

THE ART OF ENGINEERING EDUCATION

*Engineering Education needs Renaissance
no Reform or Restructuring
- but not only Engineering Education*

PRAGUE - EACR 2015
Zdeněk Vostracký, UWB Pilsen

WHAT IS ENGINEERING ?

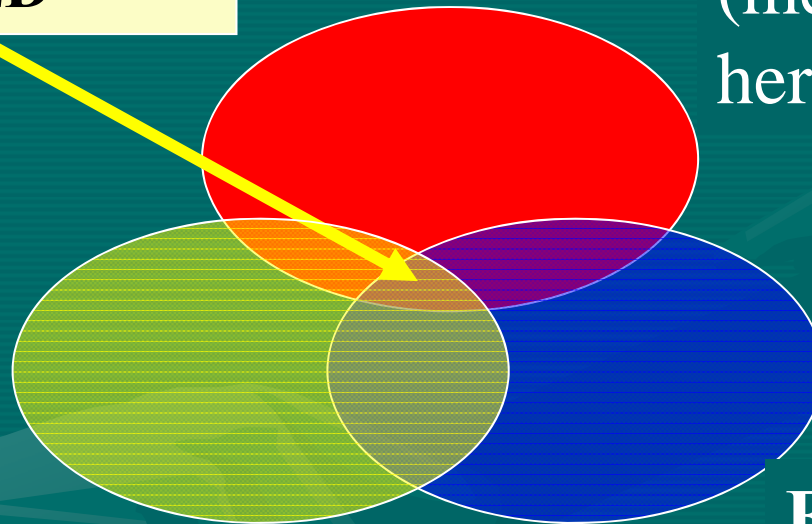
- „THE NAME ENGINEERING IS FROM *LATIN INGENIUM*, MEANING CLEVERNESS AND *INGENIARE* - MEANING TO INVENT A DEVICE" (C. 1250).
- **“SCIENTISTS DISCOVER THE WORLD THAT EXISTS; ENGINEERS CREATE THE WORLD THAT HAS NEVER BEEN.”**

(Theodore von Kármán, engineer and physicist active primarily in the fields of aeronautics in USA).

TRIVIUM RESOURCES IN ENGINEERING

**TECHNOLOGICAL
ARCHITECTURE
WORLD**

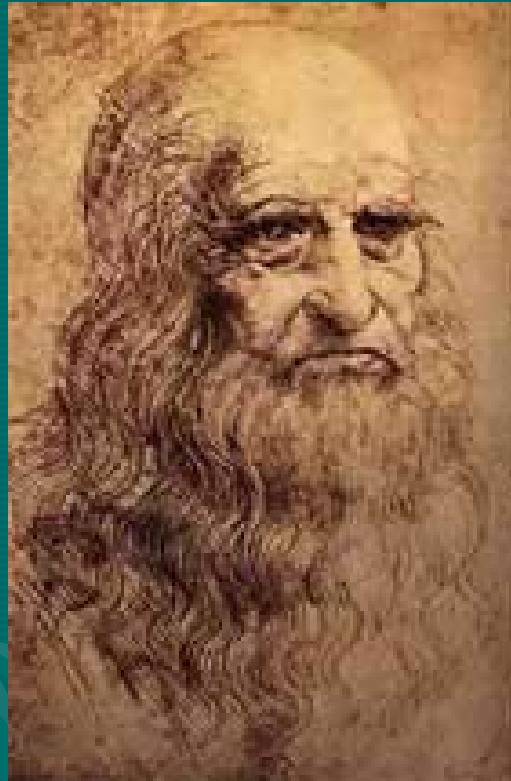
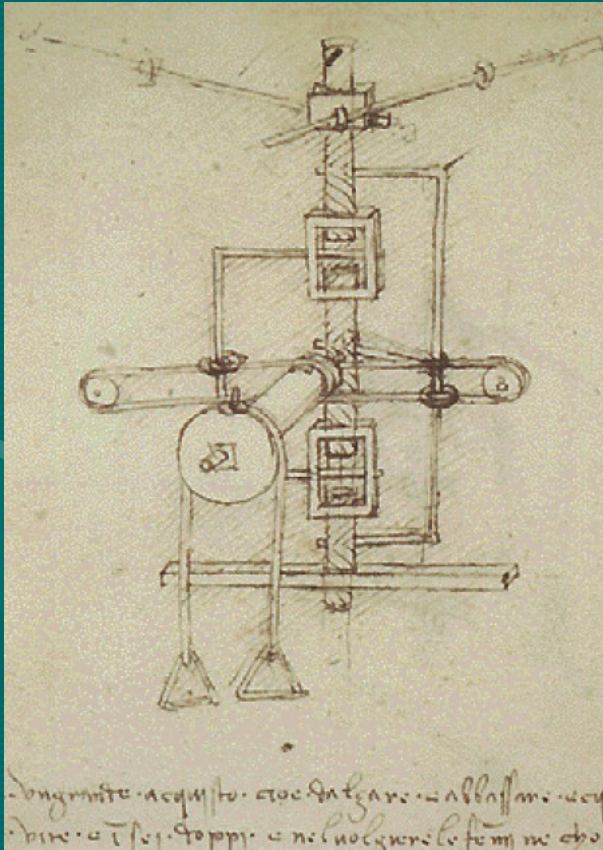
INFORMATION
(measurable,
heritage, culture)



