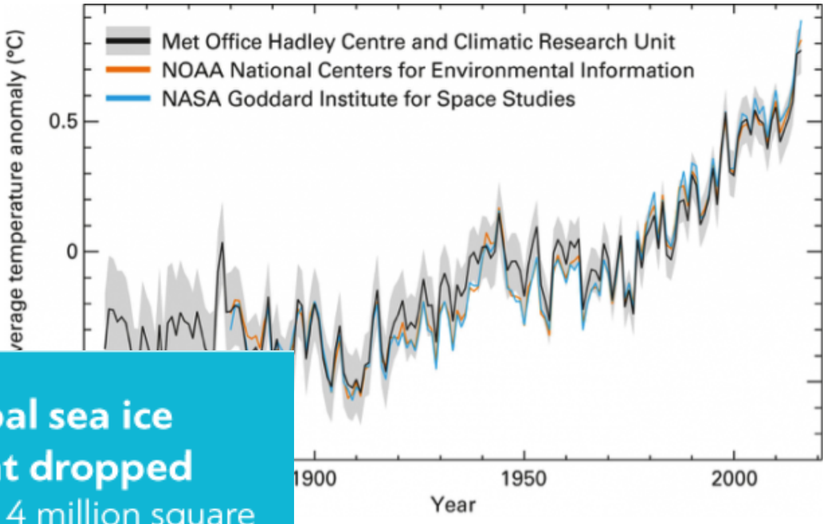

WMO

Statement on the Status of the Global Climate in 2016

2016 was the warmest on record at about 1.1 °C above the preindustrial period

+1.1°C

Carbon dioxide reached new highs at 400.0±0.1 parts per million in the atmosphere

Global sea ice extent dropped more than 4 million square kilometres below average

+ 4 million square kilometers

Global sea levels rose strongly during the 2015/2016 El Niño, with early 2016 values reaching **new record highs**

Global ocean heat was the second highest on record, contributing to **coral bleaching** and **mortality** in tropical waters

Severe droughts and floods displaced hundreds of thousands of people

Find out more at **public.wmo.int**

Mitigation and Adaptation Studies

Mitigation and Adaptation Studies

Class 18: Decision-Making

Contents

- Decisions and Human Nature: Behavioral Economics
- Biases
- Overcoming Biases
- Fast and Slow Thinking
- Science-Society Dialog

Social and Political Context

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:

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- 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

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- consideration of how relevant culture/customs/norms might be changed (descriptive/empirical ethics).

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How do humans make decisions?

Overcoming Biases

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Some notable popular books on this topic:

Thaler, R. H., Sunstein, C. R., 2008. Nudge: Improving Decisions About Health, Wealth, and Happiness, Caravan.

Mauboussin, M. J., 2009. Think Twice: Harnessing the Power of Counterintuition, Harvard Business Review Press.

Finkelstein, S., Whitehead, J., Campbell, A., 2009. Think Again: Why Good Leaders Make Bad Decisions and How to Keep It from Happening to You, Harvard Business Review Press.

Ariely, D., 2008. Predictably Irrational: The Hidden Forces That Shape Our Decisions, HarperCollins.

Kahneman, D., 2011. Thinking, Fast and Slow, Farrar, Straus and Giroux.

Kahneman, D., Lovallo, D., Sibony, O., 2011. Before you make that decision. Harvard Business Review, June 2011, 51-60.

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ILLUSTRATION: LASSE SKARBOVIK

June 2011 Harvard Business Review 51

Decisions and Human Nature

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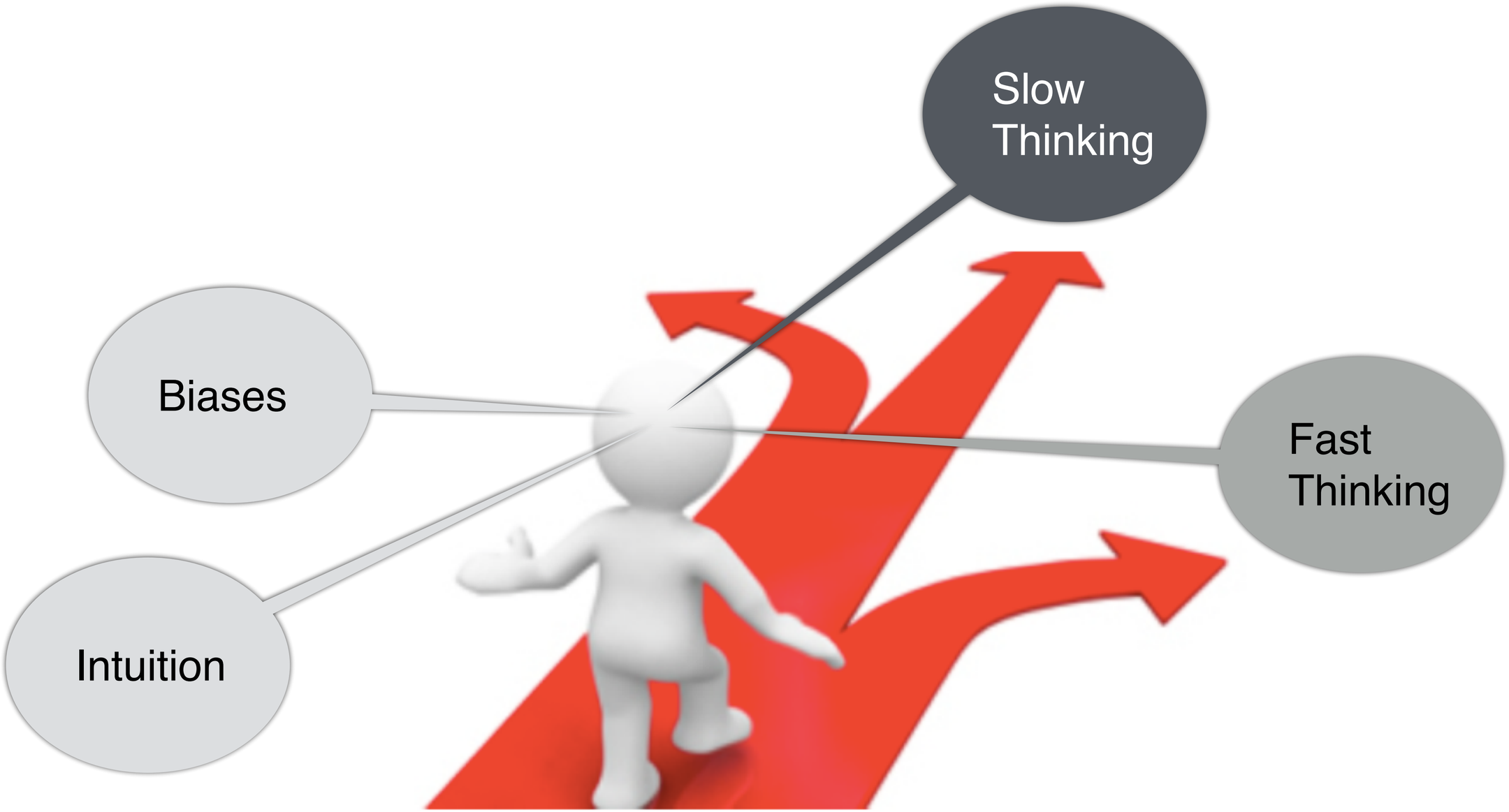

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20 cognitive biases that screw up your decisions

Samantha Lee and Shana Lebowitz

Aug. 26, 2015, 12:28 PM 285,981 3

You make thousands of rational decisions every day — or so you think.

From what you'll eat throughout the day to whether you should make a big career move, research suggests that there are a number of cognitive stumbling blocks that affect your behavior, and they can prevent you from acting in your own best interests.

Here, we've rounded up the most common biases that screw up our decision-making.

20 COGNITIVE BIASES THAT SCREW UP YOUR DECISIONS

Biases

1. Anchoring bias.

People are **over-reliant** on the first piece of information they hear. In a salary negotiation, whoever makes the first offer establishes a range of reasonable possibilities in each person's mind.

2. Availability heuristic.

People **overestimate the importance** of information that is available to them. A person might argue that smoking is not unhealthy because they know someone who lived to 100 and smoked three packs a day.

3. Bandwagon effect.

The probability of one person adopting a belief increases based on the number of people who hold that belief. This is a powerful form of **groupthink** and is reason why meetings are often unproductive.

4. Blind-spot bias.

Failing to recognize your own cognitive biases is a bias in itself. People notice cognitive and motivational biases much more in others than in themselves.

5. Choice-supportive bias.

When you choose something, you tend to feel positive about it, even if that **choice has flaws**. Like how you think your dog is awesome — even if it bites people every once in a while.

6. Clustering illusion.

This is the tendency to **see patterns in random events**. It is key to various gambling fallacies, like the idea that red is more or less likely to turn up on a roulette table after a string of reds.

7. Confirmation bias.

We tend to listen only to information that confirms our **preconceptions** — one of the many reasons it's so hard to have an intelligent conversation about climate change.

8. Conservatism bias.

Where people favor prior evidence over new evidence or information that has emerged. People were **slow to accept** that the Earth was round because they maintained their earlier understanding that the planet was flat.

Biases

9. Information bias.

The tendency to **seek information when it does not affect action**. More information is not always better. With less information, people can often make more accurate predictions.

10. Ostrich effect.

The decision to **ignore dangerous or negative information** by "burying" one's head in the sand, like an ostrich. Research suggests that investors check the value of their holdings significantly less often during bad markets.

11. Outcome bias.

Judging a decision based on the **outcome** — rather than how exactly the decision was made in the moment. Just because you won a lot in Vegas doesn't mean gambling your money was a smart decision.

12. Overconfidence.

Some of us are **too confident about our abilities**, and this causes us to take greater risks in our daily lives. Experts are more prone to this bias than laypeople, since they are more convinced that they are right.

13. Placebo effect.

When **simply believing** that something will have a certain effect on you causes it to have that effect. In medicine, people given fake pills often experience the same physiological effects as people given the real thing.

14. Pro-innovation bias.

When a proponent of an innovation tends to **overvalue its usefulness** and undervalue its limitations. Sound familiar, Silicon Valley?

15. Recency.

The tendency to weigh the **latest information** more heavily than older data. Investors often think the market will always look the way it looks today and make unwise decisions.

16. Salience.

Our tendency to focus on the **most easily recognizable features** of a person or concept. When you think about dying, you might worry about being mauled by a lion, as opposed to what is statistically more likely, like dying in a car accident.

