GEEM 445

Engineering Ethics and Professional Practices

Ethics & Engineering Ethics

What we will discus today?

- What is ethics?
- Contemporary ethical theories.
- Engineering ethics.
- Morals, Ethics and Laws
- How peoples views engineering as profession.

Ethics

What is Professional Ethics?

Ethics is referred to as **normal philosophy** and **recommends concepts of right and wrong behavior** for professionals, practicing within a profession.

Contemporary Ethical Theories:

Metaethics:

- **Investigates the origin of ethical principles**, their **meanings** and **sources** within society.

Example:

- Issues focusing on **universal truths** such as the reality and the will of God.

Normative Ethics:

- Includes **practical issues** like the **moral standard, society sets to regulate right and wrong conduct.**

- Sometimes **causes global or international conflict** when one nation's appear to be violated by another nation's practice.

Examples:

- **Human rights**
- **Appropriate age to marry**.
- Caring for family elders,
- Smoking on public places.

Applied Ethics:

- Involve **examining debatable** and **controversial issues.**
- Such as **environmental issues**, **animal rights** etc.

Ethics related to Professional Engineering, is **Normative Ethics**, where the **practicing Professionals set standard** to regulate right or wrong conduct.

What is Engineering Ethics?

- **Study of the moral issues and decisions**, **confronting individuals and organizations** engaged in engineering.

- **Engineering ethics do not mean**, **preaching virtue rather its objective** is to increase your ability as engineers to **responsibly confront moral issues** raised by technological activity.

Ethics, Morals, and Law

Morals

- **Principles of right and wrong**
- **Standard behavior**

Ethics

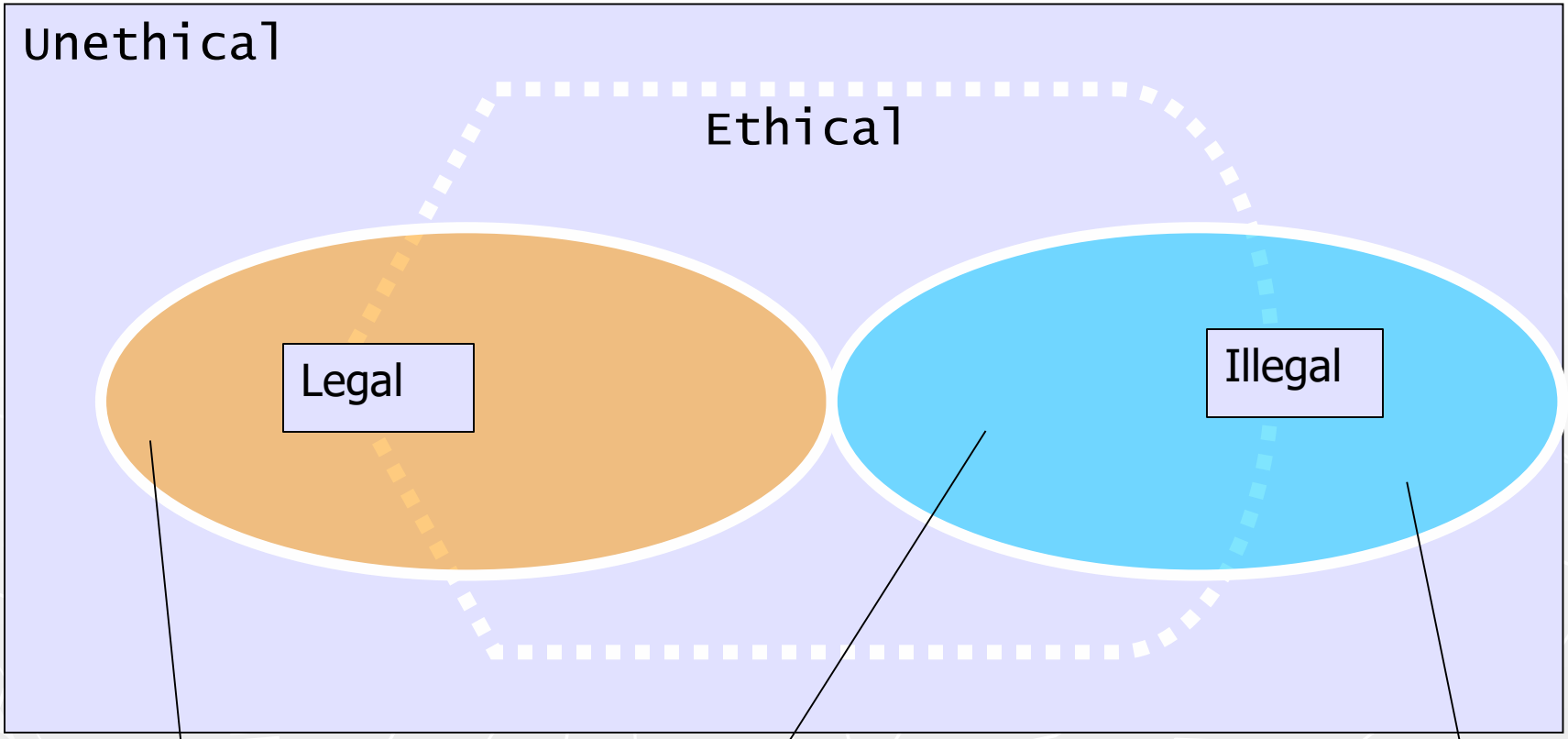
- A set of **moral principles guiding behavior and action.**
- **Guidelines that people live** by to make sure that they are doing right thing.

