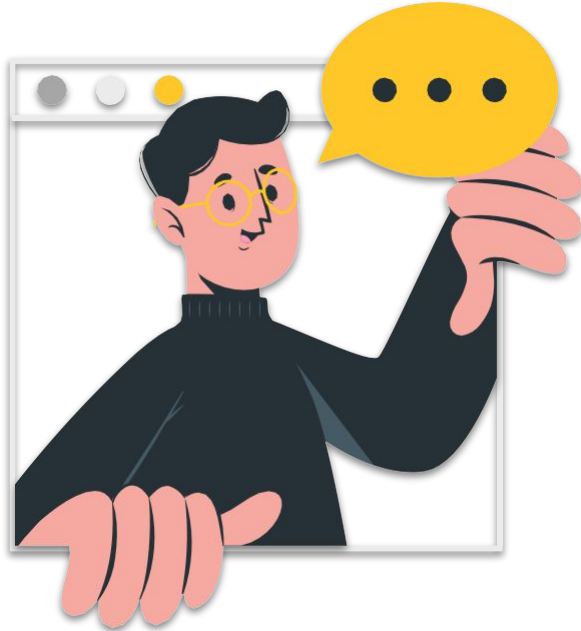


ETHICAL PROBLEM SOLVING TECHNIQUEs



Why Do We Need Ethical Problem Solving?



Situations encountered by practicing engineers are ambiguous, involving conflicting moral principles.

So we need analysis and problem solving methods.

Types Of Issues In Ethical Problems



FACTUAL

Rely on facts.
Can have conflicting opinions.
Example: Abortion, Global Warming

CONCEPTUAL

Meaning or applicability of
an idea. Also have
controversies.
Example: Bribe vs Gift



MORAL

Constitutes right or wrong.
Example: Bad behavior

Tackling The Issues



- **Factual issues** can often be resolved through **research to establish the truth.**
- **Conceptual issues** are resolved by **agreeing on the meaning and applicability** of terms and concepts
- **Moral issues** are resolved by **agreement as to which moral principles are pertinent and how they should be applied.**

Tackling The Issues



Paradyne won a bid for **Computer System** to Social Security Administration (**SSA**).

Facts: Paradyne did not have the current system
Paradyne employed one of the former SSA worker to lobby

Concepts: Whether bidding to provide an off-the-shelf product when the actual product is only in the planning stages is lying or is an acceptable business practice.

Is placing a Paradyne label over the real manufacturer's label deceptive?

Does lobbying your former employer on behalf of your current employer constitute a conflict of interest?

Morals: Is lying an acceptable business practice?

Is it alright to be deceptive if doing so allows your company to get a contract?

Line Drawing Technique

It is used when moral principles are clear but ethical principles are unclear.
The process is as follows:

1. Draw a line along different examples and hypothetical situations.
2. At one end, place examples which are morally acceptable (Positive Paradigm).
3. At other end, place examples which are morally unacceptable (Negative Paradigm).
4. Keep placing conflicting problems in appropriate places relative to the placed problems.
5. **Finally place the problem at hand at the appropriate place and find which end is closer to classify.**

Line Drawing Technique (Example)

Problem (P) : It is proposed that our company dispose of a slightly hazardous waste by dumping it into a lake. A nearby town takes its drinking water supply from this lake.

Our research shows that with the amount of waste we plan to put into the lake, the average concentration of the waste in the lake will be 5 parts per million (ppm). The EPA limit for this material has been set at 10 ppm. At the 5-ppm level, we expect no health problems, and consumers would not be able to detect the compound in their drinking water.

Positive paradigm: The water supply for the town should be clean and safe.

Negative paradigm: Toxic levels of waste are put into the lake.

Line Drawing Technique (Example)

Let's start by drawing a line and placing the positive and negative paradigms on it:

Negative paradigm (NP)

Positive paradigm (PP)

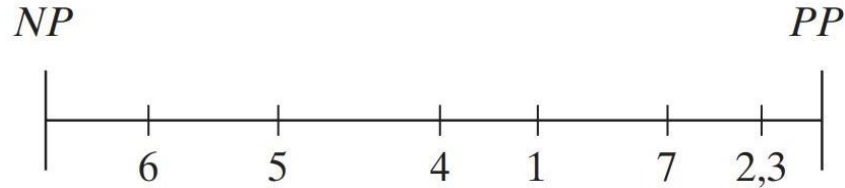


Line Drawing Technique (Example)

