CH2- Profession and Ethics

2.1 Profession: Definition and Characteristics

2.2 Professional Institutions

2.3 Relation of an Engineer with Client, Contractor and Fellow Engineers

2.4 Ethics, Code of Ethics and Engineering Ethics

2.5 Moral Dilemma and Ethical Decision Making

2.6 Detailed Duties of an Engineer and Architect

2.7Liability and Negligence

society

Ethics

Professionalism

Perspective on Morals, Ethics, and Professionalism

Morals: Concerned with goodness and badness of human characters, free from action of nature or animal. Moral measures the standard of good behaviour by which people are judged. (Distinction between right and wrongs, conforming to accepted standards and rules).

ETHICS AND moral

Perspective on Morals, Ethics, and Professionalism

Engineering morals means the standard of good behaviour of engineering people by which they are judged.

Moral means the standards of behaviour accepted by the culture and religion of the society.

Non- moral is means devoid of moral quality.

The actions of animal or nature are neither moral nor non-moral.

ETHICS AND PROFESSIONALISM

- Perspective on Morals, Ethics, and Professionalism
- **Ethics:** Greek word (ethos) means location or space where people lived together
- Later it covered meaning
- Customs, usages and habit
- The association of professional Engineers, Geologist, and Geophysicists of Alberta define standard of study of right and wrong,
- Science and philosophy deals
- Moral conduct , duty, and judgments

ETHICS AND PROFESSIONALISM

Perspective on Morals, Ethics, and Professionalism

Ethics: Ethics is the branch of philosophy concerned with the nature of ultimate value and the standards by which human action can be judged right or wrong.

It is also applied to any system or theory of moral values or principle.

Ethics is a system of belief that supports the view of morality.

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ETHICS AND PROFESSIONALISM

- Perspective on Morals, Ethics, and Professionalism
- Ethics is an activity of understanding moral values, resolving moral issues, and justifying moral judgment. It refers to moral principles or rules of behavior.
- Ethics may be defined as the science of rightness or wrong of conduct. Some times ethics is used to refer to the particular set of belief, attitudes, and habits that a person or groups displays concerning morality.

- Perspective on Morals, Ethics, and Professionalism

- Morality is complex and not easily expressed in a simple definition.
- Moral reasons require us to respect other people as well as us to care for their good as well as our own.
- When we speak about ethics, we refer to peoples outlooks on the morals issues.
- When we speak of ethical problem issues and controversies, we mean to distinguish them from non-moral problems.

ETHICS AND PROFESSIONALISM

- Perspective on Morals, Ethics, and Professionalism
- **Ethics** seeks to teach us how we can pass correct moral judgment upon human conduct and consider it as right or wrong with reference to supreme ideal of human life.

- TRUTH, BEAUTY, GOOD ARE IDEAL OF HUMAN LIFE.

- Thus ethics is the science of human character as expressed in right or wrong conduct.

- DO UNTO OTHERS AS YOU WOULD HAVE OTHERS DO UNTO YOU.

General Knowledge on Ethics

In today's life, people learn about ethics all the time, being aware of it or not. The society, the religion, the family, the culture, the media, the traditions, everything has its influence. The awareness of ethics is on a very high level, but the level of knowledge of every person and every society is not the same. Also, common ethics are learned because of the factors mentioned above, but professional ethics are not.

It's needed to take into account the distinction between morals and ethics, ethics being the practical reflection of some morals. Morals are unconsciously learnt during childhood, but ethics are learnt at the time of confrontation with problems in life. Ethics as a field of study is universal, but the perception of ethical correctness differs in different cultures. Ethics are changing during the years because society is changing. Distinctions between personal and professional ethics also exist.

ETHICS AND PROFESSIONALISM

- Perspective on Morals, Ethics, and Professionalism
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- Ethics is traditionally subdivided as

➢ Normative ethics

➢ Meta ethics and

➢ Applied ethics

- Perspective on Morals, Ethics, and Professionalism
- Normative ethics : seeks to establish norms or standards of conduct, a crucial questions in this field is whether action are to be judged right or wrong based on their consequence (result or effect something) or based on their conformity to some moral rule , such as " do not tell a lie". Normative inquires or questions are about what ought to be and what is good (concern with moral value)
- Meta ethics: is concerned with the nature of ethical judgment and theories. Meta ethics has focused on logical and semantic aspects of moral language. Some major meta ethical theories are naturalism. Conceptual inquiries are directed toward clarifying the meaning of concept, principles, and issues.
- Applied ethics: as the name implies, consists of the application of the normative ethical theories to practical moral problems. Among the major fields of applied ethics are bioethics business ethics, legal ethics, medical ethics and engineering ethics. Factual inquires (also called descriptive inquires) seek to uncover practical moral problems.

ETHICS AND PROFESSIONALISM

- Perspective on Morals, Ethics, and Professionalism
- Engineering ethics: firstly it is the applied the study of moral issues and decision confronting individuals and organisation engaged in engineering, and secondly the study of related questions about the moral ideals, character, policies, and relationship of people and cooperation in technologies activity.
- Engineering ethics refers to the accepted codes and standards of conduct. Engineering ethics accordingly is the activity and discipline aimed at understanding the normal values that ought to guide engineering practice, resolving moral problems and issues, and justifying morals judgment concerning engineering safety, health and public welfare.
- Ethics are set of principles that have been created through reflection and discussion to guide our behavior. Ethics is the science of morality.
- Morality concern what ought or ought not to be done in a given situation, what is right or wrong about the handling of it , what is morally good or bad.

