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MORALITY

- How can we decide if on balance the economic benefit brought by the technology outweighed the potential safety hazards?
- In order to answer this question we need a framework for analyzing ethical problems.
- Codes of ethics can be used as an aid analyzing ethical issues.
- Moral theories can also be used as a means for analyzing ethical cases such as the technology disaster.

MORALITY

Our goal is frequently summed up using the term **“moral autonomy”**. Moral autonomy is the ability to think critically and independently about moral issues and to apply this moral thinking to situations that arise in the course of professional engineering practice.

MORAL THEORY

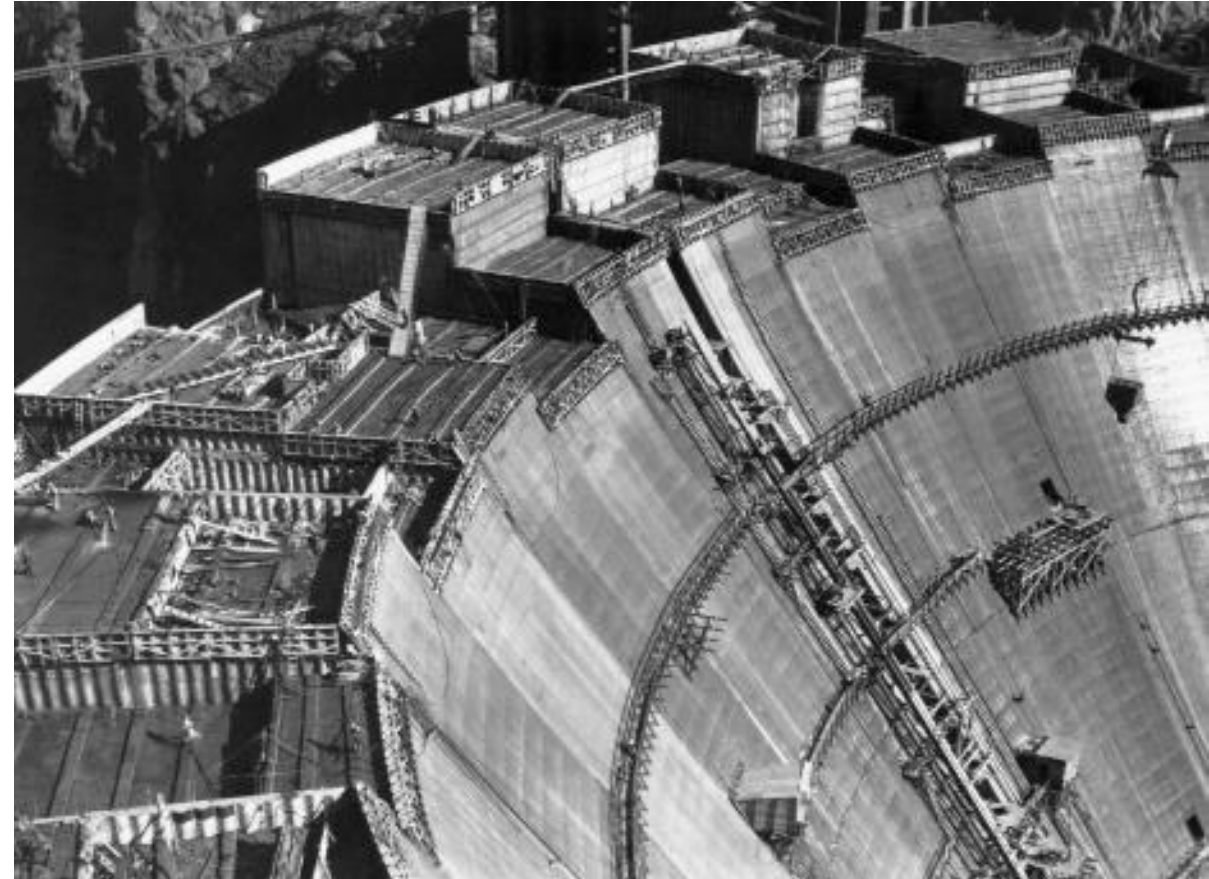
- A moral theory defines terms in uniform ways and links ideas and problems together in consistent ways [Harris, Pritchard, and Rabins, 2000].
- This is exactly how the scientific theories used in other engineering classes function. Scientific theories also organize ideas, define terms, and facilitate problem solving.
 - ❑ **Utilitarianism** seeks to produce the most utility, defined as a balance between good and bad consequences of an action, taking into account the consequences for everyone affected.

