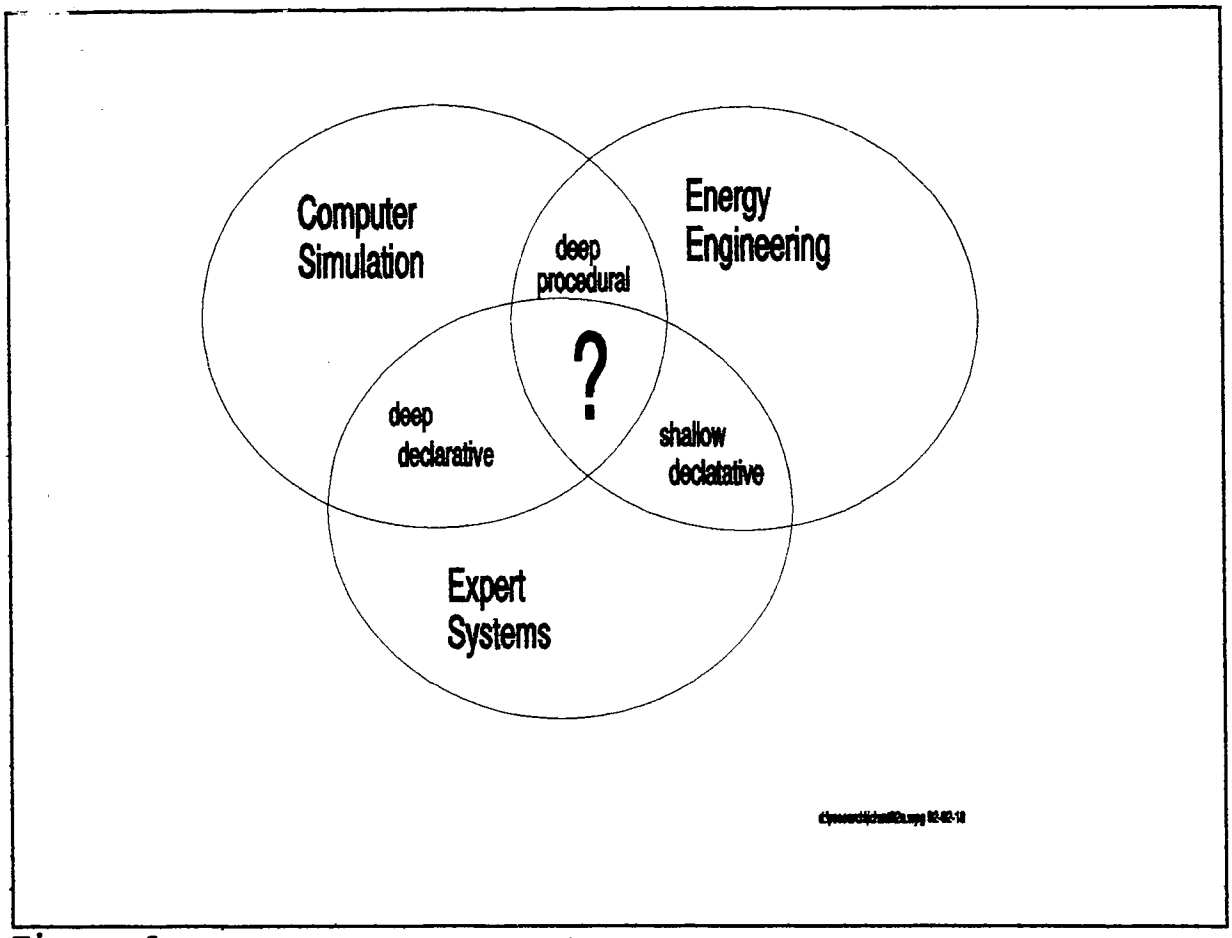