ETHICS AND PROFESSIONALISM

Perspective on Morals, Ethics, and Professionalism

Distinction between moral and non moral action

Engineering ethics refers to the study of morality.

There is difference between morality and ethics.

Ethics is a system of belief that supports a view of morality.

word moral means the principle of right or wrong behavior and standards of behavior.

Morality is the standards of behavior by which people are judged or assessed.

The word non use deviated by way of, means devoid of moral quality (without something or lacking something).

Moral judgments are about what ought or ought not to be done, what is morally right or wrong and what is morally good or bad.

On the basis of moral value society can distinguish the good and bad things.

Actions neither moral nor immoral

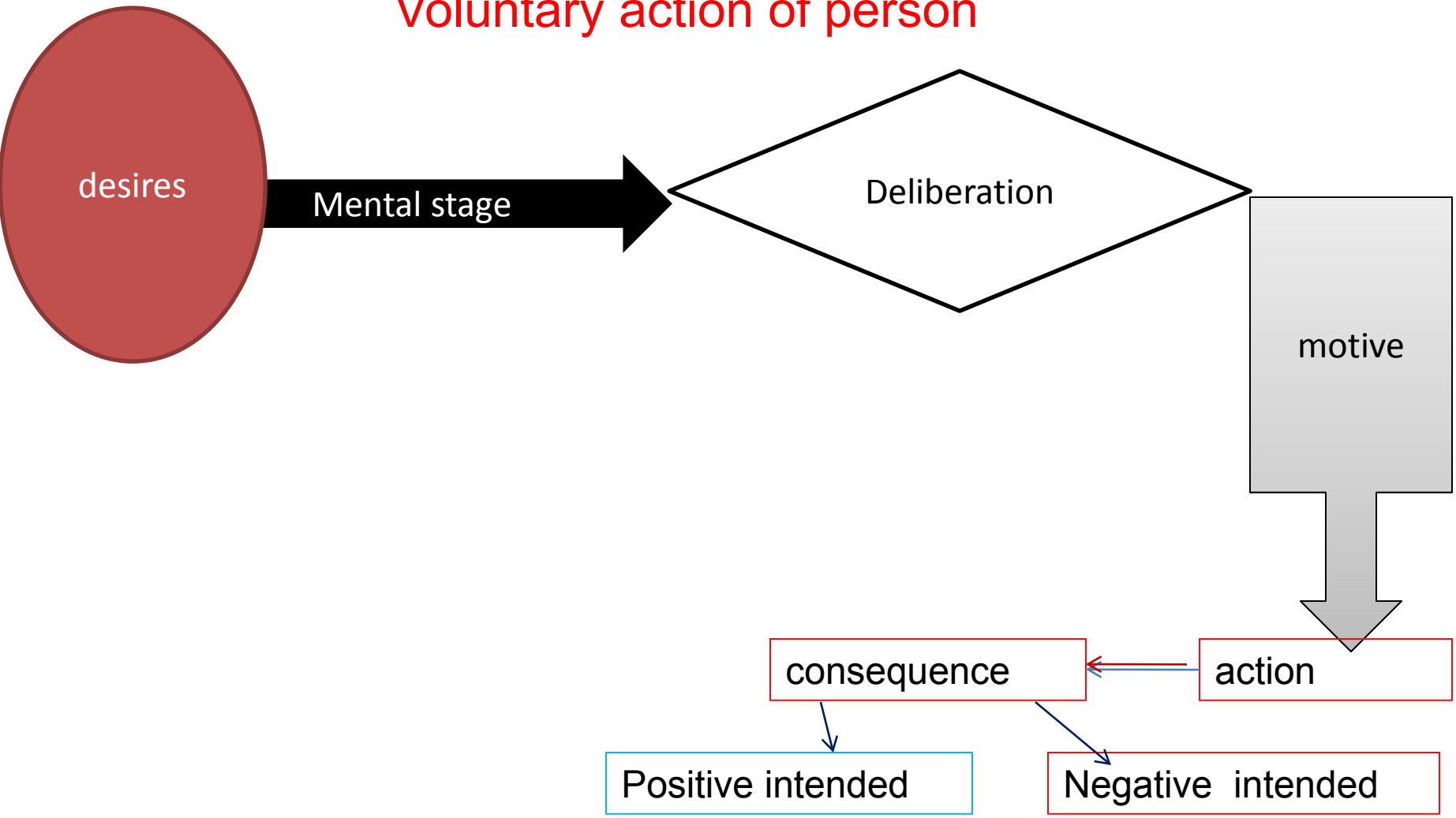
Calamities'

Animal action

Children action, mad action, idiot action

Action under compulsion

Voluntary action of person



ETHICS AND PROFESSIONALISM

- **Various laws of ethics**
  - **Eternal law of ethics**
  - **Utilitarian law of ethics**
  - **Universalism law of ethics**
  - **Distributive justice law of ethics**
  - **Personal liberty law of ethics**
-

Eternal law of ethics

The eternal law of moral is the set of standards of good behaviour on the nature and the scriptures (religious). Every one should act in accordance with the common set of standards

Utilitarian law of ethics

It is based upon Teleology theory means result out come theory. The professional or individual should act in the way to creating the greatest benefit for the largest numbers of people.

Universalism law of ethics

The professionals must have good motives behind their doing. It is based on Deontological theory means duty and obligation.

