

Engineering Ethics

&

Intellectual Property Rights

Why study engineering ethics?

1. Proficiency in recognizing moral problems
2. Skill in comprehending, clarifying, and assessing moral arguments
3. Ability to form comprehensive and consistent viewpoints based on relevant facts
4. Sensitivity to alternate viewpoints
5. Precision in and familiarity with ethical terminology
6. Sensitivity to difficulties and subtleties involved in ethical disputes

What is Ethics?

1. Systematic Area of Inquiry

2. Beliefs or Attitudes

3. Moral Correctness

1. Systematic Area of Inquiry

- into moral values
 - methods for clarifying moral issues
 - means for resolving moral disputes
 - efforts to justify moral judgments
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- discipline resulting from above activity
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- application to the moral values, issues, and decisions involved in engineering comprises the what is known as
Engineering Ethics

2. Beliefs or Attitudes

- as endorsed as proper by a specific group of individuals
- Engineering Ethics, in this sense, then can be understood as the code of ethics endorsed by one profession

3. Moral Correctness

- justified principles of obligation, rights, and ideals that ought to be endorsed
- as applied to engineering, this would be the set of such principles as they are generally applied and endorsed by engineers
 - elucidating such principles and applying them to specific situations is the central goal of engineering ethics

Areas of Application

Accountability

Safety and Risk Analysis

Academic / Intellectual Integrity

Employee-Employer Relations

Competence & Commitment to the Profession

Responsibilities to Society

The Environment

Weapons Development

Research & Experimentation

The Role of Values in the Design Process

Confidentiality

Intellectual Property Rights

What is a profession?

(Schinzinger & Martin, *Introduction to Engineering Ethics*. Boston, MA: McGraw Hill, 2000.)

1. Advanced Expertise
2. Self-regulation
3. Advancing Public Well-being

1. Advanced Expertise

- Extensive formal training
- Continuing education & updating of knowledge

2. Self-Regulation

- Public allows professional societies a certain degree of autonomy in the regulation of their practice
- This includes the adoption of standards for admission to the profession, drafting of ethical codes, enforcing standards of conduct, and representing the profession before the public and government

3. Public Well-Being

- Occupation serves some aspect of the common good
 - Engineering seeks to provide technological solutions to pressing social problems pertaining to safety, health, and the general well-being of all

Code of Ethics

- Provides a framework for ethical judgments within a profession
- Expresses the commitment to shared minimum standards for acceptable behavior
- Provides support and guidance for those seeking to act ethically
- Formal basis for investigating unethical conduct, as such, may serve both as a deterrence to and discipline for unethical behavior

IEEE Code of Ethics

We, the members of the IEEE, in recognition of the importance of our technologies in affecting the quality of life throughout the world, and in accepting a personal obligation to our profession, its members and the communities we serve, do hereby commit ourselves to the highest ethical and professional conduct and agree:

1. to accept responsibility in making engineering 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.

Moral Dilemmas

- A situation in which two or more moral obligations, duties, rights, goods, or ideals come into conflict with one another.
 - Also, possible for a single moral principle to have two or more incompatible applications
- Formulating absolute moral principles is difficult, if not impossible
- Most moral principles have perfectly justifiable exceptions when they conflict with more pressing moral duties

Resolving Moral Dilemmas

1. Establish Matters of Fact
2. Conceptual Clarification
3. Resolution of Disagreements over Applicability or Relevance

1. Establish Matters of Fact

- First be clear about what the relevant facts of the matter are
 - These could be scientific, financial, and/or legal and the particular way they bear on the issue at hand
 - ACTION: investigation and or empirical research

2. Conceptual Clarification

- Elucidation of relevant moral ideas and principles
 - Clarification of any vague notions involved
- ACTION: conceptual analysis leading to agreement over the scope or applicability of the terms used

3. Resolution of Disagreements over Applicability / Relevance

- How particular moral principles are applied in a given situation
- Different groups may have radically different ideas regarding how to understand and resolve moral dilemmas / apply moral principles
- Ideally, rational dialogue will bring people to a rough and workable consensus, either through enriching each others perspectives or through mutual compromises

ACTION: rational dialogue, mediated if need be

Relevance Problem

- Not sure whether or not a particular moral principle applies in a given situation

Conflict Problem

- Confronted by two or more moral principles that seem to apply
- However, each principles requires a different, incompatible actions

Intellectual Property

- Non-physical property that is the result of cognitive processes and whose value is based upon some idea or collection of ideas
- Intellectual property rights do not typically surround the abstract non-physical entities
 - Rather, the rights surround the control of the physical manifestation or expressions of the idea(s)
- IP rights protect one's right to an idea or ideas by protecting the right to produce and control their physical instantiations

Intellectual Property

Trade Marks

Designs

Geographical Indications

Performer's Rights

Plant Varieties

Patents

Trade Secrets

Copyrights

Patents

- A special alienable legal right granted by the government to make, use, and sell an invention
- Not all inventions are patentable, they must meet some minimum standards of technical novelty and functional utility
- Once patented, the invention become part of the public record and is therefore accessible
- Certain things such as mathematical formulas and managerial techniques cannot be patented

Trade Secrets

- Type of intellectual property not explicitly protected by patents because it either fails to meet the minimum conditions necessary for the granting of patent or because of desire to have patentable material remain secret
- Usually protect by confidentiality laws

Copyrights

- Identifies the moral right of an individual to be recognized as the creator of certain kinds of material and to object to distortions, mutilations, or other alterations of said material
 - Does not protect ideas
- Proprietary interest protected is the expression not the ideas

Lockean View of Property

- “people are entitled to hold, as property, whatever they produce by their own initiative, intelligence, and industry”
- If a person has labored on an unowned object, and assuming one owns their body and labor, their labor becomes infused into the object and thus rights to it are generated by virtue of the co-joining.

Incoherent?

Why isn't this co-joining a way of losing something I already own?

Utilitarian Justification of Property

- Authors and inventors are granted limited control over intellectual property so as to promote, by way of incentive, social progress
- According to this view, adopting a system of copyright, patent, trade secret, etc. creates an environment in which the production of intellectual works is maximized
- This is so, it is argued, because without such protections individuals, corporations, etc. would not invest the time, money, or effort necessary to produce such work since there would be no benefit to doing so

Act Utilitarianism

- Individual acts are right or wrong solely by virtue of the goodness or badness of their consequences
- Is each individual act of conferring a copyright or patent tested to see if it meets this criterion?

Rule Utilitarianism

- The rightness or wrongness is not to be judged by comparing its consequences to the consequences of other acts, but only by considering whether or not it falls under the correct moral rule
- Rules are judged by considering the consequences of everyone following the rule
- If adopting a particular set of rules maximizes net utility for everyone affected, then the rule is morally justified and should be followed