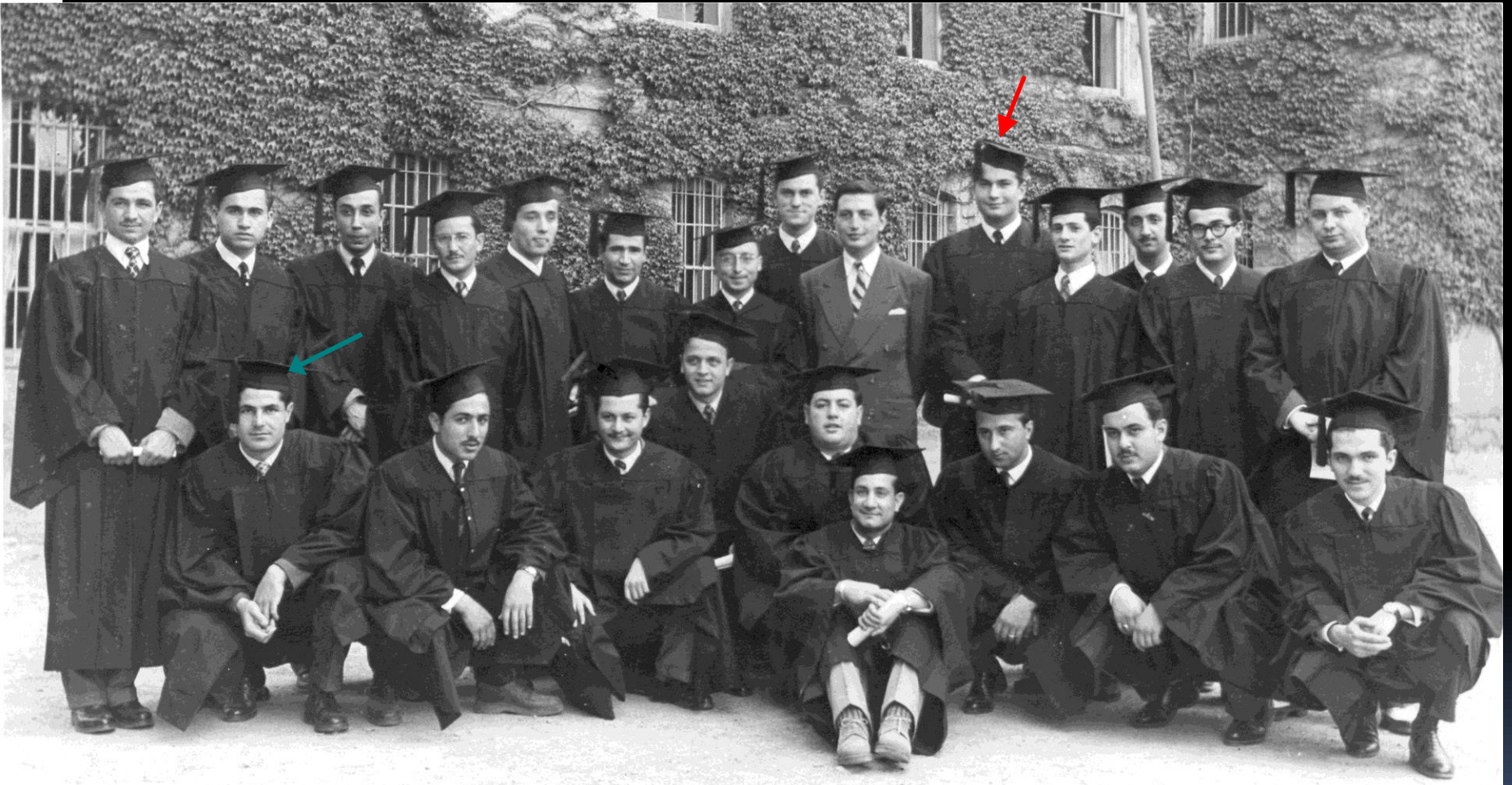


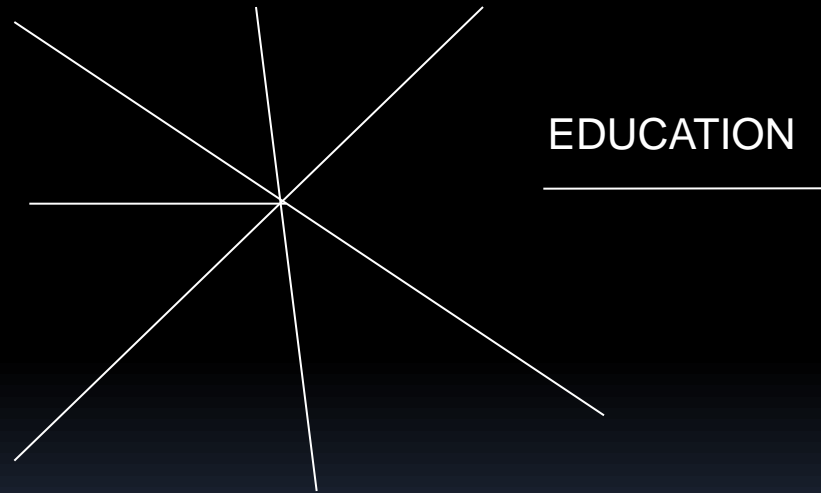
METE AS AN EDUCATOR

UĞUR ERSOY



ROBERT COLLEGE SCHOOL OF ENGINEERING, GRADUATING CLASS, JUNE 1951

MULTI DIMENSIONAL MAN





HIS STUDENTS FOUNDED CENTER OF
EXCELLENCES IN LATIN AMERICA,
EUROPE, JAPAN AND MANY OTHER
COUNTRIES AND CONTINENTS.

