

# Mitigation and Adaptation Studies



## Class 8: Participatory Modeling

Contents:

- Wicked Problems
- Participatory Modeling

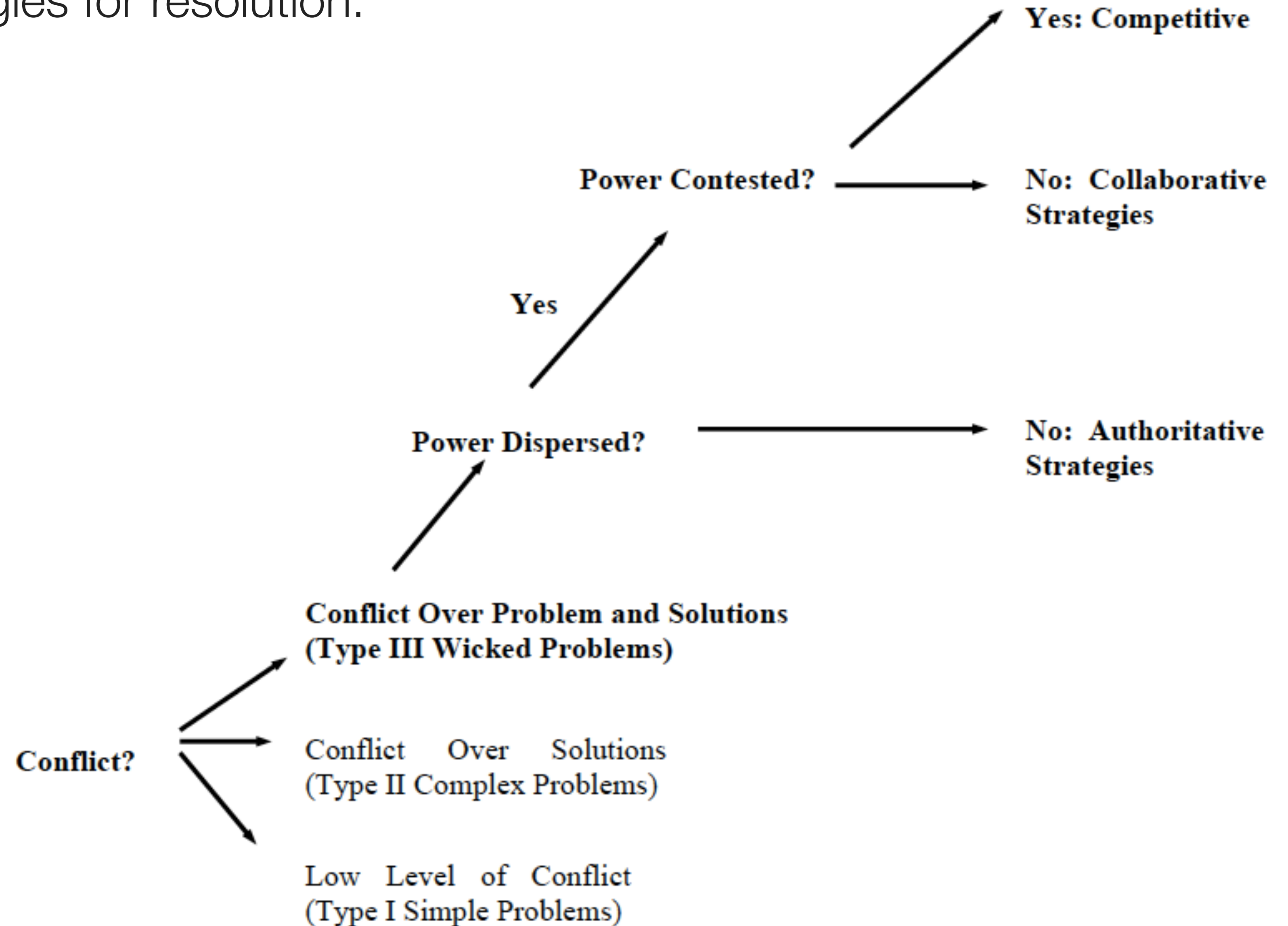




# Wicked Problems

Roberts, 2000: Three strategies for resolution:

- **Authoritative**
- **Competitive**
- **Collaborative**

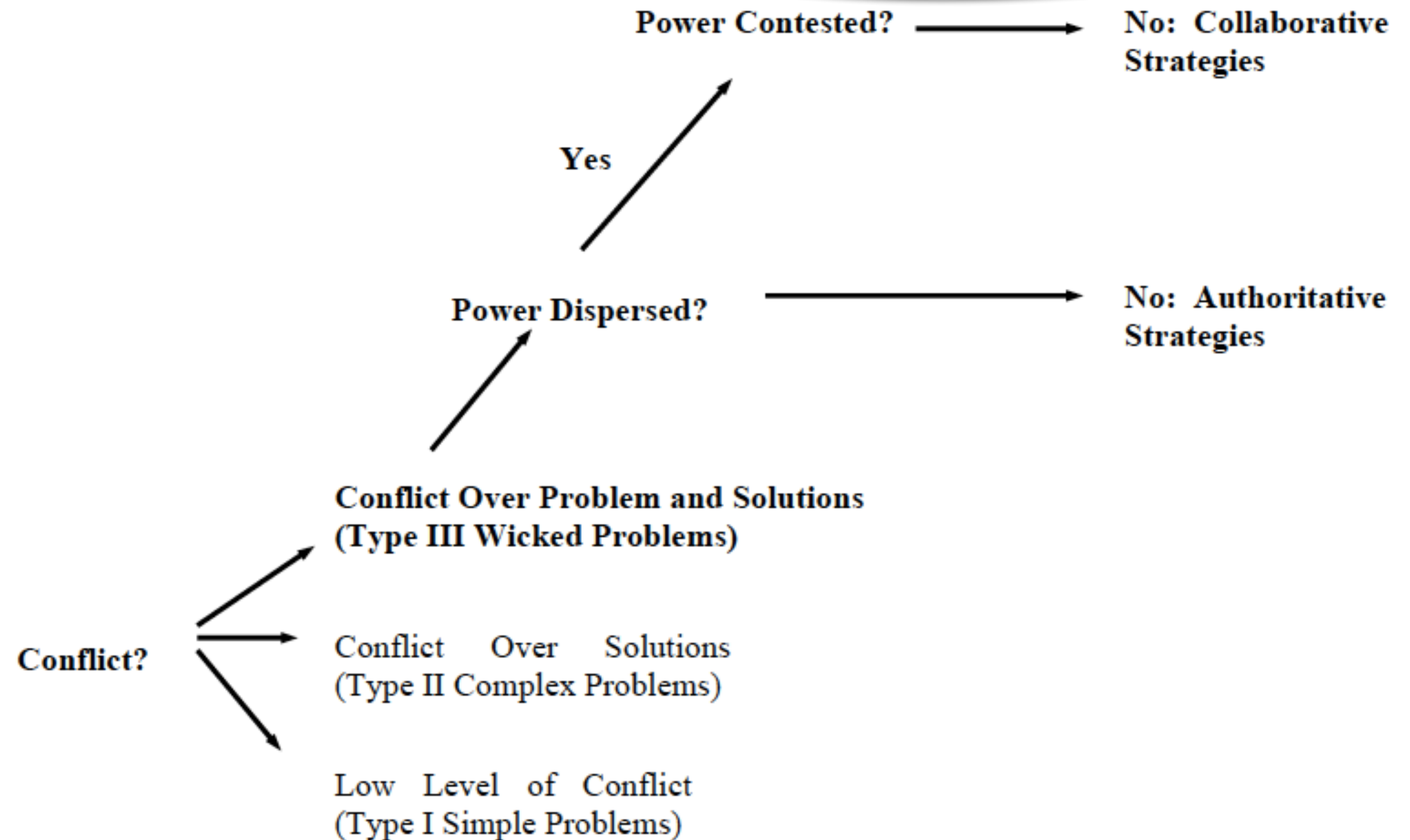


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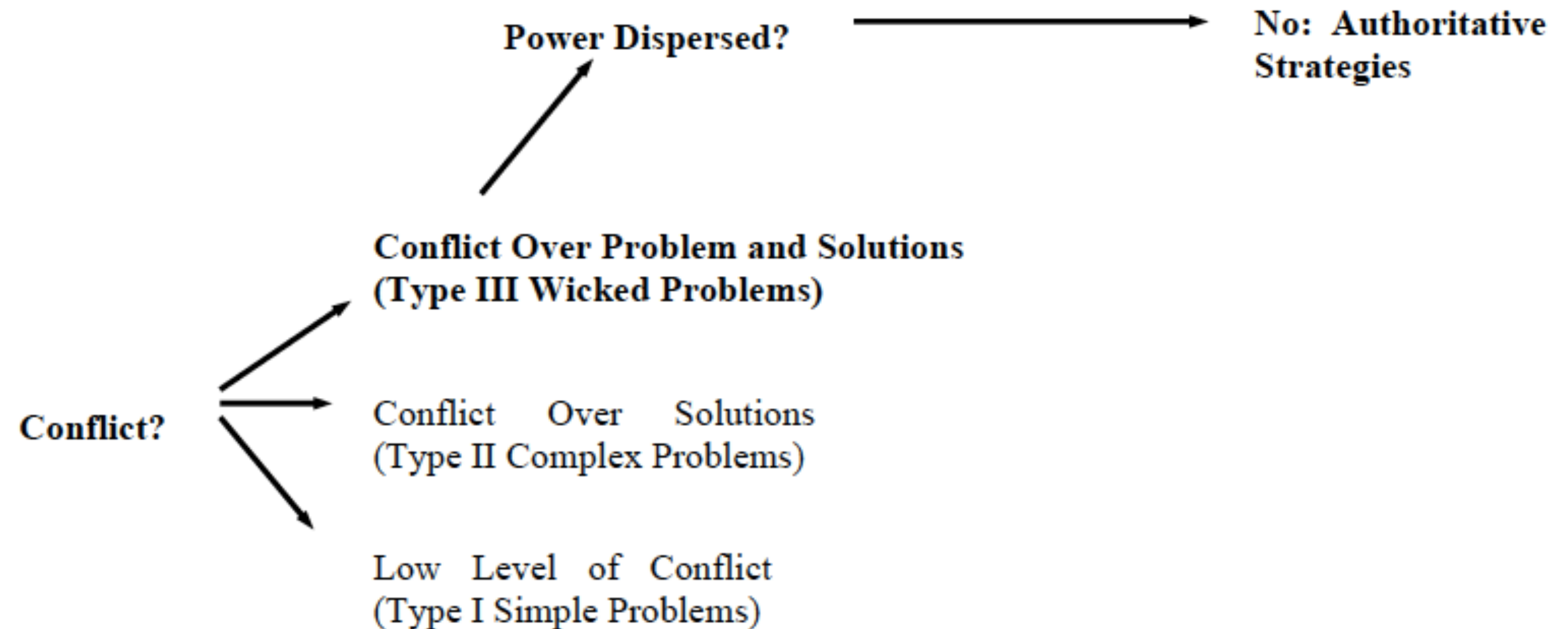
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# Wicked Problems

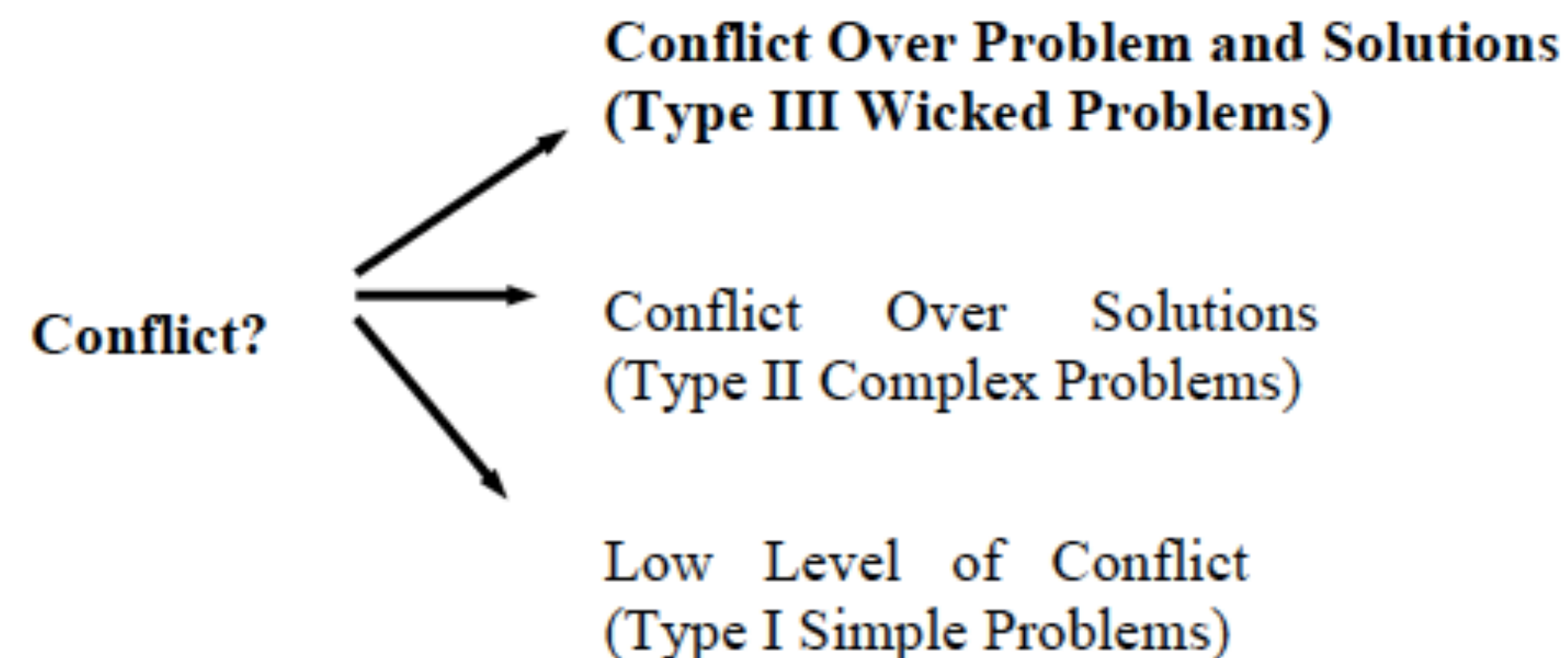
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Reduces problem complexity, as many competing points of view are eliminated at the start.

Disadvantage: authorities and experts charged with solving the problem may not have an appreciation of all the perspectives needed to tackle the problem.

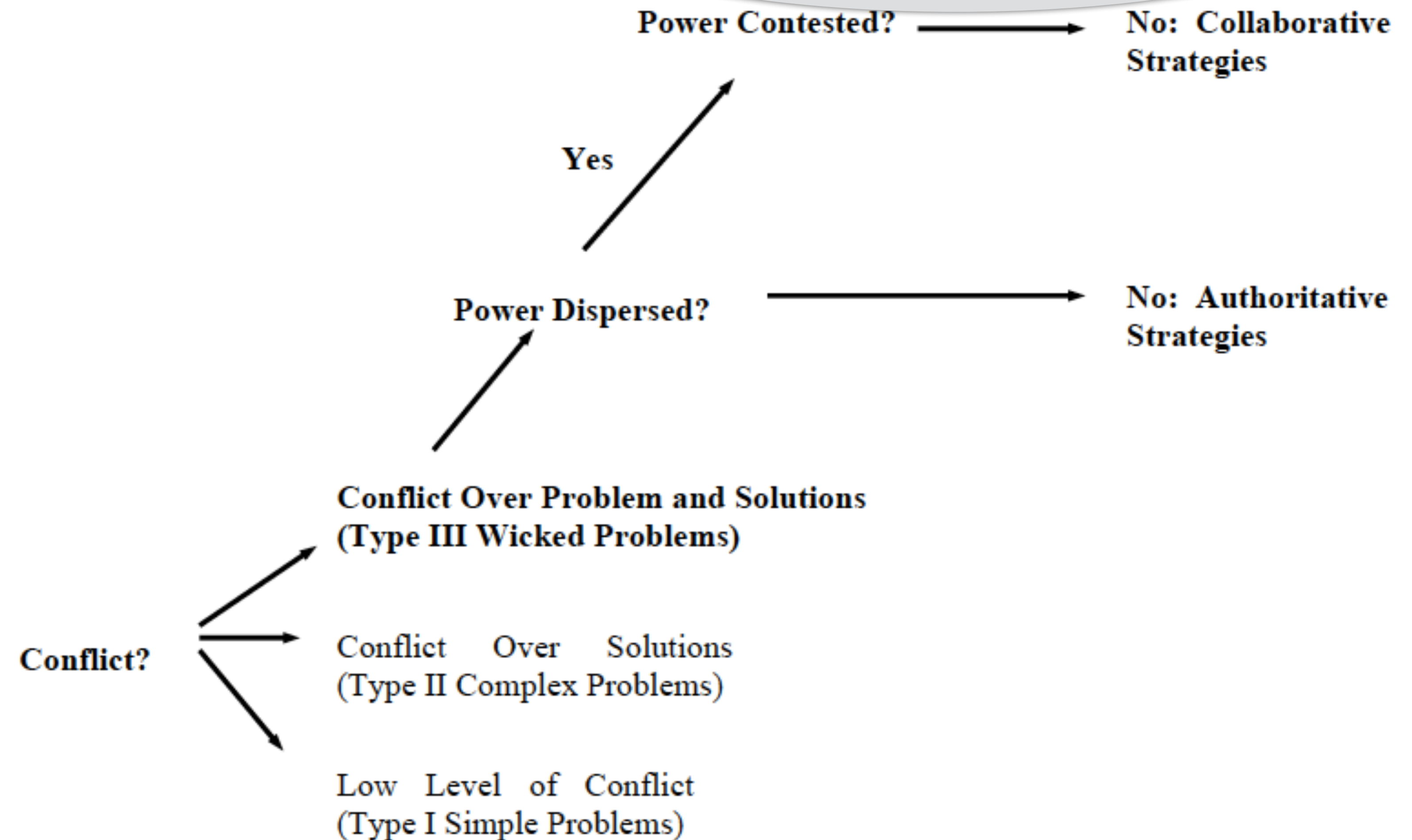


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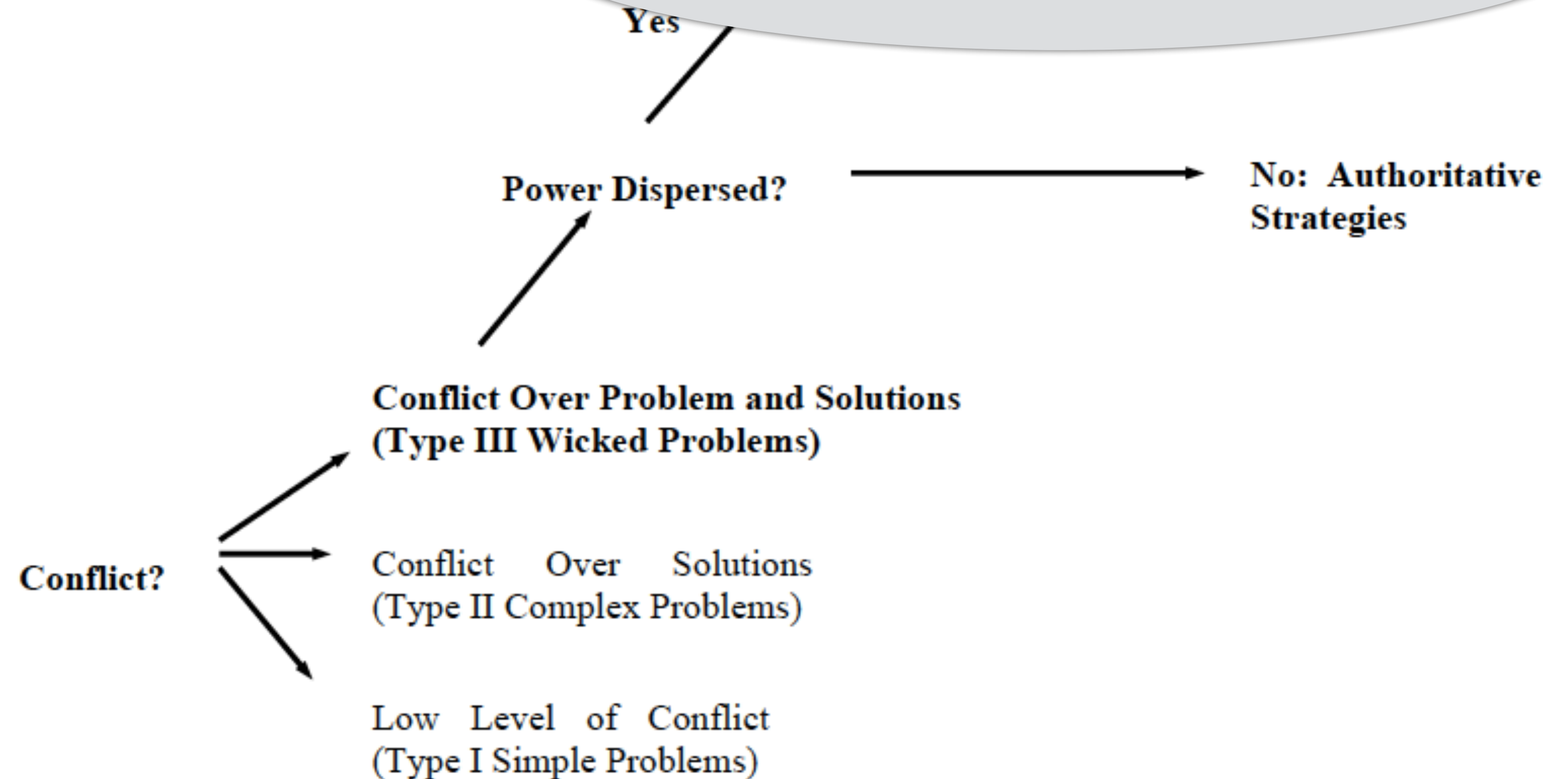
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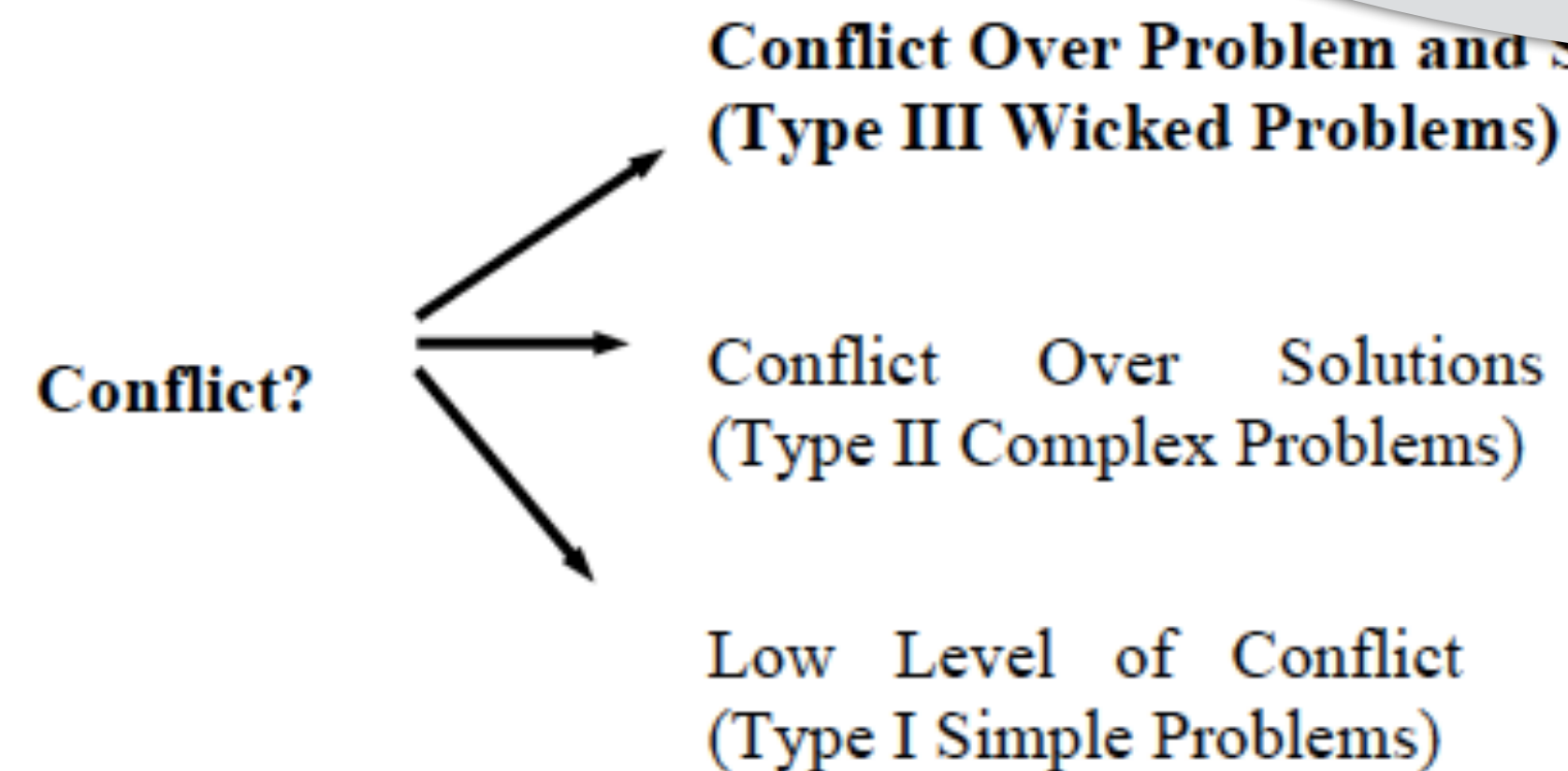
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Advantage: different solutions can be weighed up against each other and the best one chosen.

