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Enterprises as Inquiring Systems with Implications for Information Warfare

19th ICCRTS - Paper 031

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Introduction & Background

Read our paper!

As engineers, we communicate via information-dense media. The poor communication style of endless bullet-list Neanderthal grunts leads to a poor cognitive style counter to critical thinking and engineering reasoning.

19th ICCRTS

"Enterprises as Inquiring Systems with Implications for Information Warfare"
Paper #031

Topics:
1: Concepts, Theory, and Policy
2: Organizational Concepts and Approaches
3: Data, Information and Knowledge

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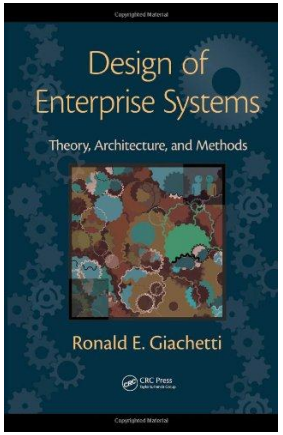
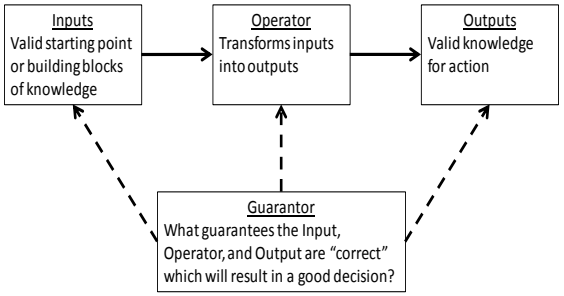
Abstract
This paper incorporates what is termed an inquiry model into a model of information warfare. An inquiry model describes an organization's belief system, often unarticulated, about how they process information and make decisions. The paper takes the position that different organizations have different inquiry systems, and effective information warfare operations requires one to tailor actions to exploit the adversary's inquiry system. Different inquiry systems are vulnerable to different types of misinformation or actions. Moreover, information warfare actions that are effective against one type of inquiry system may not be effective against another. The paper contributes to the literature on information warfare by describing a means to incorporate the adversary's worldview into the analysis of what is effective. The paper describes the model and discusses its application to information warfare.

Influences & Inspiration

Giachetti

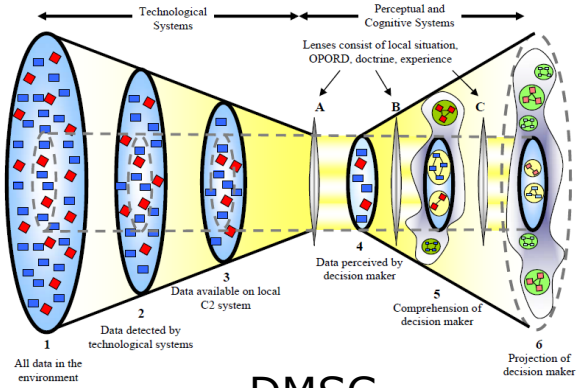


Churchman & Mitroff



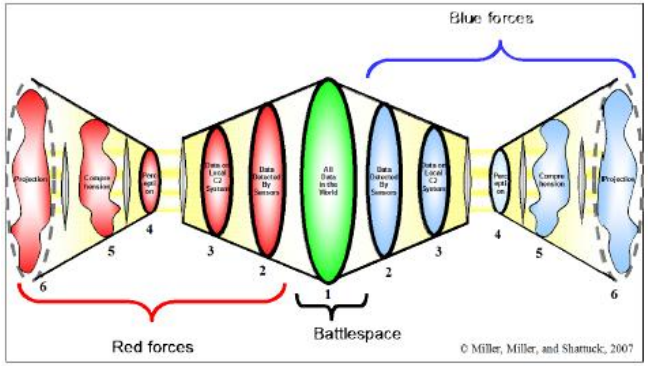
Inquiry System Model

Shattuck & Shattuck (Miller)



