Sustainability Leadership

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Class 2:
Part 1: Wicked problems, participatory modeling, and conceptual models.
Part 2: Initiating the research

"Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."
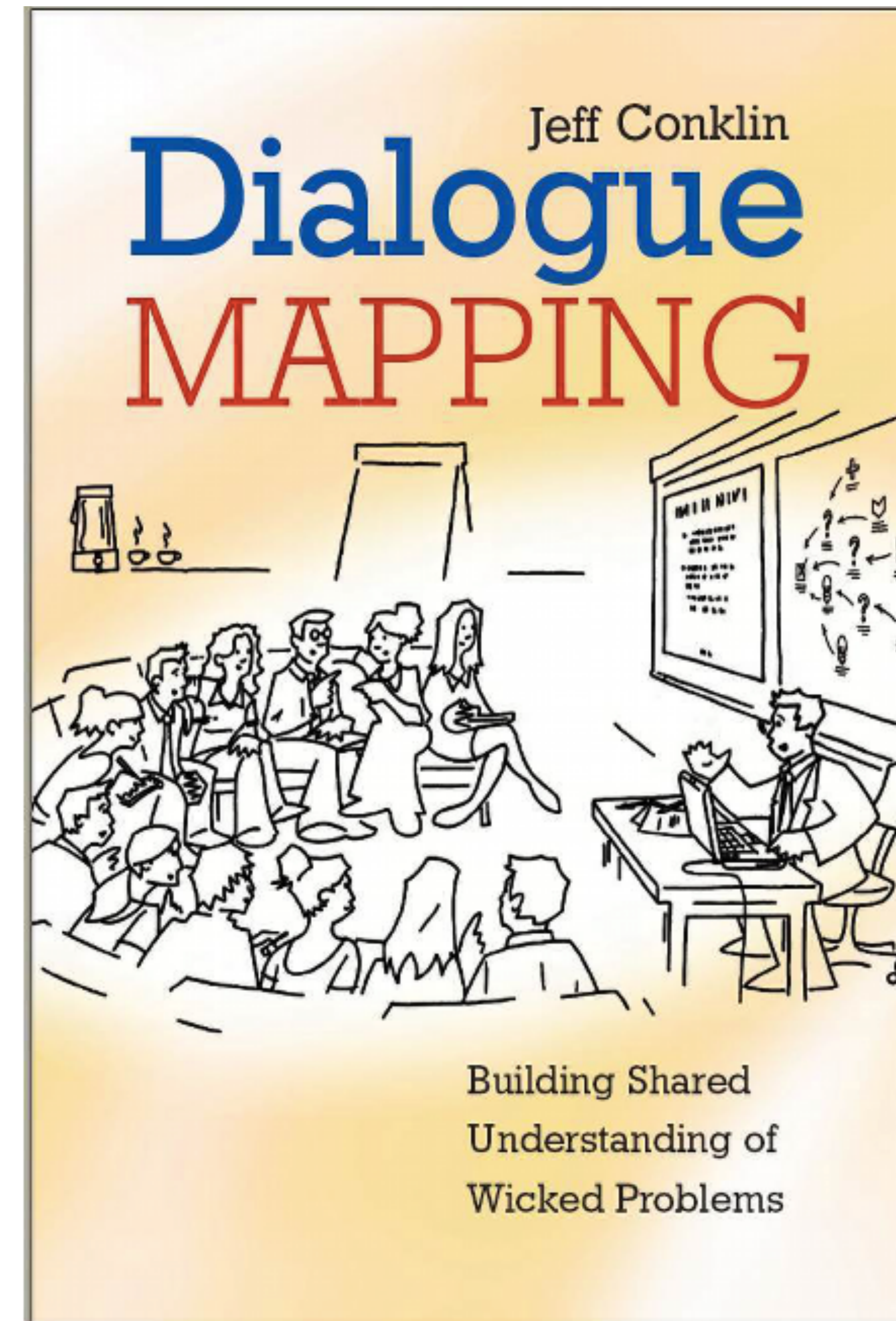
--Laurence J. Peter

"Some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them."

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A wicked problem is one for which each attempt to create a solution changes the understanding of the problem. Wicked problems cannot be solved in a traditional linear fashion, because the problem definition evolves as new possible solutions are considered and/or implemented.
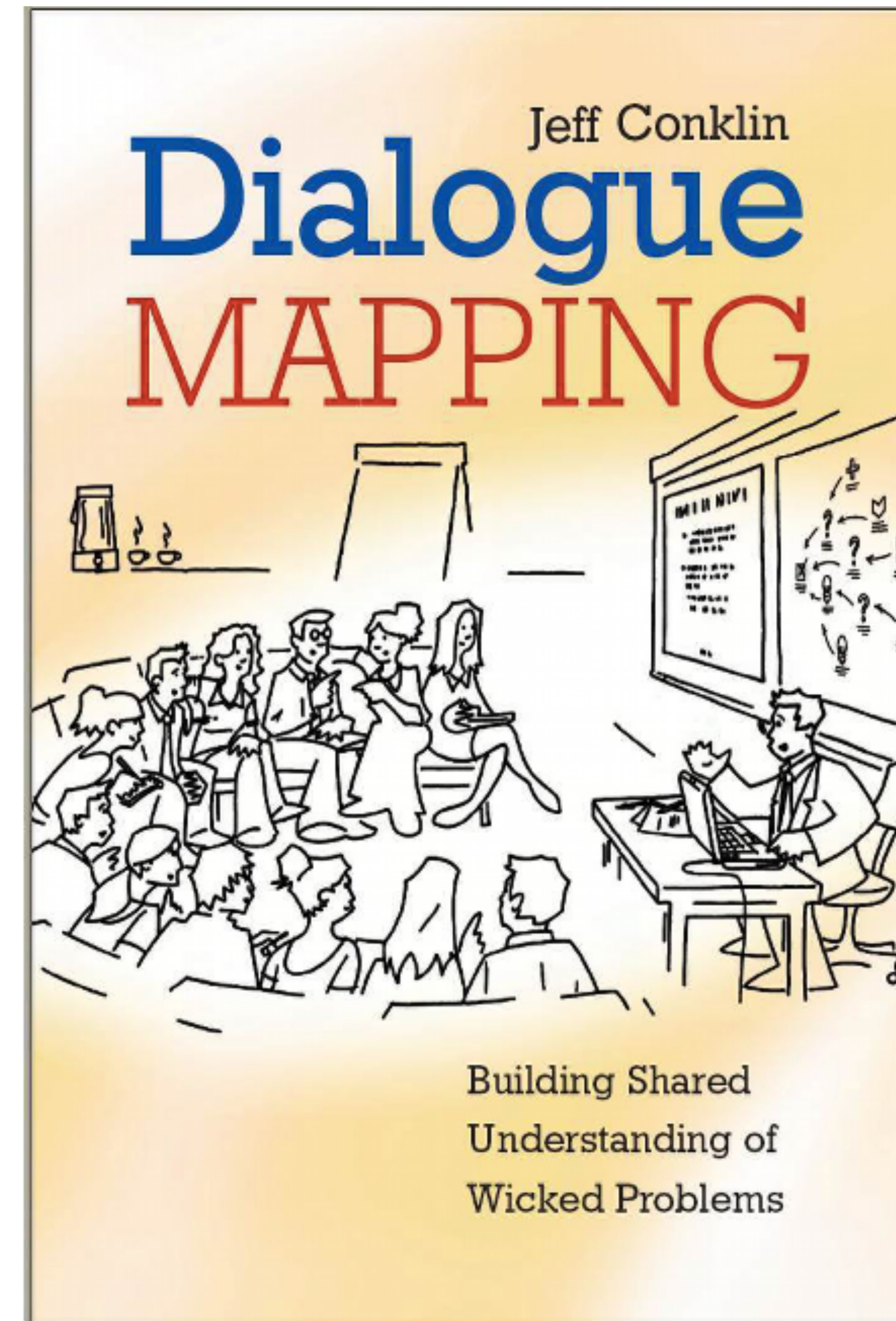

Jeff Conklin

Dialogue MAPPING

Building Shared Understanding of Wicked Problems

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Collective intelligence is a natural property of socially shared cognition, a natural enabler of collaboration.

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Fragmentation suggests a condition in which the people involved see themselves as more separate than united, and in which information and knowledge are chaotic and scattered.

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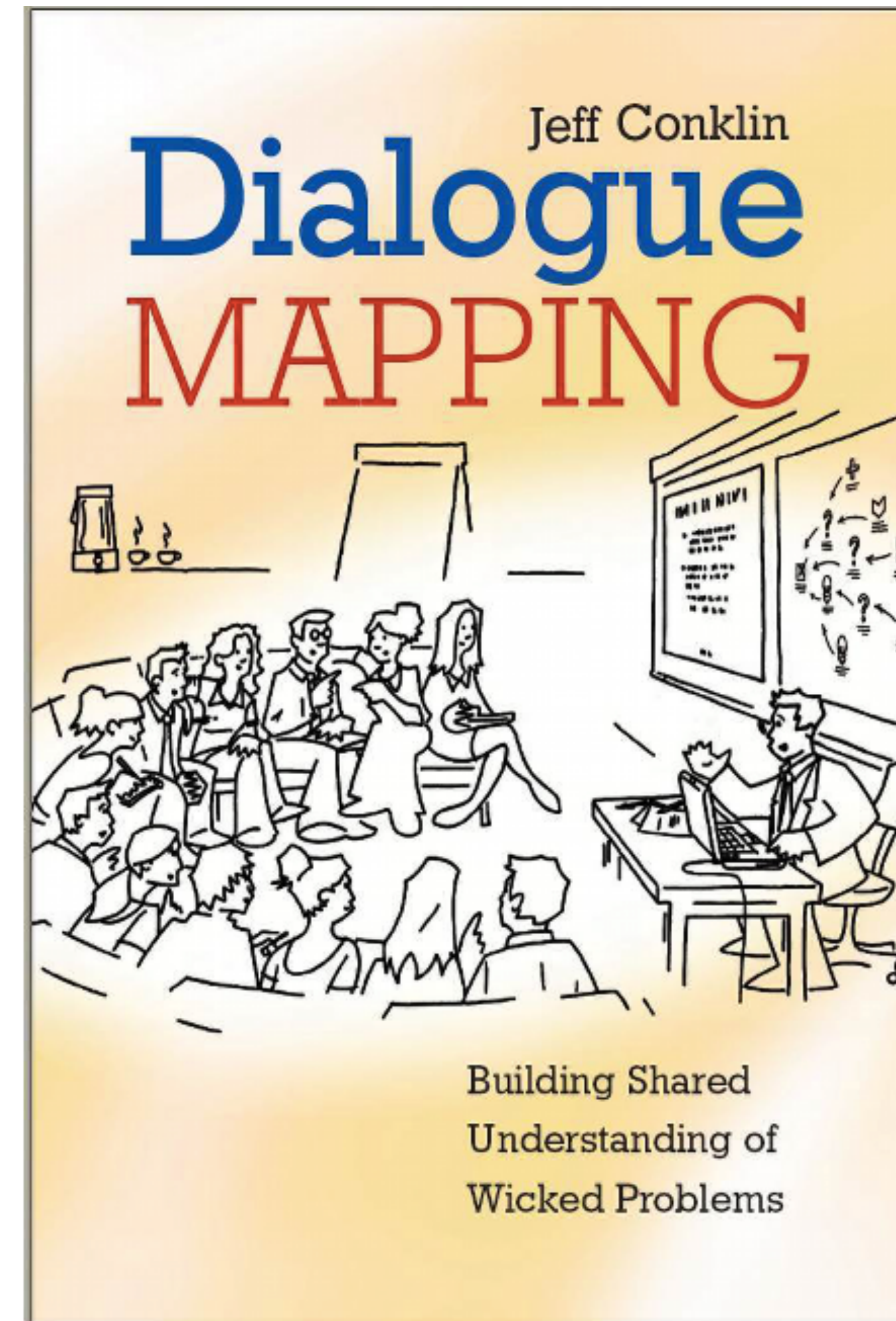
Building Shared Understanding of Wicked Problems

Rittel and Webber (1973): Ten characteristics for wicked problems in social policy planning:

1. There is no definitive formulation of a wicked problem.
2. Wicked problems have no stopping rule.
3. Solutions to wicked problems are not true-or-false, but better or worse.
4. There is no immediate and no ultimate test of a solution to a wicked problem.
5. Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial and error, every attempt counts significantly.
6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
7. Every wicked problem is essentially unique.
8. Every wicked problem can be considered to be a symptom of another problem.
9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.
10. The social planner has no right to be wrong (i.e., planners are liable for the consequences of the actions they generate).

Wicked problems are crossly similar but discretely different.

Conklin (2006) generalized wicked problems with six defining characteristics:

- **You don't understand the problem until you have developed a solution**. Indeed, there is no definitive statement of "The Problem." The problem is ill-structured, an evolving set of interlocking issues and constraints.
- **Wicked problems have no stopping rule**. Since there is no definitive "The Problem", there is also no definitive "The Solution." The problem solving process ends when the solution is acceptable or when you run out of resources.
- **Solutions to wicked problems are not right or wrong**, simply "better," "worse," "good enough," or "not good enough."
- **Every wicked problem is essentially unique and novel**. There are so many factors and conditions, all embedded in a dynamic social context, that no two wicked problems are alike, and the solutions to them will always be custom designed and fitted.
- **Every solution to a wicked problem is a "one-shot operation," every attempt has consequences**. As Rittel says, "One cannot build a freeway to see how it works." This is the "Catch 22" about wicked problems: you can't learn about the problem without trying solutions, but every solution you try is expensive and has lasting unintended consequences which are likely to spawn new wicked problems.
- **Wicked problems have no given alternative solutions.** There may be no solutions, or there may be a host of potential solutions that are devised, and another host that are never even thought of.

