



Oluwakemi Izomo

# Mitigation and Adaptation Studies



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## Class 20: Decision-Making: Facing Threats

### Contents

- Fast and Slow Thinking
- Science-Society Dialog



# Social and Political Context

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## Ethics:

- Normative: discover truth about morality - what rules should be promoted?
- Descriptive: describe the ethical and moral rules - what does motivate people?

## Norms can deviate from what ethics considers as normative:

- slavery was a norm but unethical
- voting rights restrictions for women were a norm but are now considered unethical
- Virginia Sterilization Act of 1924 reflected a social norm at that time but was highly unethical

## What of today's norms will be considered unethical tomorrow?

## Ethics requires:

- careful thinking about what is morally justified (normative reasoning),
- consideration of how relevant culture/customs/norms might be changed (descriptive/empirical ethics).

## Principles in favor of changing lifestyle:

- Duty not to contribute to harm - not to contribute to massive, systemic harm
- Duty to justice
- Obligation to our potential children

# Overcoming Biases

**Behavioral economics** studies the effects of **psychological**, social, **cognitive**, and emotional factors on the **economic decisions** of individuals and institutions and the consequences for **market prices**, **returns**, and **resource allocation**, although not always that narrowly, but also more generally, of the impact of different kinds of behavior, in different environments of varying experimental values.

**Dangerous biases can creep into every strategic choice. Here's how to find them—before they lead you astray.** *by Daniel Kahneman, Dan Lovallo, and Olivier Sibony*

## Before You Make That Big Decision...

**THANKS TO** a slew of popular new books, many executives today realize how biases can distort reasoning in business. *Confirmation bias*, for instance, leads people to ignore evidence that contradicts their preconceived notions. *Anchoring* causes them to weigh one piece of information too heavily in making decisions; *loss aversion* makes them too cautious. In our experience, however, awareness of the effects of biases has done little to improve the quality of business decisions at either the individual or the organizational level.

Though there may now be far more talk of biases among managers, talk alone will not eliminate them. But it is possible to take steps to counteract them. A recent McKinsey study of more than 1,000 major business investments showed that when organizations worked at reducing the effect of bias in their decision-making processes, they achieved returns up to seven percentage points higher. (For more on this study, see "The Case for Behavioral Strategy," *McKinsey Quarterly*, March 2010.) Reducing bias makes a difference. In this article, we will describe

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## THE BEHAVIORAL ECONOMICS OF DECISION MAKING

Daniel Kahneman (the lead author) and Amos Tversky introduced the idea of cognitive biases, and their impact on decision making, in 1974. Their research and ideas were recognized when Kahneman was awarded a Nobel Prize in economics in 2002. These biases, and behavioral psychology generally, have since captured the imagination of business experts.

Some notable popular books on this topic:

*Nudge: Improving Decisions About Health, Wealth, and Happiness* by Richard H. Thaler and Cass R. Sunstein (Caravan, 2008)

*Think Twice: Harnessing the Power of Counterintuition* by Michael J. Mauboussin (Harvard Business Review Press, 2009)

*Think Again: Why Good Leaders Make Bad Decisions and How to Keep It from Happening to You* by Sydney Finkelstein, Jo Whitehead, and Andrew Campbell (Harvard Business Review Press, 2009)

*Predictably Irrational: The Hidden Forces That Shape Our Decisions* by Dan Ariely (HarperCollins, 2008)

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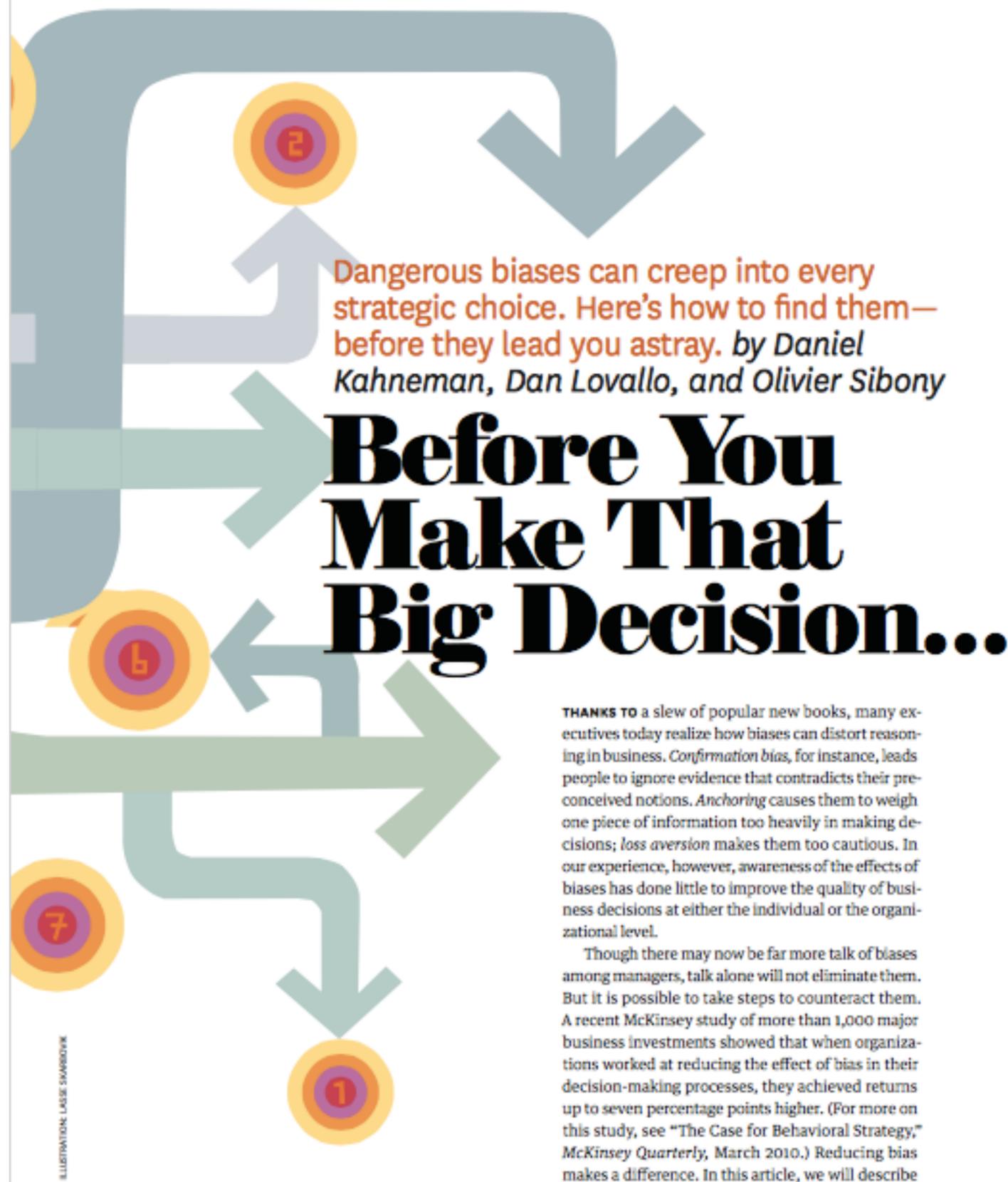


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### PRELIMINARY QUESTIONS



## Ask yourself

# 1

#### CHECK FOR SELF-INTERESTED BIASES

Is there any reason to suspect the team making the recommendation of errors motivated by self-interest?

**Review the proposal with extra care, especially for overoptimism.**

# 2

#### CHECK FOR THE AFFECT HEURISTIC

Has the team fallen in love with its proposal?

**Rigorously apply all the quality controls on the checklist.**

# 3

#### CHECK FOR GROUPTHINK

Were there dissenting opinions within the team?

Were they explored adequately?

**Solicit dissenting views, discreetly if necessary.**

THE BIG IDEA BEFORE YOU MAKE THAT BIG DECISION...

CHALLENGE  
QUESTIONS

## Ask the recommenders

# 4

CHECK FOR  
SALIENCY BIAS

Could the diagnosis be overly influenced by an analogy to a memorable success?

**Ask for more analogies, and rigorously analyze their similarity to the current situation.**

# 5

CHECK FOR  
CONFIRMATION BIAS

Are credible alternatives included along with the recommendation?

**Request additional options.**

# 6

CHECK FOR  
AVAILABILITY BIAS

If you had to make this decision again in a year's time, what information would you want, and can you get more of it now?

**Use checklists of the data needed for each kind of decision.**

# 7

CHECK FOR  
ANCHORING BIAS

Do you know where the numbers came from? Can there be ...unsubstantiated numbers?  
...extrapolation from history?  
...a motivation to use a certain anchor?  
**Reanchor with figures generated by other models or benchmarks, and request new analysis.**

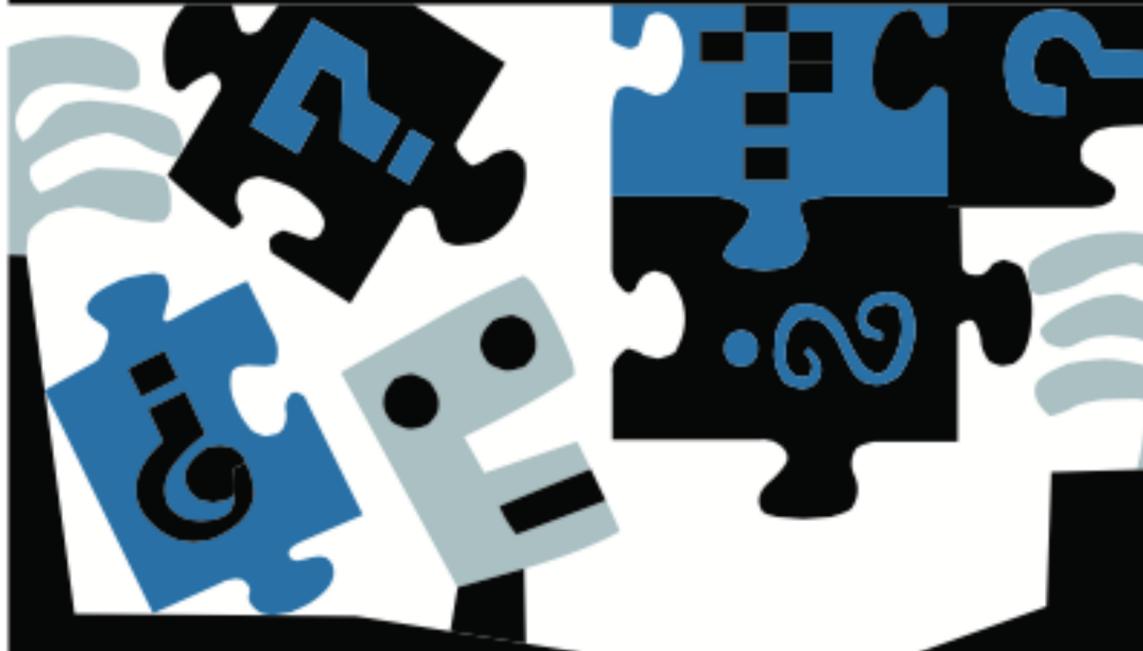
# 8

CHECK FOR  
HALO EFFECT

Is the team assuming that a person, organization, or approach that is successful in one area will be just as successful in another?

