

POLITECNICO MILANO 1863

Post-Graduate Certificate Course on Mind, Thinking & Creativity November 6-8, 2017, Inter-University Centre, Dubrovnik, Croatia



World Academy of

Art and Science

Post-Graduate Certificate Course on Mind, Thinking & Creativity

Nov 6-8, 2017, Inter-University Centre, Dubrovnik, Croatia



Dag Hammarskjold University College

Istituto dell'Approccio Centrato sulla Persona

🗱 IACP

The Mother's Inter-U Service Society Con



IUC

WUC

World University

Consortium

Models & Measurements: The Recalcitrant Rod

Rodolfo A. Fiorini

« Le seul véritable voyage ce ne serait pas d'aller vers de nouveaux paysages, mais d'avoir d'autres yeux... »

Valentin Louis Georges Eugène Marcel Proust (1871-1922) from La Prisonnière (1923).

Models & Measurements: The Recalcitrant Rod Presentation Outline

1. The Recalcitrant Rod (16)

- Model Building
- Systemic Fragility

2. A Fresh Approach to System Modeling (09)

- Building Systemic Antifragility
- CICT Co-ODR New Awareness



- 1. The Recalcitrant Rod (16)
 - Model Building
 - Systemic Fragility

The Recalcitrant Rod

Physical Behavior

Model Building

Models & Measurements: The Recalcitrant Rod Model Building

INDIVIDUAL

LEVEL.

ACTION SUBJECTIVE DOMAIN

EXPERIMENT OBSERVATION QUALITY

Rodolfo A. Fiorini 7

Models & Measurements: The Recalcitrant Rod Model Building



8 Rodolfo A. Fiorini

Model Building



9 Rodolfo A. Fiorini

Model Building



10 Rodolfo A. Fiorini

Model Building



11 Rodolfo A. Fiorini

Models & Measurements: The Recalcitrant Rod Model Building



12 Rodolfo A. Fiorini

Models & Measurements: The Recalcitrant Rod Model Building



13 Rodolfo A. Fiorini

Operative Interpretation (Decoding)



Systemic Interpretation (Encoding)

14 Rodolfo A. Fiorini

Models & Measurements: The Recalcitrant Rod Linear Feedback Example (prognosis)



Operative Interpretation (Decoding)

 $\mathscr{Q}(\mathbf{s})$

15 Rodolfo A. Fiorini

Complexity is the impossibility of separating a system from its context.

A living being from its environment. An object from its measuring instrument.

Models & Measurements: The Recalcitrant Rod Nonlinear Feedback Example (complex system)



17 Rodolfo A. Fiorini

Models & Measurements: The Recalcitrant Rod Four Possible Asymptotic Regimes

Dynamical system theory in a glance

Four possible asymptotic regimes







stationary

periodic

quasi-periodic

chaotic

The Lorenz's attractor [1963]

Models & Measurements: **The Recalcitrant Rod On Paradigmatic Confusion PARADIGMATIC CONFUSION** occurs when incompatible conceptual frameworks and epistemological assumptions are inadvertently mixed in explanations and practice.

Systemic Fragility

2. A Fresh Approach to System Modeling (09)
Building Systemic Antifragility
CICT CO-ODR New Awareness

As the experiences of the past fifty years have shown, **unpredictable changes** can be **very disorienting** at enterprise level.

These major changes, usually discontinuities referred to as fractures in the environment rather than trends, will largely determine the long-term future of organization. They need to be handled, as opportunities, as positively as possible.
But we need "systemic antifragility" first, to creatively respond to changes in our environment.

From Shannon Passive Information Channel to ODR Model



CICT CO-ODR new awareness

According to new "Computational Information Conservation Theory" (CICT) all computational information usually lost in the classic computational domain approach can be captured and recovered by corresponding ODR complementary co-domains, step-by-step. Then system co-domain information can be used to correct any computed result, achieving computational information conservation.



24 Rodolfo A. Fiorini

CICT CO-ODR new awareness



25 Rodolfo A. Fiorini

Arbitrary Complex Multiscale (ACM) System



27 Rodolfo A. Fiorini

Models & Measurements: The Recalcitrant Rod Piaget's KLEIN Four-Group Cayley Table

I | I | N | R | DNN IDR $\mathbf{R}|\mathbf{R}|\mathbf{D}|\mathbf{I}|\mathbf{N}$ $\mathbf{D} | \mathbf{D} | \mathbf{R} | \mathbf{N} | \mathbf{I}$

Inhelder and Piaget, 1955

The Challenge of Defining ACM System



NEVER ENDING LEARNING

Learning by Channeling (Spirit)

Learning by Connecting (Mind)

Learning by Doing (Body)

Models & Measurements: The Recalcitrant Rod Neuralizer Work In Progress





r A t