Engineering Ethics

Celia Schahczenski, PhD
Freshman Seminar
ESOF 194
Oct. 23 ,2019

Ethics

Discuss:
- Professionalism and ethical codes
- Ethics versus morals
- Various ethical theories
- Quiz

Material from:

Engineering Ethics: Real World Case Studies by Steven Starrett, Amy Lara and Carlos Bertha, 2017

Ethics for the information age, 3rd, by Michael J. Quinn, 2008

Software Engineering Code of Ethics and Professional Practice

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

ACM/IEEE-CS Joint Task Force

8 Principles - Code of Ethics

1. PUBLIC - Act consistently with the public interest

2. CLIENT AND EMPLOYER - Act in a manner that is in the best interests of their client and employer consistent with the public interest

3. PRODUCT - Ensure products meet the highest professional standards

4. JUDGMENT - Maintain integrity and independence in professional judgment

5. MANAGEMENT - Subscribe to and promote an ethical approach to the management of software development and maintenance

6. PROFESSION - Advance the integrity and reputation of the profession consistent with the public interest

7. COLLEAGUES - Be fair to and supportive of colleagues

8. SELF - Participate in lifelong learning

https://ethics.acm.org/code-of-ethics/software-engineering-code/
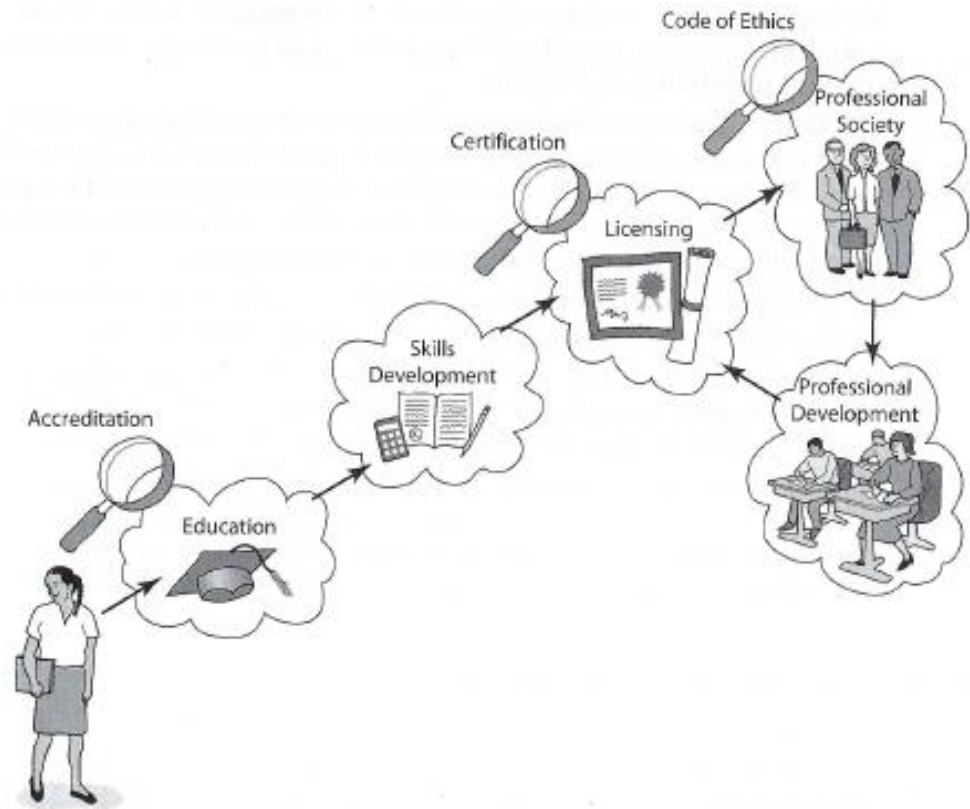
Professionalism

Professionals (doctor, lawyers, engineers)

- Have a duty to safeguard life, health, property, the public welfare and the environment.

- There is a need for self-regulation.

- Have a stake in ensuring that fellow professionals are capable and act appropriately.