**Eliminate false inferences, and ask the team to seek additional comparable examples.**

## EVALUATION QUESTIONS



## Ask about the proposal

# 10

**CHECK FOR OVERCONFIDENCE, PLANNING FALLACY, OPTIMISTIC BIASES, COMPETITOR NEGLIGENCE**

Is the base case overly optimistic?

**Have the team build a case taking an outside view; use war games.**

# 11

**CHECK FOR DISASTER NEGLIGENCE**

Is the worst case bad enough?

**Have the team conduct a pre-mortem: Imagine that the worst has happened, and develop a story about the causes.**

# 12

**CHECK FOR LOSS AVERSION**

Is the recommending team overly cautious?

**Realign incentives to share responsibility for the risk or to remove risk.**

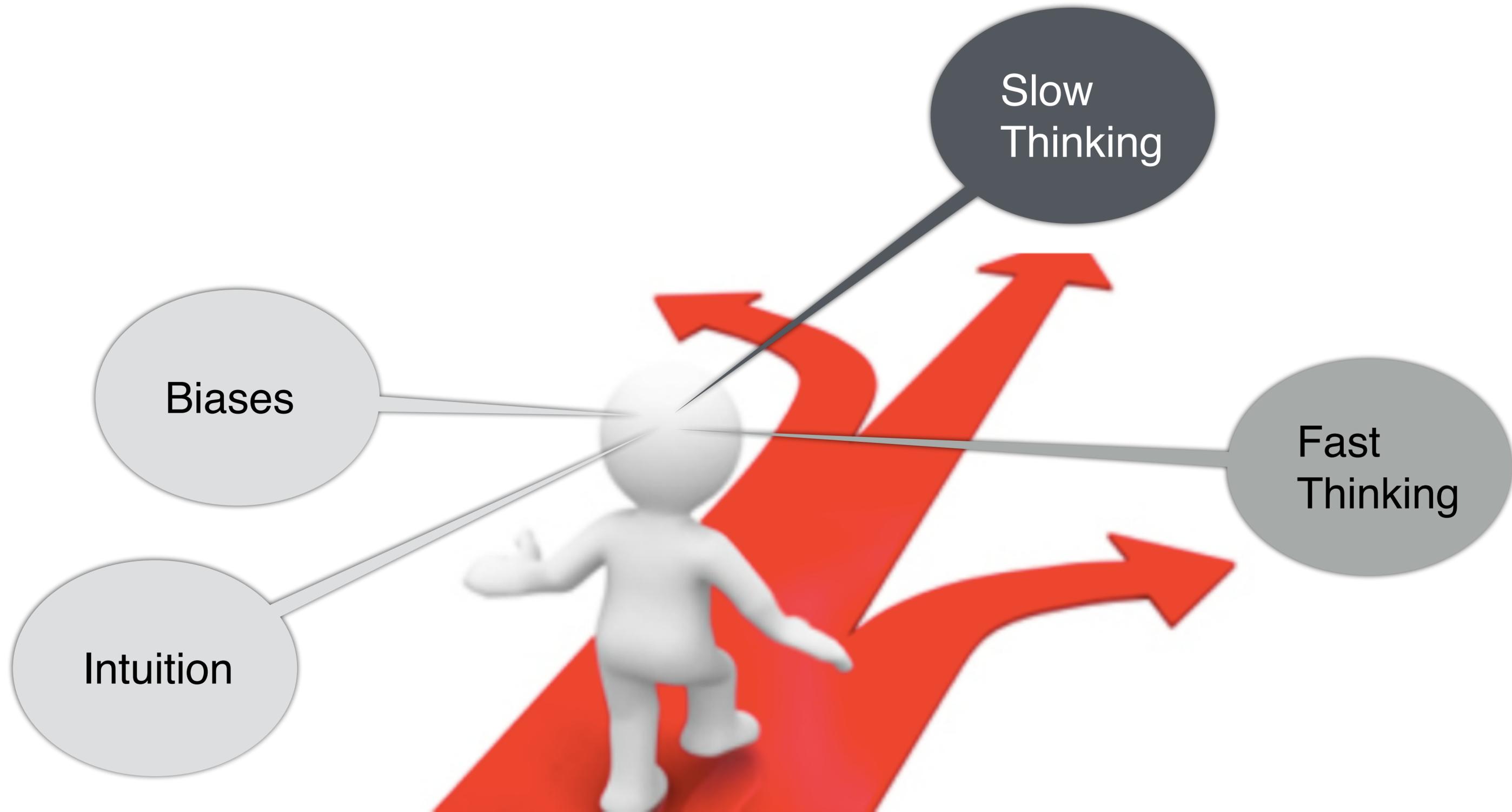


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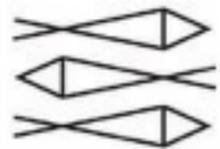






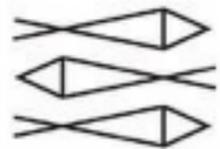
## THINKING, FAST AND SLOW

DANIEL KAHNEMAN



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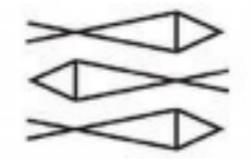
### Herbert Simon on Intuition:

“The situation has provided a cue; this cue has given the expert access to information stored in memory, and the information provides the answer. Intuition is nothing more and nothing less than recognition.”

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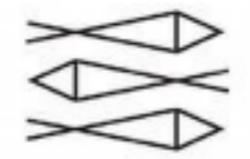
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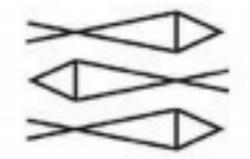
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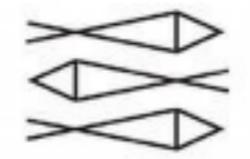
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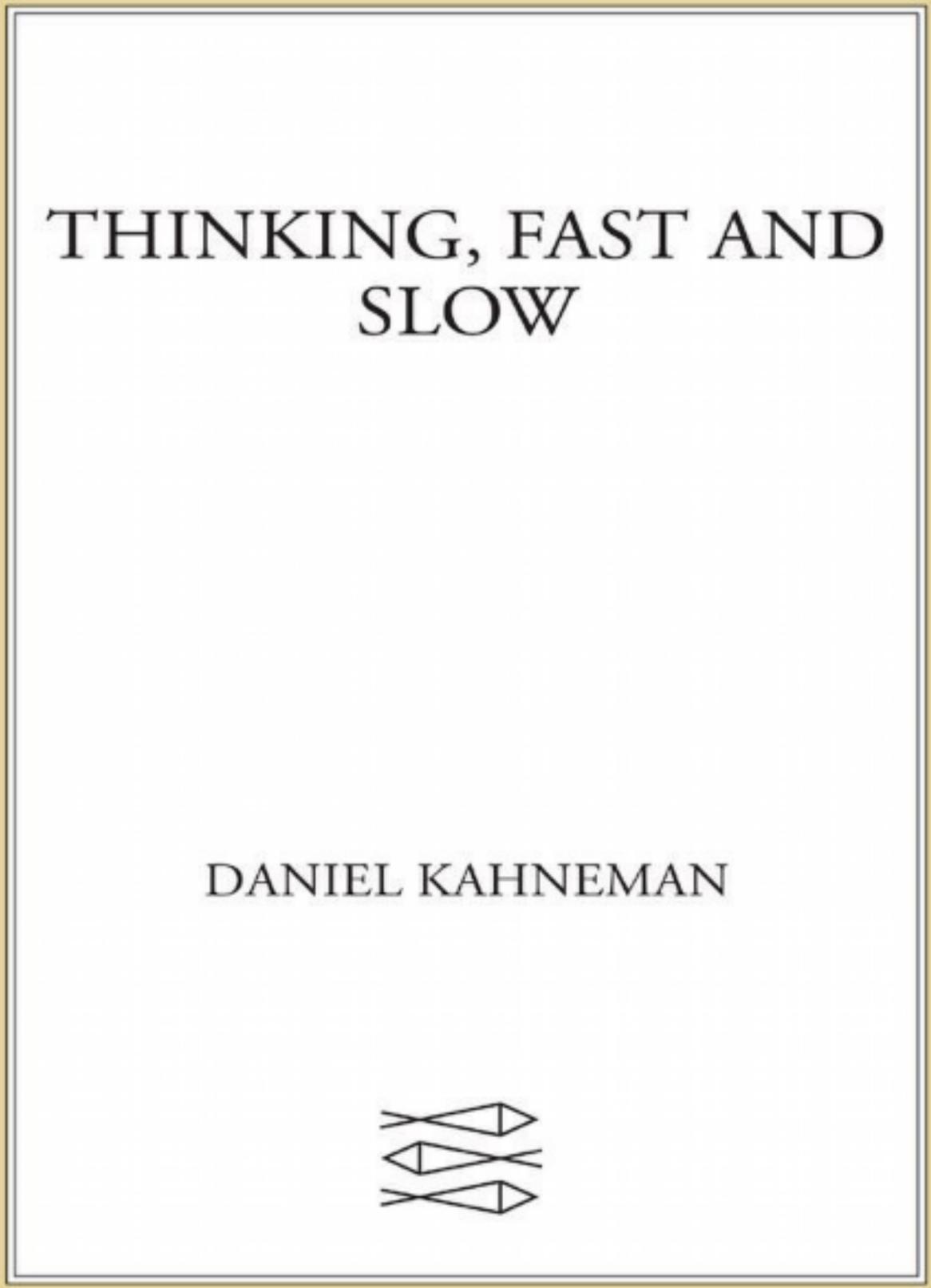
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The spontaneous search for an intuitive solution sometimes fails—neither an expert solution nor a heuristic answer comes to mind. In such cases we often find ourselves switching to a slower, more deliberate and effortful form of thinking. This is the **slow thinking** of the title. **Fast thinking** includes both variants of intuitive thought—the expert and the heuristic—as well as the entirely automatic mental activities of perception and memory, the operations that enable you to know there is a lamp on your desk or retrieve the name of the capital of Russia.