Laws

- ***Binding* codes** of conduct; **formally recognized and enforced**
- Company Policies

Ethics, Morals, and Law

Classification of Actions:



Unethical but Legal

Slave Trading

Ethical but Illegal

Whistleblowing

Harassment

Unethical and illegal

Engineering as a Profession

How we view Engineering:

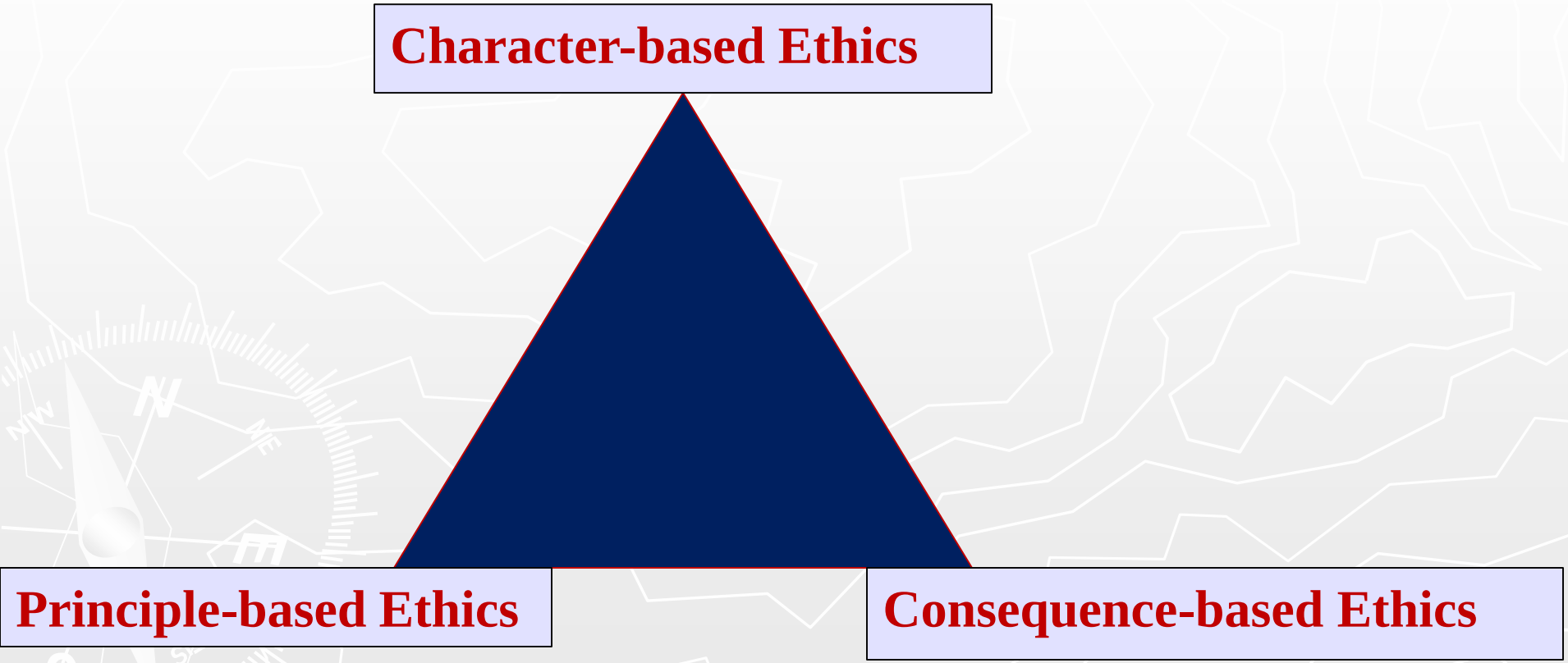
- **As problem-solvers**
- E**njoyable**; ***esprit de corps***
- **Benefits people**, provides a public service
- **Provides the most freedom** of all professionals.
- **Honorable profession**