Yes

Disadvantage: creates a confrontational environment in which knowledge sharing is discouraged. Parties involved may not have an incentive to come up with their best possible solution.

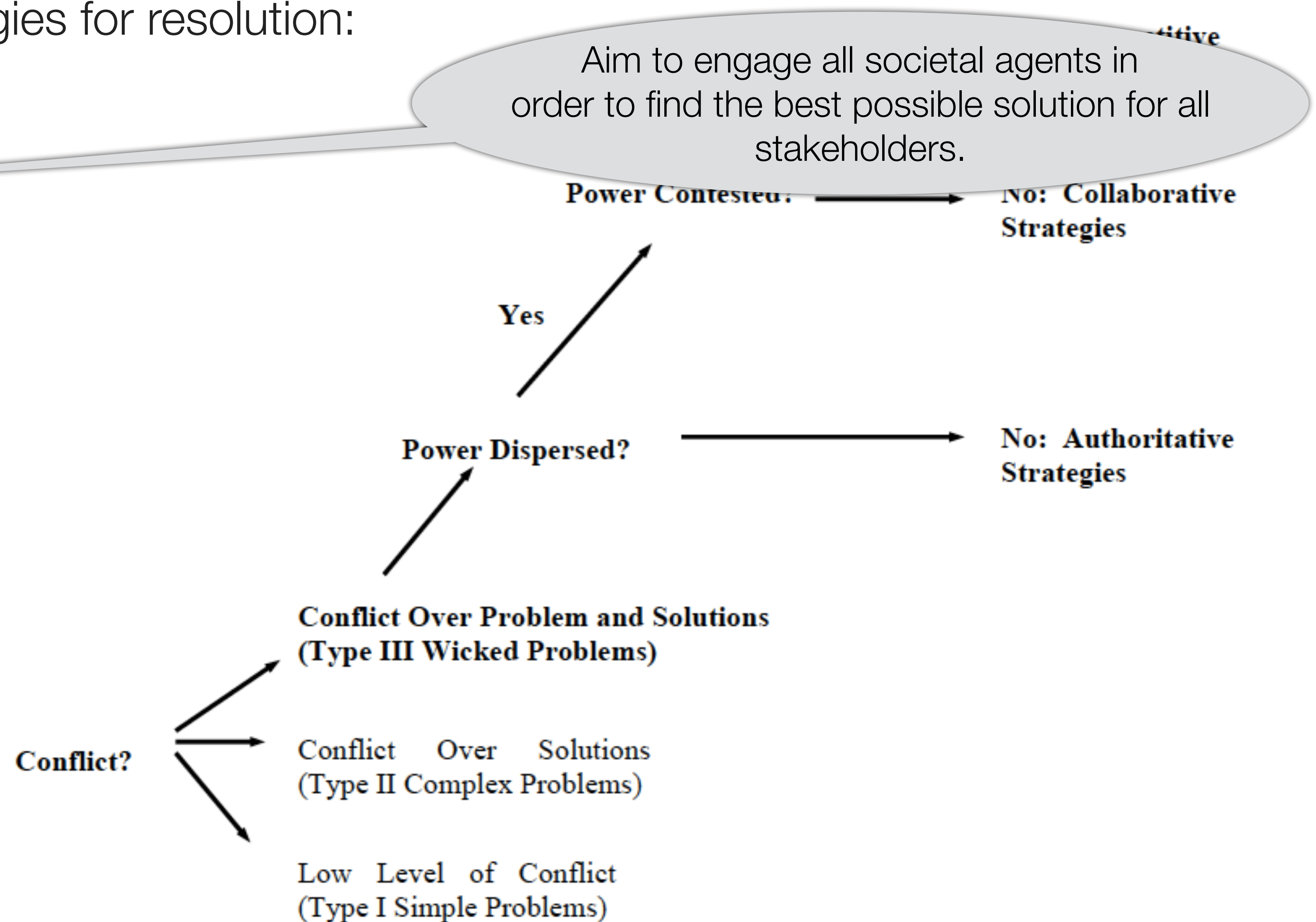




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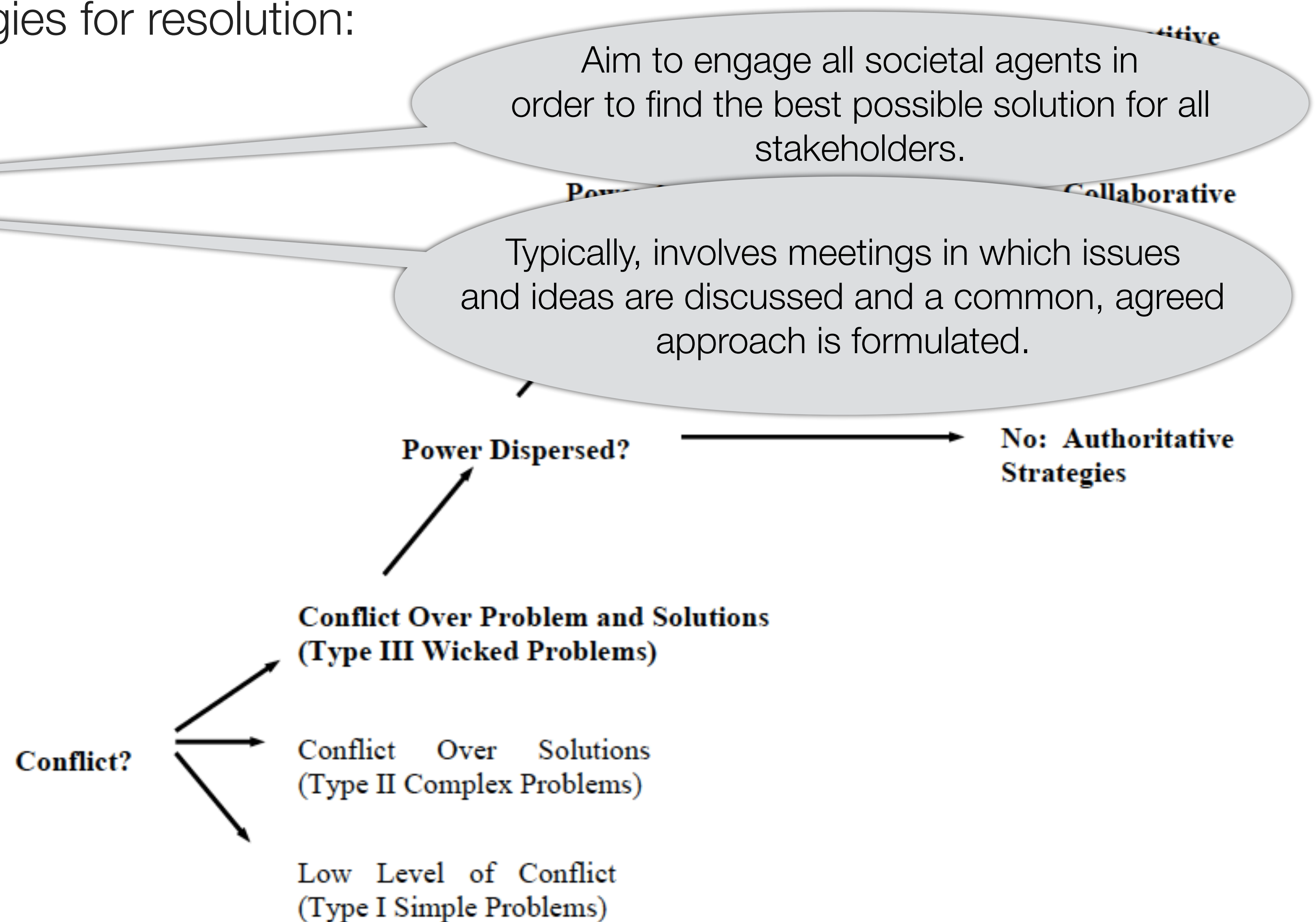
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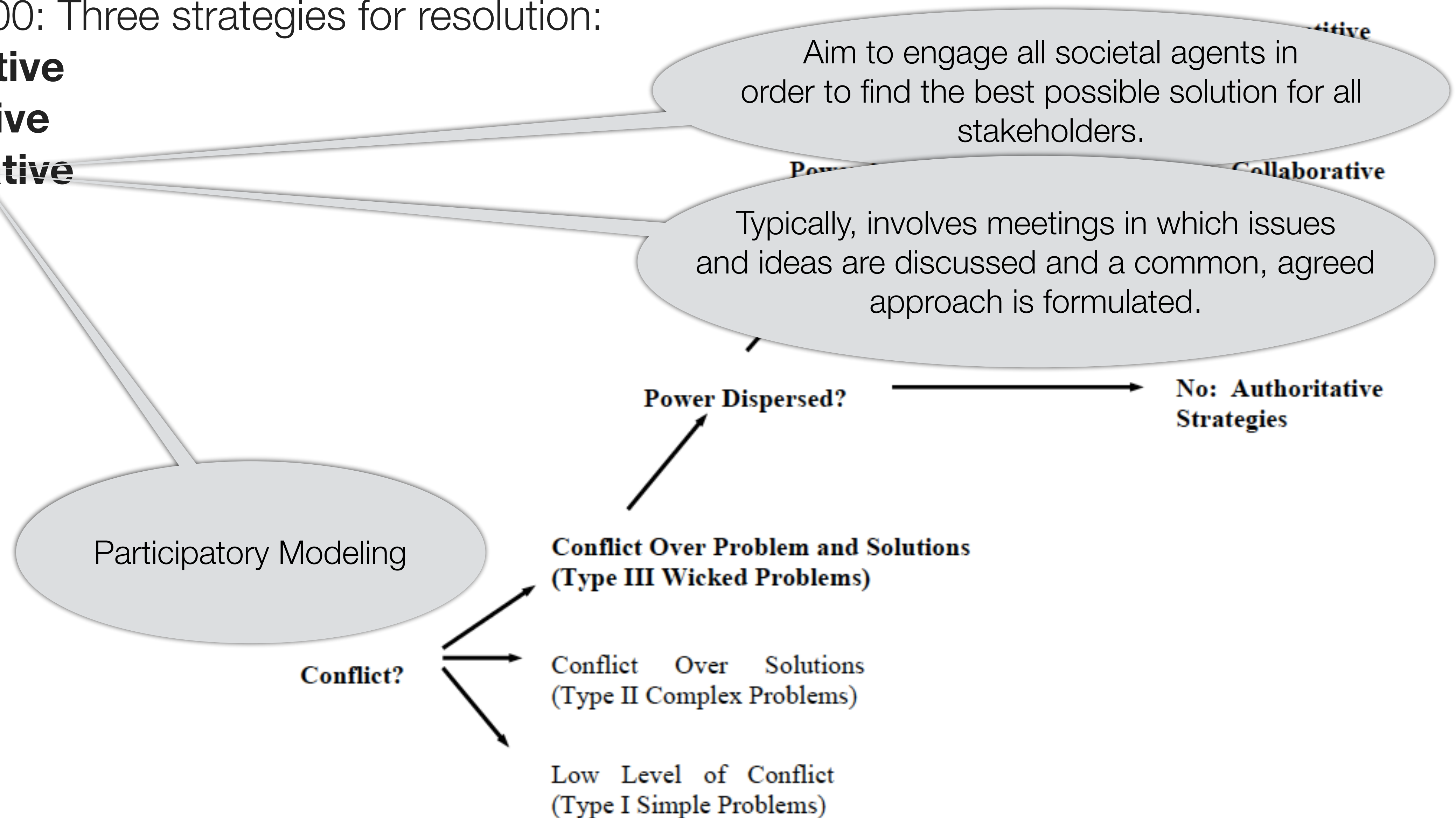




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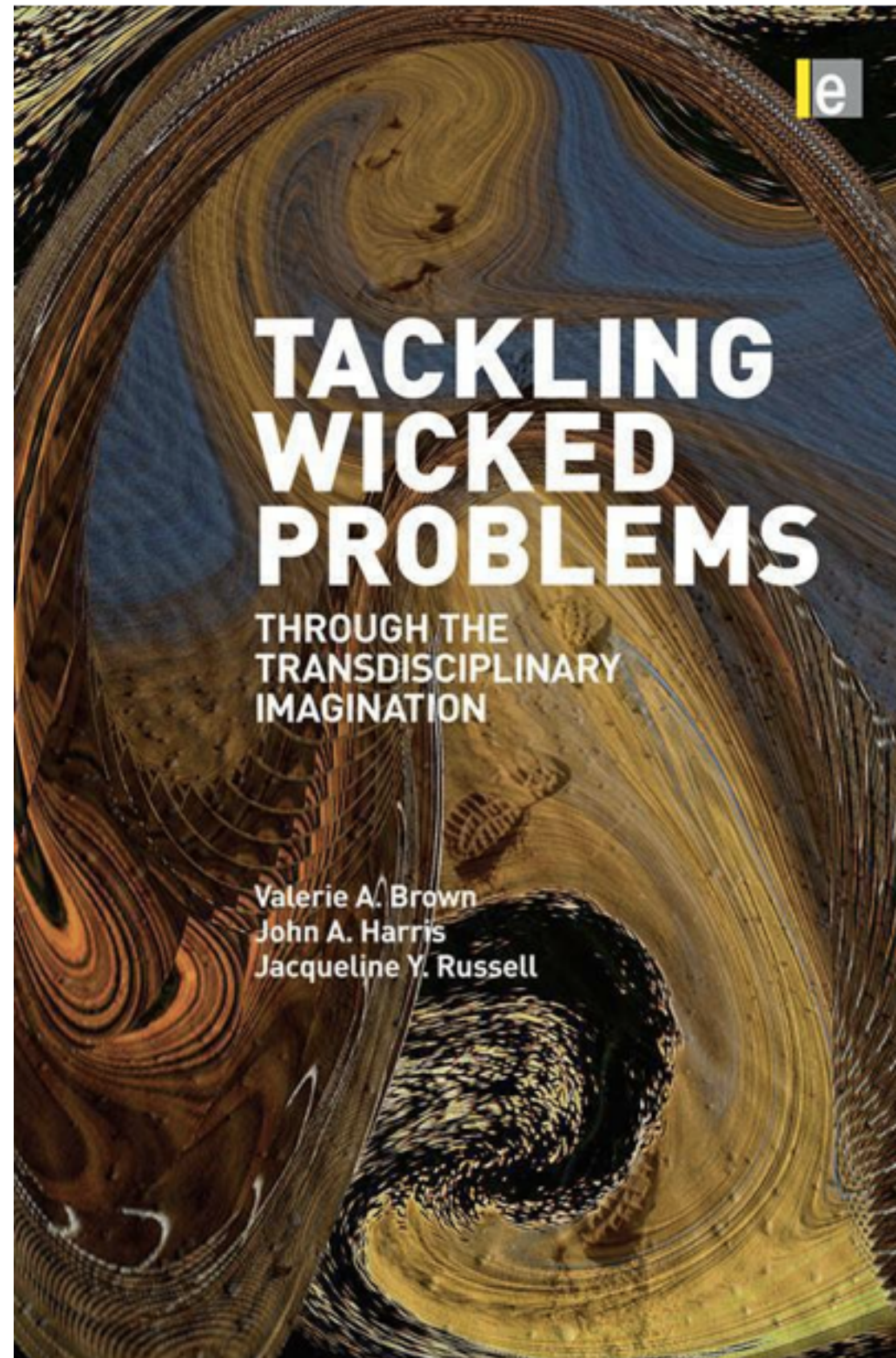




# Wicked Problems

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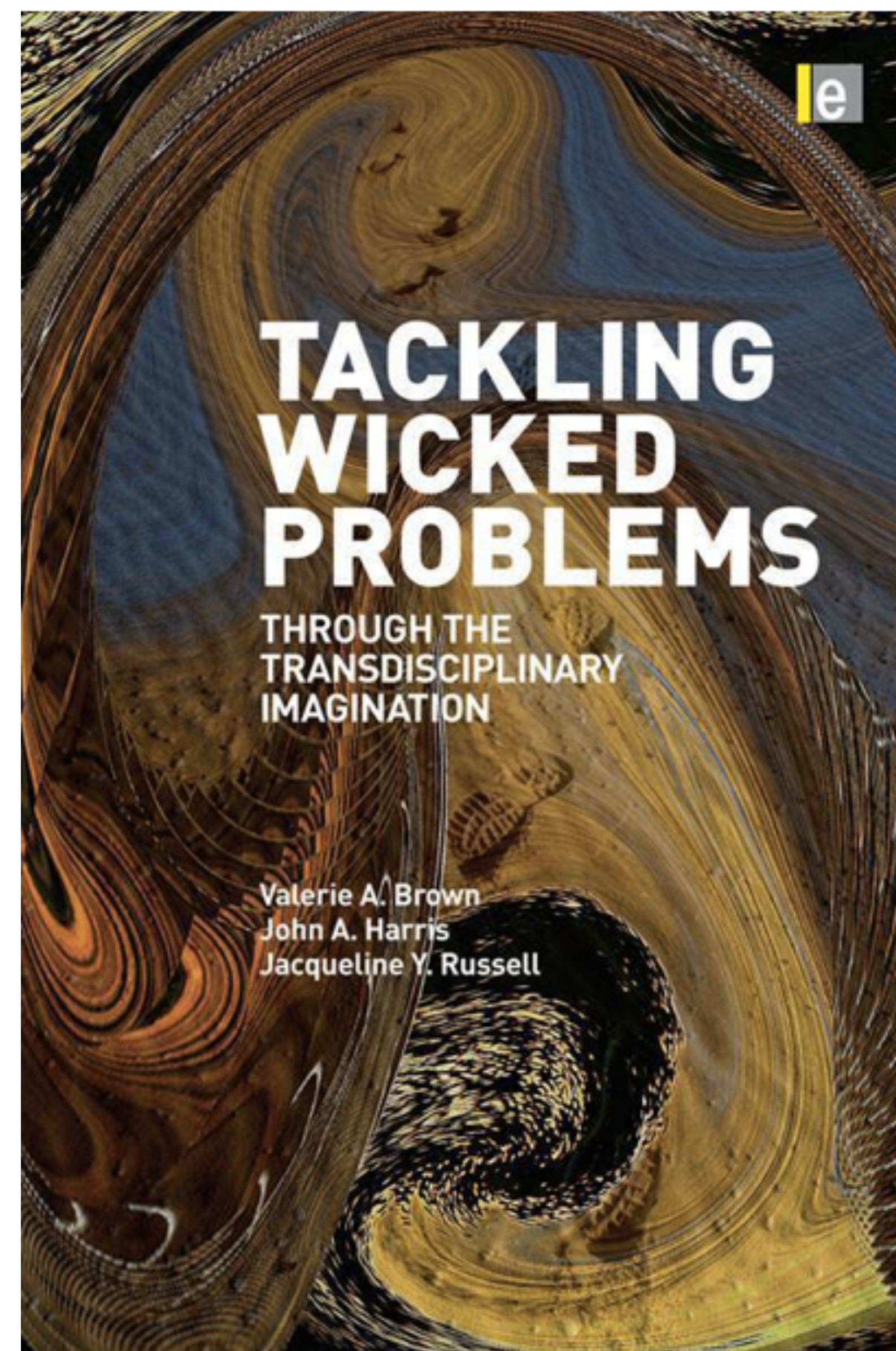
- complex issue that defies complete definition,
- there can be no final solution, since any resolution generates further issues,
- solutions are not true or false or good or bad, but the best that can be done at the time.



Brown et al., 2010.



