CE29x Team-Project Challenge

Ethics

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with acknowledgements to Keith Primrose and Mike Fairbank

Topics for Today

1. Ethics – Definitions
2. Issues affecting CSEE professionals
3. Themes and Morality
4. Ethical Frameworks

   ✳ Important Distinctions

5. Professional Codes of Conduct
6. The Free Software Foundation's view of Ethical Computing

Acknowledgments

* Some of these slides are based on those that accompany one or other of the following books:

   1. "A Gift of Fire: Social, Legal, and Ethical Issues for Computers and the Internet, 2ed" (Baase 2003) (Baase & Clark 2003)

   2. "Ethics & Technology: Ethical Issues in an Age of Information and Communication Technology" (Tavani 2004); chapters 1+2

1. Ethics – Definitions and Examples for our profession

Ethics - Definitions

* Ethics:

    * "is the philosophical study of morality, a rational examination into people's moral beliefs and behaviour"
    (Quinn 2004, p48)

    * "Principles of right or good conduct, or a body of such principles, that affect good and bad business practises."
    (NCN ltd. cited on Google define)

Quinn, Michael, 2004, "Ethics for the Information Age", Addison Wesley, Boston.

Professional Ethics

* Professional Ethics exist in
    * Medical,
    * Legal,
    * Accounting,
    * Engineering,
    * Computing,
    * …and other professional fields.

"Cyber-ethics"

* Cyber-Ethics (Tavani, 2004):
    * Ethics relating to cyber-technology
    * Cyber-technology: all types of computing/communication devices
* Other literature refers to cyber-ethics as
    * "Computer Ethics"
    * "Information Ethics"

2. Issues affecting CSEE professionals

Issues affecting CSEE professionals

✳ The technologies of CSEE are becoming ubiquitous

✳ They have a major impact

✳ Positive on some aspects of society

✳ Also negative on some aspects

✳ New scenarios arise which have never risen before

✳ No existing policy exists for them ("policy vacuums", Moor 1999)

✳ How should we / do we deal with this?

Recent Technology trends that have ethical implications

As a technology user:

✴ Using Ad-block software – who should fund websites?

✴ Installing "free" apps that secretly sell your data

  ✴ Or creating them?

✴ Using free / proprietary software

✴ Signing up to 17-page licence agreements, without reading first

✴ Downloading music and films illegally

Examples that could affect us

As a CSEE professional:

✳ Code reuse of other people's work

✳ Building on open source, while honouring their licences

✳ Making Licence agreements

✳ Delivering quality – meeting or exceeding customer's expectations. Satisfying the requirements and deliverables.

✳ Security of your clients' data

Examples that could affect us

* Generating technology lock-in. Closed vs. open standards.
    * Microsoft's controversial [Embrace and extend policy](#) to web browsers
    * Inability of Open Office to properly display .docx files

Examples that could affect us

* Do you allow your clients to take the source code you've written for them to another developer afterwards to add new features / fix bugs?

    * Or do you force them into a situation where you are the only company they can hire to do software maintenance (including fixing the bugs you yourself left in there)?

    * Service agreement

Recent Trends

* Creating software that puts people out of jobs
    * Automation
    * Self-driving taxis + lorries coming soon
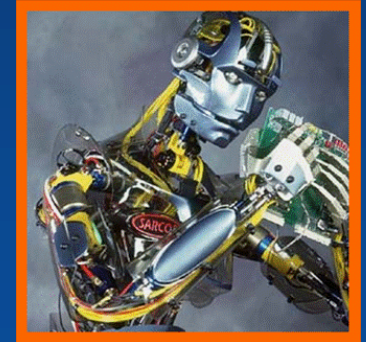
Recent Trends

✴ Or changes their working conditions

✴ E.g. the gig economy

⁎ Uber, Deliveroo, etc.

+ Workers pick and choose their hours

+ Workers are "self employed"

- Boss is an app, not a human

- Is it just disguised employment?

+ Cheaper for end user

✴ Deliveroo riders strike for minimum wage

Recent Trends

* Creating tech that is potentially dangerous
    * Self-driving cars
    * Defence industry
    * Cyber defence / offence

* [IEEE Spectrum Article: Can you program ethics into a self-driving car?](#)

Examples that could affect us

∗ Implementing code with malicious content – at the instructions of your client.