How the public views engineering:

- As **Utilitarianism**
- As **Positivism**
- **As** Applied Physical **Scientists**
- Rational, pragmatic, logical and **systematic approaches to problem solving** tend to alienate the engineer from the public

Ethical Tringle- Applied Ethics

- Can be arranged in a triangle:



Character-based Ethics:

- Also called **virtue ethics**, articulated by Aristotle
- Describes as **a good or virtuous human being**.
- Virtue of human being **come from only human activities.**

Virtuous Person:

- Person's identity is **derived from what a person does habitually**.
- A person is said to be **courageous**, one has to **point out by his courageous act.**
- Similarly, a person is said to have **strong moral character**, someone has to **demonstrate through a life** of hard choices that he or she can be depended on to choose the right moral action.

What is to be a virtuous engineer? Or What sort of characteristics define a good engineer?

Example:

- **Craig,** a young, highly energetic but **in-experienced** engineer is asked to evaluate the results of a complicated **soil toxicity test**.
- **A key characteristic** of virtuous engineer is to **work only on subjects he or she is technically proficient in.**
- If soil analysis is not yet something Craig has any experience with, using virtue ethics to suggest that **right thing to do in this c**ase would be to **seek out expertise and consult** with more-experienced or more specialized engineer.
- **Craig should acknowledge** that he hasn't developed a habit of analyzing toxicity in soil samples, so right thing to do is to find someone who looks at these tests all the time.
- **Craig is doing his best to protect the public**: he sticks to what is good at and defers to others who have a different subject matter expertise.

Principle-based Ethics

- Also called **duty-based ethics or deontological ethics**, ‘deont’ meaning binding (duty).
- Based on what **obligation we have**.
- Principle can be called **truly morale**, **must be universal, not source dependent.**

Right Principle

- **Doing right thing** by definition.
- Kant defined good, as acting in according with the right principle and can be called **action of autonomy**, **as action arise autonomously**.
- If a person is **truly impartial**, he or she does not take advantages of others or manipulate them for self-serving purposes.

Example:

- An engineer **Evelyn Meade**, needs to **refill her coffee**.
- She heads to **breakroom**, where there is an **honor system for coffee**, **a quarter per cup**.
- She **pours herself a cup**, **puts a quarter** next to the machine.
- Just as she is ready to head back to work, **she sees Jack**, a co-worker, **fill up his cup,** sees him walk way.
- No quarter, she call him out, “Hey, Jack, **it’s a quarter per cup**, you know ?
- Jack looks at her funny and responds, **Who Cares? Are you going to turn on me? It’s only quarte**r.
- No one going to miss it and it would not break any one bank.
- **But it is the principle that matters**.

Consequence–based Ethics

- **Focus on the consequences** or **results of our actions**.
- Produce the **greatest good for the greatest number.**
- Known as the **'greatest happiness principle**'.

Example:

- **Susan Jacob** attends a meeting with her fellow engineers and **bring a dozen doughnuts.**
- Suppose she **gives all the doughnuts to her supervisor**, Janice Hall.
- **Janice might be pleased with the doughnuts**, but **would not the overall happiness be increased** if Susan gave one doughnut to each participants of the meeting?
- **Greatest happiness principle would** say that giving one doughnut to each person is **more right action than giving them all to Janice**.

- Why? Because it **produced more happiness overall.**

Engineers

- In an engineering ethics context, we **can adapt this approach by taking closer look at those best results.**
- Engineers are responsible for the safety, health and welfare of the public at large, the sustainability of the environment and other goals put forth in Code of Ethics.

Moral Spectrum of Ethics

- **Facing a choice between right and wrong** is not what we call ethical dilemma (choose right one).
- **Dilemmas happen just to choose between wrong to wrong**.