# Wicked Problems



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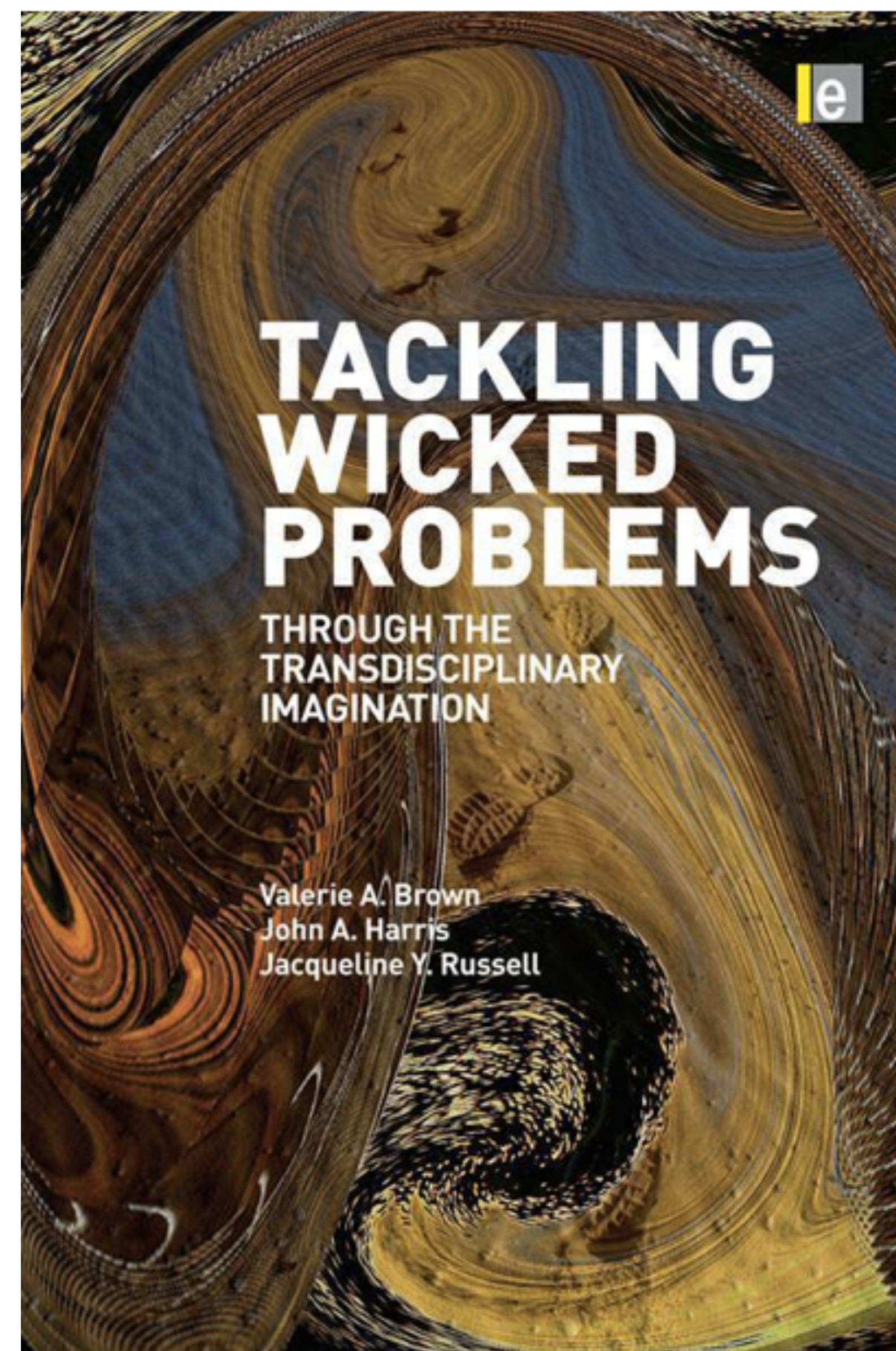
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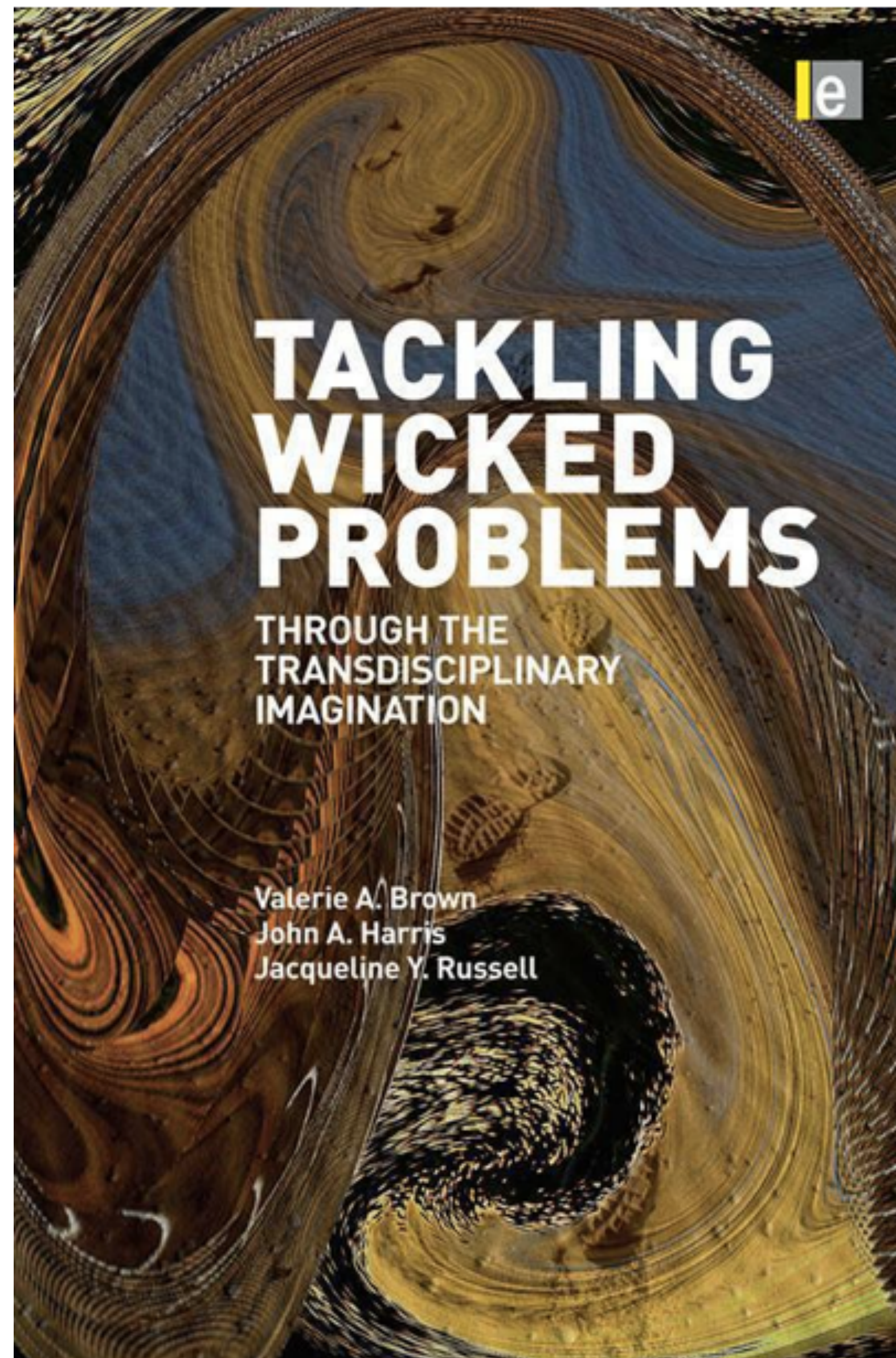
Wicked problems are:

- not morally wicked, but
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Tackling wicked problems:

- draw on all our intellectual resources,
- valuing the contributions of all the academic disciplines;
- valuing other ways in which we construct our knowledge.



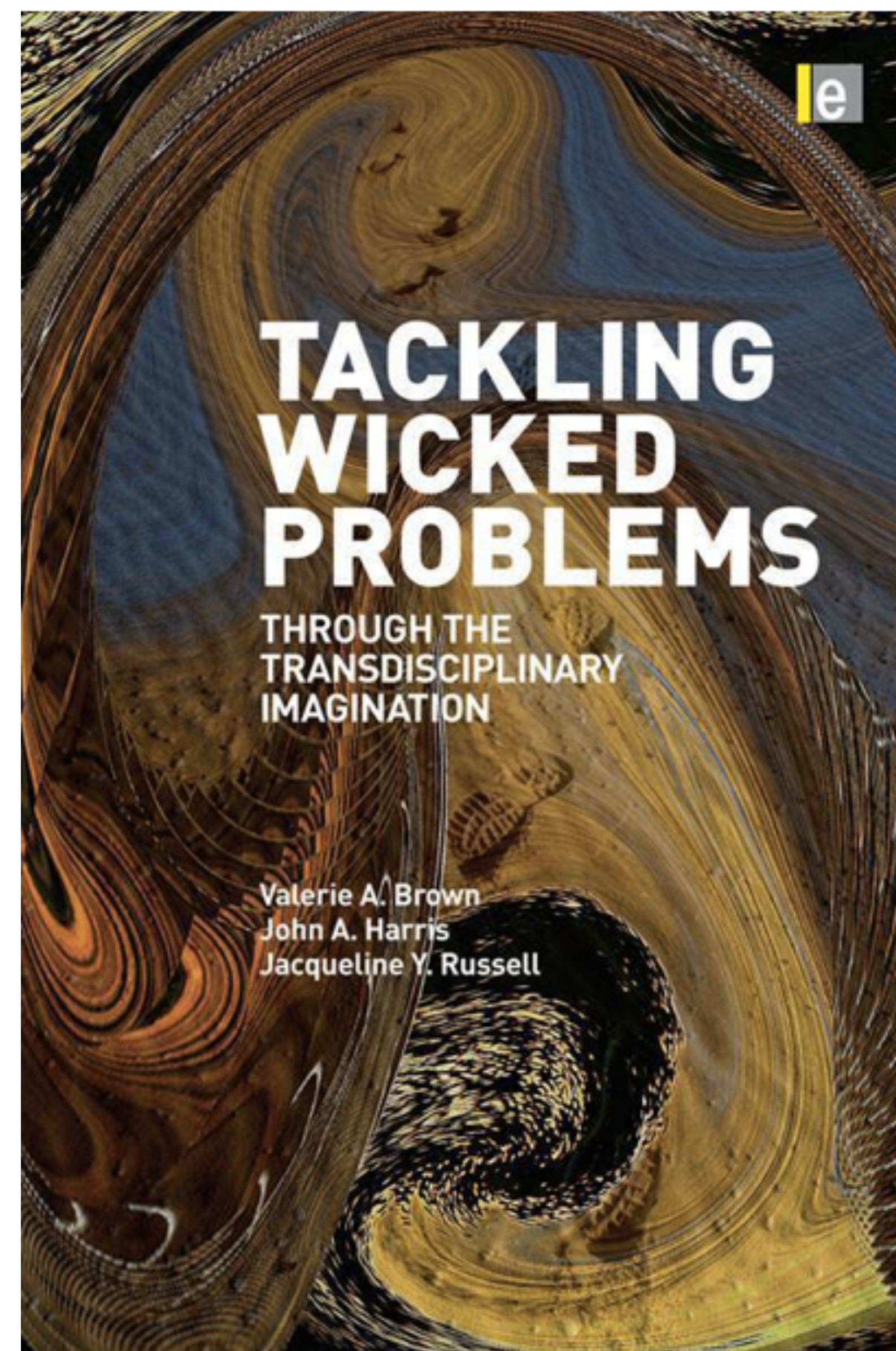


Challenge: developing open transdisciplinary modes of inquiry:

- capable of meeting the needs of the individual, the community, the specialist traditions, and influential organizations;
- allowing for a holistic leap of the imagination.



# Wicked Problems



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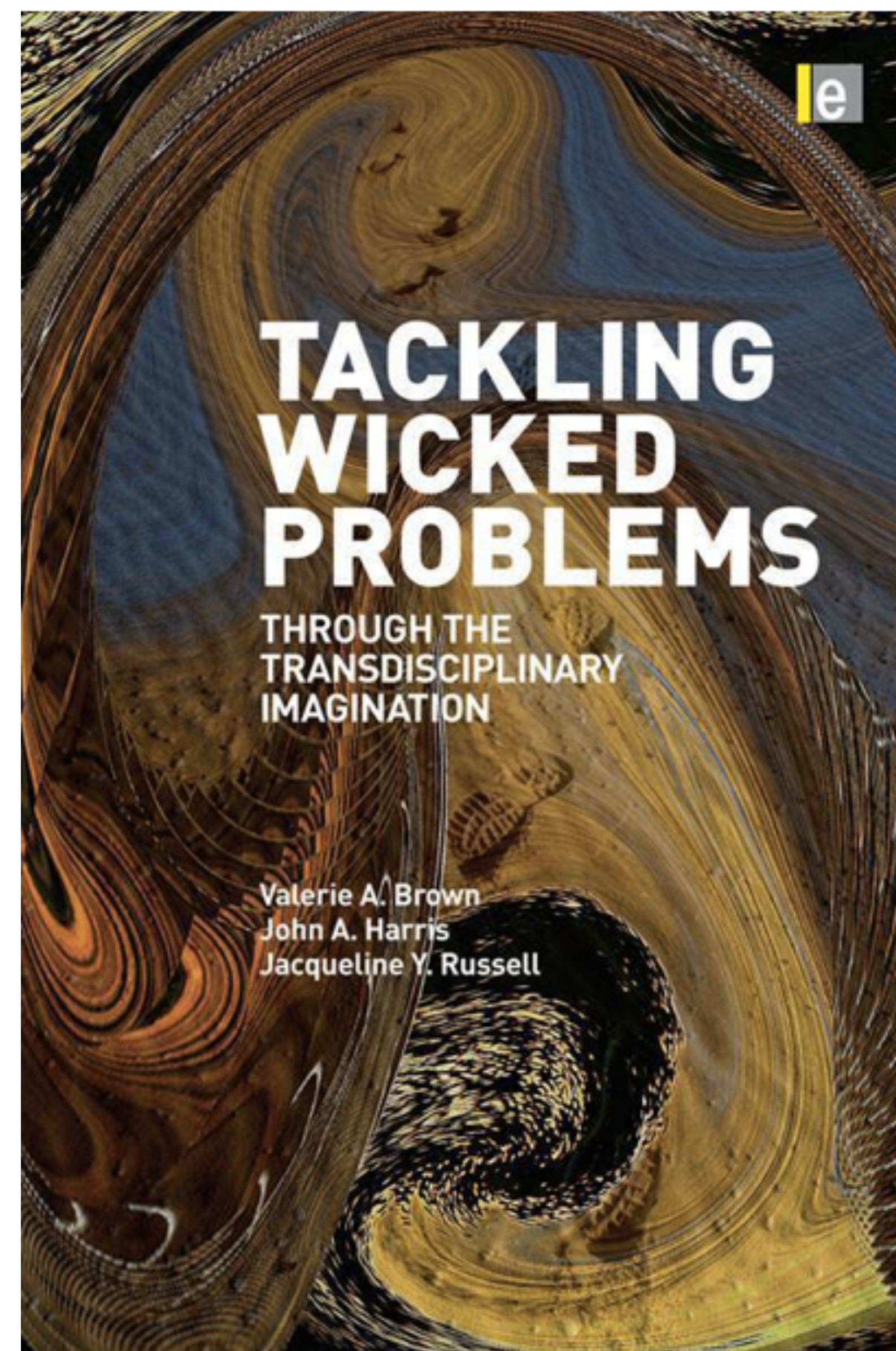
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Being transdisciplinary in the broad sense requires the use of imagination:

- Imagination is associated with creativity, insight, vision and originality; and
- Imagination is also related to memory, perception and invention.
- All of these are necessary in addressing the uncertainty associated with wicked problems in a world of continual change.



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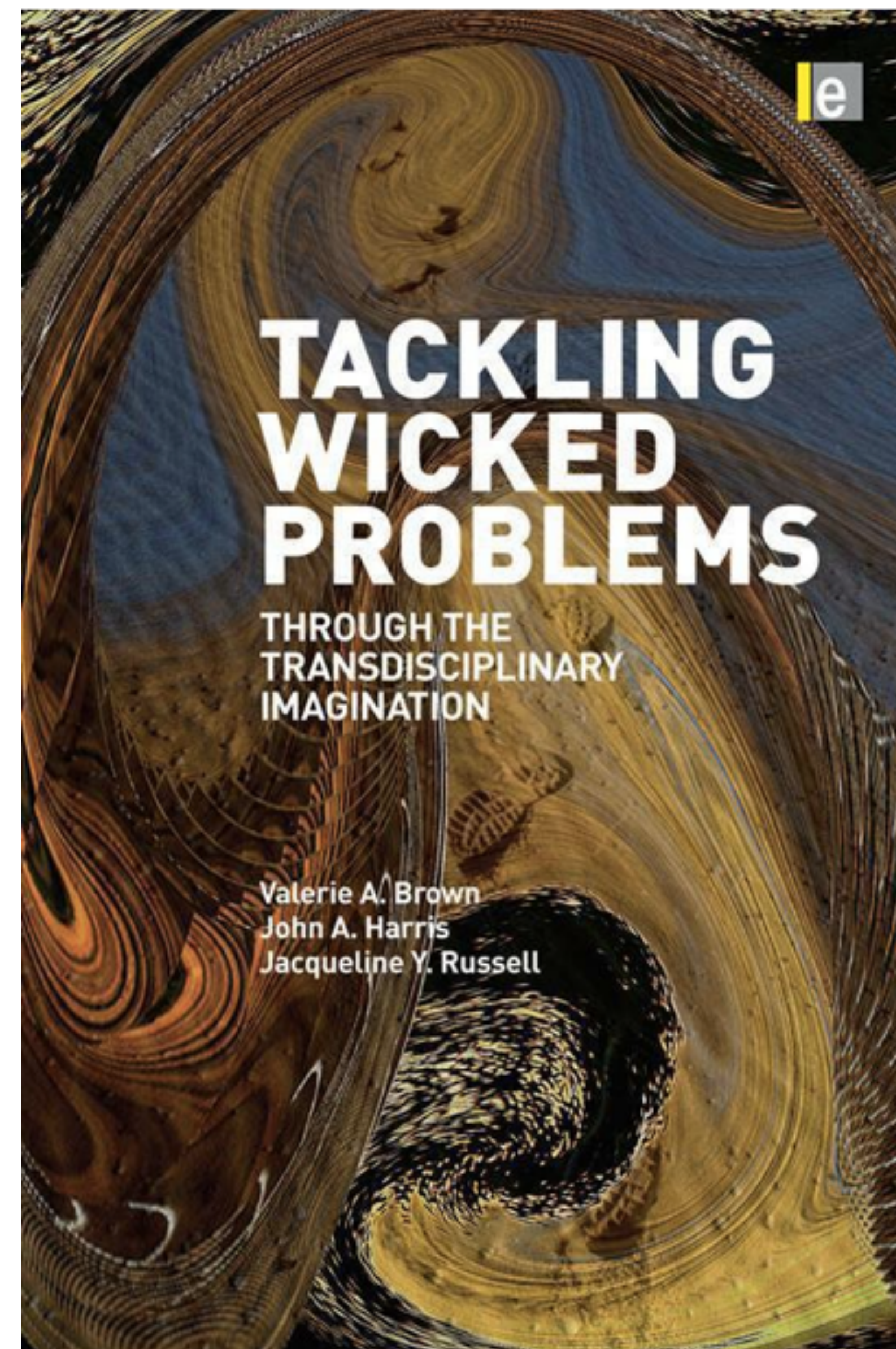
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‘Transdisciplinary’:

- the collective understanding of an issue;
- it is created by including the personal, the local and the strategic, as well as specialized contributions to knowledge.



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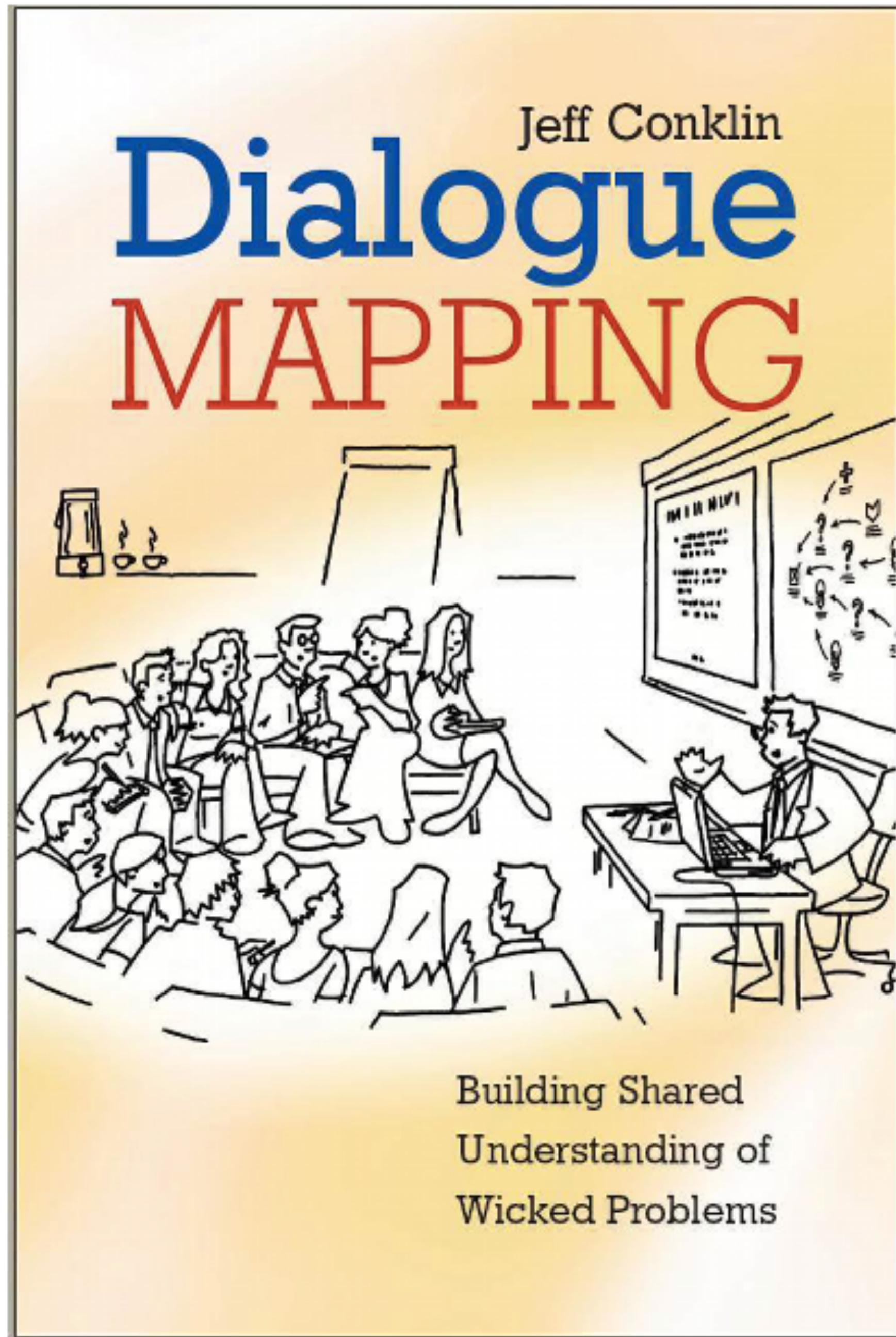
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Distinguished from:

- multidisciplinary inquiry: a combination of specializations for a particular purpose, such as in a public health initiative,
- interdisciplinary: the common ground between two specializations that may develop into a discipline of its own, as it has in biochemistry.

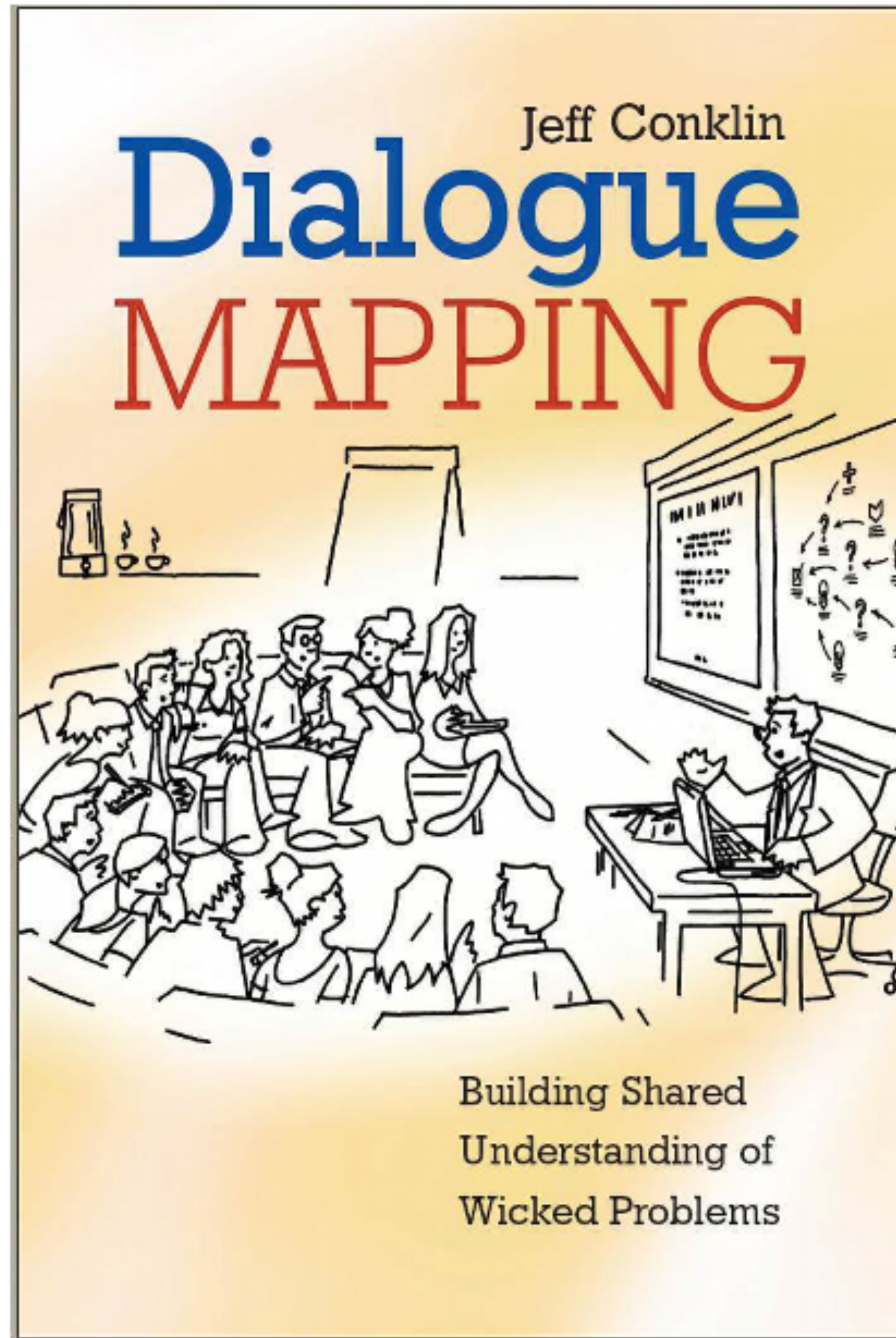




Concept of fragmentation:

- a name and an image for a phenomenon that pulls apart something which is whole.