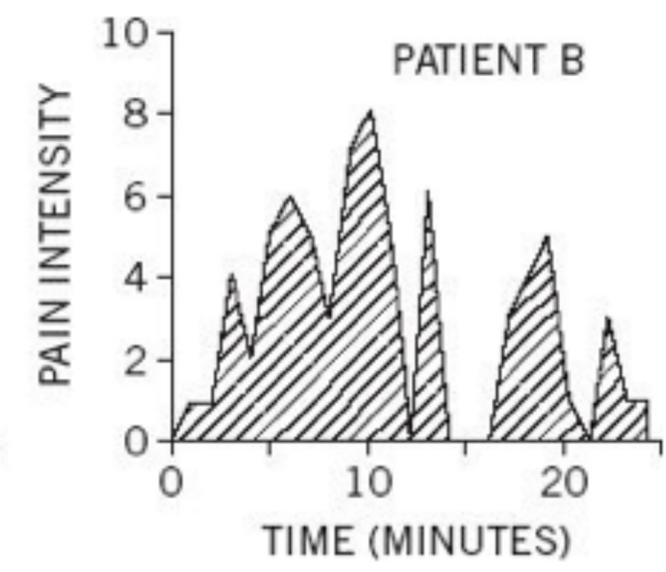
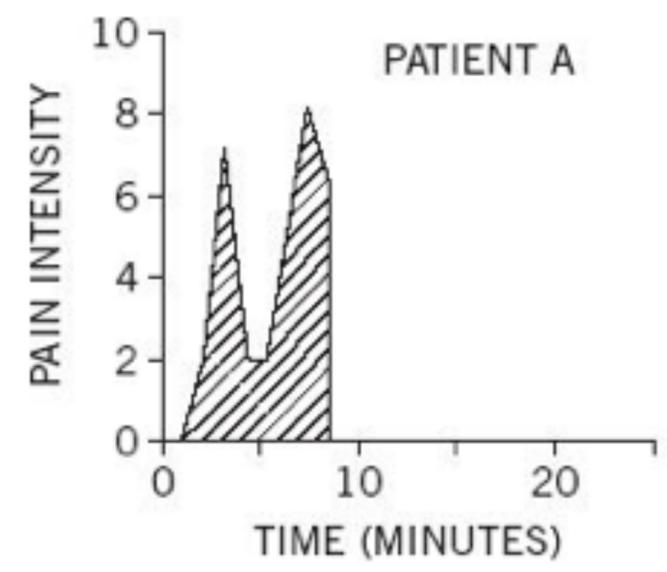
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# Fast and Slow Thinking

Experiment: Pain-full colonoscopy

**Peak-end rule:** The global retrospective rating was well predicted by the average of the level of pain reported at the worst moment of the experience and at its end.

**Duration neglect:** The duration of the procedure had no effect whatsoever on the ratings of total pain.



You can now apply these rules to the profiles of patients A and B. The worst rating (8 on the 10-point scale) was the same for both patients, but the last rating before the end of the procedure was 7 for patient A and only 1 for patient B. The peak-end average was therefore 7.5 for patient A and only 4.5 for patient B. As expected, patient A retained a much worse memory of the episode than patient B. It was the bad luck of patient A that the procedure ended at a bad moment, leaving him with an unpleasant memory.

Kahneman, Daniel. Thinking, Fast and Slow (p. 380). Farrar, Straus and Giroux. Kindle Edition.

## Conclusions

I began this book by introducing two fictitious characters, spent some time discussing two species, and ended with two selves. The two characters were the intuitive System 1, which does the fast thinking, and the effortful and slower System 2, which does the slow thinking, monitors System 1, and maintains control as best it can within its limited resources. The two species were the fictitious Econs, who live in the land of theory, and the Humans, who act in the real world. The two selves are the experiencing self, which does the living, and the remembering self, which keeps score and makes the choices.

Kahneman, Daniel. Thinking, Fast and Slow (p. 408). Farrar, Straus and Giroux. Kindle Edition.

# Fast and Slow Thinking

## Two Selves

The possibility of conflicts between the remembering self and the interests of the experiencing self turned out to be a harder problem than I initially thought.

The remembering self's neglect of duration, its exaggerated emphasis on peaks and ends, and its susceptibility to hindsight combine to yield distorted reflections of our actual experience.

The remembering self is a construction of System 2. However, the distinctive features of the way it evaluates episodes and lives are characteristics of our memory. Duration neglect and the peak-end rule originate in System 1 and do not necessarily correspond to the values of System 2. We believe that duration is important, but our memory tells us it is not. The rules that govern the evaluation of the past are poor guides for decision making, because time does matter. The central fact of our existence is that time is the ultimate finite resource, but the remembering self ignores that reality. The neglect of duration combined with the peak-end rule causes a bias that favors a short period of intense joy over a long period of moderate happiness. The mirror image of the same bias makes us fear a short period of intense but tolerable suffering more than we fear a much longer period of moderate pain. Duration neglect also makes us prone to accept a long period of mild unpleasantness because the end will be better, and it favors giving up an opportunity for a long happy period if it is likely to have a poor ending.

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System 2

System 1

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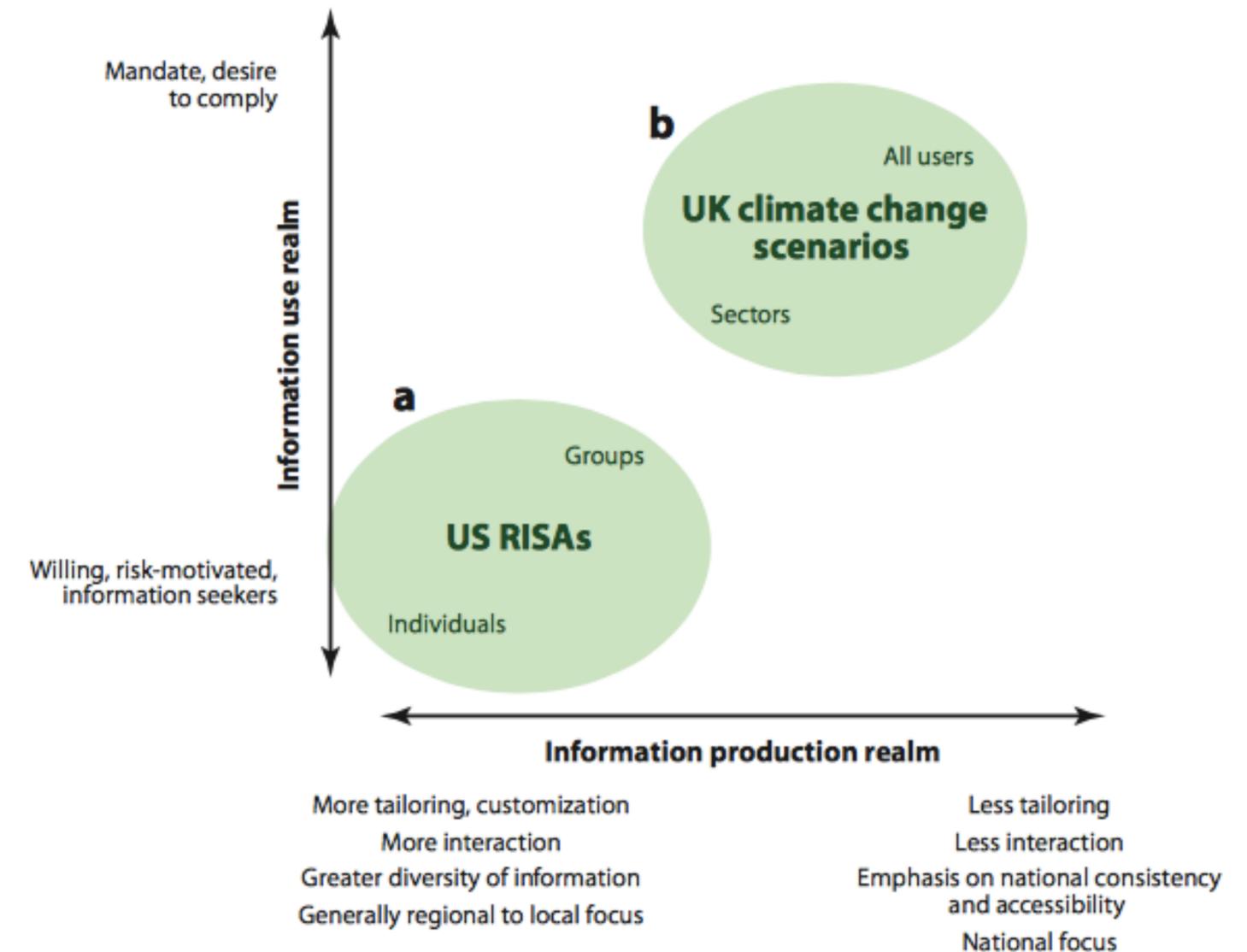
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# Actionable Knowledge for Environmental Decision Making: Broadening the Usability of Climate Science

Christine J. Kirchhoff,<sup>1</sup> Maria Carmen Lemos,<sup>1</sup> and Suraje Dessai<sup>2</sup>

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<sup>2</sup>Sustainability Research Institute and ESRC Centre for Climate Change Economics and Policy, School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom; email: s.dessai@leeds.ac.uk



**Figure 2**

Usability space in the United Kingdom versus the US Regional Integrated Sciences and Assessments (RISAs). The vertical axis depicts the information use realm where users range from being primarily self-motivated to use information (e.g., risk motivated, information seeking) to users who are motivated through the regulatory environment (e.g., desire to comply with existing or future regulations). The horizontal axis shows the range of information production. On the left, production is characterized by high levels of tailoring, interaction, and support for use; there is diversity of information; and there is a regional to local focus. On the right, information production is characterized by much lower levels of tailoring and interaction; the emphasis is on national consistency; and the focus is the national level. The two green ovals represent the usability space achieved through the US RISAs (in oval *a*) and the UK climate change scenarios (in oval *b*).

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<sup>2</sup>Sustainability Research Institute and ESRC Centre for Climate Change Economics and Policy, School of Earth and Environment, University of Leeds, Leeds LS2 9JT, United Kingdom; email: s.dessai@leeds.ac.uk

## SUMMARY POINTS

1. There has been a rapid evolution of increasingly complex science-policy models to help understand science-society interaction and to aid in understanding how to provide information to solve societal problems.
2. Despite this advancement and attention to problem solving, there is a persistent gap between production and use of scientific knowledge.
3. Much of the work to bridge the gap has focused on interactions between producers and individual users and their decision contexts.
4. We propose that to achieve more widespread uptake in information requires a shift in the way in which we approach information provisioning.
5. To advance more broad dissemination and use of information, we suggest there is a need to better understand users in the aggregate to increase the efficiency of interactions and to inform the strategies producers use to reach groups of potential users.

