

Chapter 4

Fallacies

- 1) **Attack on the person (AdHominem):** Discredit an argument by bringing into question in some negative way the presenter of the argument instead of backing the argument itself.
- 2) **Confusion between law and ethics**
Ex extramartial affairs
If its isn't illegal, it is ethical.
- 3) **Straw Figure:** "Senator Jones says that we should not fund the aback submarine program. I disagree entirely. I can't understand why he wants to leave us defenseless like that."
- 4) **Wishfull thinking:** I wish x is true, therefore x is true
- 5) **Naturalistic fallacy:** The (false) reason behind this fallacy is that we must always accept things as they are.

Logical Form:

- X is true according to nature.
 - Therefore, X is morally right.
- 6) **The privacy fallacy:** a person can risk discrimination, if that person's information is publicly known.HIV
If you have done nothing wrong there isn't anything to worry about
 - 7) **Ambiguity:** using a phrase or word unclearly; The chief was sober today indicates that he/she is usually drunk.

Fallacies of risk:

Acceptability of technological risks, some fallacies can be identified; X and Y stand for activity, product or technology.

- 1) **The sheer size fallacy:** X is acceptable, Y has smaller risk than X then Y is acceptable. If they are alternatives of the same thing then we might compare otherwise no.
- 2) **Fallacy of naturalness:** x is unnatural then x is not accepted
- 3) **Ostrich's fallacy:** X doesn't give rise to any detectable risk or there is no scientific proof that X is dangerous, so X doesn't give rise to any unacceptable risk.
- 4) **The delay fallacy:** If we wait we will know more about X. So no decision should be made about X now. Very bad for technological risk approach.. Early better than later where it becomes so hard to remove the product from stores.
- 5) **The technocratic fallacy:** it is an engineer issue to say how dangerous X is so engineers should decide whether x is acceptable. Acceptability of technology requires ethical knowledge along with technological knowledge.
- 6) **The fallacy of pricing:** weight risk of x against its benefits. Put a price on the risk of x. ford pinto case. There are things we cant value in terms of money.

CHAPTER 6

Ethical Questions in Design of Technology:

Engineering design: The activity in which certain functions are translated into a blueprint for an artifact, system, or service that can fulfill these functions with the help of engineering knowledge.

Design process: An iterative process in which certain functions are translated into a blueprint for an artifact, system, or service. Often the following six stages are distinguished: problem analysis and formulation; conceptual design; simulation; decision; detail design; and prototype development and testing.

Cost, Building time, Maintenance cost, Safety

Design Process:

Problem analysis and formulation

Including the formulation of design requirements:

Problem analysis stage: The stage of the design process in which the designer or the design team analyses and formulates the design problem, including the design requirements.

Design requirements: Requirements that a good or acceptable design has to meet technical codes professional codes legislations technical standards.

Technical codes and standards: Technical codes are legal requirements that are enforced by a governmental body to protect safety, health, and other relevant values. Technical standards are usually recommendations rather than legal requirements that are written by engineering experts in standardization committees.

Certification: The process in which it is judged whether a certain technology meets the applicable technical codes and standards.

Conceptual design

Including the creation of alternative conceptual solutions to the design problem and possible reformulation of the problem:

Conceptual design stage: The stage in which the designer or the design team generates concept designs. The focus is on an integral approach to the design problem.

Creativity: The virtue of being able to think out or invent new, often unexpected, options or ideas. Creativity is an important professional virtue for designers.

Precision, reliability, creativity, competence, honesty, accuracy

Simulation

Of one or more concept design to test how well they meet the design requirements:

Simulation stage: The stage of the design process in which the designer or the design team checks through calculations, tests, and simulations whether the concept designs meet the design requirements.

Computer Models: 1- Simulation design mistakes. 2- Assumptions: either inaccurate or users unaware of. 3- Limited applicability

Decision:

Choice of one conceptual solution from a set of possible solutions:

Decision stage: The stage of the design process in which various concept designs are compared with each other and a choice is made for a design that has to be detailed.

Design criteria: A kind of design requirements, which are formulated in such a way that products meet them to a greater or lesser extent. Design criteria are often used to compare and choose between different concept designs.