Biases

17. Selective perception.

Allowing our expectations to **influence how we perceive** the world. An experiment involving a football game between students from two universities showed that one team saw the opposing team commit more infractions.

18. Stereotyping.

Expecting a group or person to have certain qualities without having real information about the person. It allows us to quickly identify strangers as friends or enemies, but people tend to **overuse and abuse** it.

19. Survivorship bias.

An error that comes from focusing only on surviving examples, causing us to **misjudge a situation**. For instance, we might think that being an entrepreneur is easy because we haven't heard of all those who failed.

20. Zero-risk bias.

Sociologists have found that **we love certainty** — even if it's counterproductive. Eliminating risk entirely means there is no chance of harm being caused.

SOURCES: Brain Biases; Ethics Unwrapped; Explorable; Harvard Magazine; HowStuffWorks; LearnVest; Outcome bias in decision evaluation, Journal of Personality and Social Psychology; Psychology Today; The Bias Blind Spot: Perceptions of Bias in Self Versus Others, Personality and Social Psychology Bulletin; The Cognitive Effects of Mass Communication, Theory and Research in Mass Communications; The less-is-more effect: Predictions and tests, Judgment and Decision Making; The New York Times; The Wall Street Journal; Wikipedia; You Are Not So Smart; ZhurnalyWiki

BUSINESS INSIDER

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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.

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.

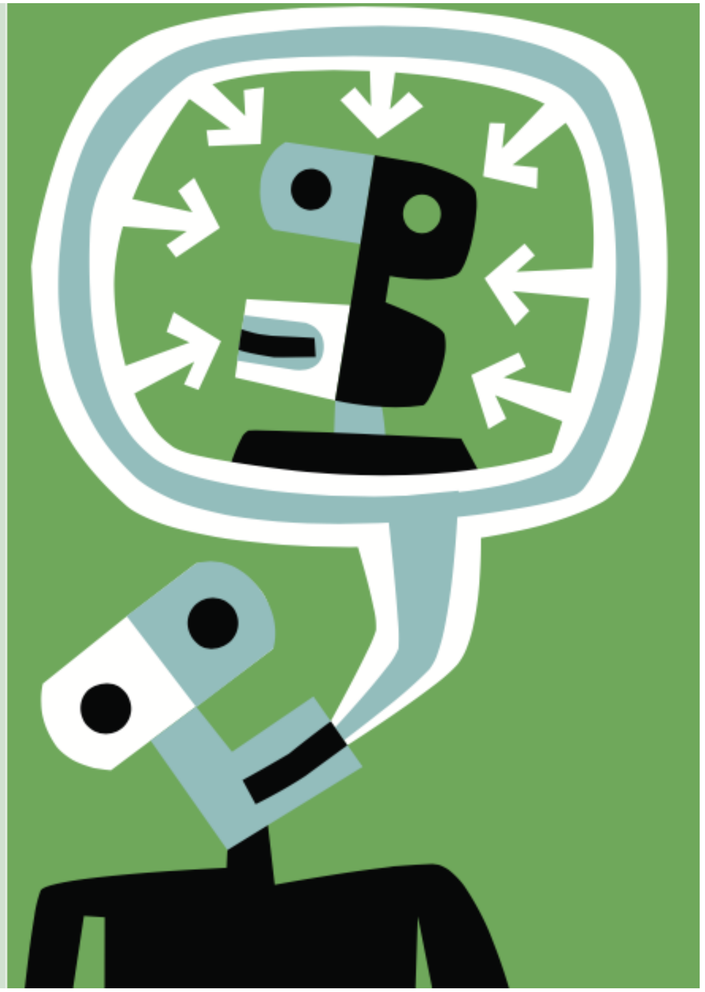
Overcoming Biases

9

CHECK FOR SUNK-COST FALLACY, ENDOWMENT EFFECT

Are the recommenders overly attached to a history of past decisions?

Consider the issue as if you were a new CEO.



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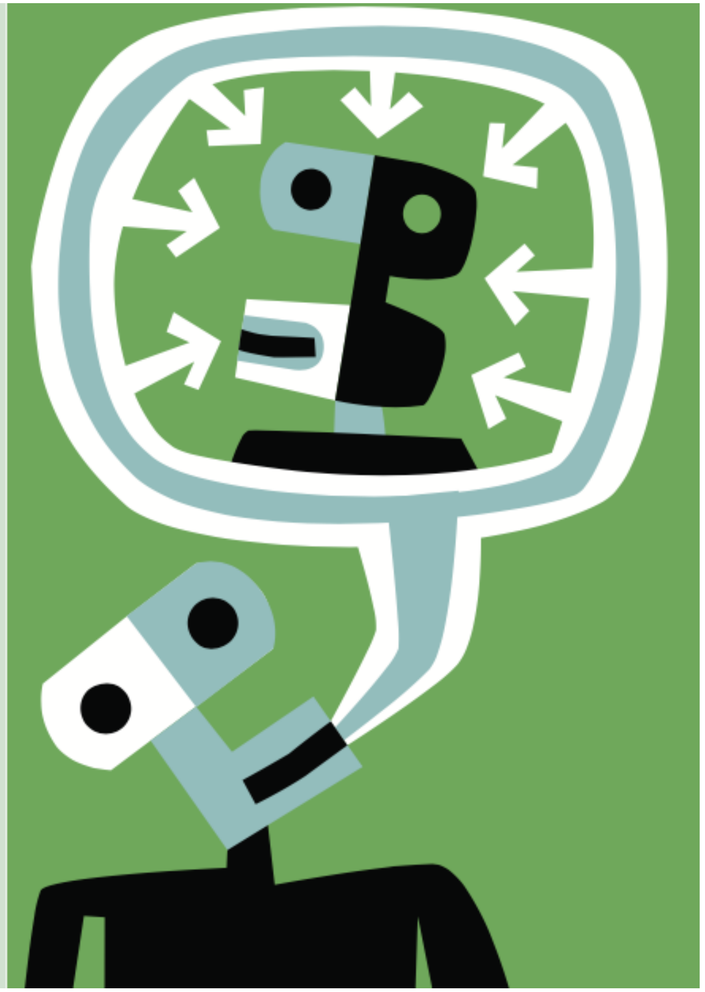

Ask about the proposal

10

CHECK FOR OVERCONFIDENCE, PLANNING FALLACY, OPTIMISTIC BIASES, COMPETITOR NEGLECT

Is the base case overly optimistic?

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

11

CHECK FOR DISASTER NEGLECT

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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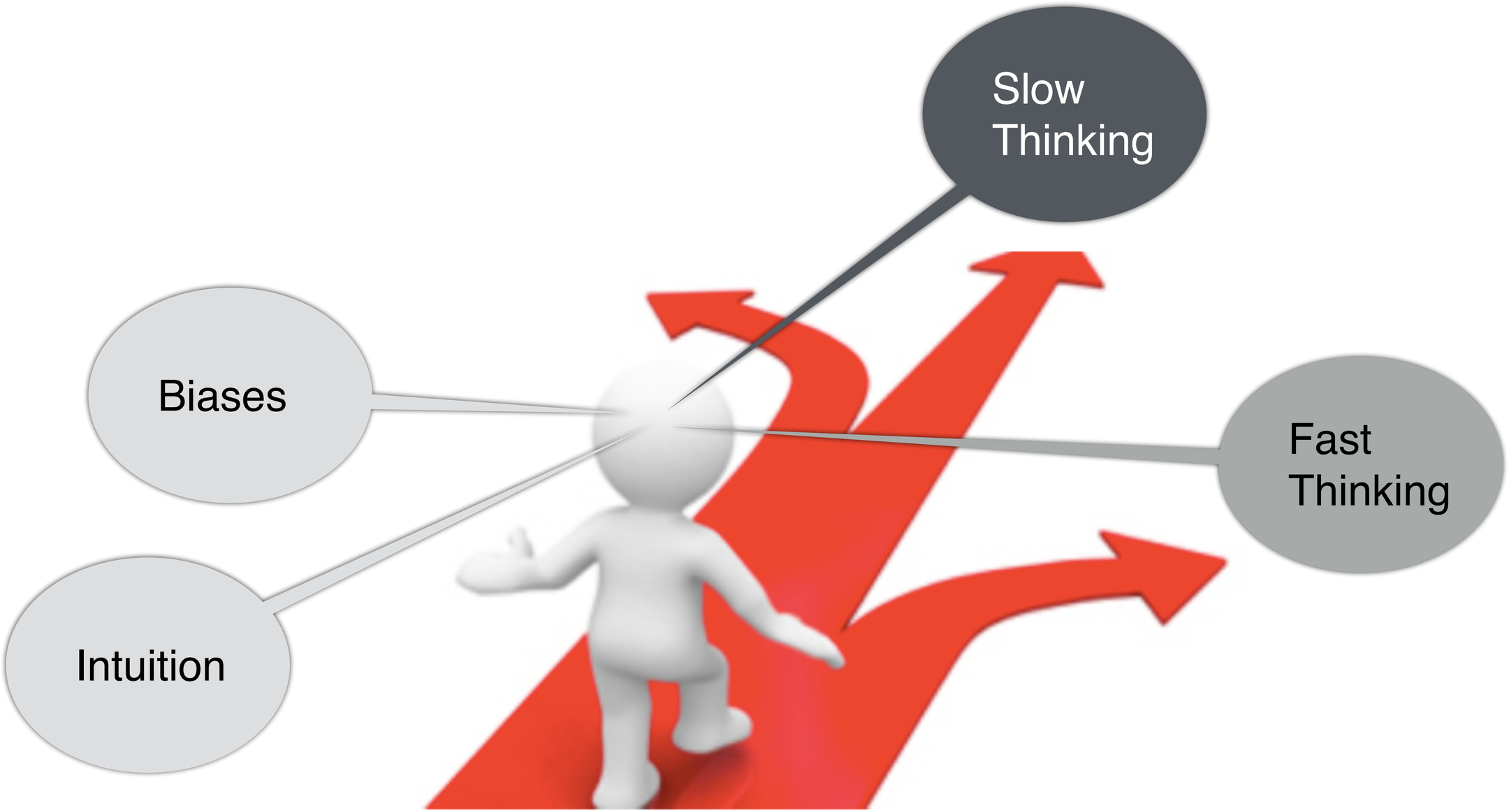