*Perspective***The Challenge of Degraded Environments: How Common Biases Impair Effective Policy****Alan Berger,<sup>1</sup> Case Brown,<sup>2</sup> Carolyn Kousky,<sup>3,\*</sup> and Richard Zeckhauser<sup>4</sup>**

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Economic activity can damage natural systems and reduce the flow of ecosystem services. The harms can be substantial, as our case studies vividly illustrate. Most degraded landscapes have at least some potential to be reclaimed. However, uncertainty plagues decision making regarding degradation and reclamation, in relation to the extent of the damage, the success of reclamation, and how exposure will change in the future. We examine how a range of observed decision biases can lead to far-from-optimal policies regarding how much degradation to allow and when, as well as how and how much, to reclaim degraded sites. Despite our focus on degraded landscapes, we believe these are generic biases present in a wide range of risk situations. Our three case studies show these biases at work. The first two studies are of mining operations in the United States and Canada, and the third is of climate change.

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The biases we discuss here lead to suboptimal decision making in a range of cases where risks and uncertainties are present. These biases play a particularly pernicious role in decision making regarding degradation and reclamation. In dealing with a disease, the crucial first step is diagnosis. In dealing with biases, the crucial first step is recognition. Once we understand the ways we are biased in our decision making, we can design systematic methods to address the issues more effectively. ...

These cases also suggest that degrading environments on a large scale and only afterwards considering how to clean up the damages simply does not work. Landscapes — or the climate — are left permanently damaged.

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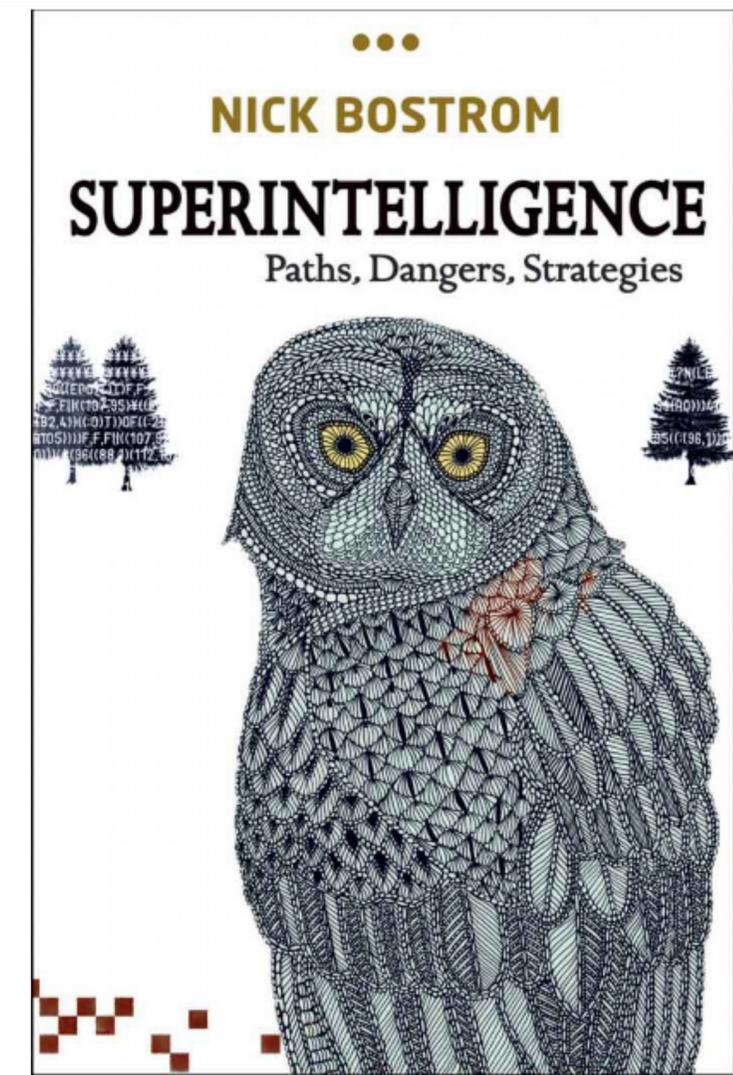
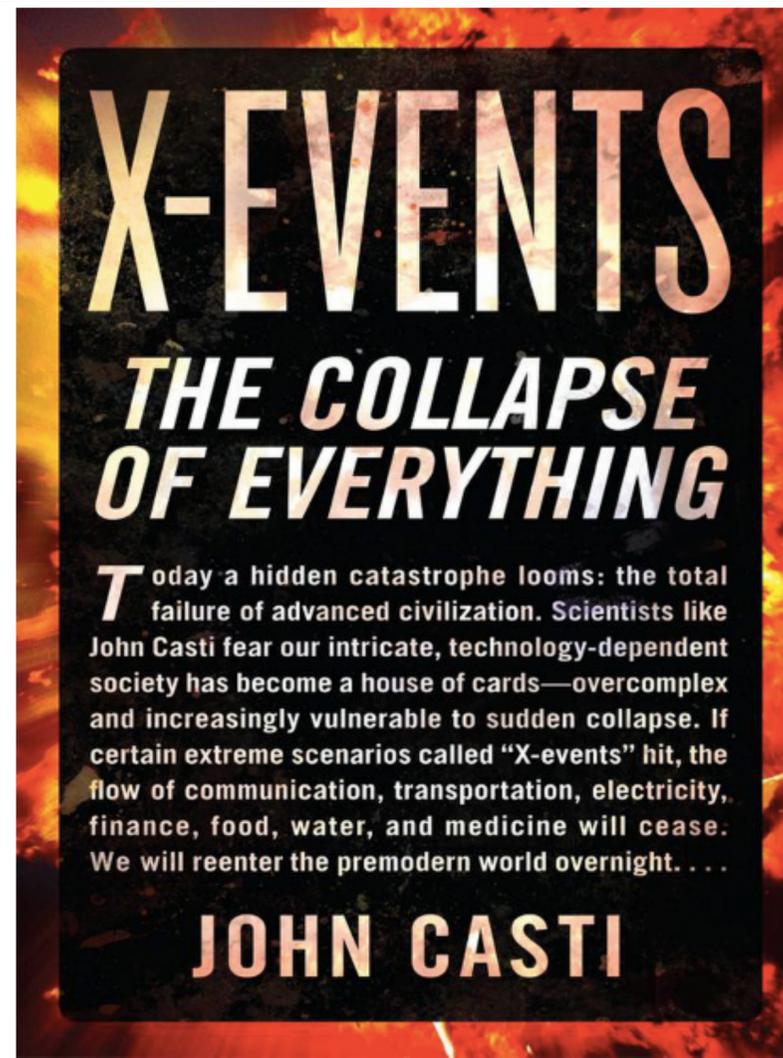
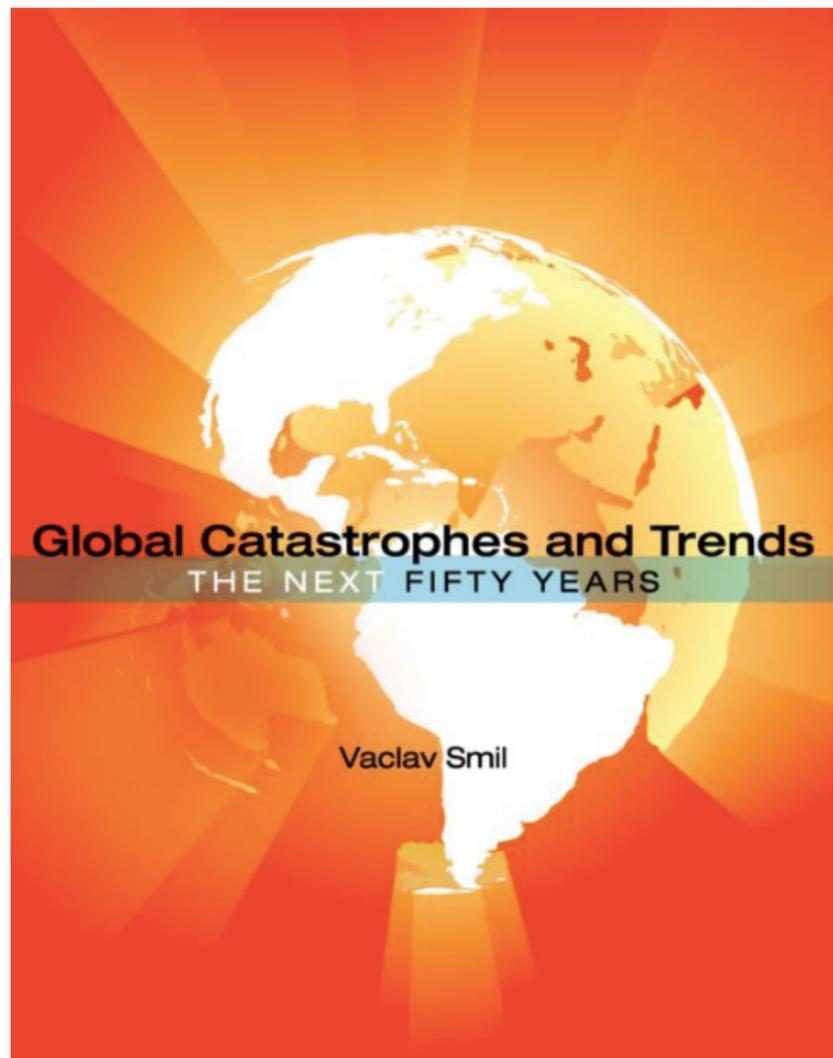
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Economic activity can damage natural systems and reduce the flow of ecosystem services. The harms can be substantial, as our case studies vividly illustrate. Most degraded landscapes have at least some potential to be reclaimed. However, uncertainty plagues decision making regarding degradation and reclamation, in relation to the extent of the damage, the success of reclamation, and how exposure will change in the future. We examine how a range of observed decision biases can lead to far-from-optimal policies regarding how much degradation to allow and when, as well as how and how much, to reclaim degraded sites. Despite our focus on degraded landscapes, we believe these are generic biases present in a wide range of risk situations. Our three case studies show these biases at work. The first two studies are of mining operations in the United States and Canada, and the third is of climate change.

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The biases we discuss here lead to suboptimal decision making in a range of cases where risks and uncertainties are present. These biases play a particularly pernicious role in decision making regarding degradation and reclamation. In dealing with a disease, the crucial first step is diagnosis. In dealing with biases, the crucial first step is recognition. Once we understand the ways we are biased in our decision making, we can design systematic methods to address the issues more effectively. ...

