First Victor de Mello Lecture

# Reflections on Victor de Mello, Friend, Engineer and Philosopher

by

Professor John Burland

Soils and Rocks, Vol 31, No 3

# 1980 in Rio de Janeiro


Victor, Maria Luiza and Lucia

# May 1986, at the Borde Seco dam site, Venezuela

“Beware of Greeks bearing gifts”

“Beware of Geeks bearing gifts”

# September 1983, with Luiz Guilherme

Keynote address at 6th African Regional Conference, 1975

# “Some lessons from unsuspected, real and fictitious problems in earth dam engineering in Brazil”

Describes the evolution of Victor’s experiences of the design and construction of over 50 major earth dams in Brazil and elsewhere in Latin America using residual soils and saprolites in particular

# WARNINGS

Warned of dangers and distortions that can result if a specialisation is permitted to drive a project

Warned that excessive domination of specialisations can obscure the chain of responsibility – a very serious matter

Warned of the dangers of importing technical “know-how” from western temperate zones to geological settings which are outside the expertise and experience of the experts.

Victor called it the import of “*technical don’t know how*”

# Victor's introduction to key-note address – 6th African Regional Conference

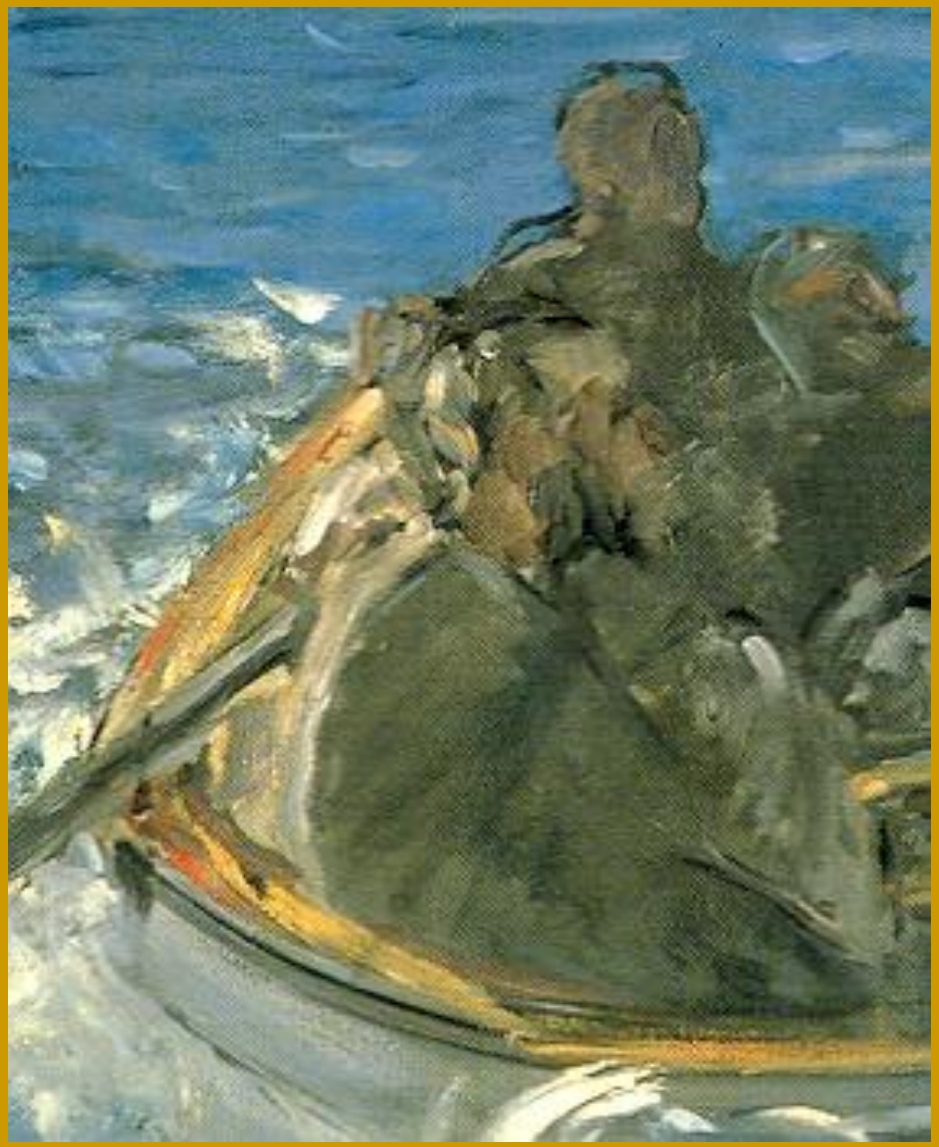
The primordial precedence of values:

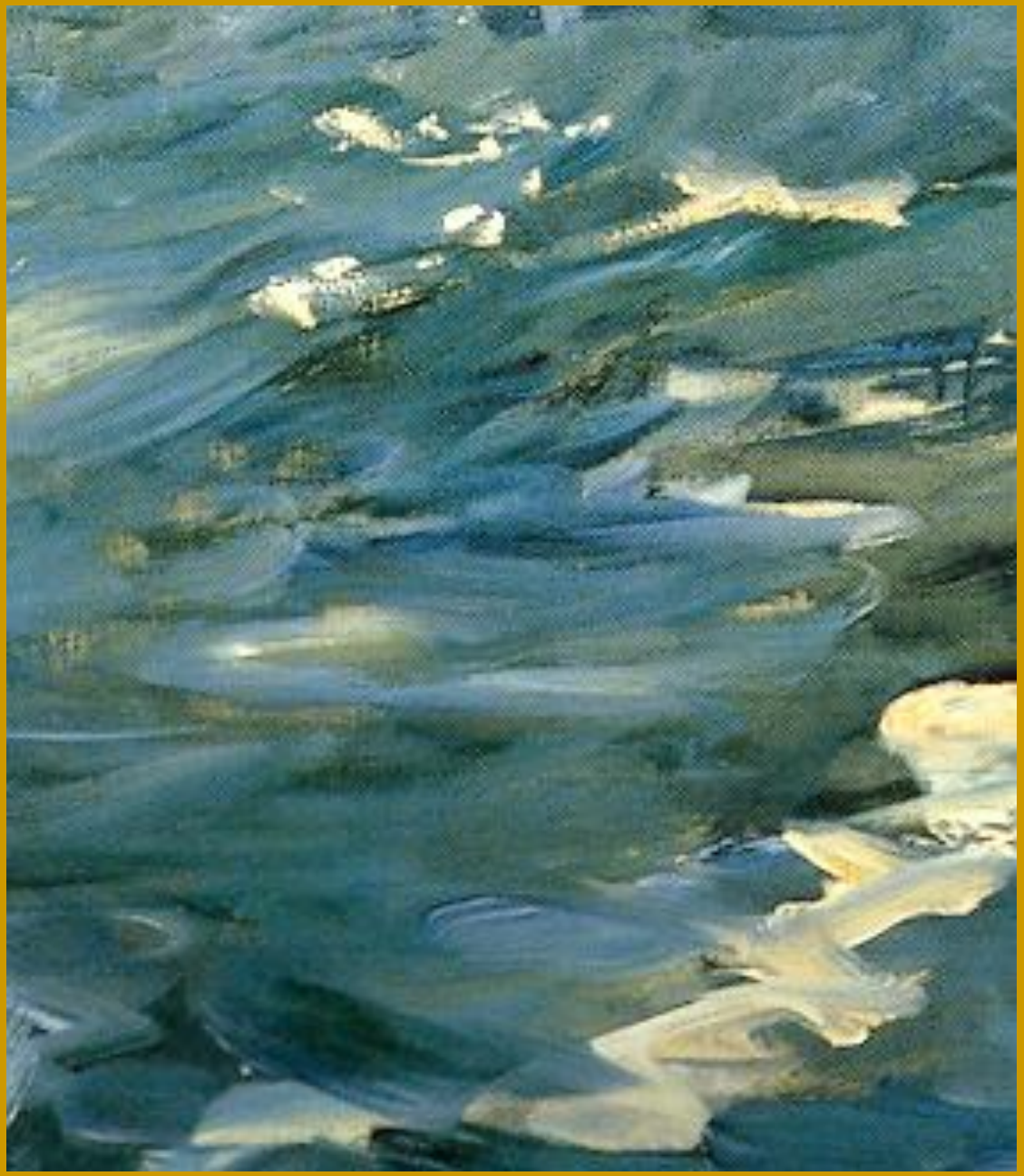
Human being 1st; engineer 2nd; specialist 3rd

"*But I am compelled to state, right from the start, that in my experience it is principally in the connection between Soil Mechanics and the overall field of Civil Engineering, and in our obligations as members of society, that the greatest challenge and chances of creative vision beckon us and lead us forward*"

# Examples of word play

- "*We need not look for new tasks, but merely look at the tasks newly*" – de Mello (1969)
- "*.. I may be described as specializing in being a practising generalist*" – de Mello (1977)
- "*Water has an unfortunate habit of seeping through every theory*"
- "*Choose your love and love your choice*" – de Mello (1985)





Edouard Manet

The escape of Rochefort 1881

BRITISH GEOTECHNICAL SOCIETY

The British National Section of the International Society for Soil Mechanics and Foundation Engineering