∗ E.g. recent blog, "The code I'm still ashamed of"

  ∗ Junior programmer receives SRS to code a website with a medical "questionnaire"

  ∗ SRS states that website must always recommend owner's pharmaceutical product (regardless of questionnaire's answers)

  ∗ Pharmaceutical product has fatal side-effects

  ∗ Programmer concludes "*As developers, we are often one of the last lines of defence against potentially dangerous and unethical practices.*"

∗ Q. Is this worth losing your client (or job) over?

  ∗ TAKE/SEE SURVEY

3. Themes and Morality

Themes

* There are many things to consider
* Old Problems in a New Context
  * We look for solutions learned in older technologies and update them. (E.g. the government extending phone tapping laws to apply to email interception)
* Adapting to New Technology
  * New activities may require a new set of rules to follow.
* The Global Reach of Technology
  * Social behavior and laws vary from country to country. (E.U. imposes constraints on what US companies can/can't do; and vice-versa)
  * Cross-border use of social media to influence elections
* Trade-offs and Controversy
  * We need to consider both sides of an argument

Themes

* Differences Between Personal Choices, Business Policies, and Law
    * Arguments for personal choice exist
    * or organizational policy
    * But these are not sufficient for enforcing decisions [laws] against others.
* We need a framework to discuss these issues in a rational way.
    * Some of the issues are legal and are handled within a given jurisdiction
    * All of them are moral issues
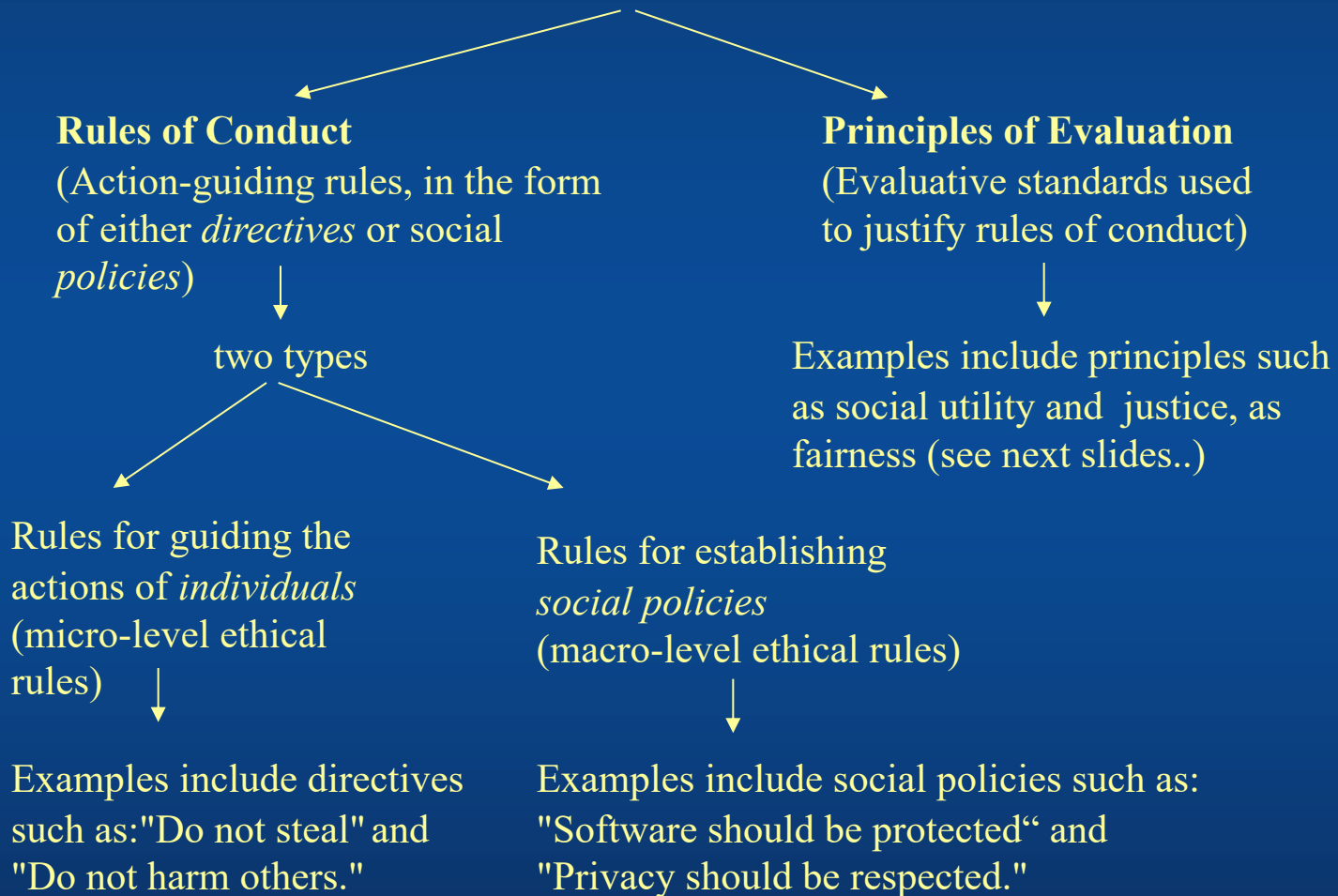
What is Morality?