These cases also suggest that degrading environments on a large scale and only afterwards considering how to clean up the damages simply does not work. Landscapes — or the climate — are left permanently damaged.



## Terrorism:

Bouzar, D., Escaping Radicalism. *Scientific American Mind*, May/June 2016, 41-43.

Dutton, K., Abrams, D., 2016. Extinguishing the threat. *Scientific American Mind*, May/June 2016, 44-49.

Reicher, S. D., Haslam, S. A., 2016. Fueling Extremes. *Scientific American Mind*, May/June 2016, 35-39.

# The Other Side of the Global Crisis: Entropy and the Collapse of Civilizations

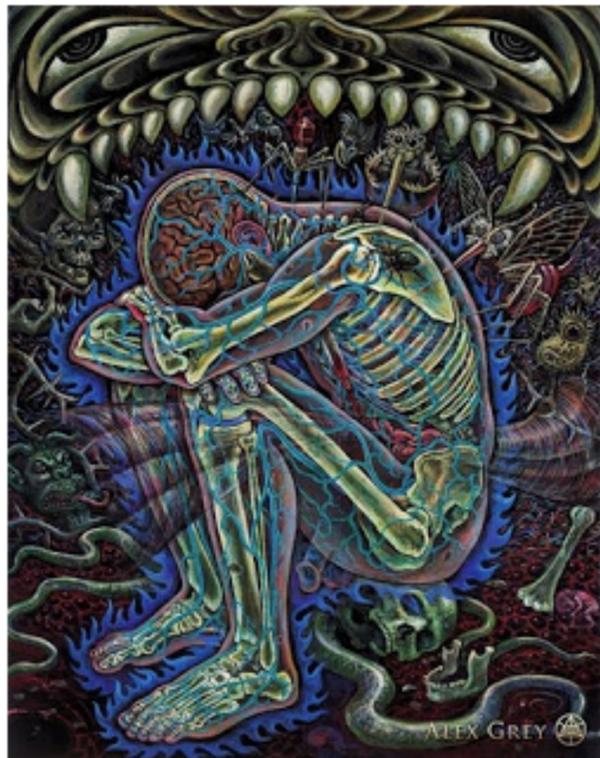
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by [Jacopo Simonetta](#), originally published by [Cassandra's Legacy](#) | MAR 7, 2016



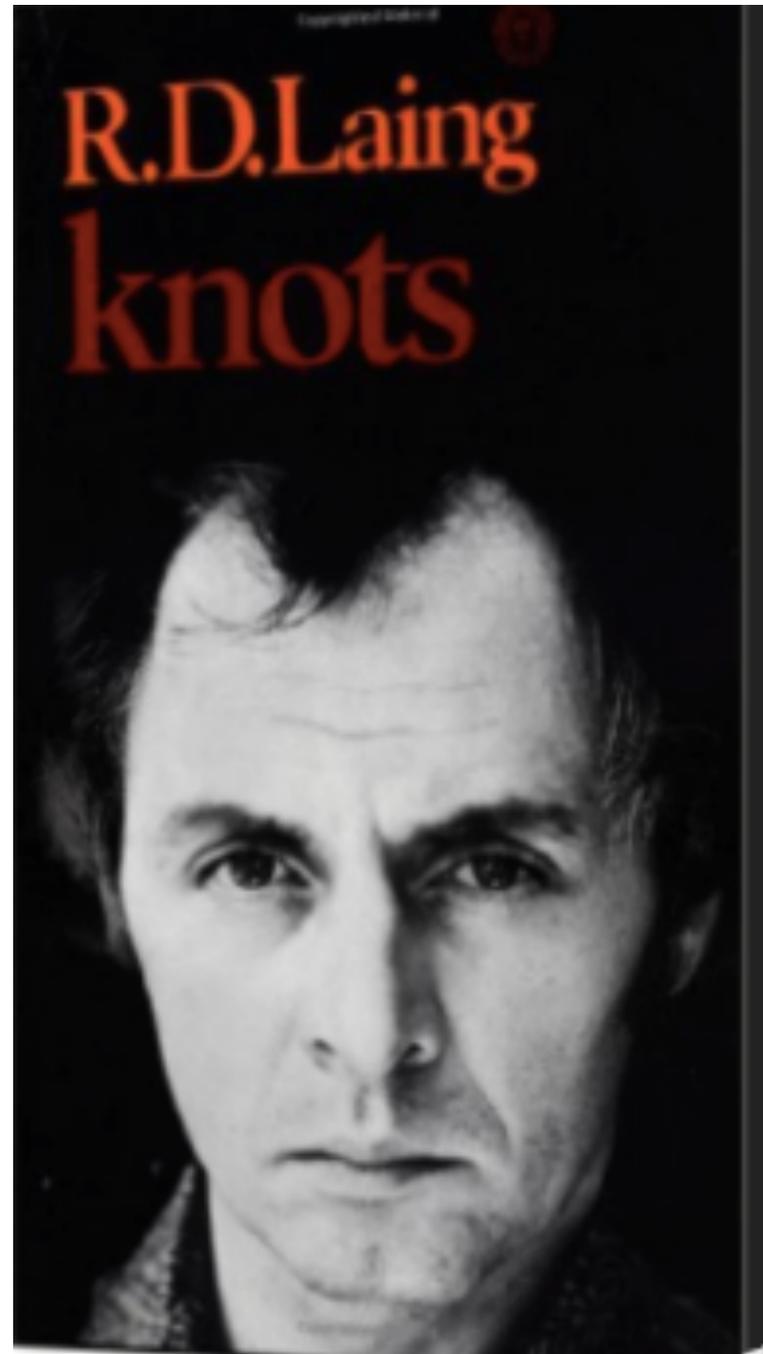
When we discuss the impending crisis of our civilisation, we mainly look at the resources our economy need in a growing quantity. And we explain why the diminishing returns of resource exploitation pose a growing burden on the possibility of a further growing of the global economy. It is a very interesting topic, indeed, but here I suggest to turn 180 degrees around and take a look at the "other side;" that is to what happens where the used resources are discarded.

Eventually, our society (as any other society in history) is a dissipative structure. It means that it exists only

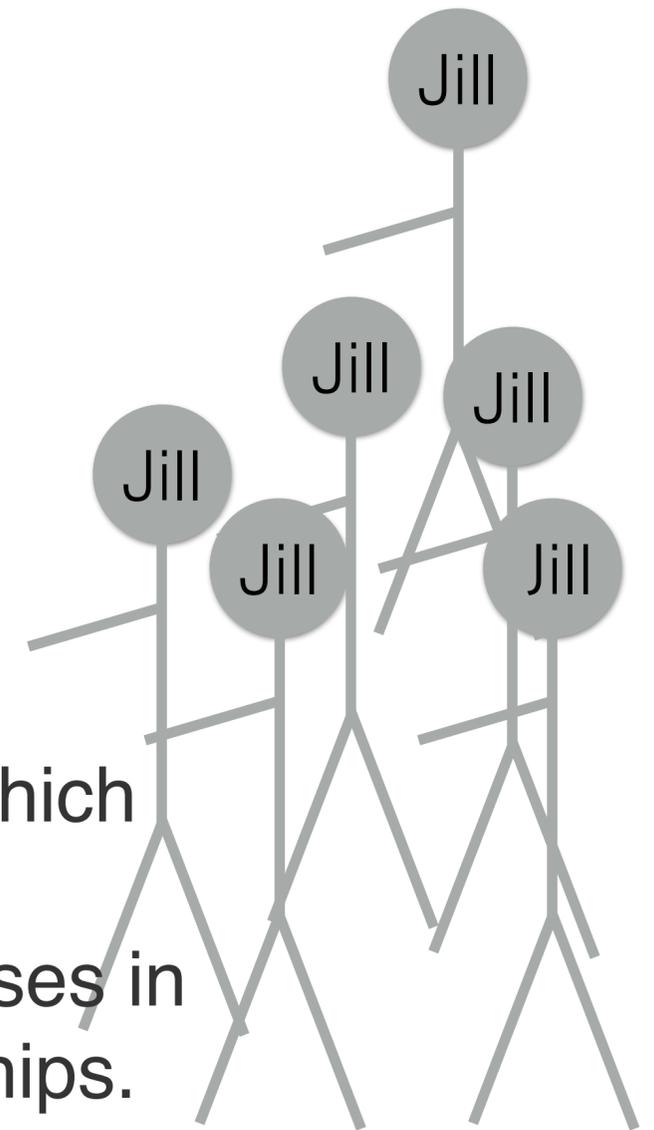
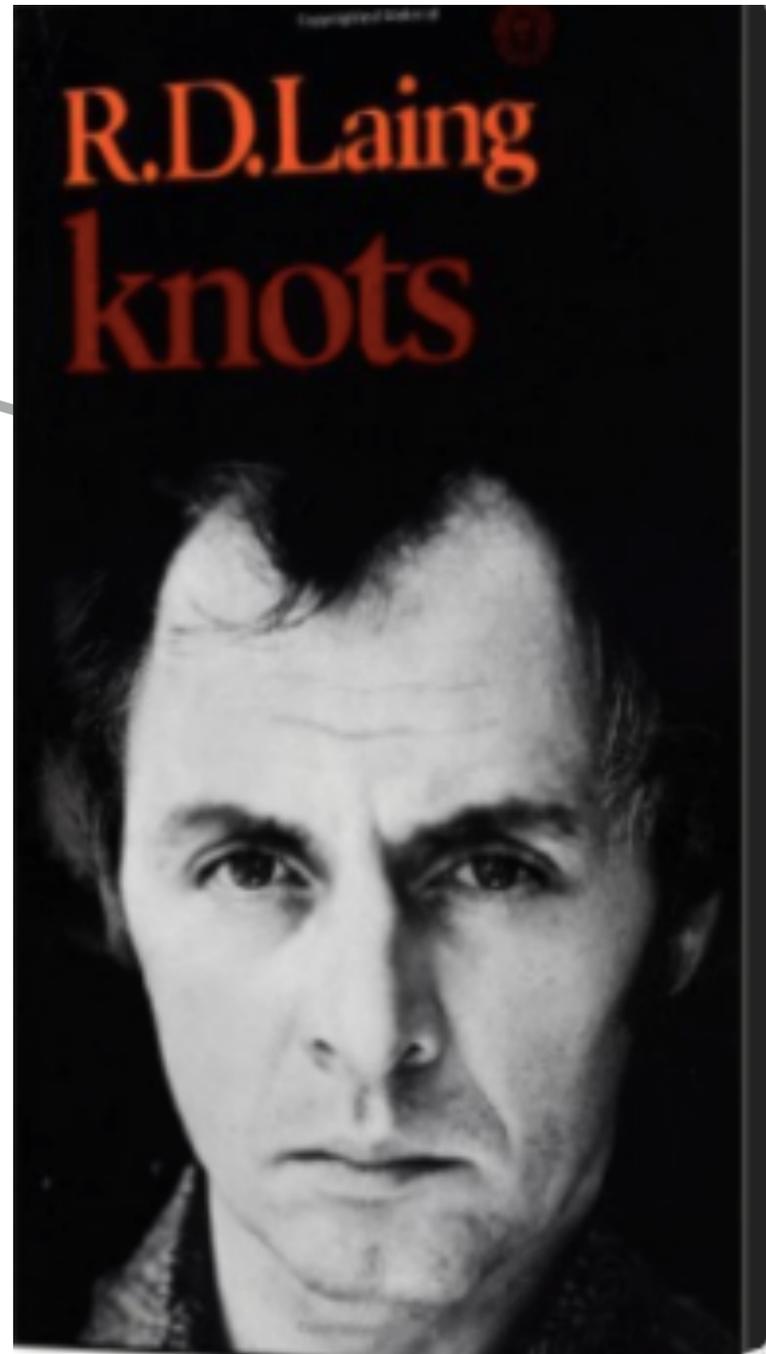
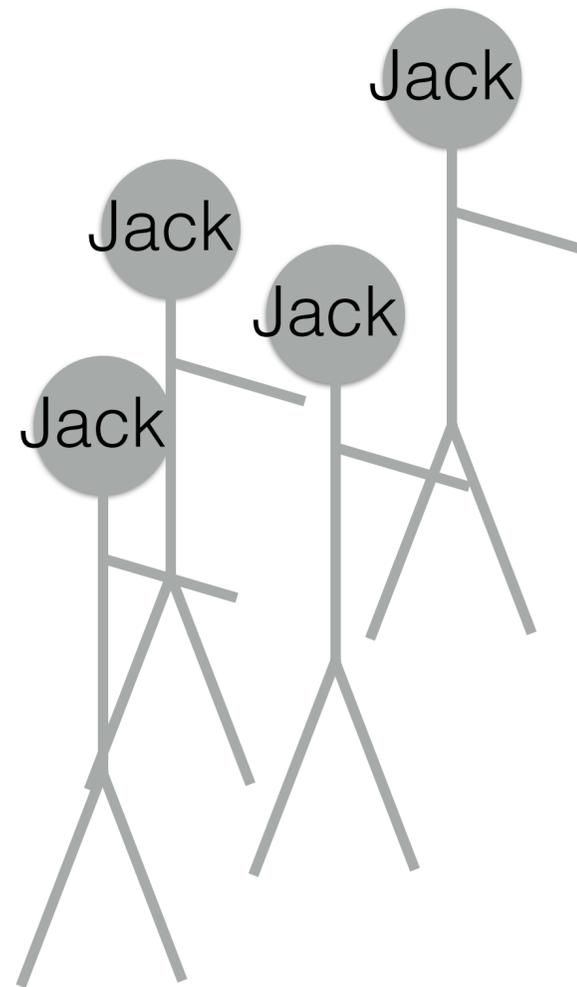
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Governance/Private