MORAL THEORY

- ❑ **Duty ethics** contends that there are duties that should be performed (for example, the duty to treat others fairly or the duty not to injure others) regardless of whether these acts lead to the most good.
- ❑ **Rights ethics** emphasizes that we all have moral rights, and any action that violates these rights is ethically unacceptable. Like duty ethics, the ultimate overall good of the actions is not taken into account.
- ❑ **Virtue ethics** regards actions as right that manifest good character traits (virtues) and regards actions as bad that display bad character traits (vices); this ethical theory focuses on the type of person we should strive to be.

UTILITARIANISM

Utilitarianism holds that those actions are **good that serve to maximize human well-being**. The emphasis in utilitarianism is not on maximizing the well-being of the individual, but rather on maximizing the well-being of **society as a whole**, and as such it is somewhat of a collectivist approach.



UTILITARIANISM

Dams often lead to great benefit to society by providing stable supplies of drinking water, flood control, and recreational opportunities. However, these benefits often come at the expense of people who live in areas that will be flooded by the dam and are required to find new homes, or lose the use of their land.

Utilitarianism tries to balance the needs of society with the needs of the individual, with an emphasis on what will provide the most benefit to the most people.

UTILITARIANISM

However, as good as the utilitarian principle sounds, there are some problems with it. First, as seen in the example of the building of a dam, sometimes what is best for everyone may be bad for a particular individual or a group of individuals.



UTILITARIANISM

- ❑ An example of this problem is the **Waste Isolation Pilot Plant (WIPP)** near Carlsbad, New Mexico. WIPP is designed to be a permanent repository **for nuclear waste** generated in the United States. It consists of a system of tunnels bored into underground salt formations.
- ❑ These salt beds are considered by geologists to be extremely **stable**, especially to incursion of water which could lead to seepage of the nuclear wastes into groundwater.
- ❑ However, there are many who oppose this facility, principally on the **grounds that transportation of the wastes across highways** has the potential for accidents that might cause health problems for people living near these routes.

UTILITARIANISM

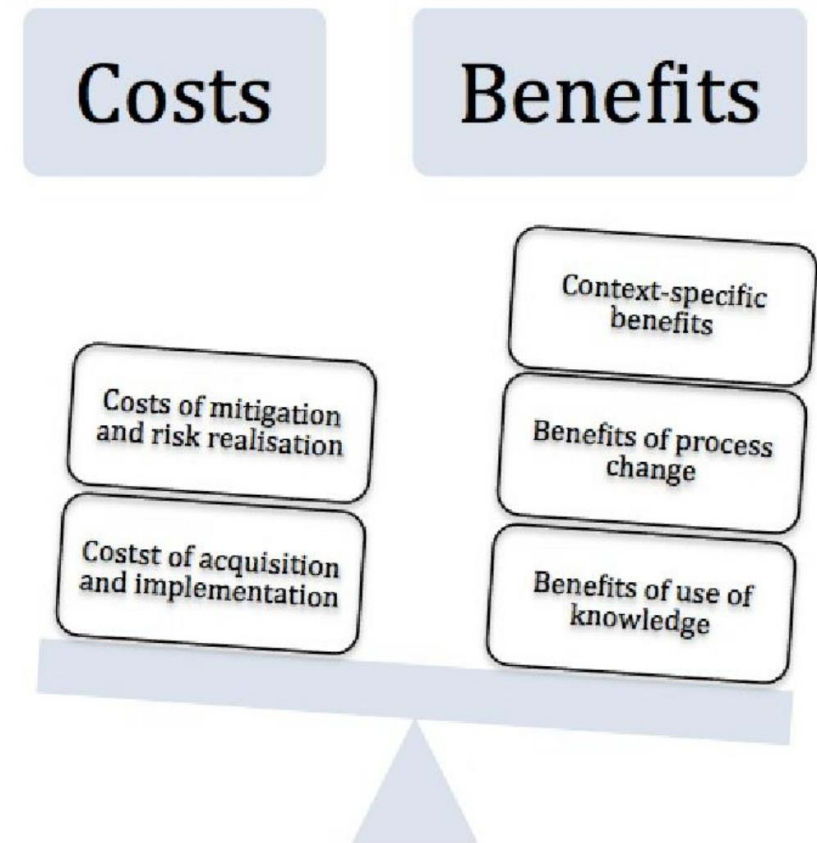
- Solution of this waste disposal problem will benefit society by **providing improved health care and more plentiful electricity**. The slight potential for adverse health effects for individuals living near the transportation routes is far outweighed by the overall benefits to society. So, WIPP should be allowed to open.
- The utilitarian approach can seem to ignore the needs of individuals, especially if these needs seem relatively insignificant.