As low as possible: Cost - As much as possible: Safety, s

Trade off: Compromise between design criteria. For example, you trade off a certain level of safety for a certain level of sustainability. (Might cause ethical question cost vs. safety) according to different people and different opinions.

Organizational deviance: Norms that are seen as deviant or unethical outside the organization are seen within the organization as normal and legitimate.

These were wrong decisions; it will be hard to reverse them.

This is true for individual decisions

This is even harder in collective decisions

Detail design:

The design is further detailed;

Detail design stage: The stage in which a chosen design is elaborated on and detailed
According to material and the health effects it brings along

Prototype development and testing:

In which a prototype is developed and tested. This testing may lead to adaptations in the design:

Test: The execution of a technology in circumstances set and controlled by the experimenter, and in which data are gathered systematically about how the technology functions in practice.

Manufacture and construction

Challenges:

1. Labor conditions: outsource it to low-wage countries whose labor conditions are worse and may use child labor? Look to reduce production costs at the expense of labor conditions?
2. Safety and health of workers subject to hazardous or toxic emissions during production process.
3. Environment and sustainability waste material that pollutes the environment (dumped into Rivers and underground aqua).

TRADE OFFS and VALUE CONFLICTS

Value conflict: A value conflict arises if

- (1) A choice has to be made between at least two options for which at least two values are relevant as choice criteria,
- (2) At least two different values select at least two different options as best
- (3) The values do not trump each other.

Trumping (of values): If one value trumps another any (small) amount of the first value is worth more than any (large) amount of the second value.

Value Conflict Solution:

1. Cost benefit analysis:

a) Cost-benefit analysis: A method for comparing alternatives in which all the relevant advantages (benefits) and disadvantages (costs) of the options are expressed in monetary units and the overall monetary cost or benefit of each alternative is calculated.

Discount rate: The rate that is used in cost-benefit analysis to discount future benefits (or costs). This is done because 1 dollar now is worth more than 1 dollar in 10 years time.

Contingent validation: An approach to express values like safety or sustainability in monetary units by asking people how much they are willing to pay for a certain level of safety or sustainability (for example, the preservation of a piece of beautiful nature). Criticism: fallacy of pricing

b) Multiple criteria analysis: A method for comparing alternatives in which various decision criteria are distinguished on basis of which the alternatives are scored. On basis of the score of each of the alternatives on the individual criteria, usually a total score is calculated for each alternative.

2. Thresholds

Threshold: The minimal level of a (design) criterion or value that an alternative has to meet in order to be acceptable with respect to that criterion or value. Factor of safety, each design has separate no tradeoffs. Sometimes change threshold to reduce effect if It has any on environment.

3. Reasoning

Reasoning approach: emphasize judgment and reasoning about values. It clarifies values that underlie the conflicting design requirements. This can be done by:

1. Identifying relevant values. Example freedom to wear seatbelt, if implemented on force because of responsibility the freedom of wearing them isn't there but yet u chose this car system
2. Specifying the values. Define certain conceptualization for a specific value
Ex: freedom without constraints misses how valuable it is.
3. Looking for common ground among values. Work for common ground behind various values that might help solve the value conflict.

CHAPTER 9

The Distribution of Responsibility in Engineering

The problem of many hands

Problem of many hands: The occurrence of the situation in which the collective can reasonably be held morally responsible for an outcome, while none of the individuals can be reasonably held responsible for that outcome.

- Fragmentation of decision making lead each authority (part of organisa9on) to focus on their own areas of responsibility and thus not feeling responsible for the design as a whole.
- Difficult to identify who is responsible for the action and who could have prevented.
- A barrier to Accountability:
 - Many people contribute in different ways, difficult to determine who is accountable.
 - Can be extremely difficult to determine an individual's contribution in failure/success
 - When mistakes are committed, it is associated with the particular decision behind it
 - If decision leads to adverse consequences, then decision maker is at fault
 - The focus is usually on the managers in the middle because, diffusion of responsibility that provides top management cover
 - Decision making at the operational level tends to be highly visible
- The Doctrine of "Many Eyes":
 - Solution to the problem of many hands
 - Can manage the network of accountability
 - The many eyes that watch the many hands could prevent risk and harm
 - A culture of responsibility can develop if we fix errors of others
 - The motivation and ability to prevent risk and harm is increased.
 - A framework for moral & ethical debates needs to be developed that can adapt meaningful discussions about exercising due care in engineering design.
 - Related to social responsibility
- Moral Problem:
 - Public wants to hold someone responsible, hard to achieve in complex engineering projects, hence **collective responsibility**: responsibility of a collective of people
 - Learn from mistakes to do better in other things.
- The occurrence of situation in which the collective can reasonably be held morally responsible for an outcome (firm...)
- Causes of Many Hands:
 - Distribution of Information at the collective level, the harm is not foreseeable.