✳ Morality can be defined as:

a system of rules for guiding human conduct, and principles for evaluating those rules.

Two points are worth noting in this definition:

i. morality is a *system;*

ii. it is a system comprised of moral *rules* and *principles.*

✳ Moral rules can be understood as "rules of conduct," which are very similar to "policies."

The different kinds of rules + principles that comprise a Moral System

Rules of Conduct
(Action-guiding rules, in the form of either *directives* or social *policies*)

↓

two types

Rules for guiding the actions of *individuals* (micro-level ethical rules)

↓

Examples include directives such as:"Do not steal" and "Do not harm others."

Principles of Evaluation
(Evaluative standards used to justify rules of conduct)

↓

Examples include principles such as social utility and justice, as fairness (see next slides..)

Rules for establishing *social policies* (macro-level ethical rules)

↓

Examples include social policies such as: "Software should be protected" and "Privacy should be respected."

Behaving Ethically

✳ "Doing the Right Thing"

✳ Behaving Ethically Includes:

✳ Being honest.

✳ Keeping promises.

✳ Doing your job well.

✳ Not stealing.

Behaving Ethically

✳ So how do we decide *what* "doing the right thing" is?

   ✳ And *why* is it the right thing?

Three Views

✳ The religious view:

"Stealing is wrong because it offends God or because it violates one of God's Commandments."

✳ The legal view:

"Stealing is wrong because it violates the law."

✳ A philosophical view:

"Stealing is wrong because it is wrong" (independent of any form of external authority or any external sanctions).

The Philosophical view

✳ Many philosophers and ethicists have argued that[#], independent of either supernatural or legal authorities, reason alone is sufficient to show that stealing is wrong.

✳ They argue that reason can inform us that there is something either in the act of stealing itself, or in the consequences that result from this kind of act, that makes stealing morally wrong.

which you may, or may not, find convincing

4. Ethical Frameworks

Ethical Frameworks

✳ To reason about morality we need some framework

✳ Over the years there have been many approaches:

1. Consequence-based
2. Duty-based
3. Contract-based
4. Character-based
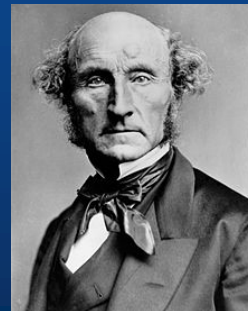5. and others

1. Consequence-based Ethics

✱ Consequentialist ethics

  ✱ Strive to increase "utility" (that which satisfies a person's needs and values) for the most people (the greater good).

  ✱ Consider the consequences for all affected people.

  ✱ Includes <u>Utilitarianism</u> (e.g.