THIS IS RARE !



HE WAS ALWAYS READY TO SERVE FOR TURKEY




ERZİNCAN EARTHQUAKE 1992

METU, ANKARA 1999





LECTURES IN ANKARA, İSTANBUL, İZMİR, TRABZON, VAN AND HAKKARİ



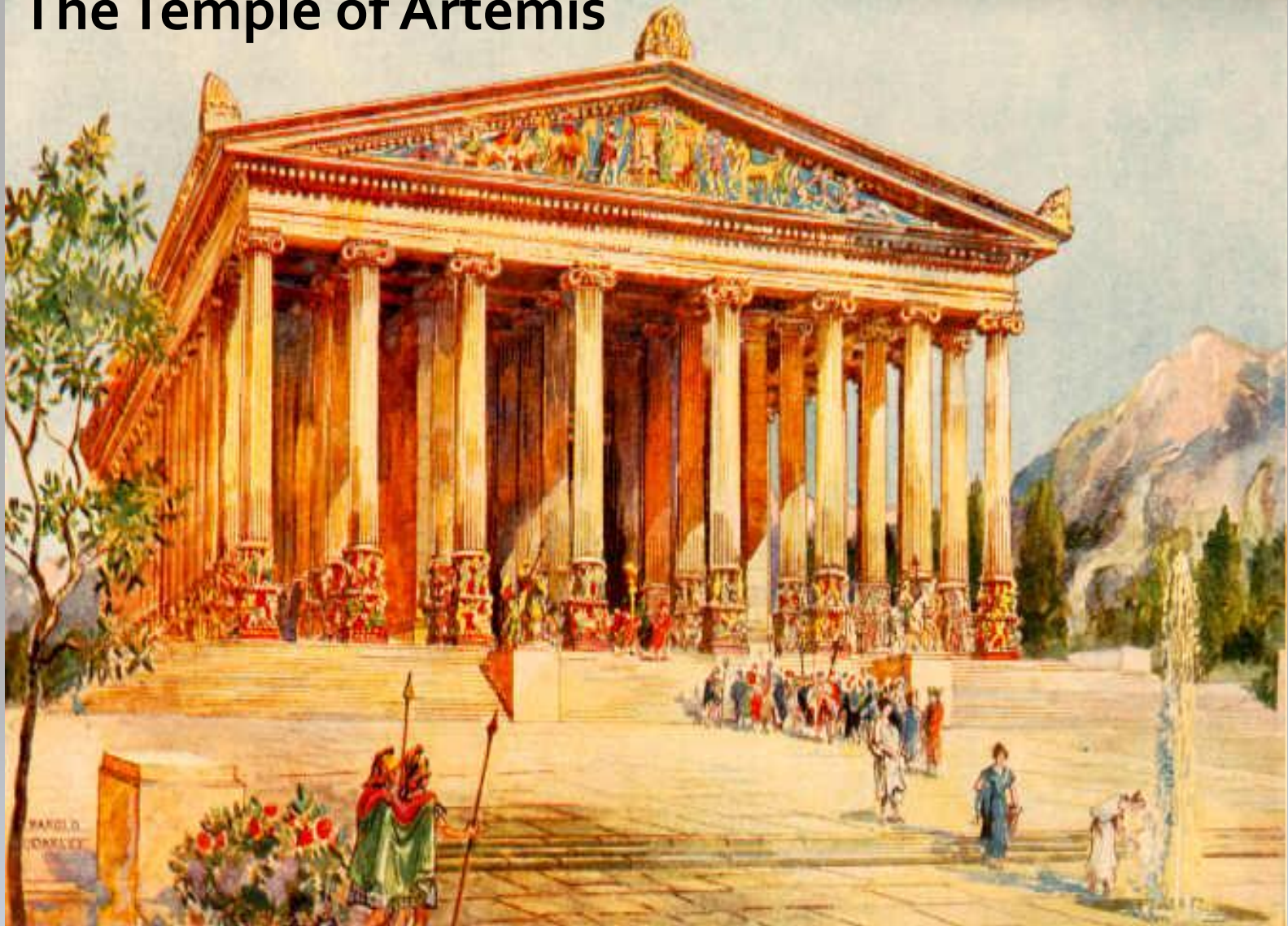
METE BELIEVED THAT,
CIVIL ENGINEERING IS DIFFERENT
FROM OTHER ENGINEERING FIELDS
LIKE ELECTRONICS,
BIOENGINEERING etc:

CIVIL ENGINEERING IS NOT ONLY
SCIENCE BUT ALSO ART!

TECHNOLOGY :

techne + logos = ART + SCIENCE

The Temple of Artemis



MARGO
CORREY

● St Sophia, İstanbul



Selimiye Mosque
Edirne





WE CALL THEM MASTER BUILDERS



MAIN TOOLS USED BY MASTER BUILDERS:

-PAST EXPERIENCE

-THEIR OWN EXPERIENCE




-ENGINEERING INTUITION



**METE RECEIVED HIS MS AND PhD
DEGREES FROM THE UNIVERSITY OF
ILLINOIS AT URBANA.**

**LATER HE SERVED AS A STAFF MEMBER
AT THIS UNIVERSITY FOR NEARLY 40
YEARS !**



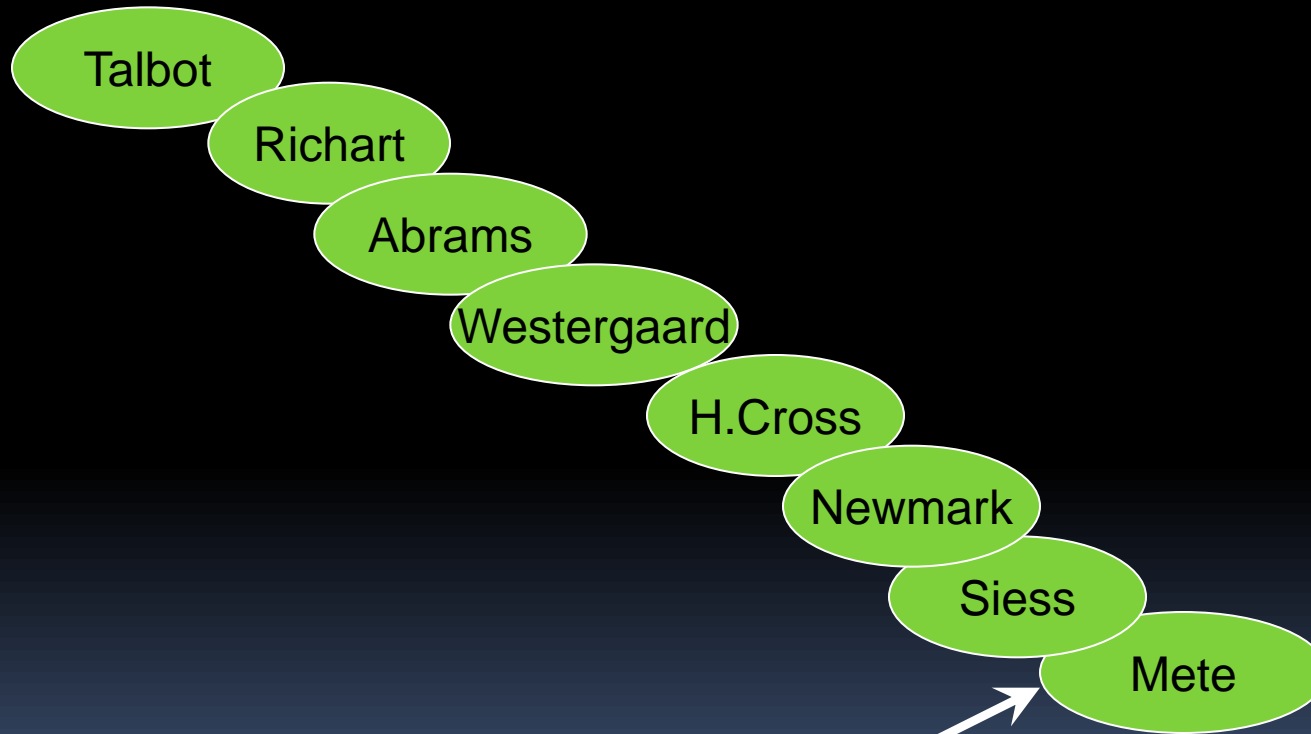
EXTENSIVE EXPERIMENTAL RESEARCH WAS PERFORMED AT UNIVERSITY OF ILLINOIS SINCE THE BEGINNING OF 20th. CENTURY TO UNDERSTAND THE BEHAVIOR OF STRUCTURES

Therefore traditionally education at University of Illinois was based on behavior. This tradition was set by Talbot and carried on to Hardy Cross, Westergard, Abrams, Richart, Newmark and Siess.