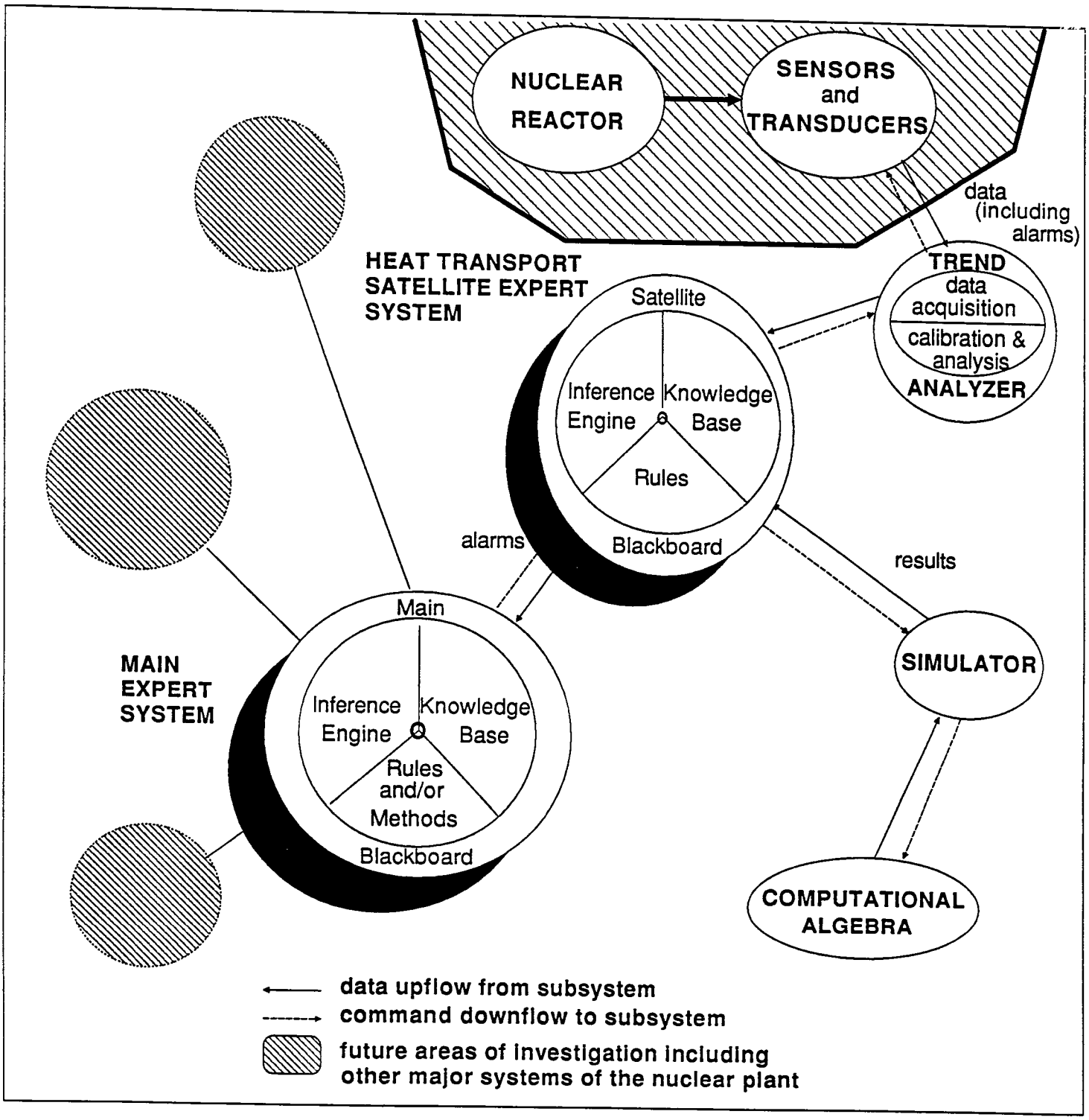