Super-Wicked Problems

Levin et al. (2012) distinguish between "wicked problems" and "super-wicked problems." Super-wicked problems have the following additional characteristics:

1. Time is running out.
2. No central authority.
3. Those seeking to solve the problem are also causing it.
4. Policies discount the future irrationally.

- The characteristics that define a wicked problem relate to the problem itself.
- The characteristics that define a super-wicked problem relate to the agent trying to solve it.

Plag (2018): 5. Discount non-human ("natural") wealth.

Wicked problems demand tools and methods which create **shared understanding** and **shared commitment**.

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Shared understanding is not the same as consensus. It does not mean everybody agrees with each other. Shared understanding among stakeholders in a project means that the stakeholders know about each others' concerns and goals.

Conklin, 2006.

Roberts (200): Three strategies:

Authoritative: Vesting the responsibility for solving the problems in the hands of a few people.
- Reduction in the number of stakeholders reduces problem complexity.
- Authorities and experts may not have all the perspectives needed to tackle the problem.

Competitive: Pitting opposing points of view against each other.
- Different solutions can be weighed up against each other and the best one chosen.
- 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.

Collaborative: Engaging all stakeholders in order to find the best possible solution for all stakeholders. Involves meetings in which issues and ideas are discussed and shared understanding is developed.
- A common, agreed approach is formulated.
- Chosen solution has a good chance of being supported by most stakeholders.

Addressing Wicked Problems
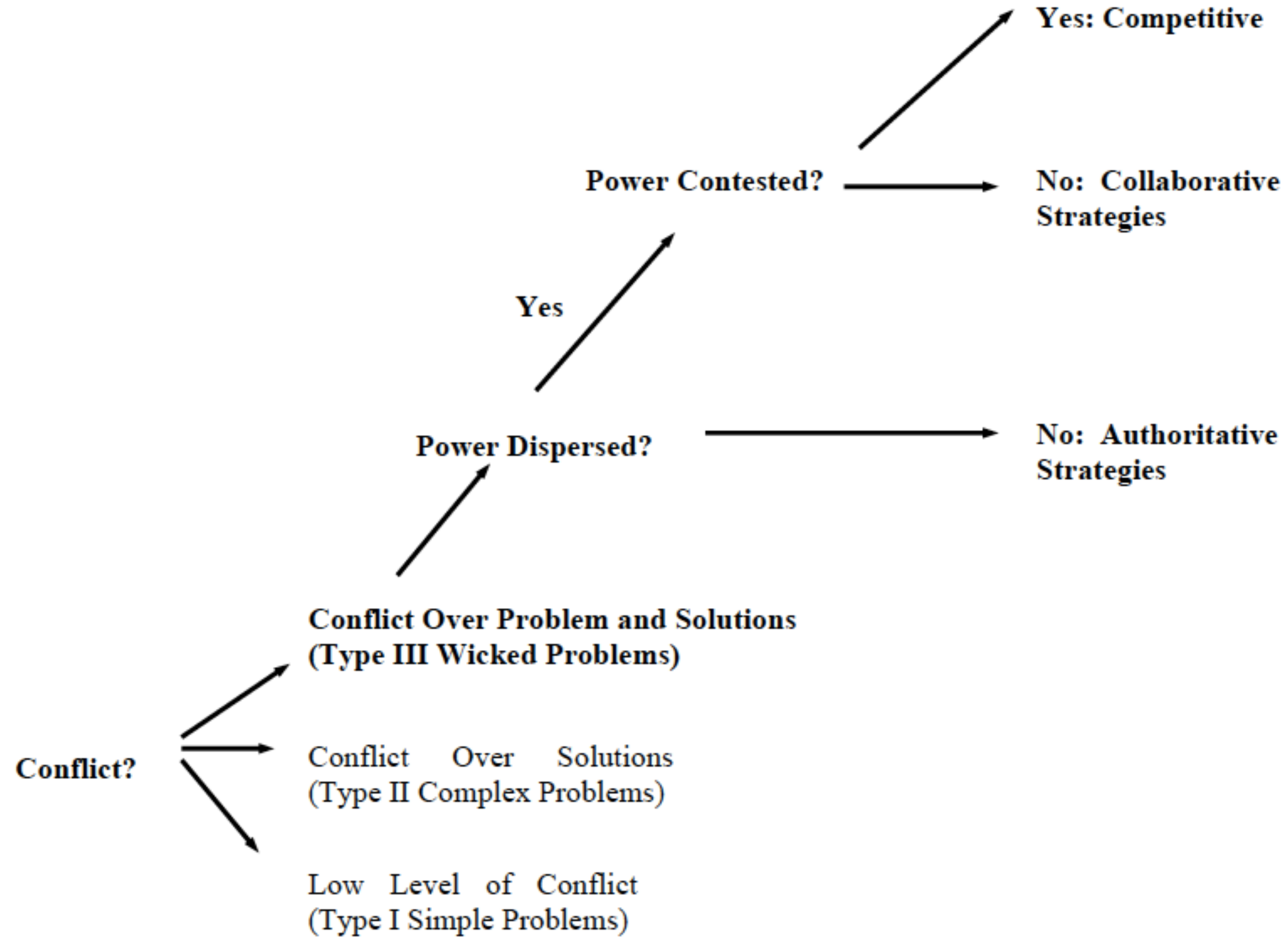
Roberts (200):

Authoritative:
- Reduction in th
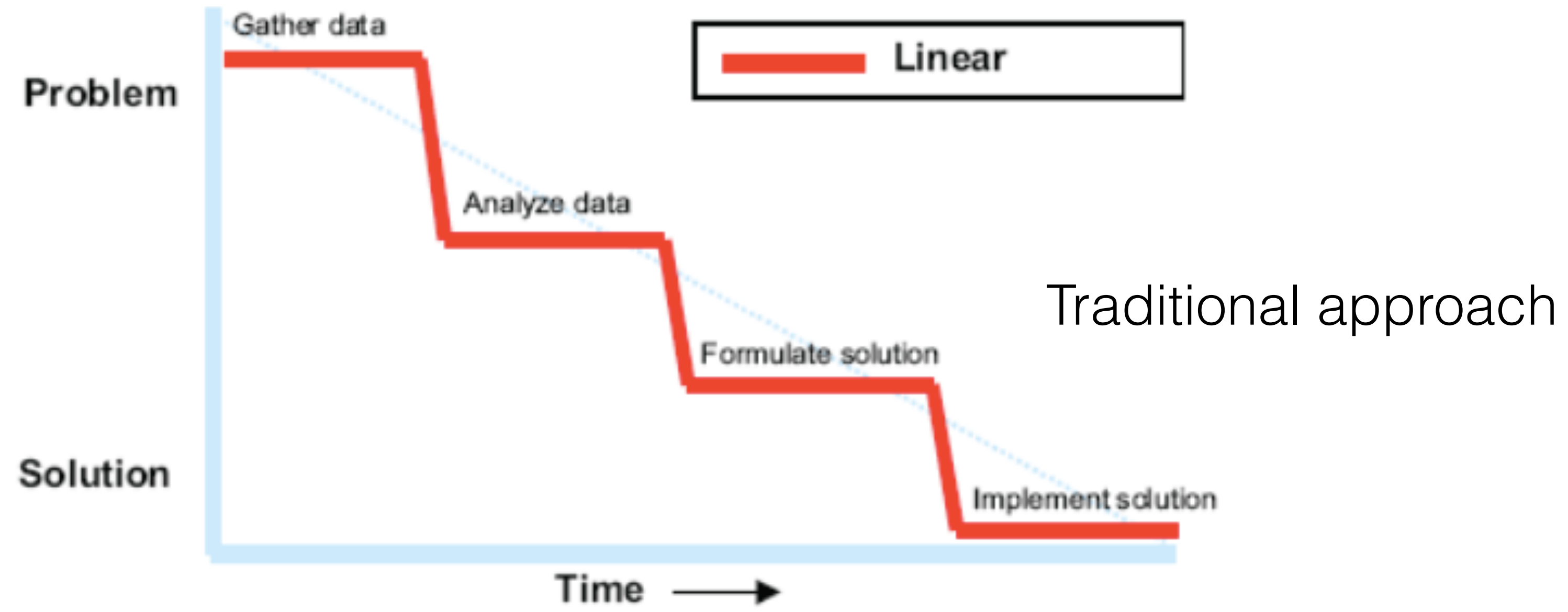- Authorities and

Competitive: I
- Different solu
- Creates a co
- Parties invol

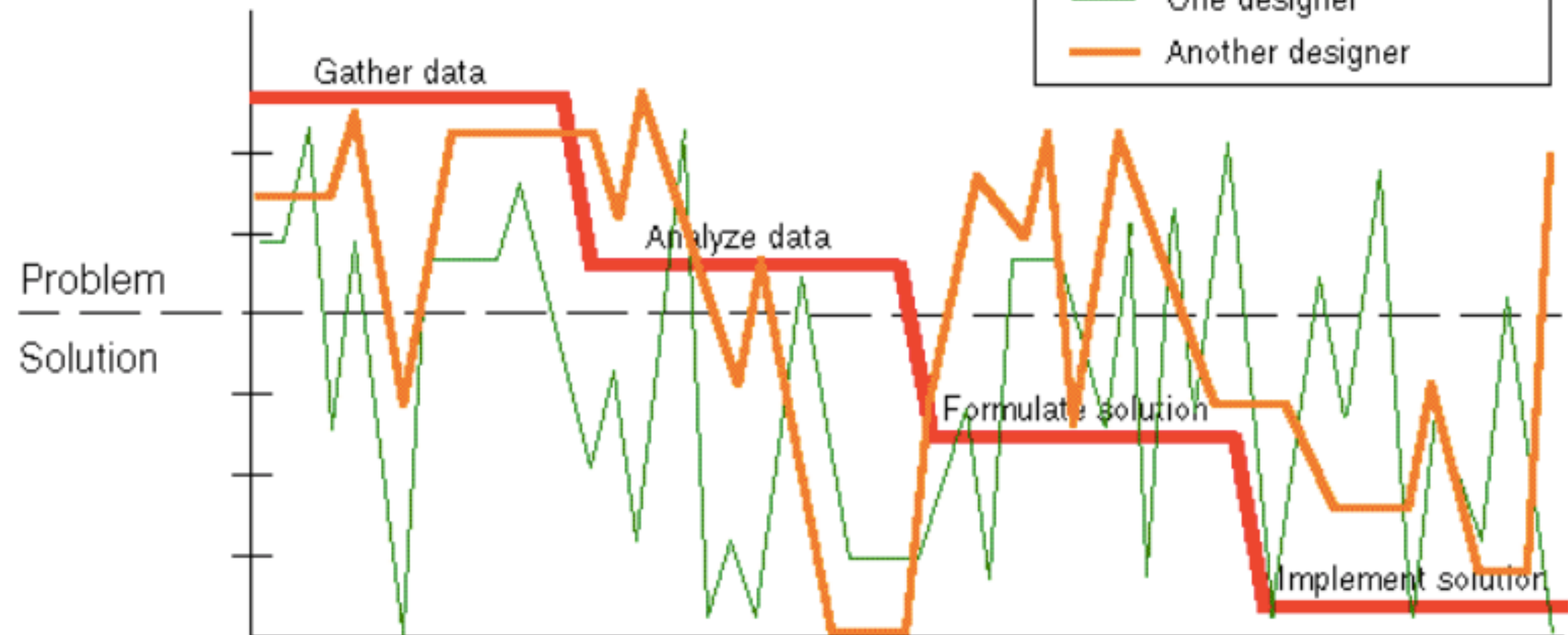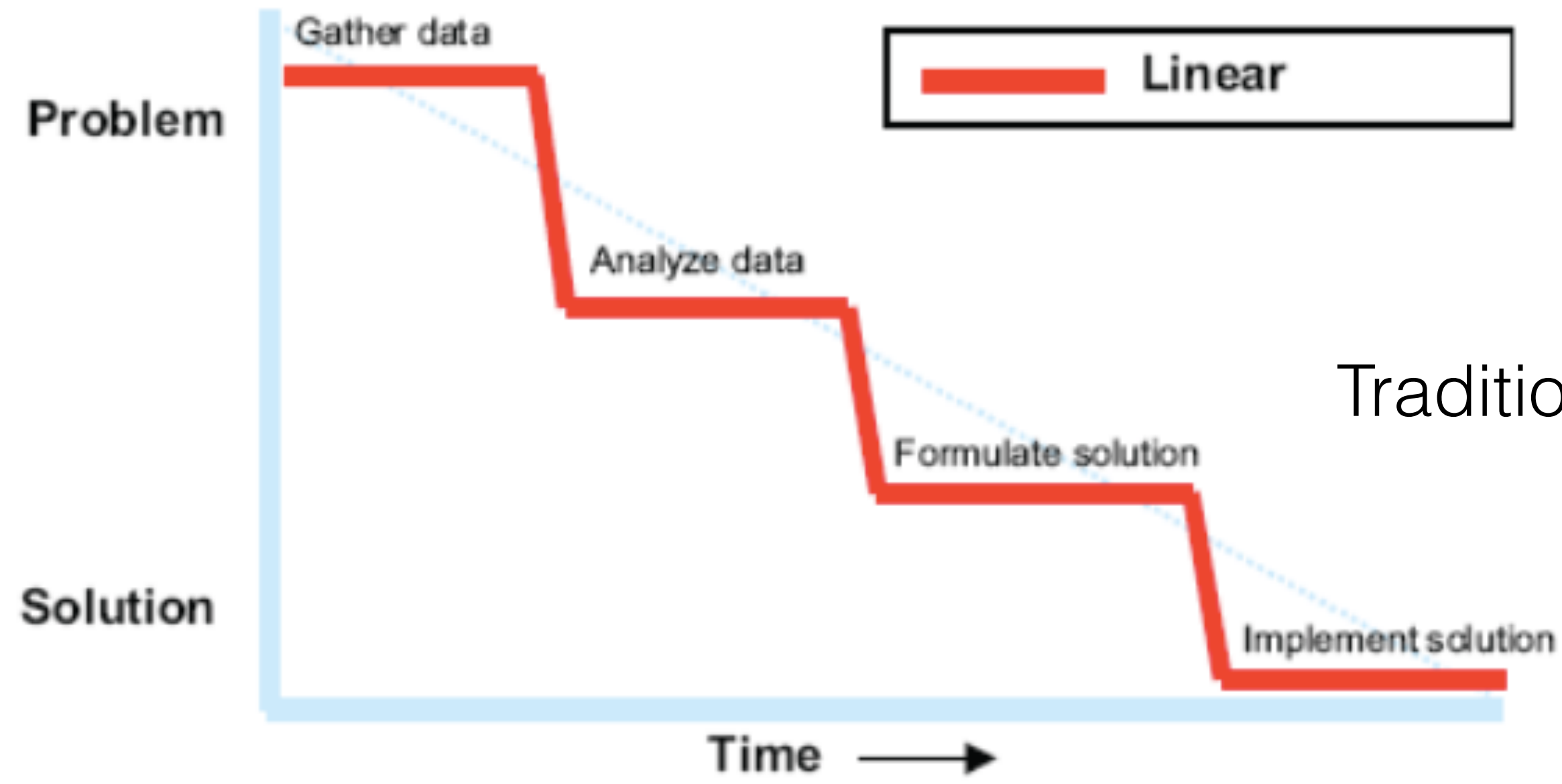**Collaborative**
Involves meeti
- A common, a
- Chosen solu