UTILITARIANISM

- Another objection to utilitarianism is that its implementation depends greatly on knowing what will lead to the most good. Frequently, it is impossible to know exactly what the consequences of an action are.
- It is often impossible to do a complete set of experiments to determine all of the potential outcomes, especially when humans are involved as subjects of the experiments. So, **maximizing the benefit to society** involves guesswork and the risk that the best guess might be wrong.
- Despite these objections, utilitarianism is a valuable tool for ethical problem solving, providing one way of looking at engineering ethics cases.

UTILITARIANISM

- **Cost–benefit analysis** is an application of utilitarianism.
- Only those projects with **the highest ratio of benefits** to costs will be implemented. This principle is similar to the utilitarian goal of maximizing the overall good.



UTILITARIANISM

- It should be noted that although cost–benefit analysis shares many similarities with utilitarianism, **cost–benefit analysis isn't really an ethical analysis tool.**
- The goal of an **ethical analysis** is to determine what the ethical path is. The goal of a **cost–benefit analysis** is to determine the **feasibility** of a project **based on costs**. When looking at an ethical problem, the first step should be to determine what the right course of action is and then factor in the financial costs in choosing between ethical alternatives.

DUTY ETHICS AND RIGHT ETHICS

- Two other ethical theories—duty ethics and rights ethics—are similar to each other and will be considered together.
- These theories hold that **those actions are good that respect the rights of the individual.**

THERE IS
NO RIGHT WAY
TO DO
A WRONG THING.

