

Engineering Systems Doctoral Seminar ESD.83-- Fall 2011

Class 3

Faculty: Chris Magee and Joe Sussman

TA: Rebecca Saari

Guest: Professor Olivier de Weck (A&A
Department and Engineering Systems Division)

Class 3-- Overview

- Welcome, Overview and Introductions (5-10 min.)
- Discussion of ESD.83 faculty-provided theme-related papers led by Jameson Toole (approximately 40 min)
- Break (10 minutes)
- Dialogue with Professor de Weck (55 min)-- Redaction provided by Josephine Wolff
- Theme and topic integration: Report from the front; Words and Quotes: Boundaries, Representations, Models, Frameworks and Processes (Sussman)
- Next Steps-preparation for Class 4- (Sussman)

Theme and topic integration: Class 3

- Report from the front--Manslaughter trial of L'Aquila earthquake scientists
- Words
- Quotes
- "Teaching and Learning Time"
- Class 4 Plan (Sussman)

Words/ Phrases

- Bounded Rationality
- Exponential (as in exponential growth)

Quotes

"Art is a lie that tells the truth."

Pablo Picasso

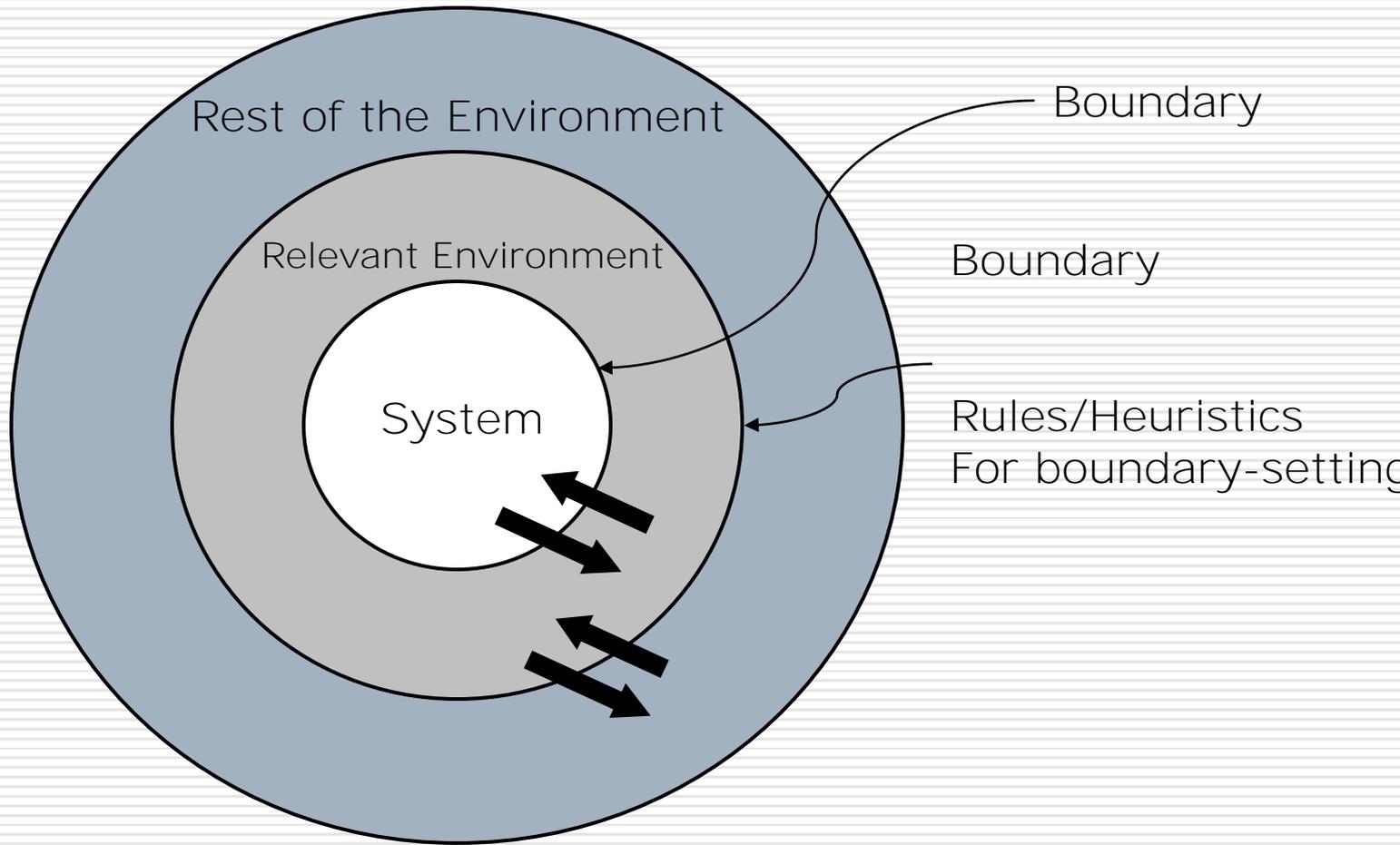
"Lady Bird Johnson found that in dealing with highway beautification it was like 'picking up a tangled skein of wool; all the threads are interwoven - recreation and pollution and mental health. and the crime rate, and rapid transit and the war on poverty, and parks....everything leads to something else'."

