

Professional Issues in Information Technology

Part VII: Ethical Codes for Computer Professionals

- com6655 2nd assignment handed out today, due in Tuesday 3rd Dec 3pm (15%)
- Take home 'exam': handed out Week 10, due in Tuesday 17th Dec (Week 12)

- **1 Introduction**
- **2 Functions of an Ethical Code**
- **3 Ethics and the Computing Professional**
- **4 The ACM and BCS Codes of Conduct**
- **5 For and Against Ethical Codes**
- **6 Capability Approach**
- **7. Value sensitive design**
- **8. Summary**

1 Introduction

- Computing is a new field; the profession has had neither the time nor the organisational capability to establish a binding set of moral rules on its members.
- Older professions, such as medicine and law, have had centuries to establish their codes of moral conduct.
- Medics and lawyers can only practice if they belong to the General Medical Council (GMC) and Law Society respectively, and adhere to the ethical codes of these organisations.

2 Functions of an Ethical Code

- 2.1 Professionalisation
- 2.2 Protection of group interests
- 2.3 Etiquette and inspiration
- 2.4 Education
- 2.5 Enforcement
- 2.6 Principles, ideas and rules
- 2.7 Rights

2 Functions of an Ethical Code

2.1 Professionalisation

Occupational groups adopt ethical codes in order to demonstrate that they deserve to be called a profession.

A code of ethics holds the profession accountable to the public. This tends to yield a payoff in terms of public trust and consequent social and economic rewards.

- Profession
 - Oxford english dictionary definition:
 - 1a: Paid occupation, especially one that involves prolonged training and a formal qualification
 - [treated as a singular or plural] a body of people engaged in a particular profession...e.g. the legal profession

2.2 Protection of group interests

Professions use codes of conduct to restrict the activities of non-members, thereby establishing a monopoly for the profession's services.

By demonstrating that they are able to control their membership, professions can convince the public that they deserve to be self-regulating

- **2.3 Etiquette and inspiration**
- Codes of ethics outline standards of courtesy and professional conduct among members of a profession.
- An ethical code can be used to inspire members of the profession to act appropriately, often by instilling a sense of pride and self-importance.

2.4 Education

Codes of ethics explicitly state what behaviour is acceptable. As such, they act as an aid to individual decision making.

2.5 Enforcement

An ethical code can also be used to discipline or deter. It may specify when the norms of a profession have been violated, and indicate that sanctions such as suspension or expulsion will be imposed.

2.6 Principles, ideals and rules

Ethical codes aim to lay out a set of principles which function as the basis for specific obligations.

Also, a code may express ideals, which will not always be strictly adhered to, i.e. members should do this rather than members shall do this.

An ethical code may contain a specific set of rules which apply to concrete situations. However, attempts to specify exhaustive lists of do's and don'ts are often unsuccessful.

- **2.7 Rights**

- As well as stating the obligations and duties of the professional, the code may indicate rights of members and indicate the obligation of the professional body to its members.

3 Ethics and the Computing Professional

- In some cases, computers have simply created new versions of age old moral issues, such as
 - Right and wrong
 - Loyalty
 - Responsibility
 - Confidentiality
 - Fairness

- However, the existence of computers has also created a whole new range of social problems. These include:
- Software theft
- Computer misuse and computer crime
- Responsibility for computer errors
- Many of these dilemmas (such as copying software) are 'grey areas' for which there are few social conventions.

- Last year:
- Teenager arrested yesterday in Kent, UK after posting a picture of a burning poppy on Facebook....
- arrested under Malicious Communications Act
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- **3.1 Existing ethical codes for computing professionals**
- A number of professional computer organisations have attempted to devise an ethical code for their members:
- The Association for Computing Machinery (ACM)
- Institute of Electrical and Electronics Engineers (IEEE)
- Data Processing Management Association (DPMA)
- International Federation for Information Processing (IFIP)
- British Computer Society (BCS)
- Australian Computer Society (ACS)

- Like engineers, computing professionals have four basic types of obligations, and conflicts can occur within and between categories:
- Obligations to society
- Obligations to their employers
- Obligations to their clients
- Obligations to other professionals and professional organisations

3.3 How do ethical problems arise?

- **3.3.1 Computers alter relationships between people**
- Data communications take place without physical contact of the people involved, so the visual and aural senses cannot help to convey meaning.
- Electronic communication occurs so quickly that one may not have time to consider the implications of the information before it has been sent and received.