MATERIAL
(raw, processed)

ENERGY
(sources, consumption,
practice)

ENGINEER SCIENTISTS – CREATOR – ARTIST

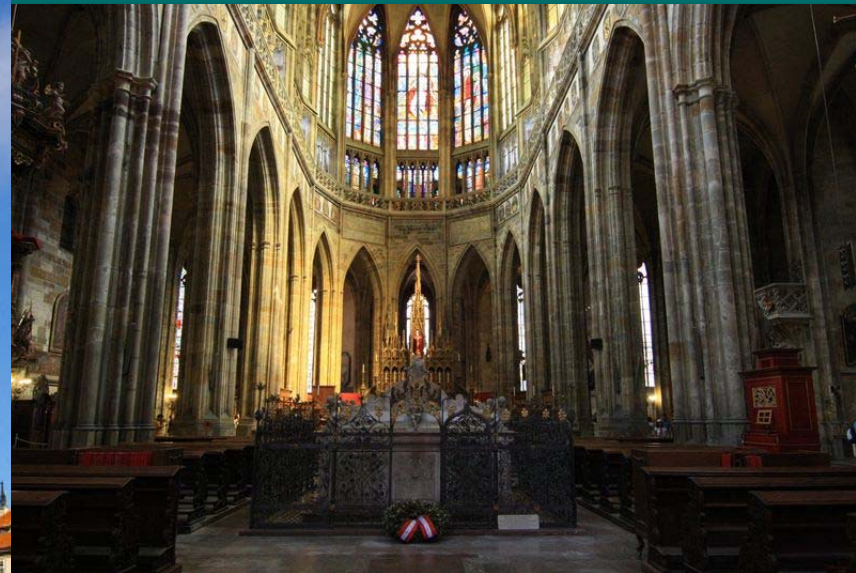


**LEONARDO
DA VINCI**
1452 - 1519



EXPERIENCE – THEORY – INTUITION

ARCHITECTURE – STATICS – ACOUSTICS – LIGHT



MAIN AISLE – STARTED IN
1344

WESTERN PART FINISHED
IN 1929

PHYSICS - COMPUTERS !!!

EACR 2015, Vostracký, UWB Pilsen

FEYNMAN – TWO DOORS

TECHNOLOGY
BENEFITS AND JEOPARDY

INNOVATION OFTEN LIVE THEIR OWN LIFE
AND OFTEN OVERWHELM
EVEN THE WILDEST IMAGE OF HUMANS

RESPONSIBILITY OF ENGINEERS???
EDUCATION IN SOCIAL SCIENCES

WILL BE WAR CHILD'S COMPUTER GAME?