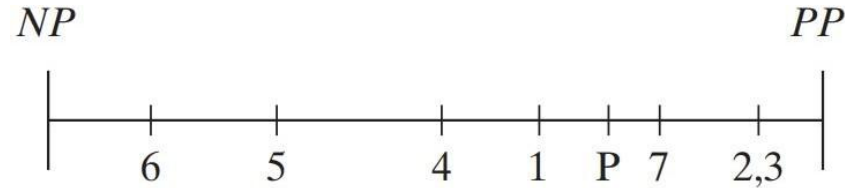
Now let's establish some other hypothetical examples for consideration:

1. The company dumps the chemical into the lake. At 5 ppm, the chemical will be harmless, but the town's water will have an unusual taste.
2. The chemical can be effectively removed by the town's existing water-treatment system.
3. The chemical can be removed by the town with new equipment that will be purchased by the company.
4. The chemical can be removed by the town with new equipment paid by taxpayers.
5. Occasionally, exposure to the chemical can make people feel ill, but this only lasts for an hour and is rare.
6. At 5 ppm, some people can get fairly sick, but the sickness only lasts a week, and there is no long-term harm.
7. Equipment can be installed at the plant to further reduce the waste level to 1 ppm.

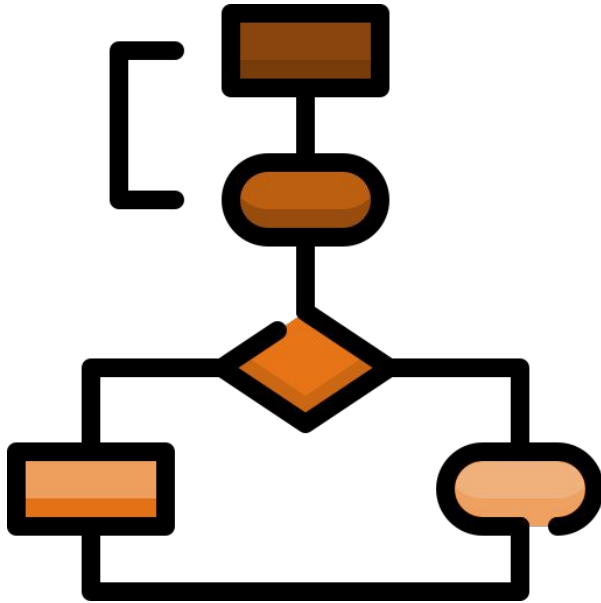
Line Drawing Technique (Example)



Now let's complete the exercise by denoting our problem by a "P" and inserting it at the appropriate place along the line.



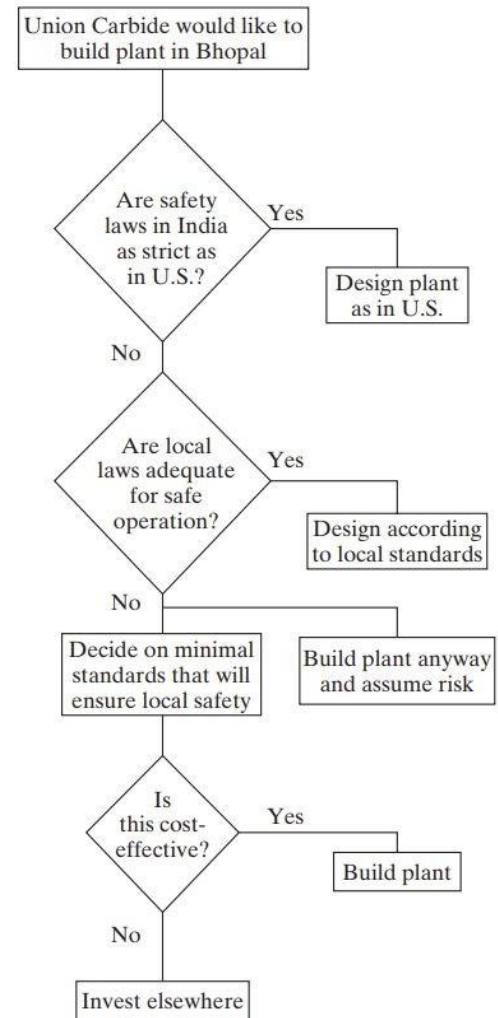
Flow Charting



- Helpful in analyzing variety of cases.
- Can visualize sequence of events.
- Readily see consequences.

FLOW CHARTING (EXAMPLE)

Application of a simple flow chart to the Bhopal case, emphasizing potential decisions made during consideration of locating a plant in India.





Conflict Problems

Ways To Solve Conflict Problems

SIGNIFICANCE

Choose the one which is more significant.

Example: Health of people over duty towards employers



CREATIVE MIDDLE WAY

Compromise for everyone.

Example: Find a way to minimize or reuse the toxic wastes

GUT FEELINGS

If the other two ways fail, one must resolve to its last resort - Gut Feelings.

THANKS!

Does anyone have any questions?