- **3.3 *How do ethical problems arise? (continued)***

3.3.2 Computer professionals have power

- Technology puts power in the hands of computer professionals through access to financial, medical and military information. This power can be abused.

3.3.3 The nature of electronic information

- Computers allow rapid processing, communication, copying and printing of intellectual property. This introduces new ethical issues of copyright, plagiarism, piracy, eavesdropping and invasion of privacy.

3.3 How do ethical problems arise? (continued)

3.3.4 Society is vulnerable to the actions of computer professionals

- The general public do not understand the dangers of projects under the control of computer professionals.

3.3.5 Clients at the mercy of computer professionals

- Many clients have no understanding of how their computer systems work. The process of costing software projects is poorly understood.

4 The ACM, BCS and IEEE Codes of Conduct

- Three professional computing bodies that have developed ethical codes for their members are the Association for Computing Machinery (ACM), the British Computer Society (BCS), and the IEEE association.

- IEEE Code of Ethics <http://www.ieee.org/about/corporate/governance/p7-8.html>
- 1. 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;
- 2. to avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist;
- 3. to be honest and realistic in stating claims or estimates based on available data;
- 4. to reject bribery in all its forms;
- 5. to improve the understanding of technology; its appropriate application, and potential consequences;
- 6. 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;
- 7. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others;
- 8. to treat fairly all persons regardless of such factors as race, religion, gender, disability, age, or national origin;
- 9. to avoid injuring others, their property, reputation, or employment by false or malicious action;
- 10. to assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

BCS code of conduct: rules covering four main areas

1. Public interest
2. Professional competence and integrity
3. Duty to relevant authority
4. Duty to the profession

1. Public interest

You shall:

- a) have due regard for public health, privacy, security and wellbeing of others and the environment.
- b) have due regard for the legitimate rights of Third Parties.
- c) conduct your professional activities without discrimination on the grounds of sex, sexual orientation, marital status, nationality, colour, race, ethnic origin, religion, age or disability, or of any other condition or requirement
- d) promote equal access to the benefits of IT and seek to promote the inclusion of all sectors in society wherever opportunities arise.

2. Professional competence and integrity

You shall:

- a) only undertake to do work or provide a service that is within your professional competence.
- b) **NOT** claim any level of competence that you do not possess.
- c) develop your professional knowledge, skills and competence on a continuing basis, maintaining awareness of technological developments, procedures, and standards that are relevant to your field.

2. Professional competence and integrity (continued)

You shall:

- d) ensure that you have the knowledge and understanding of Legislation and that you comply with such Legislation, in carrying out your professional responsibilities.
- e) respect and value alternative viewpoints and, seek, accept and offer honest criticisms of work.
- f) avoid injuring others, their property, reputation, or employment by false or malicious or negligent action or inaction.
- g) reject and will not make any offer of bribery or unethical inducement.

3. Duty to relevant authority

You shall

- a) carry out your professional responsibilities with due care and diligence in accordance with the Relevant Authority's requirements whilst exercising your professional judgement at all times.
- b) seek to avoid any situation that may give rise to a conflict of interest between you and your Relevant Authority.
- c) accept professional responsibility for your work and for the work of colleagues who are defined in a given context as working under your supervision.
- d) **NOT** disclose or authorise to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your Relevant Authority, or as required by Legislation
- e) **NOT** misrepresent or withhold information on the performance of products, systems or services (unless lawfully bound by a duty of confidentiality not to disclose such information), or take advantage of the lack of relevant knowledge or inexperience of others.

