

**Complexity, Networking,**  
**and**  
**Effects-Based**  
**Operations...**

***Approaching the “how to” of EBO***

Dr. Ed Smith  
+1-703-872-4028  
edward.a.smith-jr@boeing.com

*Boeing*

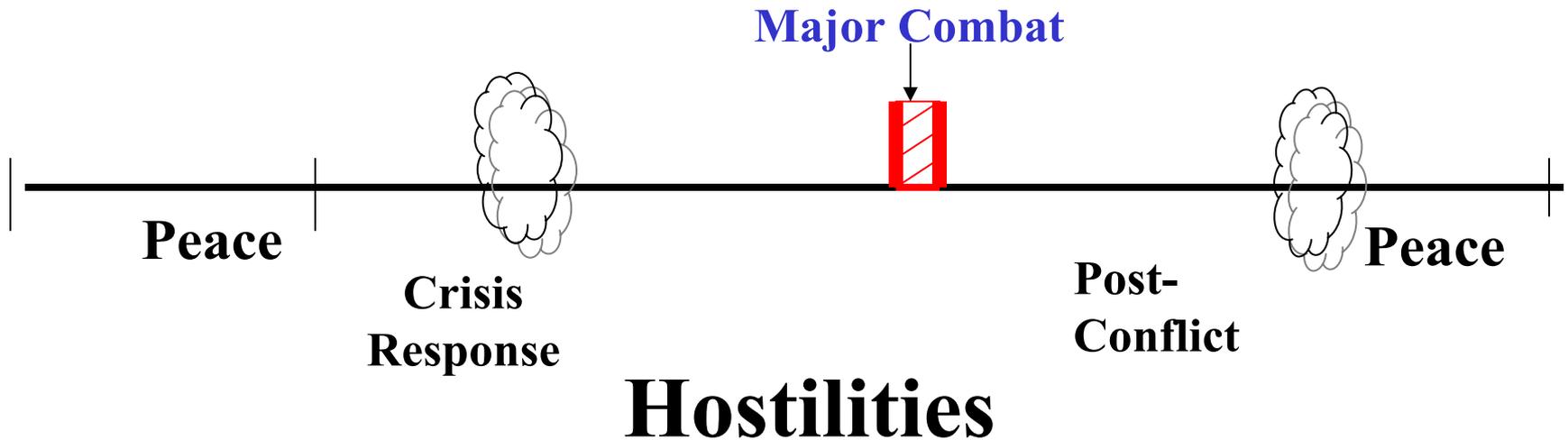


# **Outline**

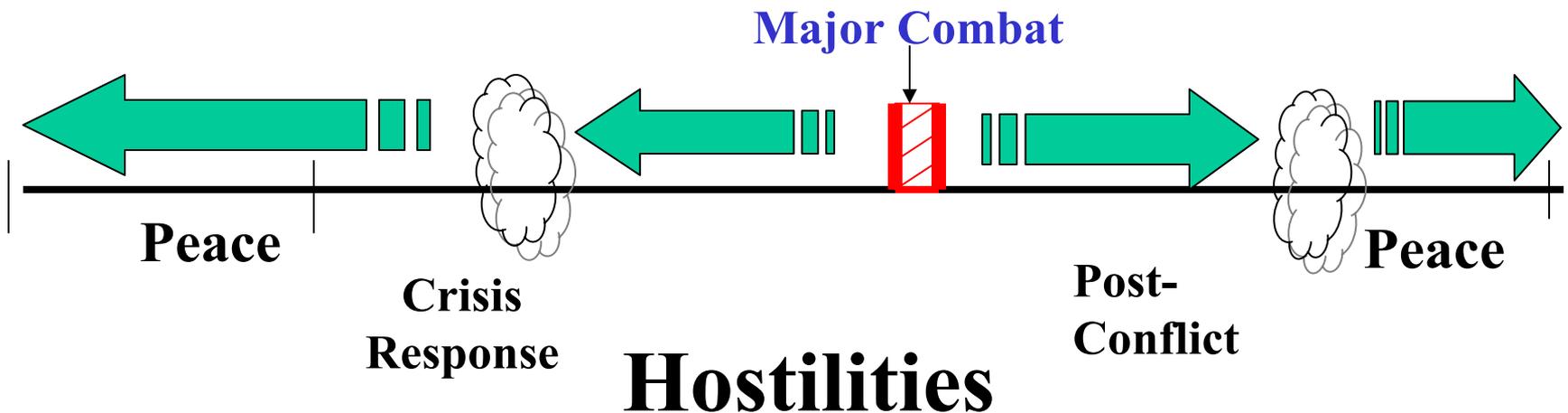
- 1. “Why” and “What”**
- 2. The Action-Reaction Cycle and Complexity**
- 3. Dealing with Complexity**
- 4. Conclusion**

# 1. “Why” and “What”

## New Security Environment



# Implications



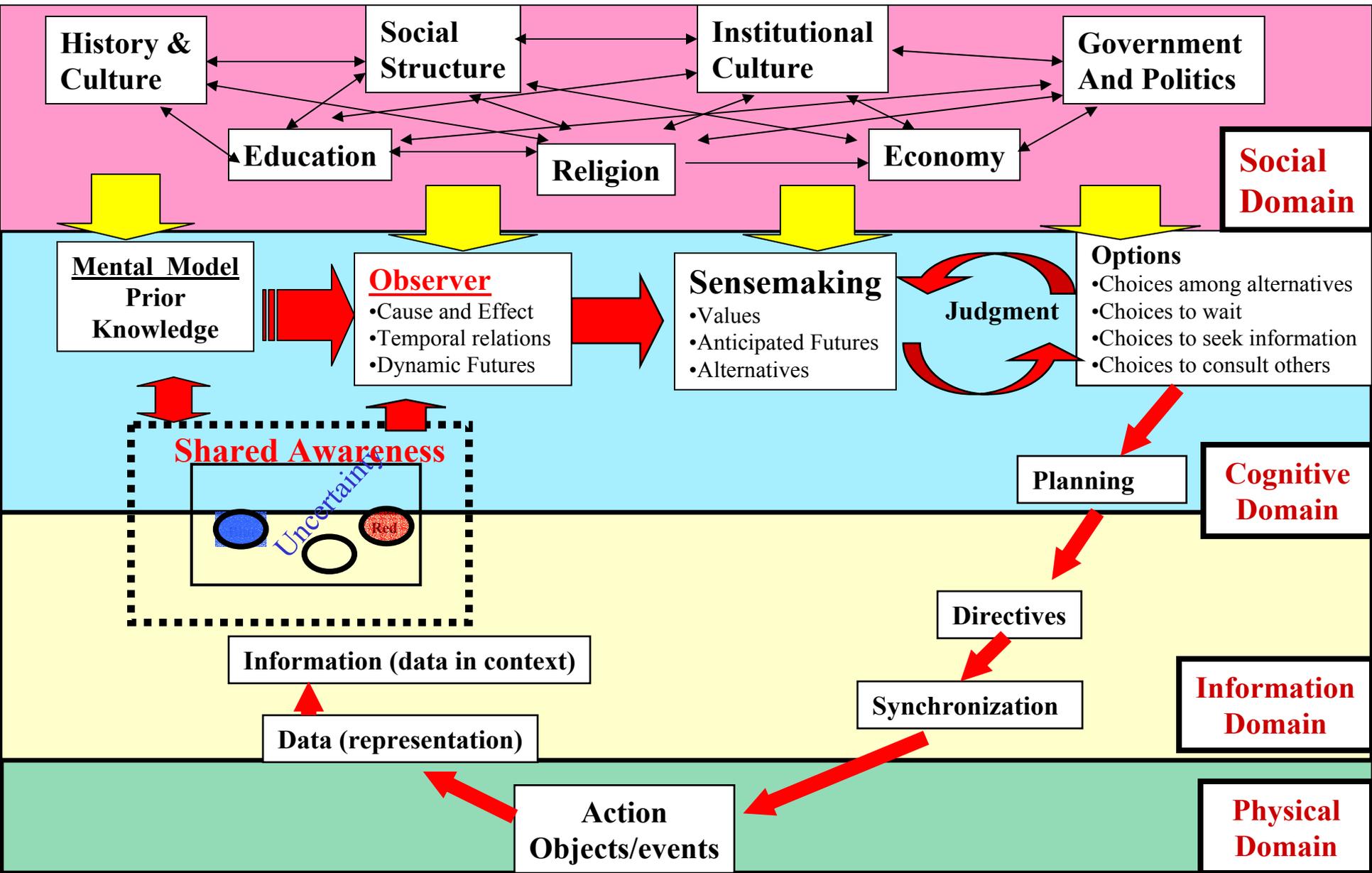
- *Increasing human dimension*
- *Increasing complexity*
- *Increasing “whole of nation”/ “whole of coalition” effort*