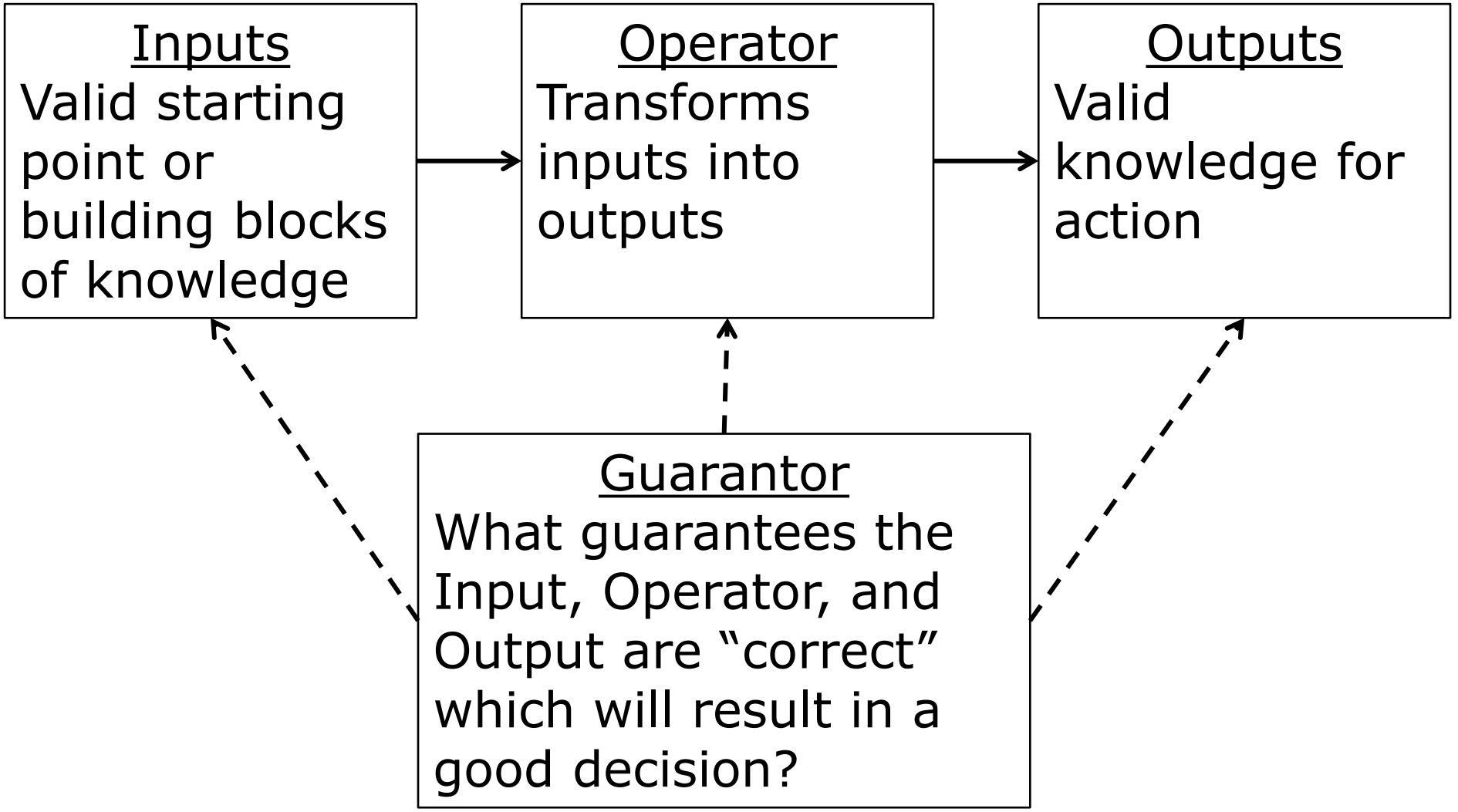
DMSC

Miller

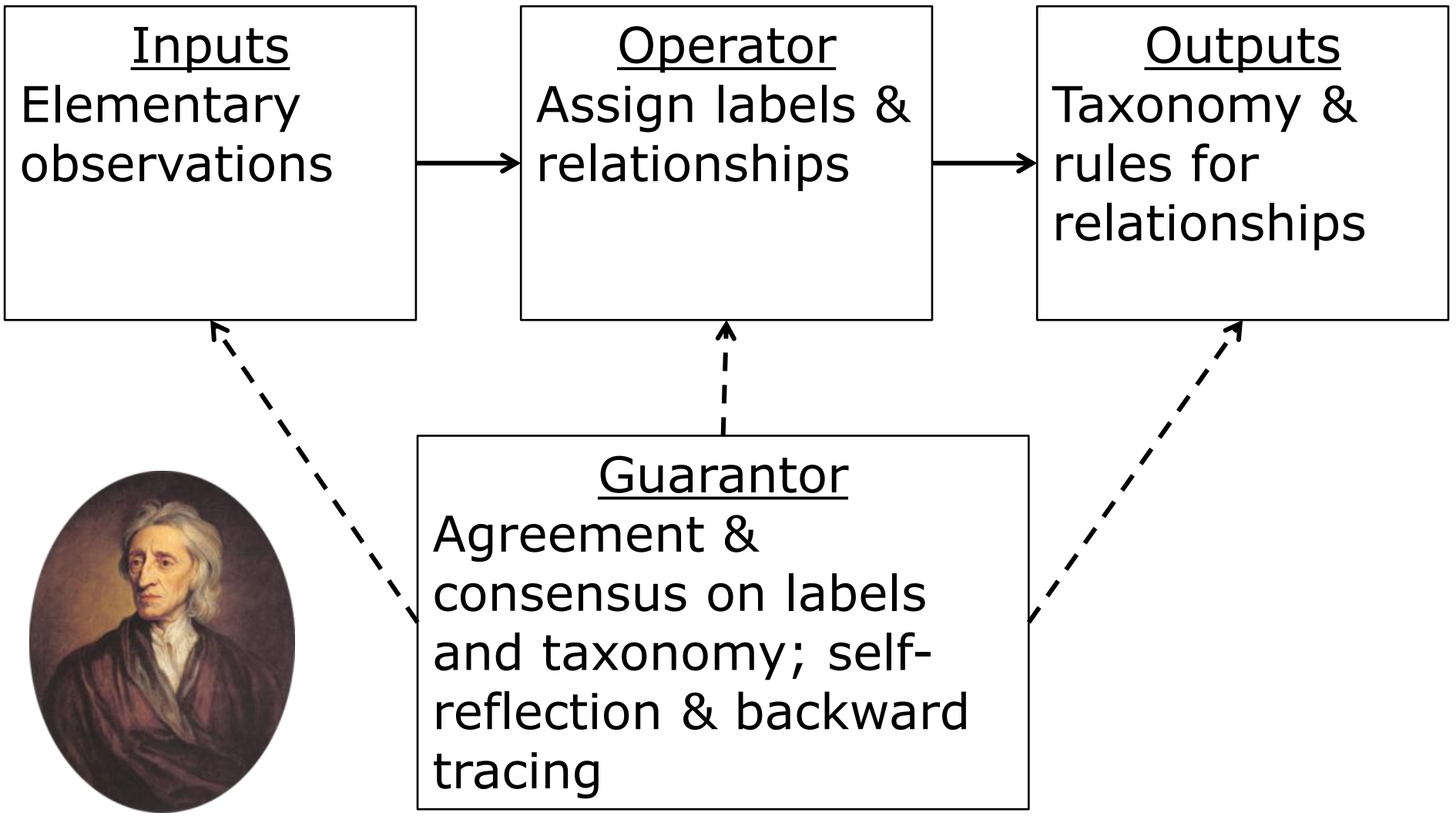


Extended DMSC

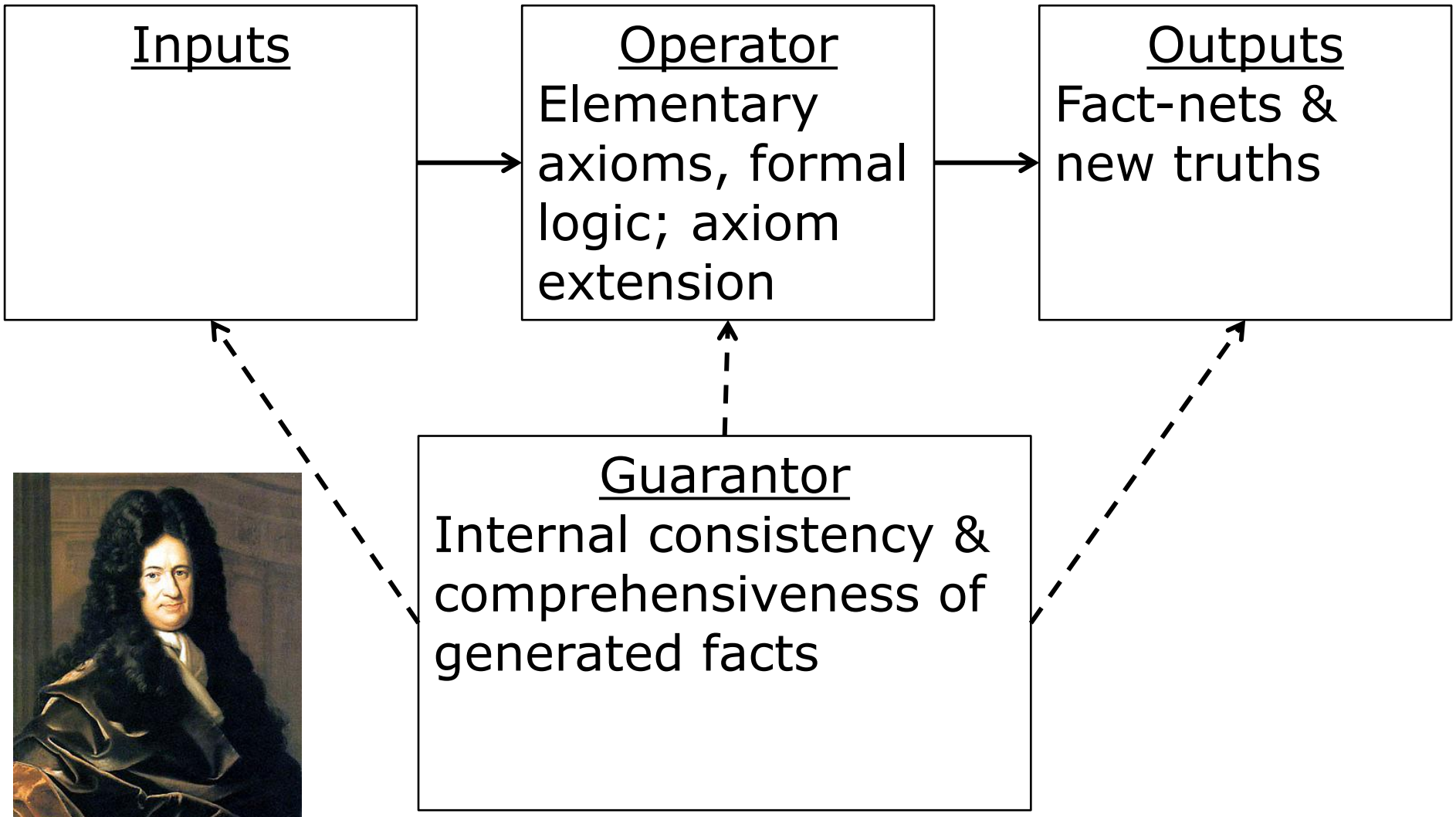
Inquiry System Models



Lockian Model



Leibnizian Model



Kantian Model

Inputs
Elementary observations

Operator
Generates hypotheses; alternative models tested

Outputs
Taxonomy & rules for relationships; fact-net models

Guarantor
Agreement between model & data; collect new input based on output & new theory