Yes: Competitive

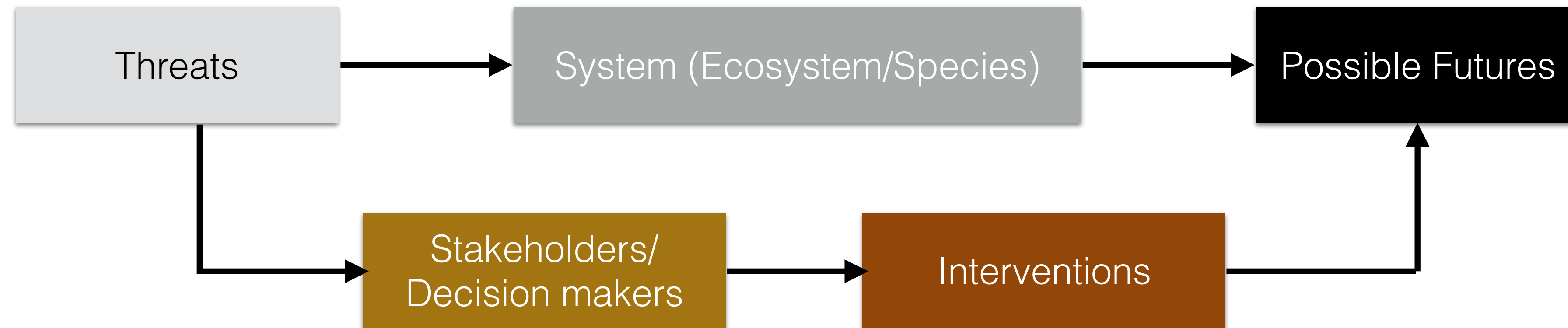Power Contested? ⟶ No: Collaborative Strategies

Yes

Power Dispersed? ⟶ No: Authoritative Strategies

Conflict Over Problem and Solutions
(Type III Wicked Problems)

Conflict? ⟶ Conflict Over Solutions
(Type II Complex Problems)

Low Level of Conflict
(Type I Simple Problems)

Traditional approach

Traditional approach

Traditional Science
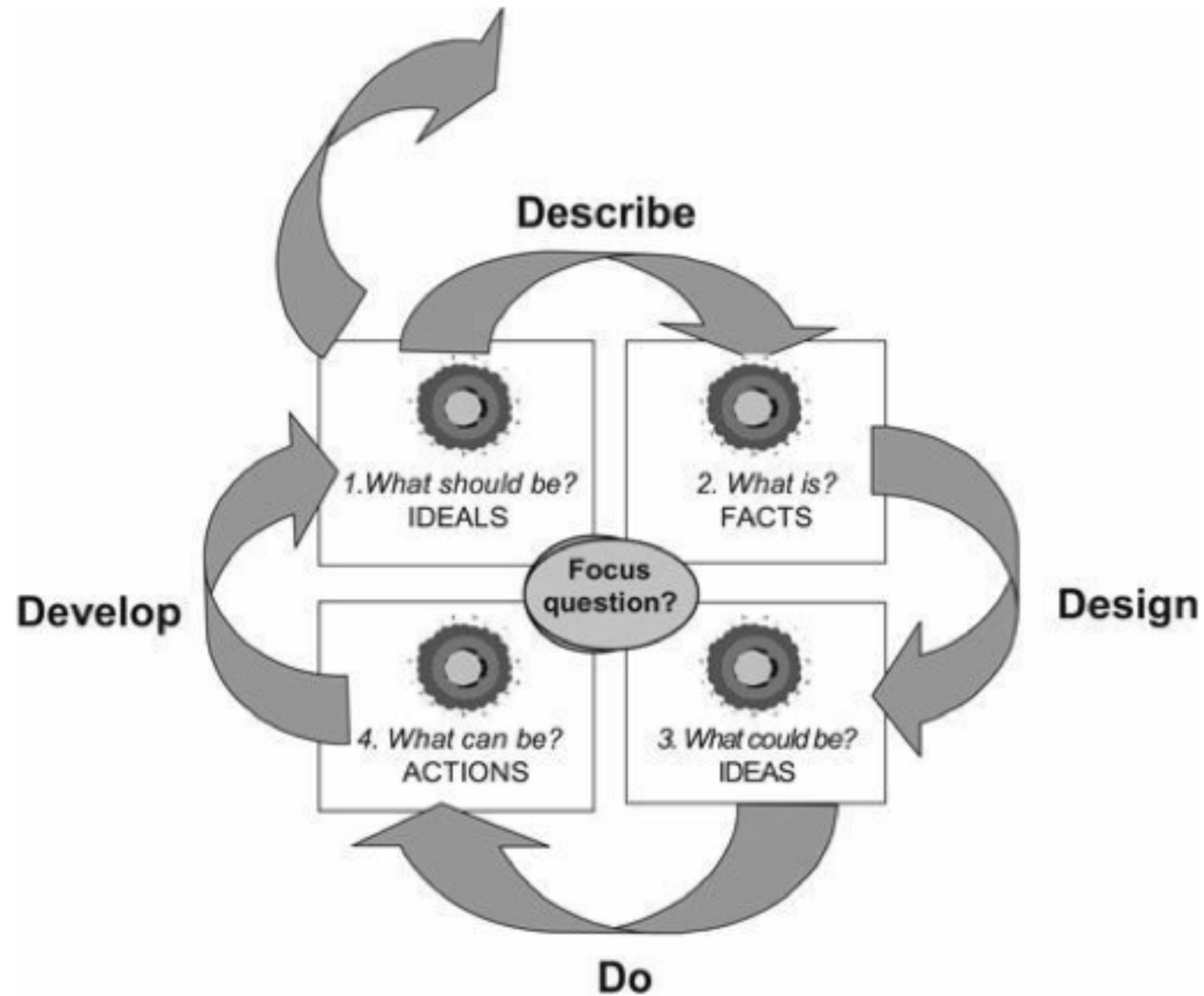
Figure: The process of conducting the collective social learning spiral.