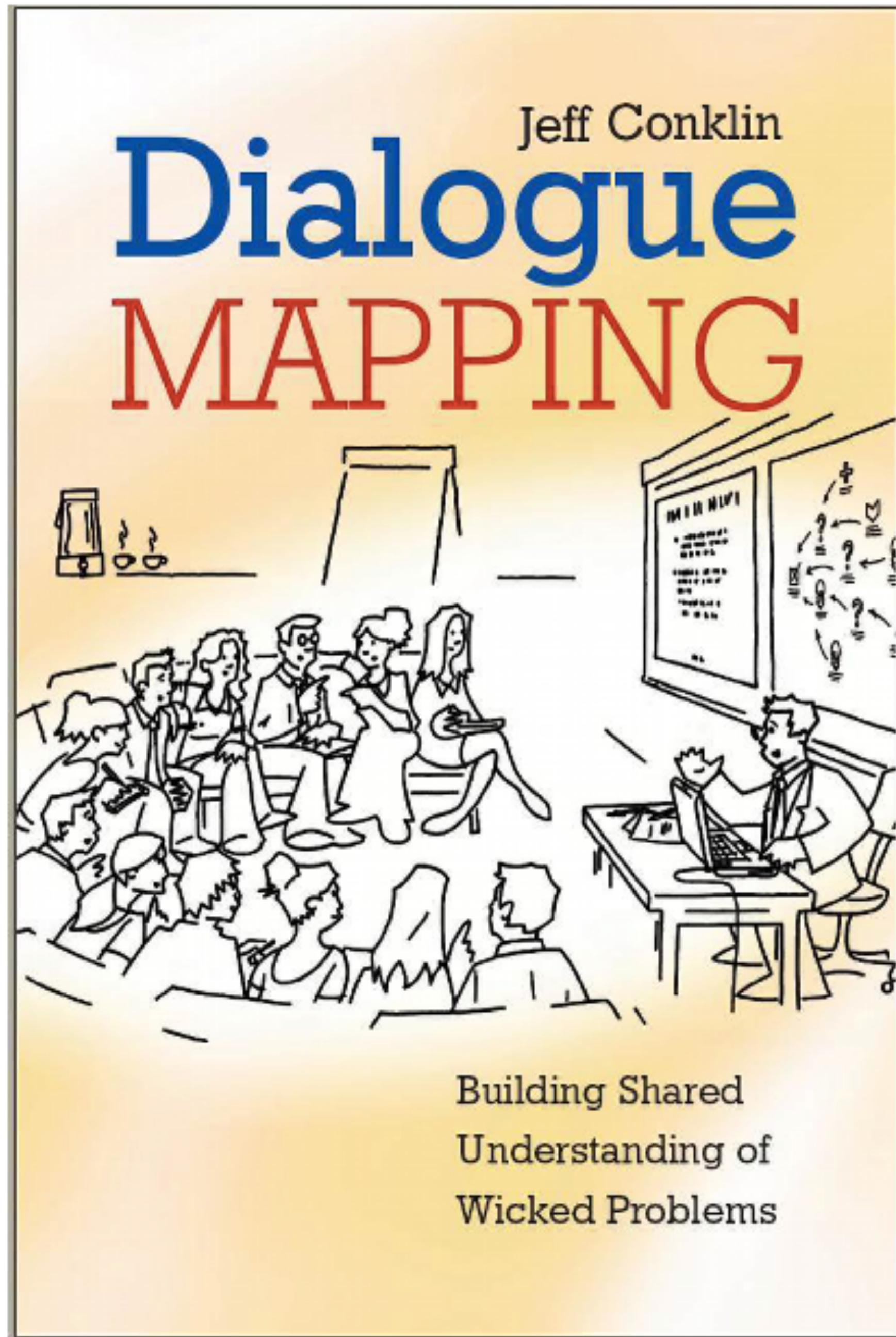
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Fragmentation suggests a condition in which:

- the people involved see themselves as more separate than united,
- information and knowledge are chaotic and scattered.



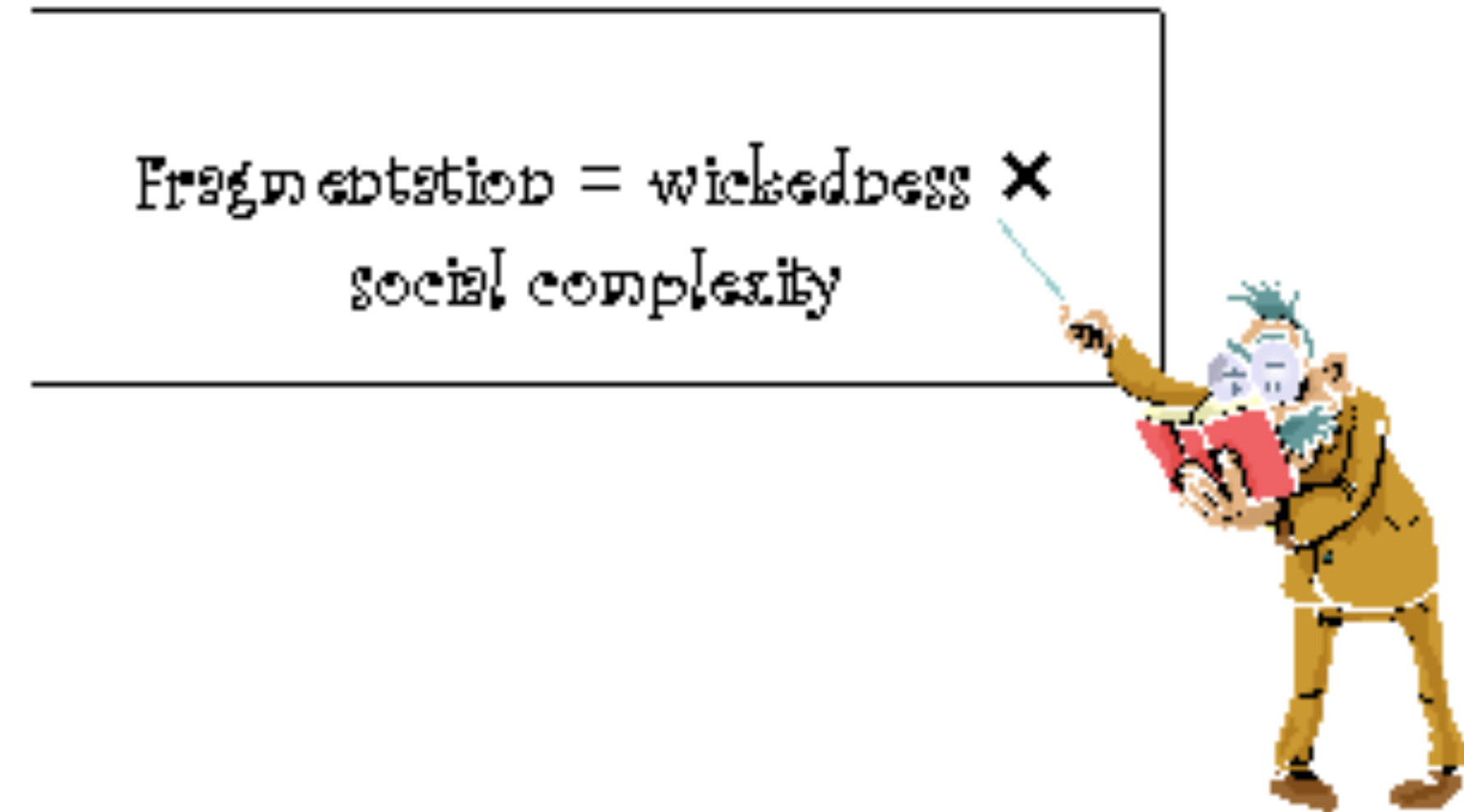


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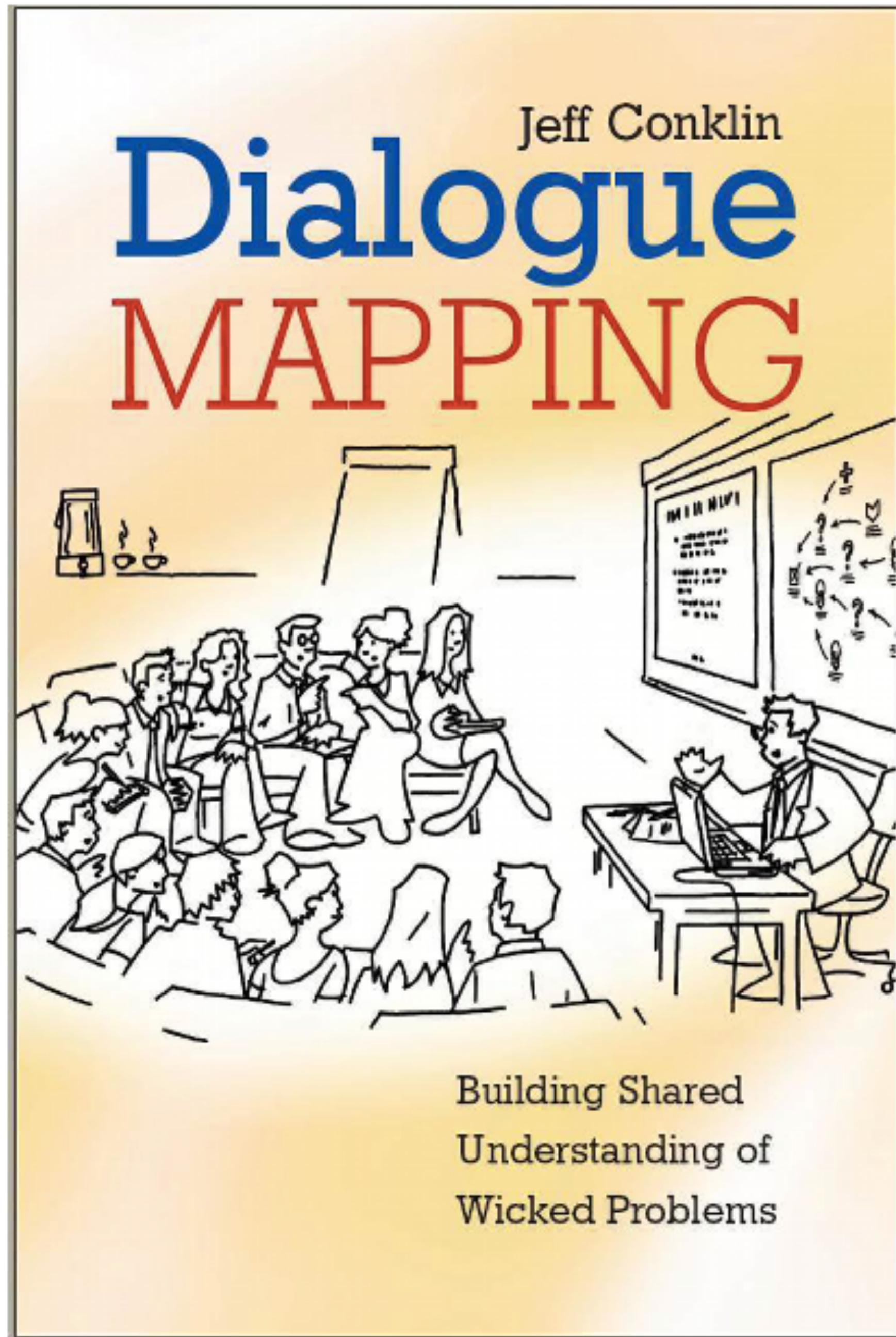
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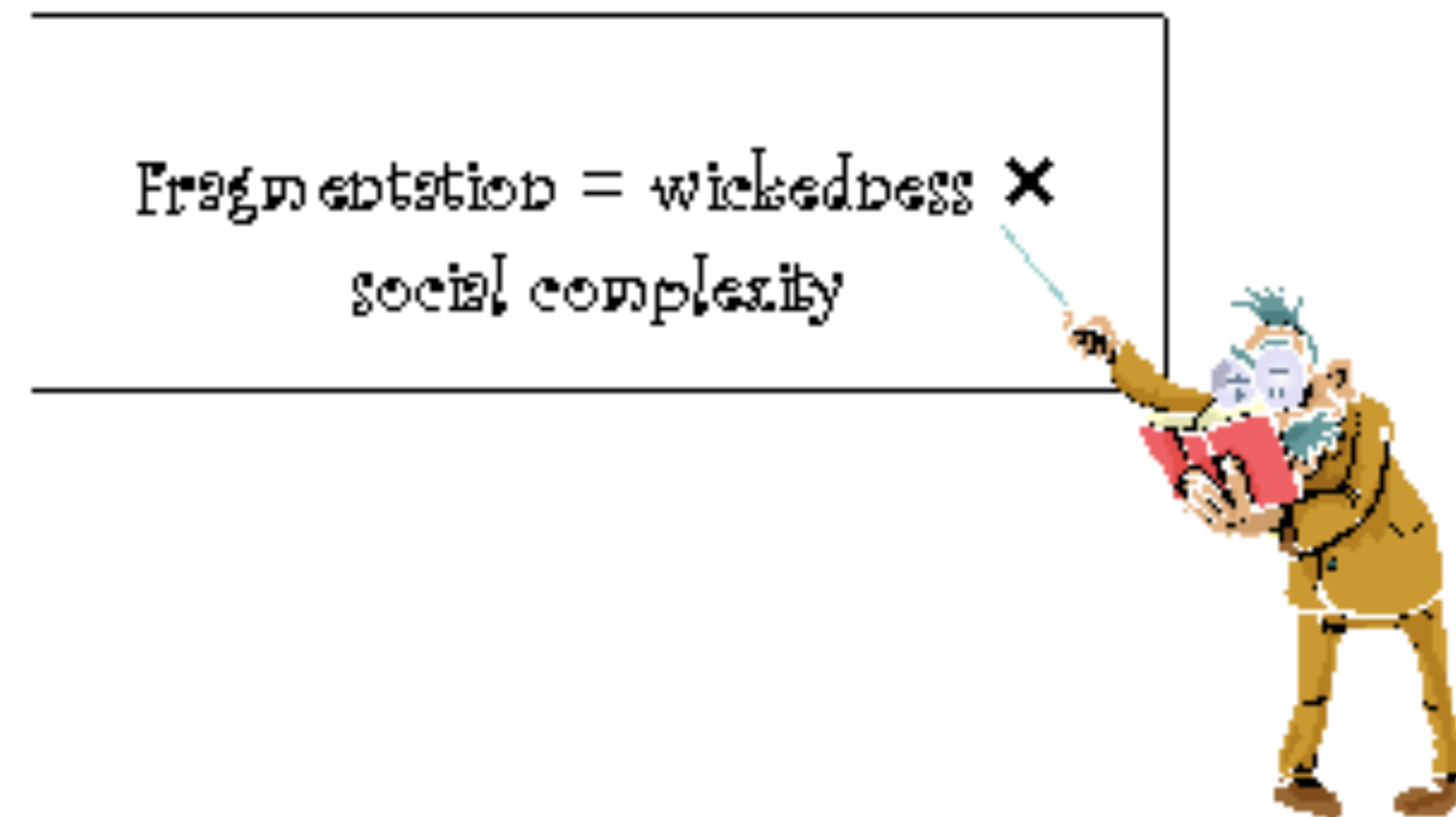


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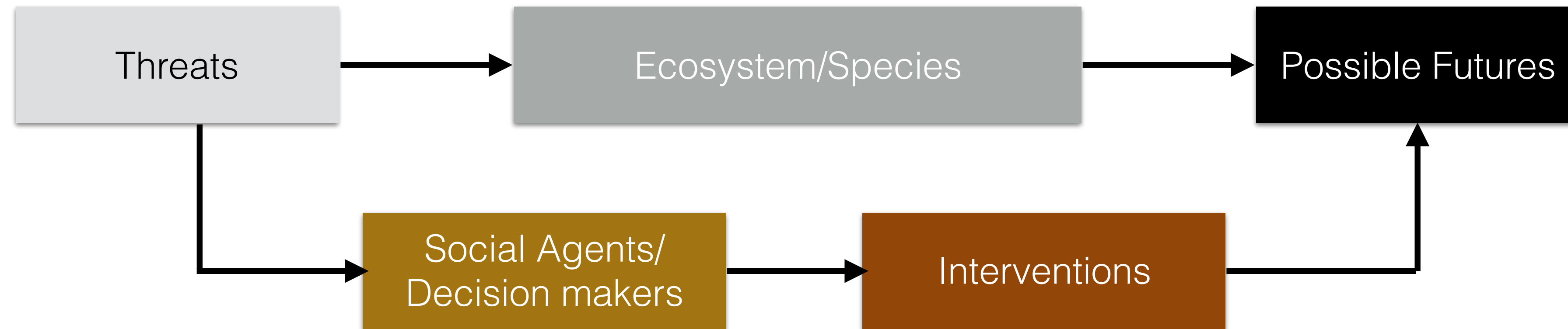
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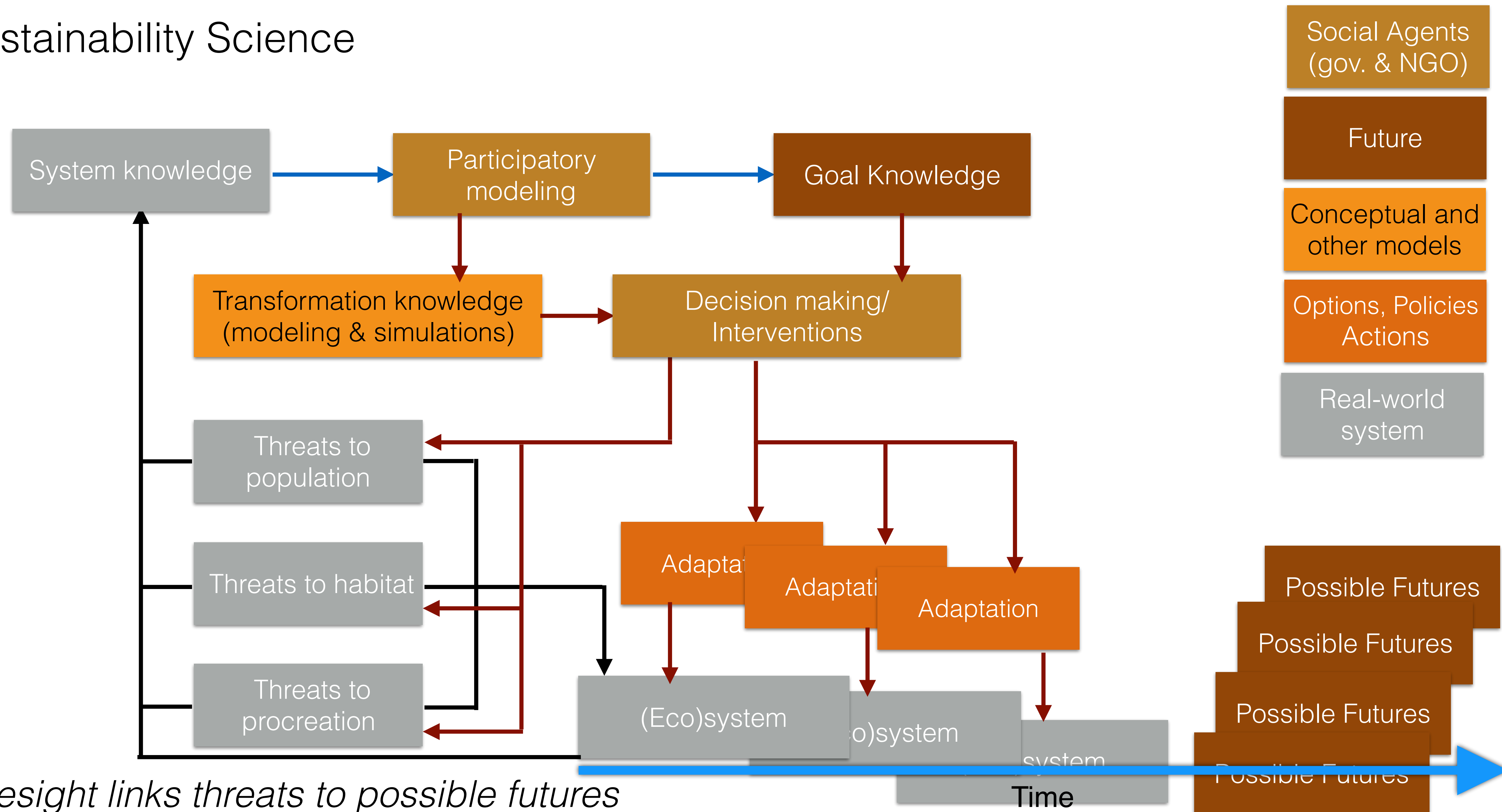
The antidote to fragmentation is shared understanding and shared commitment.

## Traditional Science





## Sustainability Science





# Mitigation and Adaptation Studies



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## Wicked Problems

ComMod

Multiple actors,  
Differing perspectives  
Conflicting interests  
Important intangibles  
Inescapable  
uncertainties.



## Wicked Problems

ComMod

**SOLUTIONS  
ARE NOT  
THE  
ANSWER.**

Solutions are not right or  
wrong but more or less  
**acceptable**

There is no stopping rule.

The answer is a **process**

Class on  
Participatory  
Modeling, March  
23, 2014  
Introductory  
Presentation by  
Claude Garcia