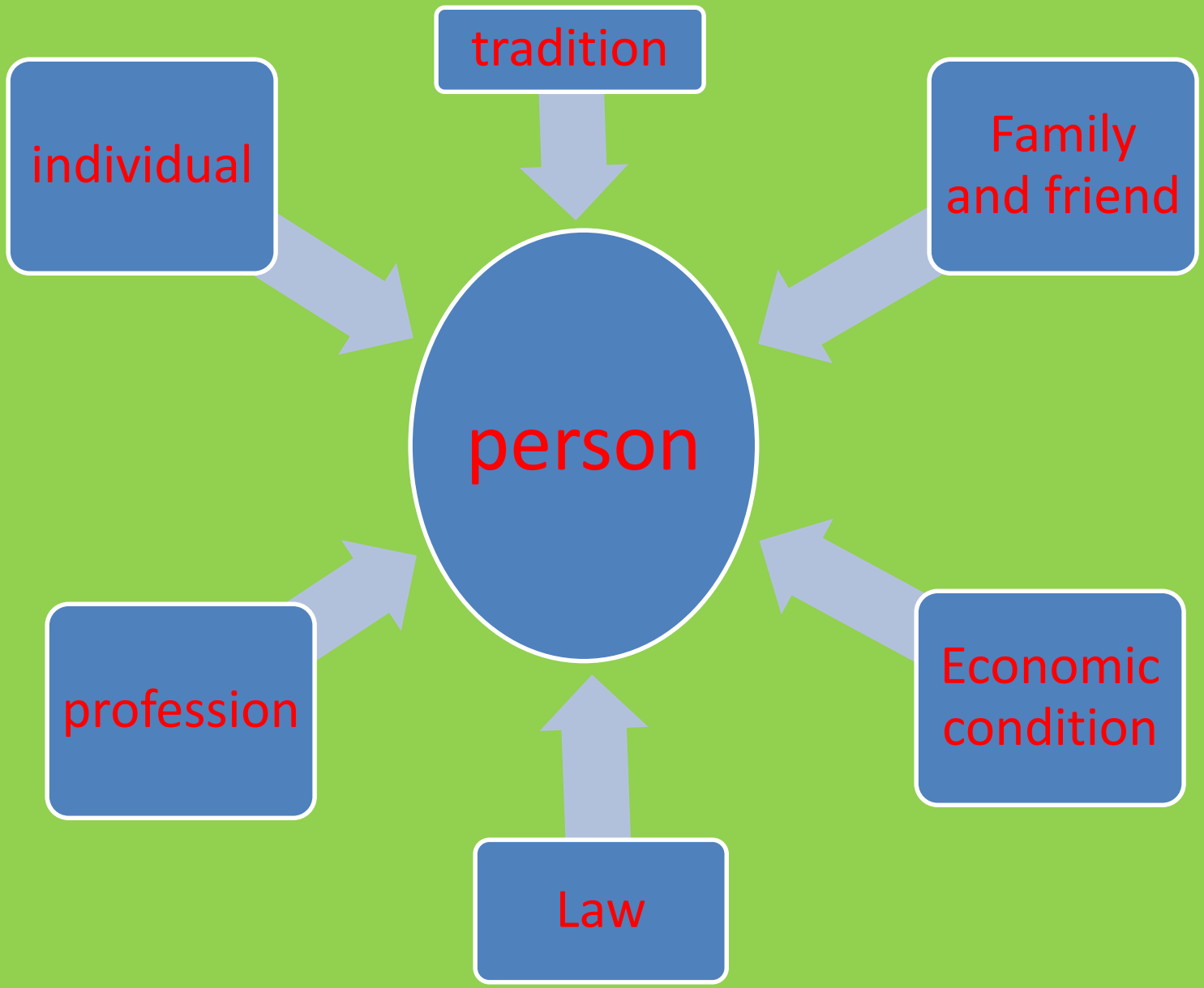
Distributive justice law of ethics

Based upon rules and law apply equally to all people. **Raja Dekhi Ranka Shamma**

Personal liberty law of ethics

This law states that any act that violates any body personal liberty even if the act creates greater benefit for the larger number of people is not accepted

Ethical system	Nature of ethical belief	Problems in ethical system
1. External law	Moral standards are given in an eternal (existing for ever) law; which is revealed in scripture (bed, Koran bible) or apparent in nature and the belief is that every one should act in accordance with interpretation.	There is multiple interpretation of the law, but no method to choose among them beyond human rationality needs an absolute principle or value as the basis for choice.
2. Utilitarian theory	Moral standards are applied to the outcome an action or decision. A decision is right and proper and good only if it generates greatest benefits for the largest number of people	Immoral acts can be justified if they provide substantial benefit for the majority, even at an unbearable cost or harm to the minority. Principle or value is needed to balance the cost benefit equation.
3. Universalism theory	Moral standards are applied to the intent (showing eager interest and attention) of an action or decision. Decision or action is right and proper, and good only if we could will that everyone, faced with the same set of circumstances, should be expected to the same decision or take the same action. Everyone should act to ensure that similar decisions would be taken by others in similar circumstances.	Immoral acts can be justified by people who are prone to self deception or self importance; there is no scale to judge between wills. Additionally principal or value needed to refine the categorical imperative concept
4. Distributive Justice	Moral standards are based upon the justice. Decision or action is right and proper, and only if least advantages members of the society enjoys a better standard of living after the decision or act, than they did before. Taking more tax from rich and subsidized to the poorer.	The primacy of the value of justice is dependent upon acceptance of the proposition that an equitable distribution of benefits social cooperation.
5. Personal Liberty	Moral standards are based upon the liberty. Decision or action is right and proper, and good only if all members of our society some how enjoy a greater freedom to develop their own lives after the decision or act than they did before	The value of liberty is dependent upon acceptance of the proposition that a market system ensures social productivity.


tradition
individual
Family and friend
person
profession
Economic condition
Law

Discussion on moral dilemma on decision making taking reference of laws of ethics

In every pace of life, ethical dilemma happens on decision making process.