- Individual driver no effect on environment, but All cars: are collectively responsible
- Employee: Knows the defect but not able to fix it. Company's manager: Does not know the defect but has the authority to fix it.

Responsibility

- Reason about responsibilities in a complex socio-technical system, have way of modeling the responsibility itself
- Four-Fold Definition of Responsibility
 - Causal Responsibility
 - Liability-Responsibility
 - Role-Responsibility
 - Moral-Responsibility

Causal Responsibility

- A purely descriptive sense of responsibility
- “The heavy rain is responsible for the flooding”
- X was causally responsible for Y =
- “But for” the occurrence of X, Y would not have happened

Liability-Responsibility

- Liability for one's actions means that one can rightly be made to pay for the adverse effects of ones actions on others
- Automobile liability insurance
- We are usually liable for such payments as long as we are causally responsible, even if our actions were unintentional does not necessarily involve moral responsibility for the action.

Role-Responsibility

- Whenever a person occupies a distinctive place or office in a Social organization, to which specific duties are attached

Moral-Responsibility

- To say a person is responsible in this sense is to say that the person is deserving of blame.
- Accountability for the actions one performs and the consequences they bring about, for which a moral agent could be justly punished or rewarded. (Do otherwise autonomy)
- Is a normative notion—it involves an evaluation
- Connected to other concepts such as duty, knowledge, freedom, choice, accountability

Distributing Responsibility:

The collective responsibility ascribed through the concept of “distribution of responsibility”

Distribution of responsibility: The ascription or apportioning of (individual) responsibilities to various actors.

Moral fairness requirement: The requirement that a distribution of responsibility should be fair (just). In case of passive responsibility, this can be interpreted as that a person should only be held responsible if that person can be reasonably held responsible according the following conditions: wrong-doing; causal contribution; foreseeability; and freedom of action. In terms of active responsibility it can be interpreted as implying that persons should only be allocated responsibilities that they can live by.

Moral fairness: person held responsible in case of: wrongdoing, casual contribution, foreseeability and freedom of action. The distribution of responsibility should be fair. Assigned various degrees of responsibility based on a variety of influencing factors

To hold someone morally responsible for their actions or omissions,
At least five conditions need to be met:

- (1) That the subject had some role to play in the particular chain of events
- (2) That the person was competent to understand their role in the chain of events, and that their competency is relevant to the issue at hand
- (3) That the person act voluntarily, and if not, what precluded or diminished their capacity to act voluntarily?
- (4) That the person was able to influence the chain of events, and if not, what precluded or diminished their capacity to influence the chain of events?
- (5) That the person was aware of the effects of their actions and knew about the results and their own power of influence or lack of power
- (6) Related concepts: Rationality, Freedom, Intentionality, Autonomy

Effectiveness requirement: The moral requirement that states that responsibility should be so distributed that the distribution has the best consequences, that is, is effective in preventing harm (and in achieving positive consequences).

RESPONSIBILITY AND LAW:

Liability Legal responsibility: backward-looking responsibility according to the law. Usually related to the obligation to pay a fine or repair or repay damages.