# The What

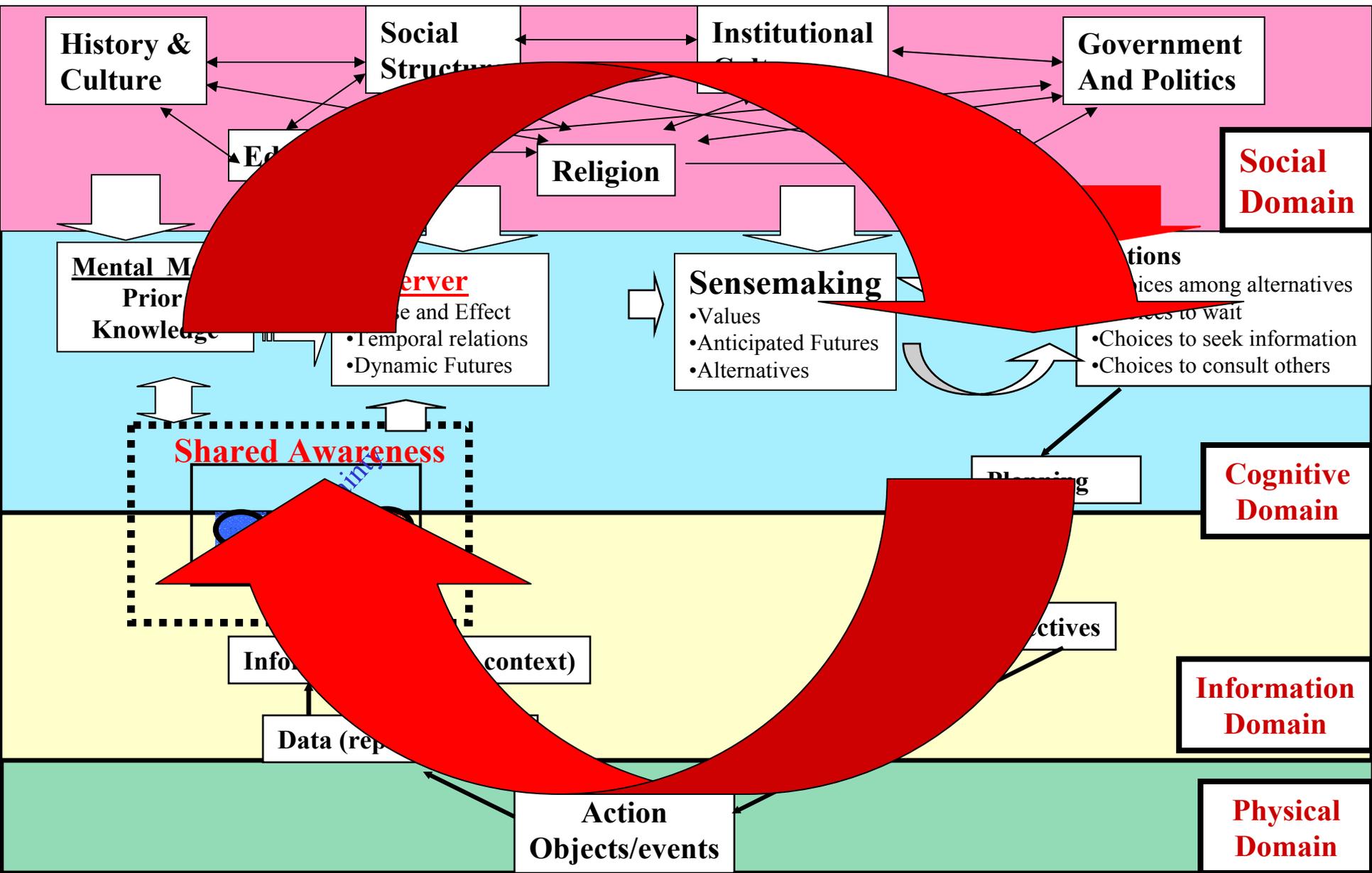
## *Effects-Based Operations:*

*Coordinated sets of actions  
directed at shaping the  
behavior  
of friends, foes, and neutrals  
in peace, crisis, and war*

