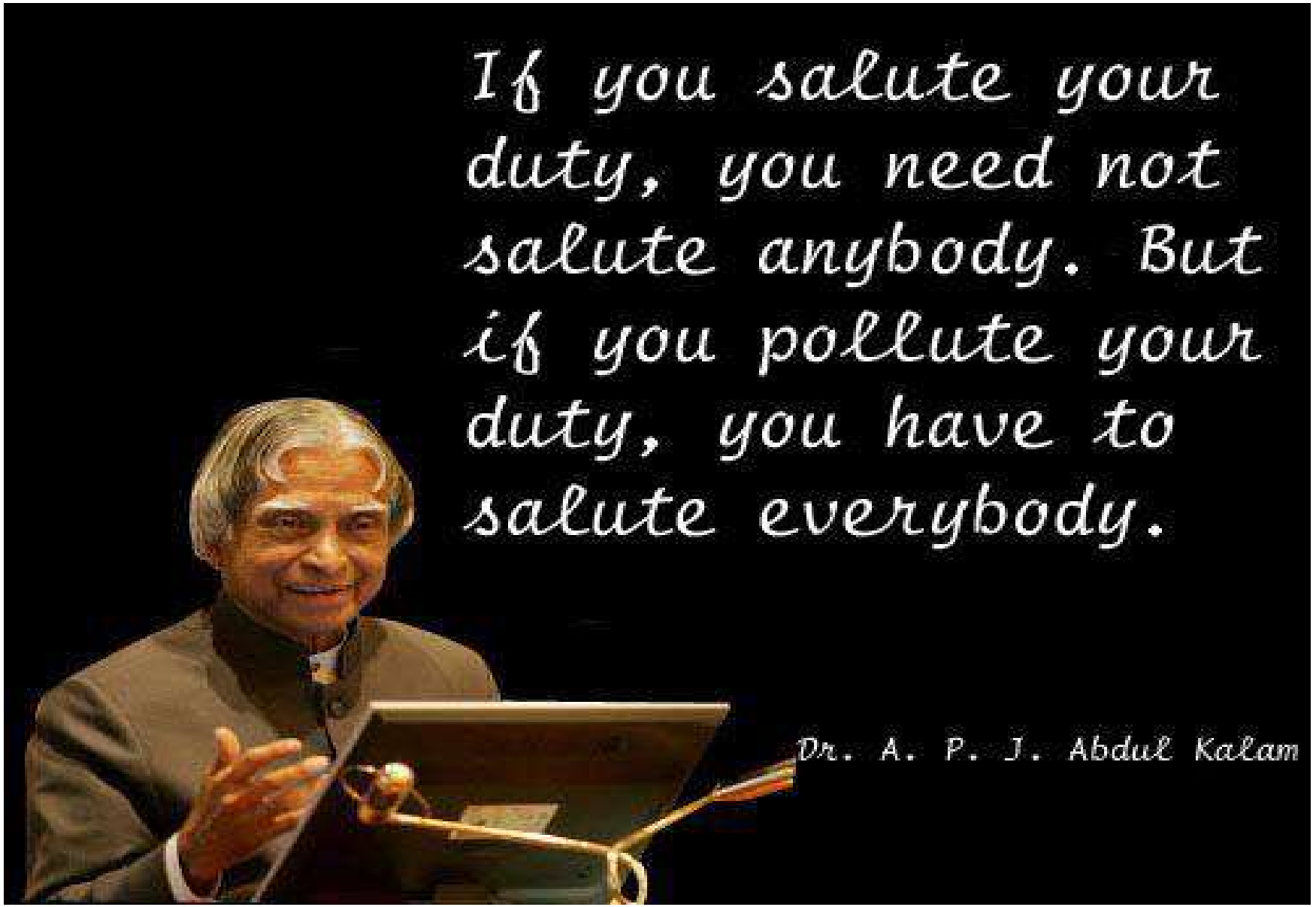
Chapter 1: Society and Technology

Introduction to Engineering



Engineer?

Heated gold is called ORNAMENT

Beated copper is called WIRE

Compressed carbon is called DIAMOND

Heated, Beated & Compressed Person is called ENGINEER

Introduction to Engineering

- Engineering is the application of scientific knowledge about matter and energy for practical human uses such as construction, machinery, products or systems.

- Engineering is the application of scientific knowledge to solving problems in the real world.