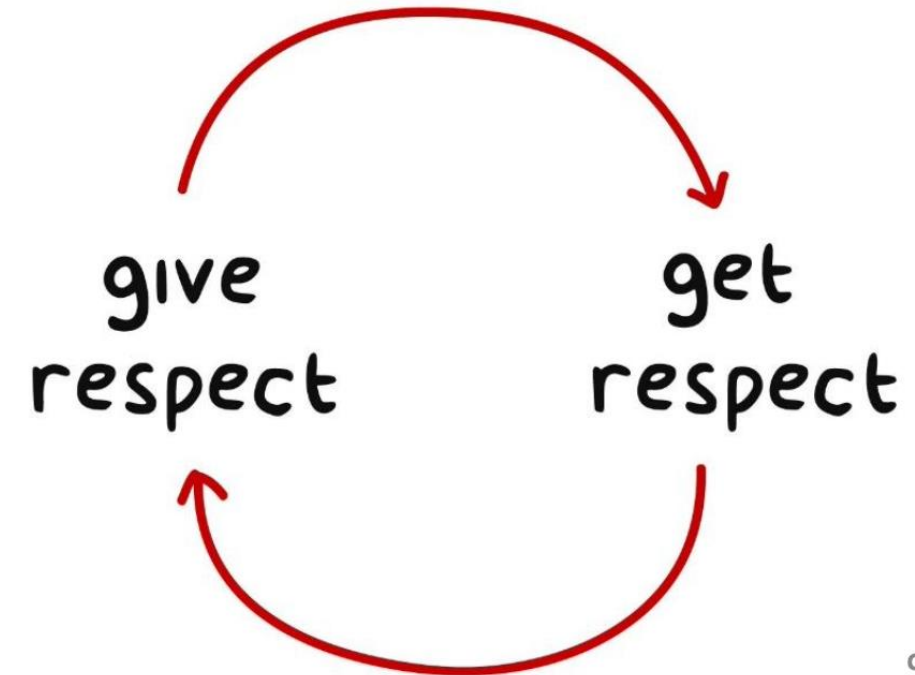


DUTY ETHICS AND RIGHT ETHICS

- ❑ A major proponent of duty ethics was Immanuel Kant (1724–1804), who held that moral duties are fundamental.
- ❑ **Ethical actions are those actions that could be written down on a list of duties:** be honest, don't cause suffering to other people, be fair to others, etc. These actions are our duties because they express respect for persons, express an unqualified regard for autonomous moral agents, and are universal principles [Schinzinger and Martin, 2000].
- ❑ Once one's **duties are recognized, the ethically correct moral actions are obvious.** In this formulation, ethical acts are a result of proper performance of one's duties.

DUTY ETHICS AND RIGHT ETHICS

- ❑ Rights ethics was largely formulated by John Locke (1632–1704), whose statement that **humans have the right to life, liberty, and property** was paraphrased in the Declaration of Independence of the soon-to-be United States of America in 1776. Rights ethics holds that **people have fundamental rights that other people have a duty to respect.**



DUTY ETHICS AND RIGHT ETHICS

- ❑ Duty ethics and rights ethics are really just two different sides of the same coin.
- ❑ Both of these theories achieve the same end: **Individual persons must be respected, and actions are ethical that maintain this respect for the individual.**
- ❑ In duty ethics, people have duties, an important one of which is to protect the rights of others. And in rights ethics, people have fundamental rights that others have duties to protect.

DUTY ETHICS AND RIGHT ETHICS

- As with utilitarianism, there are **problems with the duty and rights ethics** theories that must be considered.
- First, the **basic rights of one person (or group) may conflict with the basic rights of another group.**
- How do we decide **whose rights have priority?**
- Using our previous example of the building of a dam, people have the right to use their property. If their land happens to be in the way of a proposed dam, then rights ethics would hold that this property right is paramount and is sufficient to stop the dam project.

DUTY ETHICS AND RIGHT ETHICS

- A single property holder's objection would require that the project be terminated. However, there is a need for others living in nearby communities to have a reliable water supply and to be safe from continual flooding.
- Whose rights are paramount here? **Rights and duty ethics don't resolve this conflict very well; hence, the utilitarian approach of trying to determine the most good is more useful in this case.**
- The second problem with duty and rights ethics is that these theories **don't always account for the overall good of society very well.** Since the emphasis is on the individual, the good of a single individual can be paramount compared to what is good for society as a whole.

VIRTUE ETHICS

- Fundamentally, virtue ethics is interested in **determining what kind of people we should be**. Virtue is often defined **as moral distinction and goodness**. A virtuous person exhibits good and beneficial qualities. In virtue ethics, actions are **considered right if they support good character traits (virtues) and wrong if they support bad character traits (vices)** [Schinzinger and Martin, 2000].
- Virtue ethics focuses on words such as responsibility, honesty, competence, and loyalty, which are **virtues**. Other virtues might include trustworthiness, fairness, caring, citizenship, and respect. **Vices** could include dishonesty, disloyalty, irresponsibility, or incompetence.

VIRTUE ETHICS

- As you can see, virtue ethics is closely tied to personal character. We do good things because we are virtuous people and seek to enhance these character traits in ourselves and in others.
- In many ways, this theory may seem to be mostly personal ethics and not particularly applicable to engineering or professional ethics. However, personal morality cannot, or at any rate should not, be separated from professional morality. **If a behavior is virtuous in the individual's personal life, the behavior is virtuous in his or her professional life as well.**

PERSONAL VS CORPORATE MORALITY

- Is there a distinction between the ethics practiced by an individual and the ethics practiced by a corporation?
- **Can a corporation be a moral agent as an individual can?**
- This is a question that is central to many discussions of business and engineering ethics.

PERSONAL VS CORPORATE MORALITY

- If a corporation has no moral agency, then it cannot be held accountable for its actions, although sometimes individuals within a company can be held accountable.
- The law is not always clear on the answer to this question and can't be relied upon to resolve the issue.
- This dilemma comes most sharply into focus in a discussion of virtue ethics.
- **Can a company truly be expected to display honesty or loyalty?**
- These are strictly human traits and cannot be ascribed to a corporation. In the strictest definition of moral agency, a company cannot be a moral agent, and yet companies have many dealings with individuals or groups of people.