Each solution is

- unique
- costly
- ...and has consequences



- Authoritative
- Competitive
- Collaborative

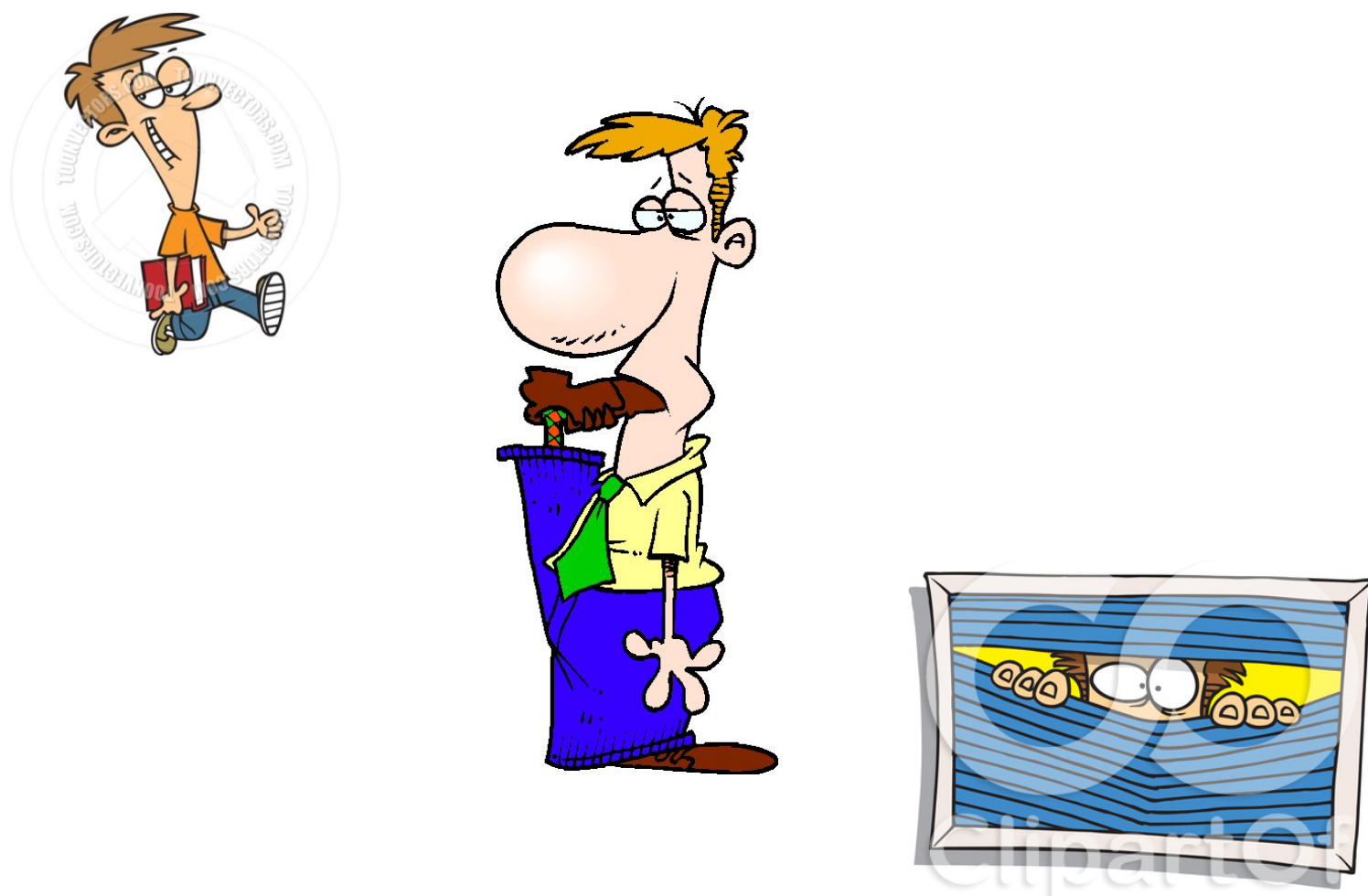




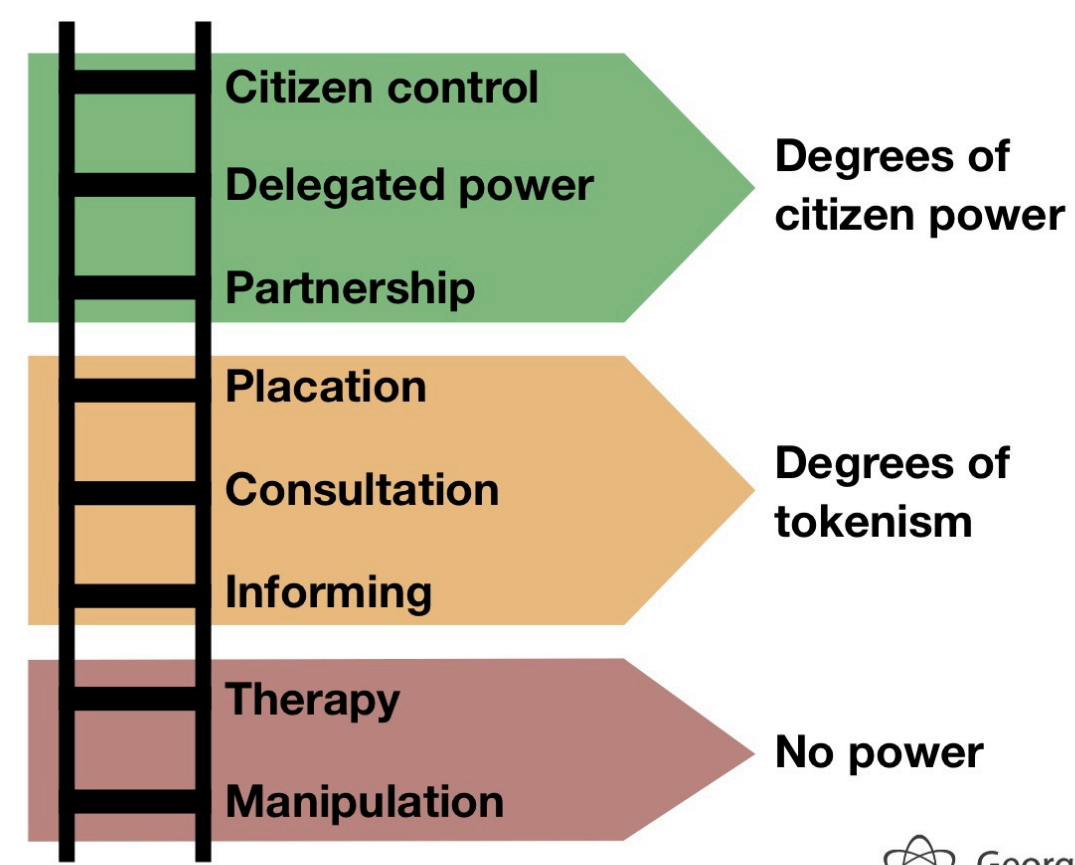
# Participatory Modeling

## The trouble with experts

## On participation

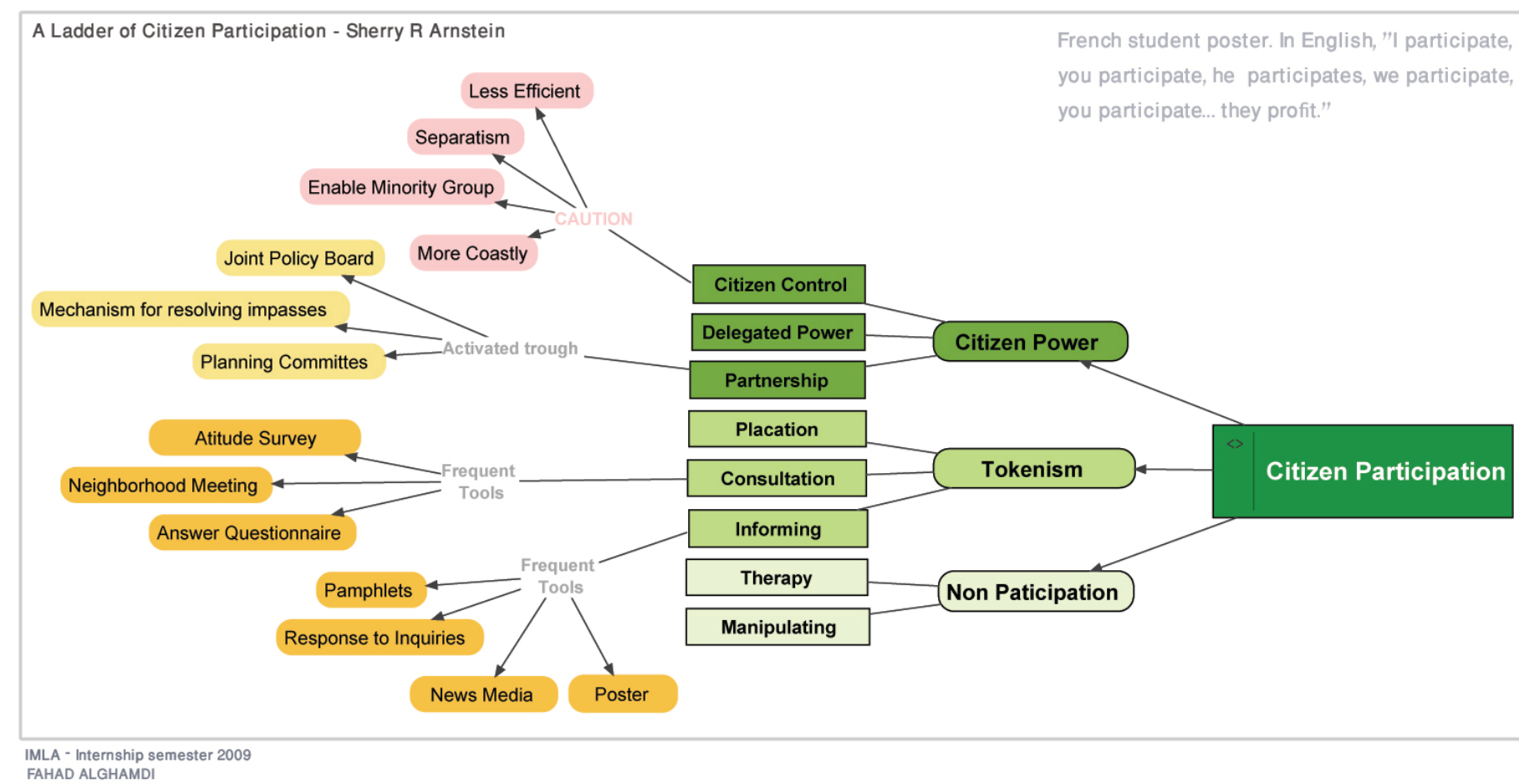
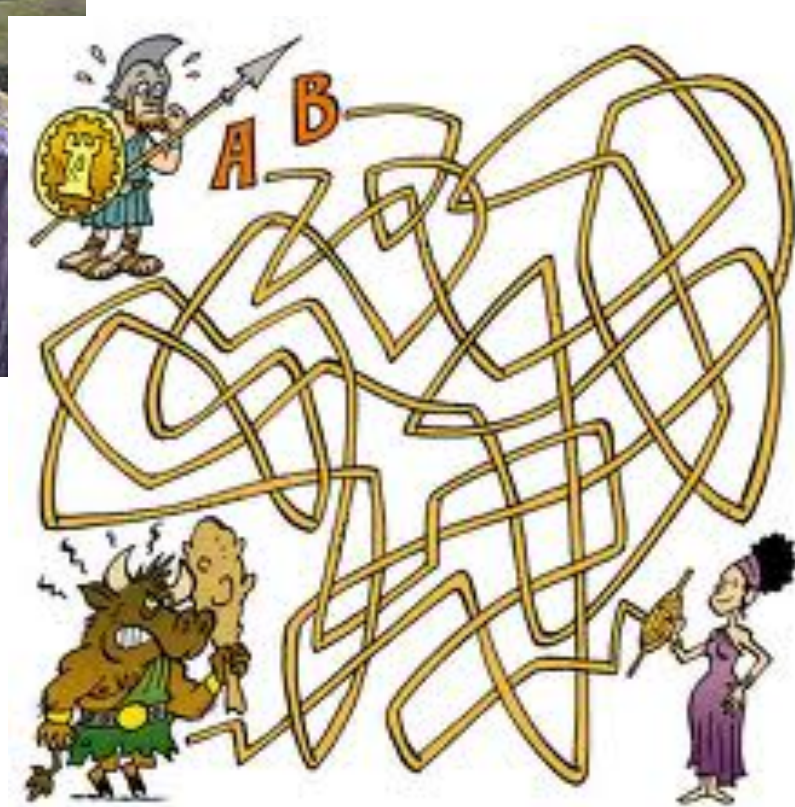


Arnstein (1969) Ladder of citizen participation



 George Julian  
Knowledge Transfer Consultancy

<http://www.georgejulian.co.uk/2013/01/22/social-media-and-citizen-engagement/>

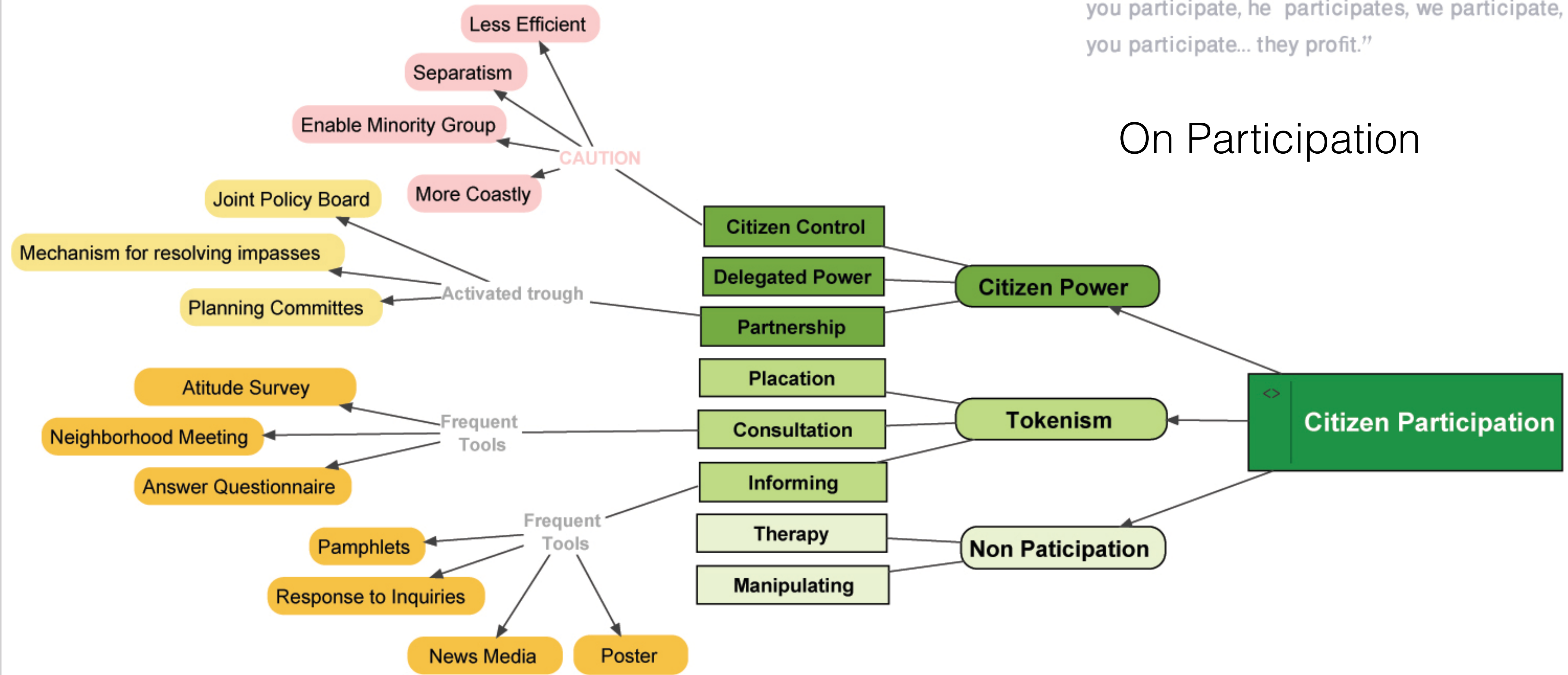


[http://fluswikien.hfwu.de/index.php/File:Arnstein\\_ladder\\_of\\_participation\\_fahad.jpg](http://fluswikien.hfwu.de/index.php/File:Arnstein_ladder_of_participation_fahad.jpg)



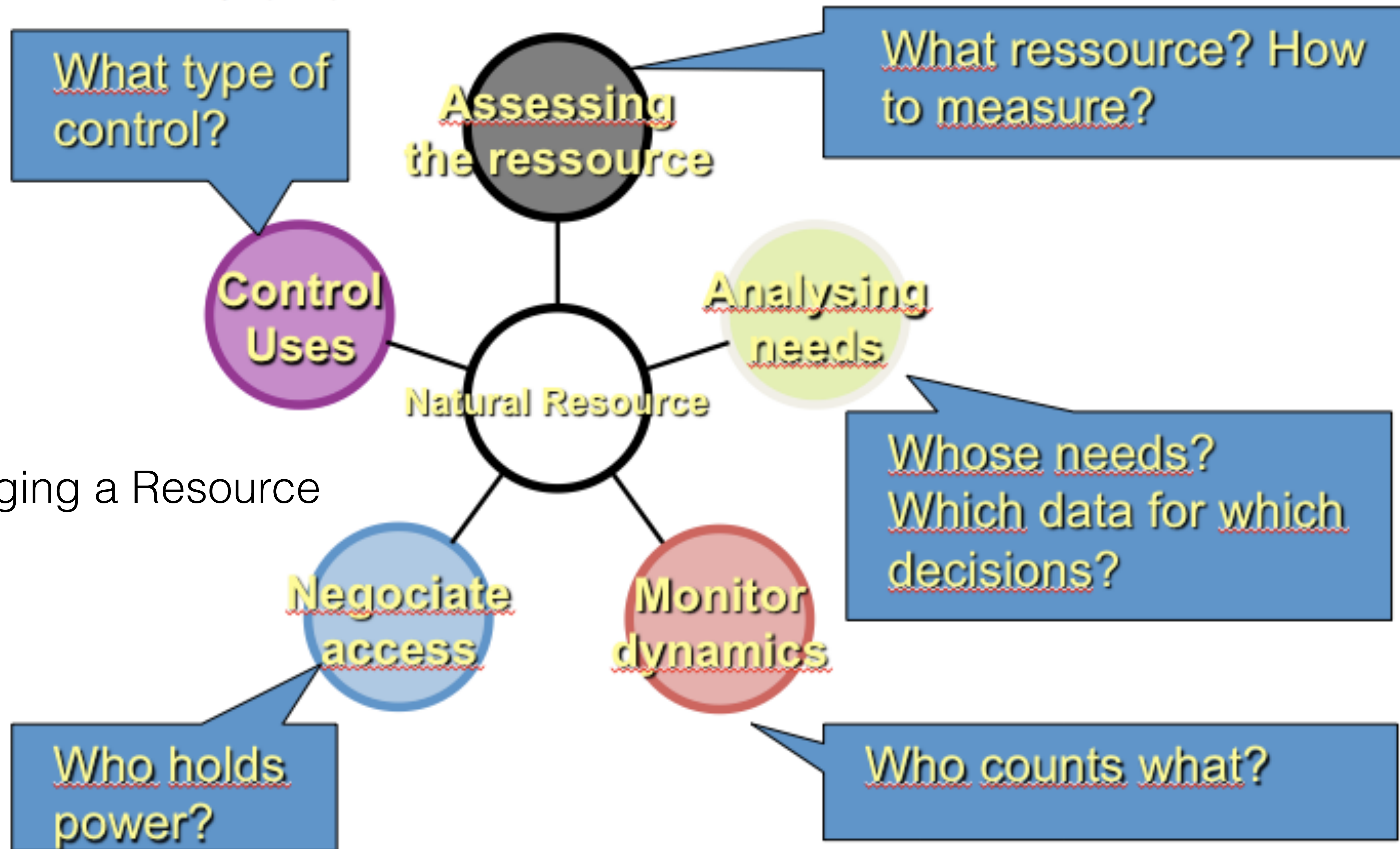
# Participatory Modeling

A Ladder of Citizen Participation - Sherry R Arnstein





*Garcia and Lescuyer (2009)*



Managing a Resource

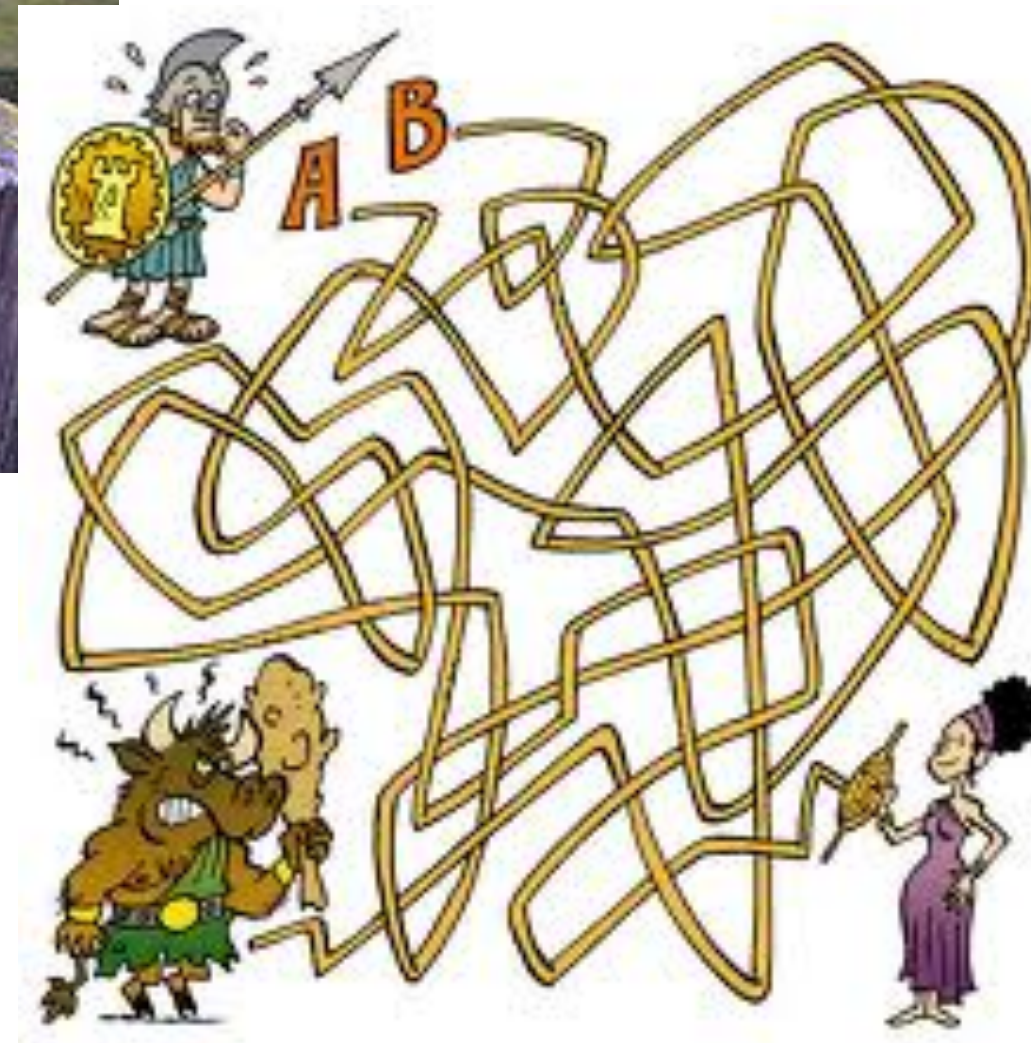


## *Participatory modelling*

ComMod

## *Participatory Approaches*

ComMod

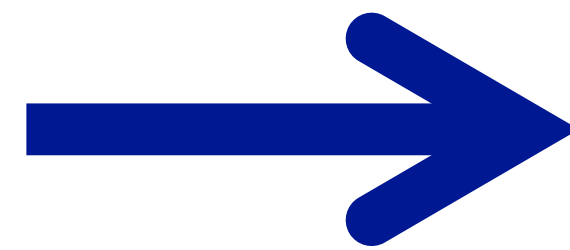


### Assumptions and Principles

- 1) Involve all stakeholders, collaboration
- 2) New ways of working together
- 3) Management = process
- 4) Managers = designers and facilitators
- 5) Solutions: institution-building, rule-making, planning
- 6) Scale: local social-ecological sustainability, global regimes



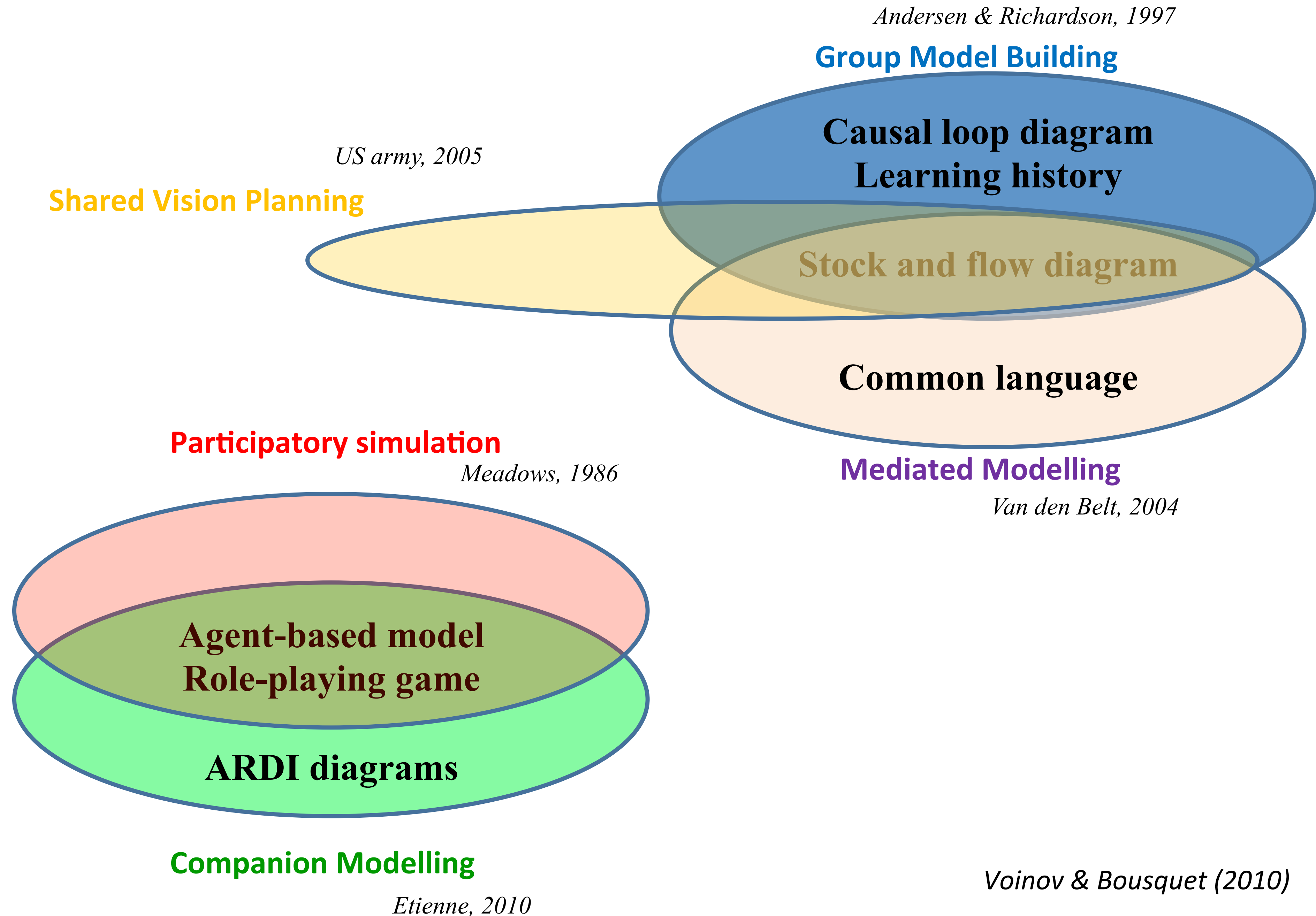
- ✓ Search for unity of agency („we“)
  - ✓ Coordination of stakeholders and collaborative procedures
- Participatory Approaches



Search for processes that will transform divided societies...

