

# New Savoir-Etre in Mathematics (soft skills, emotionnal intelligence)



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# OBJECTIVES ICMES2009

- LINK investigations
  - maths/engineering
  - with history of maths and technics,
  - ethnology, sociology
  - Didactics
  - épistémology
- With respect to
  - New technologic challenges
  - New societal stakes
  - In our postmodern society



- Originality compared to others colloquiums?
- Maths for engineers is the main theme, *not a subsidiary one*
- ICMES is a trilogy:  
Ternary relations have to be studied
- Willness to integrate intercultural dimension

# New « savoir-être » in maths (soft skills)

- Maths are invading more and more our daily life
- Need is claimed to form *enlightened citizens*, capable to better debates about main society issues
- Necessary master of new simulation tools
- Necessity appears for better understanding and better sharing of mathematical representations at work in all sciences, via education

# Savoir-être induced by the « digital » era

- Advent of digital era, following the informatics revolution of 20<sup>th</sup> century
- Leads to rough changes in the way of life
- Claim for teacher:
- To be aware of his « digital migrant status », compared to the status of « digital native » of his student
- For efficiency and performance in teaching nowadays



# Savoir-être with respect to « ruptures » in mathematics

For the Engineer: Major Conceptual  
shifts (Informatics Revolution, couple  
math/info)

Increasing complexity and uncertainty

Need for Engineers to be trained also in  
various advanced mathematics

Need for Teacher and Student to develop capability  
to achieve his own ruptures

# Savoir -être in Mathematics induced by Values

- At stake: not only technicity, income competitiveness
- But: requirement also to form « citizen engineers »
- now, mathematics are conveying negative values as positive ones
- And have invaded our daily life
- Hence, « social » part of mathematics in the engineer formation

# Savoir -être in the complexity and uncertainty of the world

- The function of engineers should not be reduced to a calculus task
- New tools in numerical simulation more and more sophisticated: no guarantee on reliability of the chosen model, of the results
- Say it, ,recognize the limitations ,manage the uncertainty and give plausible interpretation: account for the « honest » citizen engineer

# conclusion

- Students are in quest of more « sense », and it should be taken in account
- Supremacy of so called « calculating thought » should give precedence to a « meditating thought » if wanted *a citizen science*
- End of Certainty in Mathematics