ENGINEERING AND IMPACT ON SOCIETY

TECHNOLOGY – INDUSTRIAL

LANGUAGE – T.A. EDISON, B. GATES, S. JOBS

- INFORMATICS – PC, TV, MOBILE, SOCIAL NETS
- COMMUNICATION – PSYCHOLOGY PLUS AND MINUS

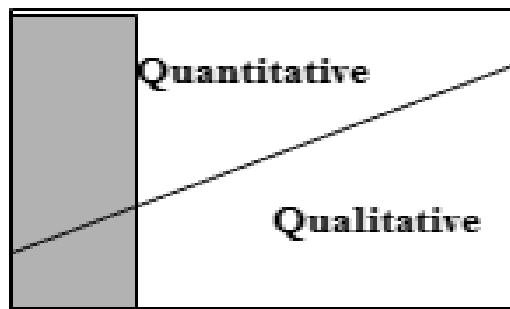
MEDICAL TECHNOLOGY - BIOLOGY, CHEMISTRY

- TREATMENT, LIFE EXPECTANCY
- CONTRACEPTION – FERTILITY RATE
- EMANCIPATION OF WOMEN

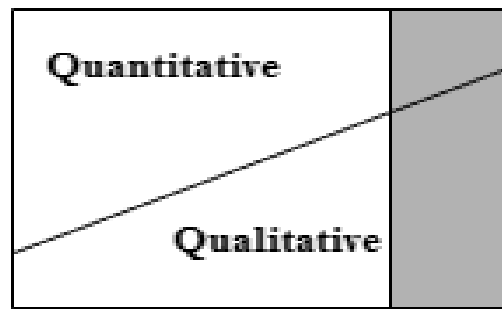
HUMAN DEPENDENCE ON TECHNOLOGY

ENGINEERING EDUCATION SHOULD CONTAIN THE HUMANITIES JUST AS HUMANITIES EDUCATION SHOULD CONTAIN THE TECHNOLOGIES

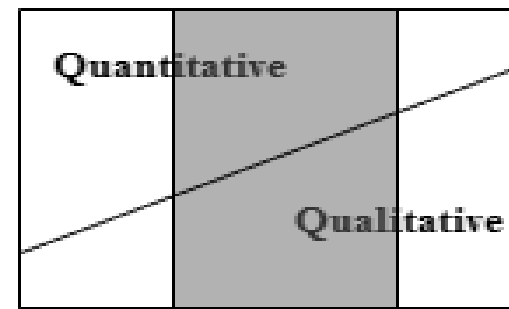
Quantitative – Qualitative Subjects



Engineering



Philosophy



Systems
(Architecture)

ENGINEERING EDUCATION

THE BOLOGNA PROCESS

OPPORTUNITY AND CHALLENGE „BUT“
DISAPPOINTMENT ADMINISTRATIVE
APPROACH
WEAK ACTIVITY OF UNIVERSITIES ?!