Ethical dilemma happens on decision making process happens due to economic and social reasons for an institution and want or desire and duties for an individual.

Disposal of industrial waste to the river basin may fulfill industries desire or wants due to economic reasons but it harm the environment and society.

An individual do something to fulfill his wants or desire what he is not supposed to do.

Asphalt lay during rainy seasons and day after broken out almost.

Software model using crack version and cannot run properly.

Discussion on moral dilemma on decision making taking reference of laws of ethics

On the basis of moral value, society can distinguish the good and bad things. aim of manager need to create an ethically healthy climate for his or her employees, where they can do their work productively and confront a minimal degree or ambiguity regarding what constitutes right wrong behaviour.

The aim of ethics is to define the nature of the highest good of a man as a member of society.

Problems faced by a manager was examined in great detail to consider in detail the actual nature of the ethical dilemma in management and from that examination five conclusions were drawn concerning the complexity of managerial ethics.

Ethical problems in management are complex and ethical decisions have:

- Extended consequence
- Multiple alternative
- Mixed outcomes
- Uncertain consequences
- Personal implications

•Extended consequence:

• most ethical decision have extended consequences.

•The decisions of manager have an impact upon others; both within the organisaion and within society;

•that is beyond their control and therefore should be considered when the decisions are made.

•For example bribe (backhander) change governmental process, pollution affects environmental health, unsafe products destroy individual lives.

•Multiple alternatives:

•Most ethical decision decisions have multiple alternatives.

•Should a manager pay a bribe or not?

•Should a factory pollute the air or not?

• Should a company manufacture unsafe product or not?

•As has been seen in the simple illustration of bribery payments for import clearances.

•Multiple alternatives have to be considered in making ethical choices.

Mixed outcomes: **most ethical decisions have mixed outcomes. Ethical issues in management are considered antithetical (negating).**

Pay an indirect bribe, but maintain the sales volume of imported goods through prompt delivery.

Cause some air or water pollution, but avoid the cost of installing and operating pollution control equipment.

Design a slightly unsafe product, but reduce the material and labour costs of manufacture.

Social benefits and costs as well as financial revenues and expenses are associated with almost all of the alternatives in ethical choices

•Uncertain consequences:

- **Most ethical decisions have uncertain consequences.**
- **It is commonly thought that ethical issues in management are free of risk or doubt, with a known outcome for an alternative.**

•Pay the bribe, and receive the imported goods promptly. Investment in pollution control equipment, and the emission will be reduced X% at Y costs of operation.

•Produce an absolutely safe product at an additional costs Z dollars per unit. It is not all clear what consequence will follow from most ethical choices.

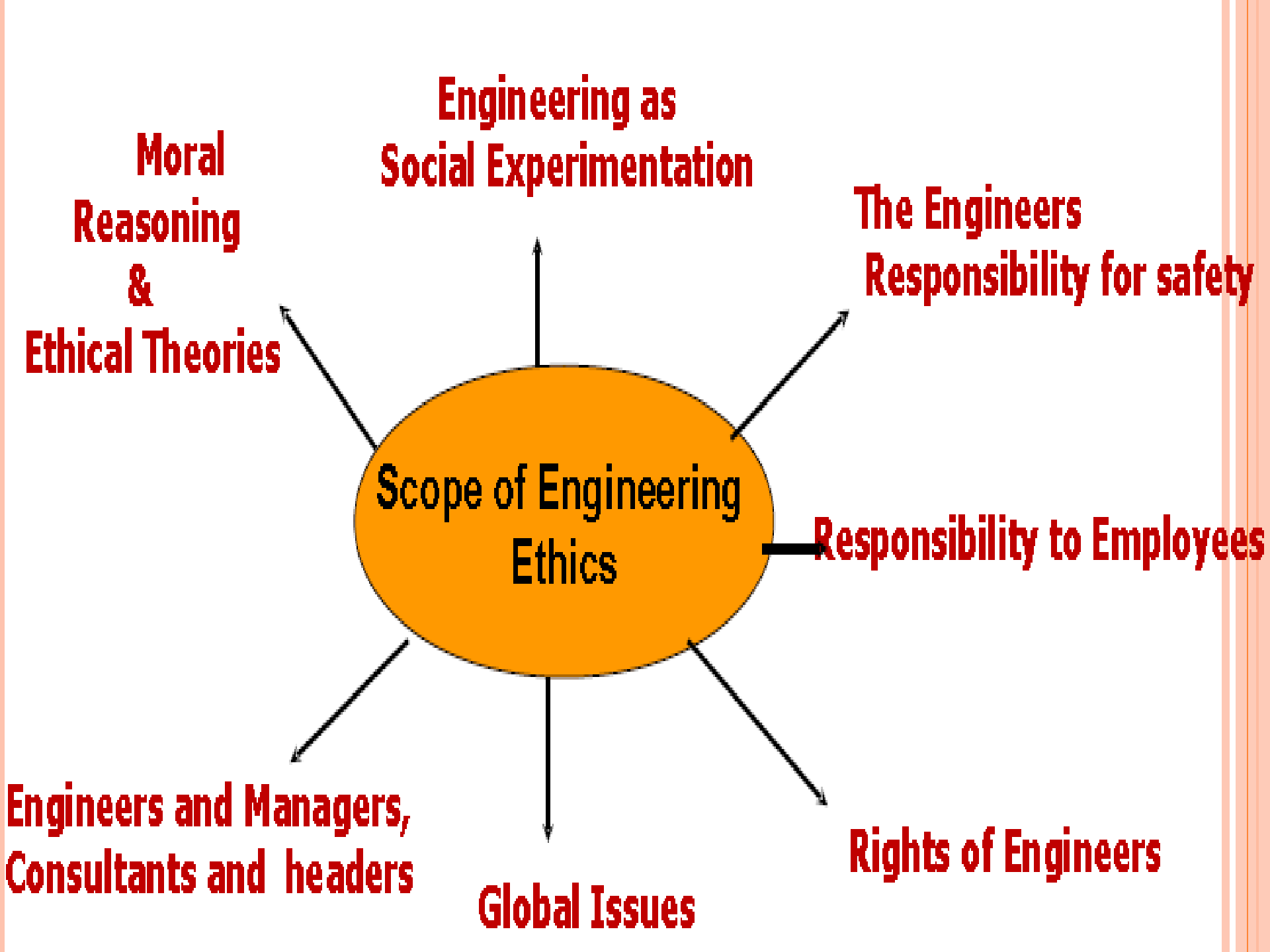
✖ Personal implications:

