE-CS.

# Why *Professional* Ethics?

| Safety-critical systems examples |
| --- |
| Aircraft & air-traffic. |
| Mass transportation. |
| Nuclear reactors. |
| Medical treatment. |
| Design software (e.g. bridges, buildings). |
| Analytical models (e.g. medical treatment). |
| Operations software (e.g. disposal site selection) |

- Ethics is ethics!?
- Expertise:

  → Advantage over non-professional.

  → Social function & impact.

  - Safety-critical systems.
  - Gotterbarn: capacity to do harm.

  → Independence.

# Professional Codes of Ethics

Primary Purposes:

- Inspire (aspirational).
- Guide.
- Educate.
- Discipline.

Secondary Purposes:

- Awareness raising.

  ("oh I didn't think about bugs as dangerous before")
- Status raising.

  ("the computer profession is upstanding")
- Define expectations

  ("should I expect the occasional bug?")

IEEE-CS/ACM Software Engineering Code of Ethics and Professional Practice.

http://www.acm.org/about/se-code

# Criticisms of Codes of Ethics (I)

Davis (1995): Codes are usually:

- Vague.
- Self-serving.
- Inconsistent.
- Unrealistic.

Fairweather (2001). Codes are usually incomplete.

- IT codes focus on privacy, accuracy, property, accessibility.
- Sanctioning unremarked items.

# Criticisms of Codes of Ethics (II)

Ladd (1995):

- Rules discourage reflection.
- Don't distinguish between individual and collective issues (micro/macro ethics).
- Ethics should not have consequences.

- Prioritisation.
  - Perlman & Varma (2002): Secrecy vs transparency.

# IEEE-CS/ACM SECEPP

**Software Engineering Code of Ethics and Professional Practice**

Eight Principles:

- 1. PUBLIC - Act consistent with the public interest.
- 2. CLIENT AND EMPLOYER – Act in interests of client and employer consistent with public interest.
- 3. PRODUCT – Ensure products and modifications meet highest professional standards.
- 4. JUDGMENT - Maintain integrity and independence in professional judgment.
- 5. MANAGEMENT - Managers and leaders follow and promote ethical approach.
- 6. PROFESSION - Advance the integrity and reputation of the profession.
- 7. COLLEAGUES - Be fair to and supportive of colleagues.
- 8. SELF - Participate in lifelong learning and promote ethical approach.

http://www.acm.org/about/se-code

Know it.

# Levels of codes

## (an attempt to overcome criticism)

- Codes of ethics (aspirational).
  - (we are people)
  - It's your business.
- Codes of conduct (behaviour guide).
  - (we are professionals)
  - You can be warned.
- Codes of practice (operational rules).
  - (we are computer professionals)
  - You can be sanctioned.

- The IEEE-CS/ACM SECEPP – observing this distinction? (Gotterbarn)
- IEEE-CS/ACM SECEPP is supposed to be in order of priority.

# Whistle-blowing & Loyalty






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## US plunges in World Press Freedom index after NSA leaks, attacks on whistleblowers

Published time: February 12, 2014 13:55
Edited time: February 14, 2014 11:55

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# Whistle-blowing & Loyalty

- Often whistle-blowing is a matter of product inadequacy:
  - BART transit system.
    - Unsafe local transit computer system, whistleblowing engineers lost jobs.
  - Challenger disaster.
    - Engineers knew about faulty parts before space shuttle launch, informed superiors.

# When is one permitted to whistle-blow?

De George (1981):

1. Serious harm may occur.
2. Concerns have been made known.
3. No satisfaction reached.

# When is one obliged to whistleblow?

De George (1981):

1. Serious harm may occur.
2. Concerns have been made known.
3. No satisfaction reached.
4. Convincing evidence exists.
5. Whistle-blowing will prevent harm.

# When is one obliged to whistleblow?

James (1991):

Depends on severity, consequences, possibility.

- Alpern (1991):

  Ordinary Morality = "do no harm".

  (engineers specially placed to do harm)

- Ladd (1991):

  Should engineers be Moral Heroes?

  (recall levels of codes)

# Loyalty

- Are we obliged to be loyal to our employers?
  - IEEE/ACM SECEPP: #2 in hierarchy
  - Duska (1991):
    - Relationship contractual actually.
    - Big companies usually would not reciprocate.
  - Power asymmetry:
    - An example of discourse shaped by power?
    - Codes do exist for managers.
- Broader definition of stakeholder needed.