4. Duty to the profession

You shall:

- a) accept your personal duty to uphold the reputation of the profession and not take any action which could bring the profession into disrepute.
- b) seek to improve professional standards through participation in their development, use and enforcement.
- c) uphold the reputation and good standing of BCS, the Chartered Institute for IT.
- d) act with integrity and respect in your professional relationships with all members of BCS and with members of other professions with whom you work in a professional capacity.
- e) notify BCS if convicted of a criminal offence or upon becoming bankrupt or disqualified as a Company Director and in each case give details of the relevant jurisdiction.
- f) encourage and support fellow members in their professional development

- **Definitions:**
- **Legislation** - The term “Legislation” means any applicable laws, statutes and regulations.
- **Third Parties** - The term ‘Third Parties’ includes any person or organisation that might be affected by your activities in your professional capacity, irrespective of whether they are directly aware or involved in those activities.
- **Relevant Authority** - The term “Relevant Authority” in this document is used to identify the person(s) or organisation(s) which has / have authority over the activity of individuals in their professional capacity. For practising BCS members this is normally an employer or client. For student members, this is normally an academic institution.

- Paul is a freelance programmer and technical author whose experience is primarily in the development of PC database systems for small companies. For the past 6 months he has been working, on a contract basis, for a small software house who have often sent him out to work for their clients.
- Now the software house has been asked by one of its regular clients to set up their E-commerce website. Unfortunately all the staff that normally do this kind of work are occupied with existing projects. Nevertheless the software house agrees to do the work, and Paul is asked to go on site and set something up. When Paul points out that he has never set up an E-commerce website before the manager tells him not to worry, given his knowledge he should be fine, and if any problems arise he can get in touch with one of the software house's E-commerce experts.

- Paul is keen to do the work since it will broaden his experience. When he asks whether the client knows he has never done this kind of work before, he is assured that he doesn't need to worry about that. He should just do his best, but not let on that he has never done similar work.
- **What should Paul do?** He is sure that the client has been misled about his level of expertise. On the other hand, the software house is quite sure that there is no problem. He doesn't want to upset them since they give him a lot of work, and the assignment is a good opportunity to broaden his level of expertise.

- The example illustrates the difficult problems that can arise:
 - Professional has duty to comply with employer's instructions
 - Professional also has duty towards client
 - And towards their own judgement about activities.
 - Sometimes employer or client might ask the professional to undertake illegal activity!

- What could a computer professional do if asked to take part in illegal activity?

- What could a computer professional do if asked to take part in illegal activity?
 - Make their objections known
 - Seek colleagues' advice, or professional body's advice.
 - Quit the job?

- Neither BCS nor ACM code has succeeded in becoming a central point of reference for computer professionals.
- Why not?

4.1 Limitation to a specific group of professionals

Both the ACM and BCS codes make clear that they apply only to their members.

So, either

- (i) only members of the ACM or BCS are considered computing professionals, or
- (ii) other professionals can practice with a different ethical code.

4.2 Lack of attention to the rights of professionals

- Neither the ACM or BCS codes places any emphasis on the rights of its members. For example, what if a member disagrees with a term in the ethical code?

4.3 Justification of the code

Both the ACM and BCS fail to indicate what the basic source of justification is. For example, all but one term in the BCS code of conduct is of the form 'You shall do something'.

Q. What is the problem with this?

Many computing professionals report that they find the codes unhelpful. One reason for this is the ambiguity of some of the terms. For example one item of the code is

d) act with integrity and respect in your professional relationships with all members of BCS and with members of other professions with whom you work in a professional capacity....

Is this useful?

- Much of the ACM and BCS codes are open to personal interpretation.

4.4 Prioritising

- Neither code establishes priorities among its different obligations. For a particular ethical problem, more than one principle of the code is likely to apply.
- This could lead to contradictory advice when applying the codes to a concrete problem.
- For example, it is not hard to imagine the following items of the BCS code being placed in competition.
- d) **NOT** disclose or authorise to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your Relevant Authority, or as required by Legislation
- e) **NOT** misrepresent or withhold information on the performance of products, systems or services (unless lawfully bound by a duty of confidentiality not to disclose such information), or take advantage of the lack of relevant knowledge or inexperience of others.

5. For and Against Ethical Codes

- **Advantages:**
- Define a common standard of behaviour, so clients know what to expect;
- Codes can support a refusal to behave unethically, so even 'obvious' rules have their uses;

5: For and Against Ethical Codes

Disadvantages:

Codes can give contradictory advice;

May give rise to complacency - practitioners think that so long as they are obeying the code, they need not concern themselves with ethical issues.