Most ethical decisions have personal implication. It is commonly thought that ethical issues in management are largely impersonal. Many people believe that prima facie ethical decision in a given operation may reduce the profits of the company but not the executive's salaries or their opportunities for promotion. Maintain the sales of imported goods at expected levels, and despite slightly increased expenses for bribes, the quarterly review will be pleasant. Delay installation of pollution control equipment, and the rate of return will be close to the planed percentage. Redesign the product to reduce the material and labour cost, profit margin and chances of promotion will increase. Individual benefits and costs as well as financial social benefits and costs associated with most of the alternatives in ethical decisions

Ethics is the study of the characteristics of morals, and involves the moral choices made by individuals as they interact with other persons. Engineers need to be aware of ethics as they make choices during their professional practice of engineering. Engineering ethics will be defined as the rules and standards governing the conduct of engineers in their roles as professionals

Engineering ethics is the field of applied **ethics** and system of moral principles that apply to the practice of **engineering**.

The field examines and sets the obligations by **engineers** to society, to their clients, and to the profession.


Engineering as
Social Experimentation
Moral
Reasoning
&
Ethical Theories
The Engineers
Responsibility for safety
Scope of Engineering
Ethics
Responsibility to Employees
Engineers and Managers,
Consultants and headers
Global Issues
Rights of Engineers

A code of ethics is not a legal document, so a professional cannot be arrested for violating its provisions · Although violating the code of ethics may result in expulsion from a professional society (such as NEC, NEA , NSPE or ASME), expulsion from a society generally will not result in an inability to practice engineering · A code of ethics does not create new moral and ethical principles; these principles are rooted in centuries of societal and human interactions

Engineering practice can be defined as a "profession," as opposed to an "occupation" or "job."

profession has the following attributes: ·

1. Work requires sophisticated skills, judgment, and exercise of discretion (work is not routine) ·
2. Membership in the profession requires formal education Special societies (controlled by members of the profession) establish standards for admission into the profession and conduct of its members
3. Significant positive public service results from the practice of the profession

National Society of Professional Engineers (NSPE),
the American Society of Mechanical Engineers (ASME),
the Institute of Electrical and Electronics Engineers (IEEE),
NEC, NEA etc.

Engineers uphold and advance the integrity, honor, and dignity of the Engineering profession by:

I. using their knowledge and skill for the enhancement of human welfare;

II. being honest and impartial, and serving with fidelity the public, their employers and clients, and

III. striving to increase the competence and prestige of the engineering profession. THE FUNDAMENTAL CANONS

1. Engineers shall hold paramount the safety, health and welfare of the public in the performance of their professional duties.
2. Engineers shall perform services only in the areas of their competence.
3. Engineers shall continue their professional development throughout their careers and shall provide opportunities for the professional development of those engineers under their supervision.
4. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.
5. Engineers shall build their professional reputations on the merit of their services and shall not compete unfairly with others.
6. Engineers shall associate only with reputable persons or organizations.
7. Engineers shall issue public statements only in an objective and truthful manner.

Ethics in Current Engineering Education

- Talking about the ethics in current university education there are different situations:

- ● Complete specific course on ethics.
- ● Integrated in some other courses – based on the will of the teachers or part of the program of the
- course.
- ● The students are not taught ethics at all.
- Even if ethics is taught in some universities, like in the first two cases, it can be problematic in some
- situations:
- ● The course is elective and not all the students are taking part because of the big number of courses
- they can choose.
- ● The material is extensively theoretical.
- ● Professors have no proper approach and make the course not attractive and tedious
- ● The methods that are used are inappropriate

Ethics in Engineering Education: is it necessary and why?

- The necessity of ethics in the engineering education was corroborated by the problems faced by engineers. They will be critical about all the information they will receive. Also they will be more confident when standing up for their own opinion, resisting outer pressure if needed. The critical thinking will be raised with a background on ethics that the engineers will have with this kind of courses. Thus, in every day situations, the dilemmas will be solved in a better way and the long-term consequences of engineering discoveries will be more carefully evaluated.
- Ethics also have an important role on the gaps that there are inevitably in laws and involve the
- responsibility of communicating with the society, of presenting, objectively, one person's own work.