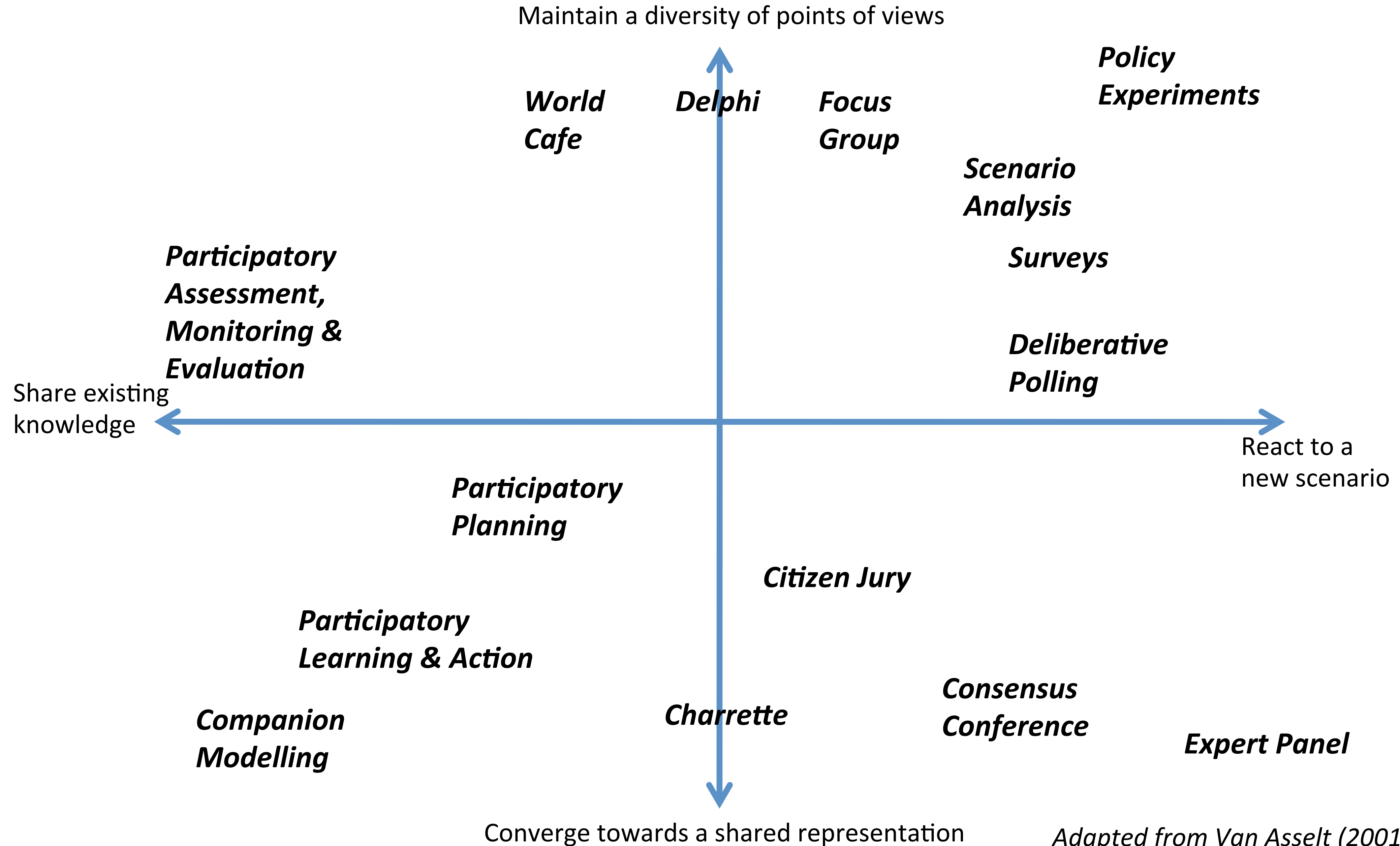
into unified managers of ecosystems







# Participatory Modeling





# Participatory Modeling

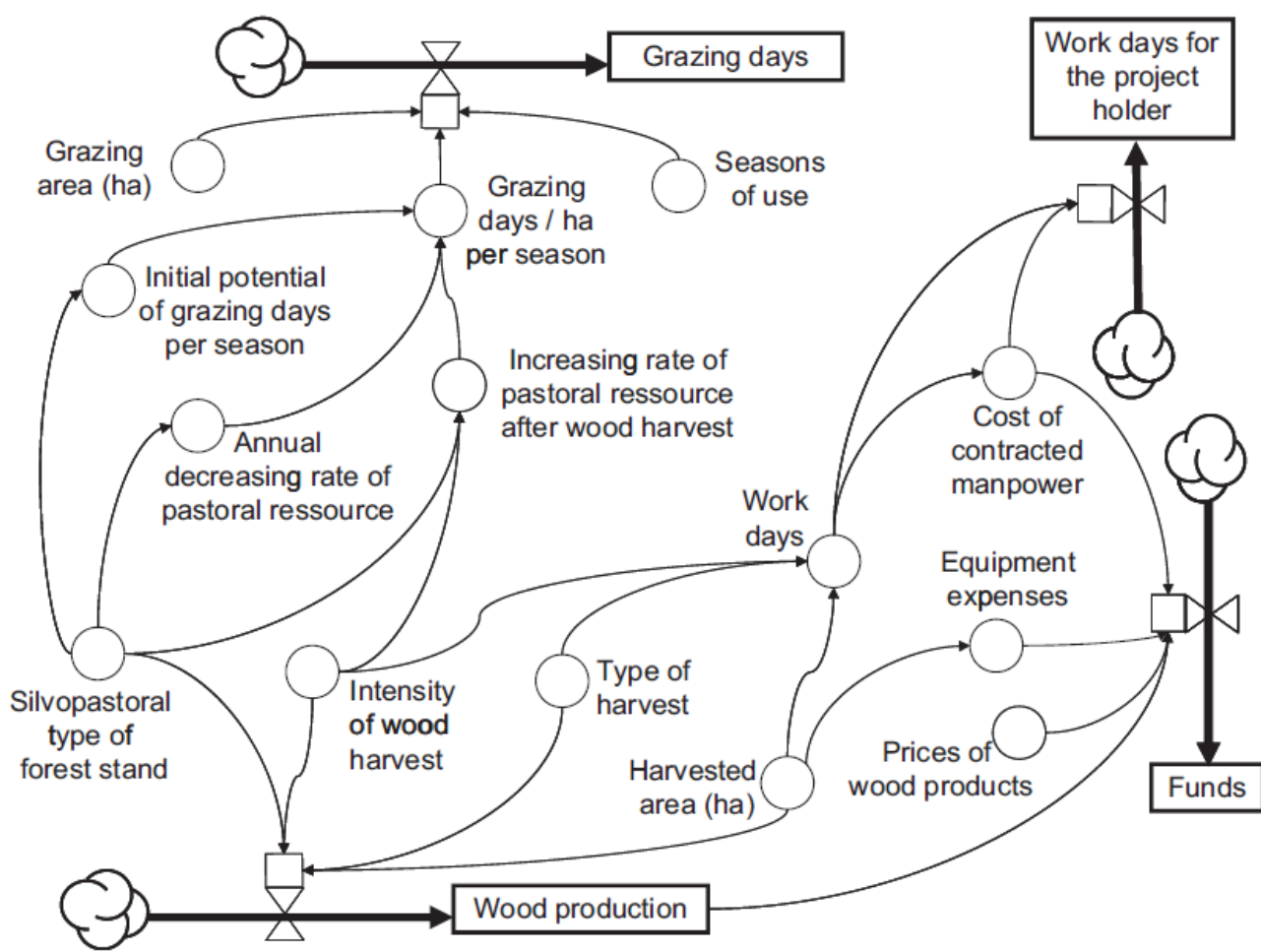
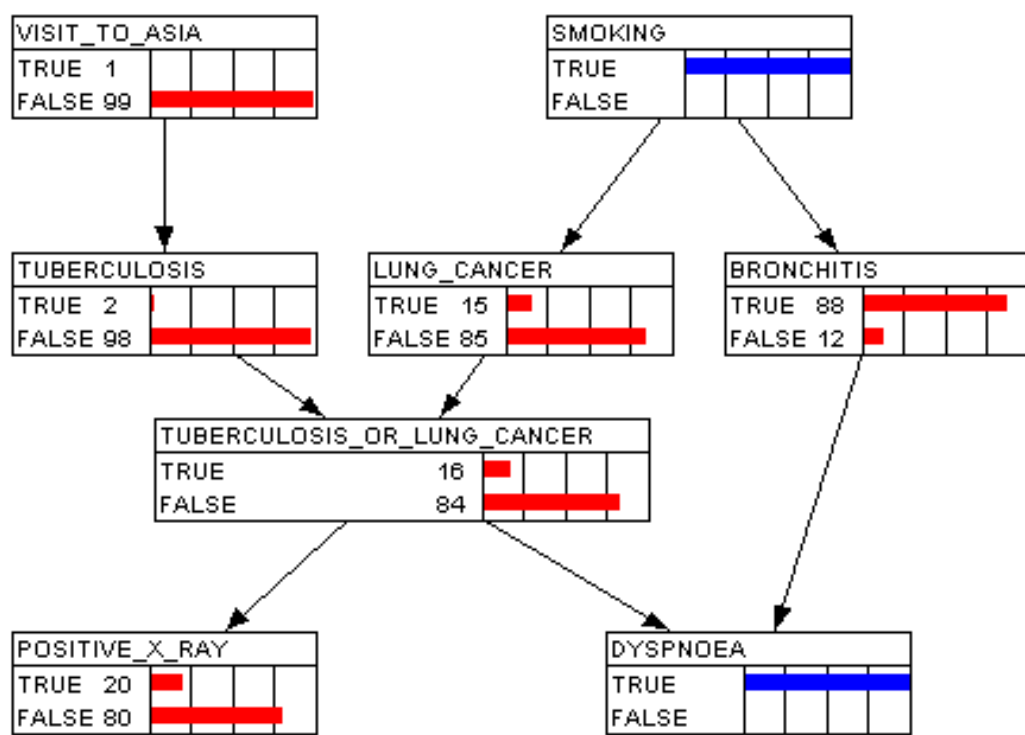


Fig. 2. Stock and flow diagram showing the interrelationship between key variables.

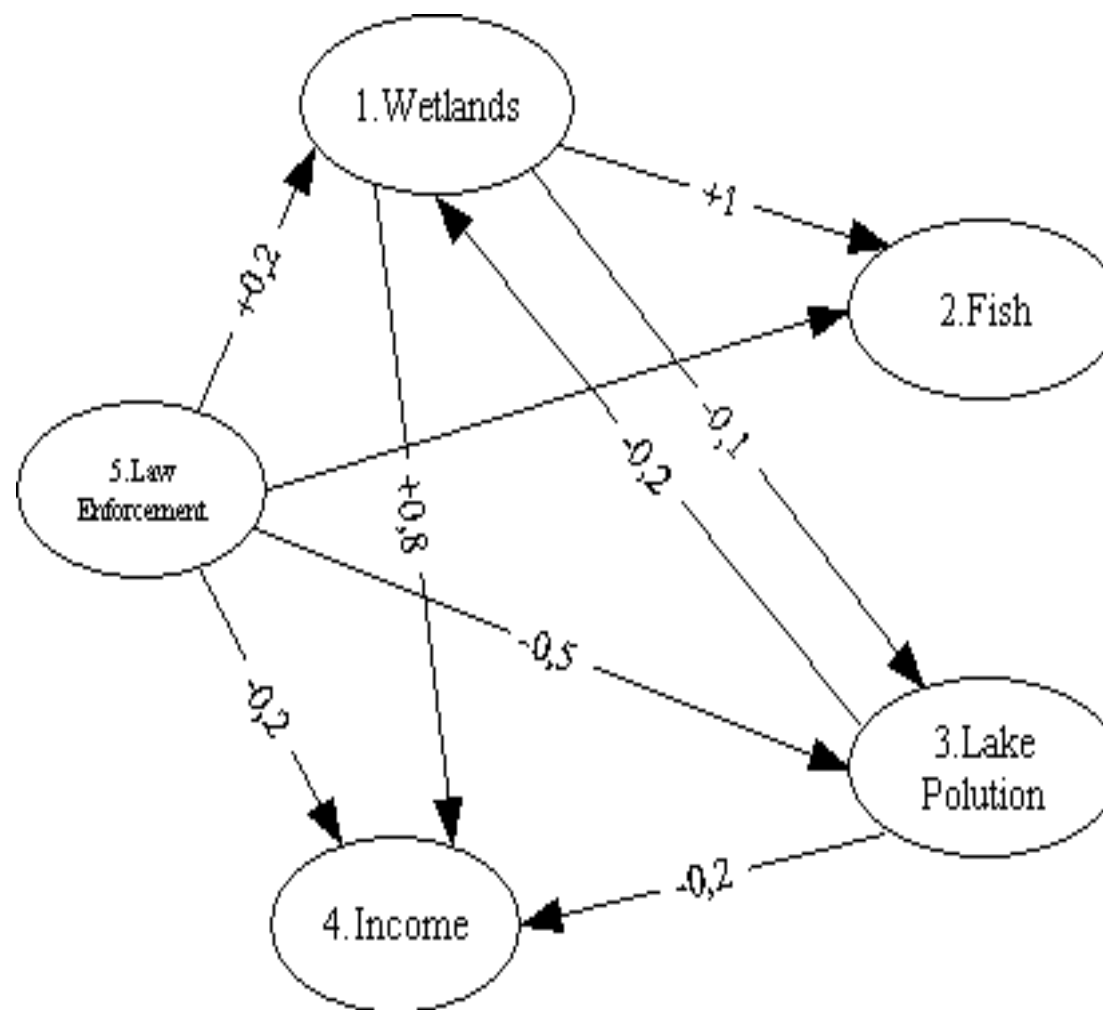
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Stock and flow models, feedback loops



## Bayesian belief networks

Conditional probabilities between variables

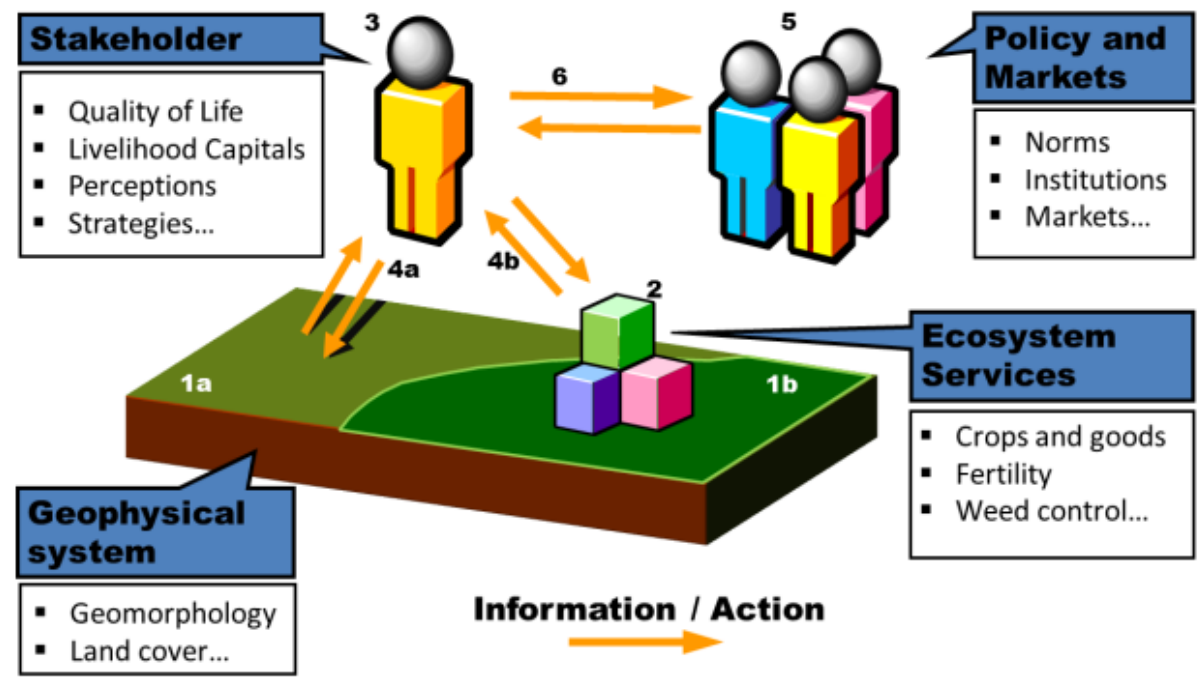


## Fuzzy cognitive mapping

weighted connections between nodes

## Agent-based models

decision rules based on states of the environment and the communication modalities





# Participatory Modeling

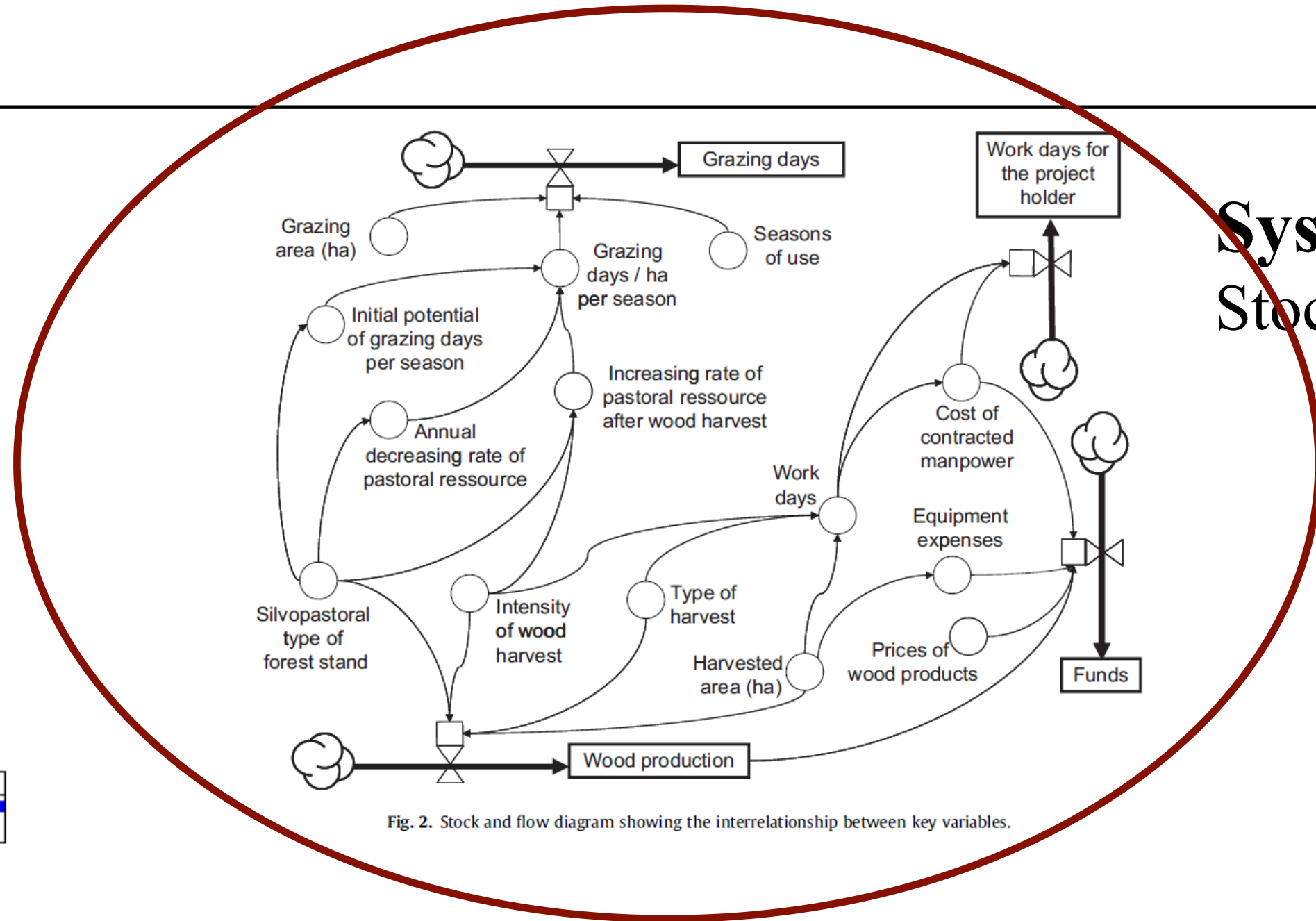
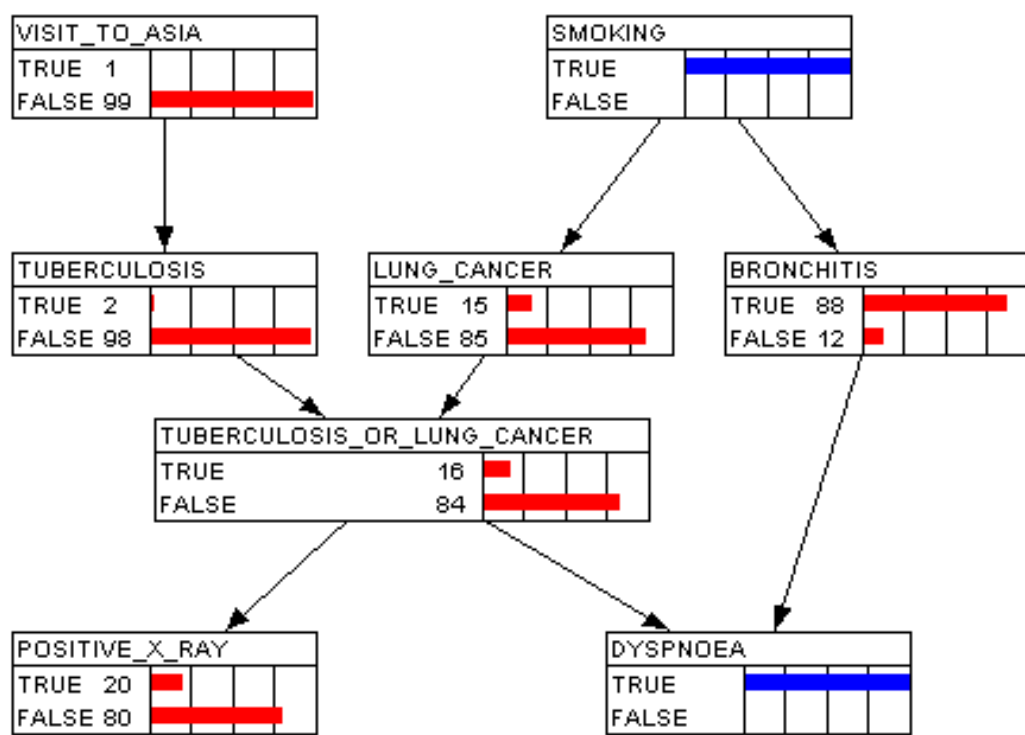