Hegelian Model

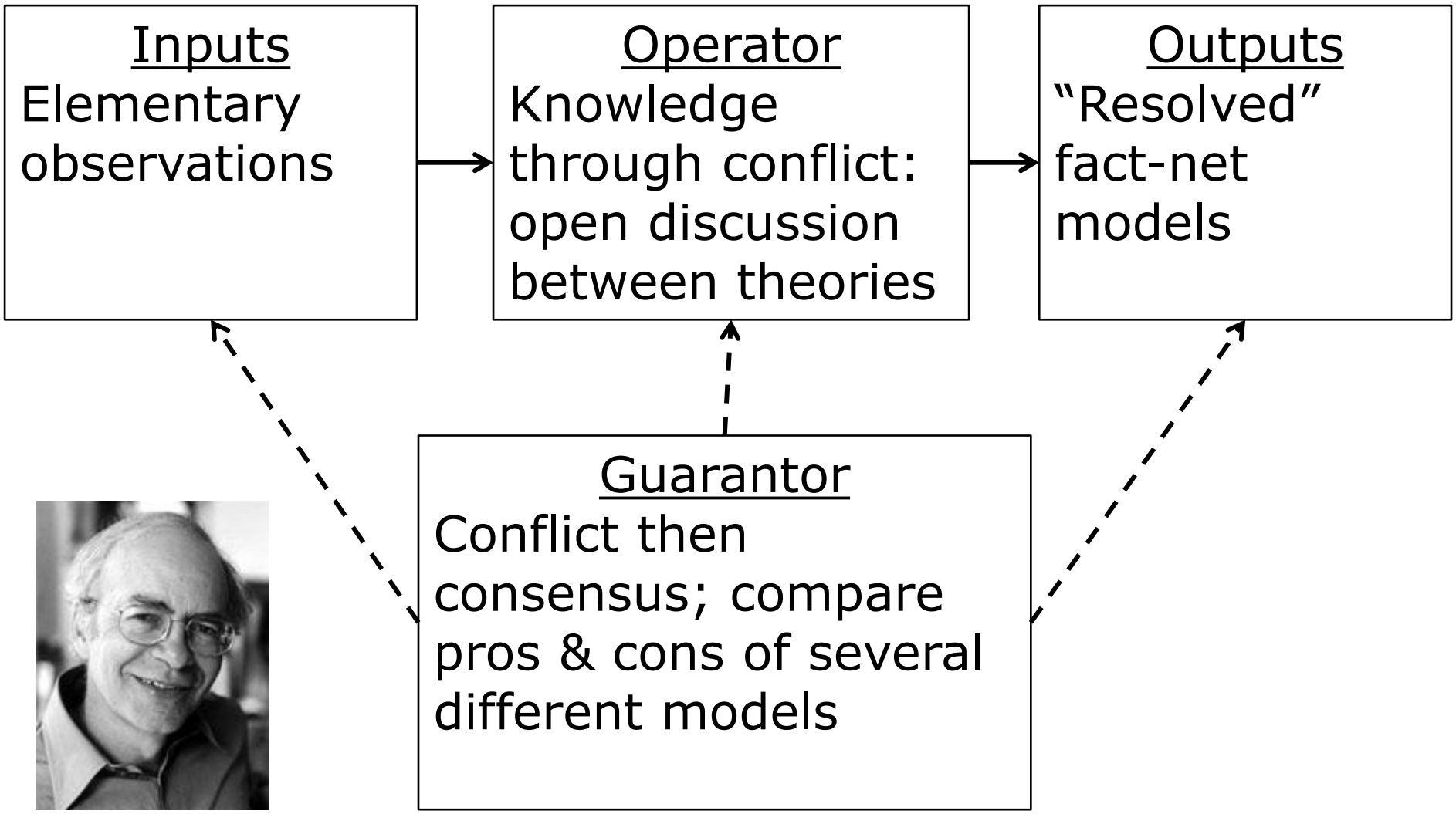
Inputs
Elementary observations

Operator
Knowledge through conflict: thesis-antithesis

Outputs
"Winning" fact-net models

Guarantor
Conflict – "best fit" between competing models & input data; collect new input to uncover differences

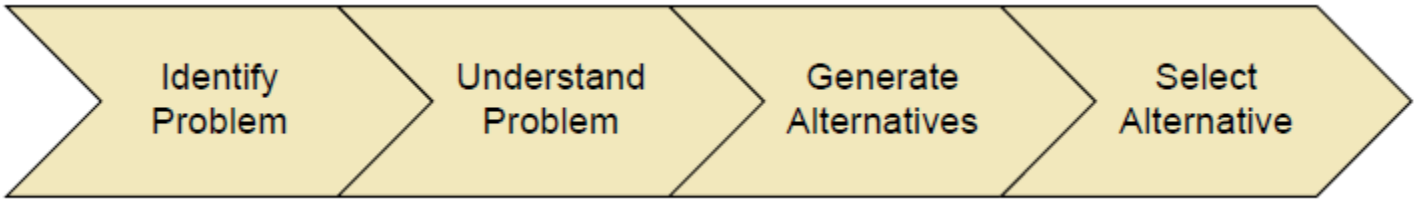
Singerian Model



Enterprises & Decision Making

- A Decision is the selection of a course of action from among alternatives; a commitment of resources
- Decision making is at the heart of management responsibilities

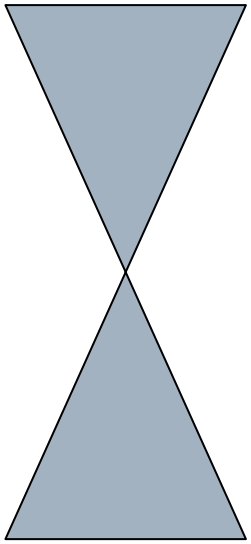
Decision Making Process

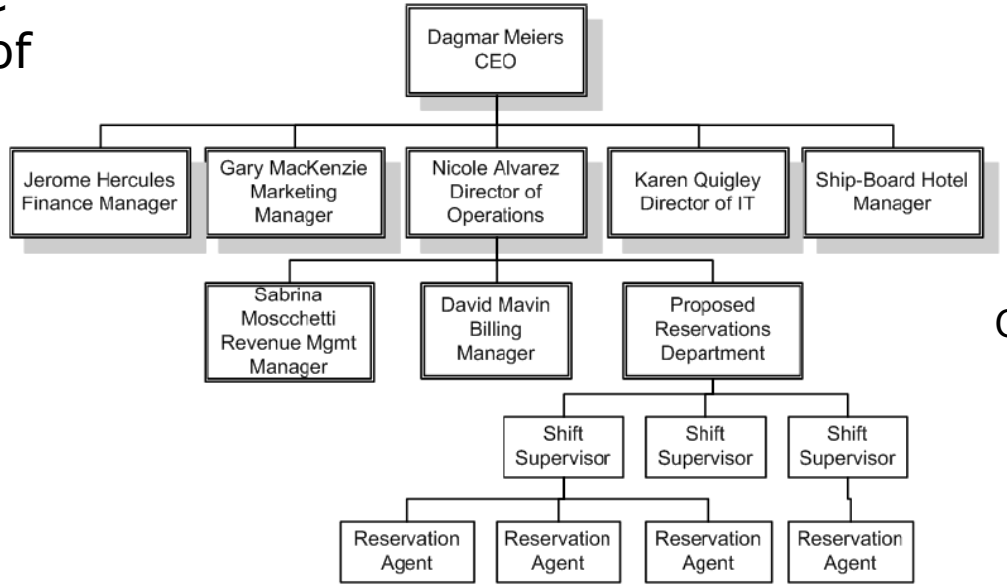


- Routine decisions versus non-routine decisions
  - Who makes the decision – at what level?
  - Who decides what is routine and what is not?
  - Organization design & culture
  - Environment