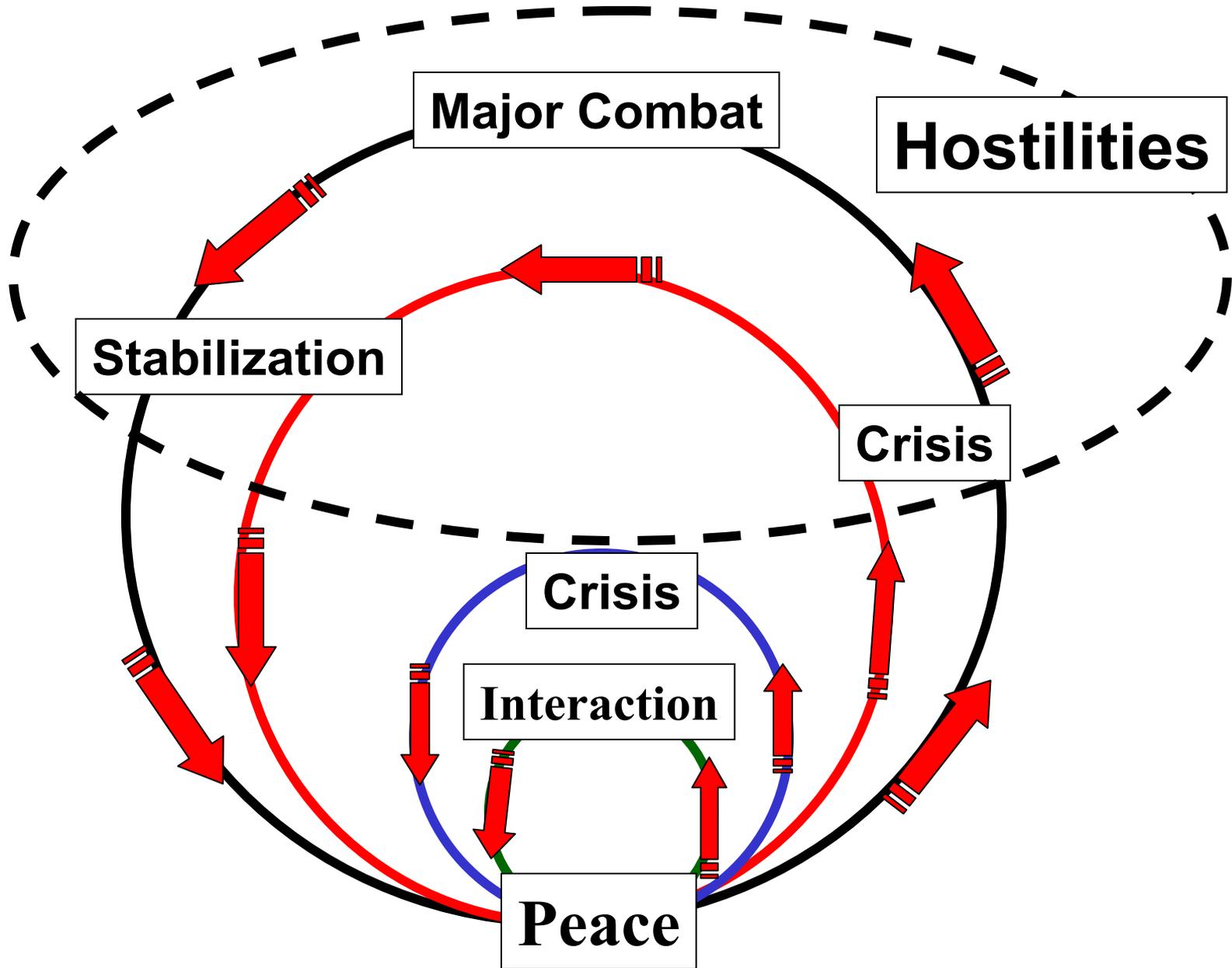
# 2. The Action-Reaction Cycle and Complexity



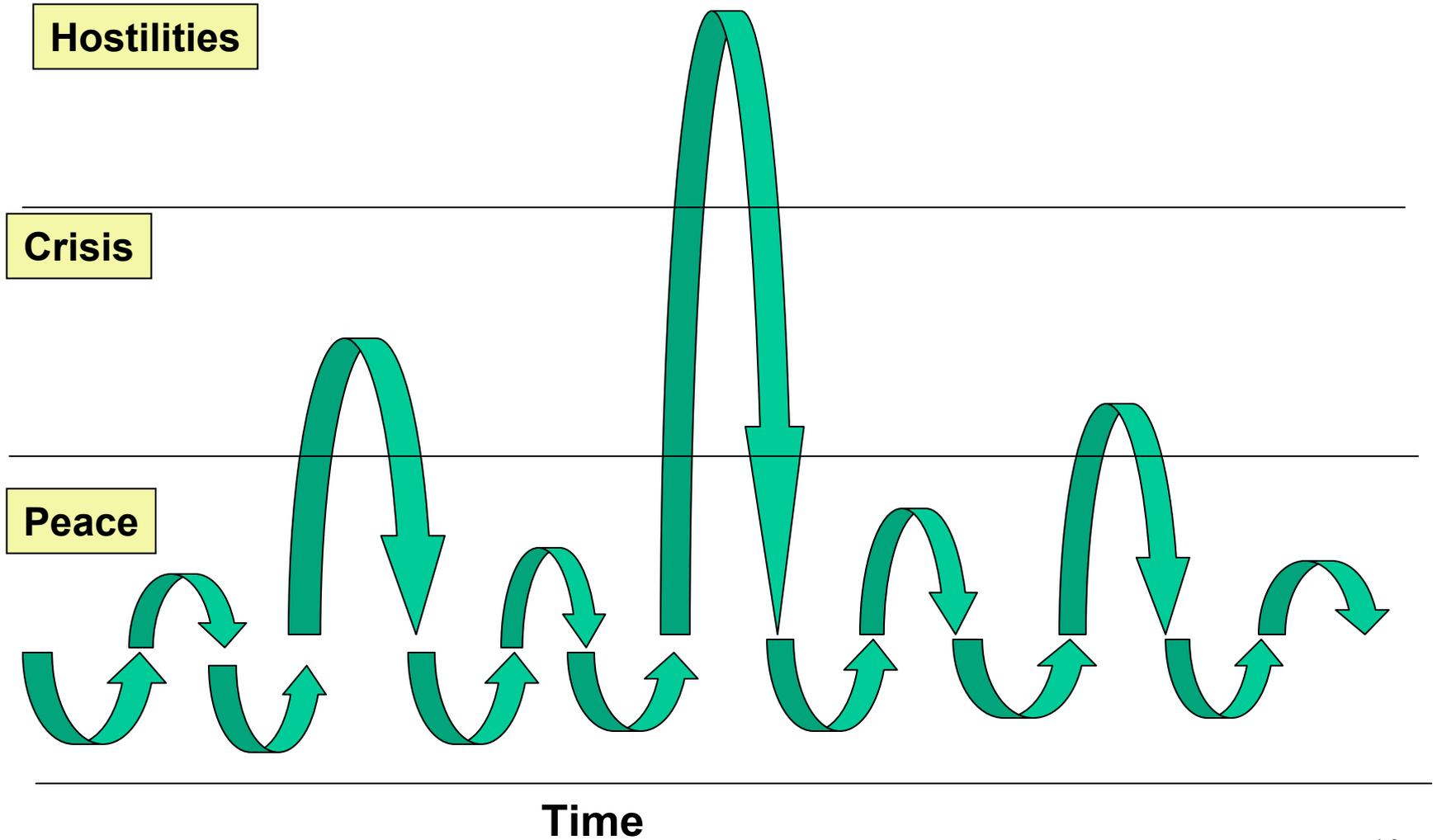
# Continuing Action Reaction Cycles



# Circular Continuum



# Spiral Continuum



# 3. Dealing with Complexity

- The Complicated

- Known or knowable cause and effect chain
- Inputs/outputs proportional; whole equals sum of parts