Brown, 2008

Addressing Wicked Problems

New approach:
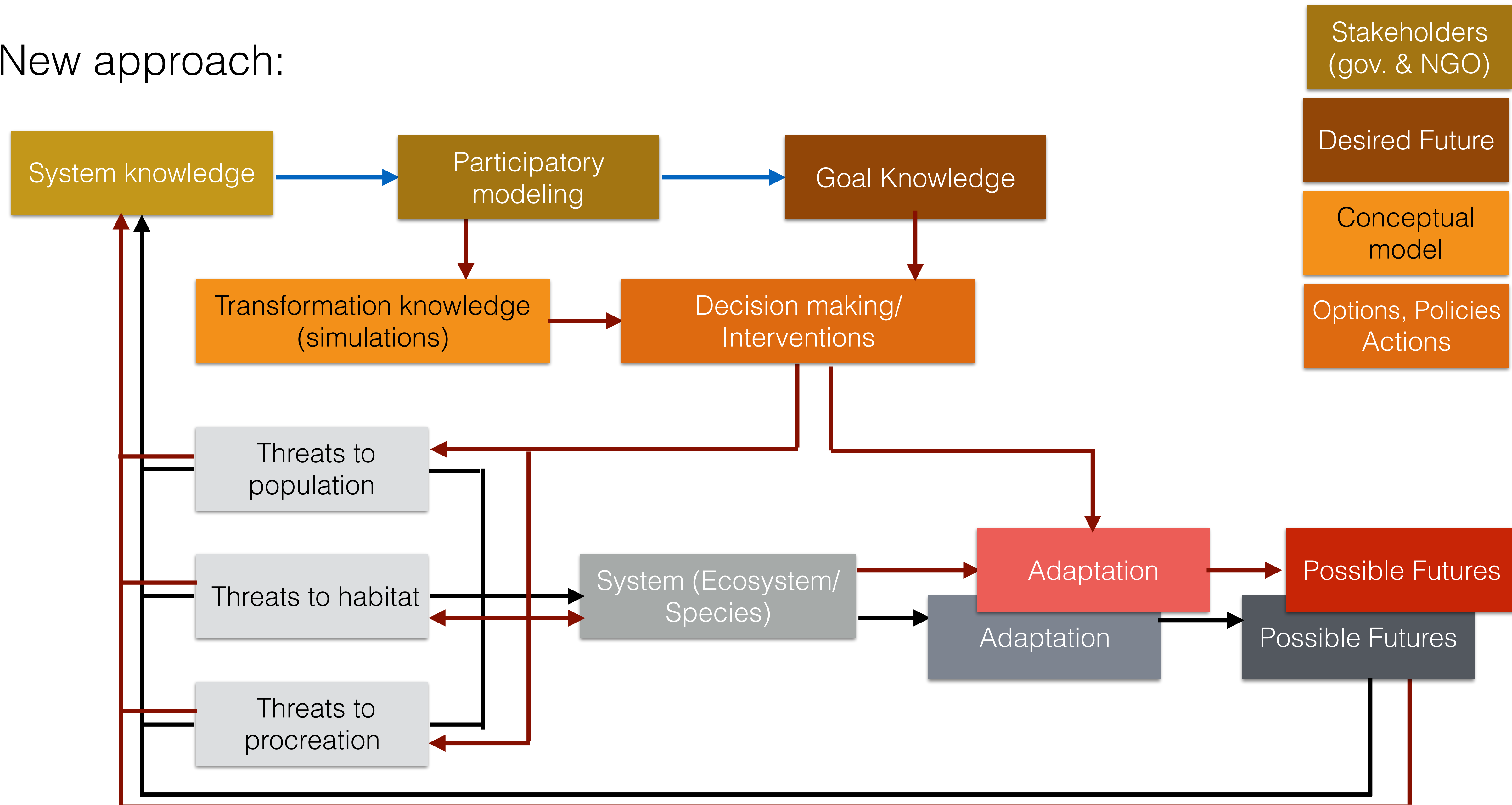
Wicked Problems

Wicked Problems

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

Wicked Problems

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**

Wicked Problems

Each solution is

ATTACK OF THE **WICKED PROBLEM** *HORROR BEYOND UNDERSTANDING!*

- unique
- costly
- …and has consequences

Taming Wicked Problems

- Authoritative
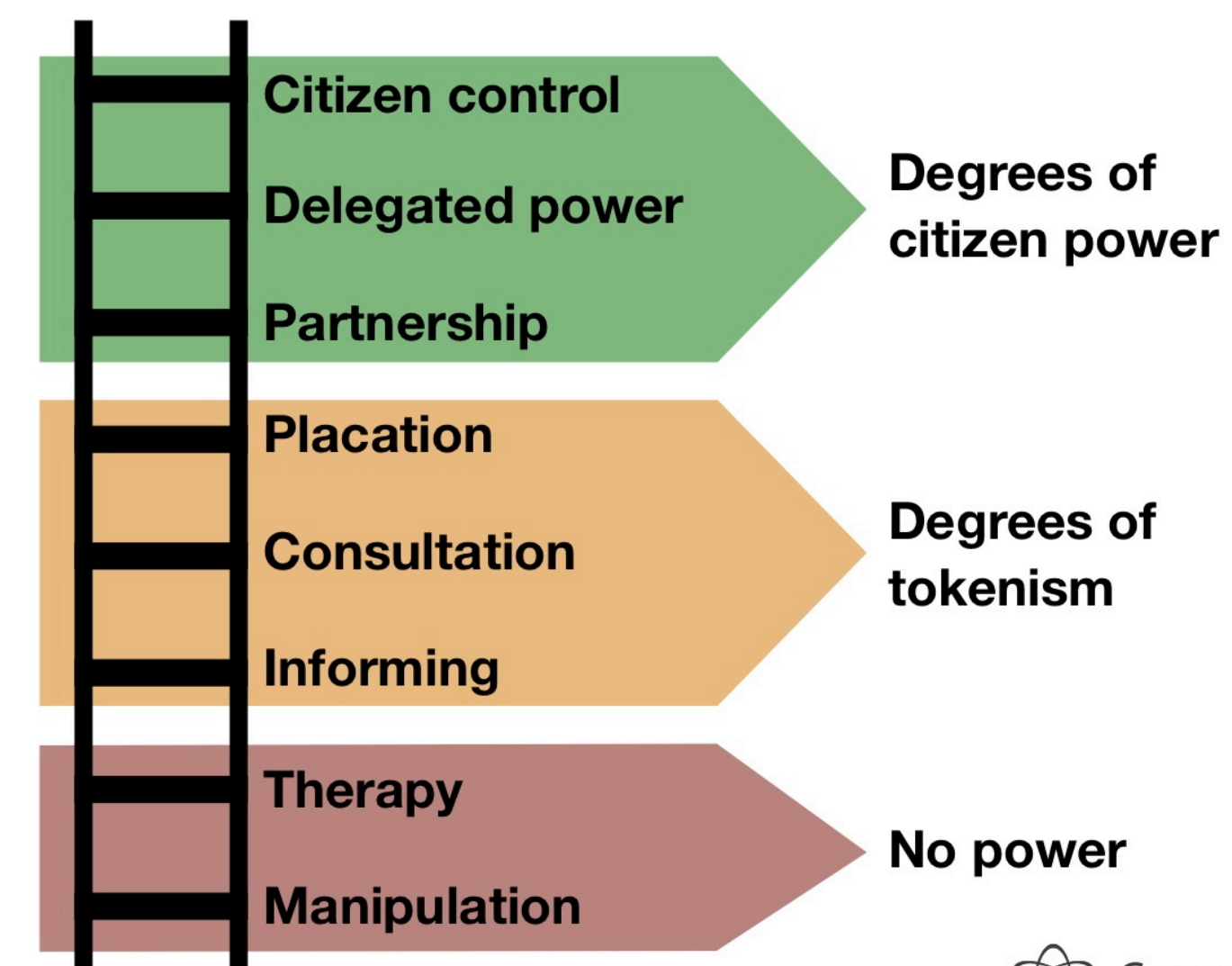- Competitive
- Collaborative

Patricipatory modelling

On participation

Arnstein (1969) Ladder of citizen participation

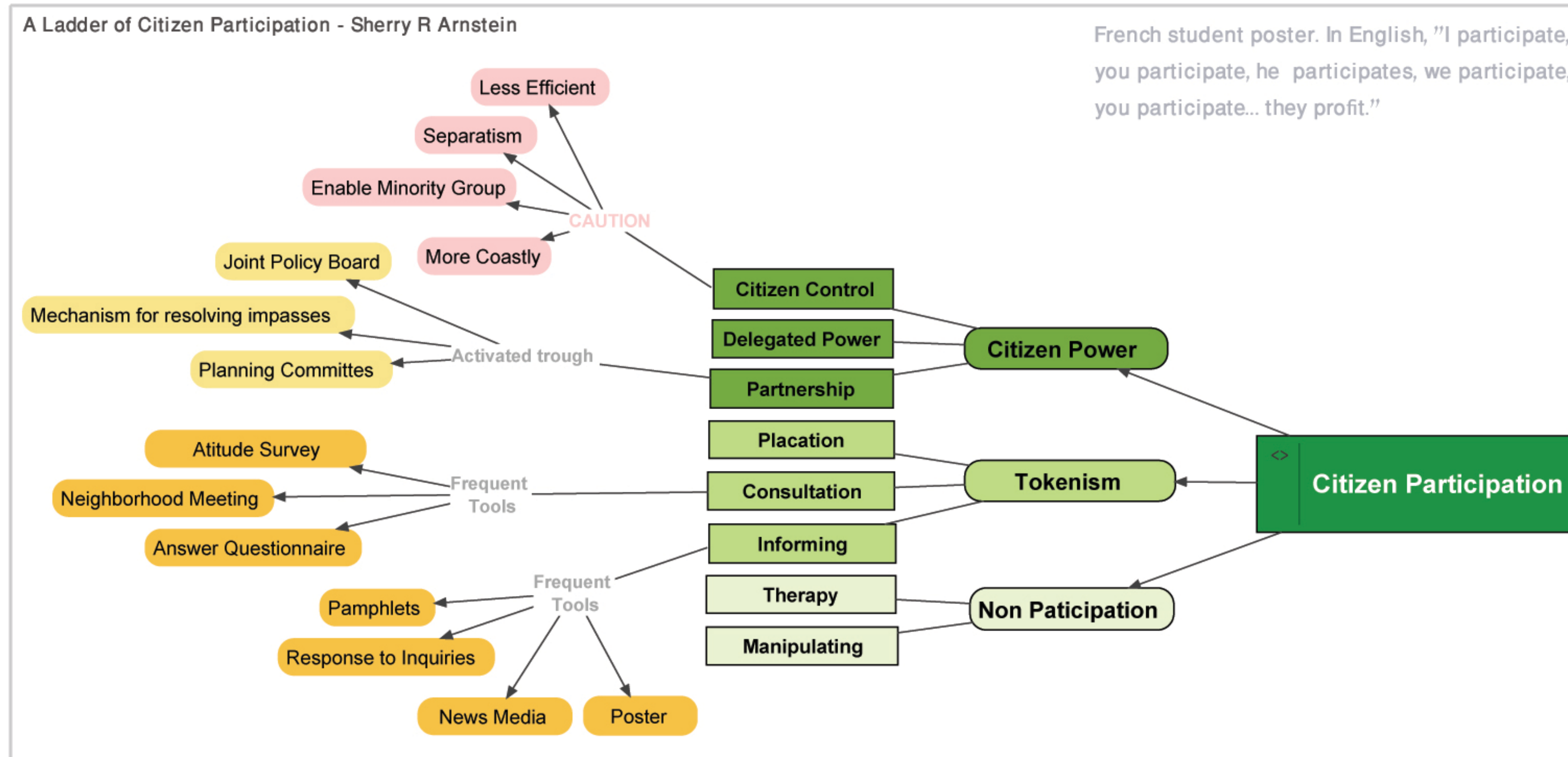- Citizen control
- Delegated power
- Partnership

Degrees of citizen power

- Placation
- Consultation
- Informing

Degrees of tokenism

- Therapy
- Manipulation

No power

George Julian
Knowledge Transfer Consultancy

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

On participation

http://fluswikien.hfwu.de/index.php/File:Arnstein_ladder_of_participation_fahad.jpg

Participatory Modelling

ComMod
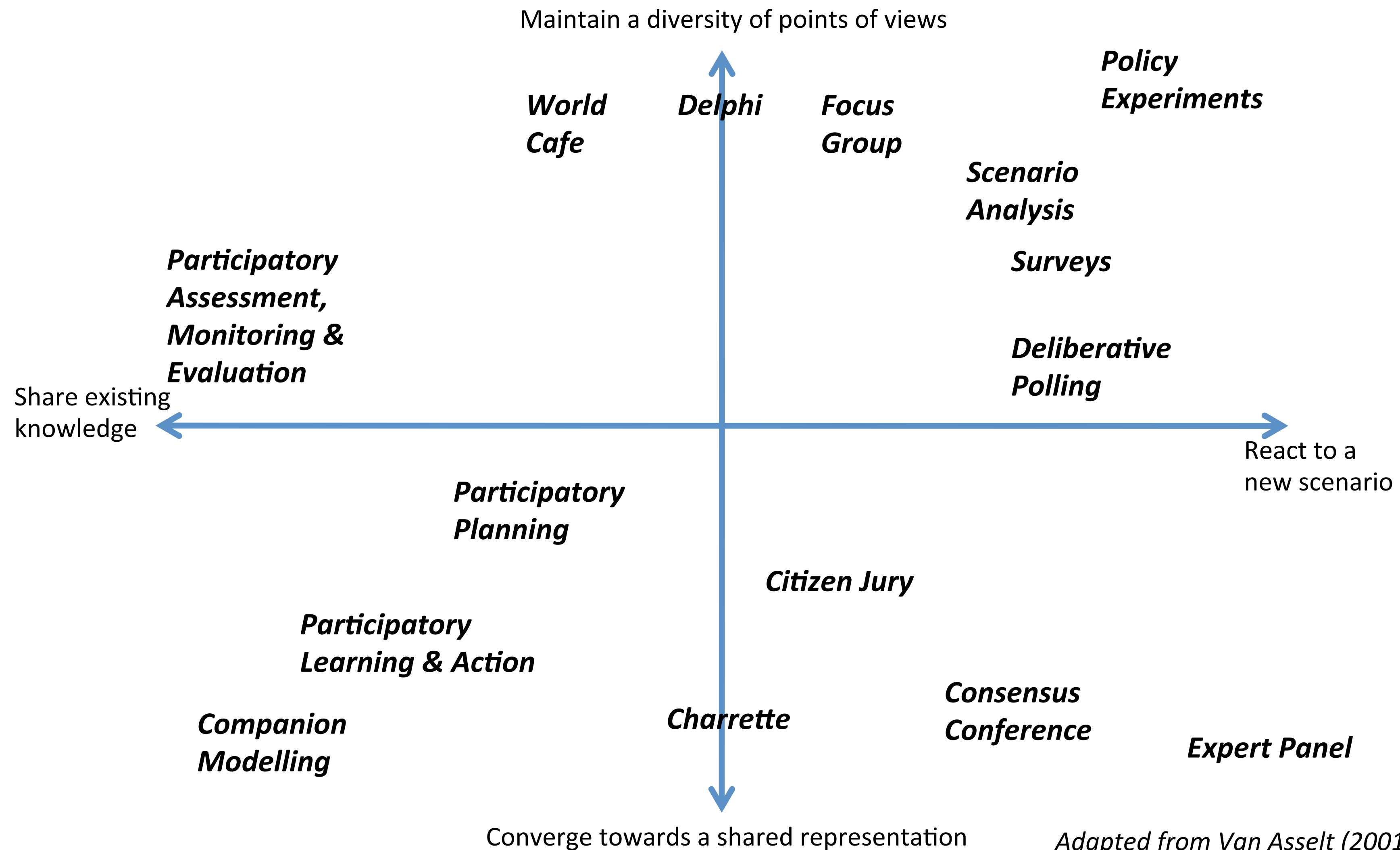
Maintain a diversity of points of views

Policy Experiments

World Cafe   **Delphi**   **Focus Group**

Scenario Analysis

Surveys

Participatory Assessment, Monitoring & Evaluation

Deliberative Polling

Share existing knowledge

React to a new scenario

Participatory Planning

Citizen Jury

Participatory Learning & Action

Charrette   **Consensus Conference**

Companion Modelling   **Expert Panel**

Converge towards a shared representation
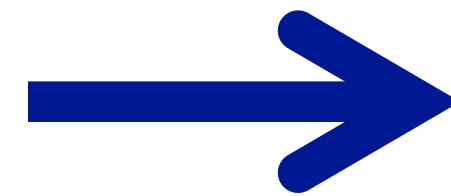
Adapted from Van Asselt (2001)

Participatory Approaches

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

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Participatory Approaches

✓ Search for unity of agency („we")

✓ Coordination of stakeholders and collaborative procedures

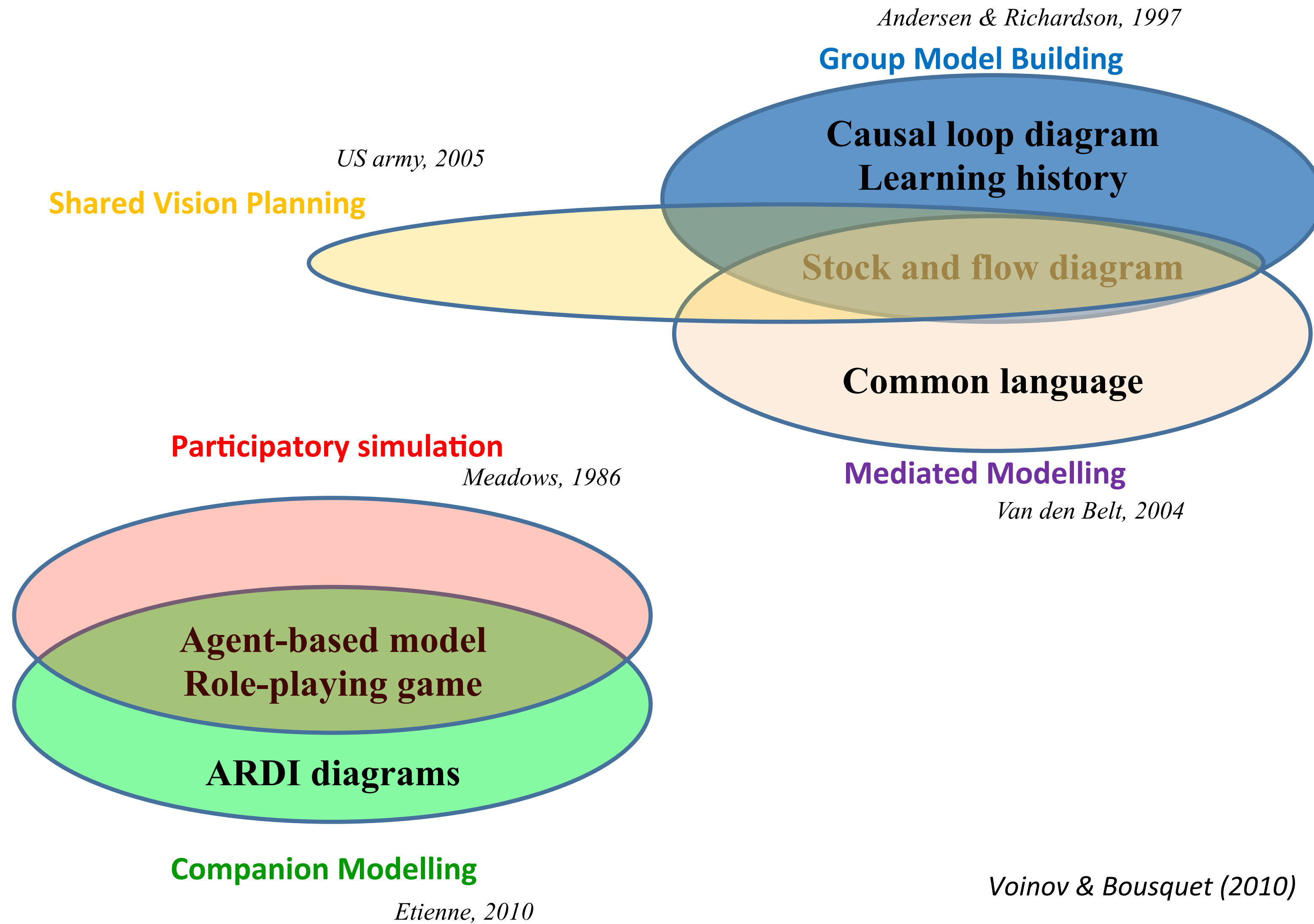Search for processes that will transform divided societies...

into unified managers of ecosystems

Mermet 2011

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Participatory Modelling

Andersen & Richardson, 1997

Group Model Building

Causal loop diagram
Learning history

US army, 2005

Shared Vision Planning

Stock and flow diagram

Common language

Participatory simulation

Meadows, 1986

Mediated Modelling

Van den Belt, 2004

Agent-based model
Role-playing game

ARDI diagrams

Companion Modelling

Etienne, 2010

Voinov & Bousquet (2010)

Participatory Modeling

Agency

Who is we?