Characteristics of a Profession

Components of a mature professional infrastructure:

- Education
- Accreditation
- Skills development
- Licensing
- Professional
      development
- Code of ethics
- Professional society

Issues

Software safety is critical:
1. Self driving cars
2. Monitoring nuclear power plant
3. Information gathering
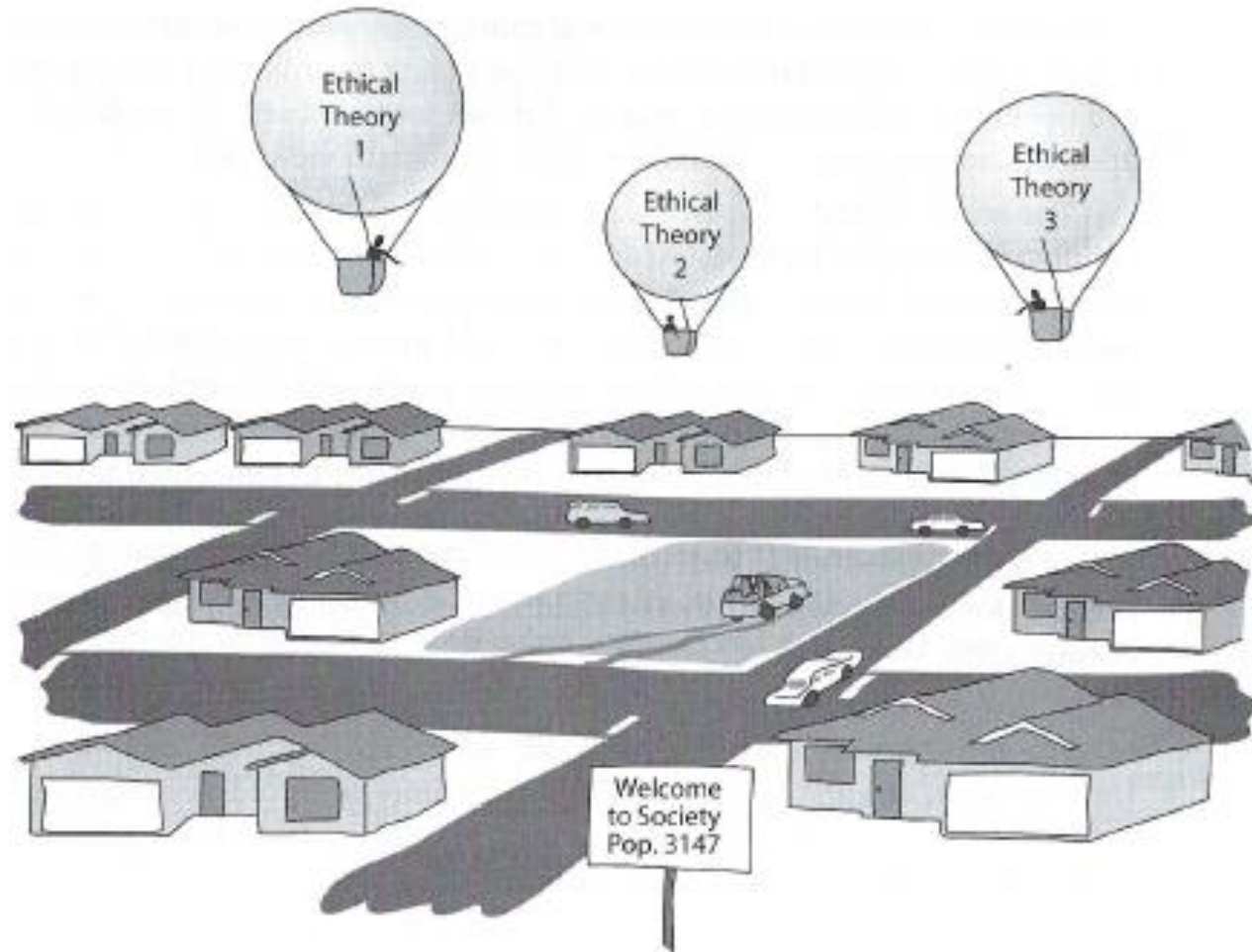4. Medical devices
5. Security

Copying a CD

Violating a licensing agreement by copying a CD containing copyrighted music and giving it to a friend.

Ethics versus Morals

Morals – rule of conduct describing what people ought and ought not to do in various situations.

Ethics – philosophical study of morality

7 Ethical Theories

7 common ethical theories:

1. Subjective relativism
2. Cultural relativism
3. Divine command theory
4. Kantianism
5. Act utilitarianism
6. Social contract theory

Subjective Relativism

Relativism – No universal moral norms of right and wrong , different people have different views

Subjective relativism – each person decides right and wrong for himself or herself

"What's right for you may not be right for me."