Mete Sözen was the last representative of this SCHOOL OF THOUGHT

- Structural Engineering chain (Chain of Giants)
at University of Illinois-Urbana (Excluding Dept. of Applied
Mechanics)
1910-1993



METE, LAST OF MOHICANS !



IN 1993 HE CARRIED THIS TRADITION
TO PURDUE UNIVERSITY



COMPUTER AGE (REVOLUTION)

A WONDERFUL TOOL


ALSO SOME ADVERSE SIDE EFFECTS



**SOME ENGINEERS THINK THAT
EXPERIENCE AND INTUITION ARE NO
LONGER IMPORTANT IN THE COMPUTER
AGE !**

THIS IS A GRAVE MISTAKE.





MANY STRUCTURAL ENGINEERS GET SO MUCH INVOLVED IN SOPHISTICATED METHODS AND NUMBERS, THEY LOSE THE PHYSICAL PICTURE AND THEY FORGET THAT CIVIL ENGINEERING IS NOT ONLY SCIENCE BUT SCIENCE AND ART.

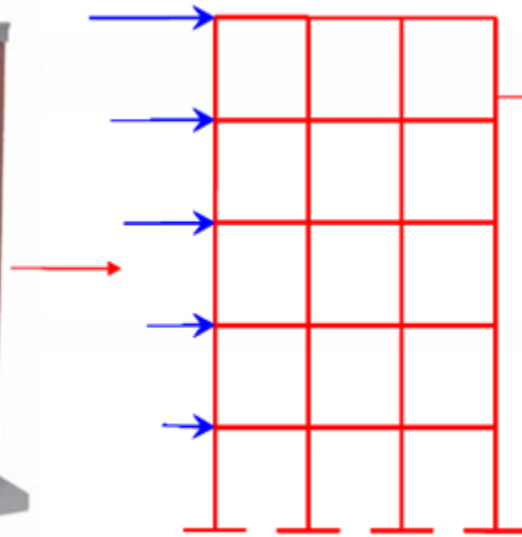


METE EMPHASIZED THIS IN ALL HIS LECTURES AND PAPERS



METE ALWAYS SAID,
“GUESS BEFORE YOU CALCULATE”