Importance of the actor supporting the environmental change

Collaborative approach: stakeholders act jointly

Who takes initiative?

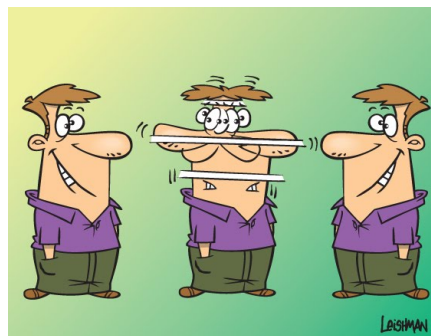If environmental concern are not shared?

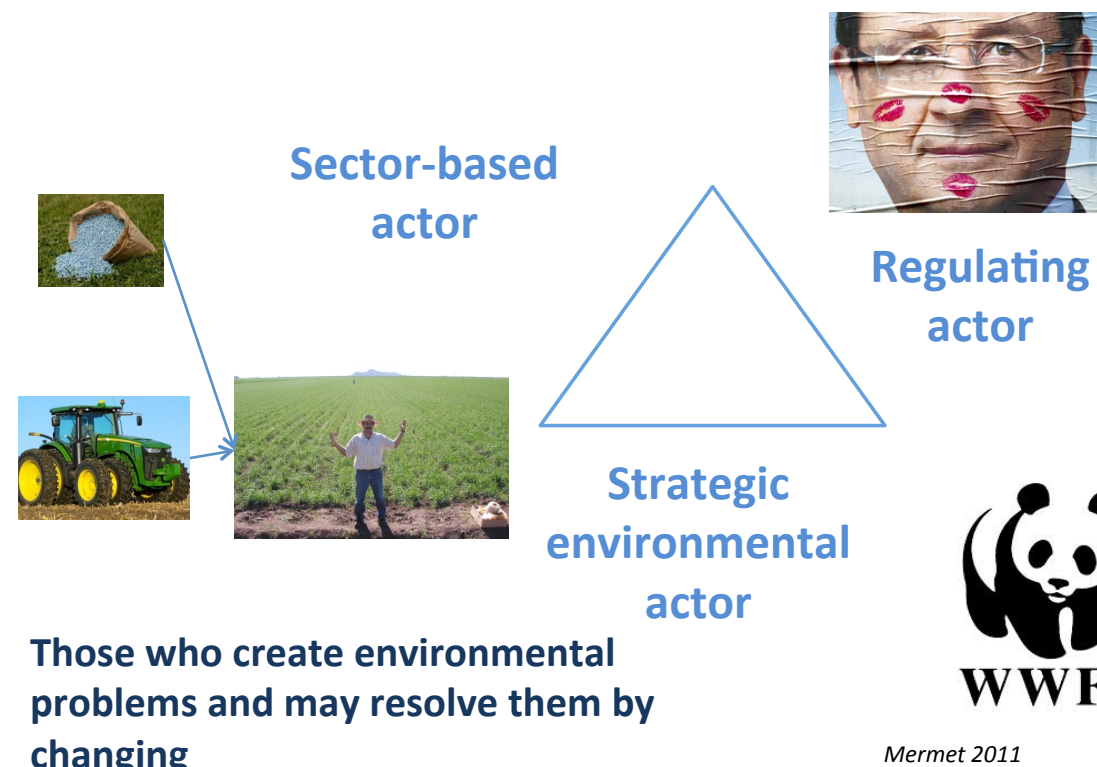The burden falls on specific stakeholders

Who's who

"Role:

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

Scholz et al 2013

Roles

Sector-based actor

Regulating actor

Strategic environmental actor

Those who create environmental problems and may resolve them by changing

WWF

Mermet 2011

Participant

All stakeholders taking part in the process are participants.

He is active if he engages in the collaborative process influencing the outcome.
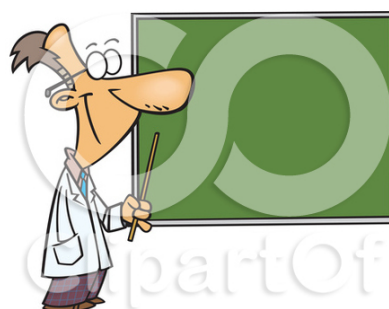
He is passive if he does not actively take part, being merely a bystander to the process.

Technical Expert

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

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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.

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.

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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.

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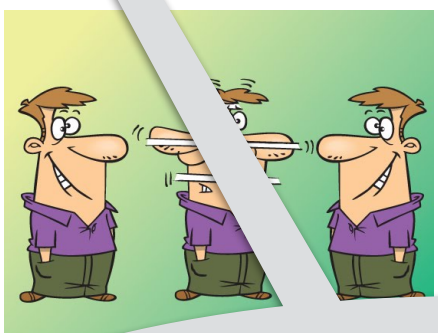
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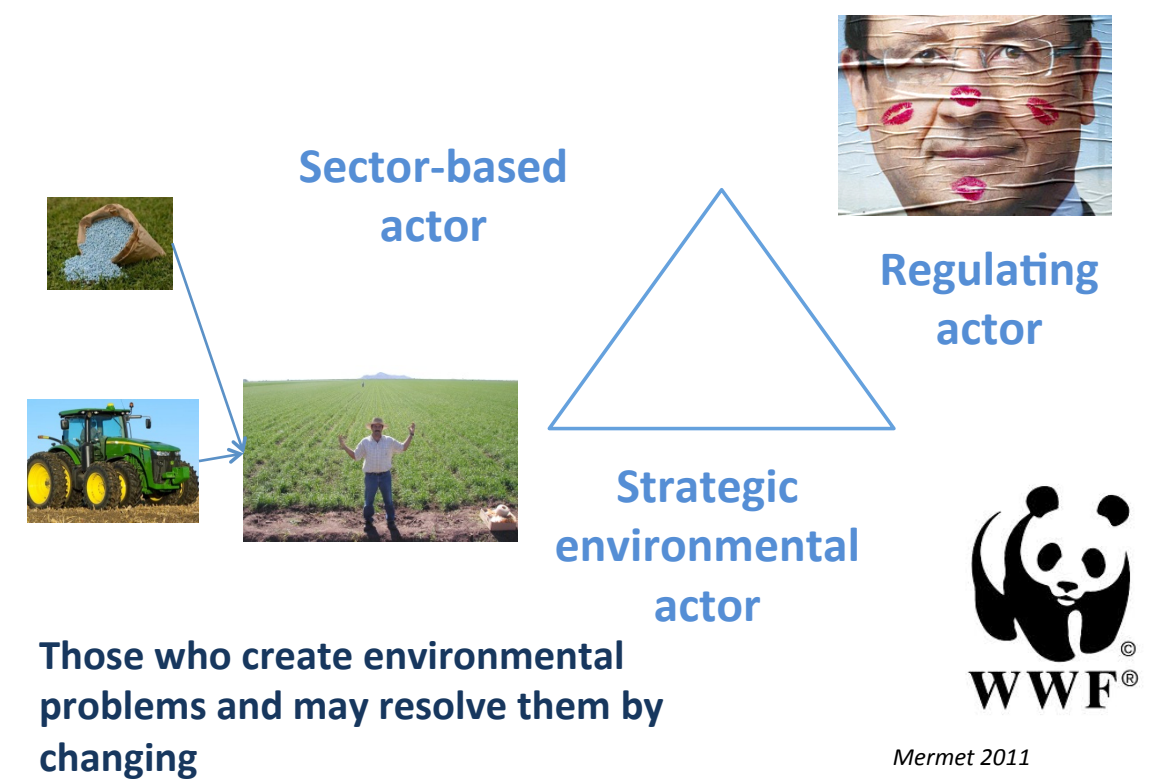The burden falls on specific stakeholders

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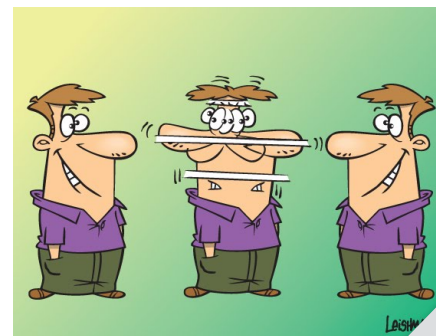Who takes initiative?

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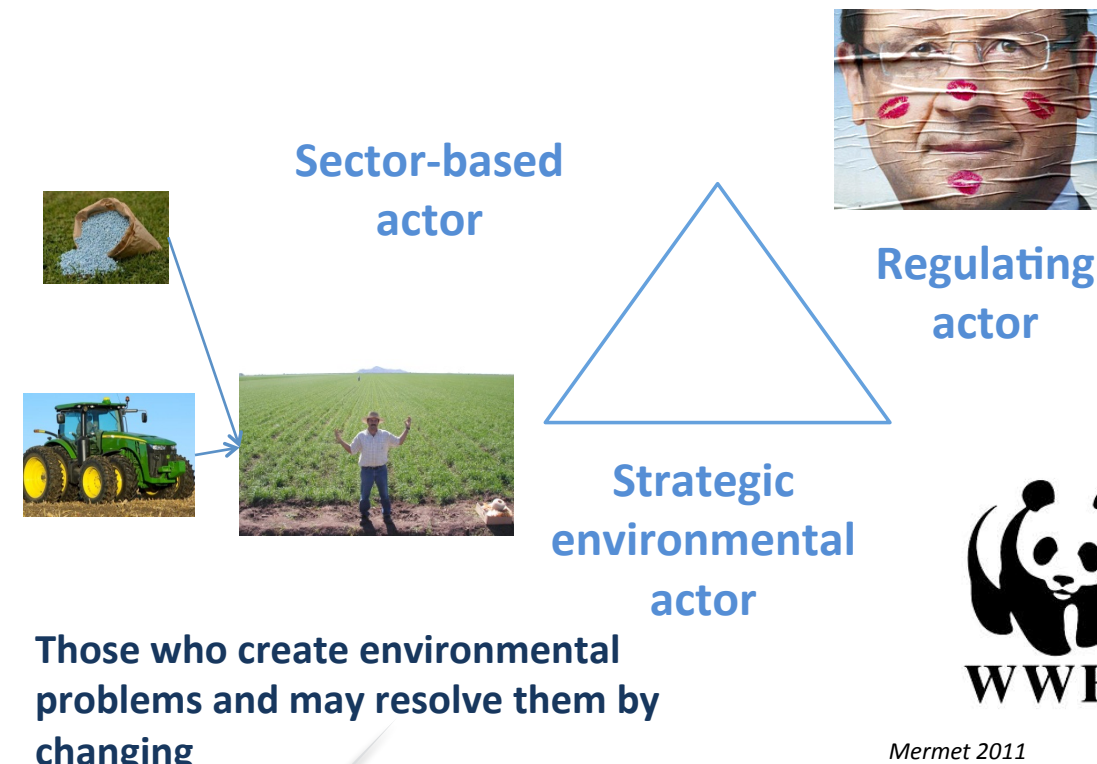Shared expectations about how a particular person in a group ought to behave"

Scholz et ... 3

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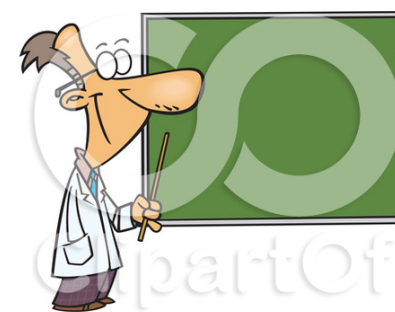All stakeholders taking part in the process are participants.