Could draw attention away from major ethical issues (e.g., how technology should be introduced and controlled) towards smaller immediate issues (the behaviour of individuals).

May suggest a dichotomy between ethical decision making in personal life and in professional life.

6. A recent (influential) ethical theory

The capability approach

- Pioneered and developed by **Amartya Sen** (economist and philosopher) and **Martha Nussbaum** (philosopher)
- Instead of focusing on maximising utility or happiness, or on justice – focus on capabilities
- Capabilities: what people are effectively able to be or to do

- Amartya Sen



Martha Nussbaum



- Capability theorists focus on capabilities instead of utility or preference satisfaction because of a phenomenon that Sen calls
 - “**adaptive preferences**”.
- People adjust to circumstances to make life bearable – those who are persistently deprived may find ways of adjusting to their situation, and may lack courage to demand change.

- Emphasis on ***capability*** because of personal choice
- i.e. A person who is fasting is in a state of under-nutrition, which may seem very similar to a person who is starving. But in the one case, the fasting person *could eat and chooses not to*; whereas the starving person would eat if she could.
- Aim is to provide the possibility of adequate food.

Nussbaum (unlike Sen) has developed a list of 10 capabilities.

- People need a threshold level of all of these in order to have a life “worthy of human dignity”
- Emphasis on social justice

Central human capabilities (Nussbaum, 2006)

1. Life: being able to live to the end of a human life of normal length
2. Bodily health: being able to have good health, to be adequately nourished, to have adequate shelter
3. Bodily integrity: being able to move freely from place to place, being secure against violent assault, opportunities for sexual satisfaction, choice in matters of reproduction
4. Senses, imagination and thought: being able to imagine, think and reason in truly human way...includes literacy and mathematical and scientific training, and freedom of expression
5. Emotions: being able to have attachments to things and people- to love, to grieve, to experience longing, gratitude and justified anger. Requires support for forms of human association that enable positive emotional development free from fear and anxiety

6. Practical reason – being able to form a conception of the good, and to engage in critical reflection about the planning of one's life.
7. Affiliation –
 - a) being able to live with and towards others, to recognise and show concern for others, to be able to imagine the situation of others, social interaction
 - b) being treated as dignified being whose worth is equal to that of others (requires guards against discrimination on many grounds)
8. Other species – being able to live with concern for and in relation to animals, plants and the world of nature
9. Play – being able to laugh, to play, to enjoy recreational activities
10. Control over one's environment
 - a) Political participation
 - b) Material – being able to hold property, and having the right to seek employment

- Technology, and computer software, could increase the capabilities of some people
 - e.g. blind people and self driving cars
 - disabled people and exoskeletons
 - access to education (MOOCs?)
 - people with dementia and robot pets



7. Computer ethics and value sensitive design

- Helen Nissenbaum, (2001) **How computer systems embody values**
 - Information technology can change society – but technology is also developed on the basis of certain values.
- Complex interplay between system and *“those who built it, what they had in mind, its conditions of use, and the natural, cultural, social, and political context in which it is embedded—all these factors may feature in an account of the values embodied in it”*

- Friedman and Nissenbaum (1996) **Bias in computer systems.**
- Bias can take different forms
- (i) Pre-existing bias
- (ii) Technical bias
- (iii) Emergent bias

- **(i) Pre-existing bias:**
 - e.g. automated loan advisor which negatively weights applicants who live in “undesirable” locations, such as low-income or high-crime neighbourhoods, as indicated by their home addresses

- (ii) **Technical bias**
- E.g. Listing of flights: which are listed first?
 - System may have a bias towards placing certain airlines flights first – for instance those with all segments on a single carrier.
 - Might miss better alternatives for someone flying from Phoenix, USA to New York and then London.

- (iii) **Emergent bias** – emerges as use changes.
 - E.g. Flight advisor that was developed for national flights might be biased towards flights with one carrier when extended to international flights.
 - E.g. In USA, the computerised National Resident Medical Match program is used to place medical students in their first jobs. Developed in the '70s it assumed only one member of the family needed placing. But increasing numbers of women lead to more marriages between residents, and it was biased against couples.