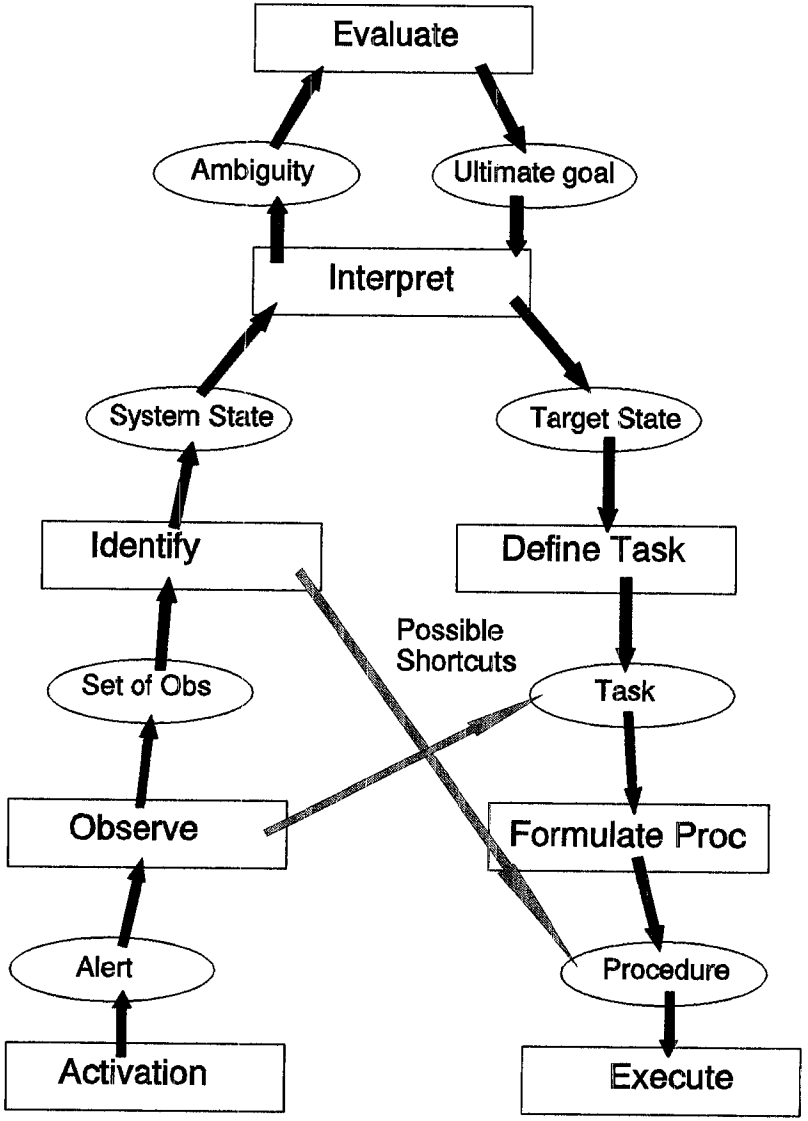