Subjective Relativism

Pros	Cons
Well-meaning and intelligent since people can have totally opposite opinions about moral issues	No sharp line between doing what you think is right and wrong
Ethical debates are disagreeable and pointless	No moral distinction is made between the actions of different people
	Allows people to make decisions based on something other than reason

Cultural Relativism
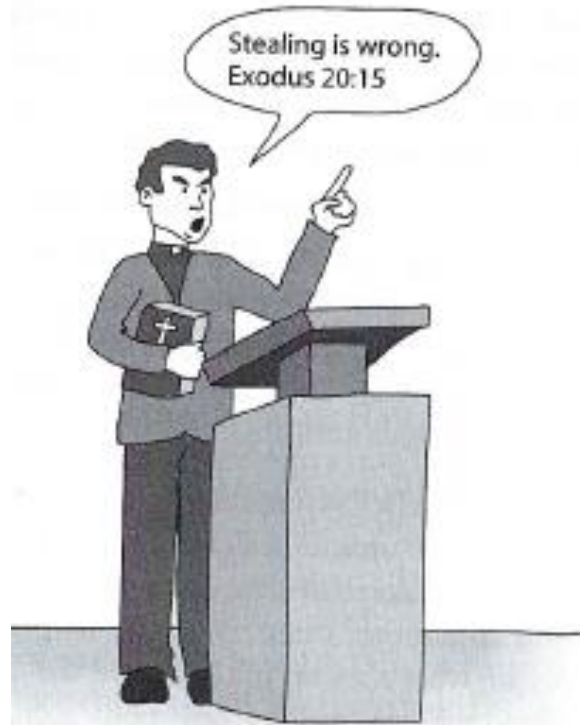
Right and wrong rests with a society's moral guidelines.

"When in Rome, do what the Romans do."

Cultural Relativism

Pros	Cons
Different social context demand different moral guidelines	Acceptable cultural practices aren't necessarily acceptable
It is arrogant for one society to judge another	Gives no framework for reconciliation between cultures in conflict
Morality is reflected in actual behavior	Societies do share certain core values
	Is only indirectly based on reason

Divine Command Theory

Good actions are those aligned with the will of God and bad actions are those contrary to the will of God.
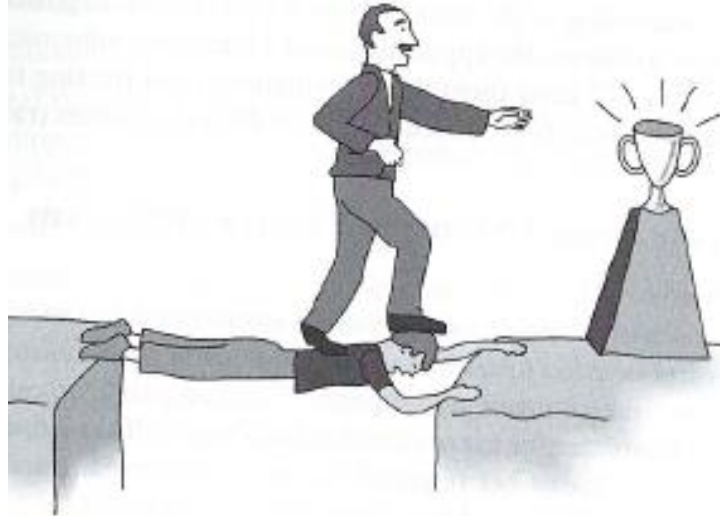
Divine Command Theory

Pros	Cons
We owe obedience to our Creator	There are many holy books, and some disagree with each other
God is all-good and all-knowing	Some moral problems are not addressed directly in scripture
God is the ultimate authority	It is unrealistic to assume a multicultural society will adopt a religion-based morality
	It is fallacious to equate "the good" with "God"
	This is based on obedience, not reason

Kantianism

Categorical Imperative - Act so that you always treat both yourself and other people as ends in themselves, and never only as a means to an end
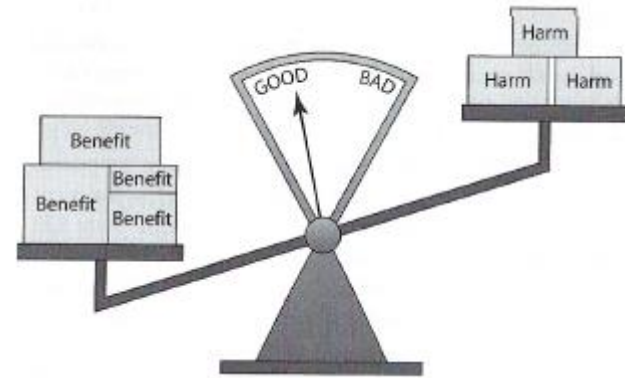

Intensions are important.
Based on duties.