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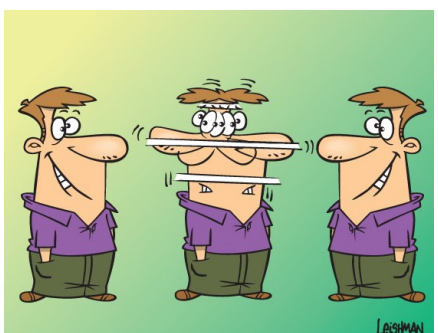Collaborative approach: stakeholders act jointly

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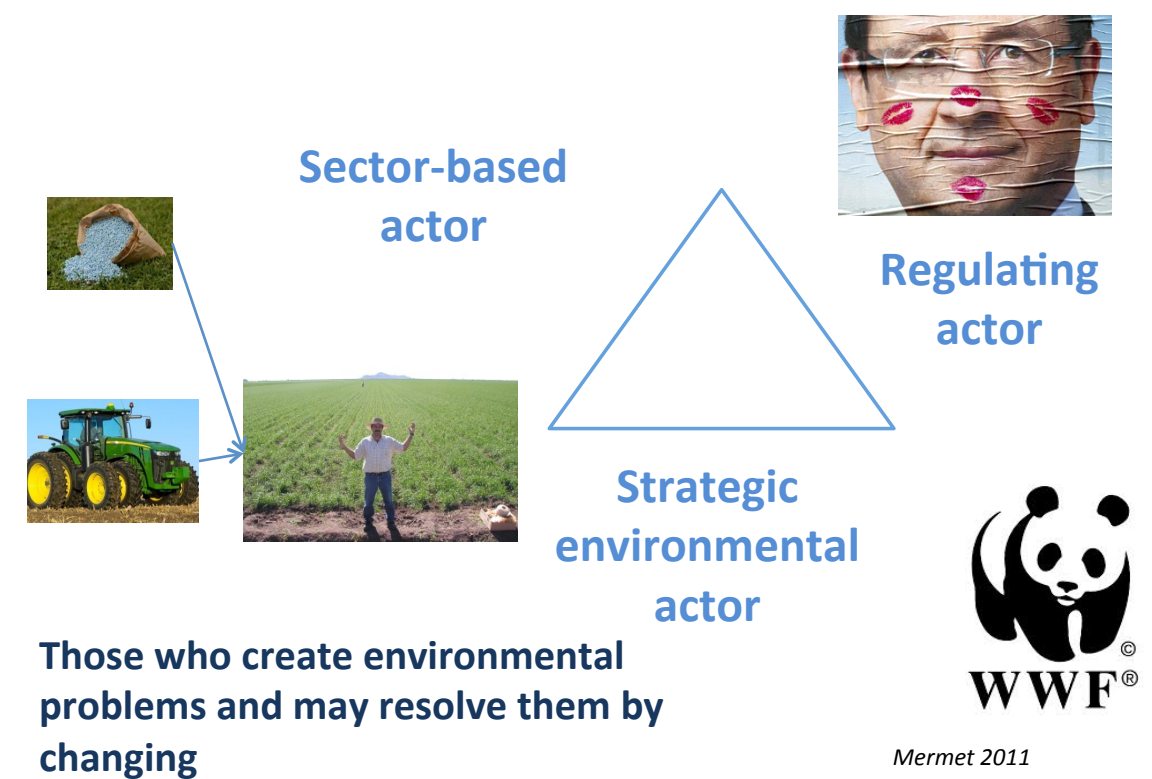**The burden falls on specific stakeholders**

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Scholz et al 2013

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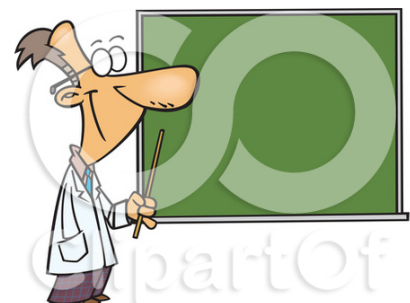
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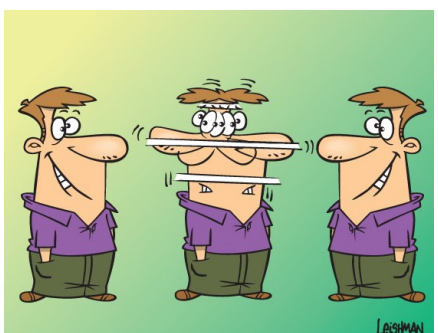
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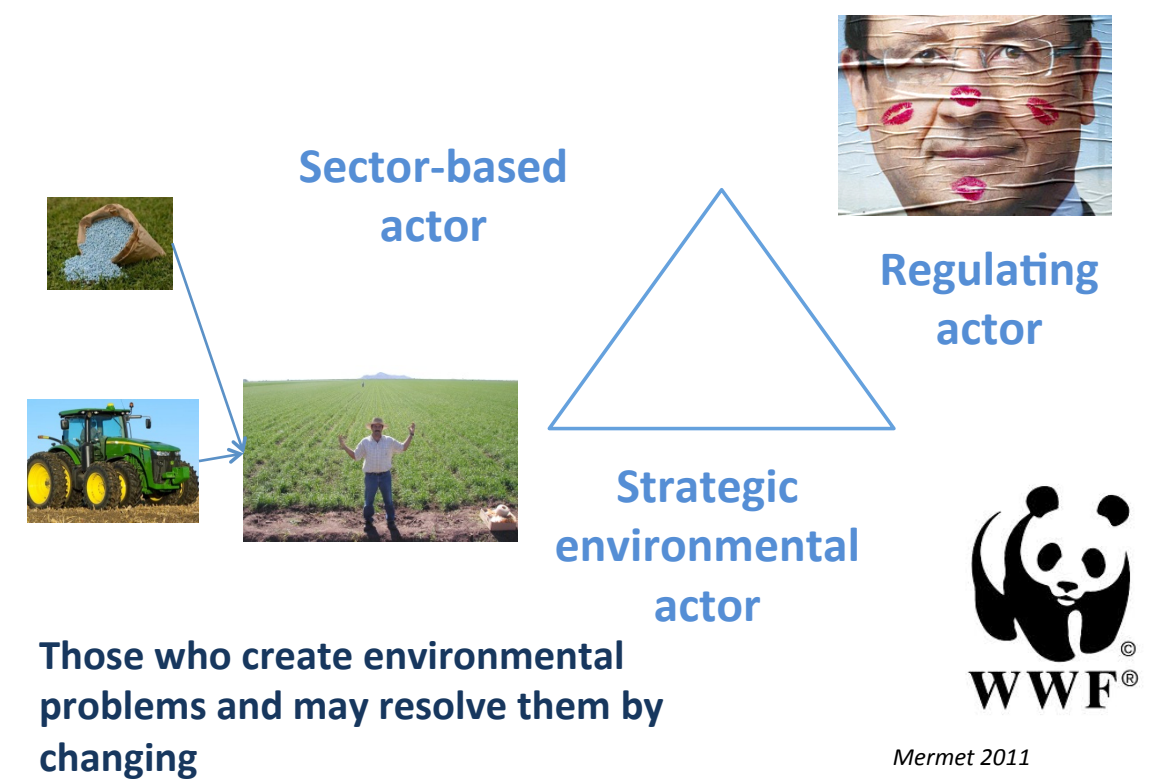The burden falls on specific stakeholders

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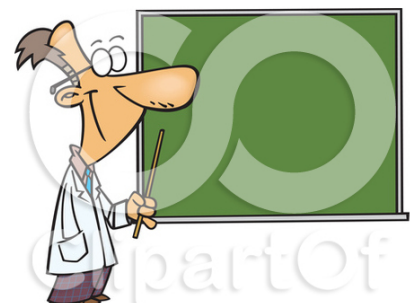
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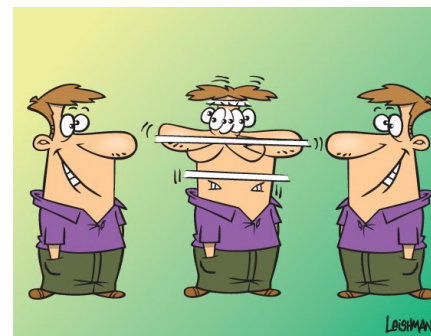
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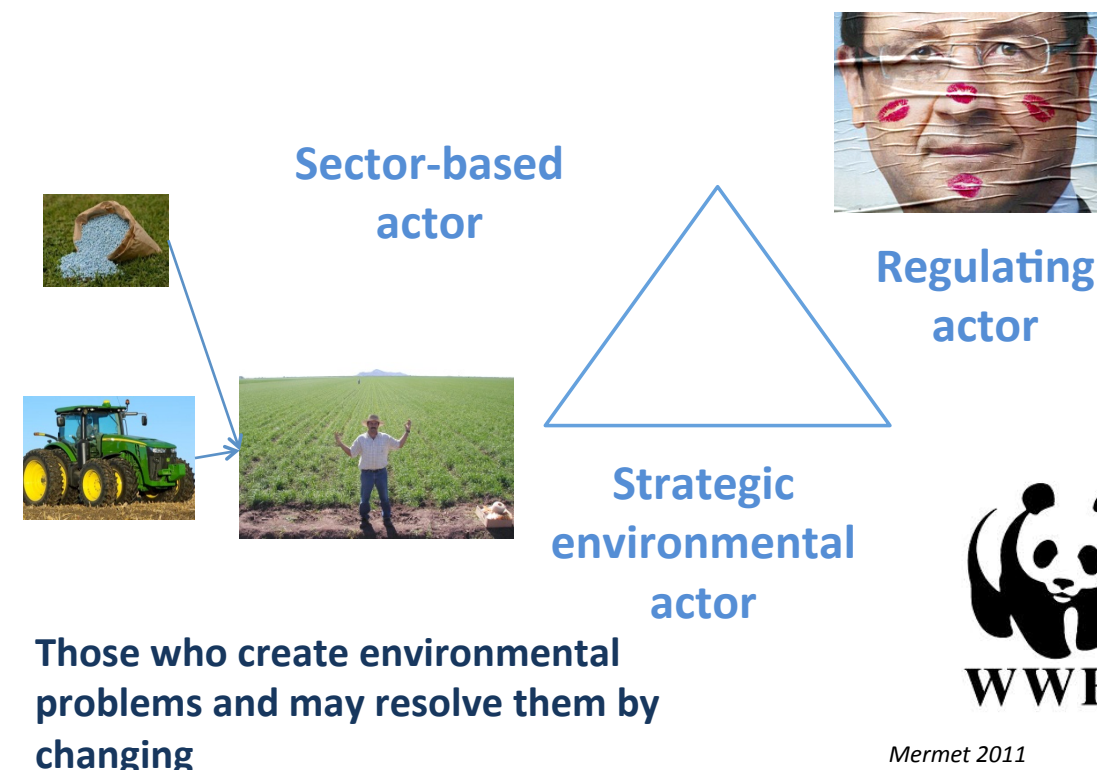
Scholz et al 2013

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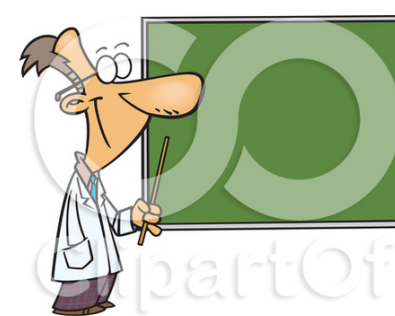All stakeholders taking part in the process are participants.

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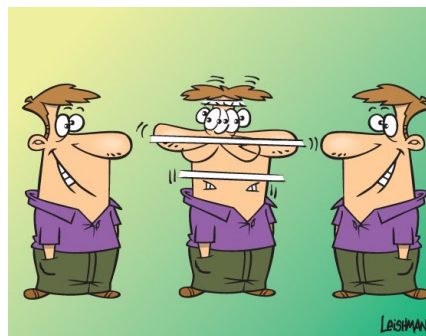
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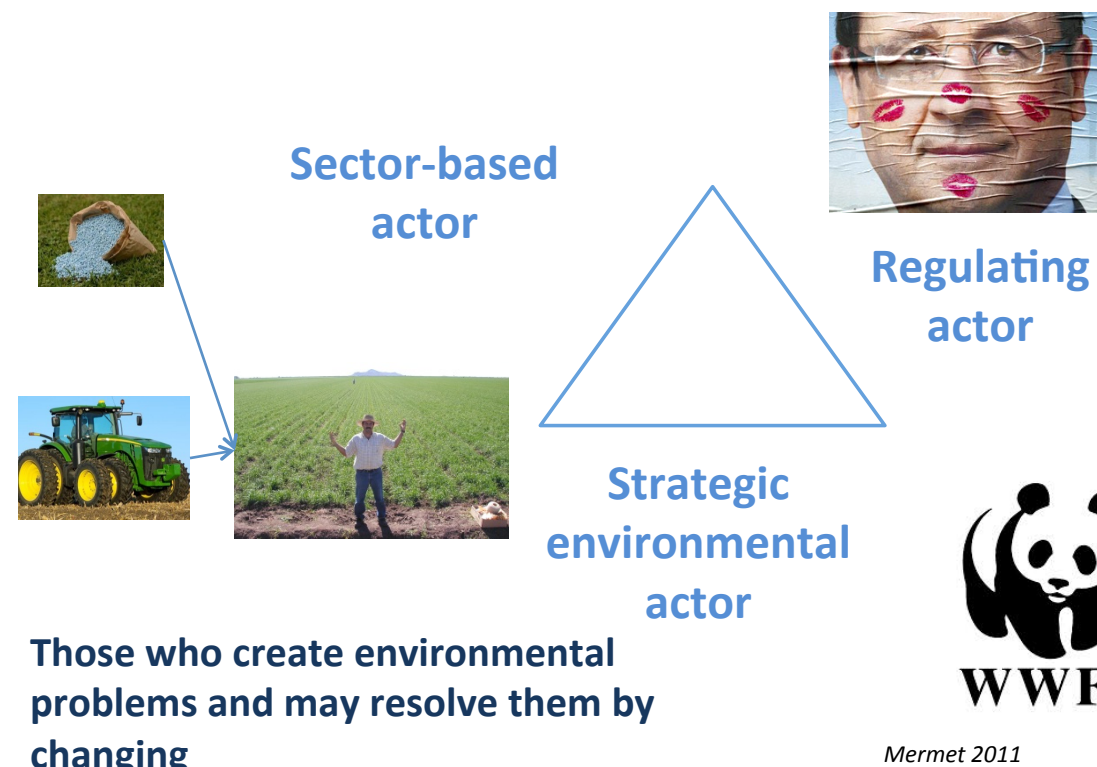The burden falls on specific stakeholders

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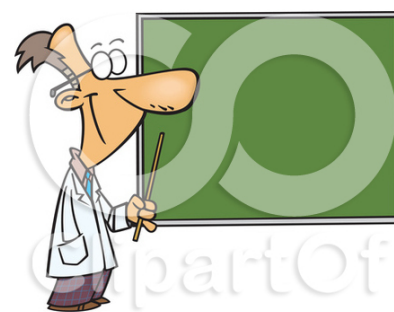All stakeholders taking part in the process are participants.