Figure 1 The Intersection of Computer Simulation, Expert Systems and Energy Engineering



wfsp/July'90
kbcsfg1.gem


Evaluate
Ambiguity
Ultimate goal
Interpret
System State
Target State
Identify
Define Task
Possible
Shortcuts
Set of Obs
Task
Observe
Formulate Proc
Alert
Procedure
Activation
Execute

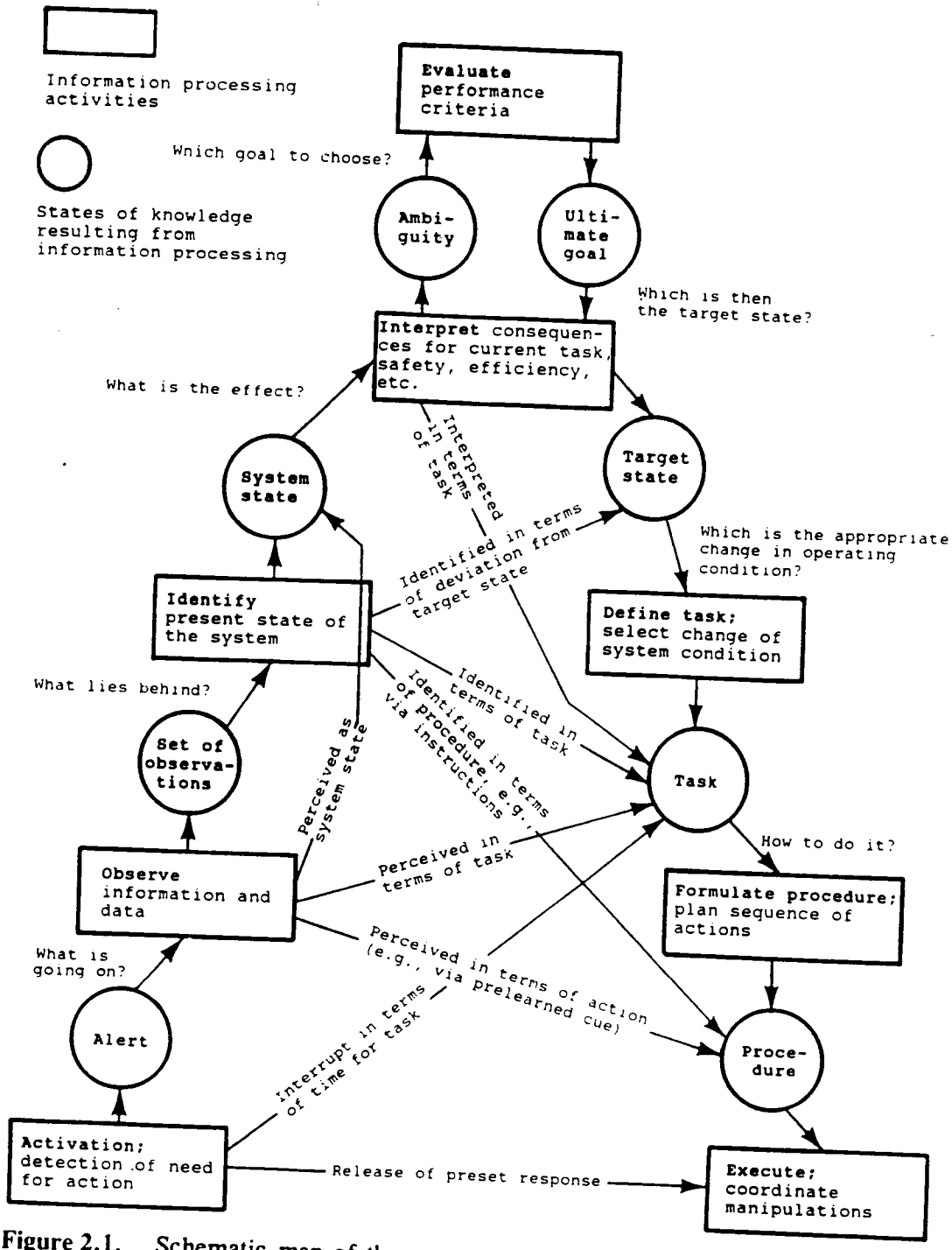
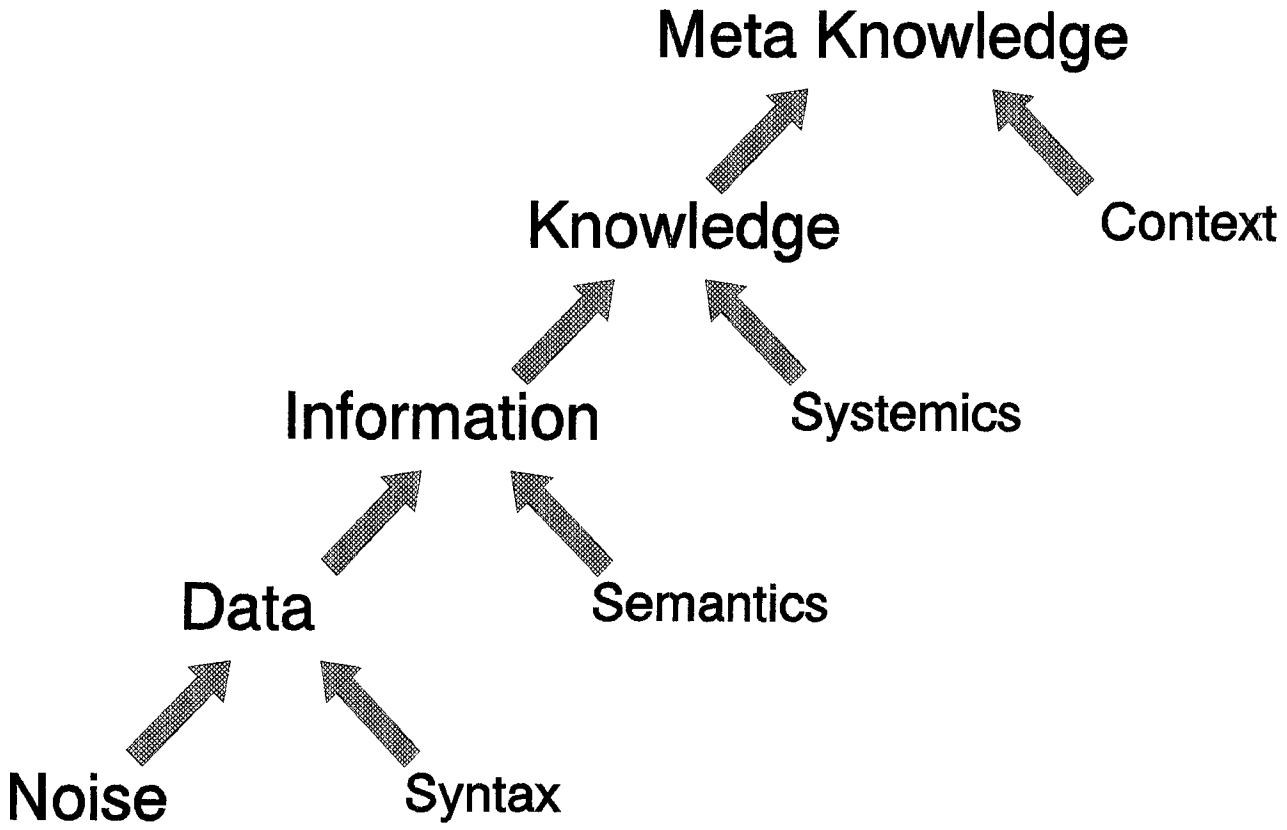
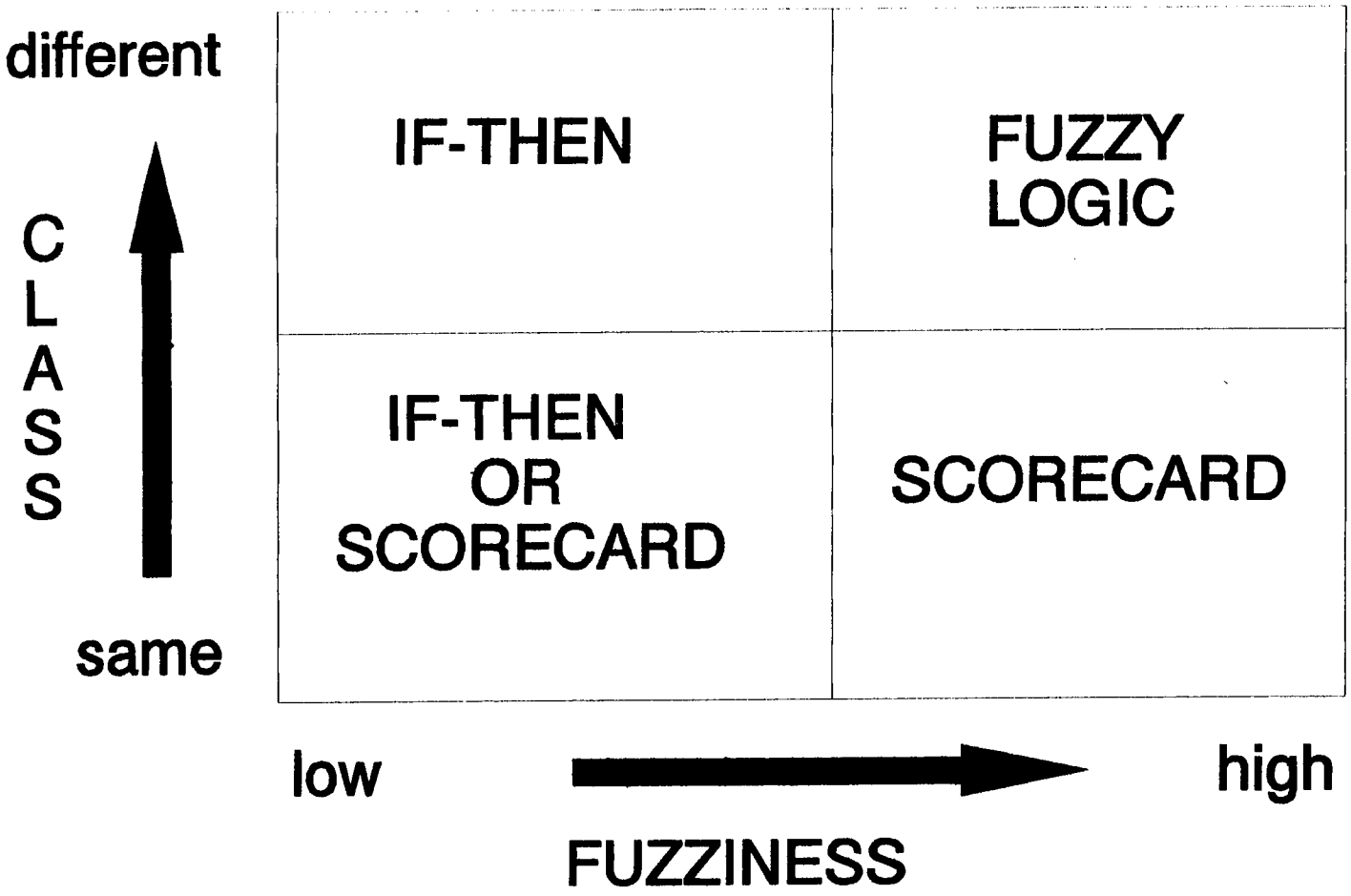