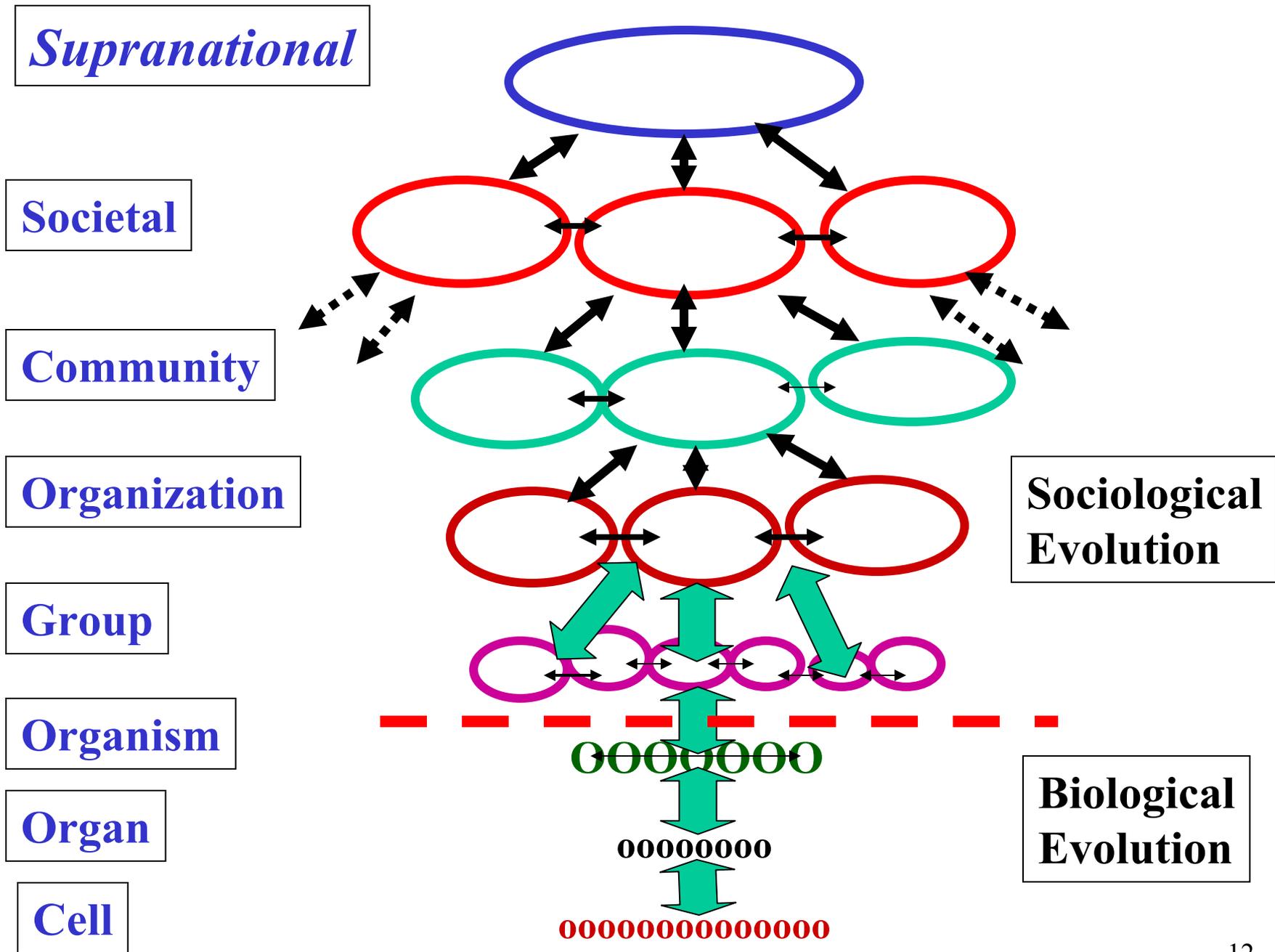
- The Complex

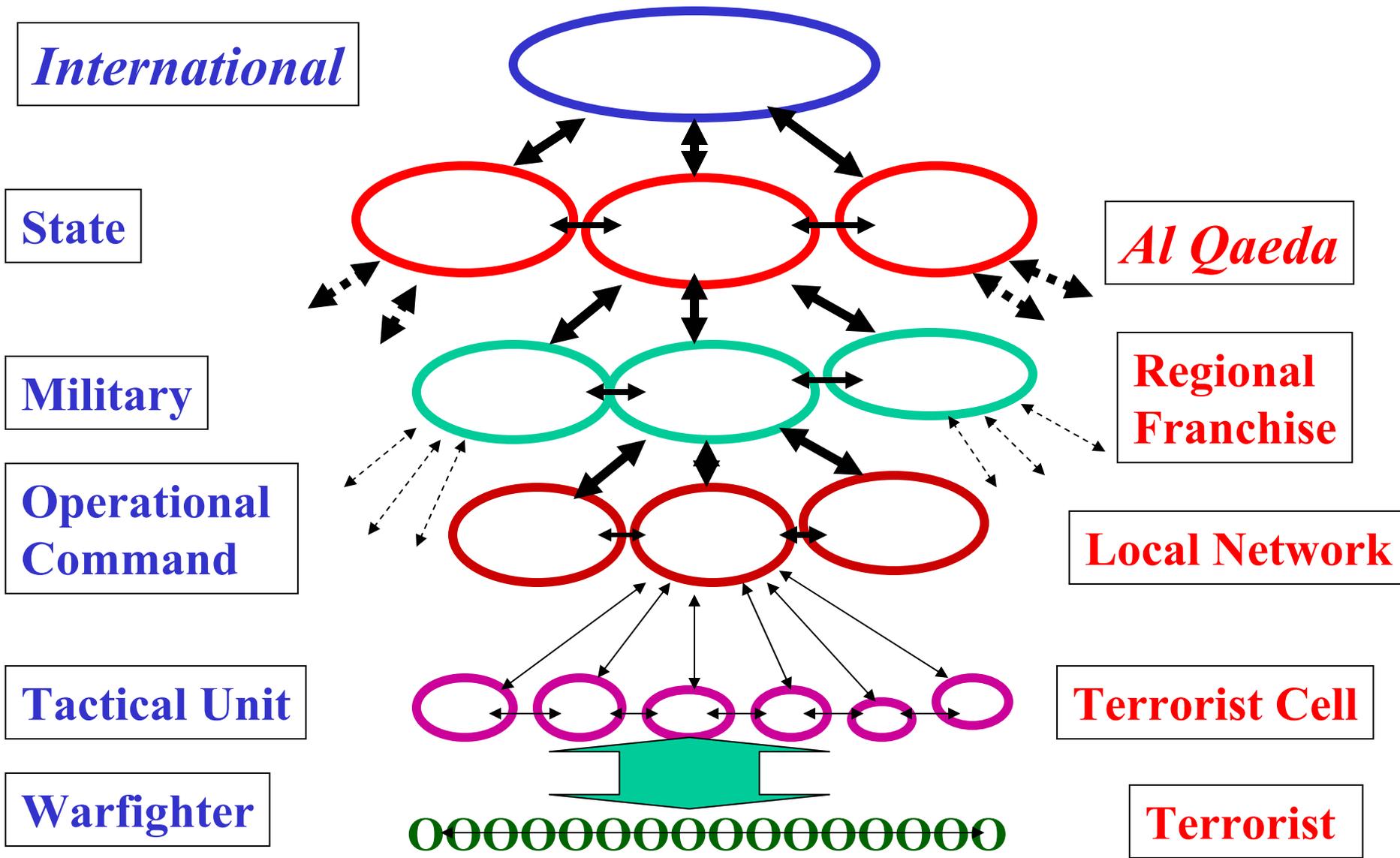
- Multiple interdependent variables
- Changing cause and effect chain
- Inputs and outputs not proportional; whole does not equal sum of the parts