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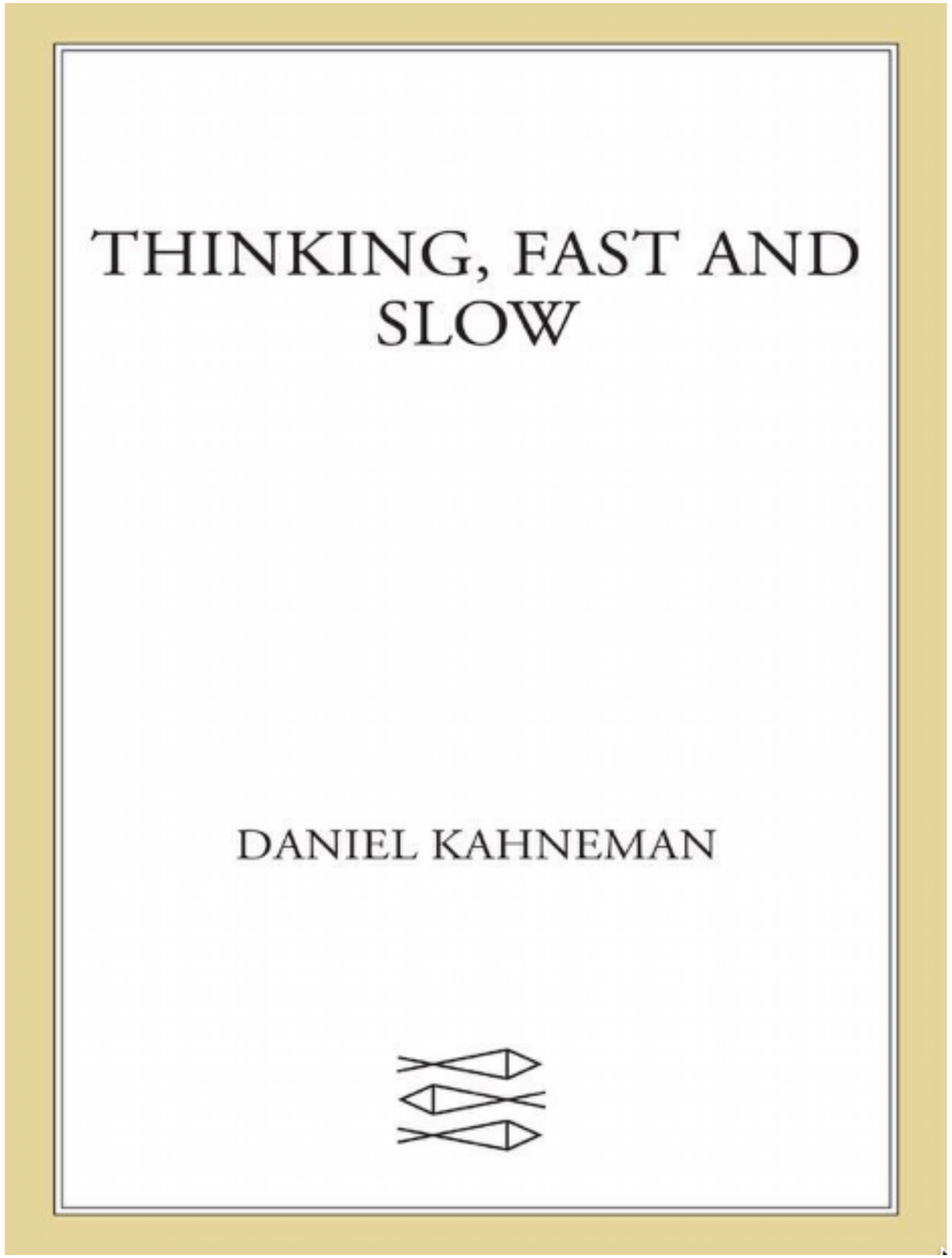
Fast and Slow Thinking



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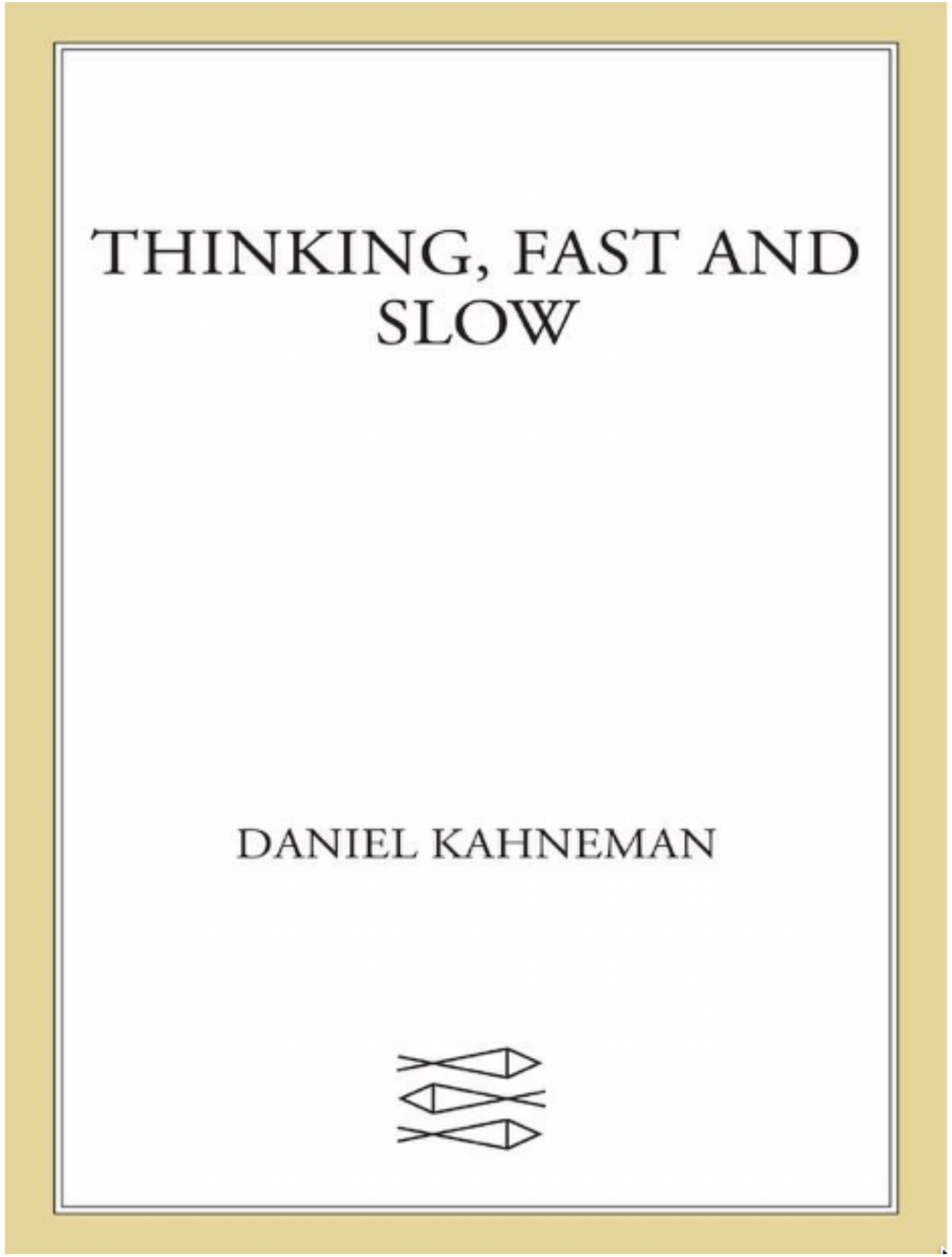

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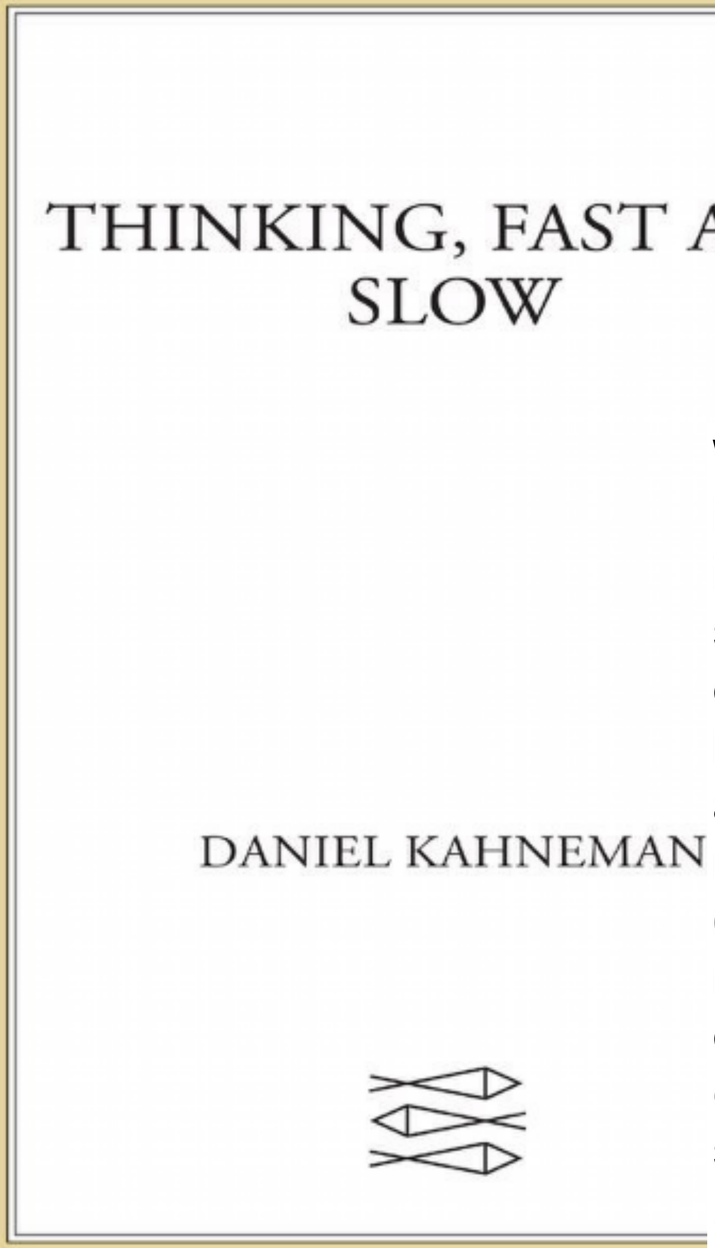