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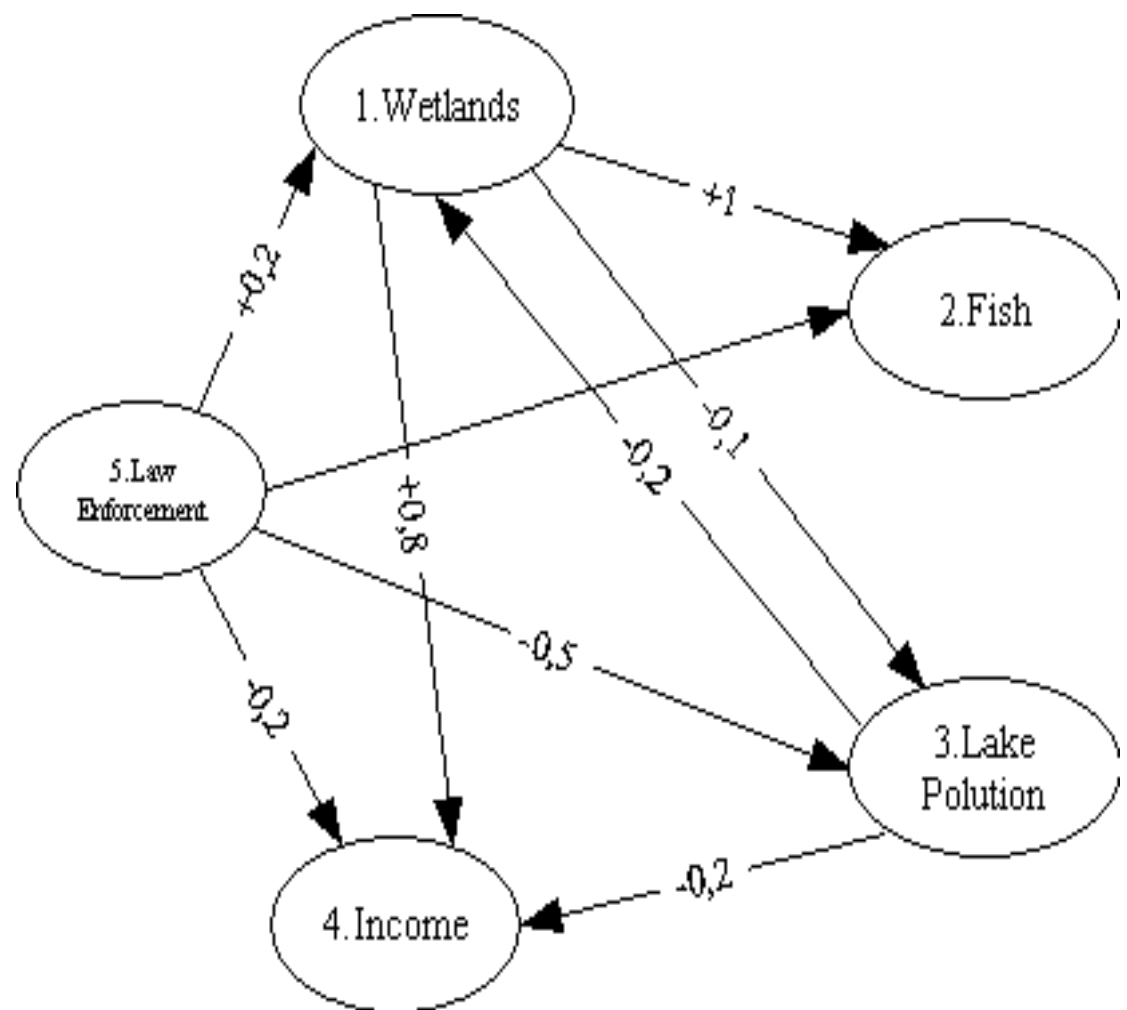
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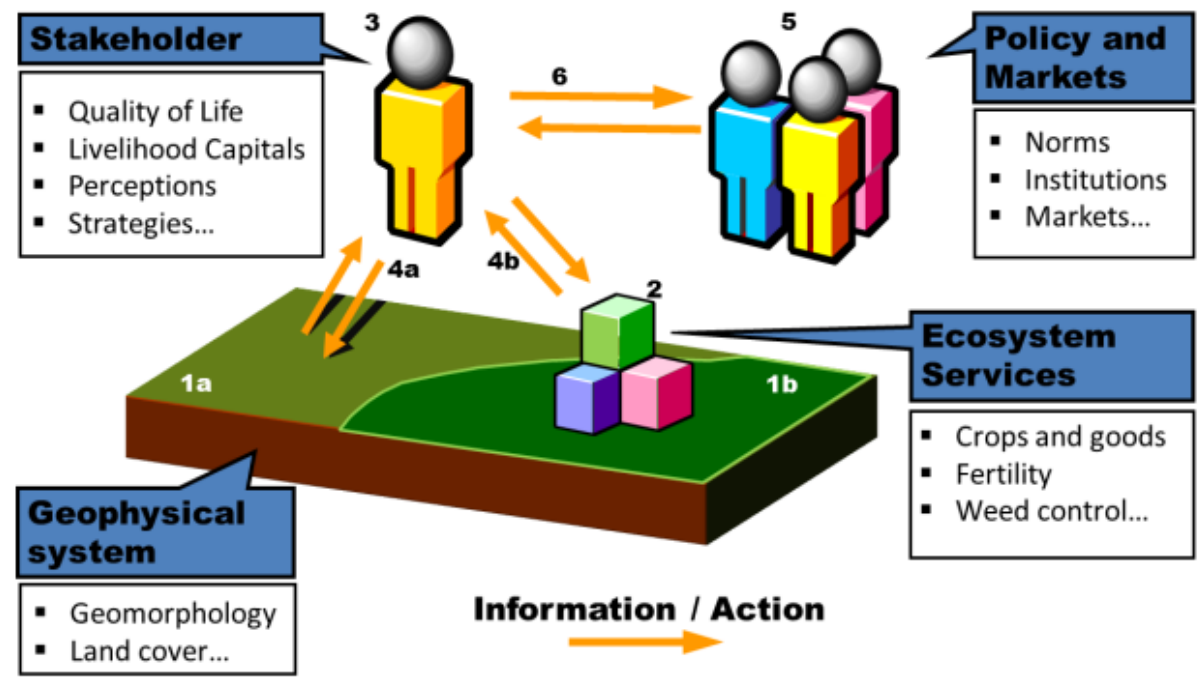


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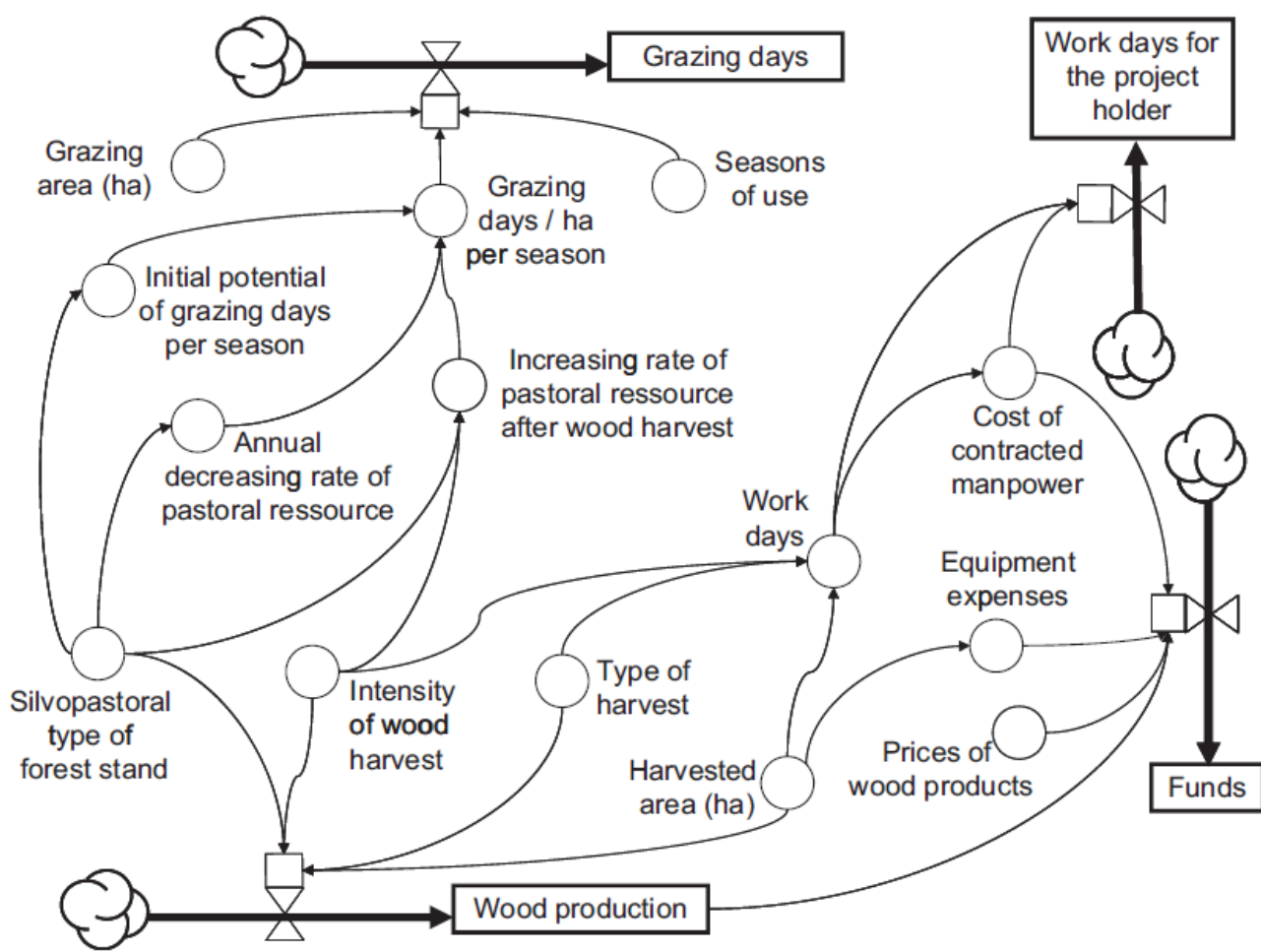
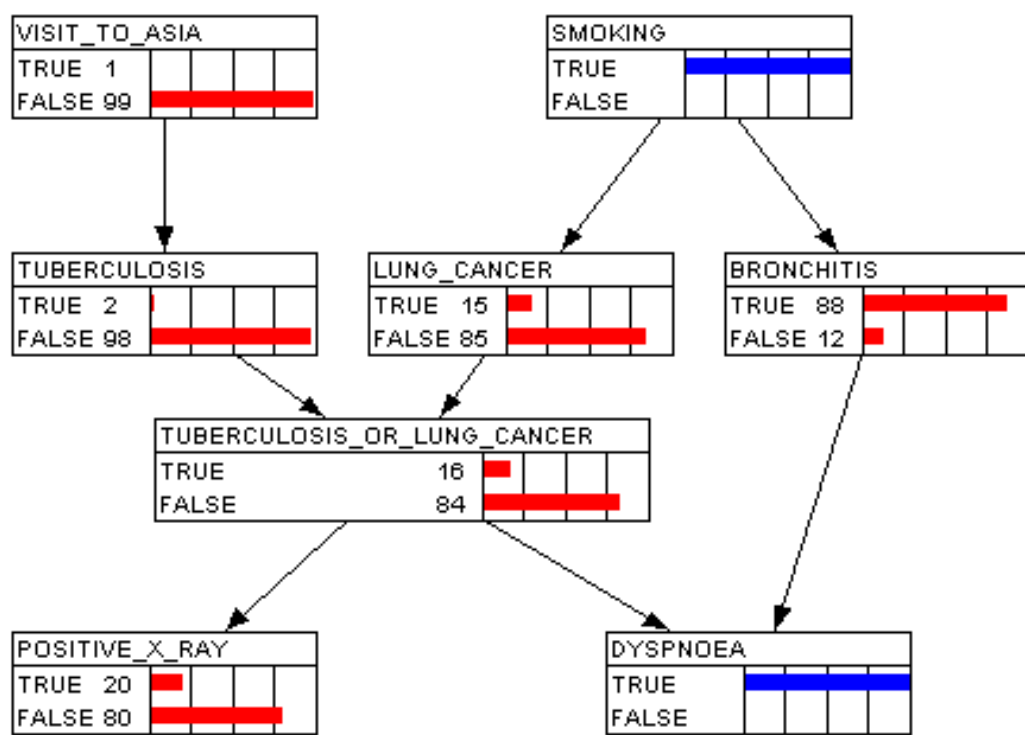


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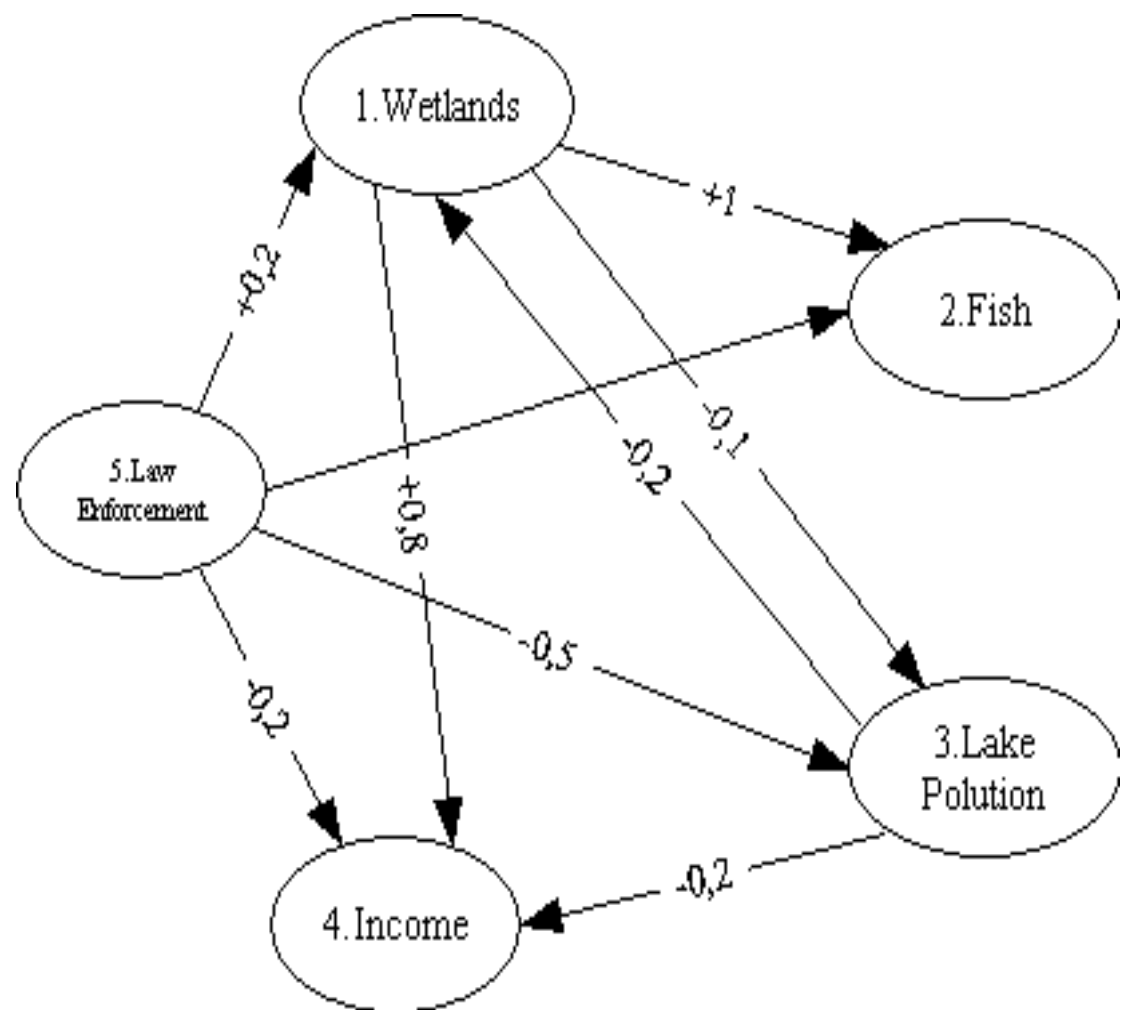
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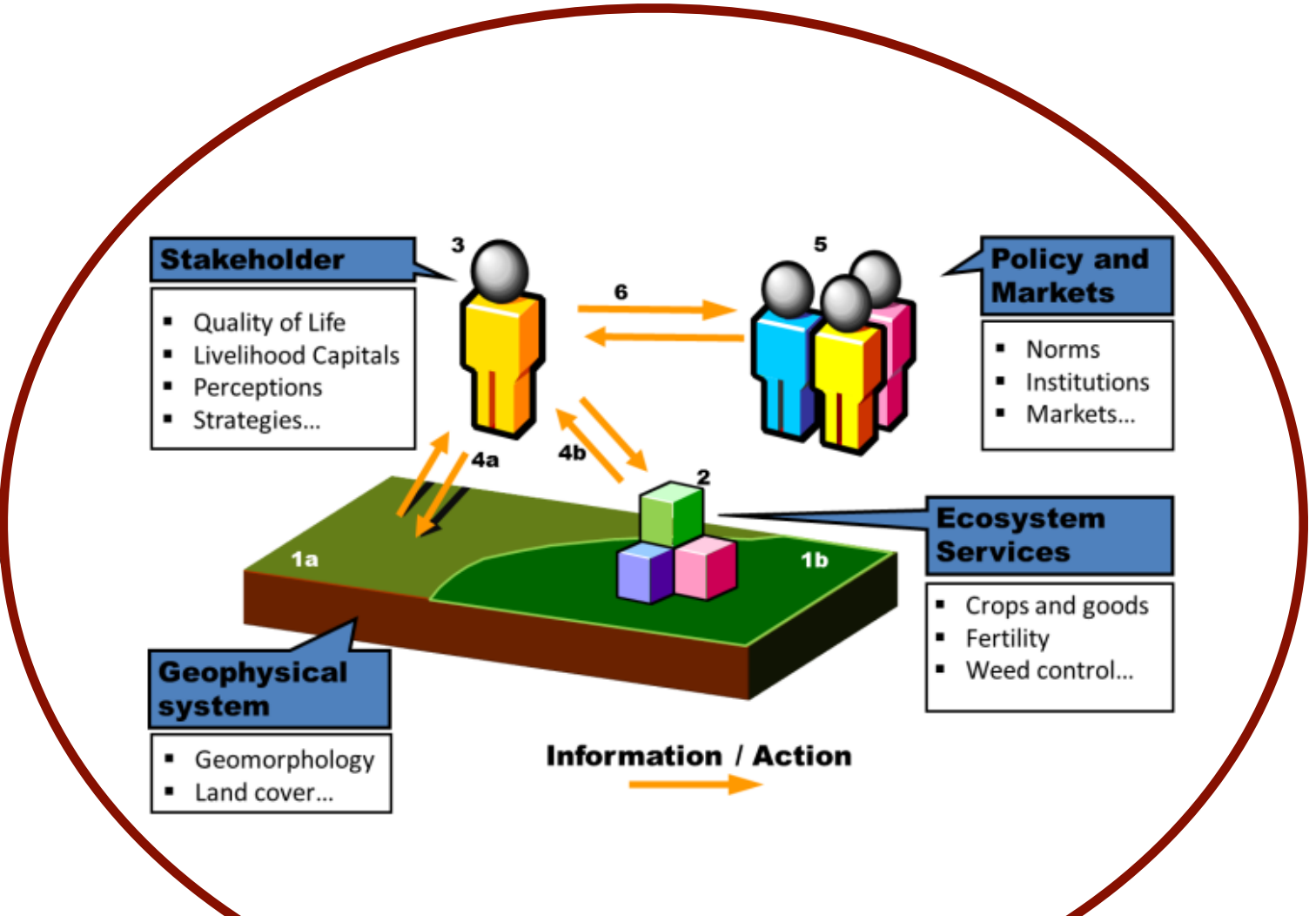


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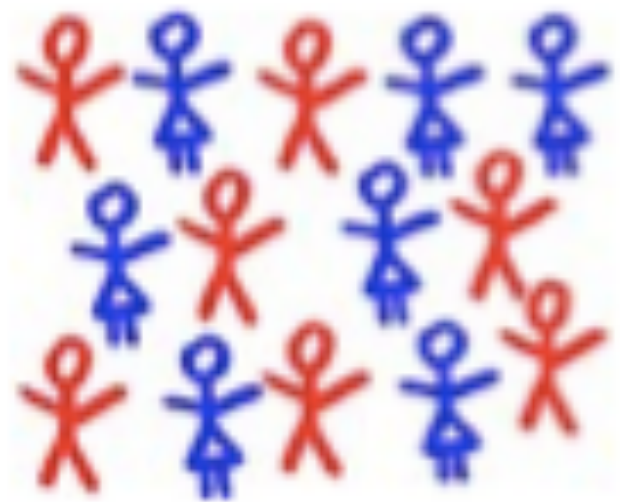
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## Blind Spots



- **AGENCY**



Lack of clarity on who is going to take action, who defines and implements the management strategy.



- **CONFLICTS**



Tendency to disown environmental conflicts



- **STRATEGY**

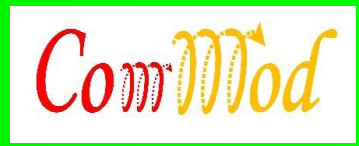


Social and political systems treated in a way that may be too naive



# Participatory Modeling

## Agency



### Who is we?

Importance of the actor supporting the environmental change

Collaborative approach:  
stakeholders act jointly

Who takes initiative?

If environmental concern are  
not shared?



The burden falls on specific stakeholders

## Roles



### Participant

All stakeholders taking part in the process are participants.

He is active if he engages in the collaborative process influencing the outcome.



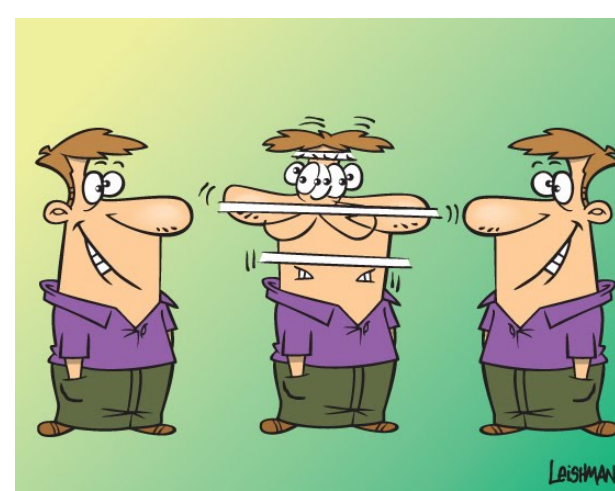
He is passive if he does not actively take part, being merely a bystander to the process.