Centralization/Decentralization

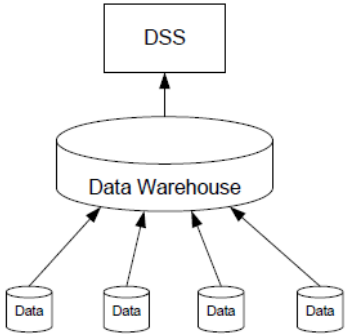
Centralized: concentrate decision-making at top of hierarchy





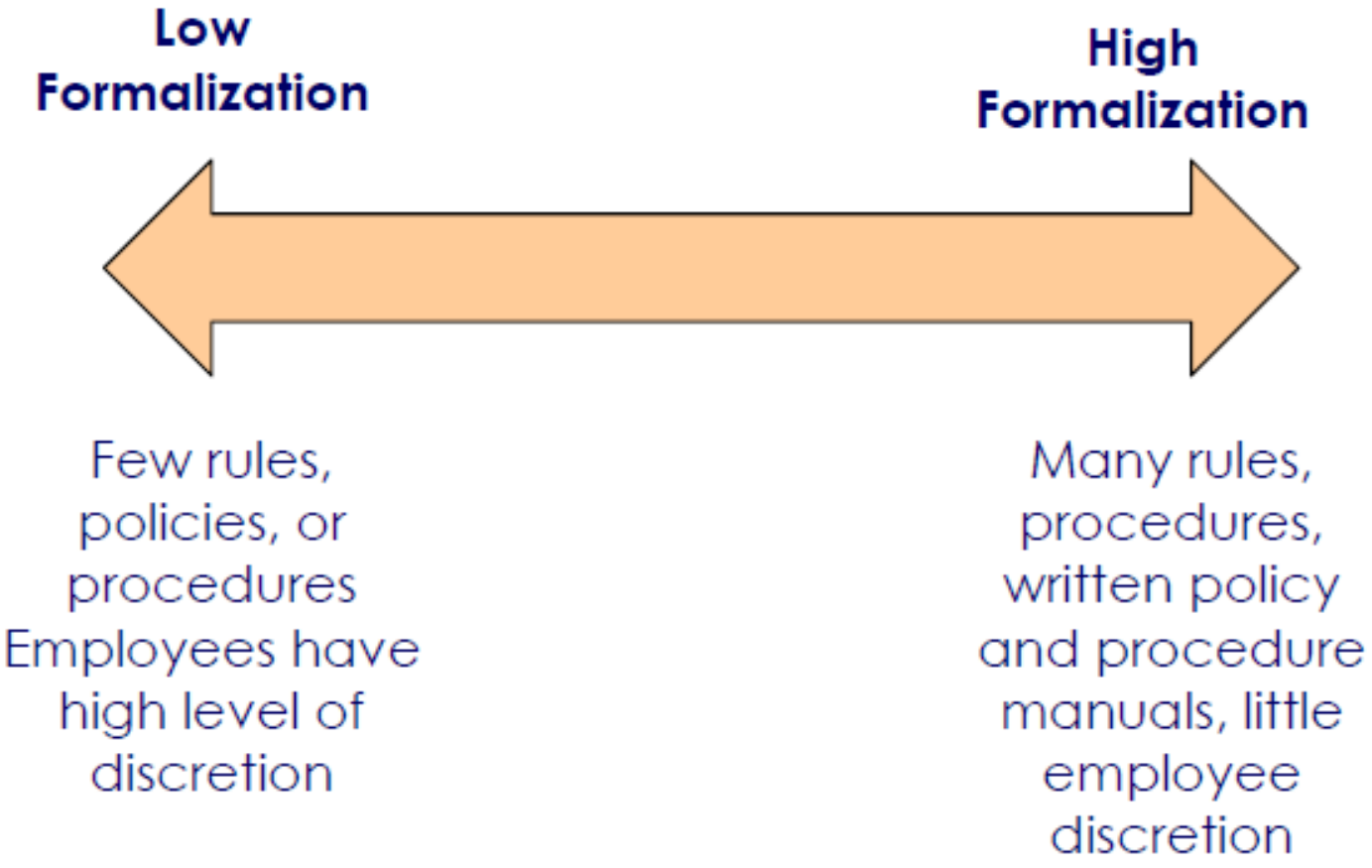
Decentralized: delegate decision-making to the bottom of hierarchy

Where is the information? How do you get more? How is it distributed?