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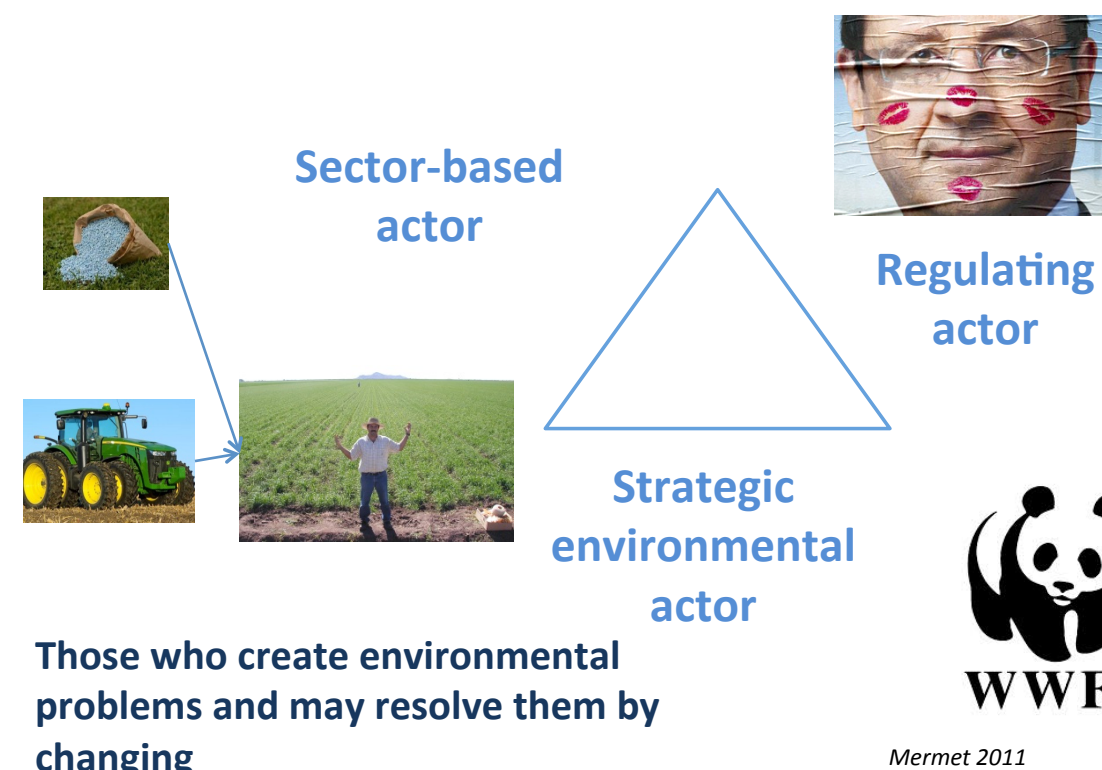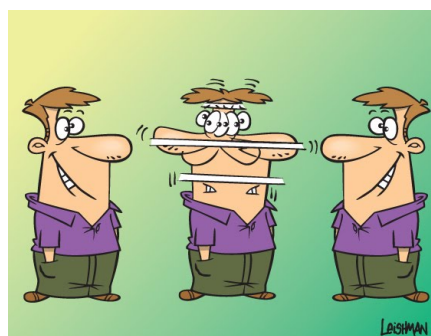| Collaborative approach: stakeholders act jointly | Who takes initiative? | If environmental concern are not shared? |

The burden falls on specific stakeholders

Who's who

"Role:

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

Scholz et al 2013

Roles

Sector-based actor

Regulating actor

Strategic environmental actor

Those who create environmental problems and may resolve them by changing

Mermet 2011

Participant

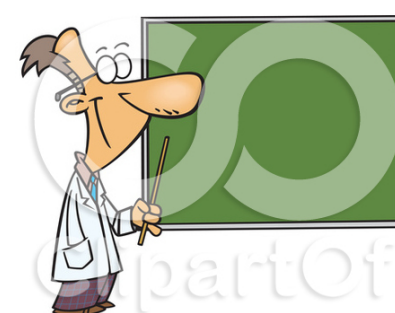All stakeholders taking part in the process are participants.

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.

Technical Expert

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

www.clipartof.com · 1236211

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.

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.

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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.

www.clipartof.com · 1186461

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Participatory Modeling

Agency
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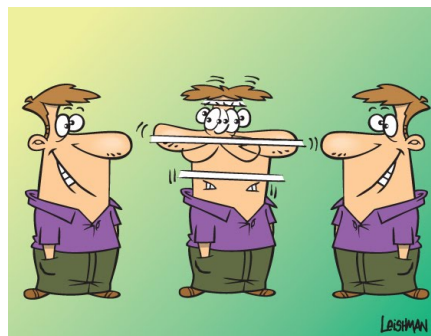

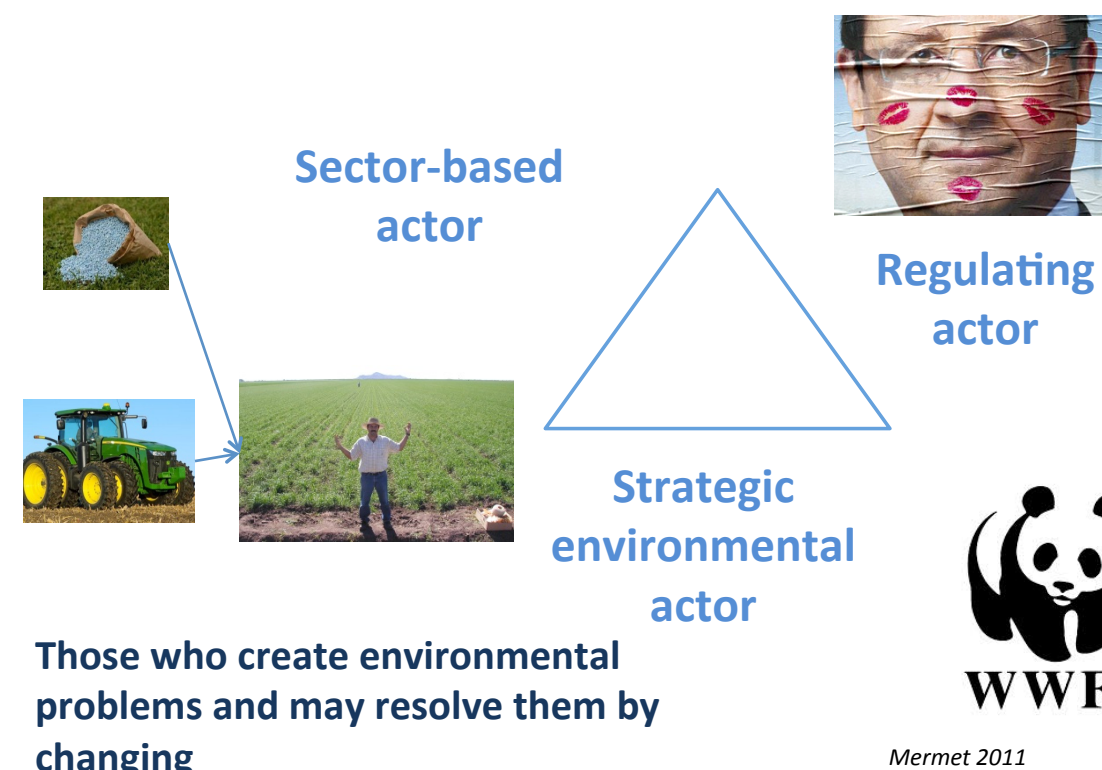The burden falls on specific stakeholders

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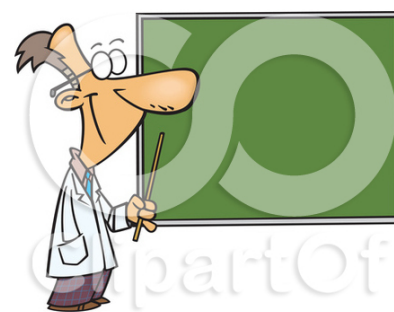All stakeholders taking part in the process are participants.

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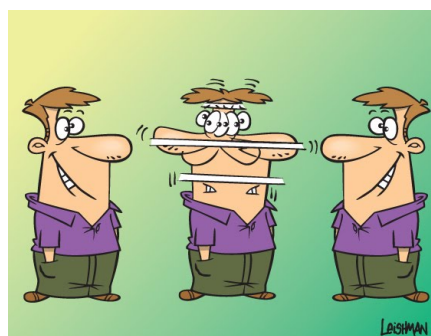Who takes initiative?

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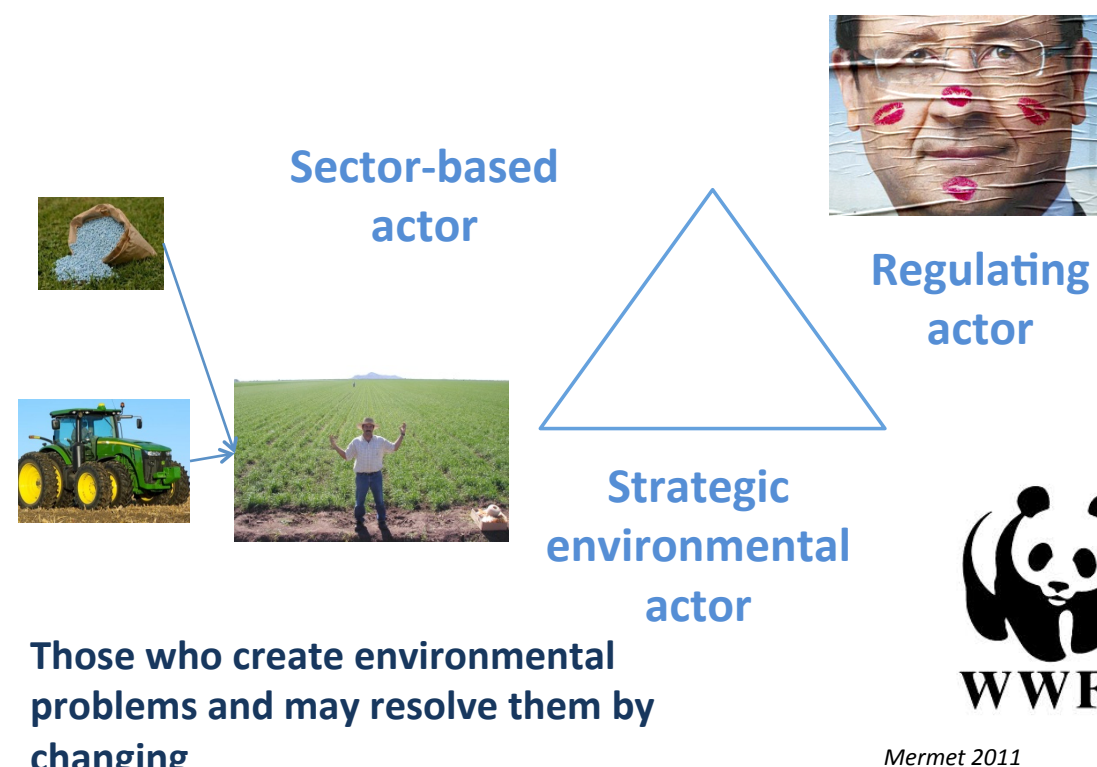The burden falls on specific stakeholders

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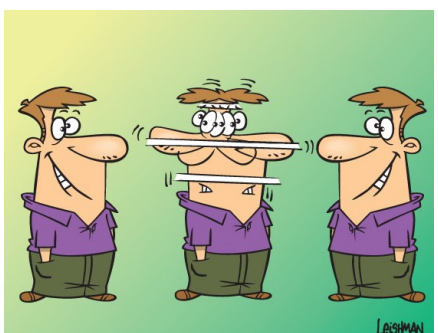If environmental concern are not shared?
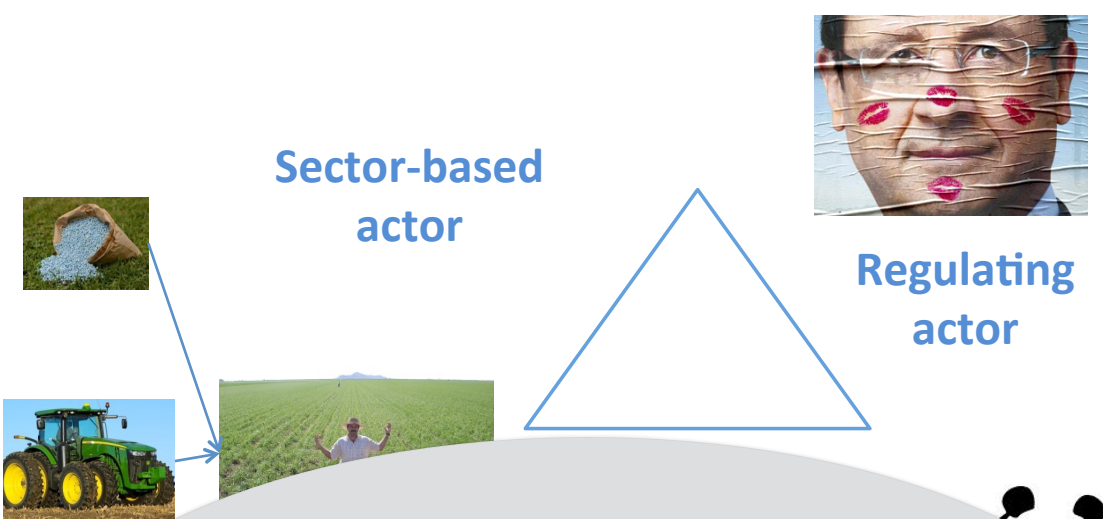
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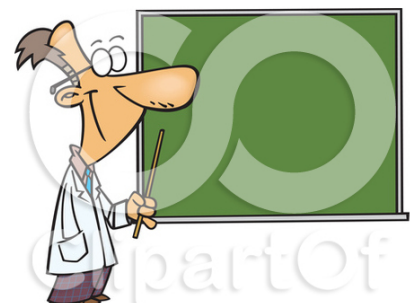All stakeholders [in the] process are participants.