Implementation of Ethics in Engineering Education

The idea of having a course on ethics as compulsory. More ideas on how the course should look like were presented:

- The course should give a direction of thinking that would make people more aware of their actions. By introducing a certain level of criticism, automatic behaviour would be excluded from decision making.
- Students generally would like to have interaction among all the students that enrolled the course and the teacher. It is a way through which more ideas could come up and more sharing could exist.
- The course should include: case studies, examples from real life, problem–solving methods.
- Although theory and definitions are not so attractive to students, they should exist.
- Optionally: the first contact with ethics should be before university, and it should be about general ethics and latter on professional ethics should be given at university.

Implementation of Ethics in Engineering Education

- Dynamic course: as the time is changing the material should also change. The technologies are changing, so the courses should take it into account.
- The course should represent a lot of examples from real life.
- About the person(s) who will give the course there were more ideas:
  - The person should have not just theoretical knowledge but also a practical background, the person should have experience as working as an engineer or as an option, special training on ethics.
  - Cooperation among two persons: engineer who will be practical and philosopher who will be theoretical.
- Having and not having grading:
  - The grading will be a reason for bigger interest and motivation during the course. The grade should not be based on classical exam, but on the activities during the time the course is rolling and a final project.
- There was not agreement if the course should be in the beginning or in the end of the studies:
  - In the beginning: The students will learn to act even in the beginning of their studies.
  - In the end: the course would be based on the final preparation of the engineer for his/her professional work.

Co nc lusio ns

There is a distinction between moral and ethics, as moral is something learned unconsciously and ethics is something learned by reflecting moral stands in a real world.

- Big need exist for engineers to understand ethical issues that will occur during their carrier, especially as engineers are the ones making the discoveries and they need to stimulate the consequences of those.
- Engineers have to stand up for their positions in ethically questionable cases.
- In different universities the way ethics is taught varies from specific ethical courses, ethics being part
- in some technical courses to not having any ethics taught to the students. In cases where ethics is taught
- there are some problems concerning competitiveness of teachers, and lack of practical examples.

Co nc lusio ns

- **The goal of Ethical courses should be to promote critical thinking.**
- **They should be compulsory, dynamic and interactive (real cases, case studies and so on).**
- **should have theoretical knowledge but also practical and technical experience as engineers.**
- **There was no conclusion reached concerning when the ethical courses should be implemented (at the beginning of studies or at their end)**
- **Unethical behaviour during studies can effect future behaviour.**
- **How ever in many universities system of exams seems to promote or at least doesn't try to stop that kind of behaviour.**
- **So the system should change in order to make it unworthy to even try.**

engineering progress has been the development of many thousands of technical standards.
an engineering triumph - a glory of our civilization, comparable to the development of regulatory laws and agencies.
Voluntary standards are developed by professional groups, and then government agencies, when they see fit, adopt the standards and give them the force of law.
Without these laws, regulations, codes, and rules, each engineer would be given unwarranted - and unwanted - powers (and, incidentally, each engineering problem would entail reinventing the wheel).

We must constantly work to make our regulatory apparatus more efficient.
This is a special challenge for engineers who choose to go into government service.
And we must constantly preach self-discipline.
Even with laws and regulations, we need self-discipline in the form of scrupulous compliance.
Yet self-discipline is no substitute for restraint by government.

will be judged."

- it would be impossible - and undesirable - to subject every engineering decision to a written regulation.
- defense, however, is not the ethics of engineers, but rather the standards of liability as made manifest by our courts.
- How safe is safe enough?
- What is the expectation of the citizenry in the area of risk and responsibility?
- Beyond the limits of legislation, the decisions of judges and juries govern.
- We do not say to industry, "be ethical."
- That is too vague and permits an enormous range of individual responses. It is an invitation to chaos.
- We say instead, "be prudent, and here are the standards by which you will be judged."

Introduction – Sustainable Development

1. **Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.**
2. **It is often referred as a way to ensure survival of the mankind taking into account, economy, environment and society.**

3. **Sustainable Development is already very much part of curricula in some fields of engineering education (environmental engineering) but the question is concerning all other fields which are not directly connected to the concept of sustainable development.**

4. **Sustainable development in engineering, importance of it in engineering education, current situation and ways to improve it in future.**

- **engineers should be able to understand other professionals, such as lawyers, social scientist, other kinds of engineers and**
- **Sustainable Development in Engineering Education: if it is necessary,**
- **how should we implement it?**
- **The answer on this question is not evident and the opinions were not always the same.**
- **we would like to list several general accepted ideas that came up during the discussions together with the questions that are still open or there was no agreement for.**
- **the discussions did not agree whether that course should be theoretical or practical.**
- **At the end of the studies, applied courses are necessary and they should be different depending of the field of study.**
- ●

YOURSELF WHEN MAKING AN ETHICAL DECISION (Tylor-1990)

10. Could the decision become habit forming?

If so, don't do it.

9. Is it legal?

If it isn't, don't do it.

8. Is it safe?

If it isn't, don't do it.

7. Is it the right thing to do?

If it isn't, don't do it.

6. Will this stand the test of public scrutiny?

If it won't, don't do it.

5. If something terrible were to happen, could I defend my actions?

If you can't, don't do it.

YOURSELF WHEN MAKING AN ETHICAL DECISION

4. Is it just, balanced, and fair?

If it isn't, don't do it.

3. How will it make me feel about myself?

If it's lousy, don't do it.

2. Does this choice lead to the greatest good for the greatest number?

If it doesn't, don't do it.

And the #1 question you should ask yourself when making an ethical decision:

1. Would I do this in front of my mother?

If you wouldn't, don't do it.