Science/Earth Observation

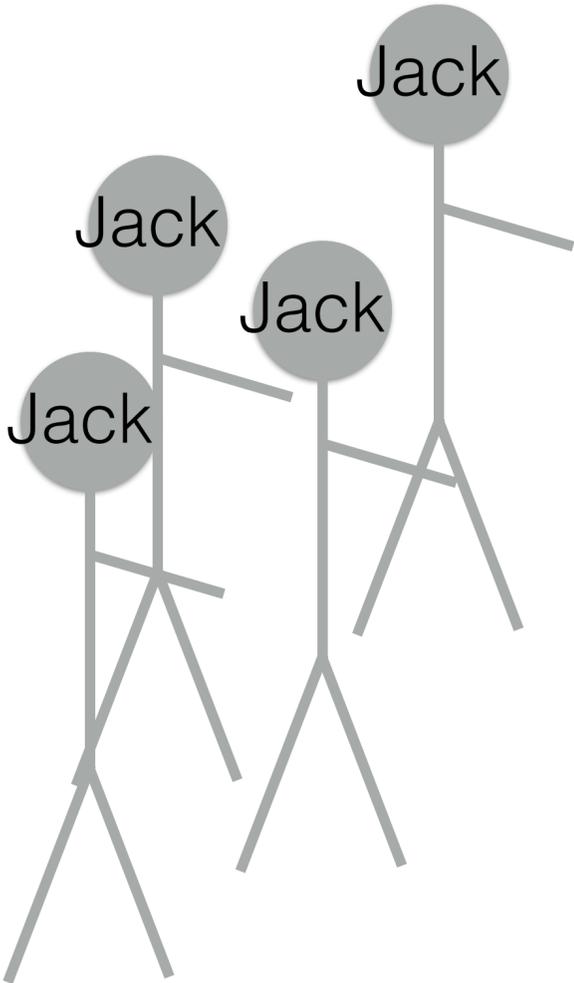


A series of dialogue-scenarios, which can be read as poems or plays, describing the "knots" and impasses in various kinds of human relationships.

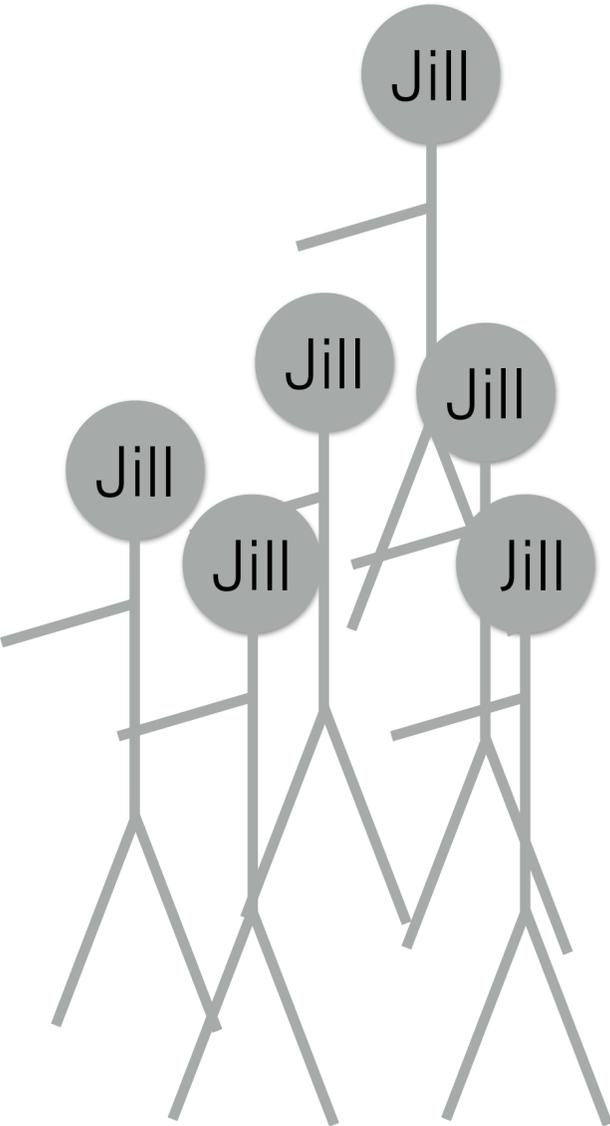


A series of dialogue-scenarios, which can be read as poems or plays, describing the "knots" and impasses in various kinds of human relationships.