Kantianism

Pros	Cons
Kantianism is rational	Sometimes no single rule fully characterizes an action
Kantianism produces universal moral guidelines	There is no way to resolve a conflict between rules
All persons are treated as moral equals	Actions are judged independently of their outcome, moral laws are categorical i.e. true at all times

Act Utilitarianism

Principle of Utility or the Greatest Happiness Principle – An action is right (or wrong) to the extent that it increases (or decreases) the total happiness of the affected parties

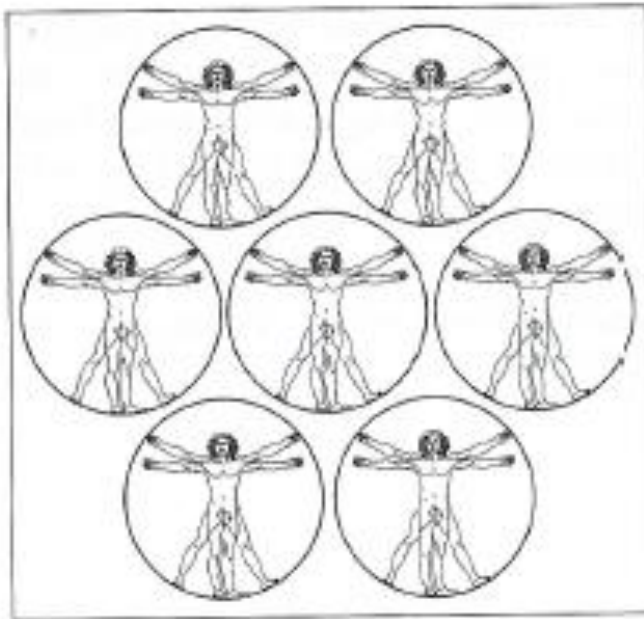Consequences, rather than intensions, are most important.

Act Utilitarianism

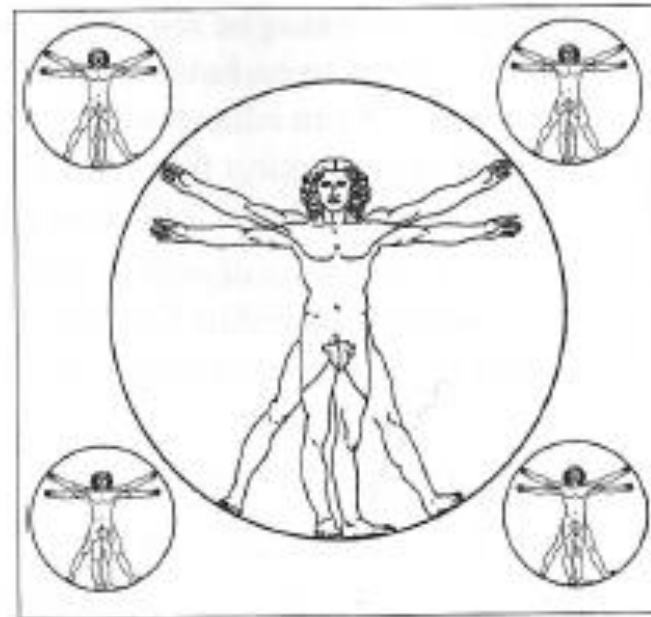| Pros	Cons
Focuses on happiness	Not clear where to draw the line when thinking of consequences
Is down-to-earth	Not practical to put so much energy into every moral decision
Is comprehensive	Ignores our innate sense of duty
	Is susceptible to the problem of moral luck

Social Contract Theory

Social Contact Theory – Morality consists in the set of rules, governing how people are to treat one another, that rational people will agree to accept, for their mutual benefit, on the condition that others follow those rules as well.

Social Contract Theory

Harm comes from a concentration of wealth and power.

Just

Unjust

Social Contract Theory (Theory of Justice)

Basic rights and liberties:

- Freedom of thought and speech
- Freedom of association
- The right to be safe from harm
- The right to own property

so long as these claims are consistent with everyone else having a claim to the same rights and liberties

Theory of Justice

Social and economic inequalities are acceptable only if:

- Every person has an equal chance to achieve them.

