An Introduction to Electrical Engineering

Introduction

Lectured By: Dr. A. Haghbin

Overview

- Knowledge
- Science
- Engineer vs. Scientist
- Critical Thinking

Knowledge

- Descartes´ Definition
  - Deduction by which we understand all necessary inference from other facts that are known with certainty, leads to knowledge when recommended method is being followed.
  - Two methods [*intuition and deduction*] are the most certain routes to knowledge, and the mind should admit no others.

Science

- We can see science from different perspectives,
  - **Science** from Latin *scientia, scire* to know
  - A department of systematized knowledge as an object of study
  - Knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method

To do *science* is to search for repeated *patterns*, not simply to accumulate facts.

Robert H. MacArthur

SCIENCE

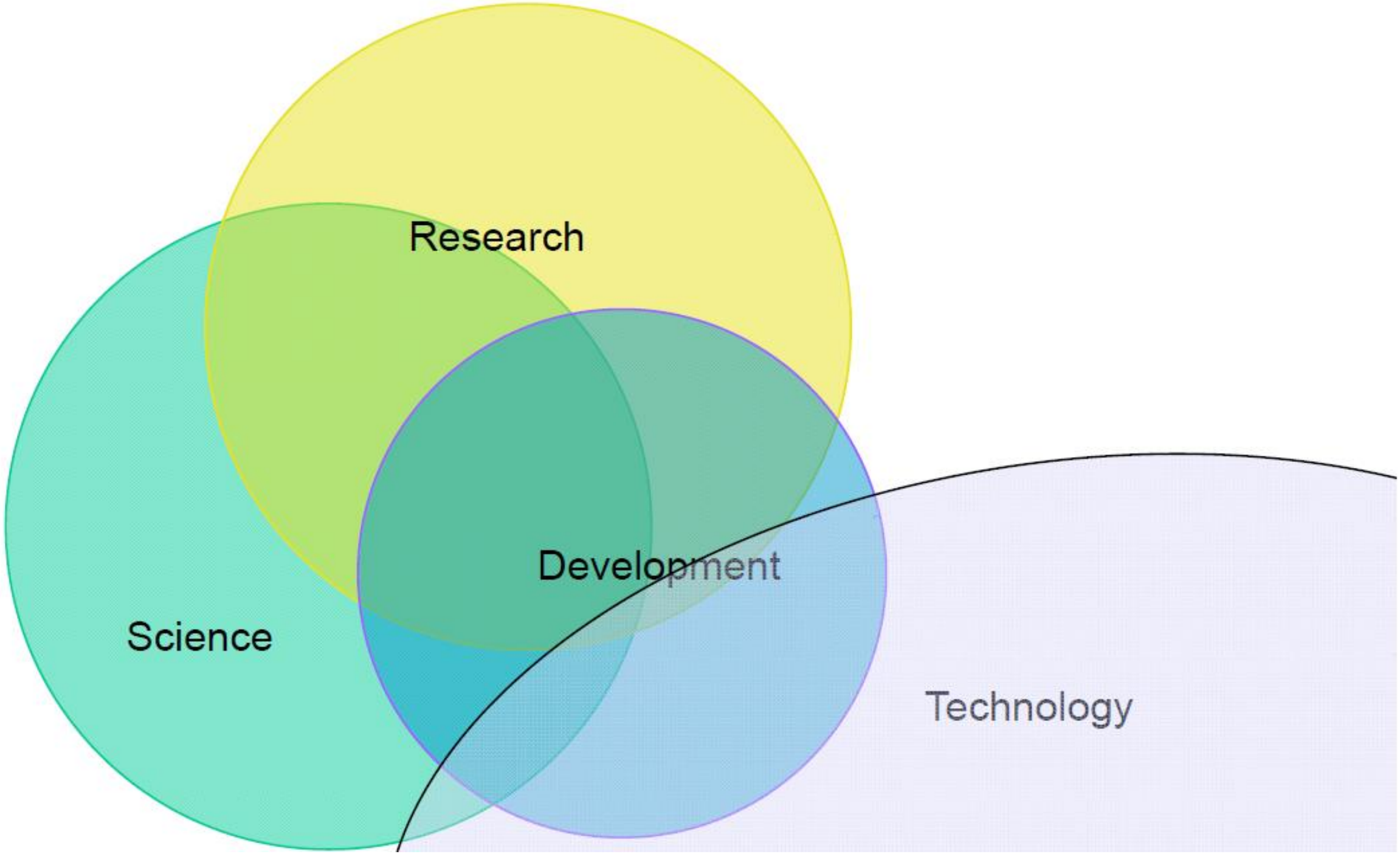
Religion is a culture of *faith*; *science* is a culture of *doubt*.

Richard Feynman

SCIENCE

Engineer vs. Scientist

- Engineering is both a *science* and an art.
- Scientist discovers what is be (the facts) but Engineer builds what is not be (the tools).
- New development of collaborations between different research disciplines is enabled by the progress of technology.


Research
Science
Development
Technology

Engineer vs. Scientist

- **Engineers make the things work**
  - **Solving problems**
    - Understand the problem
    - Analyze the problem
  - **Find solutions**
    - Constructing the solution from parts that address the problem's
    - Various aspects - do a synthesis

Engineer vs. Scientist

- **To achieve the goal engineers**
  - Apply theories, methods and tools from different disciplines
  - Search for solutions even when there is not theory or methods

Reserve your right to think, for even to think wrongly is better than not to think at all.

Hypatia, natural philosopher and mathematician

CRITICAL THINKING

Think Outside the Box

Think Outside the Box

Any Question?

THANKS