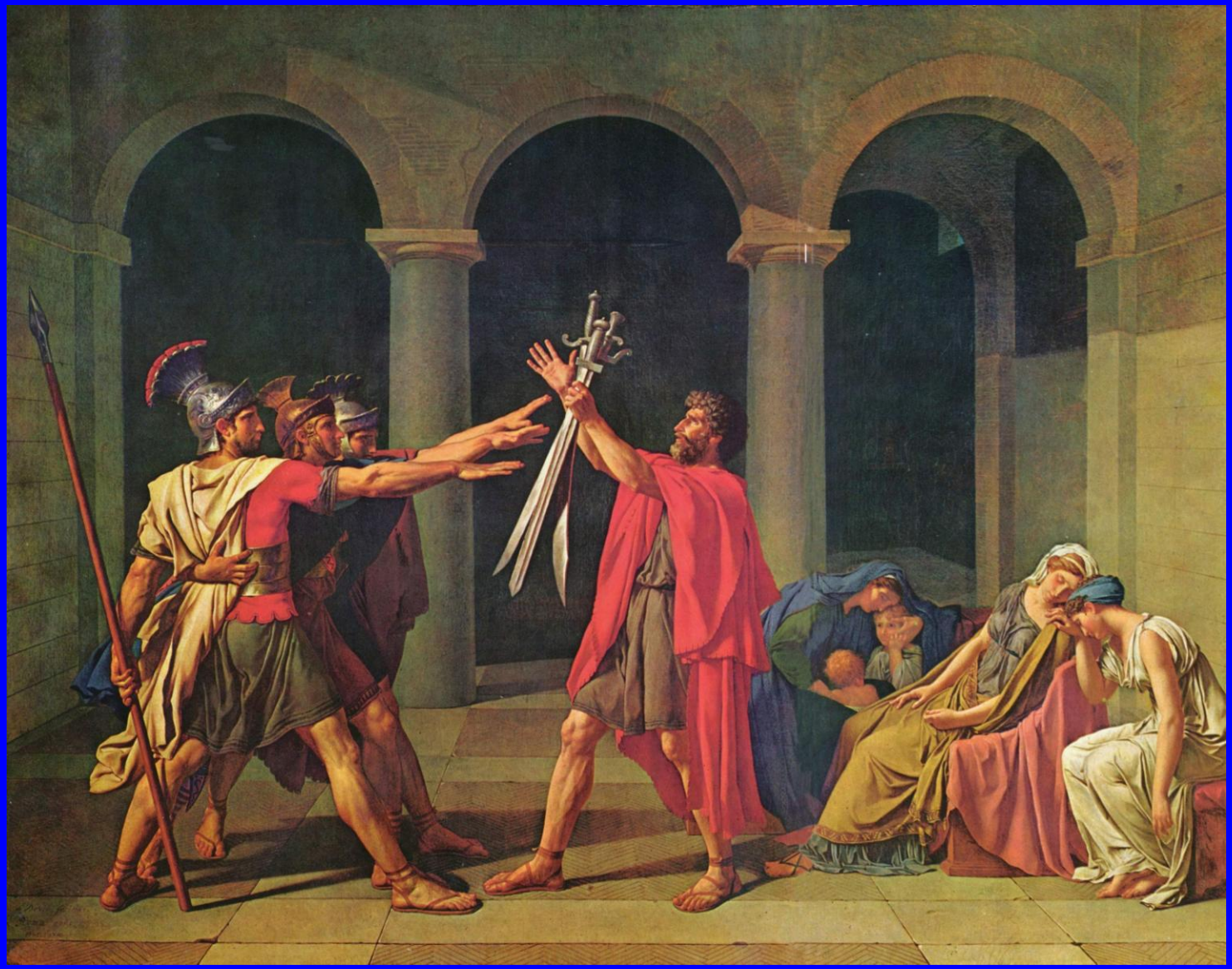
THE SEVENTEENTH RANKINE LECTURE

# REFLECTIONS ON DESIGN DECISIONS OF PRACTICAL SIGNIFICANCE TO EMBANKMENT DAMS

**PROFESSOR VICTOR F. B. DE MELLO**

**ISSMFE Vice-President for South America**


CHAIRMAN



The oath of the Horatii

# Victor de Mello on Design

Good engineering design is founded on the ability to make creative and ingenious decisions in the face of uncertainties which minimise or avoid the uncertainties at reasonable cost


CHAIRMAN

# Victor de Mello on Prediction

"*Our ability to predict what will happen is poor compared to our ability to predict what will not happen*"

# Golder, 1971

"*Any design that relies for its success on a precise calculation is a BAD design*".

# Generalisation of the Five Design Principles

DP1 Aim to ‘design out’ any risk from behaviour triggered by local phenomena e.g. piping; tension cracking; internal erosion ROBUSTNESS

DP2 Use a dominant feature to cut-across uncertainties e.g. full-height chimney filter drain; downstream drainage blanket CHANGE THE PROBLEM

DP3 Aim at homogenization e.g. long seepage paths; single well-graded filter transitions REDUNDANCY

DP4 Minimise rapid uncontrolled loading. Use pre-loading e.g.by permitting high construction pore-pressures OBSERVATIONAL CONTROL

DP5 Ask ‘what if’ questions of each design decision e.g. what happens if the permeability is 10 times different? ASK ‘WHAT IF’ QUESTIONS

# Presidential Address, San Francisco

*"I submit that the most important question facing the geotechnical engineer is for him to reassume a position as the foundation instrument of every civil engineering orchestra, and for the civil engineer himself to reassume his position as the most influential element of human society in affecting the environment"*

# Concluding thought

Engineers of all disciplines should take to heart Victor de Mello's insistence that we are human beings first, engineers second and specialists third.

THE ORDER IS VERY IMPORTANT!