- The inequalities are justified because their overall effect is to provide the most benefit to the least advantaged.

Most Advantaged   Least Advantaged

Social Contract Theory

Pros	Cons
Framed in the language of rights	None of us signed the social contract
Explains why rational people act out of self-interest in the absence of a common agreement	Some actions can be characterized multiple ways
Provides a clear ethical analysis of important moral issues regarding the relationship between people and government	Does not explain how to solve a moral problem when the analysis reveals conflicting rights
	Unjust to people who are incapable of upholding their side of the contract

Copying a CD

Violating a licensing agreement by copying a CD containing copyrighted music and giving it to a friend.

7 Ethical Theories

7 common ethical theories:
1. ~~Subjective relativism~~
2. ~~Cultural relativism~~
3. Divine command theory
4. Kantianism
5. Act utilitarianism
6. Rule utilitarianism
7. Social contract theory

If all is relative, there is no room for analysis.

7 Ethical Theories

7 common ethical theories:
1. ~~Subjective relativism~~
2. ~~Cultural relativism~~
3. ~~Divine command theory~~
4. Kantianism
5. Act utilitarianism
6. Rule utilitarianism
7. Social contract theory

Want theories where ethical decision-making is a rational process, using logical reasoning based on facts and commonly held values.

Copying a CD

Violating a licensing agreement by copying a CD containing copyrighted music and given it to a friend.

- Kantianism
- Act utilitarianism
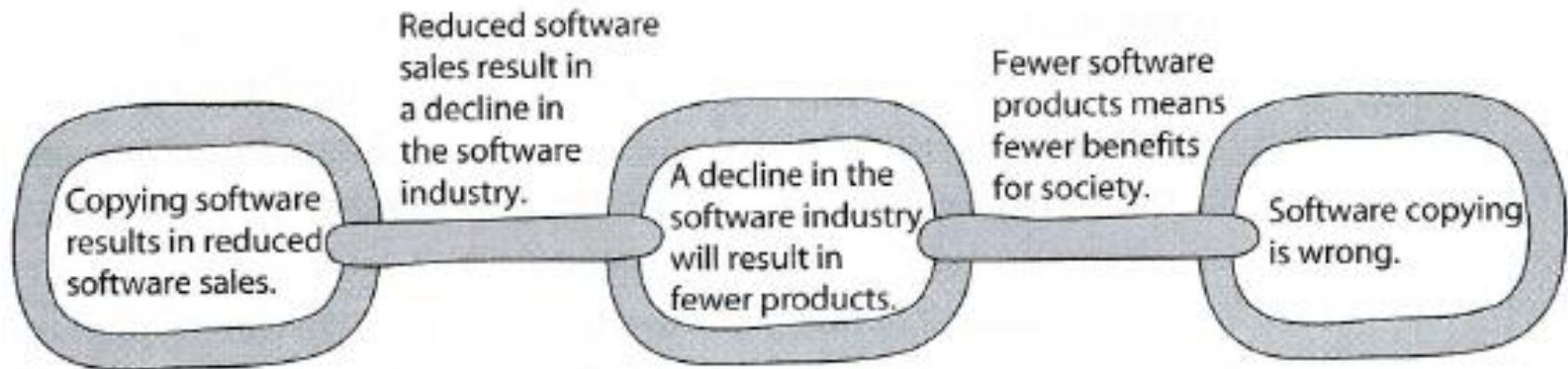- Rule utilitarianism
- Social contract theory

Selling Information

Owner of DVD rental store tracks the DVDs rented to customers. He decides to sell this information to mail order companies. The customers begin receiving many unsolicited mail order catalogs. Some of the customers are happy to receive these catalogs. Others are unhappy at the increase in the amount of "junk mail" they are receiving.

- Kantianism
- Act utilitarianism
- Rule utilitarianism
- Social contract theory

Copying Software

Chain of reasoning for consequentialist argument as to why copying is bad

Copying software results in reduced software sales.

Reduced software sales result in a decline in the software industry.

A decline in the software industry will result in fewer products.

Fewer software products means fewer benefits for society.

Software copying is wrong.

Ethics – like juggling troupe

Can't be self-absorbed, must think about how my tosses affect the other members of the troupe and what we are trying to accomplish.