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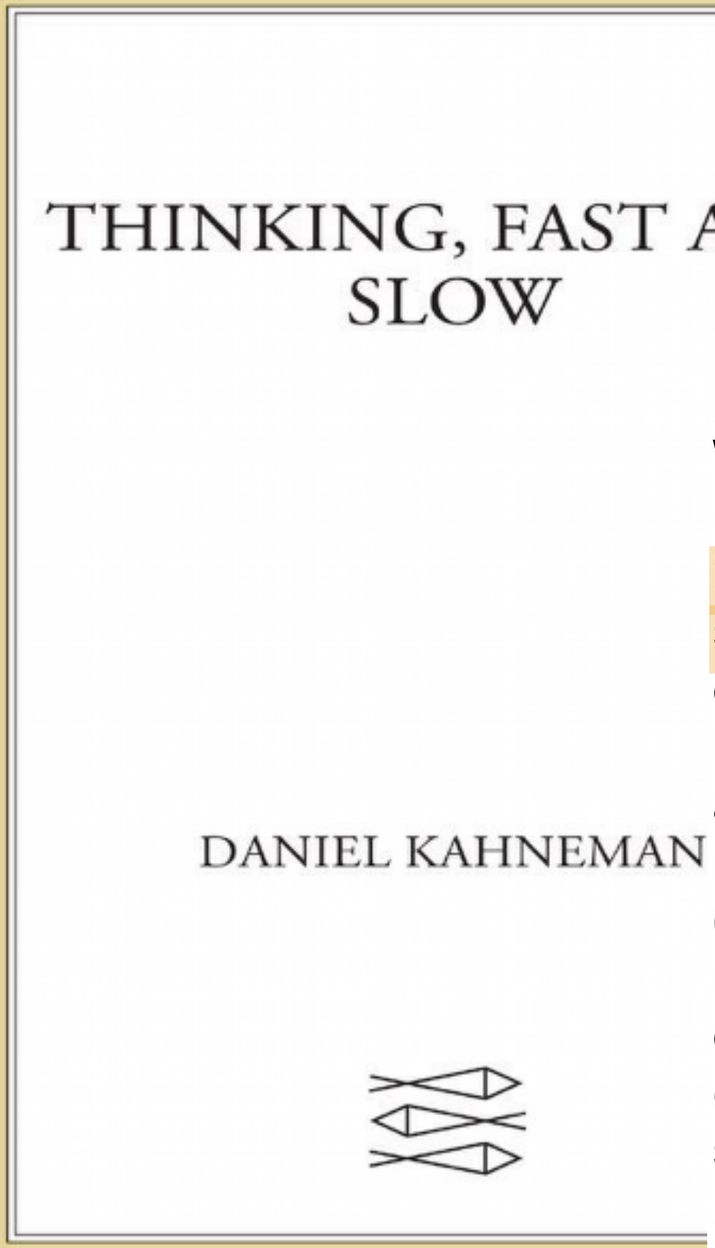

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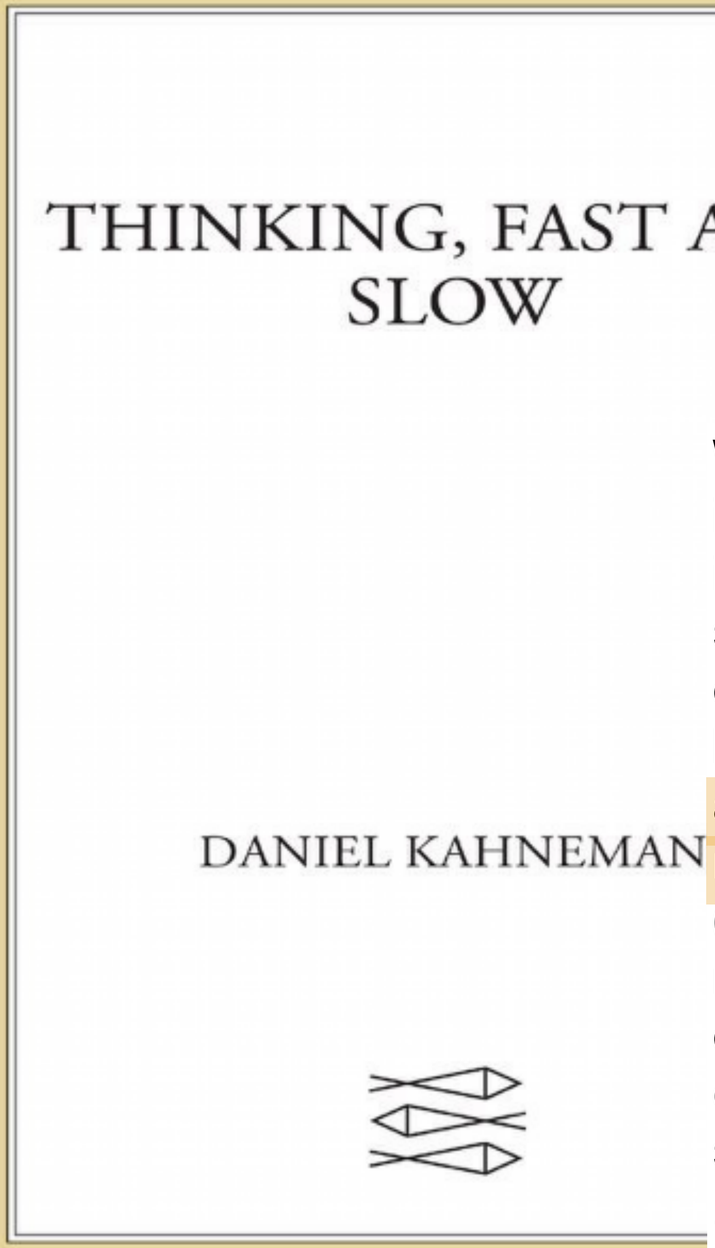

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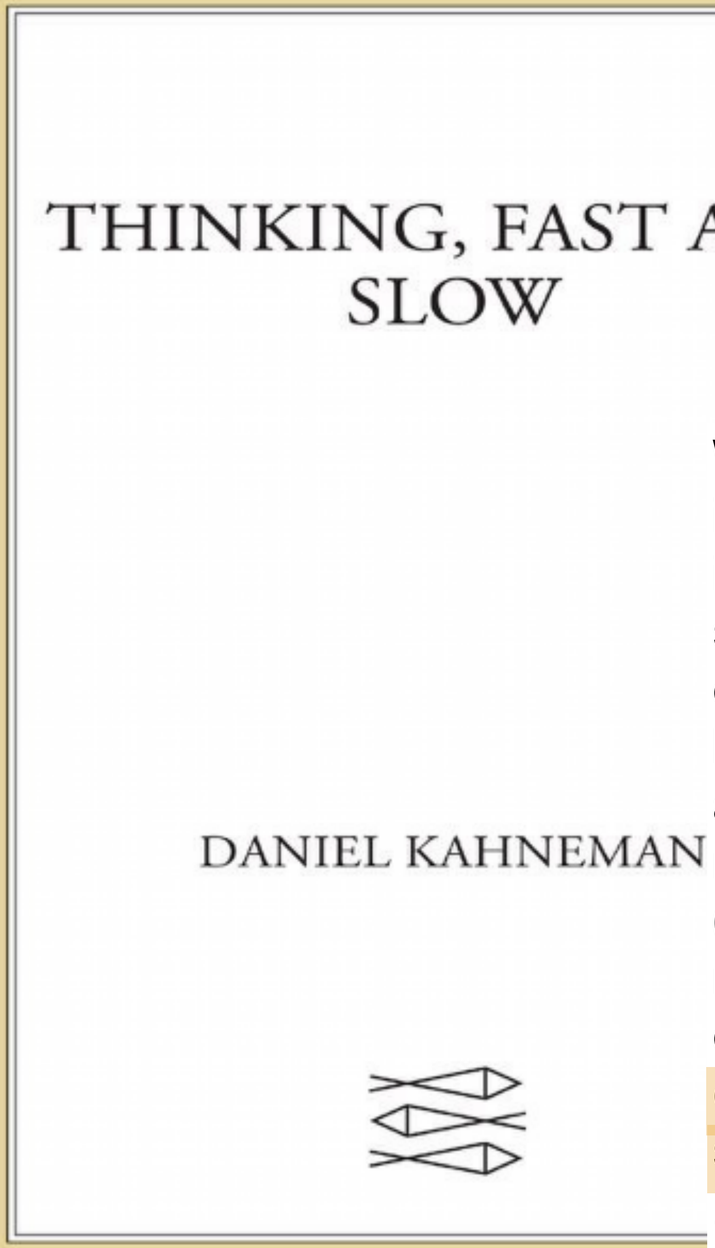

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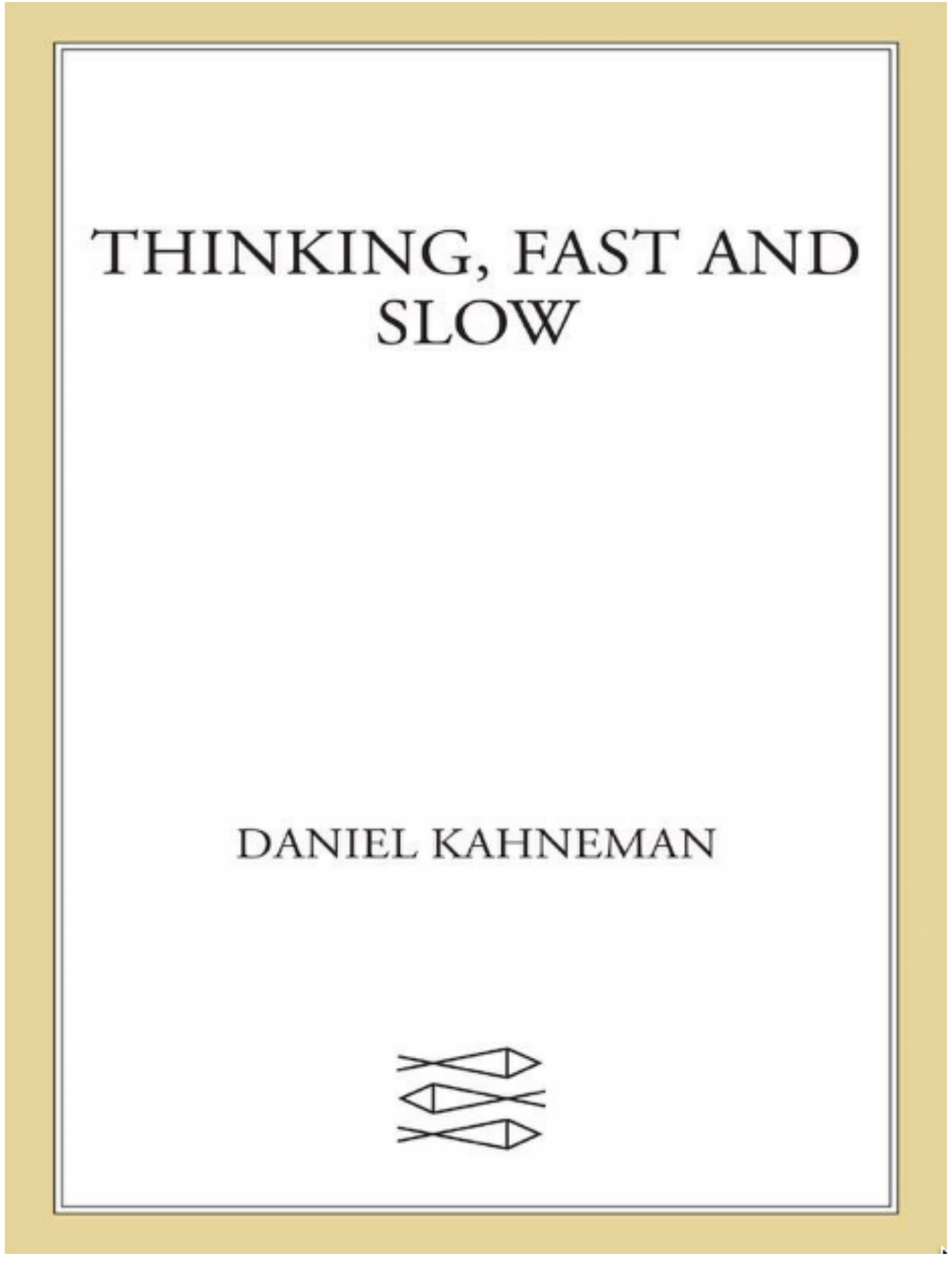