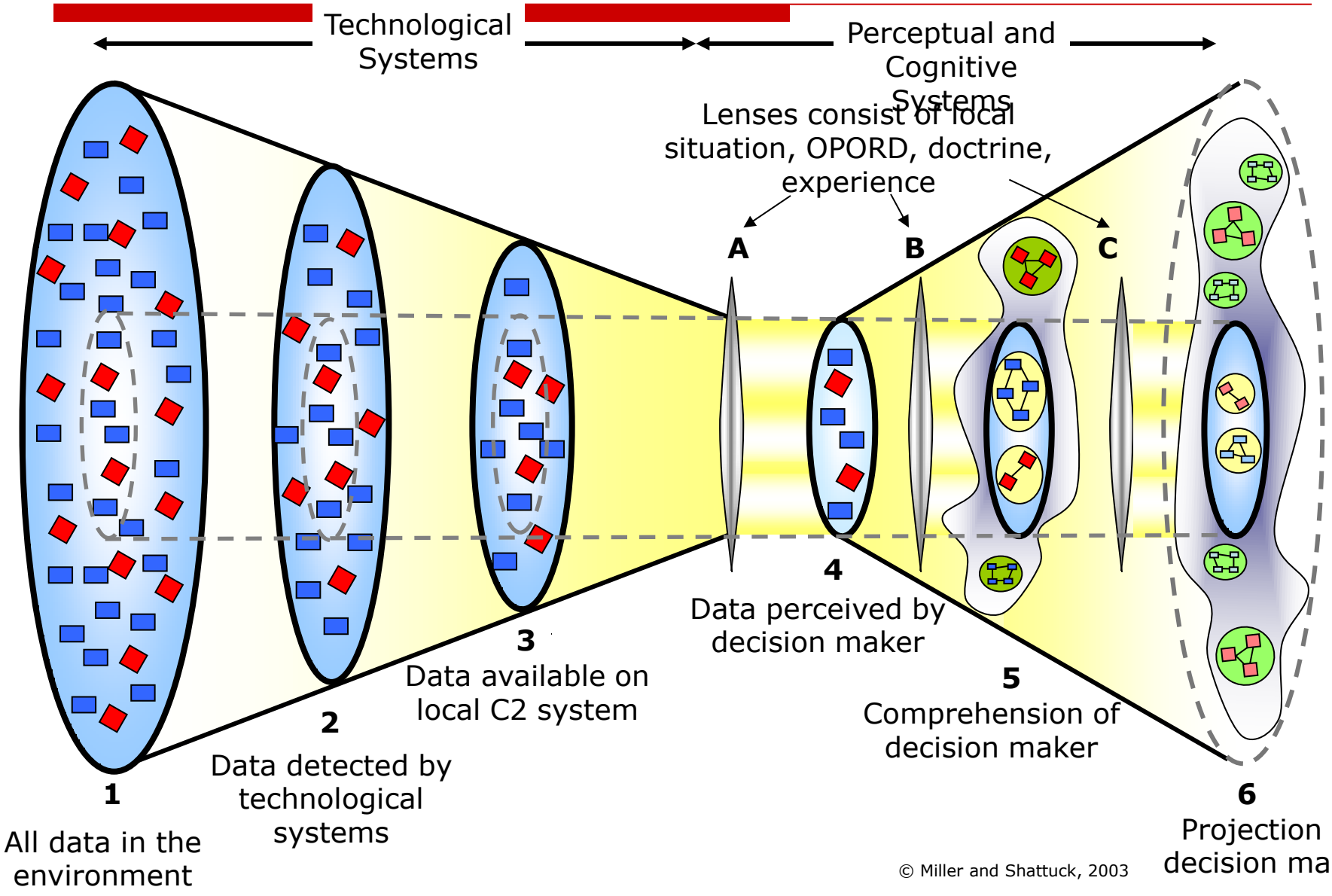


Decision Policies & Formalization

Decision policies: Rules that guide how decisions are made

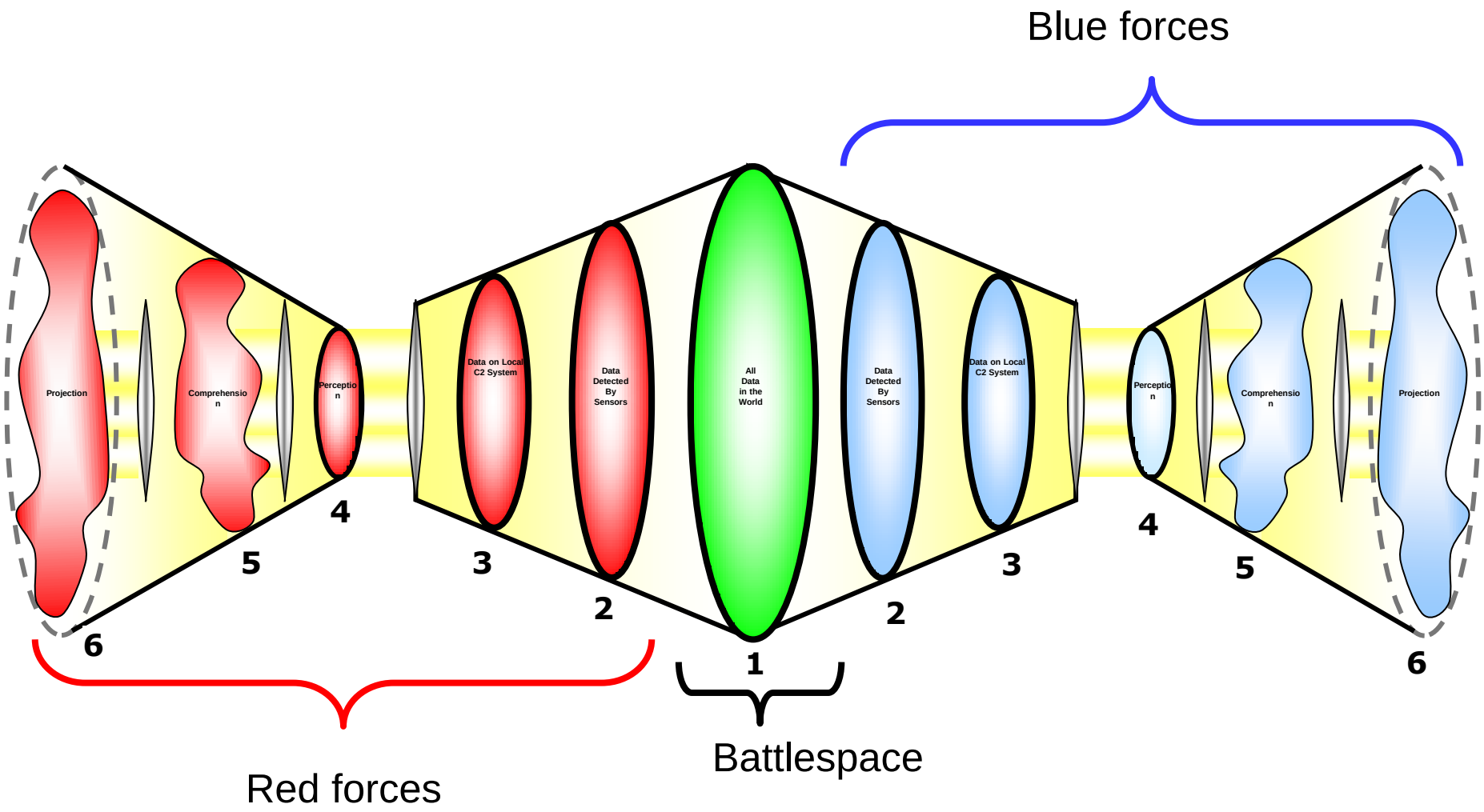


Original DMSC



© Miller and Shattuck, 2003

A Recent Extension



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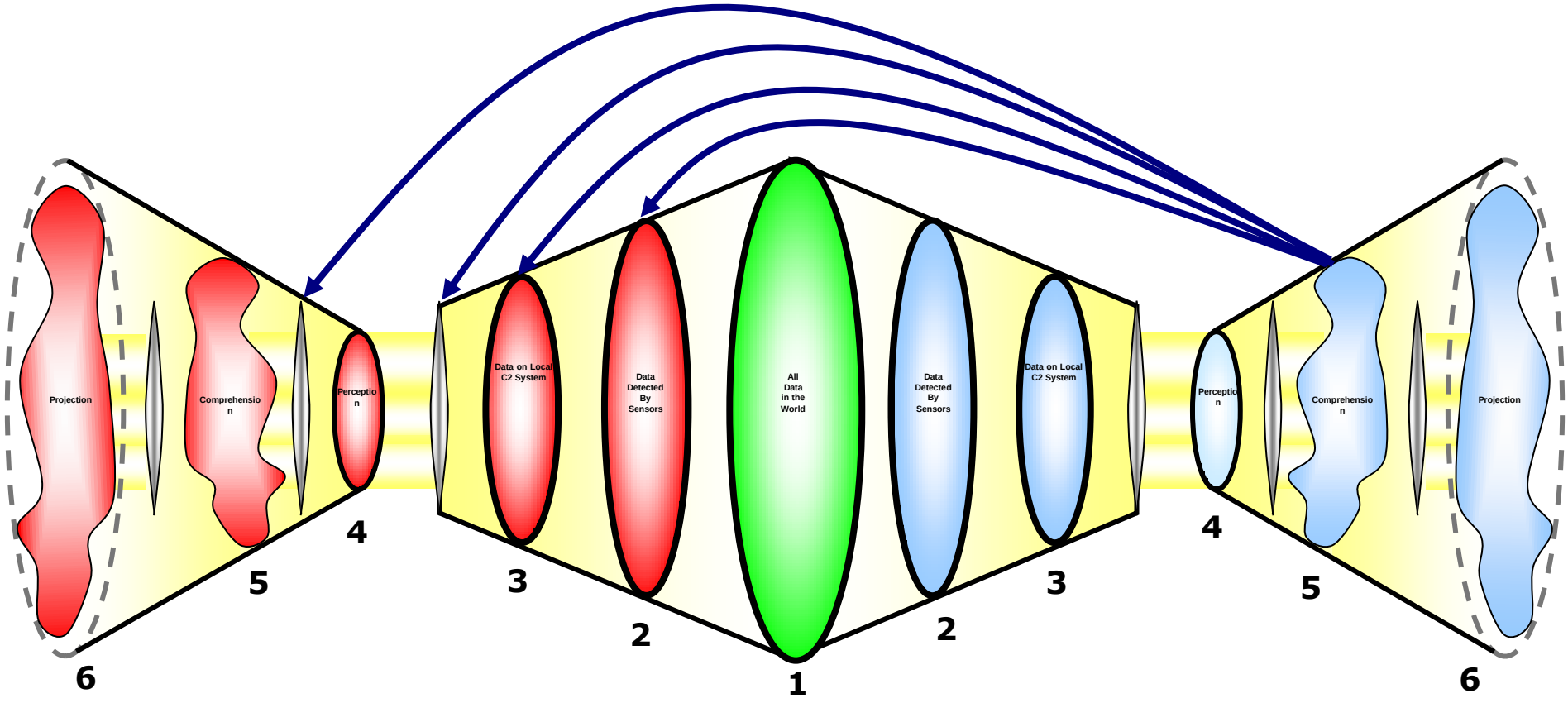
IW & Socio-Technical Considerations