## Who's who



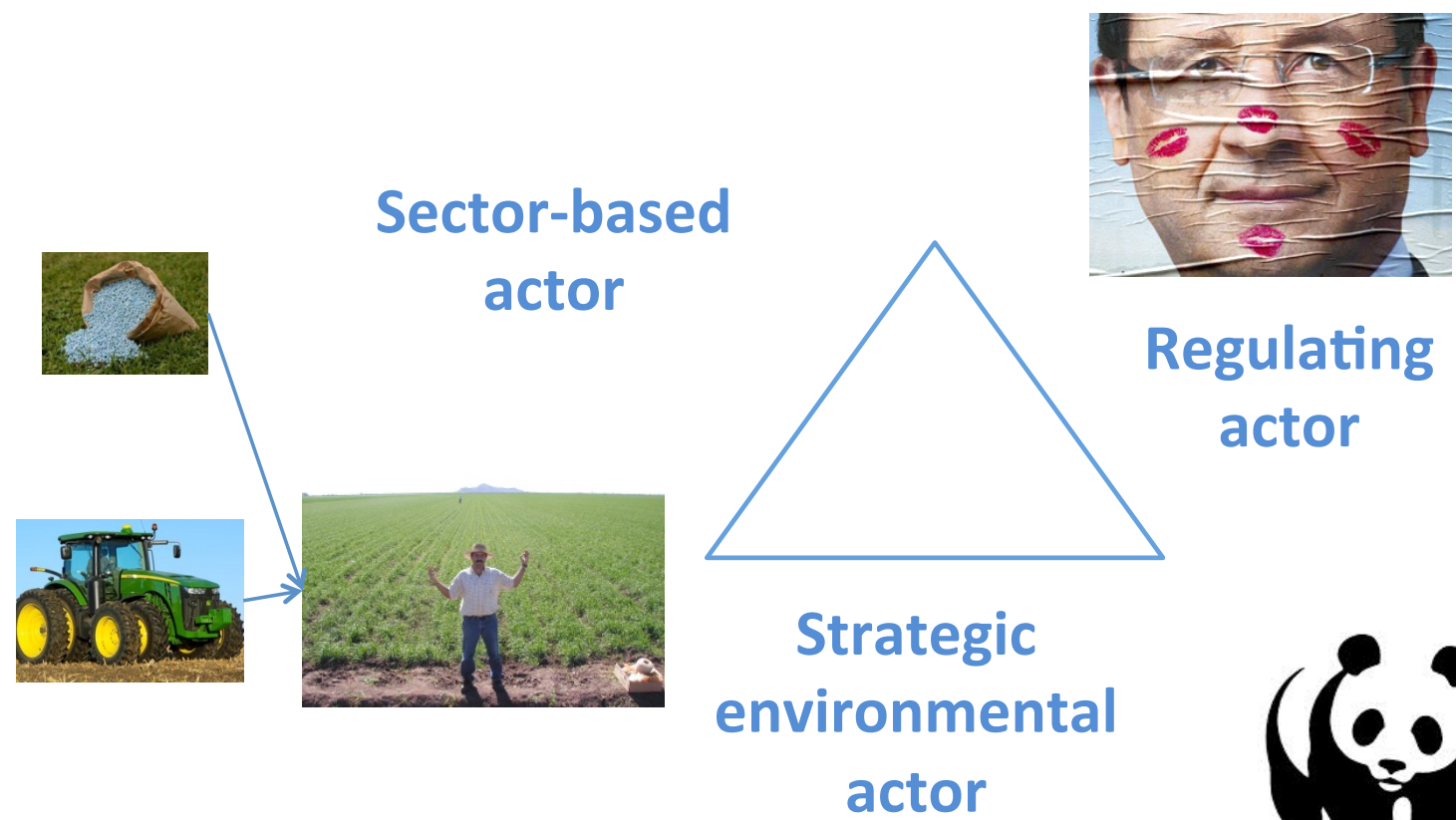
“Role:

Shared expectations about how a particular person in a group ought to behave”



Scholz et al 2013

## Roles



Those who create environmental problems and may resolve them by changing



Mermet 2011



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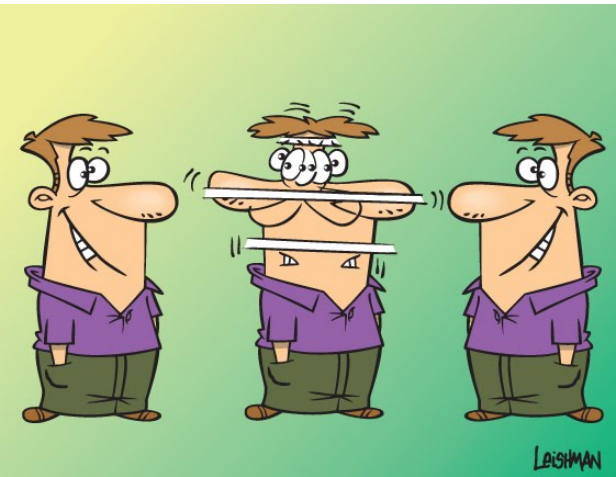


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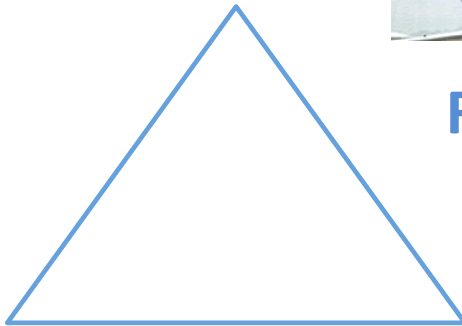


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Shared expectations about how a particular person in a group ought to behave

## Roles

Sector-based actor



Strategic environmental actor



Regulating actor



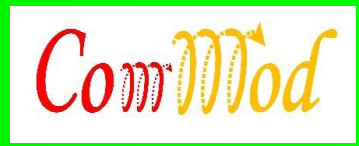
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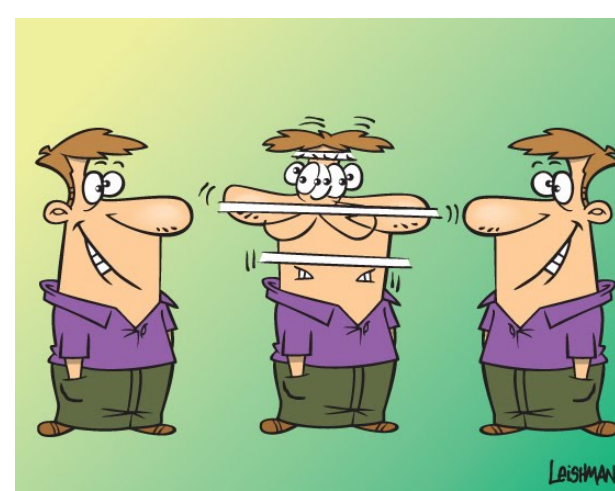
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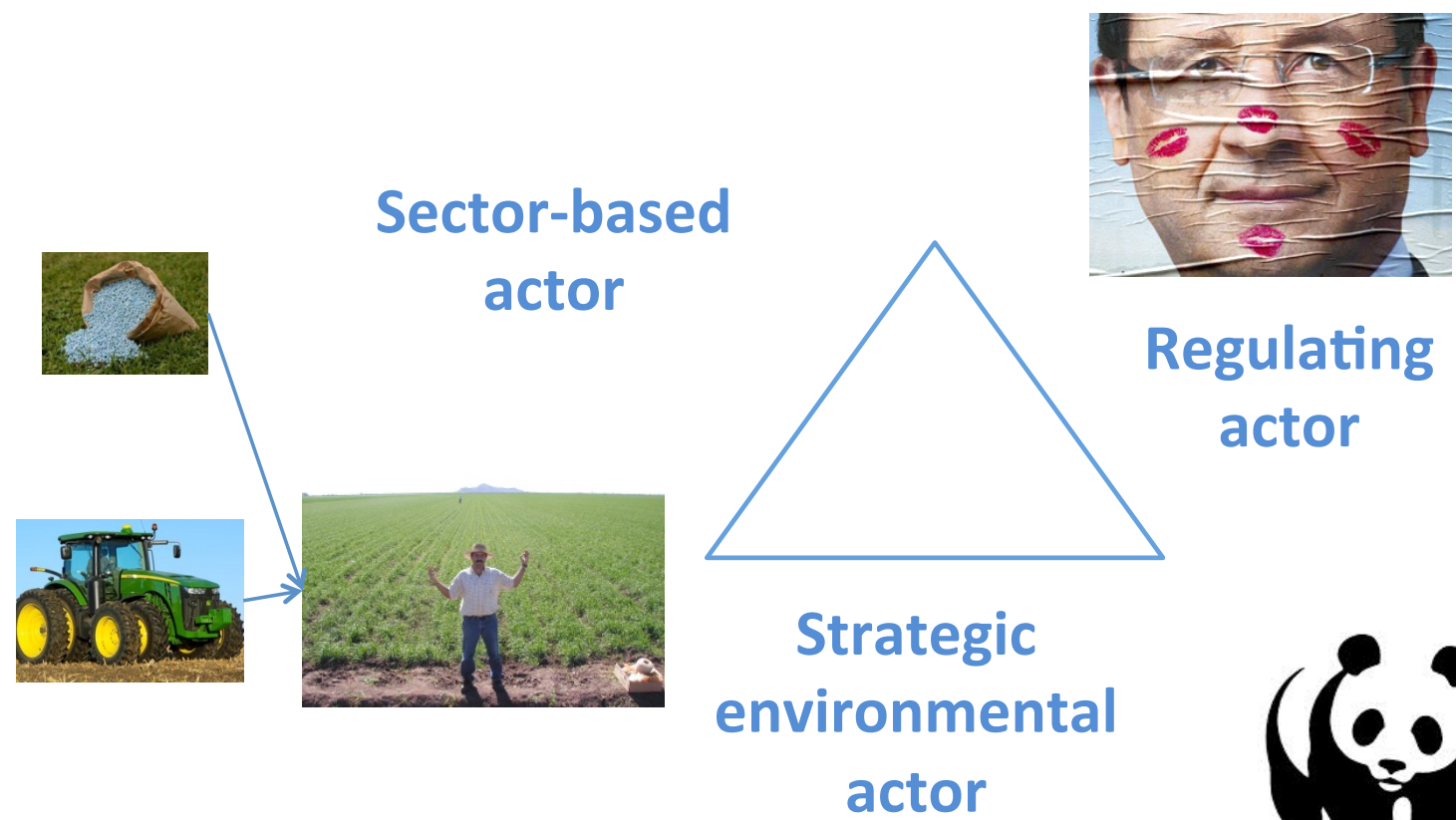
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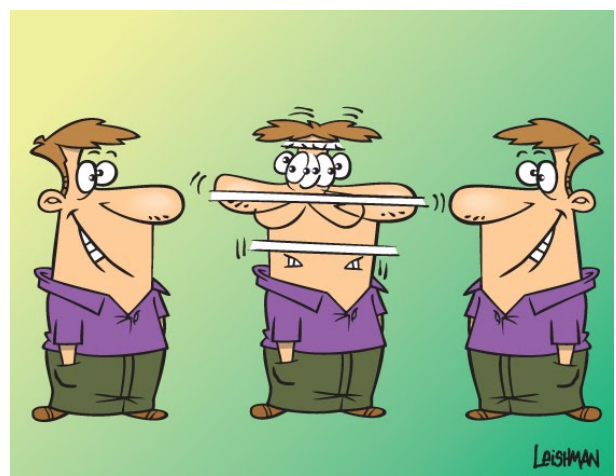


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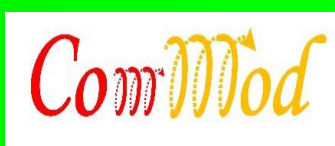


“Role:  
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Scholz et al 2013

## Roles



### Convener

The formal lead in the process.



He decides on the nature of participation and prepares the agenda.

He has legitimacy and capacity to gather together parties concerned.

## Roles



### Leader

A participant who takes on leadership connects people, supports convergence and induces engagement.



Arbitration and integration of divergent understandings is also part of leadership.

Facilitation and leadership may be held by the same person.

## Roles



### Participant

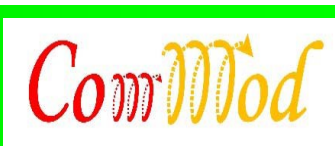
All stakeholders taking part in the process are participants.

He is active if he engages in the collaborative process influencing the outcome.



He is passive if he does not actively take part, being merely a bystander to the process.

## Roles



### Facilitator

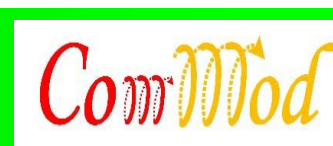
The facilitator role is normally explicitly assigned to one external person

A facilitator helps the group to work collaboratively

Facilitation also includes eliciting participant knowledge.

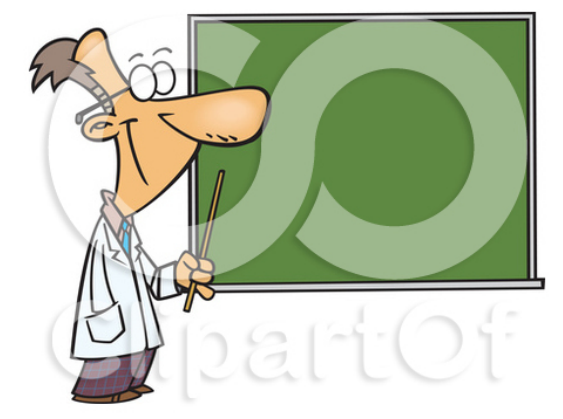


## Roles



### Technical Expert

The technical expert brings technical expertise on a topic to the process, and adds a particular perspective.



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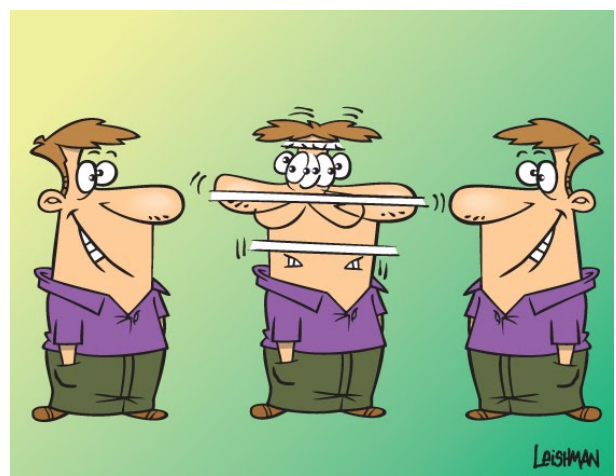


# Participatory Modeling

## Who's who

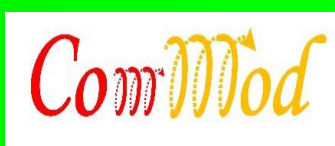


“Role:  
Shared expectations about how a particular person in a group ought to behave”



Scholz et al 2013

## Roles



### Convener

The formal lead in the process.



He decides on the nature of participation and prepares the agenda.

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## Roles



### Leader

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## Roles



### Participant

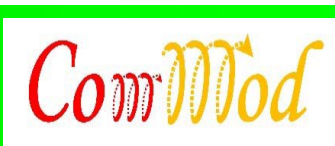
All stakeholders to a particular process are participants. Shared expectations about how a particular person in a group ought to behave

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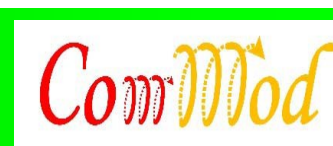
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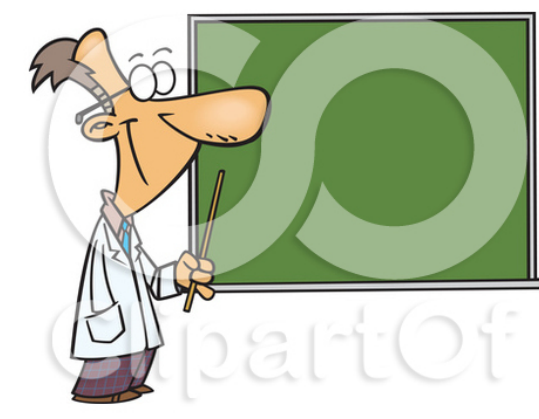


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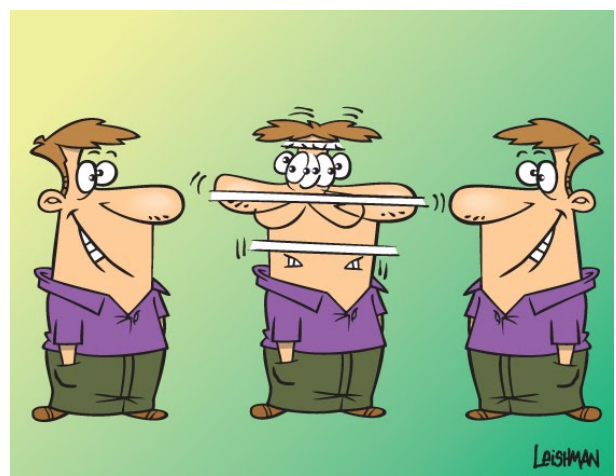


# Participatory Modeling

## Who's who

“Role:

Shared expectations about how a particular person in a group ought to behave”



Scholz et al 2013

## Roles

### Convener

The formal lead in the process.

He decides on the nature of participation and prepares the agenda.

He has legitimacy and capacity to gather together parties concerned.



## Roles

### Leader

... has legitimacy and capacity to gather together parties concerned

Facilitation and integration of divergent understandings is also part of leadership.

Facilitation and leadership may be held by the same person.



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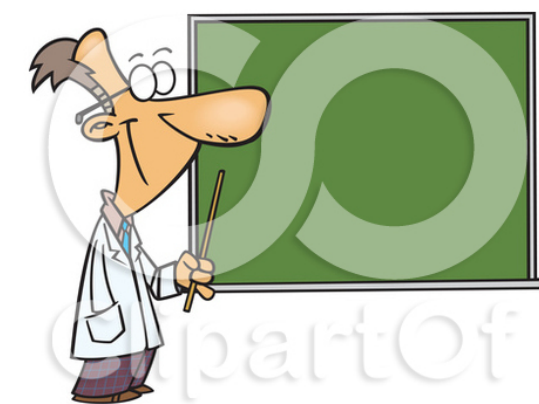
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# Participatory Modeling

## Who's who

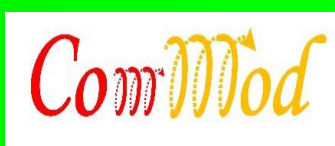


“Role:  
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The facilitator role is normally explicitly assigned to one **external** person

Scholz et al 2013

## Roles



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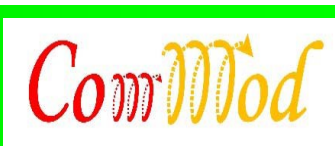
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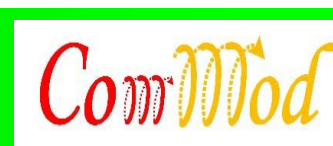
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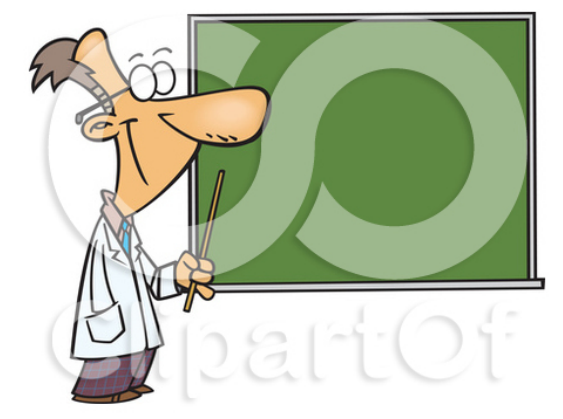


## Roles



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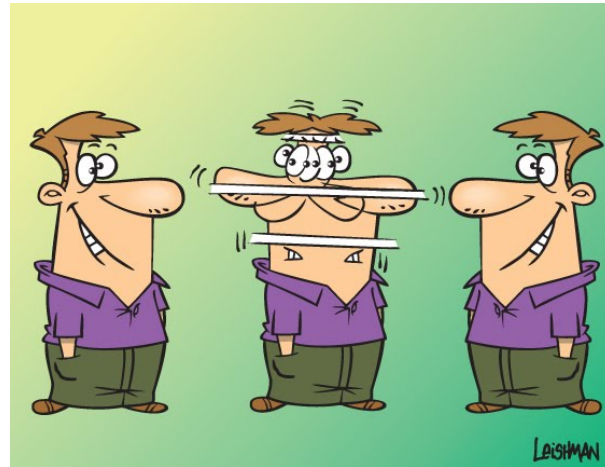
# Participatory Modeling

## Who's who



“Role:

Shared expectations about how a particular person in a group ought to behave”



Scholz et al 2013

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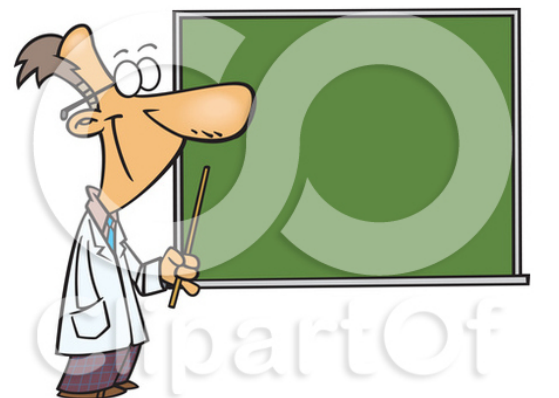


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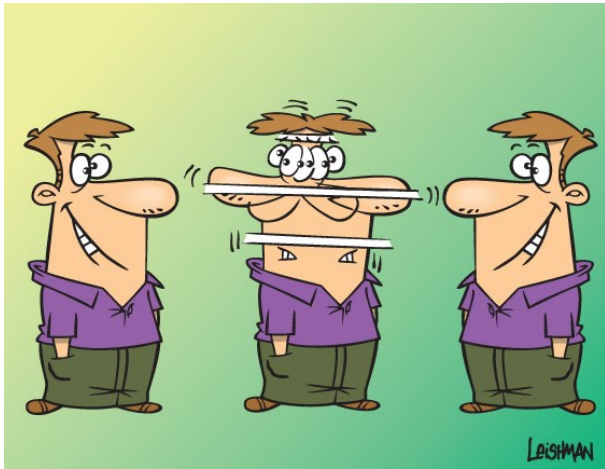


# Participatory Modeling

## Who's who



“Role:  
Shared expectations about how a particular person in a group ought to behave”



Scholz et al 2013

## Roles



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The formal lead in the process.



He decides ... connects and  
prepare people, supports  
He has convergence and induces other  
parties com engagement.

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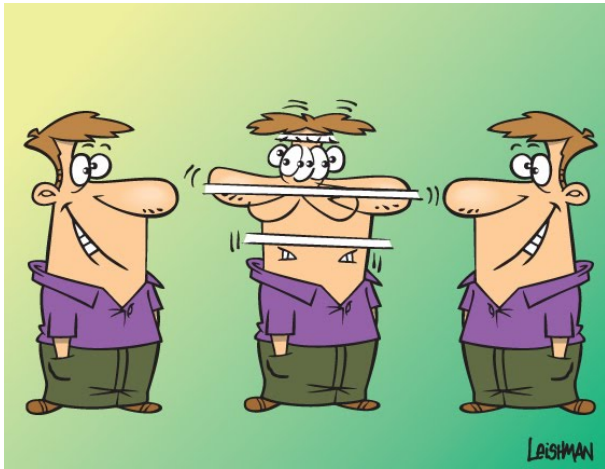
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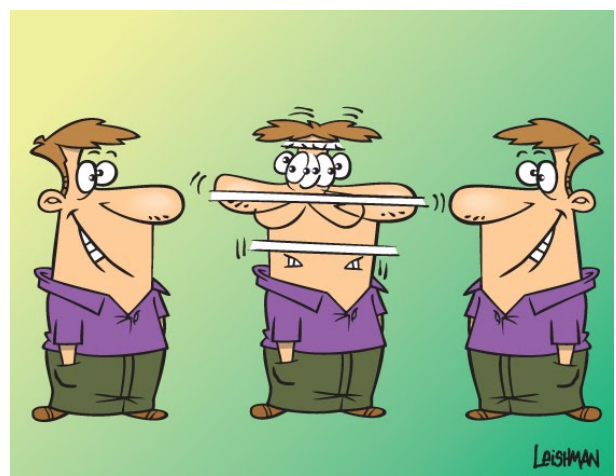


# Participatory Modeling

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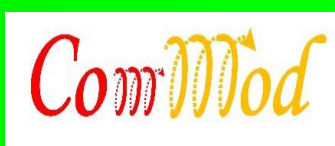


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Scholz et al 2013

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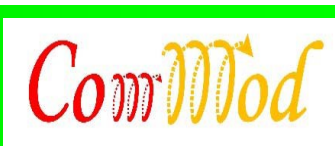
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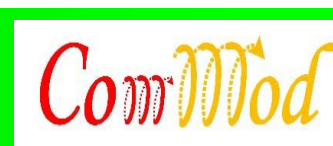
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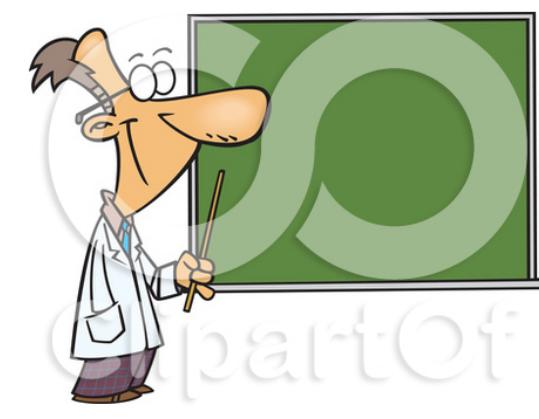
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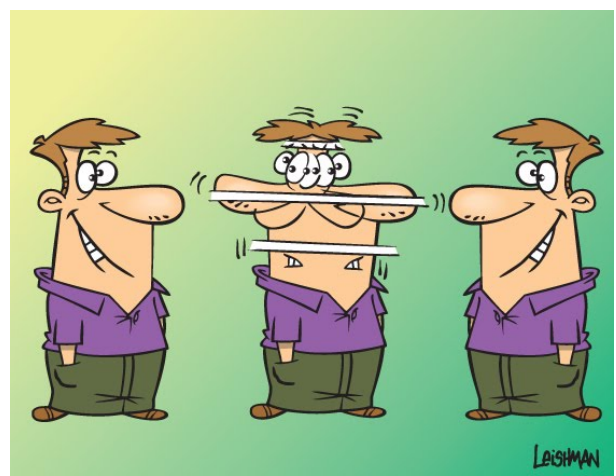
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# Participatory Modeling

## Who's who

**“Role:**  
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Scholz et al 2013

## Roles

### Convener

The formal lead in the process.

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He has legitimacy with all parties concerned.



Role of experts and facilitators have to be strictly separated.

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