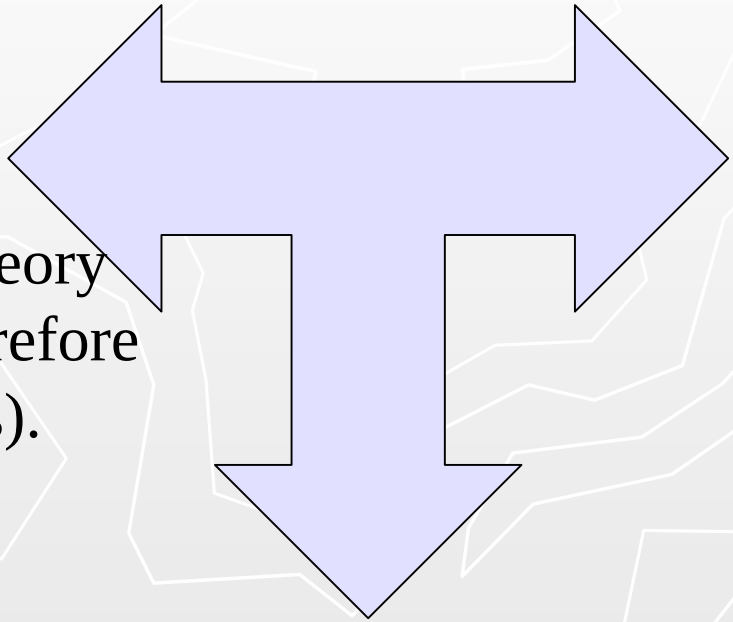
- Three approaches/ways to **choose the moral theories** called **moral spectrum**.

Pluralism

We can use various moral theories to determine the best course of action

Absolutism

Only one moral theory is correct (and therefore applies in all cases).



Relativism

There are no universa moral standards.

Moral Spectrum

Absolutism

- An absolutist would say that **only one moral theory is correct** and that such a theory ought to **apply in all cases**.
- An absolutist, **Abbot Zirokowski,** might say "The only thing that matters is the principle at hand. The **end never justify the means**."
- When abort is confronted to moral dilemma, he always takes a principle-based approach.

Example:

- Abbot believes that a principle that **makes lying permissible is a bad principle**, so he would never lie, even if **his life is depended on it**.

Relativism:

- Argues that there are **no universal theories** depicted on the triangle are right.
- Another version of this version argument, **called cultural relativism**, takes the position that while some moral standards may exist, they **exist only within a particular culture**.

Example:

- **An American knows** that it is not commonly acceptable to bribe a police officer in USA.
- While travelling in Nigeria, he notices that the practice is **quite common and unproblematic there.**
- He would say that **we in USA would not be able to judge the moral standards of Nigeria** and vis-à-vis, because such standards reside only within a culture.
- "**When in Rome, do as the Romans do**", the old adage states.

Absolution vs. Relativism

- On one hand, an absolutist would be committed to **choosing one and only one moral theory** to guide all moral choices.
- Principles such as not lying are important, but are we willing to say that there **absolutely no circumstances under which telling lie is the right thing to do**?

- And, on the other hand is it really true that there **absolutely no moral standards that cross cultural boundaries?**
- Are **willing to excuse heinous practices** around the world under the guise of, "**when in Rome, do as Romans do**"?

Pluralism

- A position that accepts that it is possible for moral questions to have **more than one right answers** bur that accepting that, there may be more than one right answer **does not entail that there are no wrong answers.**

Example:

- Suppose if you ask about the world's best movies in the world to **5000 shopkeepers**, probable you will not receive 5000 different answers.

- There is a **pretty good chance that some movies would not be mentioned at all,** even if we were to ask 5000 people.
- The point is that there are numerous reasonable, defensible answer to our question, “What is the best movie ever made?”
- Fact that multi[le reasonable answers exist **does not preclude other answer as being false.**

Samantha:

- Has number of options, too.

  -Can challenge Todd directly,

  -Appeal to Todd’s supervisor instead,

  -Go to the press,

  -or Take some other action.

- But **option of doing nothing is not good one**, because it places the public in unacceptable danger.
- **She must act in some way to protect the safety, health, and welfare of the public.**

- When we make moral decisions, we might be **faced a number of possible right answers.**
- Each of those answers ought to be backed by some sort of argument.
- Sometimes the argument might be grounded in **consequence-based** theories; other times our argument may be based on **character-based** theories; and there will be situations that might call for a **principle-based approach.**
- Fact that **any of the three approaches** may apply to any given situation doesn't entail that **one theory is always right one to take**, nor does it suggest that any argument presented is just as valid as any other.

Thank you