The spontaneous search for an intuitive solution sometimes fails— neither an expert solution nor a heuristic answer comes to mind. In such cases we often find ourselves switching to a slower, more deliberate and effortful form of thinking. This is the slow thinking of the title. Fast thinking includes 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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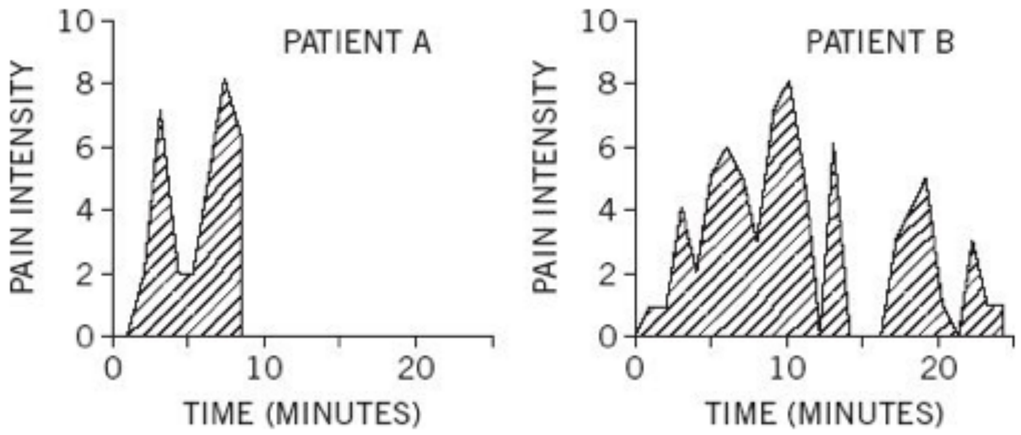
Fast and Slow Thinking

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.

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.

Kahneman, Daniel. Thinking, Fast and Slow (p. 409). Farrar, Straus and Giroux. Kindle Edition.

System 2

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Fast and Slow Thinking

System 2

System 1

Two Selves

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

Christine J. Kirchhoff,[1] Maria Carmen Lemos,[1] and Suraje Dessai[2]

[1]School of Natural Resources and Environment, University of Michigan, Ann Arbor, Michigan 48109-1041; email: ckirchhoff@engr.uconn.edu, lemos@umich.edu

[2]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

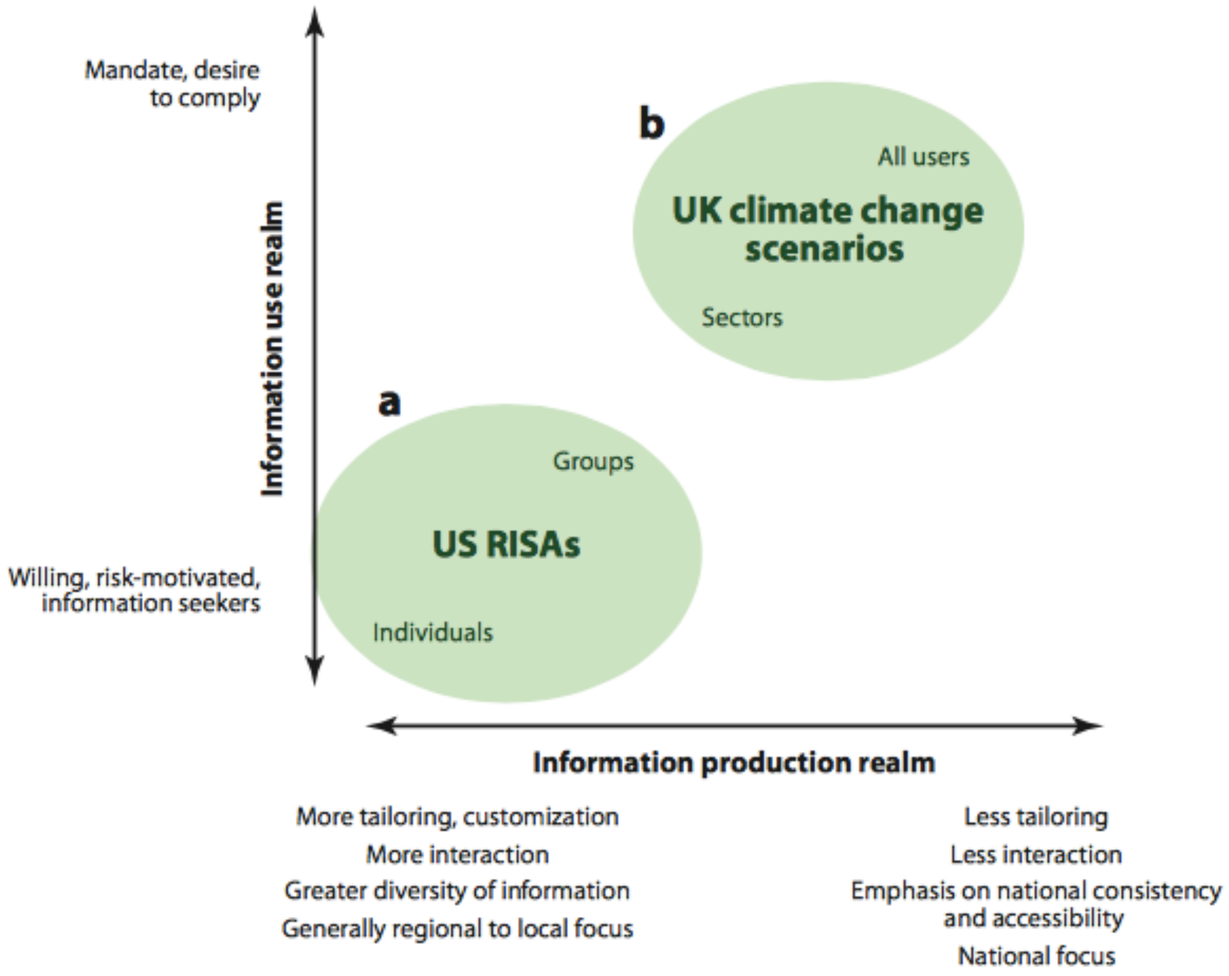

Figure 2

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*).

Science Society Dialog

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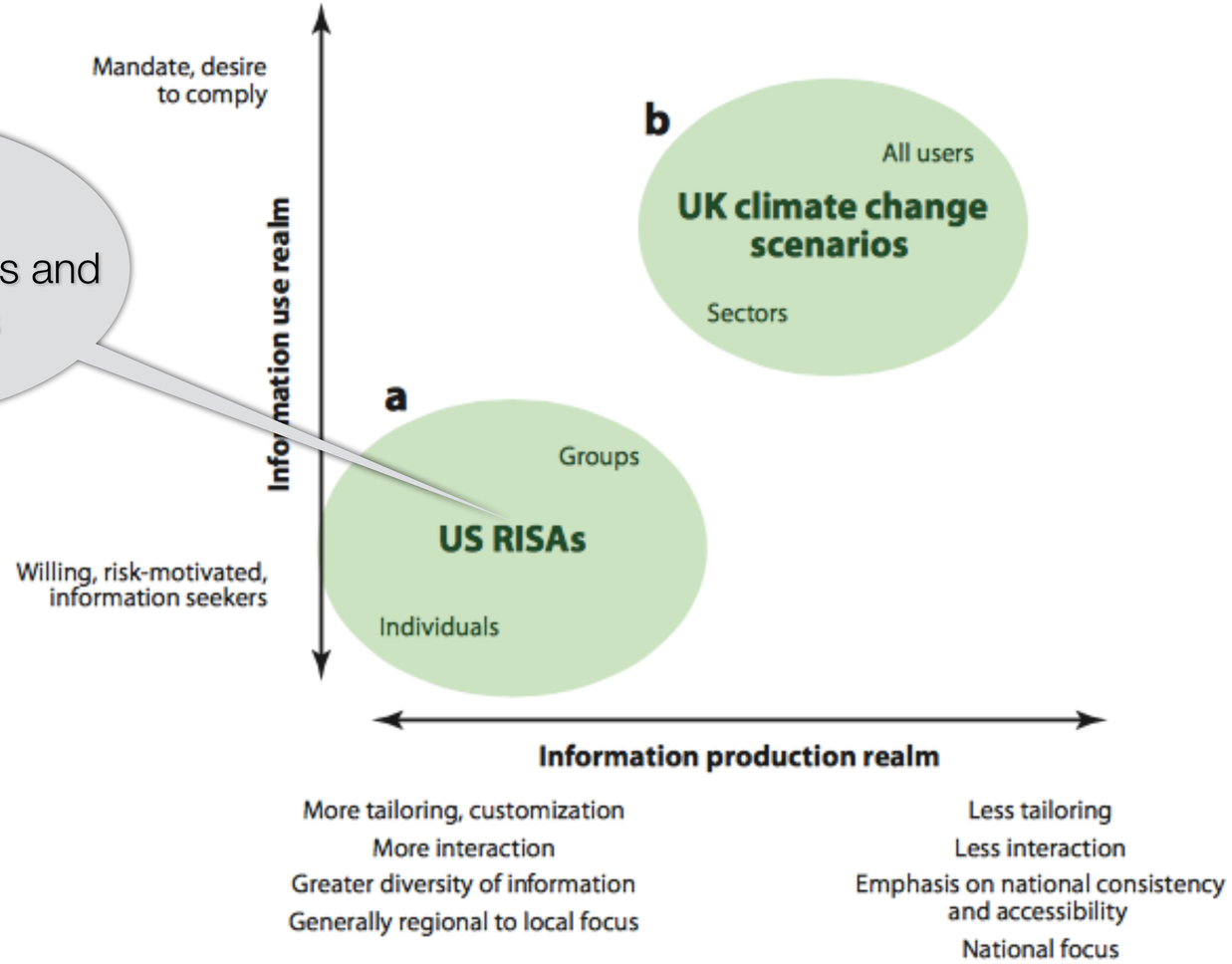
US Regional Integrated Sciences and Assessments