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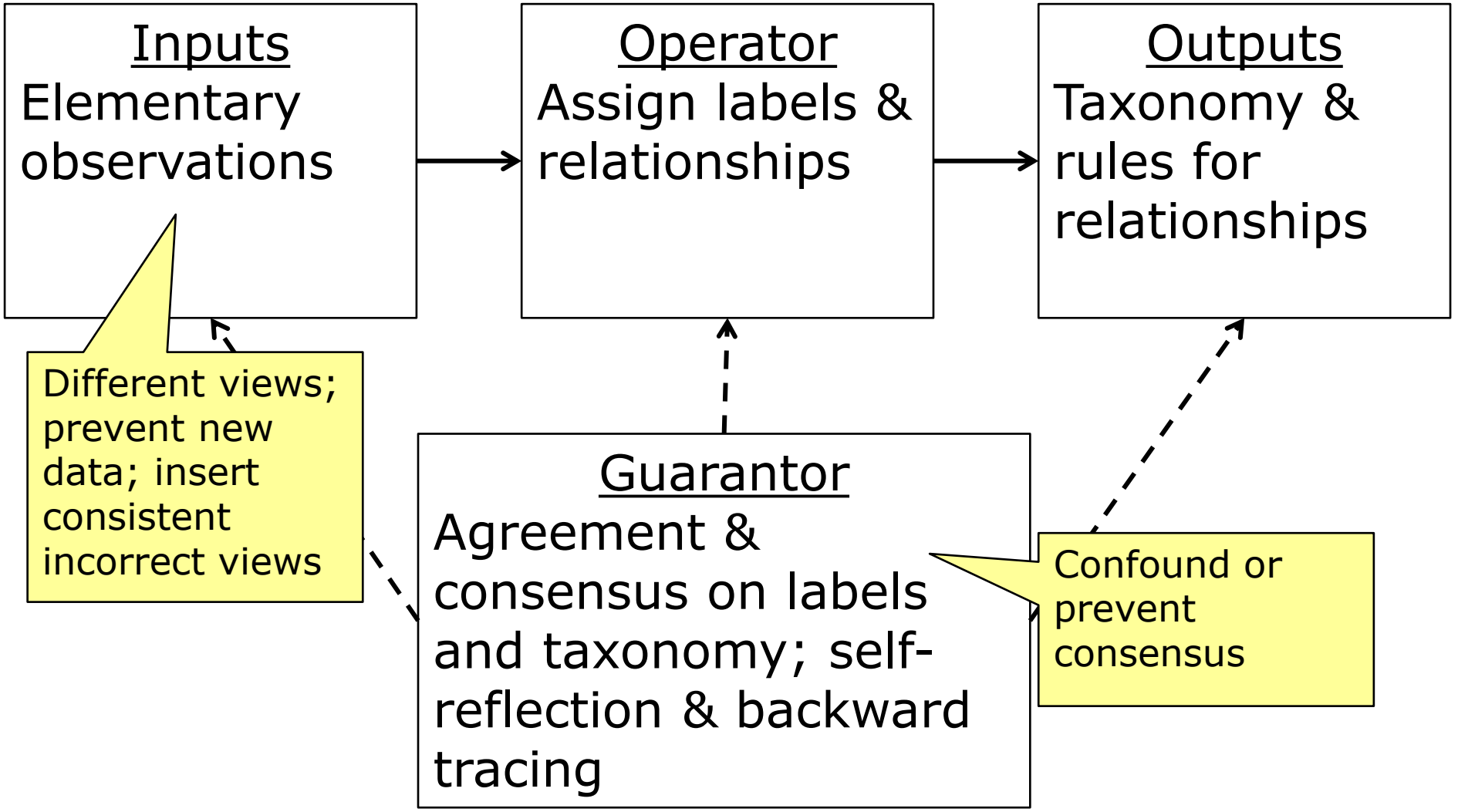
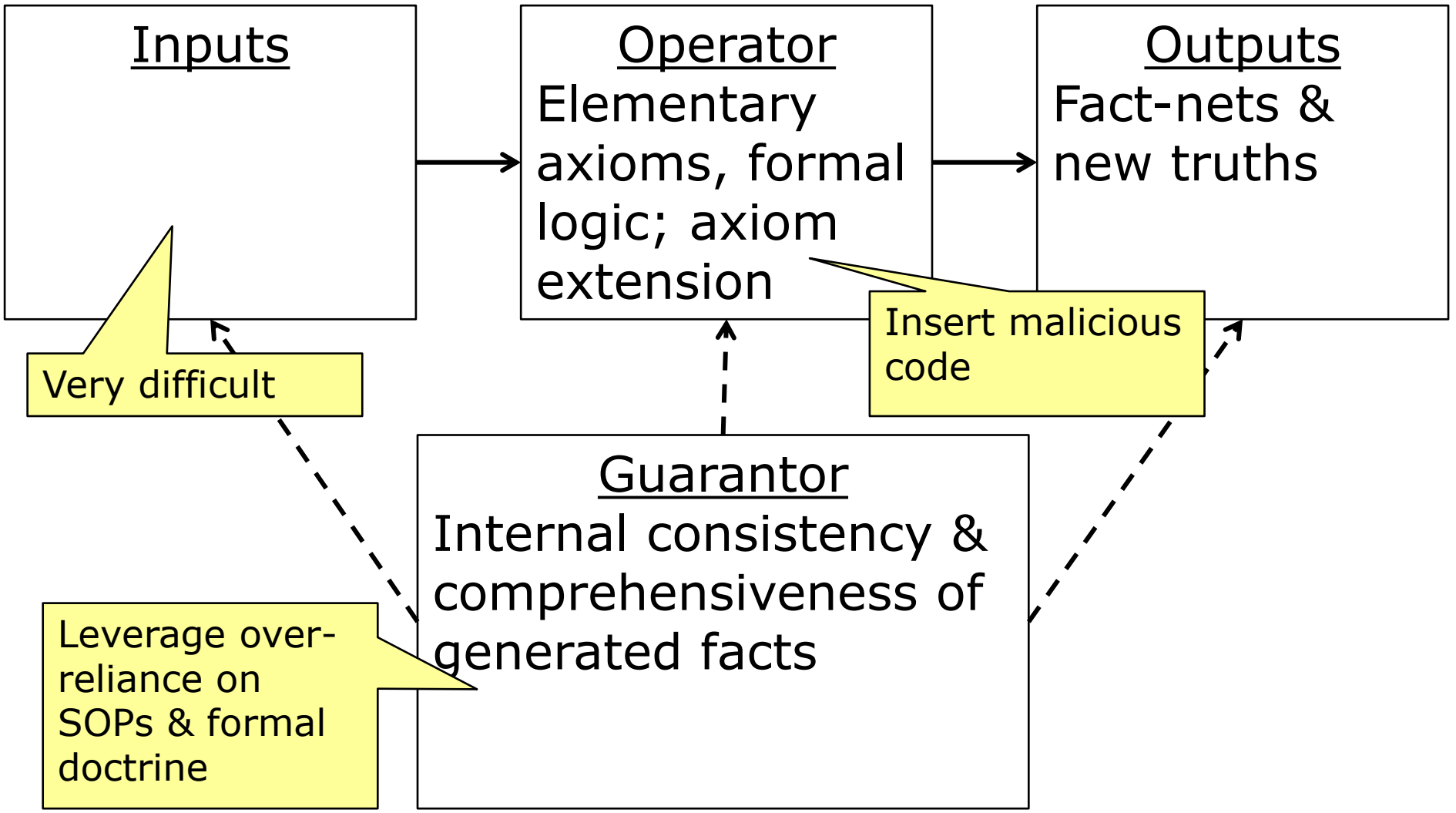
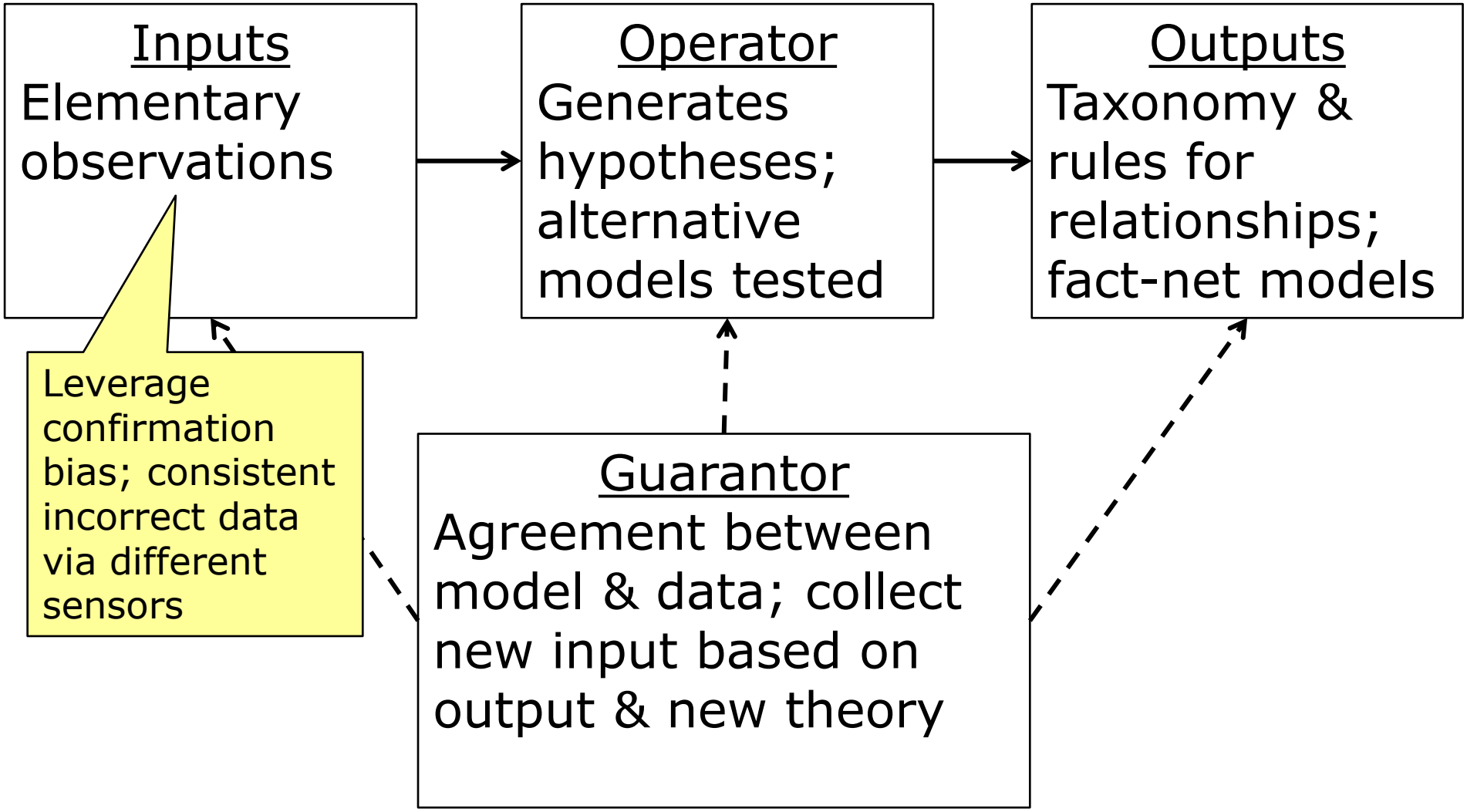
Operations Against Lockian System