  <u>Jeremy Bentham</u>, <u>John Stuart Mill</u>)
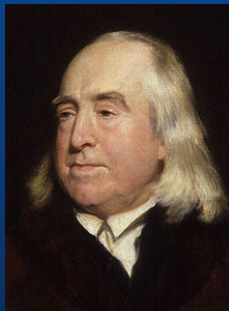
1748-1832, England   1806-1873, England

1. Consequence-based Ethics

✳ Consequentialist (cont'd)

    ✳ Rule-Utilitarianism: Choose rules, or guidelines for behavior, that generally increase utility.

    ✳ Act-Utilitarianism: Analyze each action to determine if it increases utility.

2. Duty-based Ethics

✱Deontological (Duty-based) Ethics
  ✳ Emphasize duty, and absolute rules.
   (from Ancient Greek, *deon:* obligation, duty *logia*: the study of)
  ✳ Rules should apply to everyone.

2. Duty-based Ethics

✳Deontological (Duty-based) Ethics
   ✳ Includes Kant's Categorical Imperative
      ✴ Kant uses logic or reason to determine what is good.
      ✴ Is not concerned with happiness
      ✴ "Act always on that maxim or principle (or rule) which ensures that all individuals will be treated as ends-in-themselves and never merely as a means to an end". (Don't use and abuse people!)
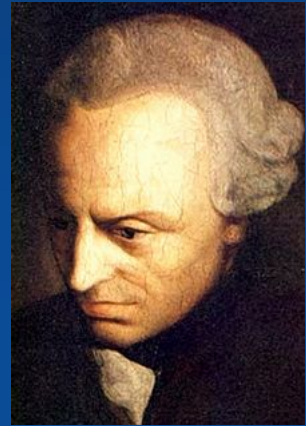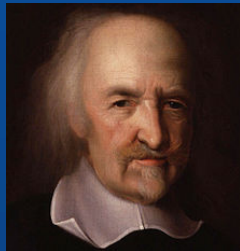

Immanuel Kant
1724-1804, Prussia

3. Contract-based Ethics

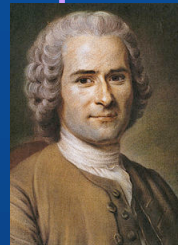Contract-based ethics assert that we have some "Natural Rights" -

* Derived from the 'nature of humanity'

* Includes 'The Social Contract'

(Thomas Hobbes, Jean-Jacques Rousseau)

1588-1679, England   1712-1778, Geneva

* Focus is on the process by which people interact.

* Respect the fundamental rights of others, including life, liberty, and property.

3. Contract-based Ethics

✳ These contract-based rights can be divided into "positive rights" and "negative rights":

✳ Positive rights:

* Impose an obligation on some people to provide certain things

* (Positive rights oblige others to actively do something towards you)

* E.g. your right in the UK

  * to be provided with an education

  * to receive health-care

3. Contract-based Ethics

✳ Negative rights (liberties):

   ✳ The right to act without coercive interference.

   ✳ Negative rights oblige others not to interfere with you

   ✳ E.g. Your right not to be murdered

   ✳ E.g. Your right to free speech (without interference)

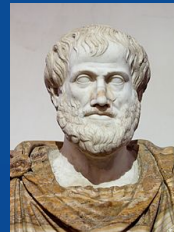   ✳ E.g. Your right to own a computer (without interference)

Further information: See Tavani 2.6.2.   Also Negative and positive rights, Claim rights and liberty rights

4. Virtue Ethics (a.k.a. Character Ethics)

✳ Ignores the roles that consequences, duties, and social contracts play in moral systems

✳ Descends from Plato and Aristotle
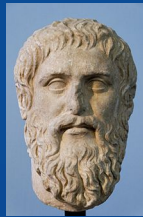
~420BC, Greece

384BC, Greece

✳ Focuses on individuals acquiring good character traits "Virtues"

4. Virtue Ethics (a.k.a. Character Ethics)

✳ Aristotle argues that becoming an ethical person requires more than simply memorizing and deliberating on certain kinds of rules.