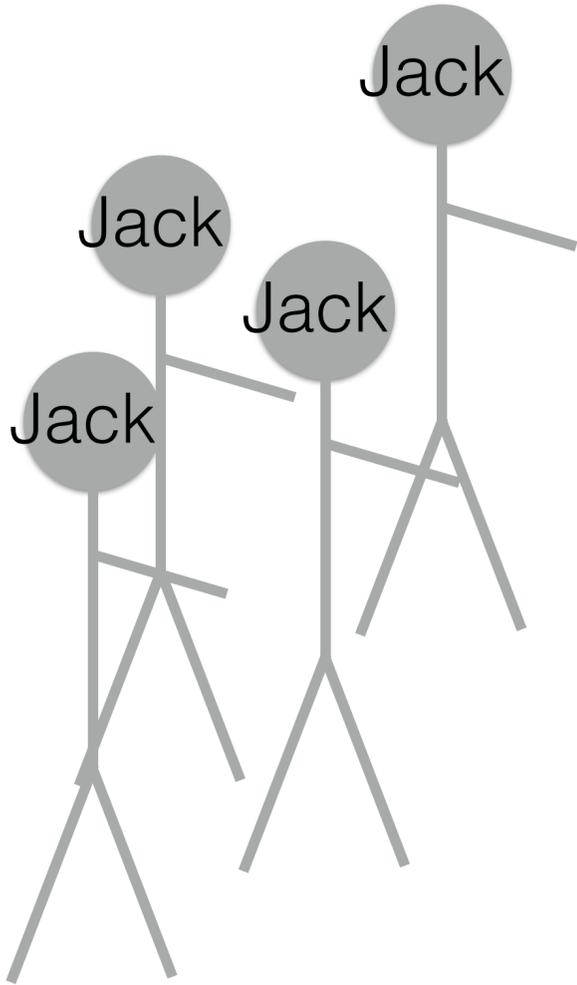
Governance/Private



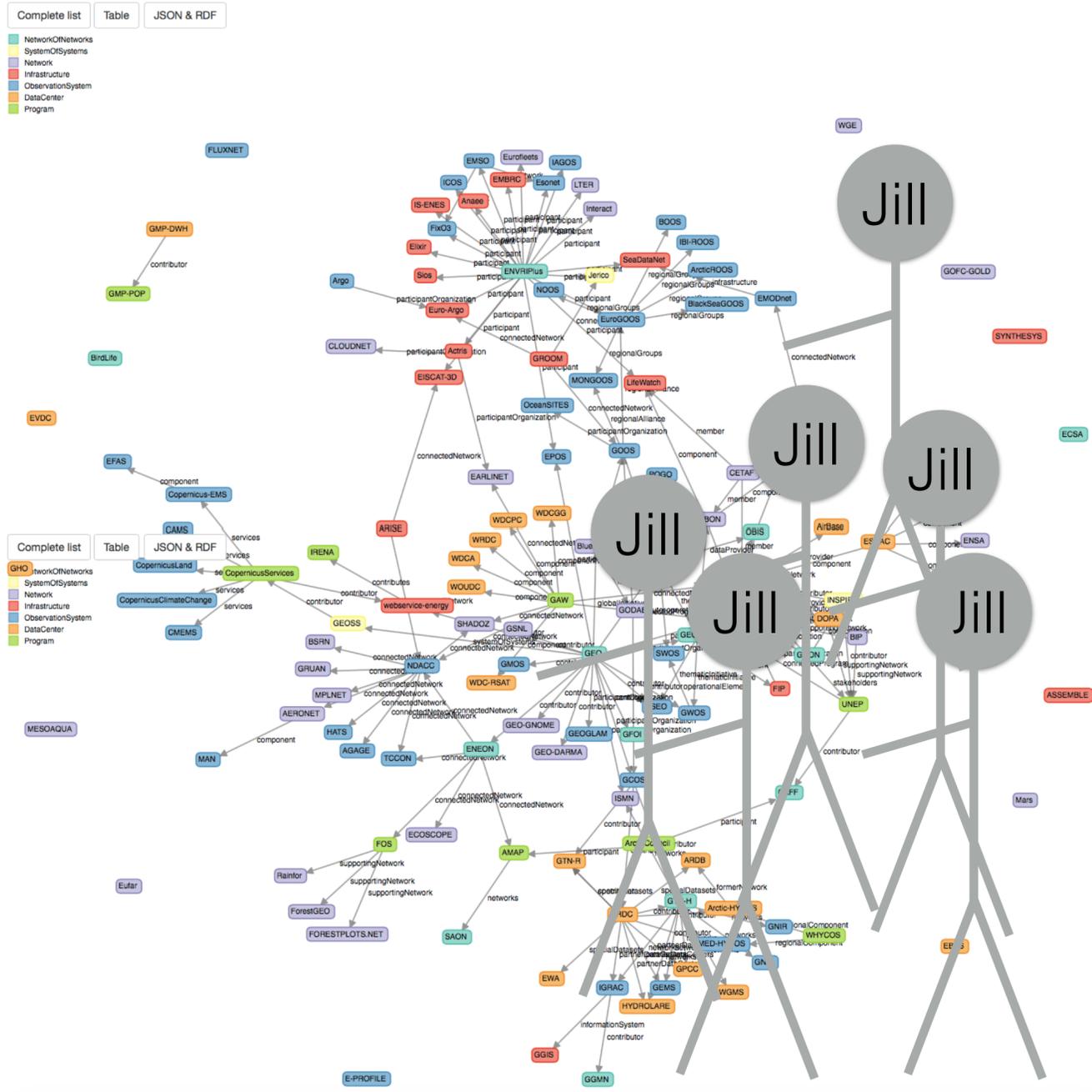
Science/Earth Observation



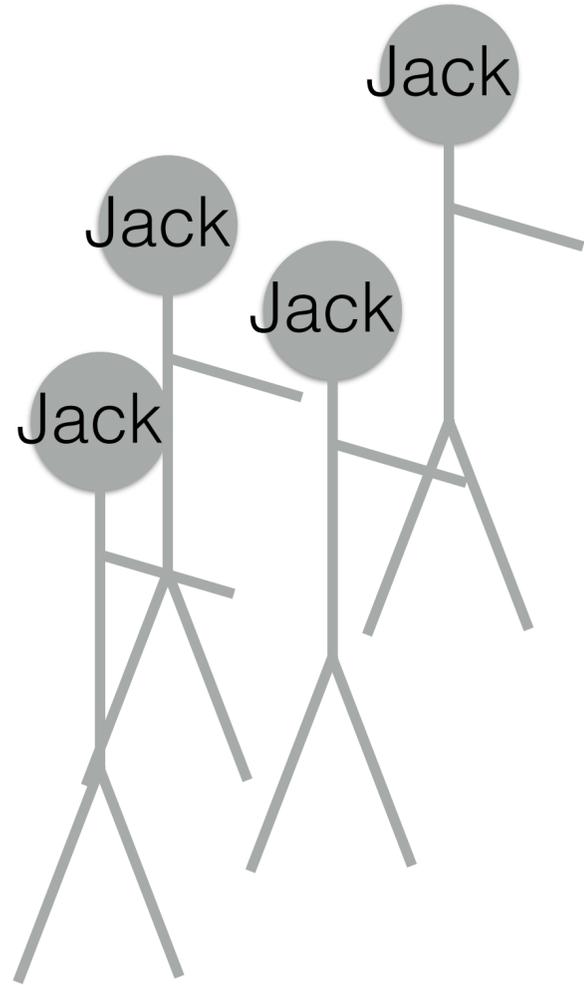
# Governance/Private



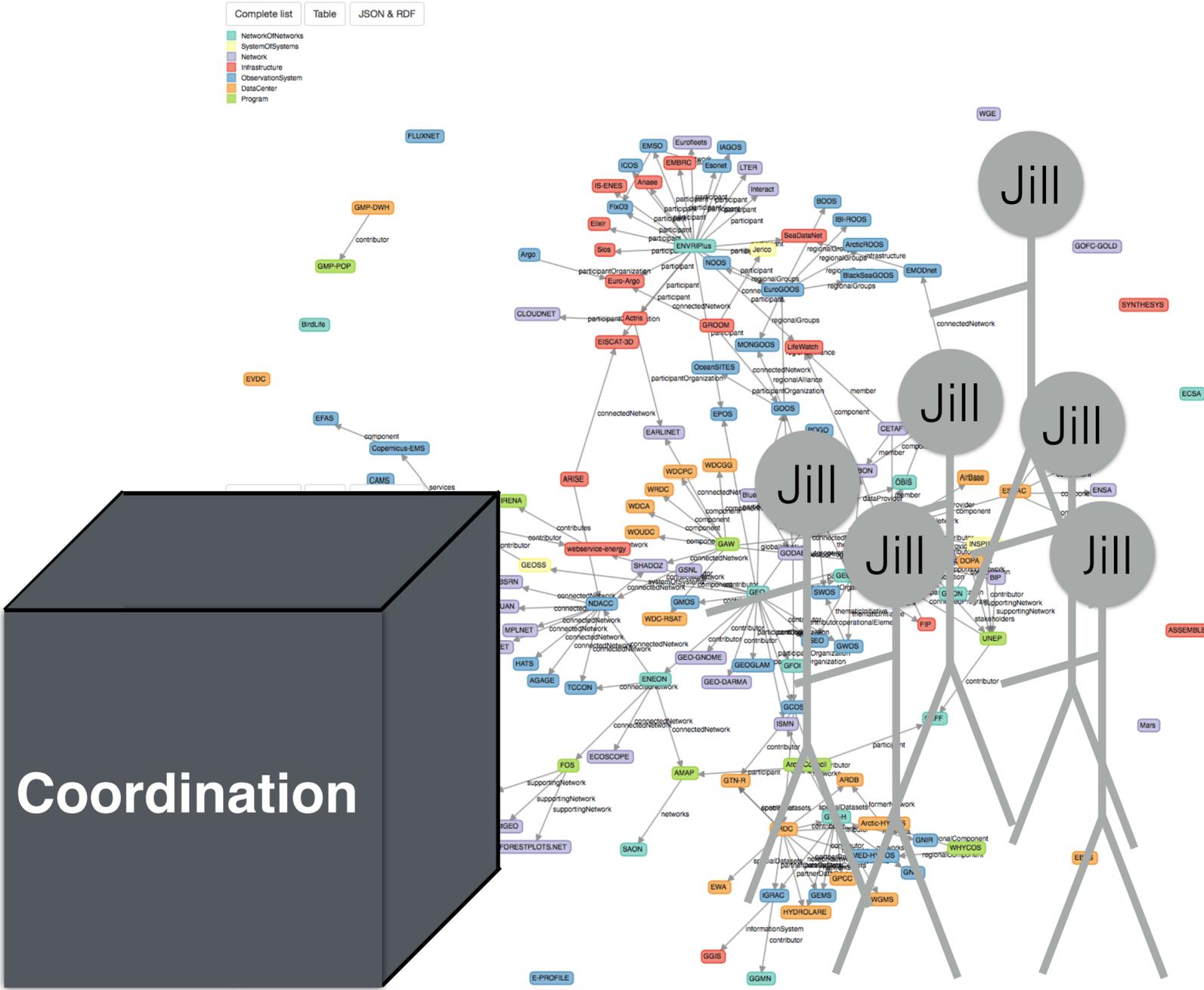
# Science/Earth Observation



# Governance/Private



# Science/Earth Observation





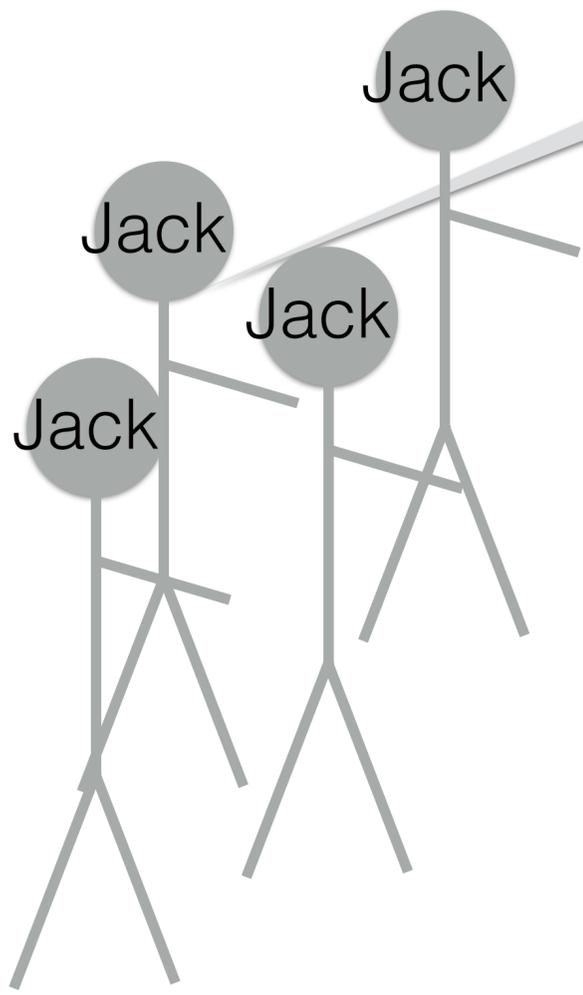


# Governance/Private

We have a complex/  
wicked problem

We will help you  
find partners!