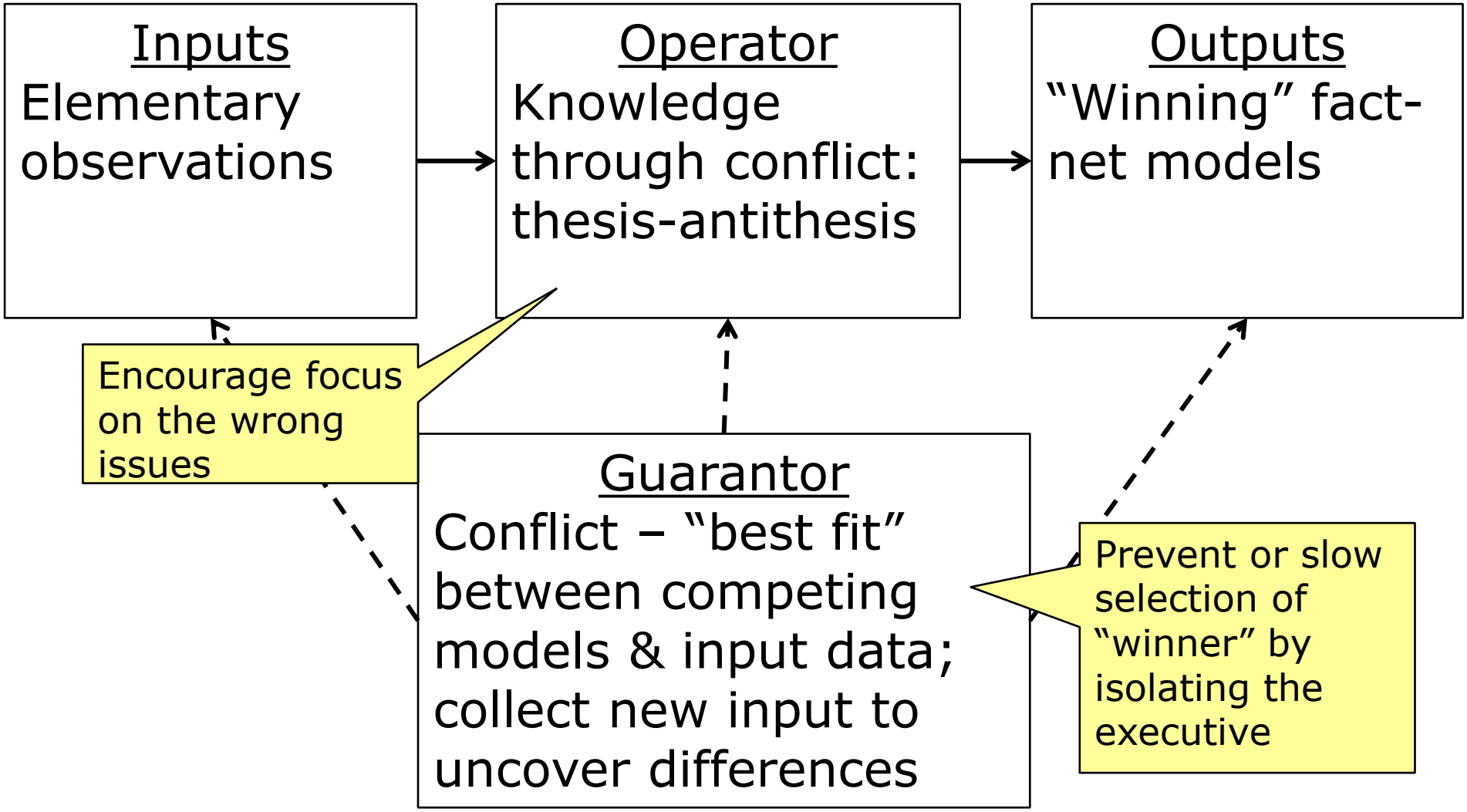
Operations Against Leibnizian System



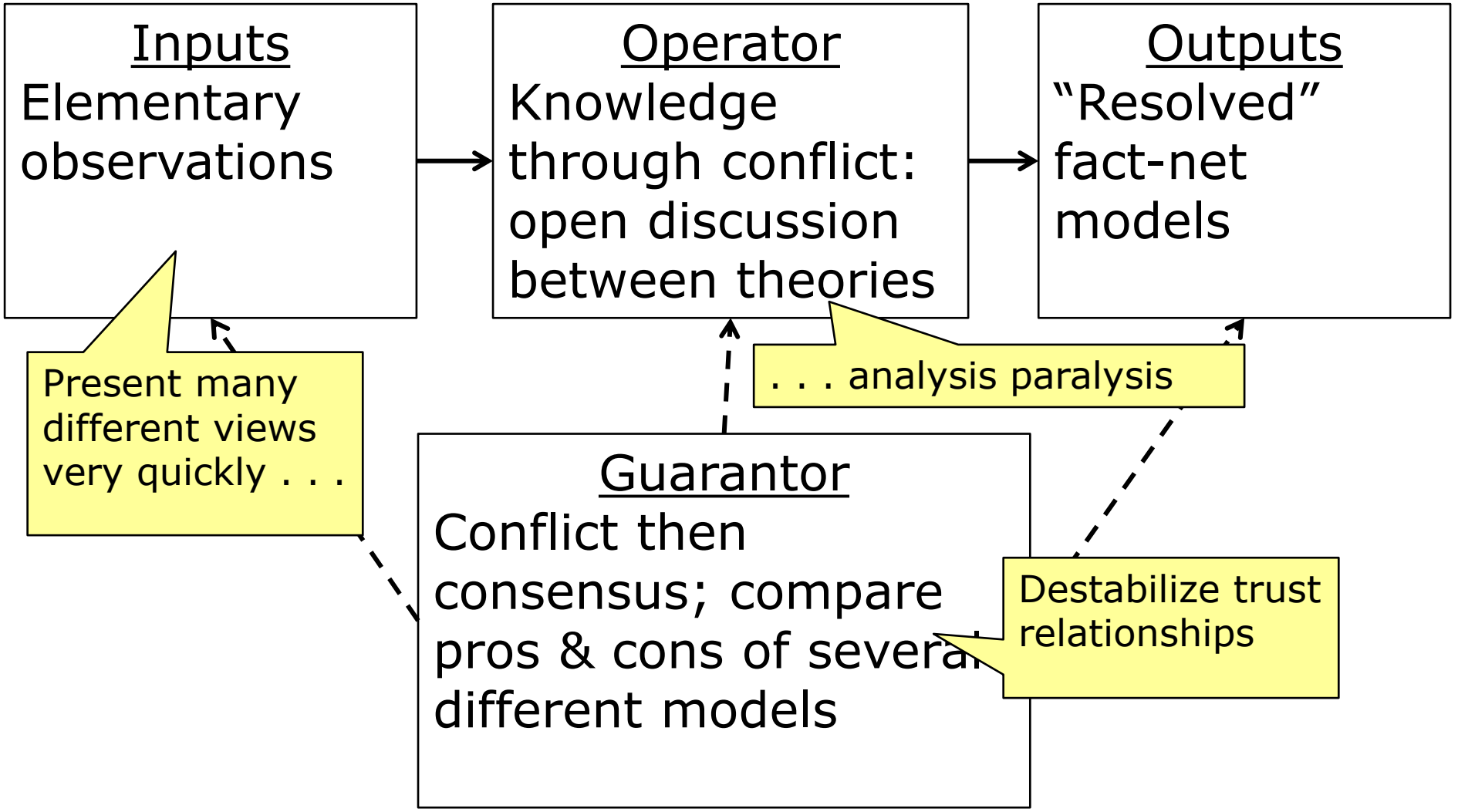
Operations Against Kantian System



Operations Against Hegelian System



Operations Against Singerian System



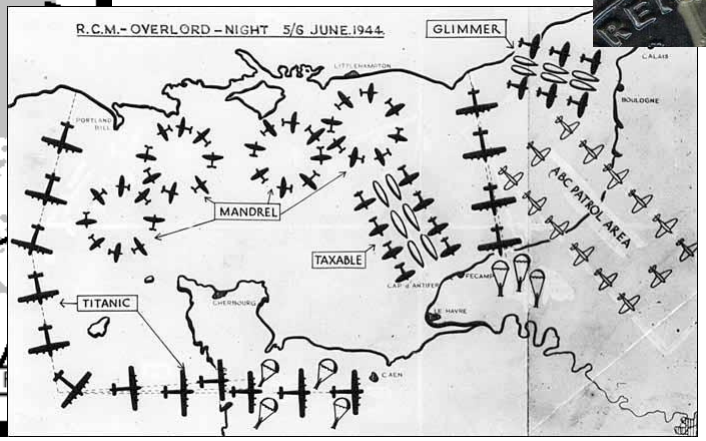
Illustrative Example

Numb. 60.

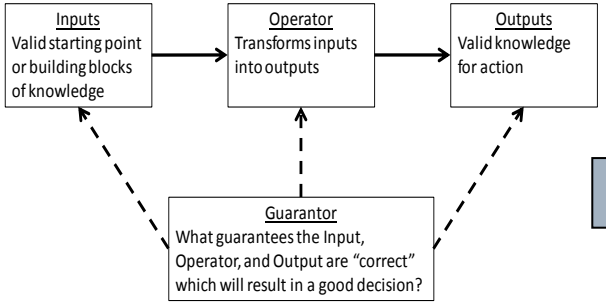
The Edinburgh Gazette

Published by Authority.

From Munday September 18th. *to* Thurſday September 21ſt. 1699.

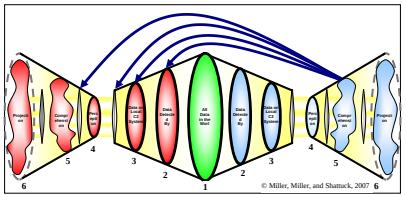


Summary & Conclusions



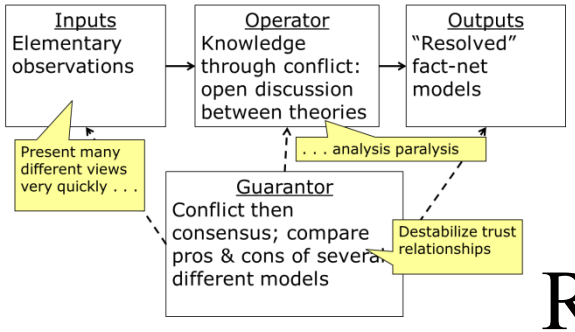
Enterprises as Decision-Making Systems

Socio-Technical Implications



- No decision-making enterprise modeled as an inquiry system is immune
- Systems thinking considers
  - Organization
  - Processes
  - IT support

Illustrative Example: Operation Bodyguard



Read our paper!

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