✳ Aristotle listed Four Cardinal Virtues:

  ✳ Prudence (practical wisdom),

  ✳ Temperance (self-control or moderation),

  ✳ Courage,

  ✳ Justice (fairness)

Four Ethical Frameworks

Type of Theory	Advantages	Disadvantages
1. *Consequence-based (Utilitarian)*	Stresses promotion of happiness and utility	Ignores concerns of justice for the minority population
2. *Duty-based (Deontology)*	Stresses the role of duty and respect for persons	Underestimates the importance of happiness and social utility
3. *Contract-based (Rights)*	Provides a motivation for morality	Offers only a minimal morality
4. *Character-based (Virtue)*	Stresses moral development and moral education	Depends on homogeneous community standards for morality

Combined approaches

✻ Some Ethicists have tried to combine aspects of two more theories, such as consequentialism and deontology.

✻ James Moor (1999) has devised a framework called "Just Consequentialism" that incorporates aspects of:

　✻ Deontology (duty and justice),

　✻ Utilitarianism (consequences).

Moor's 2 Stage approach

1. *Deliberate* over various policies from an impartial point of view to determine whether they meet the criteria for being ethical policies. A policy is ethical if it:

    a) does not cause any unnecessary harms to individual groups (Utilitarianism)

    b) supports individual rights, the fulfilling of duties, etc (Deontological)

2. *Select* the best policy from the set of just policies arrived at the deliberation stage, by ranking ethical policies in terms of benefits and (justifiable) harms. In doing this, be sure to:

    a) weigh carefully between the good consequences and the bad consequences in the ethical policies (Utilitarianism) and

    b) distinguish between disagreements about facts and disagreements about principles and values,

    when deciding which particular ethical policy should be adopted.

Conclusion

✳ We have to always try to reach the right decision
  ✳ There is no one formula to solve ethical problems.
  ✳ All professionals have to consider trade-offs.
  ✳ Ethical theories help to identify important principles or guidelines.

Some Important Distinctions

✳ Right, Wrong, and Okay: Acts may be

   ✳ ethically obligatory, (E.g. Giving first-aid to an injured party)

   ✳ ethically prohibited, (E.g. taking part in an elaborate tax-avoidance scheme)

   ✳ ethically acceptable. (E.g. saving in a tax-free ISA)

✳ Causing harm:

   ✳ Some acts may cause harm to others but are not necessarily unethical. (E.g. trialing a new drug and finding it has nasty side effects)

Some Important Distinctions

✸ Goals vs. actions:

  ✶ The actions we take to achieve our goals should be consistent with our ethical constraints. (E.g. "I want to get a promotion, but not by treading on my colleagues").

✸ Personal preference vs. ethics:

  ✶ Some issues we disapprove of because of our dislikes, rather than on ethical grounds. (E.g. "I disapprove of homeless people; because they are so unsightly")

✸ Law vs. ethics:

  ✶ Some acts are ethical, but illegal; other acts are legal, but unethical. (E.g. maybe assisted suicide/tax avoidance)

5. Professional Codes of Conduct

Codes of conduct

✳ Your degree is accredited by British Computer Society (BCS) and Institute of Engineering and Technology (IET):

  ✳ BCS Code of Conduct

  ✳ IET Code of Conduct

(British Computer Society)

(Institution of Engineering and Technology)

Codes of conduct

"The Code governs your personal conduct as an individual member of the BCS and not the nature of business or ethics of the relevant authority. It will, therefore, be a matter of **exercising your personal judgement in meeting the Code's requirements**." (BCS code of conduct, p1)

"The IET promotes and encourages ethical behaviour in the practice of science, engineering and technology by all stakeholders. ... **Responsibility for professional and personal decisions and actions rests with the individual member**. (IET, 2007)

"A universal ethical code for scientists" *

* Rigour, honesty and integrity:
  * Act with skill and care in all scientific work. Maintain up to date skills and assist their development in others.
  * Take steps to prevent corrupt practices and professional misconduct. Declare conflicts of interest.
  * Be alert to the ways in which research derives from and affects the work of other people, and respect the rights and reputations of others.
* Respect for life, the law and the public good:
  * Ensure that your work is lawful and justified.
  * Minimise and justify any adverse effect your work may have on people, animals and the natural environment.
* Responsible communication: listening and informing:
  * Seek to discuss the issues that science raises for society. Listen to the aspirations and concerns of others.
  * Do not knowingly mislead, or allow others to be misled, about scientific matters. Present and review scientific evidence, theory or interpretation honestly and accurately.