- The Complex Adaptive

- Not only complex but evolves independently

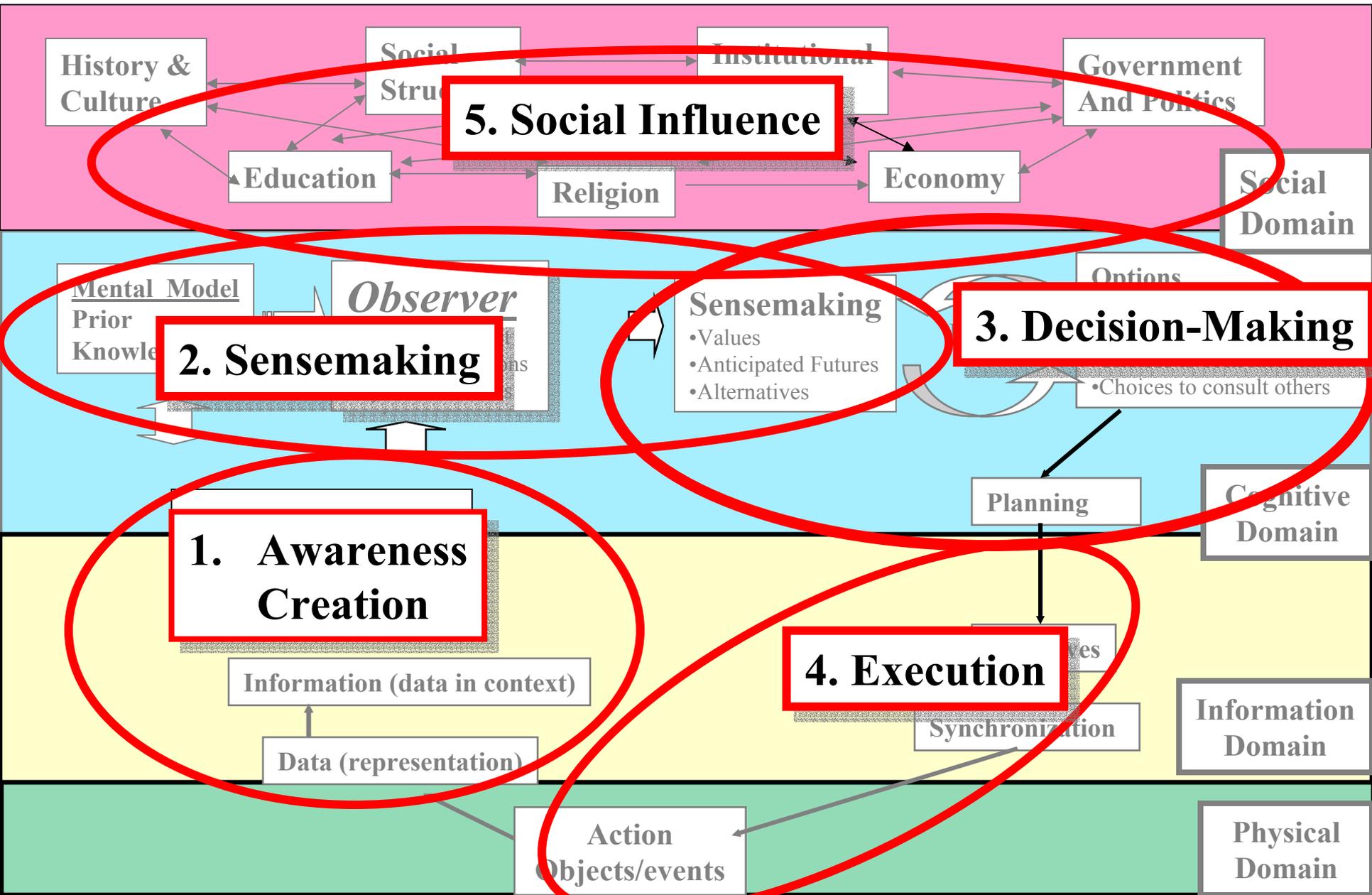
- ...and The System of Complex Adaptive Systems