Lady Bird Johnson's Obituary in the Economist,
July 21, 2007

“Teaching and Learning Time”

- Boundaries
- Representations, Models, Frameworks and Processes
- Match-up of Class 3 with
 - Framing Questions
 - Learning Objectives

Boundary Concept

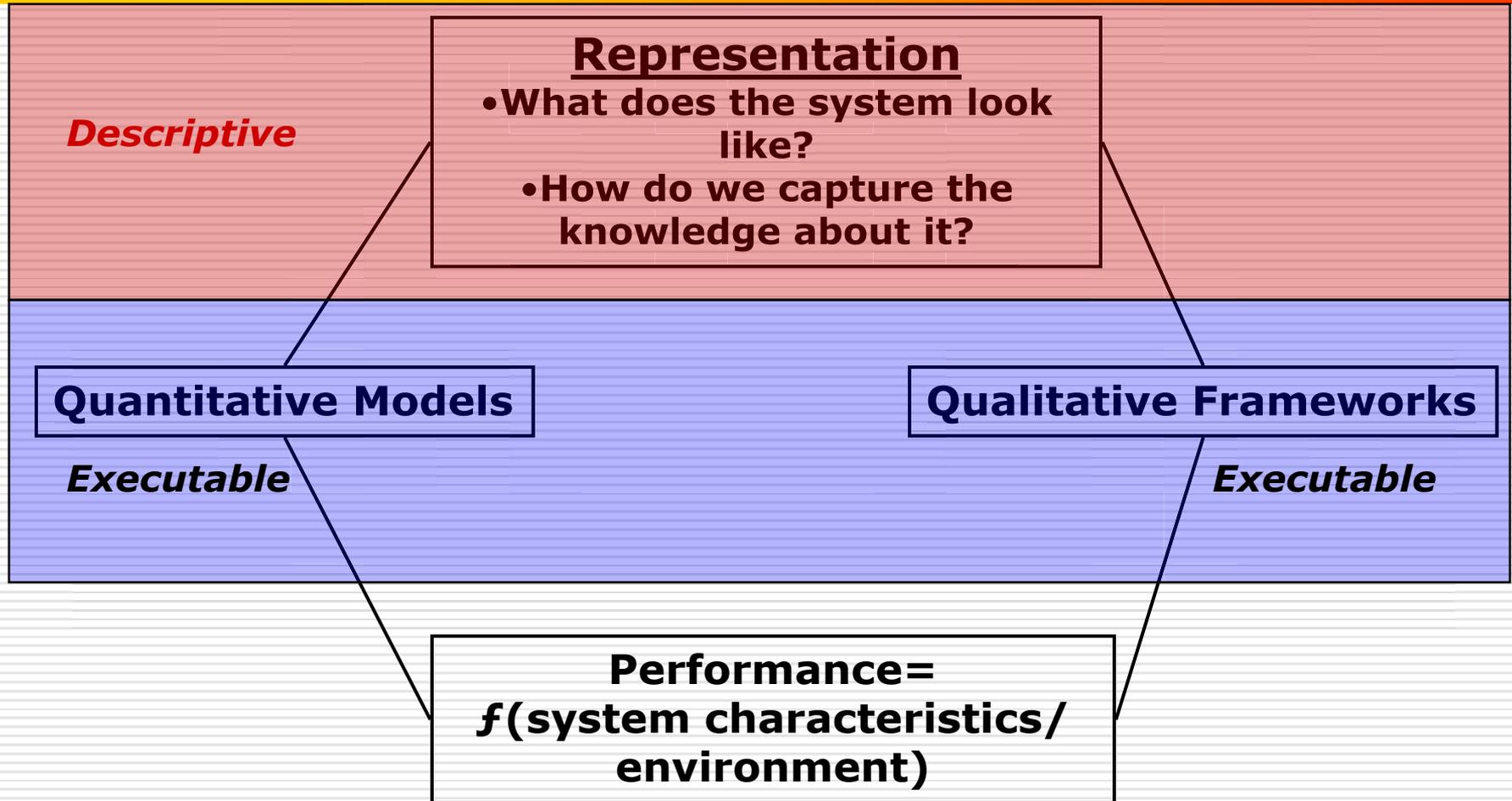


Different Kinds of Boundaries

- Time
- Geography
- Physical (e.g. a factory)
- Depth
 - Micro/Macro question

- Breadth
 - What other systems relate?
 - How much of the environment do you consider relevant?

Representations, Models, Frameworks and Performance



□ Representations

- Simply the description of a system in both qualitative and quantitative terms

□ Models

- Quantitative - The language is usually math
- Executable-by this we mean you can get **“answers”** from it

□ Frameworks

- Qualitative - Usually natural language
- Executable (but what does this mean in the case of a framework?)
 - Example: Stakeholder analysis

- How do you decide when to go from a descriptive representation to
 - A executable model
 - A executable framework

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