- The profession of engineer is- “the art of directing the great sources of power in nature for the use and convenience of human” (ICE Charter)

We can enjoy the benefit of good technology only when "we" apply it in practice and sharing of experience

Man

- **Man is a social animal.**
- **Has a natural behavior to live an associated life with others.**
- **Ultimate ambition of society is to promote good and happy life for its individuals.**
- **Men also contribute to society by his wisdom and experience.**
- **Thus, society and individuals are inter-related by an intimate and harmonious bond and the conflicts between the two are credible and momentary.**

Society

- **Definition of society keeps changing since society is dynamic.**

- **Society is the largest form of human group which consists of people who share the common heritage and culture.**

- **Society is a complicated network of social relationships by which every human being is inter-connected with his fellowmen.**

- **A settlement with the following criteria is called a society:**

  - Population

  -Population must occupy a common territory.

  -Population have a common government and political authority.

  -Common culture and a sense of relationship/membership to the group

Types of Society (From Evolution Aspect)

- **Tribal: Hunting and gathering society**
- **Pastoral: Domesticate animals for meat**
- **Horticultural: Domesticate Plants (Small-scale agriculture)**
- **Agricultural: Cultivation of crops, animal, irrigation, saving of seed, beginning of towns and cities**

Factors/Causes of Social Change

- **Physical Environment / Contact with other societies:**

urban areas where the physical needs are easily accessible changes rapidly than those located in remote areas (difficult to access)

- **Information, knowledge and skills:**

Rate of social change depends on access to information, ability to put together the information into knowledge, ability to convert the knowledge into skills.

- **Natural Causes:**

Earthquake, landslide, flood, desertification and tsunami disintegrate social fabric and changes society.

- **Anthropogenic / Human Activities:**

International war, civil war, displacement for developmental activities, industrial accidents, mass migration

Classical Theories of Social Change

- **Cyclical (चक्रिय):**
- **Change from a historic perspective**
- **Societies arise, go through various stages of development and then decline**
- **Ups and downs, birth-mature-death**
- **Takes 1000 years**
- **Evolution (विकास):**
- **based on the assumption that societies gradually change from simple beginning into ever more complex forms**
- **- According to them, social change means progress toward something better.**
- **Functionalist (भिन्न):**
- **Functionalism views society as a social system of inter-connected parts – a bit like a human body with each part of body depending on other to function.**
- **Society has social institutions like schools, families, police that work together so that social body can survive:**
- **Conflict :**
- **Competition between groups over material goods, opportunities, values and meaning**
- **Karl Marx class conflict between haves and have-nots**

Essential Elements of a society:

- **Plurality:**
- **All ages, sexes and groups of various economic status.**
- **Stability:**
- **Organized on the basis of divisions of labor**
- **Likeliness:**
- **Recognition (Nationality now-a-days)**
- **Differences**
- **Interests, ages, sexes, opinions, intellectuality**
- **Interdependences**
- **Co-operation**

Technology and Society

- **Technology is the accumulation of techniques, skills, methods and process used in the assembly of products or services or within the accomplishment of objectives, such as scientific investigation.**

- **Technology has helped advance added avant-garde economies.**

- **Abounding abstruse processes accomplish exceptionable by-products, accepted as pollution, and bank- rupt accustomed resources, to the damage of Earth's surrounding.**

- **Various implementations of technology access the ethics of an association and new technology usually raise new moral queries.**

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Key Roles of Engineers

1. Creating Vision
2. Preparing Mission
3. Execution
4. Monitor and Evaluate
5. Train
6. Upgrade Profession

The Engineering Design Process

Moving through the Engineering Design Process might involve asking the following questions or making the following decisions:

Ask
Imagine
Plan
Create
Improve

The Engineering Design Process

ASK

What is the problem?

What have others done?

What are the constraints?

IMAGINE

What are some solutions?

Brainstorm ideas.

Choose the best one.

PLAN

Draw a diagram.

Make lists of materials you will need.

The Engineering Design Process

CREATE

Follow your plan and create it.

Test it out!

IMPROVE

Talk about what works, what doesn't, and what could work better.

Modify your designs to make it better.

Test it out!

After you improve your design one, you may want to begin the Engineering Design Process all over again to refine your technology. Or you may want to focus on one step. The Engineering Design Process can be used again and again!

Changes Brought by Engineers

1. Mass production of goods through machines
2. Automation
3. Faster means of transportation
4. Mass communication
5. Inventing labor saving devices
6. Creating faster pace of life
7. Commercializing recreation
8. Emphasizing on high degree of specialization

Thank You !!!