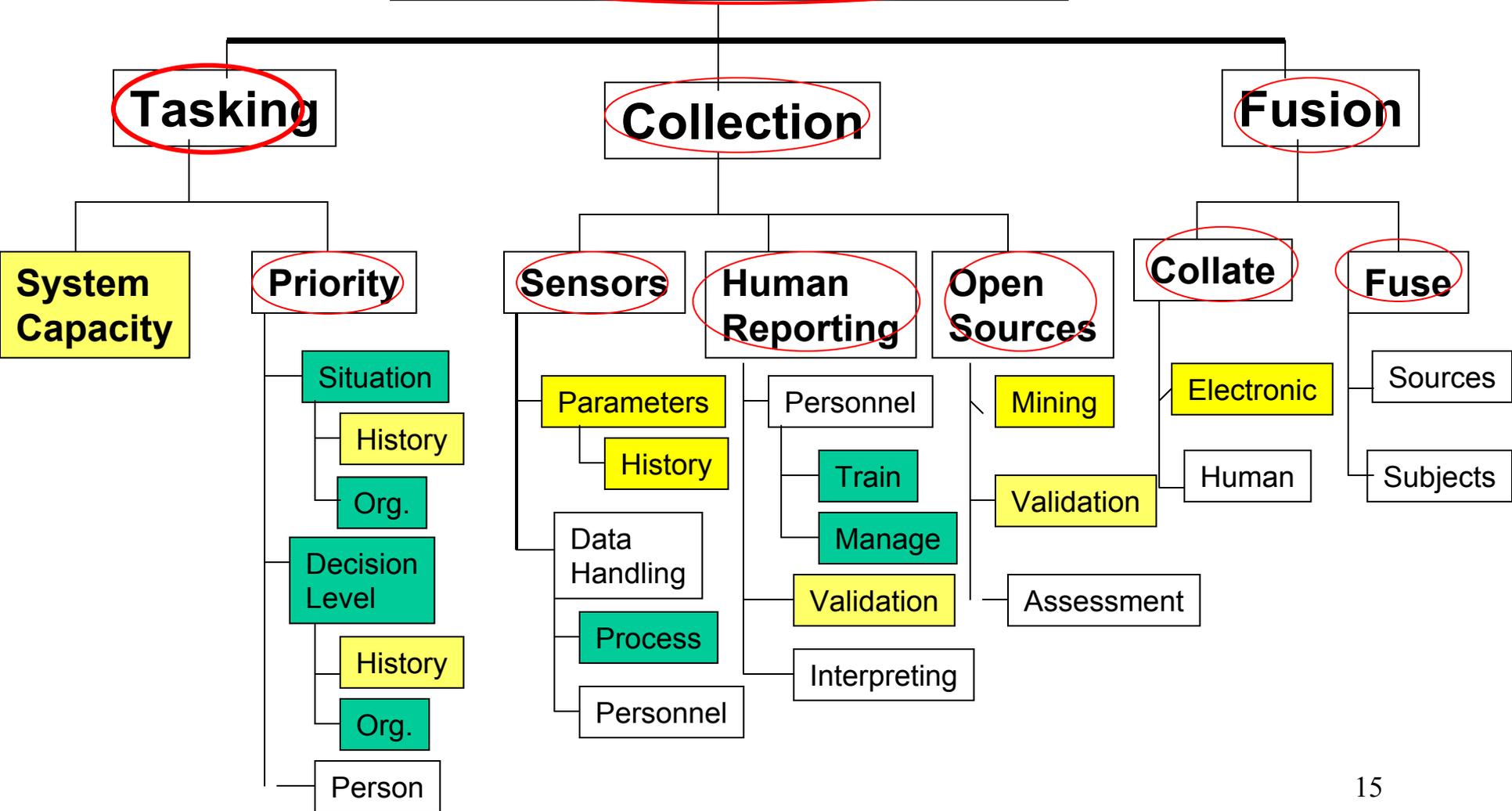


**State vs. Non-State Actor**

# “Essential Processes”



# Awareness Creation



# Sensemaking

## Contextualization

## Analysis

### History

#### Compilation

Situation

Time

History

Tasking  
feedback

#### Retrieval

Organization

### Knowledge Base

#### Internal

Subject

#### External

Interface

Identify

Validate

### Mental Model

#### History

#### Culture

Organization

Profession

Society

Idiosyncratic