* BERR, 2007, Rigour, respect and responsibility: A universal ethical code for scientists

CyberEthics

* Ethics and CSEE
    * Special responsibilities face professionals and users
        * Maintaining relationships and responsibilities towards customers, clients, coworkers, employees, and employers.
        * Making critical decisions that have significant consequences for many people.
        * Determining how to manage, select, or use computers and other technologies in a professional setting.

Is Professional Ethics enough?

✴ Some of the ethical issues raised by Cyber Technologies do not directly involve CSEE Professionals

  ✴ Is it right to assume that <u>users</u> will abide by the same standards as the authors?

    ✴ What if we create a P2P network that users use to distribute classified/copyrighted material?

    ✴ Is facebook responsible for stopping user-harassment?

Is Professional Ethics enough?

✳ Not all people who operate, in some respects, as professionals within the field are bound by the professional codes

✳ Anyone can call themselves a software developer

　　✳ Unlike some other professions (e.g. Doctors, Architects)

　　✳ Lack of regulation can lead to poor implementation, even to safety problems

　　✳ E.g. London Ambulances in 1992 were dispatched incorrectly by a new automated system

✳ You can apply for Chartered IT Professional status ("CITP") with BCS

6. The Free Software Foundation's view of Ethical Computing

The Free Software Foundation's (FSF's) view

✱ For software to be ethical, it should not control the user in anyway.

✱ "Free Software" is defined to be software that grants the user 4 fundamental freedoms:

1. The freedom to run the program as you wish, for any purpose
2. The freedom to study how the program works, and change it so it does your computing as you wish.
3. The freedom to redistribute copies so you can help your neighbour
4. The freedom to distribute copies of your modified versions to others.

✱ Non-free software is *proprietary,* or "User subjugating" software

The Free Software Foundation's (FSF's) view

1953-, US

* FSF was founded by Richard Stallman
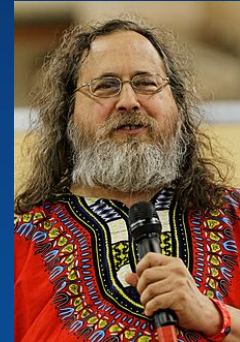
* Richard Stallman claims that if the software is proprietary, then it adds too much temptation for the developer to add malicious features

  * That's why we find backdoors or secret data-harvesting features in so much software

Gnu, Linux, and the FSF

✳ Richard Stallman created the Gnu project, and the FSF

✳ Richard Stallman was frustrated at copyright being used to stop tinkering or sharing software,

  ✳ so he invented "copyleft" and the Gnu GPL (General Public License)

  ✳ Licence allows the 4 freedoms, and stipulates that any derivative of this software must retain these same rights

✳ Linus Torvalds released the Linux kernel with the GPL

  ✳ That's what allowed anyone to contribute to it, and made it grow so fast

  ✳ Linux and Gnu are normally distributed together (E.g. Ubuntu is Gnu+Linux)

"Free Software"?

1. How does "Free Software" differ from software that costs nothing?

2. How does free software differ from "Open Source"?

3. Given an option between otherwise-identical pieces of high-quality software,

   * assuming financial cost is no issue,

   * would you rather the software was Free Software or not?

"Free Software" ethics?

* The FSF claims that

  * Proprietary software is unethical

    * Using it or creating it

  * To be ethical, schools and universities should not teach students with proprietary software.

Further Study

* **Ethics Quiz**
  * Due in 9 days, 25.11.2018
* Further information on the FSF:
  * https://www.gnu.org/philosophy/free-sw.html
  * Recommended viewing on Gnu/Linux origins: Revolution OS
* Course textbooks:
  * "A Gift of Fire: Social, Legal, and Ethical Issues for Computers and the Internet, 2ed" (Baase 2003) (Baase & Clark 2003)
  * "Ethics & Technology: Ethical Issues in an Age of Information and Communication Technology" (Tavani 2004)
* Next Lecture is on Organisations

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