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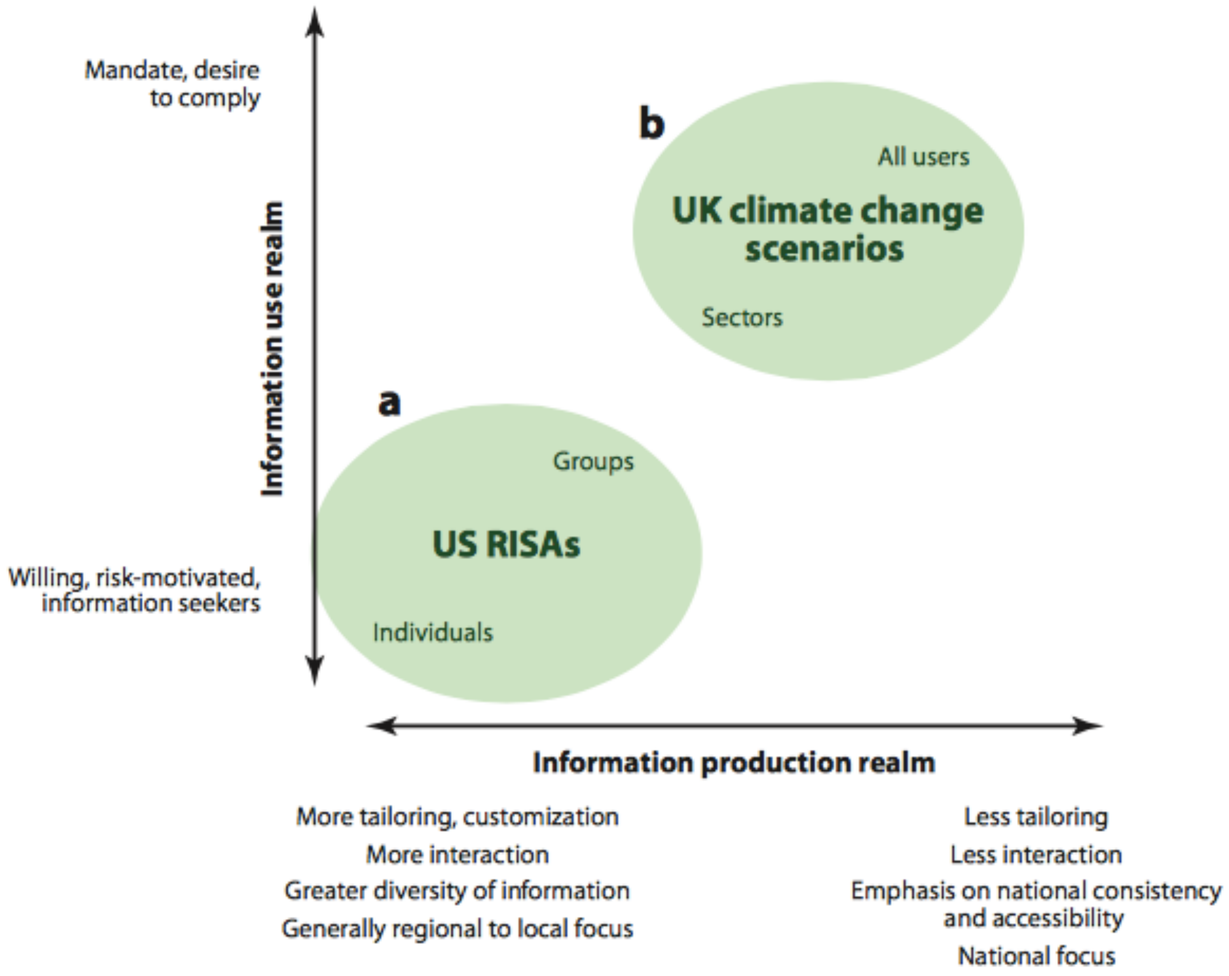

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SUMMARY POINTS

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.

Risk Analysis, Vol. 31, No. 9, 2011 DOI: 10.1111/j.1539-6924.2010.01477.x

Perspective

The Challenge of Degraded Environments: How Common Biases Impair Effective Policy

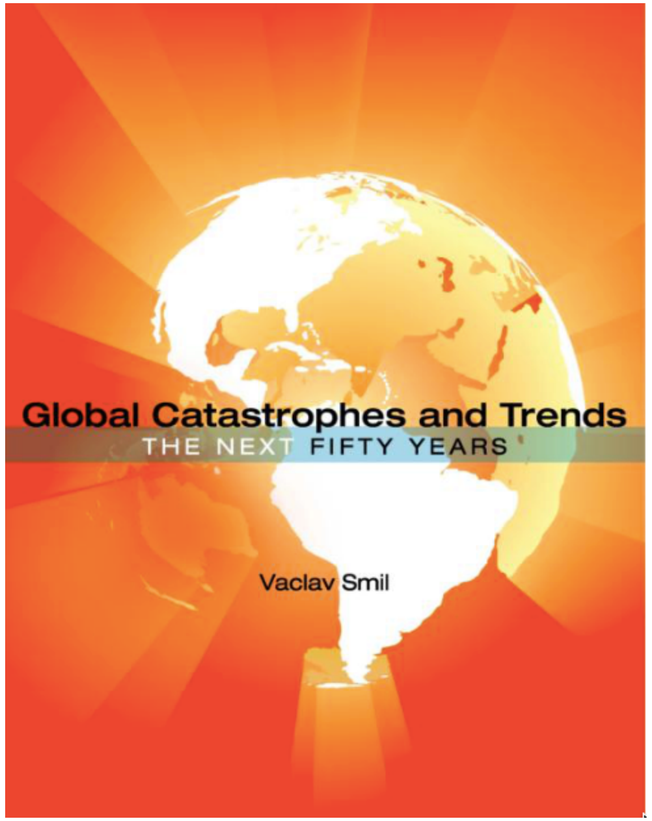
Alan Berger,[1] Case Brown,[2] Carolyn Kousky,[3,*] and Richard Zeckhauser[4]

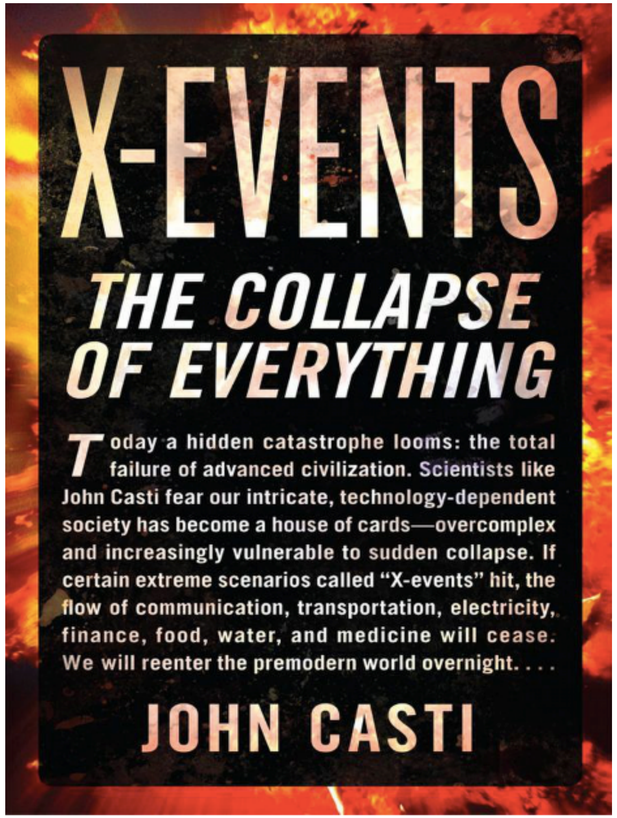
Economic activity can damage natural systems and reduce the flow of ecosystem services. The harms can be substantial, as our case studies vividly illustrate. Most degraded landscapes have at least some potential to be reclaimed. However, uncertainty plagues decision making regarding degradation and reclamation, 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.