### Cause/Effect

#### Process

Organization

Personalities

#### Cascades

Physical

Psychological

### Futures

#### Cascades

Military

Diplomatic

Economic

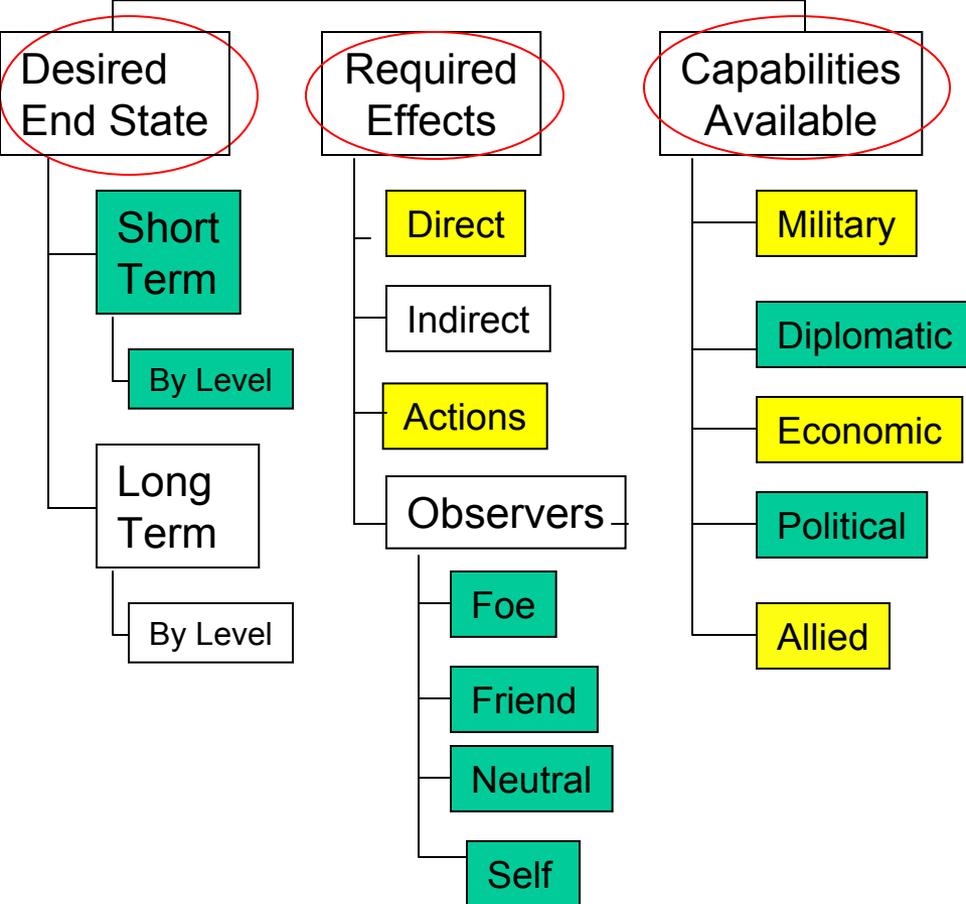
Political

#### Intentions

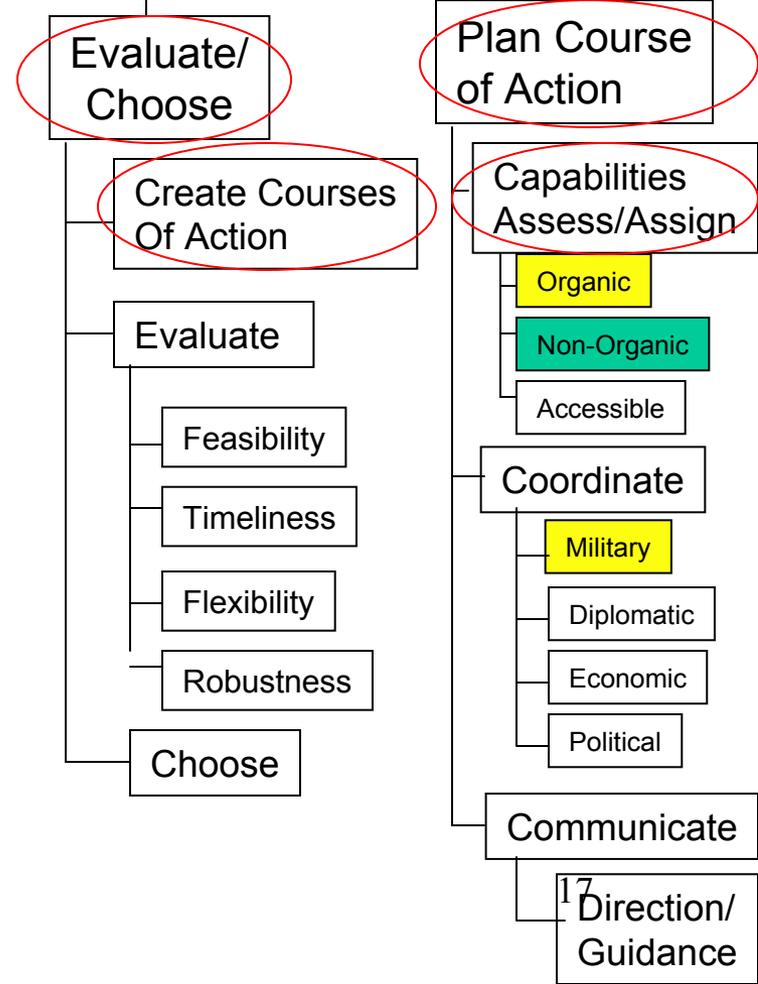
Future  
Actions

# Decision-making

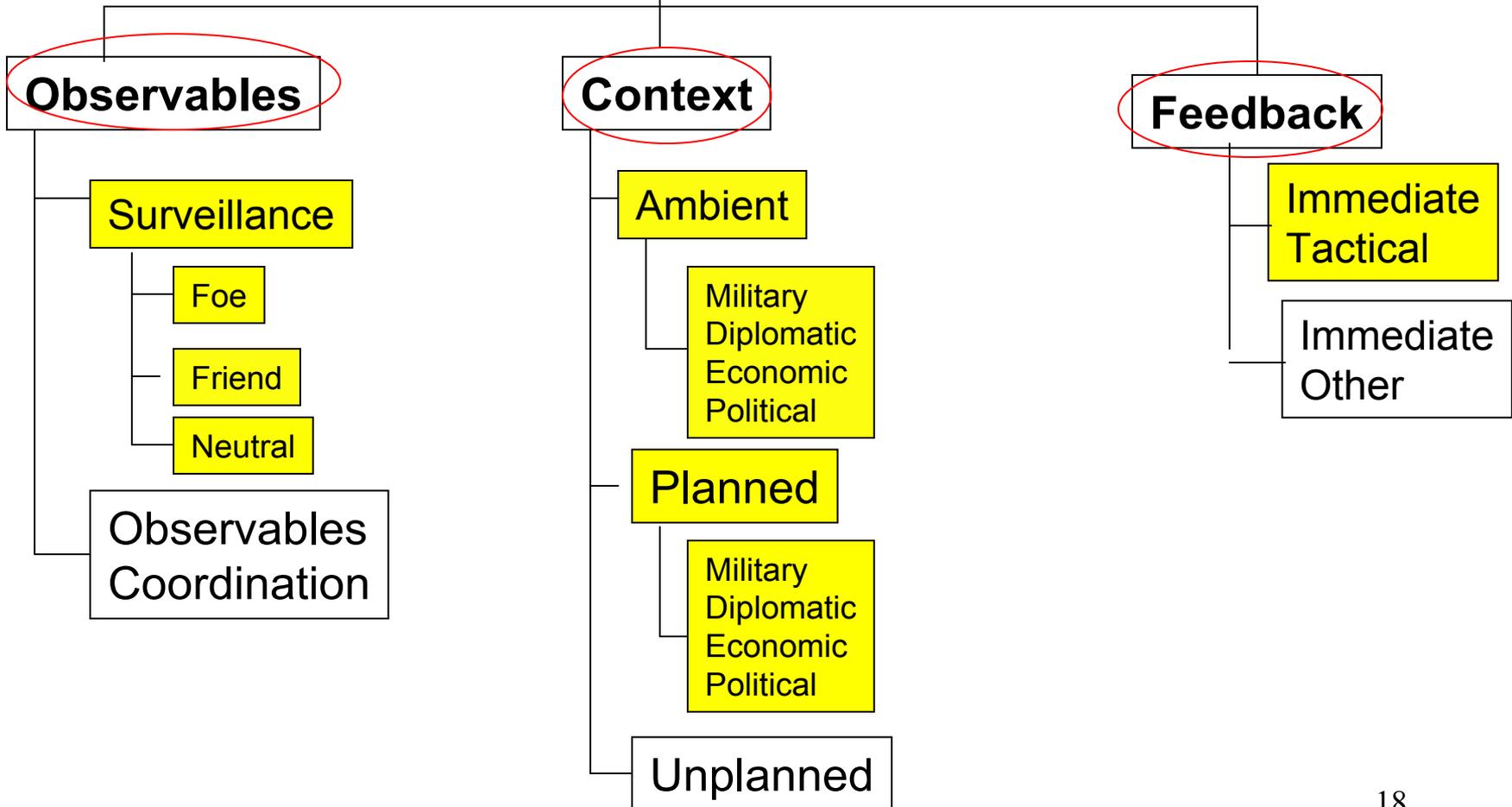
## Projected Sensemaking



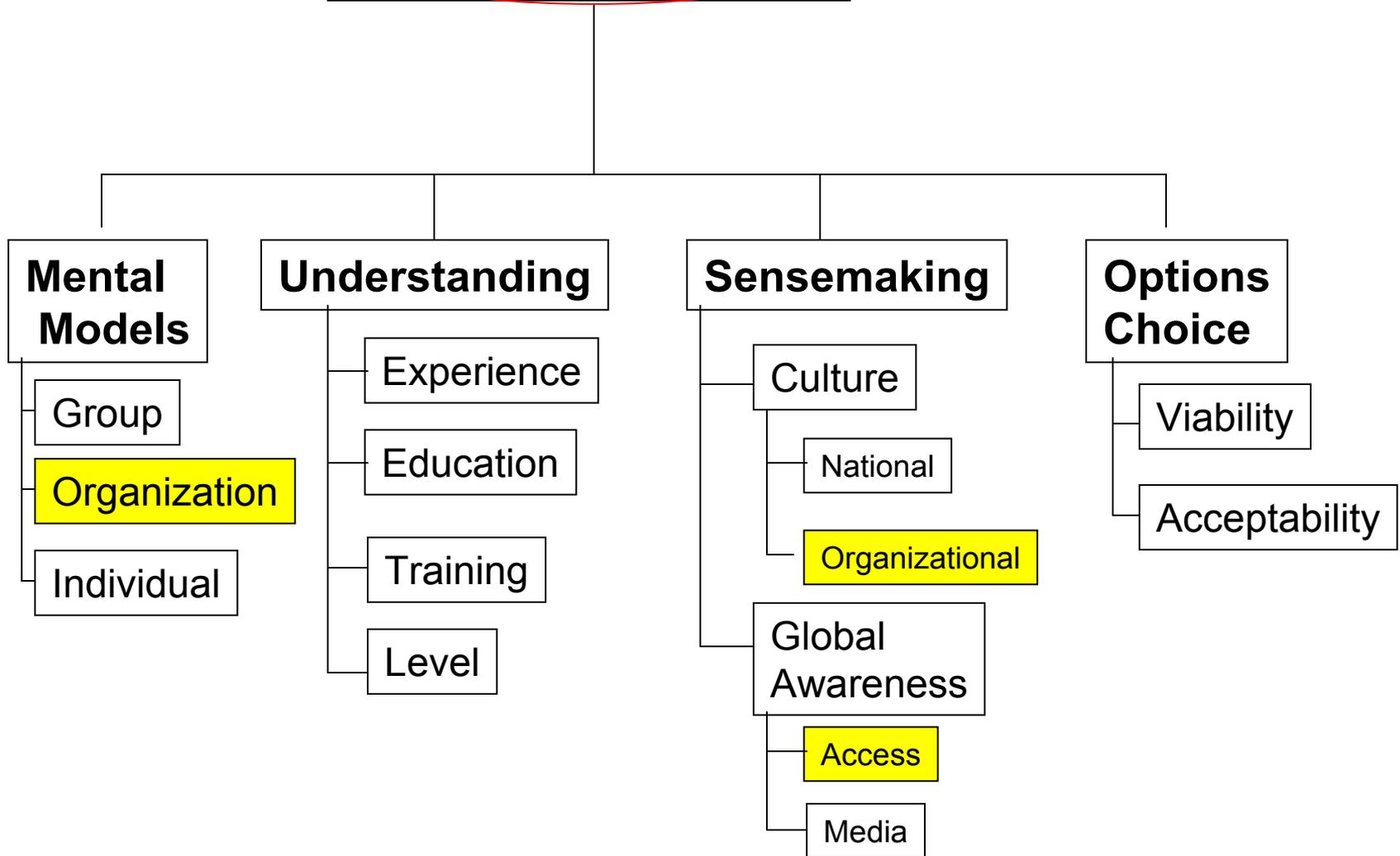
## Options Choice/Plan



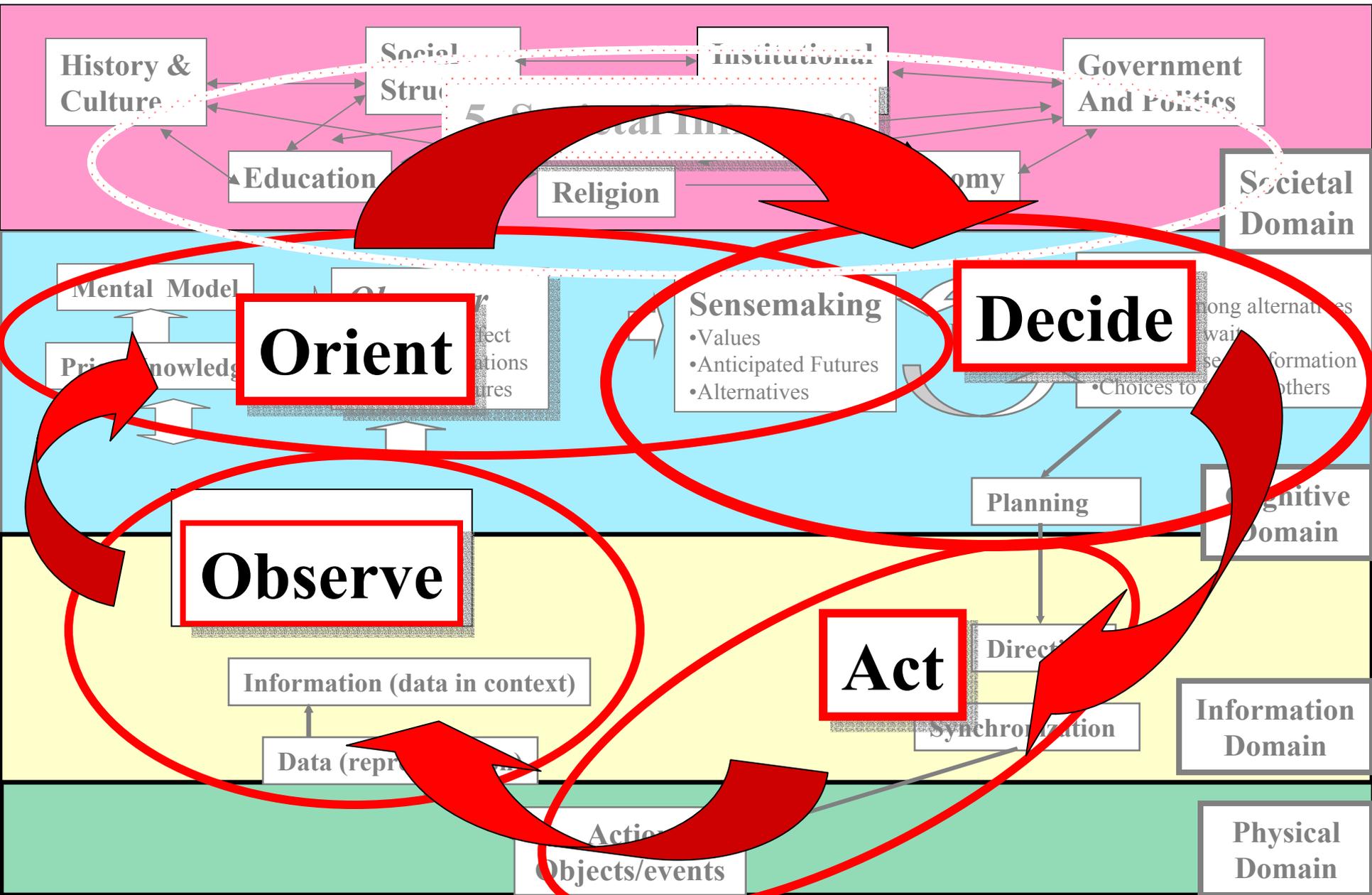
# Execution



# Social Domain



# Scalability and Timeliness



# Conclusions: So where's the cookbook?

- **“It’s about the people, stupid!”**
  - **Effects-Based Operations = People = Complexity**  
therefore...
  - **There is no cookbook**
- **Human in the loop is key**
  - **Complex, multi-level, multi-arena responses**
- ***Networking vice networks***
  - **Supporting the man in the loop**
  - ***Second Generation Network Centric Operations***