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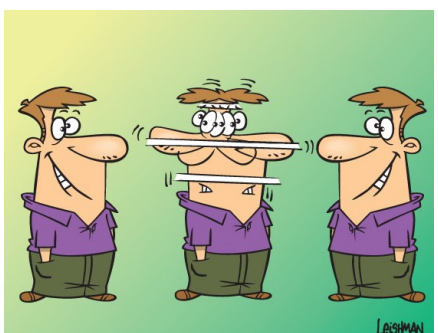If environmental concern are not shared?

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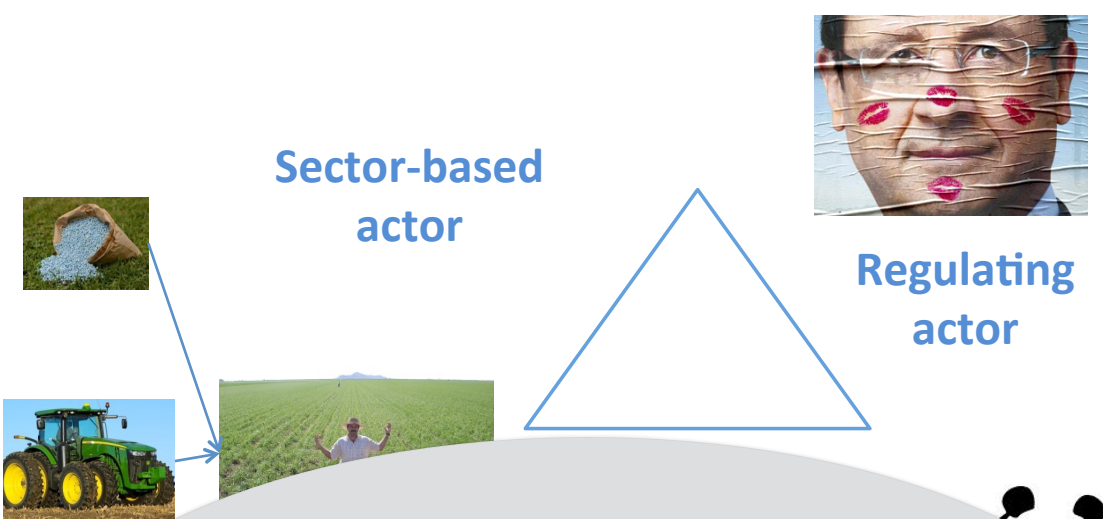
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Important Conclusion:
Having Experts as conveners and leaders is in conflict with the Participatory Modeling Approach
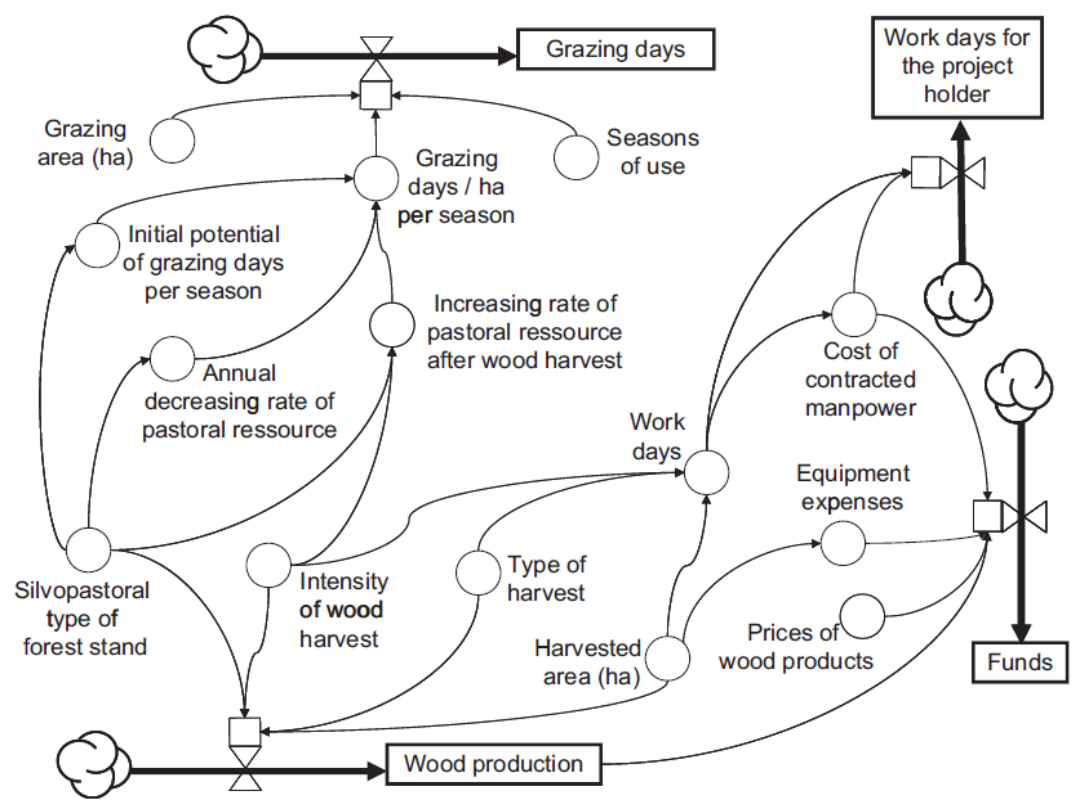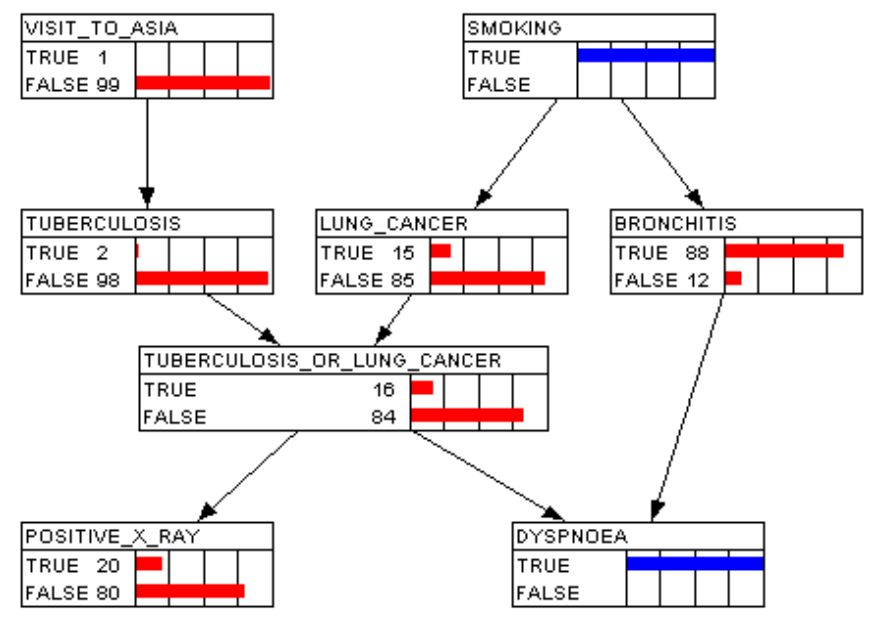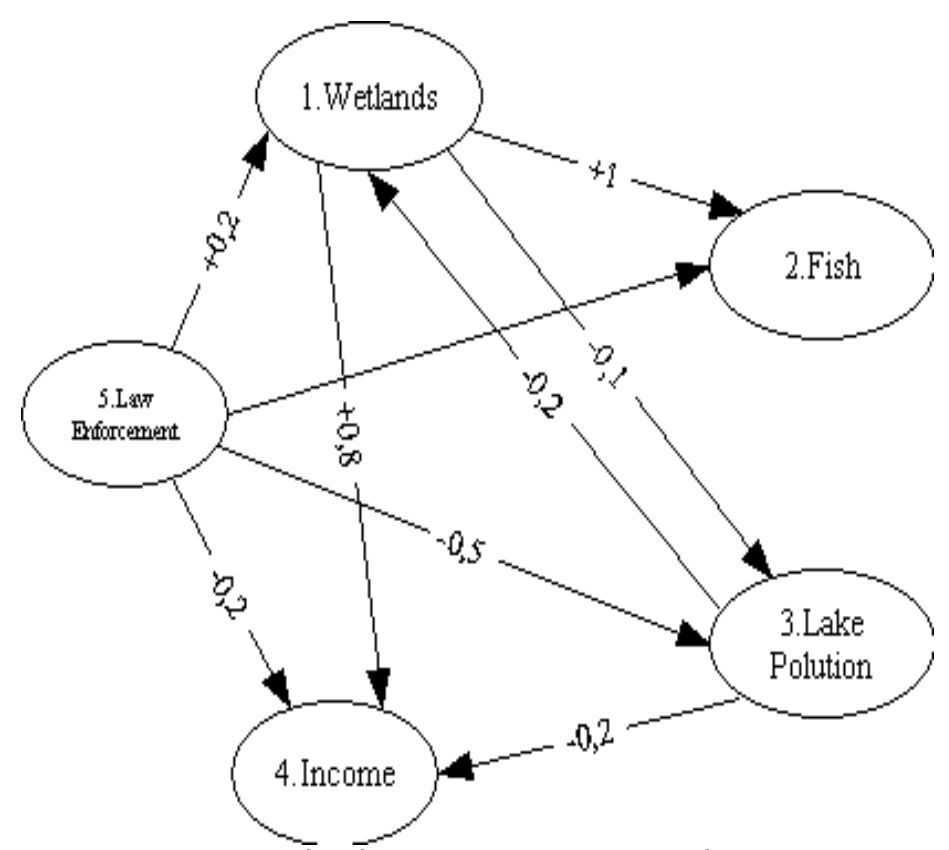
B0: General Introduction

System dynamics
Stock and flow models, feedback loops

Fig. 2. Stock and flow diagram showing the interrelationship between key variables.
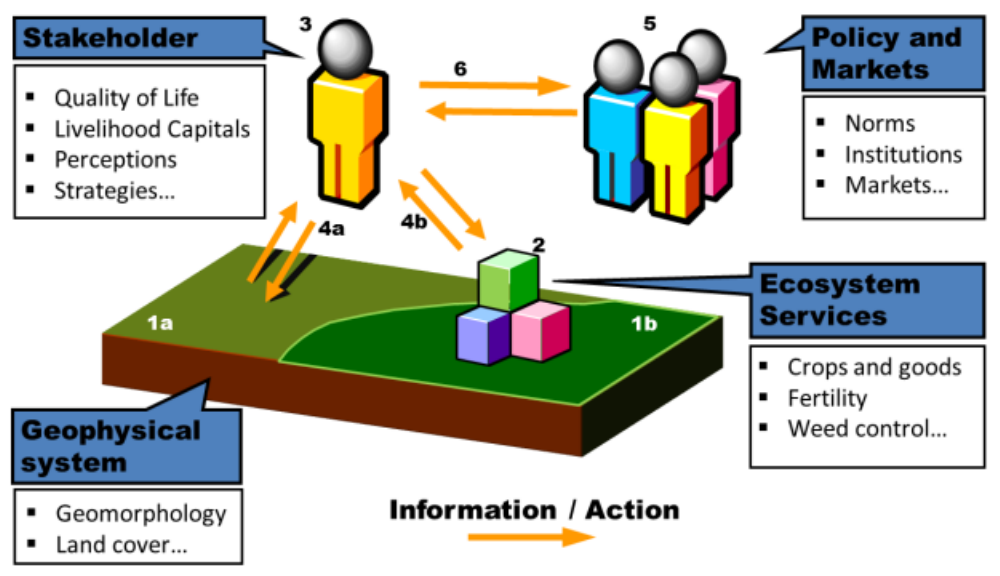
Bayesian belief networks
Conditional probabilities between variables

Fuzzy cognitive mapping
weighted connections between nodes

Agent-based models
decision rules based on states of the environment and the communication modalities

Step 1: Goal statement

Step 2: Conceptual model

Step 3: Table top game

Step 4: Agent-based models