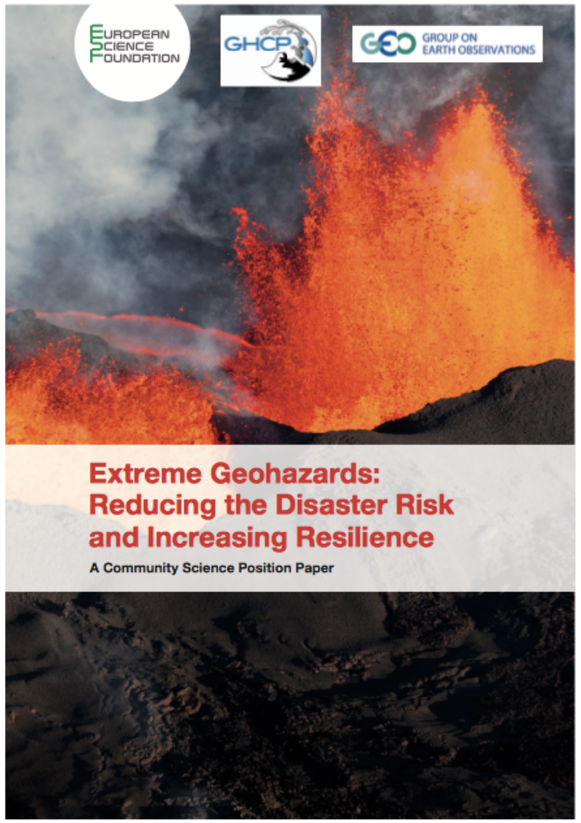
The biases we discuss here lead to suboptimal decision making in a range of cases where risks and uncertainties are present. These biases play a particularly pernicious role in decision making regarding degradation and reclamation. In dealing with a disease, the crucial first step is diagnosis. In dealing 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. …

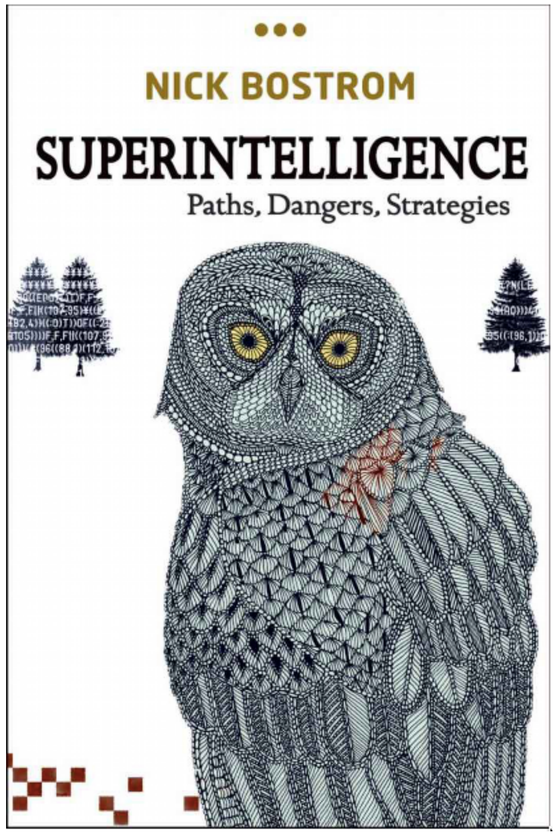
These cases also suggest that degrading environments on a large scale and only afterwards considering how to clean up the damages simply does not work. Landscapes — or the climate—are left permanently damaged.

Science Society Dialog









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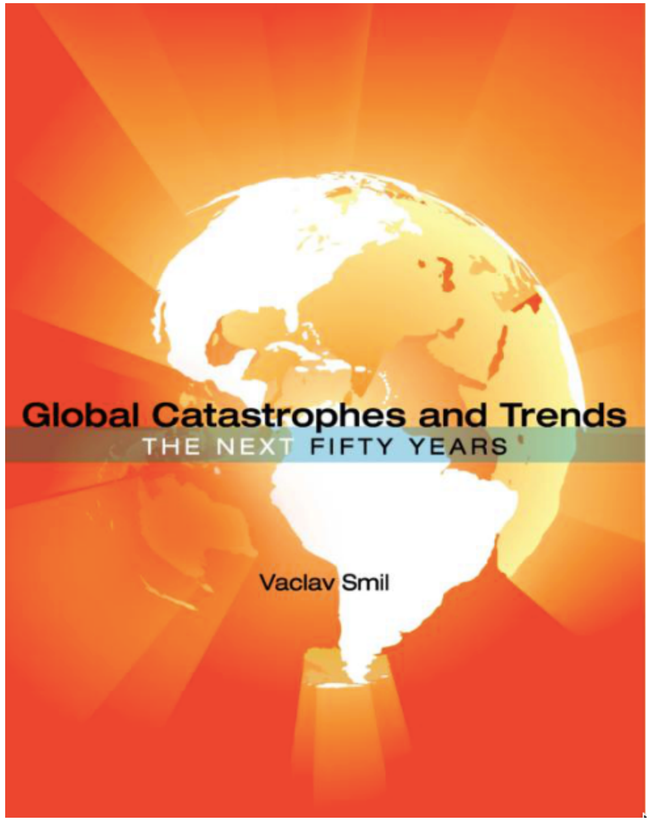

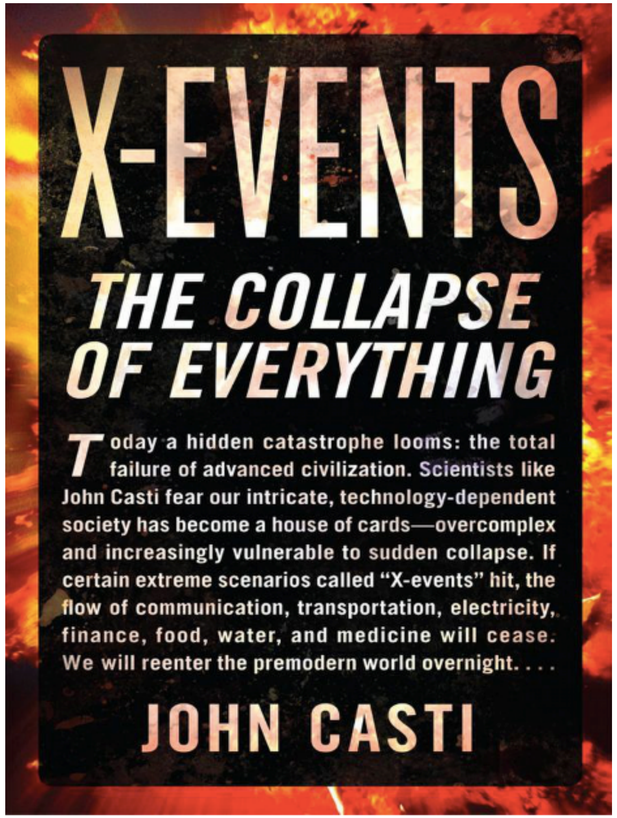

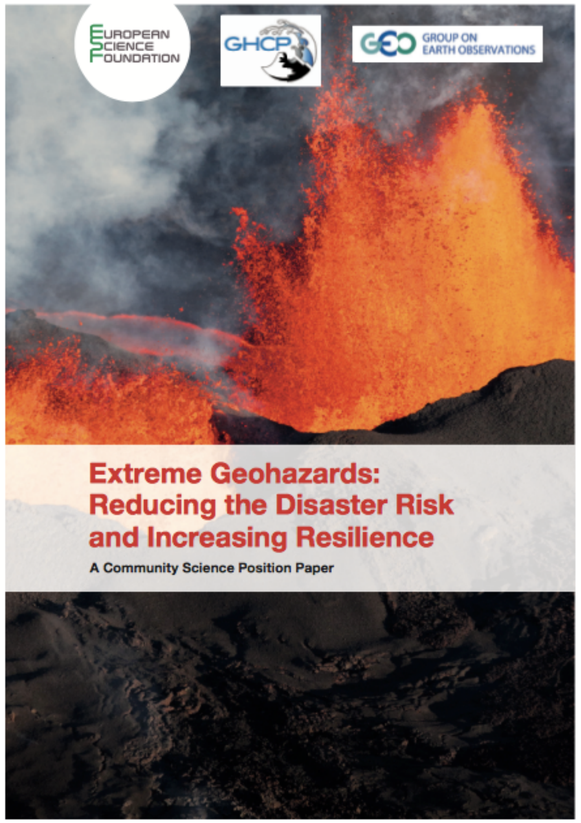

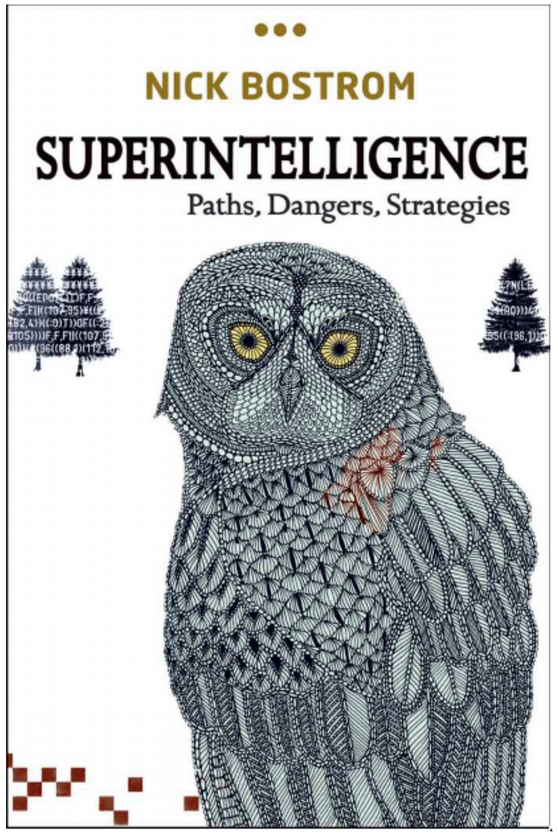

Terrorism:

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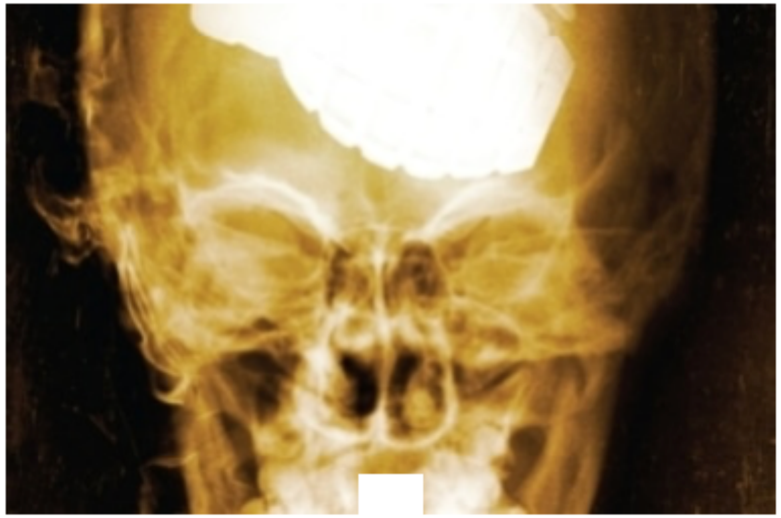

Special Report: The Psychology of Terrorism

Five experts share recent studies, classical research and professional experiences that shed light on defusing the threat of extremism

March 25, 2016 — THE EDITORS

What Research Says about Defeating Terrorism

Seven enlightening studies from social psychology hold vital lessons for policy makers —and the rest of us

March 25, 2016 — Kevin Dutton and Dominic Abrams

Fueling Terror: How Extremists Are Made

The psychology of group dynamics goes a long way toward explaining what drives ordinary people toward radicalism

