

Engineers & Society

CHAPTER 1 (Part 1) INTRODUCTION

by


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Engineer and Engineering

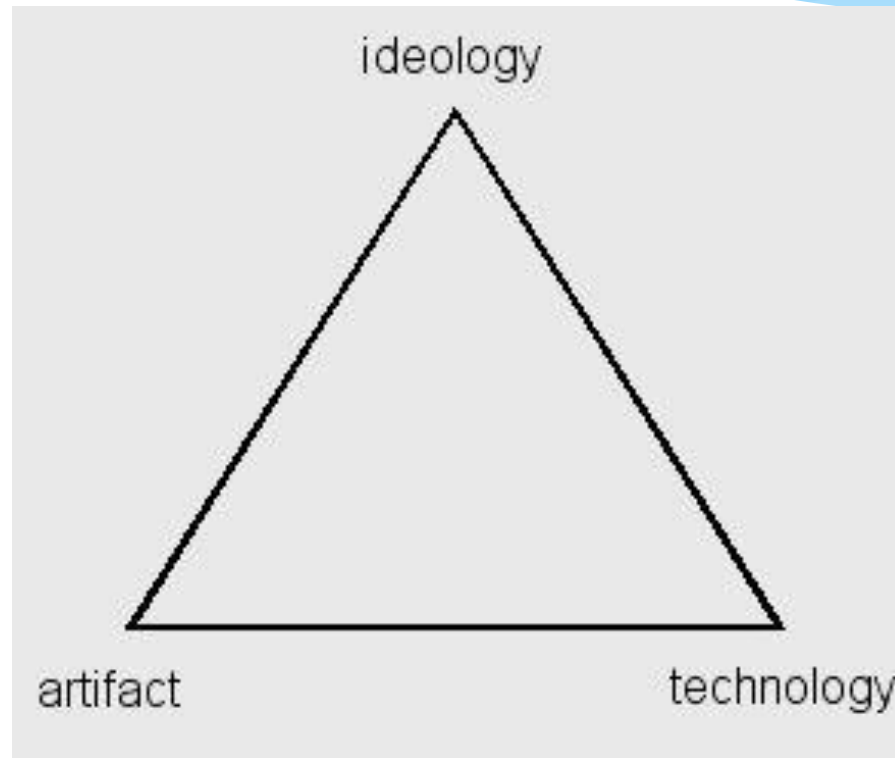
Engineering - origins of the word

- * Engineering is a practical form of art and a profession, evolved from the work of builders thousands of years ago
- * It was originated probably in the Middle Ages around 1000-1200 AD
- * They were mainly builders of civil and mechanical structures such as buildings, bridges, roads, mills and war machines

What is Engineering ?

- * Engineering : practice of organizing the design, construction and operation of any artifice that transforms the physical world to meet some recognized need
- * Engineers environment has changed from natural world dominated to artifact dominated

Engineering and society triangle



Artifact	Ideology	Technology
Pyramid	Afterlife, funeral rites	Lever, ratchet, pulley
Dykes, polders, waterworks	Protection, economic, human damage	Hydrostatics, windmills
Ship-design	Trade	Steam engine
Church	Religion	Arches
Positioning technology	Transport	Radar
Wireless telephone	Communication	Miniturization, chip design

ABET Definition

- * ABET – Accreditation Board for Engineering and Technology (USA)
- * The profession in which a knowledge of the mathematical and natural sciences gained by study, experience and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind

Source: www.abet.org

IEM Definition of Engineering

- Share a common heritage of knowledge, skill and art.
- Renders a specialized service.
- Involves a confidential relationship between practitioner-client and/or employer.
- Is charged with a substantial degree of public obligation.
- Is bound by a distinctive Ethical Code.
- Has learned organizations or societies.

■ Source: <http://www.myiem.org.my>

Engineering is..

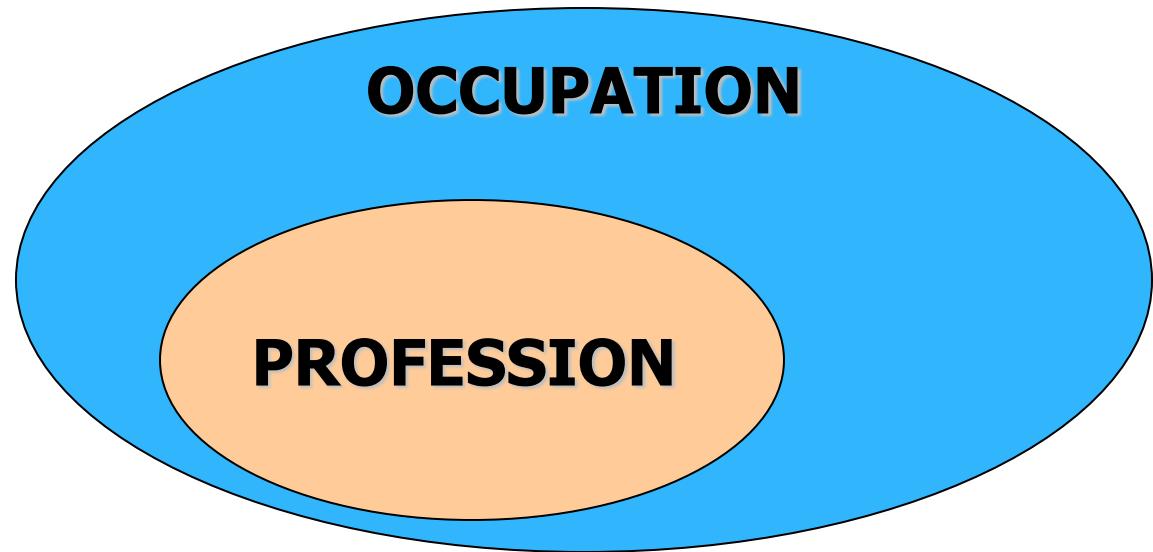
- A profession: it has standards of conduct, responsibilities, is based on specialized knowledge and members can attain professional status in well-defined ways.
- An art as well as science: experience and practice is required.
- The application of professional judgment in seeking optimum solutions.
- The utilization of resources: nature, forces, energy, material, knowledge.
- An exercise in optimizing economic cost.



Profession
and
Professional

Profession

- * What is the difference between profession and occupation?



Profession

- * An occupation that requires advanced education and training
- * It usually claims high level of social standing and recognition
- * Examples:
 - * Theology, Law, Medicine
 - * Engineering, Architecture, Accounting, etc.

The Characteristics of Modern Profession

- * Advanced Education and Training
- * Claim to social standing and recognition
- * Autonomy
- * Registration
- * Faithful relationship with the client and society

Engineering as a Profession

- * Why is engineering considered as a profession?

Engineering as a Profession

- * Engineering is different from other professions:
 - * Type of service provided
 - * Training requirements
 - * Diversity of its leadership

Engineering as a Profession

- * Engineers are concerned with the creation of structures, devices and systems for human use; groups of people rather than individuals
- * What do you think is the implication?



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