(Taylor, 1990)

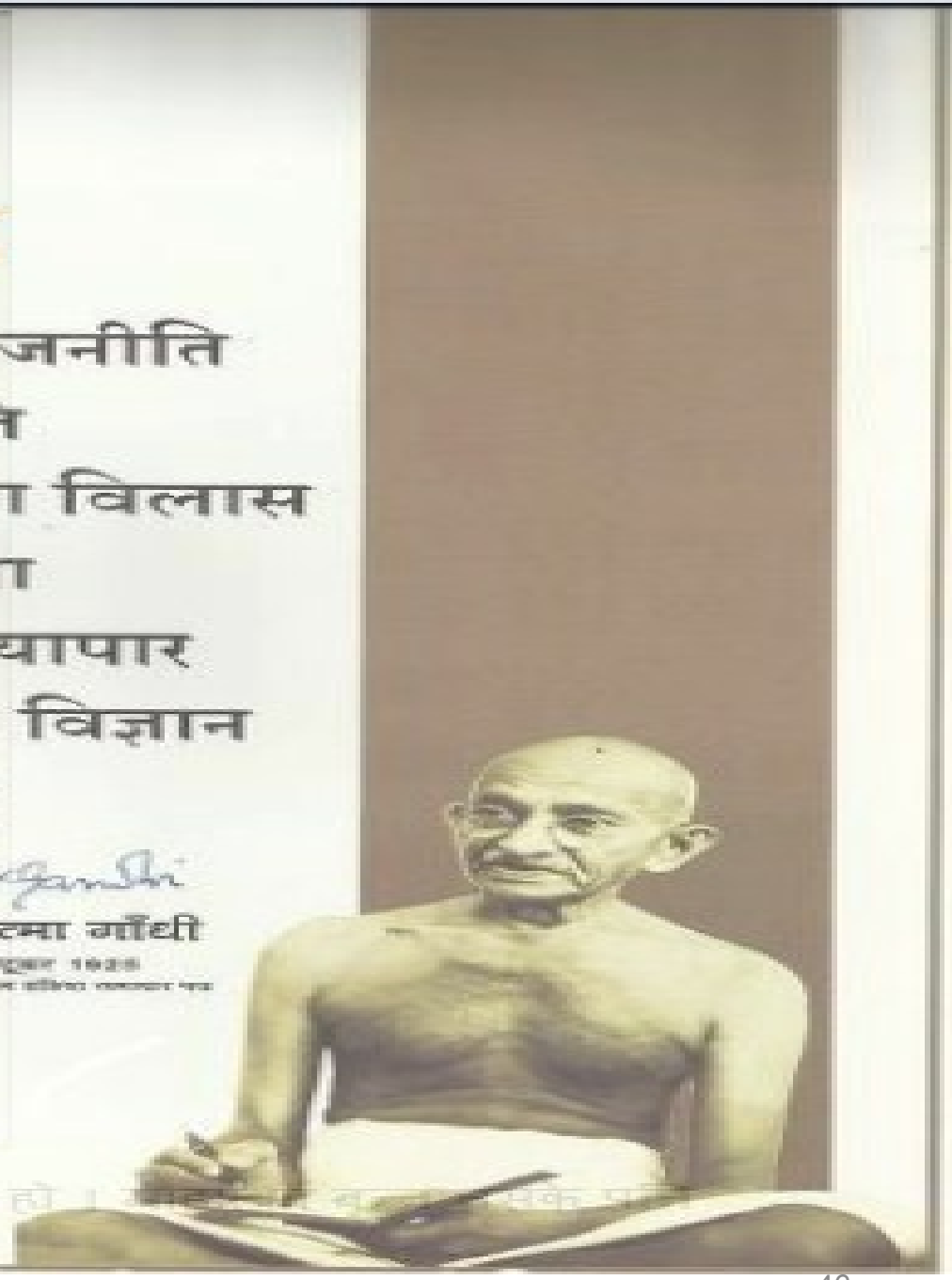
- Seven sins by Mahatma Gandhi

1. **Wealth Without Work**
2. **Pleasure Without Conscience**
3. **Knowledge Without Character**
4. **Commerce (Business) Without Morality (Ethics)**
5. **Science Without Humanity**
6. **Religion Without Sacrifice**
7. **Politics Without Principle**

सात पाप

सिद्धान्त विहीन राजनीति
श्रम विहीन सम्पत्ति
विवेक विहीन भोग विलास
चरित्र विहीन शिक्षा
नैतिकता विहीन व्यापार
मानवीयता विहीन विज्ञान
त्याग विहीन पूजा

महात्मा गाँधी



1. Right View. The right way to think about life is to see the world through the eyes of the Buddha--with wisdom and compassion.

2. Right Thought. We are what we think. Clear and kind thoughts build good, strong characters.

3. Right Speech. By speaking kind and helpful words, we are respected and trusted by everyone.

4. Right Conduct. No matter what we say, others know us from the way we behave. Before we criticize others, we should first see what we do ourselves.

5. Right Livelihood. This means choosing a job that does not hurt others. The Buddha said, "Do not earn your living by harming others. Do not seek happiness by making others unhappy."

6. Right Effort. A worthwhile life means doing our best at all times and having good will toward others. This also means not wasting effort on things that harm ourselves and others.

7. Right Mindfulness. This means being aware of our thoughts, words, and deeds.

8. Right Concentration. Focus on one thought or object at a time. By doing this, we can be quiet and attain true peace of mind.

Four Truth of Buddha

- What's wrong with me?
- Why am I sick?
- What will cure me?
- What do I have to do get well?

