Engineering Systems Doctoral Seminar ESD.83-- Fall 2009

Class 3--September 23, 2009

Faculty: Chris Magee and Joe Sussman

TA: Judy Maro

Guest: Professor Annalisa Weigel (A&A Department and Engineering Systems Division)

Class 3-- Overview

- [ ] Welcome, Overview and Introductions (5 min.)

- [ ] Dialogue with Professor Weigel (55min)-- Redaction provided by Jesse Sowell

- [ ] Break (10 minutes)

- [ ] Discussion of ESD.83 faculty-provided theme-related papers led by Don MacKenzie (30 -40 min)

- [ ] Theme and topic integration: Report from the front; Boundaries; Representations, Models, Frameworks and Processes (Sussman)
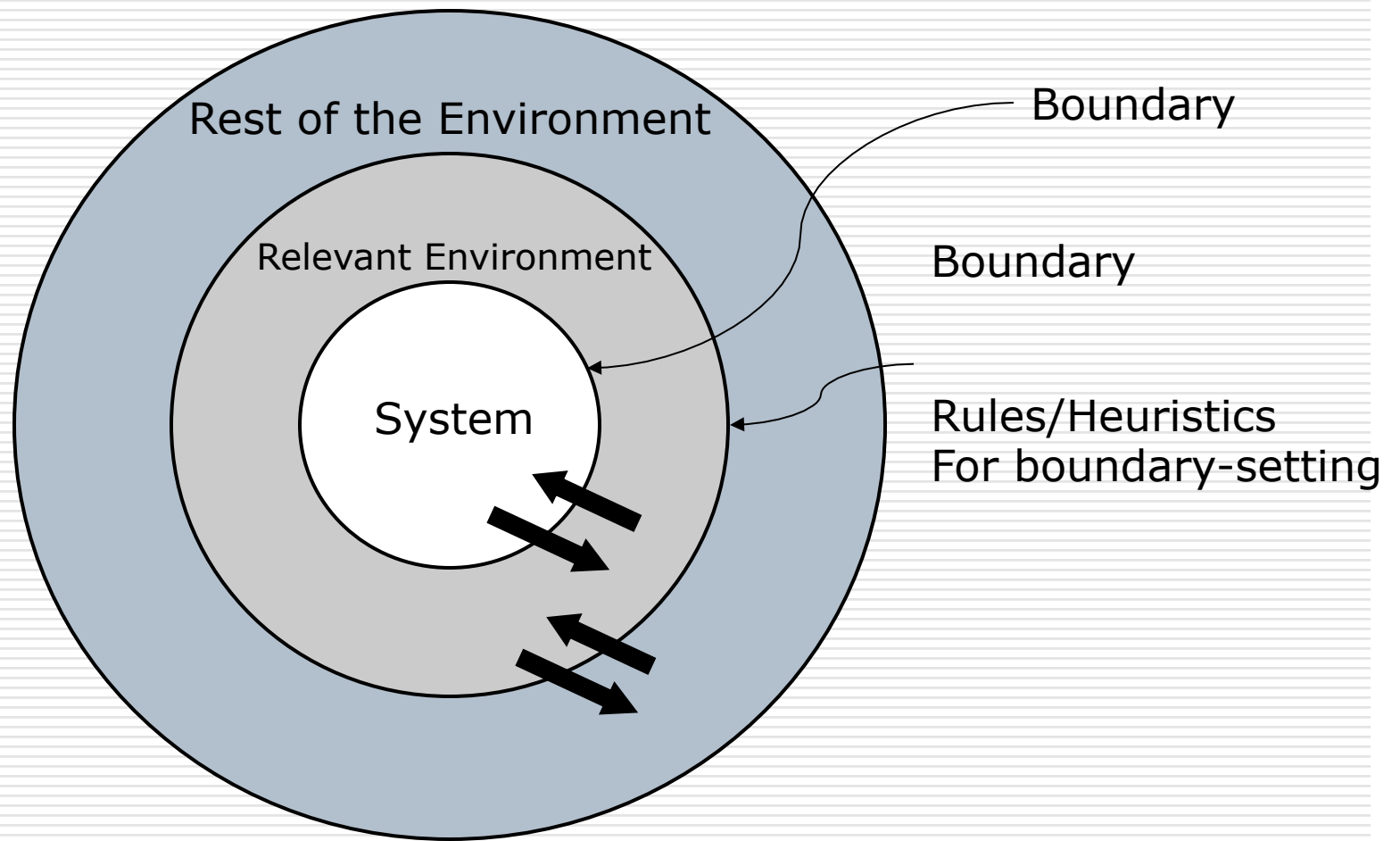
- [ ] Next Steps -preparation for Class 4- (5 min.)