PERSONAL VS CORPORATE MORALITY

- In their capacity to deal with individuals, **corporations should be considered pseudo- moral agents and should be held accountable in the same way that individuals are**, even if the ability to do this within the legal system is limited.
- In other words, with regard to an ethical problem, responsibility for corporate wrongdoing shouldn't be hidden behind a corporate mask.
- Just because it isn't really a moral agent like a person doesn't mean that a corporation can do whatever it pleases.

PERSONAL VS CORPORATE MORALITY

- Instead, in its interactions with individuals or communities, **a corporation must respect the rights of individuals and should exhibit the same virtues that we expect of individuals.**
- The Supreme Court held that corporations have a free-speech right to contribute to political campaigns just like individual citizens do, and that this right was being infringed upon by the federal law.
- Basically, the court said that **corporations are like individuals** and have some of the same rights.

WHICH THEORY TO USE?

- In solving ethical problems, **we don't have to choose from among these theories.**
- Rather, we can use all of them to analyze a problem from different angles and see what result each of the theories gives us.
- This allows us to **examine a problem from different perspectives** to see what conclusion each one reaches.
- Frequently, the result will be the same even though the theories are very different.

WHICH THEORY TO USE?

- Take, for **example**, a **chemical plant** near a small city that discharges a hazardous waste into the groundwater. If the city takes its water from wells, the water supply for the city will be compromised and significant health problems for the community may result.
- **Rights ethics** indicates that this pollution is unethical.
A utilitarian analysis would probably also come to the same conclusion, the economic benefits of the plant outweighed by the negative effects of the pollution and the costs required to ensure a safe municipal water supply.
- **Virtue ethics** would say that is irresponsible and harmful to individuals and so shouldn't be done.

WHICH THEORY TO USE?

- What happens when the different theories seem to give **different answers?** This scenario can be illustrated by the discussion of WIPP presented previously.
- Rights ethics indicated that transporting wastes through communities is not a good idea, whereas utilitarianism concluded that WIPP would be beneficial to society as a whole.
- This is a **trickier situation**, and the answers given by each of the theories must be examined in detail, compared with each other, and carefully weighed.

WHICH THEORY TO USE?

- Generally, **rights and duty ethics should take precedence** over utilitarian considerations.
- This is because **the rights of individuals should receive relatively stronger weight** than the needs of society as a whole.
- For example, an action that led **to the death of even one person is generally viewed very negatively**, regardless of the overall benefit to society.
- After thorough analysis using all of the theories, a **balanced judgment can be formed.**

NON-WESTERN ETHICAL THINKING

- It is tempting to think that the ethical theories are applicable only in business relations within cultures that share Western ethical traditions.
- Since **the rest of the world has different foundations** for its ethical systems, it might seem that what we learn here won't be applicable in our business dealings in, for example, Japan, India, Africa, or Saudi Arabia.



NON-WESTERN ETHICAL THINKING

- However, this thinking is incorrect.
- **Ethics is not geographic or cultural.**
- Indeed, ethical thinking and standards have developed similarly around the world and is not dependent on a Western cultural or religious tradition. Since the engineering workforce in the United States is international, and since engineering itself is a global profession with engineers from differing cultural backgrounds working together all over the world, it is important that we understand the origins of ethical thinking from places outside the Western world.

NON-WESTERN ETHICAL THINKING

- Although ethical thinking throughout the world has originated in various ways and has diverse language and terminology, **the results are similar across cultures.**
- How then are the ethical principles of differing cultures expressed when applied to professional ethics in general, and codes of ethics specifically?
- It seems that the concept of a formal code of ethics is a Western creation designed to serve the needs of professional communities.

NON-WESTERN ETHICAL THINKING

- However, engineers around the world have recognized the value of codes of ethics in expressing shared values and ideas on engineering practice.
- Indeed, many of the codes of ethics for engineering professional practice borrow heavily and sometimes even use the exact wording of the codes of ethics of the U.S. engineering societies.
- In addition, some of the engineering societies, such as the **IEEE**, already have an international reach and their code of ethics is widely recognized and adhered to by electrical engineers worldwide.



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Thank You