- **Examples of the relationship between values and technological design**
 - (from Friedman and Kahn,2003)
- Inuit people were given snowmobiles:
 - altered transportation methods from dog sleds, but also introduced a symbol of social status and a dependence on money economy.
- Email:
 - rarely tells you anything about the social status of the emailer.

Value sensitive design

Friedman, Kahn and Borning (2008)

- Value sensitive design is *“a theoretically grounded approach to the design of technology that accounts for human values in a principled and comprehensive manner throughout the design process”*
- Extend the traditional criteria used to evaluate a system (e.g. Reliability and correctness) , and also consider its relationship to core human values

- Value sensitive design: concerned with shared human values such as
 - Well-being
 - Human dignity
 - Justice
 - Human rights
 - E.g. Right to privacy

- Value sensitive design

- Friedman, B., Kahn, P.H., and Borning, A. (2008) *Value-Sensitive Design and Information Systems*, in K.E. Himma and H.T. Tavani (Eds) *The Handbook of Information and Computer Ethics*, John Wiley and Sons.

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- **How to apply value sensitive design**
 - Start with value, technology or context of use
 - Identify direct and indirect stakeholders (indirect – those who don't use the system but could be affected by its use)
 - Identify potential harms and benefits of system for stakeholders
 - Map harms and benefits onto corresponding values
 - Conceptually investigate values (philosophical work can be useful here)
 - Identify value conflicts (e.g. Privacy vs security, trust vs security, accountability vs privacy)
 - Explore effects of different technical designs on value conflicts, and on different groups of stakeholders
 - Design for flexibility, and subsequent modification based on feedback.

- Value sensitive design involves an interactive process that examines conceptual, empirical and technical issues.
 - Conceptual – how are values supported or diminished by designs
 - Empirical – researching understandings and experiences of those affected by application
 - Technical – identifying values and developing technical mechanisms that support them.

- Case studies, applying conceptual, empirical and technical investigations.
- E.g. to **Design of cookies technology**
- **A) Conceptual**
- What values are implicated? Tradeoffs? Weighting (e.g. between moral values such as privacy, and non moral values e.g. Aesthetic preferences)
- Value of informed consent is involved, protection of other human values such as privacy, autonomy, and trust.
- Do people understand what they are agreeing to?

- **B) empirical investigations**
- Observing people's use of and understanding of cookies on websites
- **C) technical investigations**
- Designing systems to support the values that were identified as relevant
- Looking at how the technological properties support or hinder human values.

- Value-sensitive design:
 - Linked to participatory design, but as well as user-centred design, also involves the inclusion of marginalised perspectives in the design process.

- Assignment 2 for Com6655: Deadline Monday 3rd December
- Write an essay of between 1000-2500 words on the following:
- Choose **one** of the following and discuss its legal, ethical and societal implications:
 - social networks (e.g. Facebook, MySpace);
 - robots for care of the elderly;
 - autonomous self-driving cars;
 - computer games;
 - virtual reality;
 - internet campaigns;
 - autonomous weapons.

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8 Summary

- Codes of Conduct are a means by which professional organisations can control their membership and avoid external regulation.
- They also act as a guide to professional decision making.
- Ethical problems often arise because of the special nature of computer technology.

Summary (continued)

Both the BCS and ACM have established professional codes of conduct. Both are flawed, but have some merit.

Undesirable: Computing professionals are bound by a fixed set of rules that distance them from their own ethical standards and those of society in general.

Desirable: Professional ethical codes act as guidelines for ethical decision making in the context of professional employment, not in life in general. The guidelines place an emphasis on the personal ethics of the individual and their place within the ethics of society as a whole.

Summary (continued)

- A recent ethical theory: The Capability Approach
- Value sensitive design: A recent approach that emphasises the idea of values in design
 - Conceptual – how are values supported or diminished by designs
 - Empirical – researching understandings and experiences of those affected by application
 - Technical – identifying values and developing technical mechanisms that support them