SOLUTION :
RENAISSANCE - NO REFORM
OR RESTRUCTURING

THREATS IN ENGINEERING EDUCATION

POPULARITY OF ENGINEERING EDUCATION IS DECLINING
IN MANY DEVELOPED COUNTRIES
BUT IN THE ASIAN REGION IS INCREASING

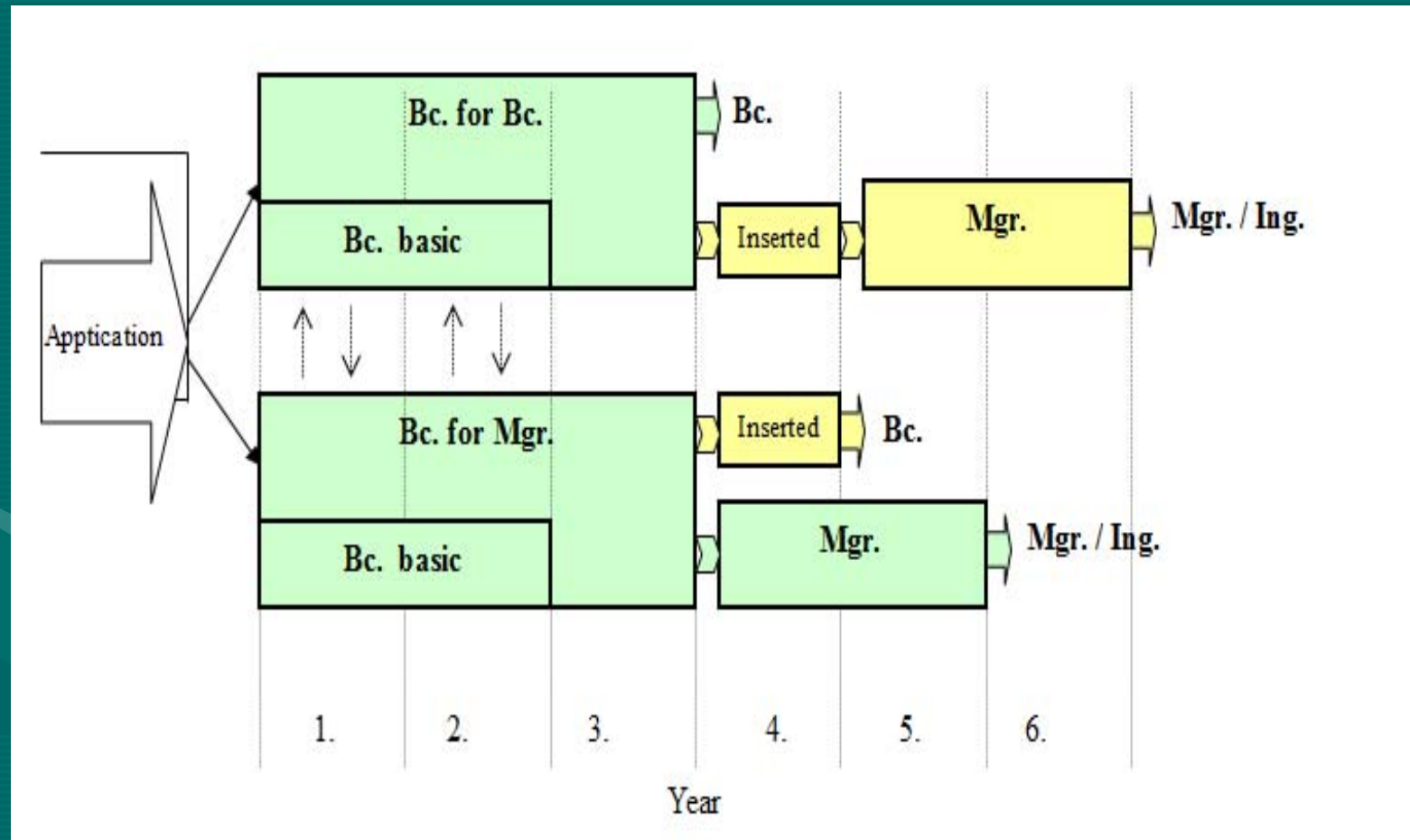
PROGRAMMES:

US GOVERNMENT (1990) – IMPROVING THE
ATTRACTIVENESS AND IMAGE OF THE INDUSTRY
- POPULARIZATION AND EXPRESSION OF THE NEED
FOR TALENTED PEOPLE – RECRUITMENT OF
ENGINEERS FROM ABROAD