- Five fundamental ethical values for codes
  - **Protection of life and safeguarding people**
  - **Sustainable management and care for the environment**
  - **Community well being**
  - **Professionalism, integrity and competence**
  - **Sustaining engineering knowledge**

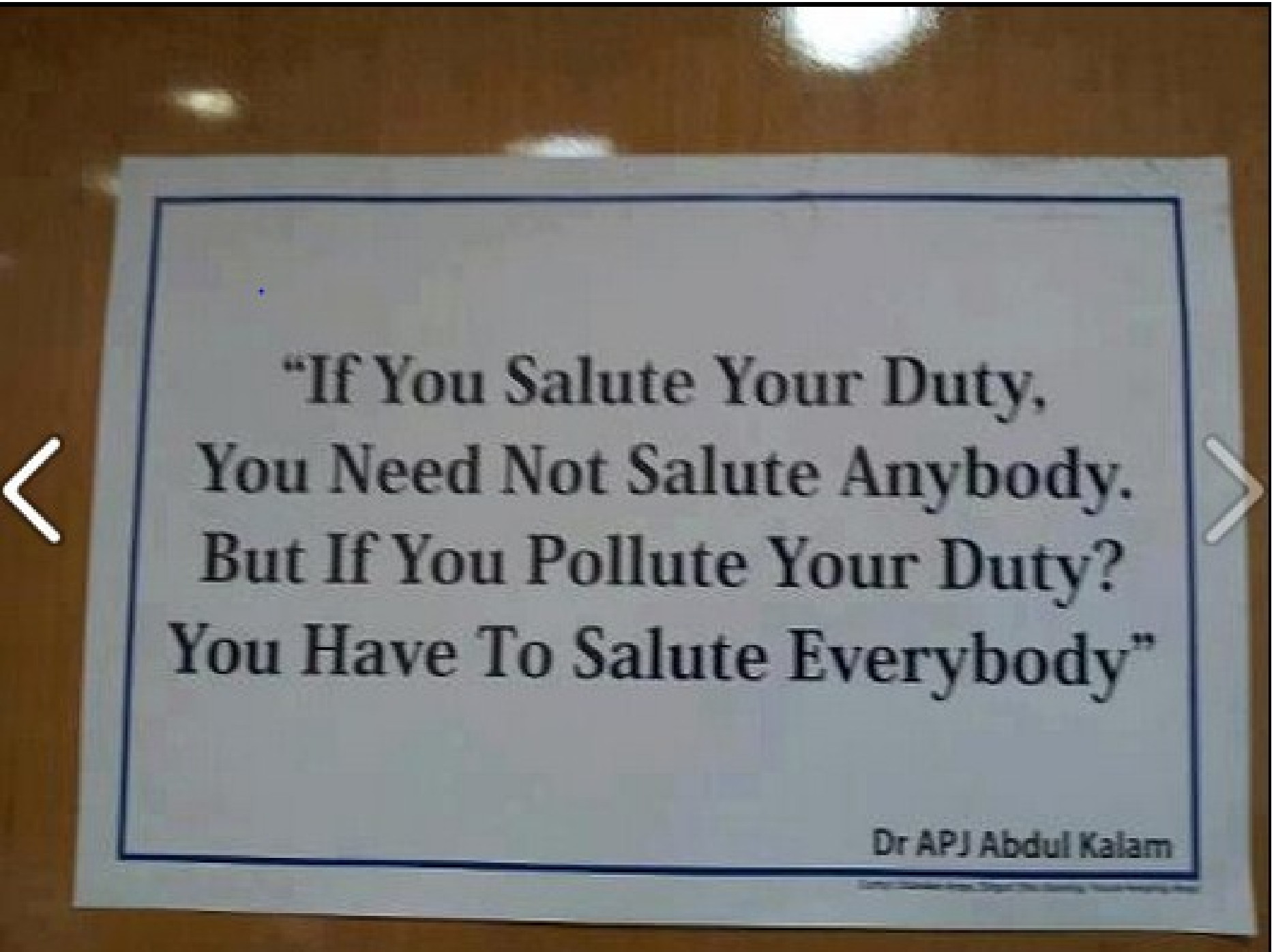
- Some other basic norm for professional engineers as below
  - Welfare of public
  - Serve in area of competences
  - Issue public statement in an objective and truthful manner
  - Shall act as faithful or trustee
  - Should build their reputation, unfairness to others
  - Enhance honor, integrity and dignity of the profession
  - Professional career development
  - Advertise on factual representation
  - Do not offer or accept the hidden payment
  - Do not disclose confidential matter(information)
  - Do not engage in conflicting services
  - Sign those documents which are prepared under his direct involvement
  - Report if any unethical matter in your knowledge etc.

A Conflict of Interest Policy Incorporates an Organization's Ethics, Values and Integrity

DUTIES/ LIABILITIES/ of designers or professional

1. Negligent, misstatement.
2. Statutes, bylaws, and standards
3. Examination of site above or below ground surface
4. Public and private rights
5. Plans. drawings/ specification
6. Suitability of materials
7. Suitability of Method of execution
8. Novel/ risky design and employers interference in design
9. Revision of design during execution

If you Salute your Duty,
You no need to Salute
Anybody,
But
If you pollute your
Duty, You have to
Salute Everybody
-Kalam


"If You Salute Your Duty,
You Need Not Salute Anybody.
But If You Pollute Your Duty?
You Have To Salute Everybody"
Dr APJ Abdul Kalam

- Thank you

Ethics

- Just read "48 Laws of Power" written by an American Writer, Robert Greene. While much of the ideas appear so crooked, I am just trying to understand the role of Power to one's Survival to his/her Happiness. I feel somehow there should be a strong positive correlation.
- LAW 1) Never outshine the master
  LAW 2) Never put too much trust in friends, learn how to use enemies
  LAW 3) Conceal your intentions