Liability: legal responsibility; backward looking, usually related to obligation to pay a fine

Regulation: A legal tool that can forbid the development, production, or use of certain technological products, but more often it formulates a set of the boundary conditions for the design, production, and use of technologies

Liability	Moral Responsibility
Particular: Derives from legislation in force in a certain time and place	Universal: Ethical principles aspire to universality in that they are not limited to particular people or particular groups or societies
Limited: Applies only to specific People at specific times or places	Unlimited: It applies to any person in the same situation
Divisible: It can be delegated or distributed	Indivisible: It cannot be delegated nor distributed
It can be waived: Sometimes not applicable, implemented or enforced	It cannot be waived: it always applies
Punishable	Not based on punishment except social shame or guilty conscience

backward

backward and forward

Negligence

- A person is considered negligent or careless if they do not exercise the kind of due care that is appropriate.
- **Negligence:** Not living by certain duties. Negligence is often a main condition for legal liability. In order to show negligence for the law, usually proof must be given of a duty owed, a breach of that duty, an injury or damage, and a causal connection between the breach and the injury or damage.
- **Duty of care:** The legal obligation to adhere to a reasonable standard of care when performing any acts that could foreseeably harm others.

- Negligent omission: failing to act when the person has a duty to act
- The law of negligence imposes a duty to think before you act.
- The ordinary care standard imposes a social standard may or may not agree with your evaluation of your own conduct. (They judge it)
- If you have negligence concerns, ask:
 - What do my colleague or whatever required of me
 - What would I avoid under these circumstances;
 - Considering the probability of harm and the degree of injury or damage
 - Am I taking reasonable risks?

Liability, Regulation and Innovation

- Regulation is based on current knowledge of technology and its consequences and on the past experience with that technology.
- Drawback: Not able to deal with innovation; (lags behind them)
- Hence: regulation tends to make innovators liable for the consequences under certain conditions
- Also liability would stimulate those innovators to employ their active moral responsibility

Negligence vs Strict liability:

- Proving Negligence: In order to establish liability for damage, the courts analyze the following four elements: • duty • breach • proximate cause injury • damages.
- Duty of care: a legal obligation that individuals adhere to a reasonable standard of care when performing any acts that could foreseeably harm others.
- a breach of that duty
- An injury or damage
- A causal connection between the breach and injury or damage.
- Opposite to negligence we have strict liability (does not require the defendant to be negligent).
- **Strict liability:** A form of liability that does not require the defendant to be negligent.
- **Product liability:** Liability of manufacturers for defects in a product, without the need to prove that those manufacturers acted negligently.

Corporate liability

Is the Liability of a company (corporation) when it is treated as a legal person

- Companies are sometimes treated as a legal person.
- Advantage: government does not need to find individuals responsible, hence sue a company.
- Disadvantages: 1. Corporates don't have no soul to damn and no body to kick ' 2. Corporates have limited liability; hence shareholders are liable up to certain limit for the corporation's debt up to a certain value of their shares. 3. Corporates can disappear by being split up or mergers or bankruptcy. 4. No clear allocation to liability within organizations; accuses (scapegoats).

Responsibility and organizations

Most organizations divide tasks and roles affecting as who can be held responsible. We will discuss three types of organizations:

- Hierarchical:
 - Hierarchical responsibility model:** The model in which only the organization's top level of personnel is held responsible for the actions of (people in) the organization. CEO, vice president director management
 - Managers might not have all the information. Gather knowledge before making decisions.
 - Managers not fully informed, held totally responsible?

- Collective responsibility:
Collective responsibility model: The model in which every member of a collective body is held responsible for the actions of the other members of that same collective body (and for the responsibility of the collective).
 Every member in the collective body is responsible for the actions of the other members.
 Implementable in small-scale organizations.
- Individual responsibility:
Individual responsibility model: The model in which each individual is held responsible insofar as he or she meets the conditions for individual responsibility.
 Each individual is held responsible for their actions if they meet the conditions of wrongdoing, freedom, causality, and foreseeability. Encourages individuals to behave responsibly.

Chapter 5

Ethical Cycle:

We shall need a systematic approach to identify, analyze and solve a moral problem.

Ethical cycle: A tool in structuring and improving moral decisions by making a systematic and thorough analysis of the moral problem, which helps to come to a moral judgment and to justify the final decision in moral terms.

A '**well-structured problem**' yields a right answer through the application of an appropriate algorithm.

Ex converting a unit of measure

Ill-structured problem: A problem that has no definitive formulation of the problem, may embody inconsistent problem formulations, and can only be defined during the process of solving the problem. It Enhance argumentation skills.

CASE

Phase1 Moral Problem Statement

It must clearly state

-What the problem is

-Who has to act

-The moral nature of the problem

Moral problem: Problem in which two or more positive moral values or norms cannot be fully realized at the same time.