THE STRUCTURAL ENGINEER SHOULD NOT ACCEPT OUTPUTS OF THE COMPUTER AS THE SOLUTION OF THE PROBLEM, UNLESS THEY AGREE (more or less) WITH WHAT EXPERIENCE AND INTUITION TELLS HIM OR HER TO BE THE CORRECT ANSWER.



ANALYSIS

FILTER

DECISION

Building

Model



A RIDDLE !!!!

IS THE EXACT ANALYSIS OF AN APPROXIMATE
MODEL GOOD ENOUGH TO QUALIFY AS AN
APPROXIMATE ANALYSIS OF THE EXACT
STRUCTURE ?



Mete A. Sözen

**SOMEONE HAS SAID THAT THE
THEORY OF STRUCTURAL DESIGN IS
BUILT BY ATTRIBUTING IMPOSSIBLE
PROPERTIES TO NON-EXISTENT
MATERIALS !!!**

Hardy Cross




**HISTORY OF SCIENCE IS FULL OF
BEAUTIFUL THEORIES, BUTCHERED BY
SMALL UGLY FACTS !**

Sir S. Thomas



METE BELIEVED IN SIMPLICITY.

**HE HAD A GREAT TALENT AND
INSTINCTIVE ABILITY TO EXPRESS HIS
IDEAS IN SUCH A SIMPLE WAY THAT
ANY STUDENT OR ENGINEER COULD
UNDERSTAND IT !**



**THE GREAT TRUTHS OF ENGINEERING
ARE SIMPLE...
AN ENDLESSLY COMPLEX
PRESENTATION OF AN ENGINEERING
FACT INDICATES COMPLICATION IN
THE BRAIN OF THE PROPOUNDER
RATHER THAN COMPLEXITY OF
NATURE.**

Hardy Cross



IF YOU CAN NOT EXPLAIN IT SIMPLY,
YOU DO NOT UNDERSTAND IT WELL
ENOUGH !

Albert Einstein



TODAY WE HAVE,

-TWO EXCELLENT MATERIALS:

STEEL AND CONCRETE

**-ADVANCED ANALYSES TECHNIQUES AND
SOFTWARES**

-HIGH CAPACITY, HIGH SPEED COMPUTERS

ADAPAZARI DEPREMI 1967




MARMARA 1999



VAN, 2011





BETWEEN 1967 AND 2019 SEISMIC
CODE WAS REVISED SEVERAL TIMES.
AT EACH REVISIONS MORE
SOPHISTICATED ANALYSIS METHODS
WERE INTRODUCED.



THERE ARE MANY REASONS FOR SUCH DISASTERS. TWO OF THEM ARE,

- INADEQUATE SUPERVISION DURING CONSTRUCTION STAGE

- WORSHIPPING NUMBERS WHICH COME OUT AS A RESULT OF ANALYSES, FORGETTING INTUITION, COMMON SENSE AND BEHAVIOR OF THE STRUCTURE.



THEY ASKED THE FAMOUS PAINTER
RAPHAEL, “WITH WHAT HE MIXED HIS
PAINTS?”

THE MASTER ANSWERED:

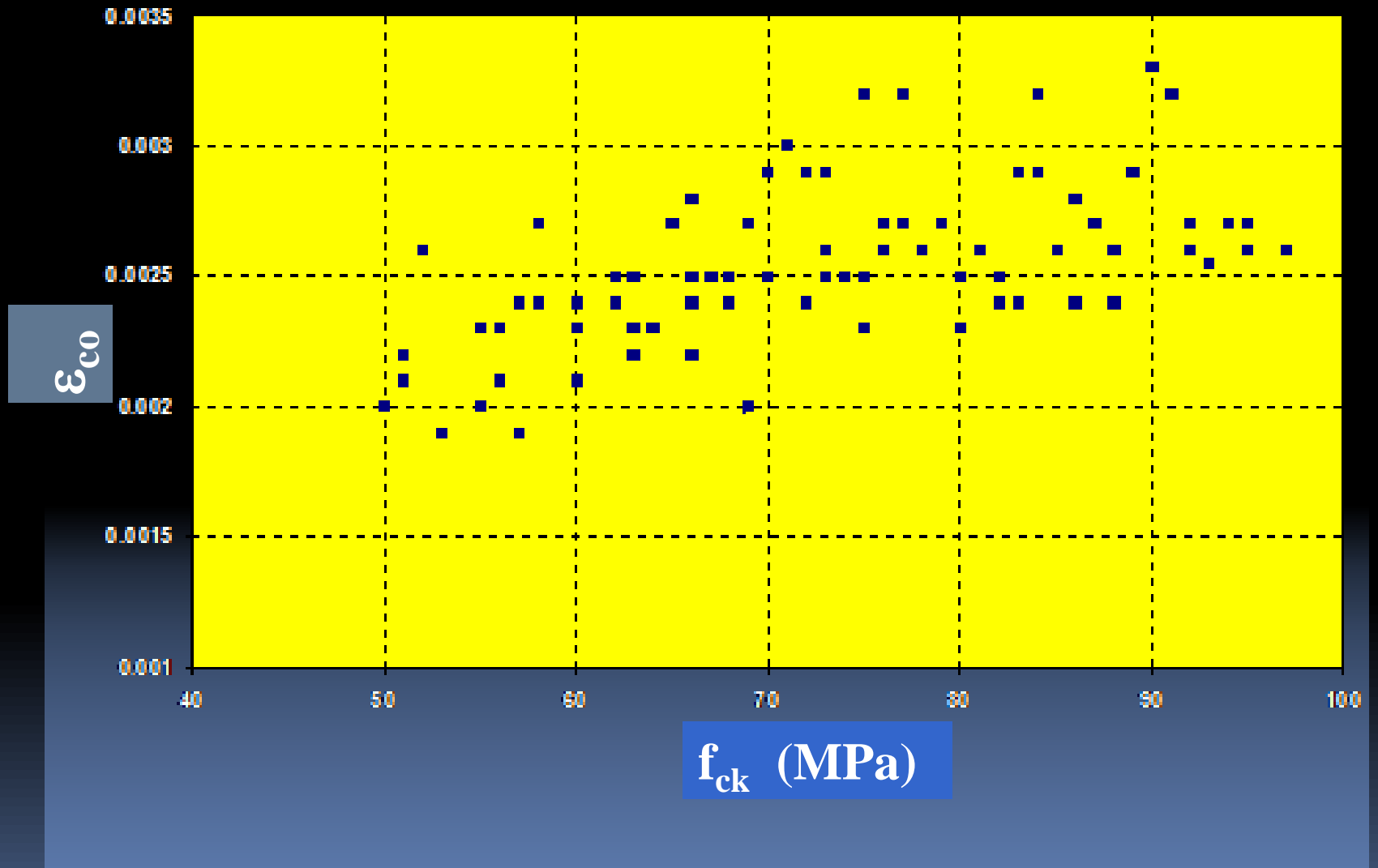
“WITH MY BRAIN!”




ILL SIDE EFFECTS OF THE COMPUTER AGE. AN EXAMPLE !


$$\varepsilon_{c1} = 0.007 (f_{ck} + 8)^{0.31}$$


$$\varepsilon_{c2} = 0.002 + 0.000085 (f_{ck} - 50)^{0.53}$$






IN MANY EDUCATIONAL INSTITUTIONS
EMPHASIS IS ON ANALYSIS. LITTLE OR
NO TIME IS SPENT ON STRUCTURAL
BEHAVIOR.



THIS IS A GRAVE MISTAKE !



“THE FUNCTION OF THE UNIVERSITIES IS TO TURN OUT INTELLIGENT MEN WITH SOME KNOWLEDGE OF PRACTICAL FIELDS, RATHER THAN TURN OUT UNINTELLIGENT MEN WITH DETAILED KNOWLEDGE OF LIMITED FIELDS.”