Figure 2.1. Schematic map of the sequence of information processes involved in a control decision. Rational, causal reasoning connects the "states of knowledge" in the basic sequence. Stereotyped processes can bypass intermediate stages. Together with the work environment, the decision sequence forms a closed loop. Actions change the state of the environment, which is monitored by the decision maker in the next pass through the decision ladder. [Adapted from Rasmussen (1976) with permission from Plenum Publishing Corp.]


Meta Knowledge
Knowledge
Context
Information
Systemics
Data
Semantics
Noise
Syntax


different
CLASS
same
IF-THEN
FUZZY LOGIC
IF-THEN OR SCORECARD
SCORECARD
low
high
FUZZINESS

AI & Simulation

A Real Time Application

- Not a scenario analyzer

- Is a knowledge-based system to support real-time processing systems

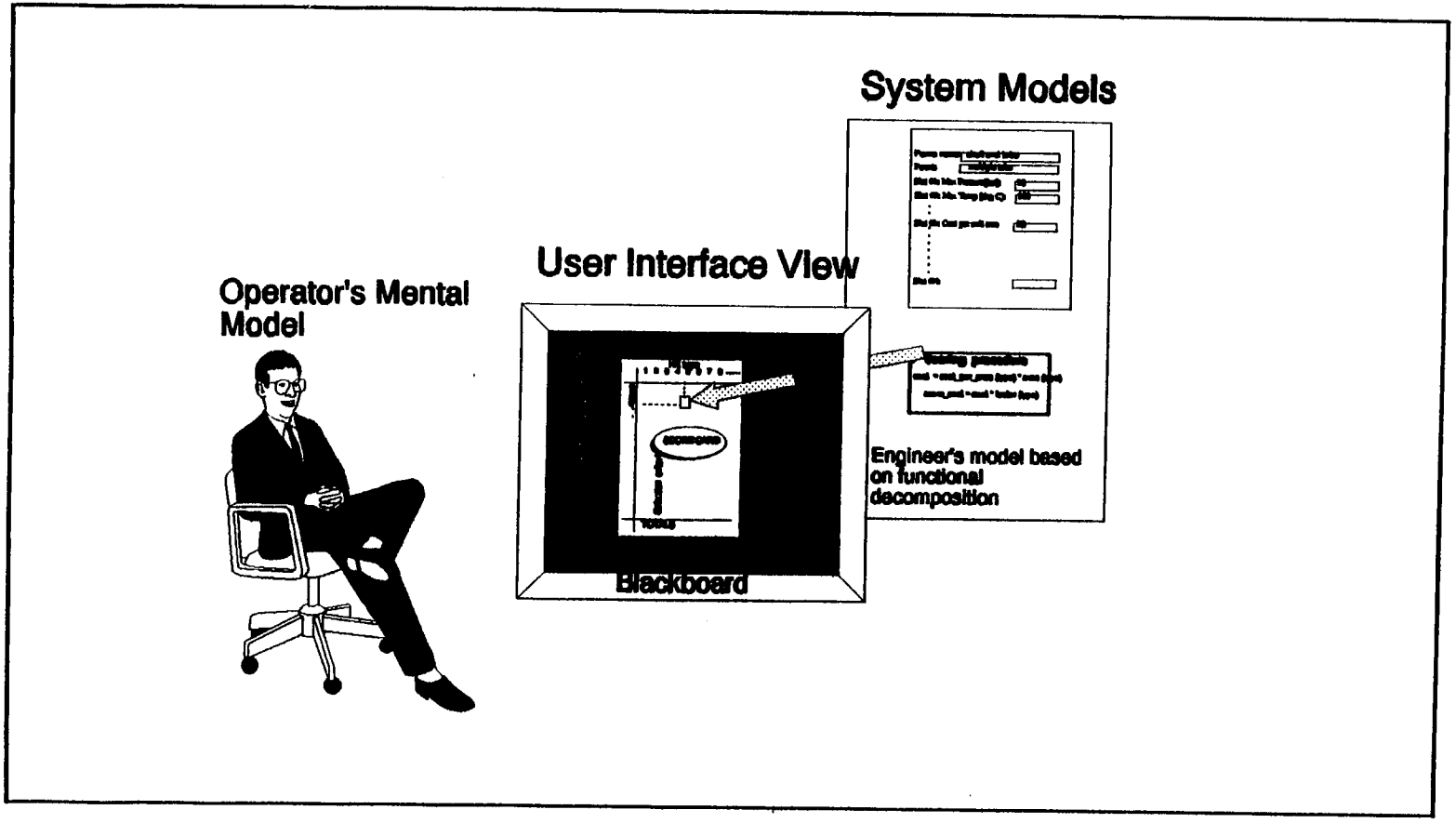
- Will discuss an expert system (Nuclear Reactor Operator Companion) focusing on the architectural design strategy

- Main points of discussion:

problem definition -> finite vs. infinite

inference strategy -> procedural vs. declarative

inference tactics -> exclude + score card


System Models
User Interface View
Operator's Mental Model
Engineer's model based on functional decomposition
Blackboard