**Match Making**

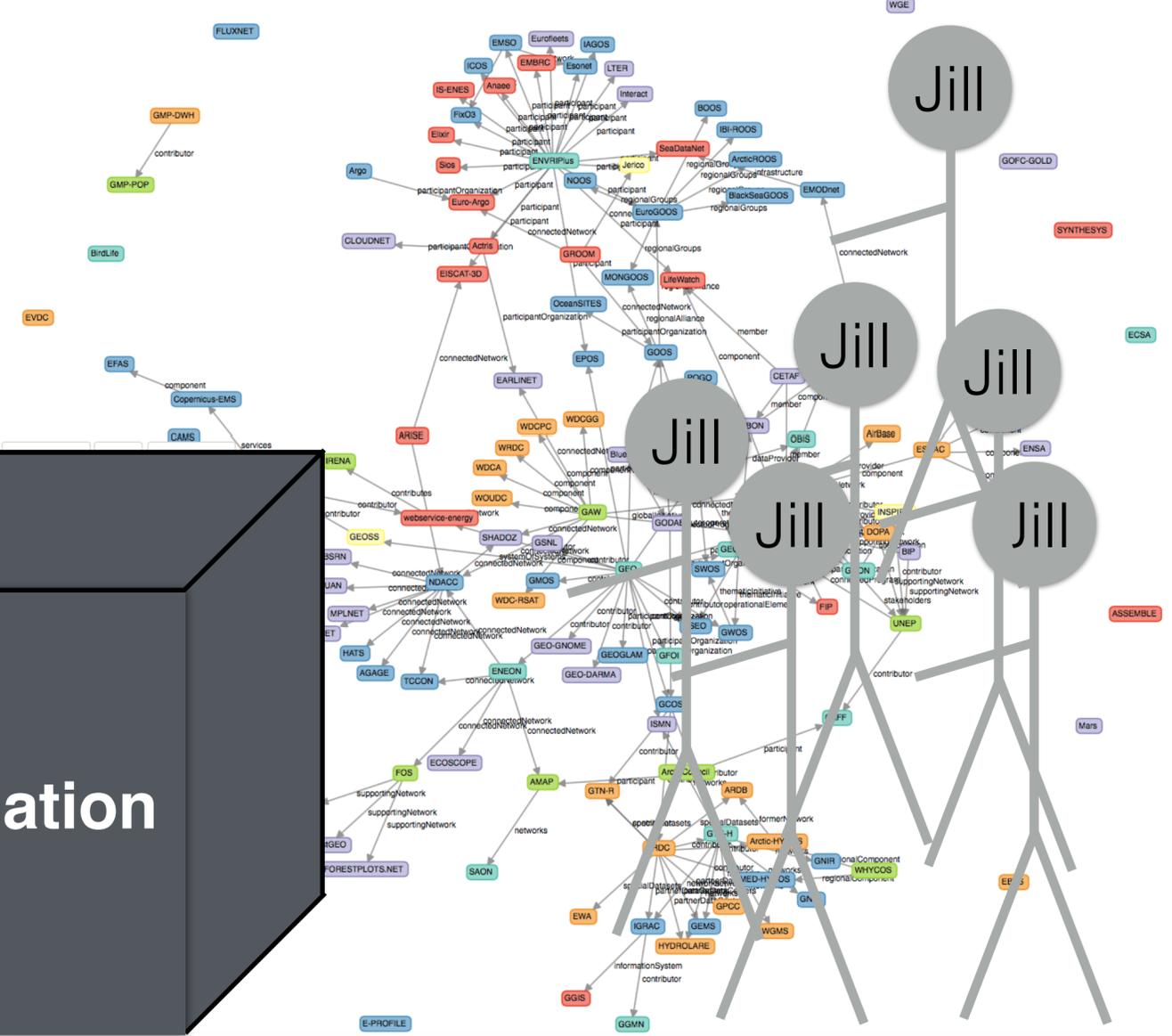


# Science/Earth Observation

**Coordination**

Complete list Table JSON & RDF

- NetworkOfNetworks
- SystemOfSystems
- Network
- Infrastructure
- ObservationSystem
- DataCenter
- Program

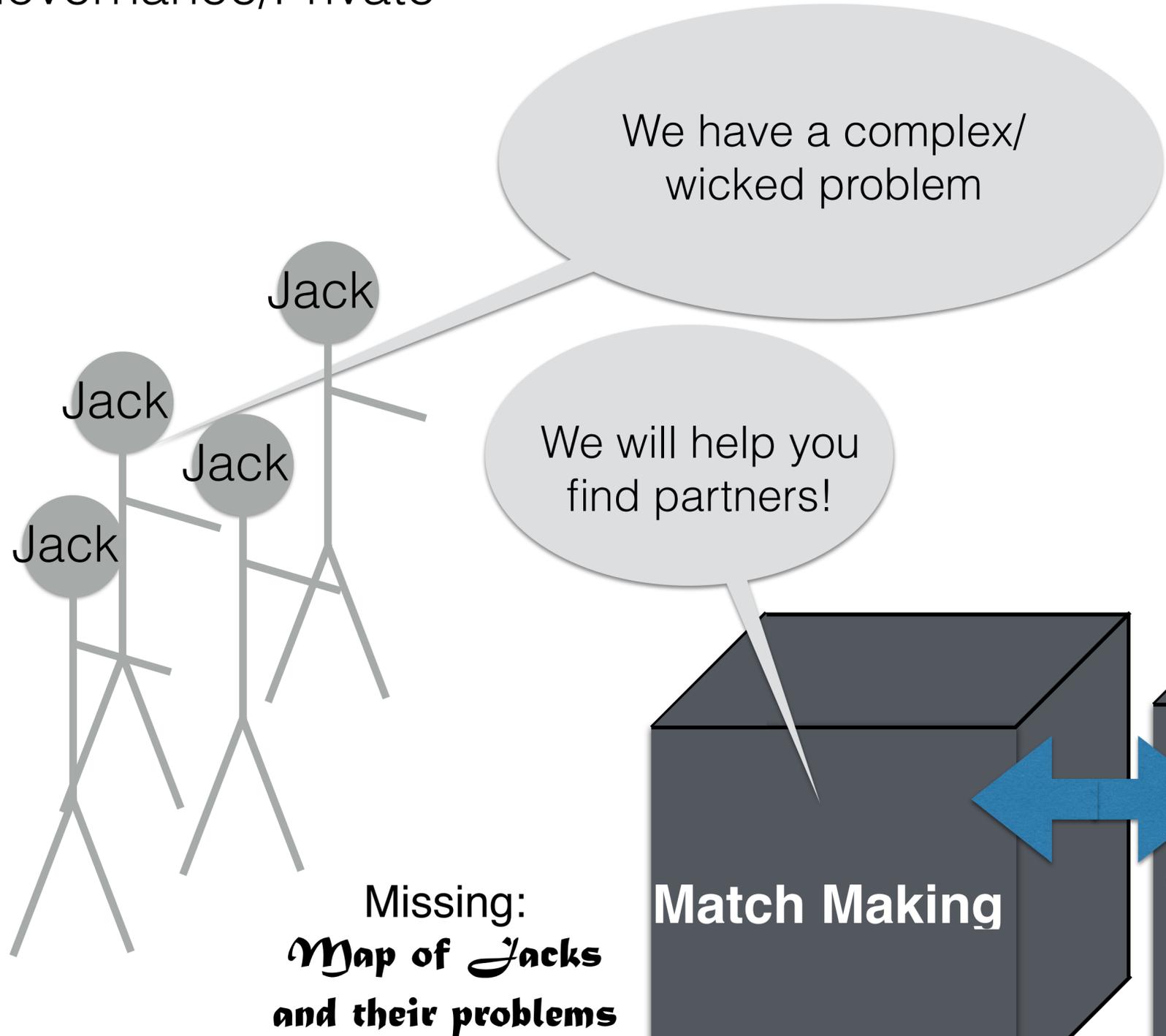




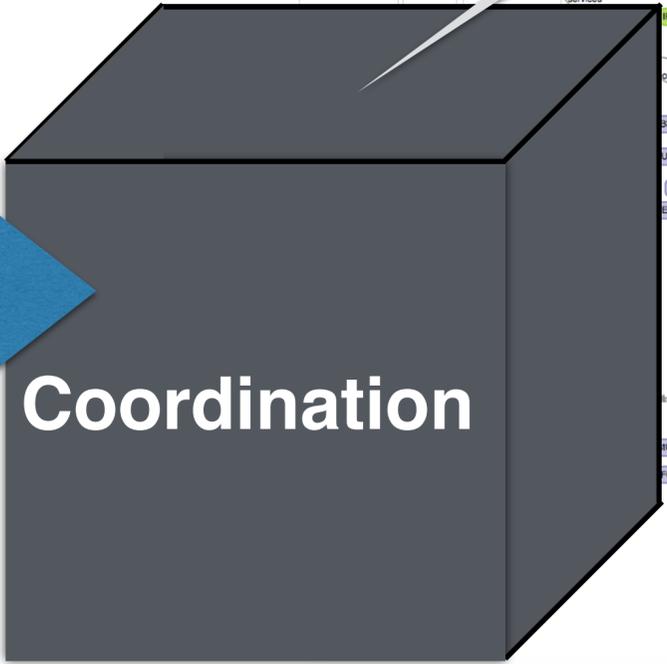
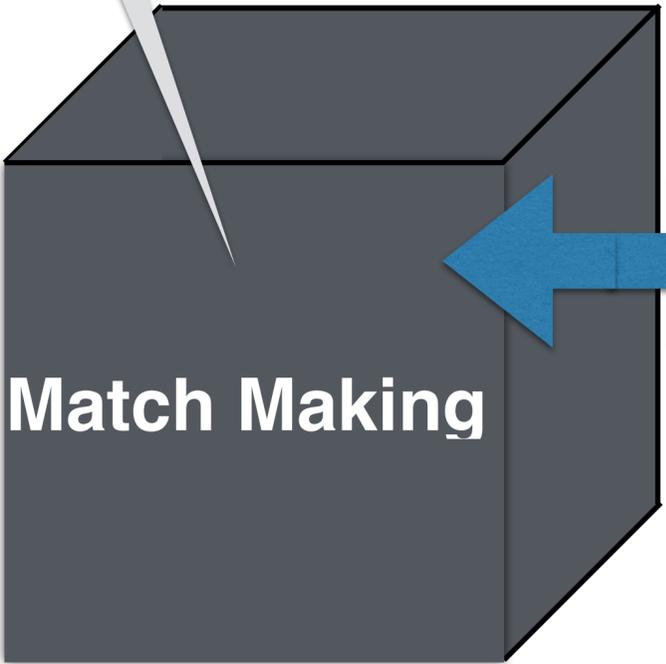


# Governance/Private

# Science/Earth Observation



Missing:  
*Map of Jacks and their problems*



- Complete list
- Table
- JSON & RDF
- NetworkOfNetworks
- SystemOfSystems
- Network
- Infrastructure
- ObservationSystem
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- Program