Moral dilemmas: A moral problem with the crucial feature that the agent has only two (or a limited number of) options for action and that whatever he chooses he will commit a moral wrong.

Moral, Factual, Practical questions

Phase2 Problem Analysis

-Stakeholders and their interests

-Relevant moral values

-Relevant, uncertain and possible missing facts

Describe relevant elements of the moral problem

- Relevant values: Public health • Environmental care • Public Welfare • Honesty • Loyalty to the company • Integrity
- Stakeholders: Actors that have interest in the project (affected positively or negatively)

Stakeholders: Actors that have an interest ("a stake") in the development of a technology
 Stakeholders and their interest each one by one specify interest.

- Facts: may be certain, unknown or known. Unknown facts: need to make assumptions. Different people have different assumptions. Formulate moral standpoints like “If x is the case, then option for action ‘A’ is morally acceptable but if it turns that ‘y’ is the case the option B is morally acceptable”

Phase3 Options for Action

- Black and white strategy (Consider two options)
- Creative middle way solution
- Cooperation strategy
- Whistle Blowing
- Generate a possible solution in the light of the formulated problem
- get a win-win situation

Black-and-white-strategy: A strategy for action in which only two options for actions are considered: doing the action or not.

Strategy of cooperation: The action strategy that is directed at finding alternatives that can help to solve a moral problem by consulting other stakeholders.

Phase4 Ethical Evaluation

- Intuition
 - Common sense
 - Utilitarianism
 - Utility Principle (Bentham)
 - Freedom Principle (Mill)
 - Kant’s theory
 - Universality Principle
 - Reciprocity Principle
 - Virtue Ethics (Aristotle)/ Professional Virtues
 - Care Ethics
 - Codes of Conduct
 - Use formal and Informal frameworks to evaluate the case.
 - Formal: Codes of conduct and ethical theories
- Informal: intuition (what is intuitively most acceptable) and common sense (The method that weighs the available options for actions in the light of the relevant value)
- Conflicting values [loyalty/ public safety?] determine dominant values, Hence choose the option that best meets that dominant value.

Intuitivist framework: The ethical framework in which options for action are evaluated on basis of one’s view about what is intuitively most acceptable and that formulates arguments for this statement.

Common sense method: The method that weighs the available options for actions in the light of the relevant values.

Phase5 Reflection

- Criticize the ethical theories
- Answer the questions for reflection:
 - Does an ethical framework provide reasons that support my intuitive opinion?
 - Does an ethical framework succeed in selecting those features of a situation that are morally relevant?
- Wide reflective equilibrium
- Consider the various options for actions to come with well-argued choice. Use wide reflective equilibrium. 1. Considered moral judgment. 2. Moral principles. 3. Background theories. Hence we consider wider moral and ethical considerations and options.

- Different judgments are weighed against each other. Apply critical thinking to the theories (and their consequence) and to the options on hand
- Moral Deliberation (preferably collective) - To expose your analysis to debate and criticism - To collect additional data and info from other stakeholders - To listen to other analyses and choices
- Should not be affected by authority/power
- Should be decided based on arguments
- Should be sincere and open
- People should argue their points of view

Wide reflective equilibrium: Approach that aims at making coherent three types of moral beliefs: 1) considered moral judgments; 2) moral principles; and 3) background theories. Also the resulting coherent set of moral beliefs is often called a wide reflective equilibrium.

FEEDBACK

Phase2-Phase1

Phase4-Phase2

Phase5-Phase2

Phase5-Phase3

Collective moral Deliberation and social arrangement

- One solution is to engage others in the moral deliberation (involved and affected people.)
- These will help highlight different options and draw your attention to topics you haven't considered
- Reflection is considered the final phase in our moral cycle. However, this needs not to be your final choice.
- It can be seen as provisional choice that after can be revised after discussion with others.
- Hence Moral deliberation: An extensive and careful consideration or discussion of moral reasons for and against certain actions
Standards for moral deliberation
 - 1- shouldn't be decided based on authority or power but based on arguments.
 - 2- People should be honest and sincere, and should argue their point of view.

Moral deliberation: An extensive and careful consideration or discussion of moral arguments and reasons for and against certain actions.