Theme and topic integration: Class 3 September 23, 2009

- ☐ **Report from the front--** Boston Globe, August 22, 2009-- "Fighting global warming with the CIA: Some say security fears are counterproductive"

- ☐ **"Teaching and Learning Time"**

- ☐ **Class 4 Plan (Magee)**

MIT ESD
Massachusetts Institute of Technology
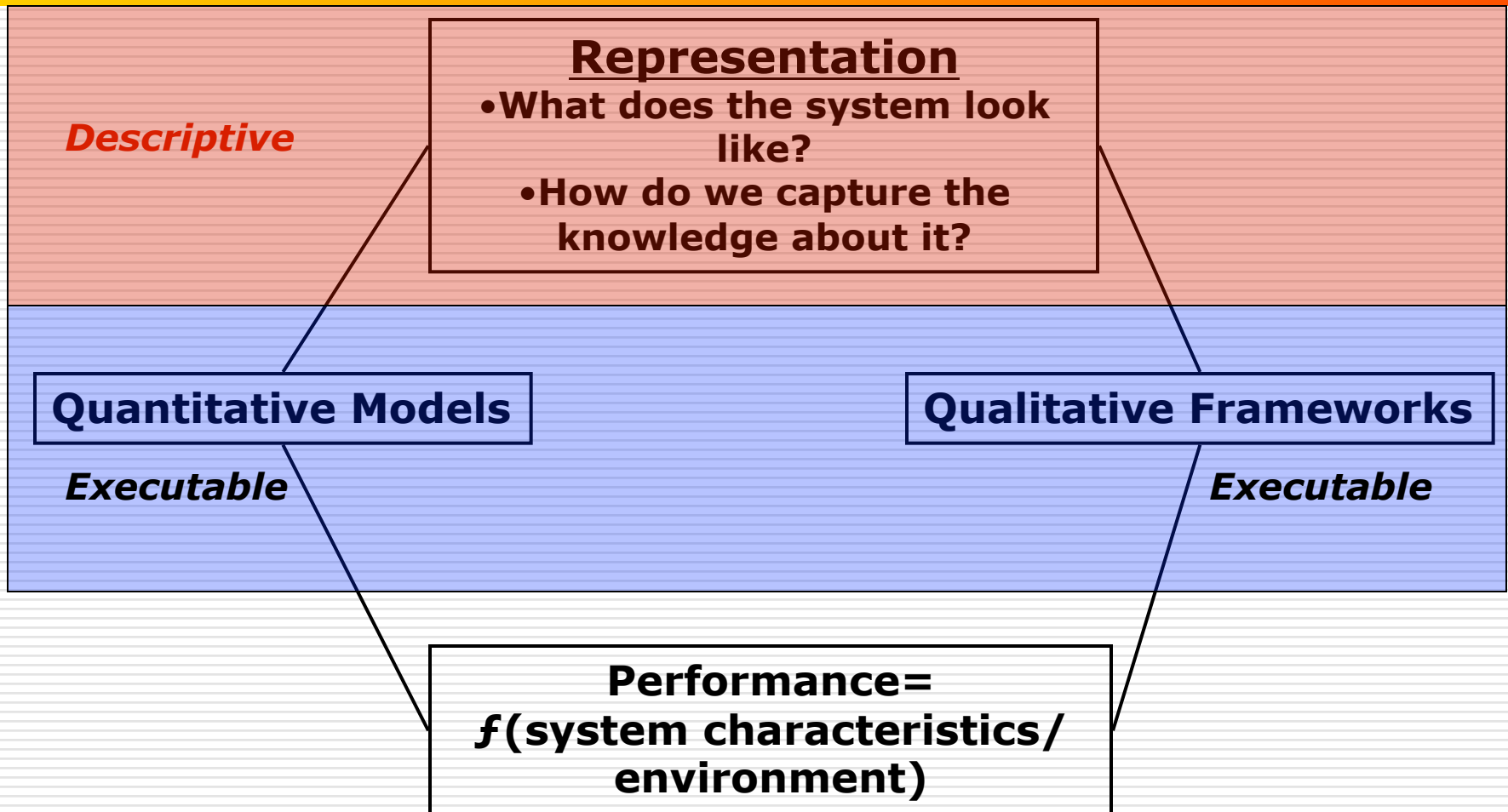Engineering Systems Division

"Teaching and Learning Time"

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

Boundary Concept

Rest of the Environment

Relevant Environment

System

Boundary

Boundary

Rules/Heuristics
For boundary-setting

Representations, Models, Frameworks and Performance

Descriptive

Representation
- What does the system look like?
- How do we capture the knowledge about it?

Quantitative Models

Executable

Qualitative Frameworks

Executable

Performance= ƒ(system characteristics/ environment)

Capturing and Representing the Knowledge about a System (Dori)

☐ Ontology--the study of categories of things that exist in some domain

  Formal

  Intuitive

His contribution is Object-Process Methodolgy (OPM)-- a way to capture the knowledge about a system

An ontology "is a domain vocabulary complete with a set of precise definitions…

  to enable consistent interpretation of the (knowledge)….

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