March 25, 2016 — Stephen D. Reicher and S. Alexander Haslam

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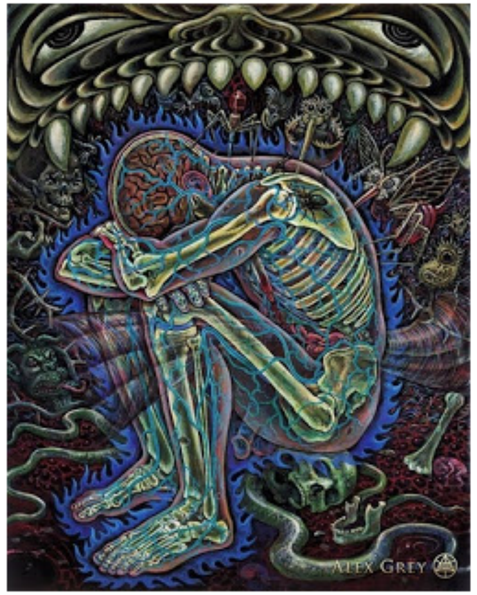
The Other Side of the Global Crisis: Entropy and the Collapse of Civilizations

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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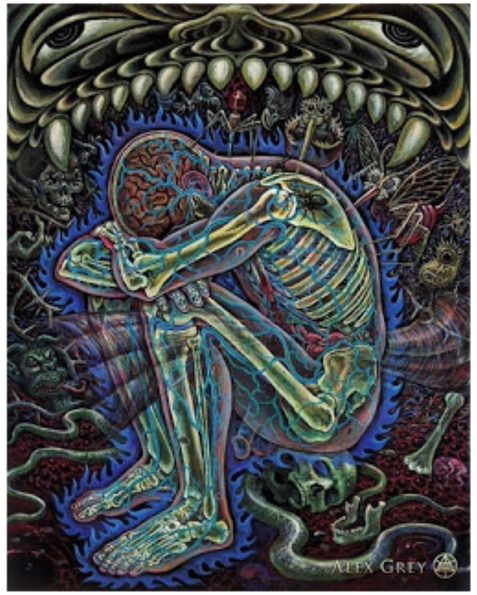

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Science-Science Dialog

Hazards and Disasters

- Natural versus anthropogenic hazards would work if we were in a spaceship and Earth was human-free.
- We are embedded in the Earth's life-support system.
- A hazard is a change of the system state that leads to a reduction of the system's capability to function.
- A hazard can be a short event, a longer process, or a slow trend.

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We distinguish:

- geo(logical) hazards: those that arise from processes in the solid earth
- hydro-meteorological hazards: those that result from processes in the coupled hydrosphere-atmosphere system
- extraterrestrial hazards: asteroids, bolides and solar storms
- biological hazards: pandemics, rodents, insects, algae-bloom, extinction
- chemical hazards: pollution, acid rain, ocean acidification, change of greenhouse gases
- technological hazards: accidents, mall-function, AI, nano-technology
- social hazards: involuntary migration, unrest, racism, genocide, wars, imperialism, fail governance
- economic hazards: depressions, bubbles, speculations, peak-oil-etal.

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Boundary between those that have non-human origin and human origin is blurred.

Technological hazards can be triggered by non-technological hazards

- Fukushima
- Solar storms

Human activity can trigger hazards or change spectrum:

- induced seismicity
- GHG emission changes spectrum of HMHs

Slowly developing hazards:

- sea level rise
- climate change
- land-use change
- extinction

Slowly developing hazards:

- Have impact on hazard spectrum
- Can cross threshold

Creating the ‘Illusion of Truth’

Neurohacks | Psychology

How liars create the ‘illusion of truth’

Repetition makes a fact seem more true, regardless of whether it is or not. Understanding this effect can help you avoid falling for propaganda, says psychologist Tom Stafford.

By Tom Stafford
26 October 2016

Creating the ‘Illusion of Truth’

“Repeat a lie often enough and it becomes the truth”, is a law of propaganda often attributed to the Nazi Joseph Goebbels.

Creating the ‘Illusion of Truth’

Recently, a team led by Lisa Fazio of Vanderbilt University set out to test how the illusion of truth effect interacts with our prior knowledge. Would it affect our existing knowledge? They used paired true and un-true statements, but also split their items according to how likely participants were to know the truth (so "The Pacific Ocean is the largest ocean on Earth" is an example of a "known" items, which also happens to be true, and "The Atlantic Ocean is the largest ocean on Earth" is an un-true item, for which people are likely to know the actual truth).

Repetition can even make known lies sound more believable

What Fazio and colleagues actually found, is that the biggest influence on whether a statement was judged to be true was... whether it actually was true. The repetition effect couldn’t mask the truth. With or without repetition, people were still more likely to believe the actual facts as opposed to the lies.
This shows something fundamental about how we update our beliefs – repetition has a power to make things sound more true, even when we know differently, but it doesn't over-ride that knowledge

Creating the 'Illusion of Truth'

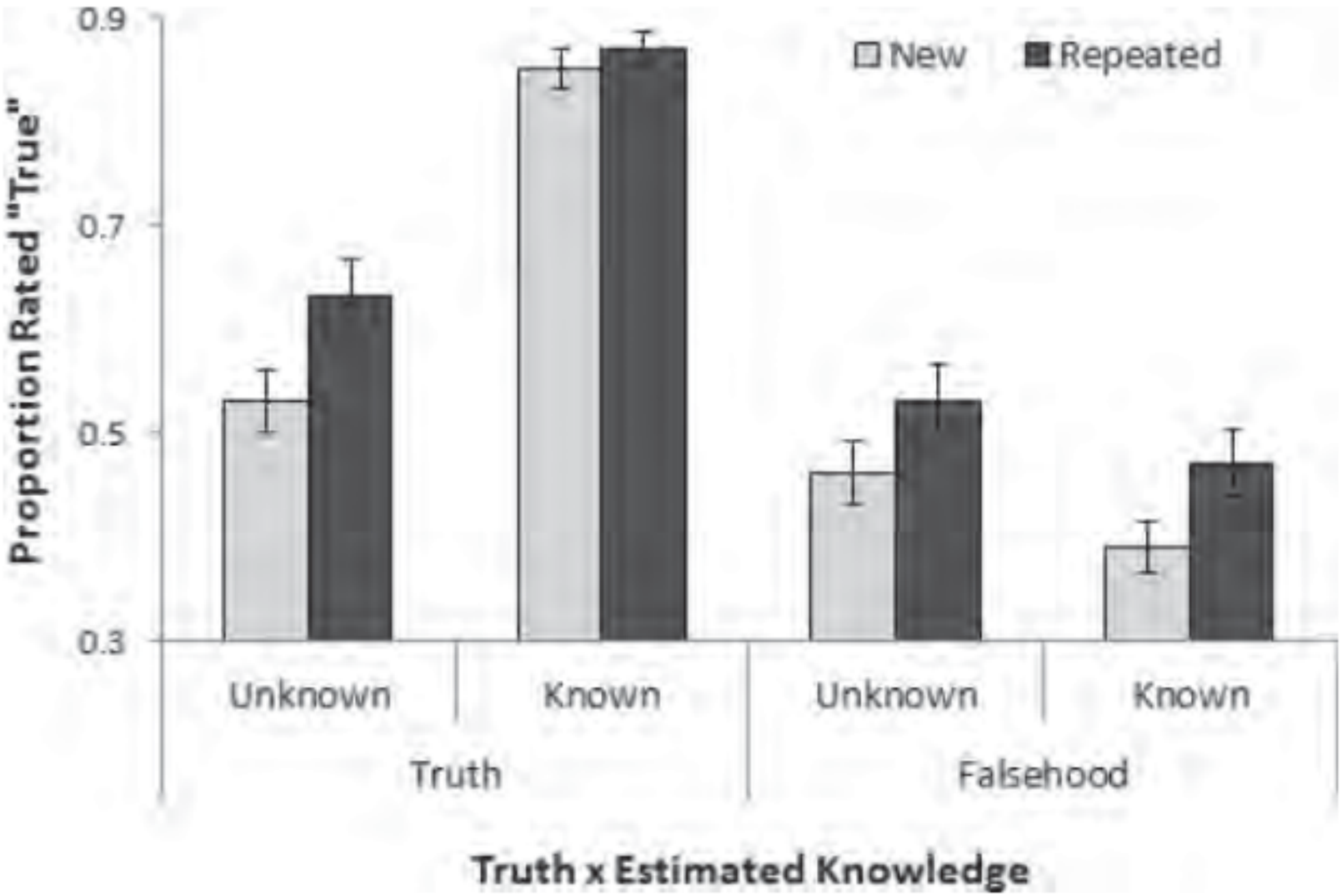

Figure 4. Proportion of statements rated "true" as a function of repetition, truth, and norm-based estimates of knowledge (Experiment 2). Error bars reflect standard error of the mean.

Creating the ‘Illusion of Truth’

The illusion of truth is not inevitable – when armed with knowledge, we can resist it

If repetition was the only thing that influenced what we believed we'd be in trouble, but it isn't. We can all bring to bear more extensive powers of reasoning, but we need to recognise they are a limited resource. Our minds are prey to the illusion of truth effect because our instinct is to use short-cuts in judging how plausible something is. Often this works. Sometimes it is misleading.

Once we know about the effect we can guard against it. Part of this is double-checking why we believe what we do – if something sounds plausible is it because it really is true, or have we just been told that repeatedly? This is why scholars are so mad about providing references - so we can track the origin on any claim, rather than having to take it on faith.

But part of guarding against the illusion is the obligation it puts on us to stop repeating falsehoods. We live in a world where the facts matter, and should matter. If you repeat things without bothering to check if they are true, you are helping to make a world where lies and truth are easier to confuse. So, please, think before you repeat.

Societal Dialog

Reason, we are told, is what makes us human, the source of our knowledge and wisdom. If reason is so useful, why didn't it also evolve in other animals? If reason is that reliable, why do we produce so much thoroughly reasoned nonsense? In their groundbreaking account of the evolution and workings of reason, Hugo Mercier and Dan Sperber set out to solve this double enigma. Reason, they argue with a compelling mix of real-life and experimental evidence, is not geared to solitary use, to arriving at better beliefs and decisions on our own. What reason does, rather, is help us justify our beliefs and actions to others, convince them through argumentation, and evaluate the justifications and arguments that others address to us.

In other words, reason helps humans better exploit their uniquely rich social environment. This interactionist interpretation explains why reason may have evolved and how it fits with other cognitive mechanisms. It makes sense of strengths and weaknesses that have long puzzled philosophers and psychologists—why reason is biased in favor of what we already believe, why it may lead to terrible ideas and yet is indispensable to spreading good ones.

Project Classes