# Stakeholders

- Employers.
- Clients.
- Users.
- Beneficiaries.
- Affected individuals.

...

# Responsibility

- Case-study: Therac-25.
  - Machine to give radiation in hospitals.
  - Bugs in safety code, in dosage calculations, and a hardware error.
  - Staff trusted machine & safety measures.
  - 3 dead, 3 irreversible injuries.
- Who is responsible?
  - Hospital staff?
  - Hospital management?
  - Engineers who built it?
  - Company that owned and sold it?

# Responsibility: kinds

| | Responsibility | Accountability | Liability |
|---|---|---|---|
| Main idea: | Conscience following. | Addressed for issues. | Legal consequence. |
| Who is addressed: | Individuals. | Individuals or groups. | Any legal entity. |
| Consequences: | Guilt, shame, sense of wrong. | Must answer to victims etc. | Compensation, punishment, redress. |

<u>Responsibility:</u>
- Causality.
- Intent.

<u>Is responsibility exclusive?</u>
- The problem of "many hands".
  → introduce "accountability".

**Note**: This is jargon.
Everyday usage of these words is different.

# Legal liability

- Licensing:
  - Certification programs exist.
    - Some countries license software engineers.
  - ACM:
    - Consistency would be better.
    - State of knowledge too immature.
    - No guarantees:
      - Reliability.
      - Dependability.
      - Usability.
- Software owners:
  - Property protected in law.
  - Obligations: "no responsibility accepted" (License Agreements).
  - Liability usually with user.

# Risk assessment

- Normally:
  - Scheduling.
  - Budget.
  - Specification matching.
- Ethical considerations?
  - Full software lifecycle (Gotterbarn, 2001).
  - Social, political, ethical issues (Schneir, 2000).

# Collective Responsibility

McFarland:

Responsibility of an engineer

vs

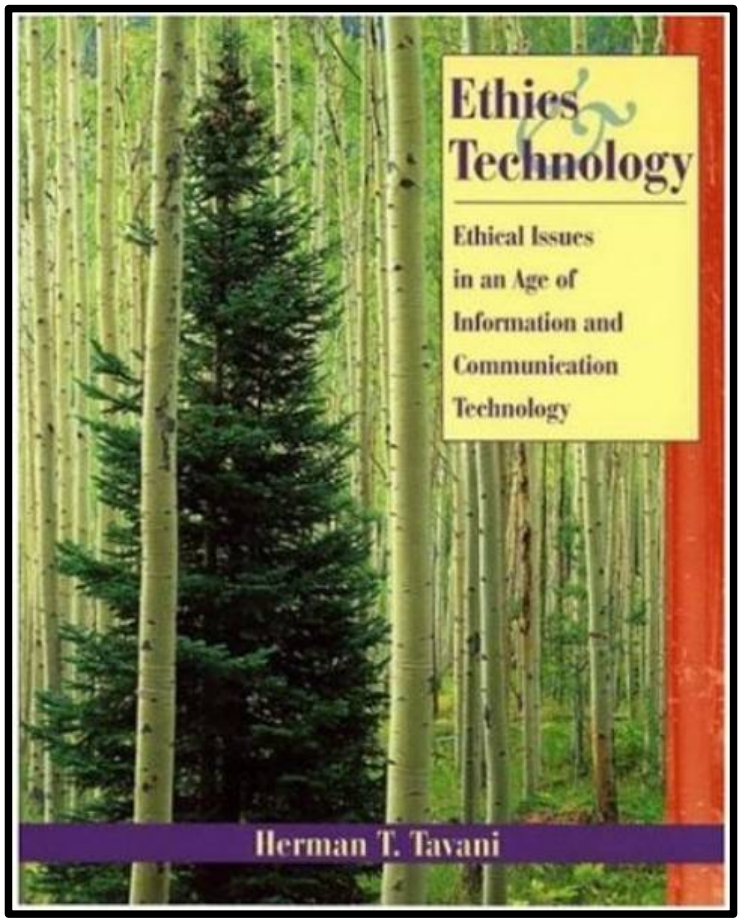
Responsibility of engineers

Nobody is a moral hero.

We're in it together.

# Reading:

Tavani Chapter 4: Professional Ethics, Codes of Conduct, and Moral Responsibility

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