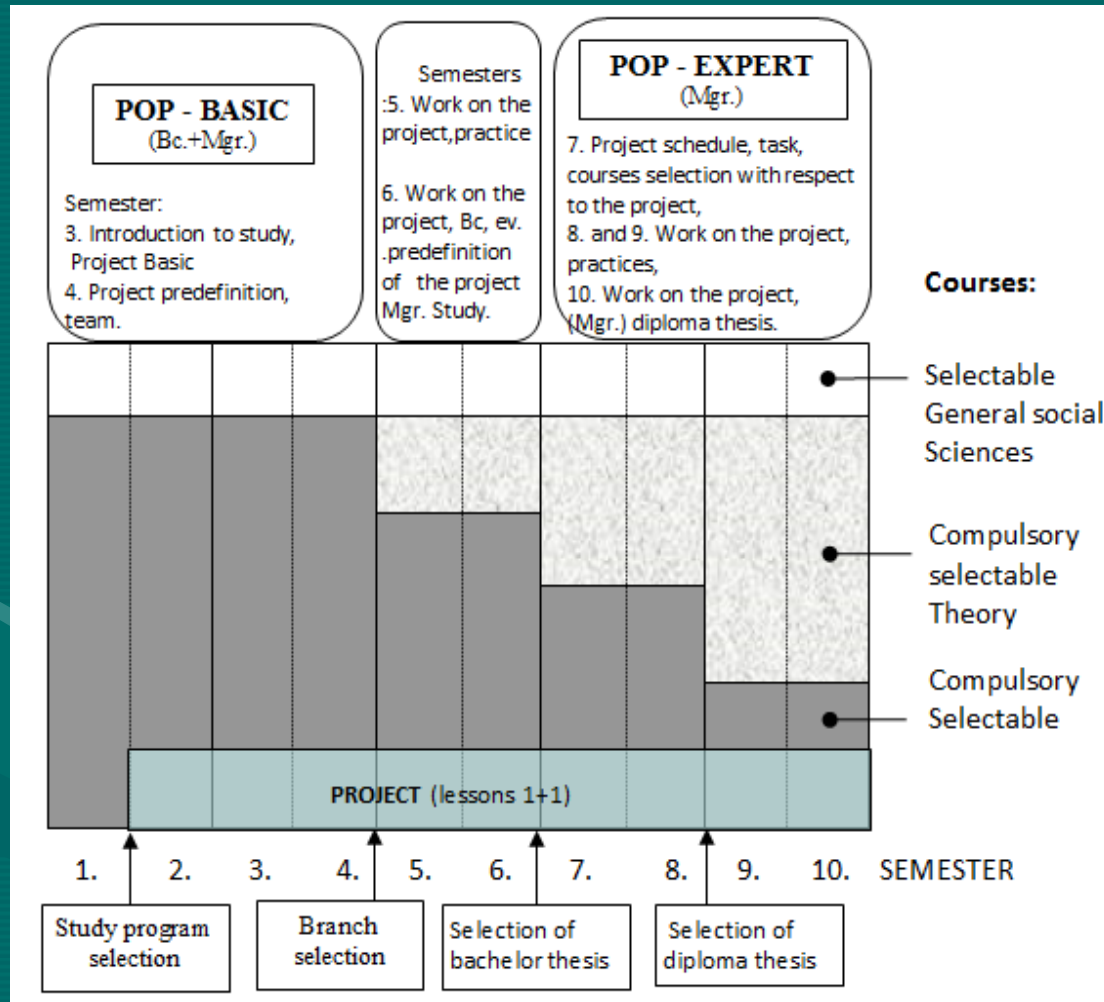
EU - WORLD ENERGY COUNCIL (Formed in 1923)
PROGRAM FEL 100 - YOUNG ENGINEERS

FLEXIBILITY

Bc. and Mgr. - 4 WAYS



PROJEKT ORIENTED PROGRAM



Benefits for students

(learning by doing – Confucius, Harvard University)

Benefits for organizations

(time for experience, on job training)

We can conclude by sentence Alfred P. Sloan Jr.:

**"THE TWO LARGEST SOURCES OF PROSPERITY IN
THE USA ARE UNIVERSITIES AND COMPANIES.
IF THEY FIND MUTUAL UNDERSTANDING
AND COOPERATION, THERE IS ALMOST NO
PROBLEM THAT CAN NOT BE SOLVED."**

***THANK YOU FOR YOUR
ATTENTION***

Zdenek Vostracký