Hardy Cross

Nobody would agree with Hardy Cross more than Mete.




METE BELIEVED THAT,

**EDUCATION SHOULD AIM TO DEVELOP
STUDENTS INTELLIGENCE AND ABILITY TO
MAKE JUDGEMENT.**

**STUDENTS SHOULD BE ENCOURAGED TO DO
INDEPENDENT WORK, DEVELOP IDEAS AND TO
APPLY THEM.**






STUDENTS OF TODAY WILL BE PRACTICING
ENGINEERING TWENTY, THIRTY YEARS
FROM NOW.

IT IS HARD, IF NOT IMPOSSIBLE TO
PREDICT WHAT WOULD BE EXPECTED
FROM CIVIL ENGINEERS IN THOSE YEARS.




**METHODS, CODES AND KNOW-HOW WILL
CHANGE BY TIME, BUT BEHAVIOR AND
BASIC PRINCIPLES DO NOT CHANGE !**



A FEW YEARS AGO METE AND I WERE
DISCUSSING THE EDUCATION AT ROBERT
COLLEGE WHEN WE WERE STUDENTS.
METE ASKED ME A QUESTION:

“HOW IMPORTANT IS THE ROLE
OF TEACHERS IN EDUCATION ?”




“TEACHERS ARE IMPORTANT. THEY CAN NOT COMPLETELY RUIN A GOOD MAN NOR CAN THEY MAKE A BARREL OUT OF A BUNGHOLE, BUT THEY CAN ACCOMPLISH MUCH IN EITHER DIRECTION!”

Hardy Cross



**INSTRUCTORS AT UNIVERSITIES SHOULD GIVE
UP SPOON FEEDING !**

**THERE SHOULD BE SEVERAL DESIGN COURSES IN
WHICH THE STUDENTS WOULD PREPARE TERM
PAPERS AND PROJECTS BASED ON
INDEPENDENT RESEARCH, THINKING AND
JUDGEMENT!**






“EDUCATORS, ESPECIALLY THE OLDER ONES
ARE EAGER TO GUIDE. THEY SAY, ‘WE HAVE
EXPERIENCE.’

YES, BUT WE SHOULD NOT FORGET THAT TOO
MUCH GUIDANCE WILL KILL NEW IDEAS AND
THE CREATIVITY.”

Hardy Cross




METE SÖZEN'S PHILOSOPHY OF
TEACHING CAN BE SUMMARIZED BY
MAKING A QUATATION FROM K.GIBRAN .



***“IF THE TEACHER IS INDEED WISE, HE
DOES NOT BID YOU TO ENTER THE
HOUSE OF HIS WISDOM, BUT RATHER
LEADS YOU TO THE TRESHOLD OF YOUR
OWN MIND.”***

Kahlil Gibran

(From his book “The Prophet”)



METE WAS NOT ONLY A GREAT ENGINEER
BUT ALSO A RARE INTELLECT WHO HAD
KNOWLEDGE IN HISTORY, LITERATURE,
MYTHOLOGY AND OTHER FIELDS.



ONE OF MY AMERICAN FRIENDS TOLD ME THAT BEFORE
READING ONE OF METE'S PAPERS HE PUTS THE
FOLLOWING BOOKS ON THE TABLE:

1) DICTIONARY

2) ENGLISH and AMERICAN LITERATURE



3) MYTHOLOGY

4) HISTORY



METE'S LECTURES AND PAPERS
WERE MASTERPIECES NOT ONLY IN
ENGINEERING BUT ALSO IN ART !

YOU COULD SMELL INTELLECTUALISM
IN ALL HIS WORKS AND PRESENTATIONS.

LADY LOVELACE (19. CENTURY)

-SHE IS THE ONLY LEGAL DAUGHTER OF LORD BYRON !





LADY LOVE LACE

-VERY INTELLECTUAL AND ROMANTIC

-STUDIED MATHEMATICS

-WELL KNOWN MATHEMATICIAN

- PAPER =SCIENCE + ART

-PIONEER IN COMPUTER SOFTWARE

- PIONEER IN “POETIC SCIENCE ! “



METE SÖZEN,
PIONEER IN POETIC ENGINEERING !