

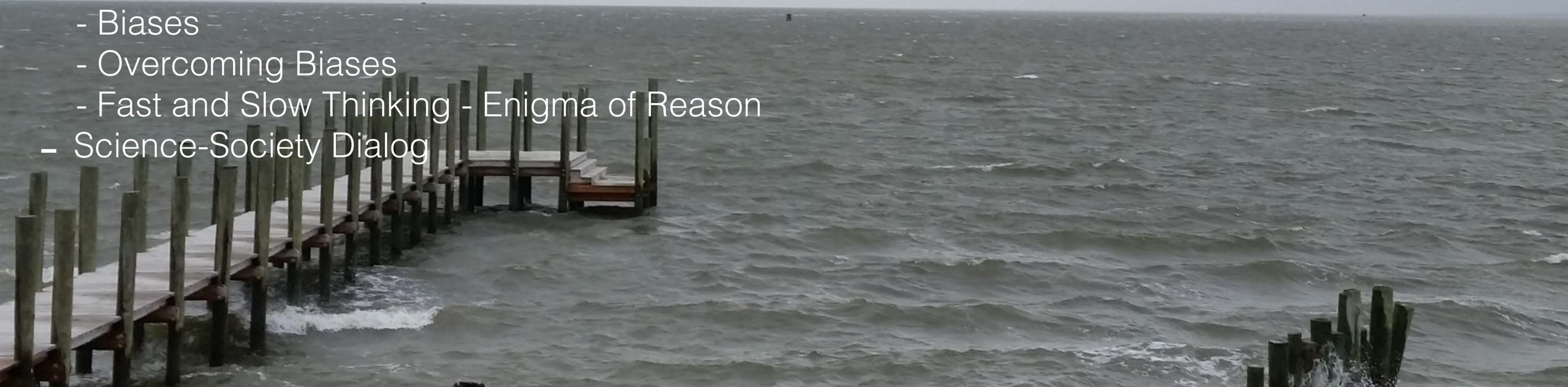
Mitigation and Adaptation Studies



Classes 19+20: Decision-Making

Contents

- Wicked Problems
- Modeling and Simulation
- Economic Context
- Social and Political Context
- Decisions and Human Nature:
 - Biases
 - Overcoming Biases
 - Fast and Slow Thinking - Enigma of Reason
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Ethics, value systems, norms

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SPRINGER BRIEFS IN PUBLIC HEALTH · ETHICS

Travis N. Rieder

Toward a Small Family Ethic

How Overpopulation and Climate Change Are Affecting the Morality of Procreation

 Springer

years. Our population is growing so fast that anyone alive today who was born prior to the mid-1960s has seen the population *double*.¹ In other words: we humans have made a lot of people very quickly. The concern that will occupy me in the rest of this short book is that we now have very good evidence that we made too many.

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quickly enough. We are on track to be at nine or ten billion by 2050,³ and so a question that gets asked a lot is whether the earth can sustain a population of ten billion people. However, the answer to that question is, in one sense, unequivocally ‘yes’. If those ten billion people renounce all unnecessary greenhouse gas-producing activities, turn to a sustainable vegetarian diet, and live simple lives, then there is no reason to think that the world cannot support a population of ten billion. Call this fictional version of our future **Modest World**.

On the other hand, we might think both that such a conversion by the world’s wealthy is unlikely, and that we have a duty of justice to pull some of the world’s poorest people out of poverty, increasing their resource consumption. Can the earth support a population of ten billion people, some of whom are fantastically well-off, and the rest of whom are living decent lives? Let’s call this case **Excess World**.

Finally, we can even consider what is likely to be the *actual* constitution of a population of ten billion people: a population much like ours, only bigger. Such a population has some fantastically wealthy people, who consume a vast majority of the planet’s resources, and then very, very many poorer people, who live modest or desperate lives, and who consume far fewer resources. Perhaps this is the population that, as a matter of realism, we ought to be most concerned with, so let’s call this one **Real World**. Can the earth sustain this version of our future selves?

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1.5 Conclusion: The Population Crisis is a Public Health Emergency

The main lessons of this first chapter are (1) that population is a major driver of climate change, in addition to raising concerns about other limited resources; and (2) that climate change is a morally urgent problem. As a result, it seems appropriate to say that we have a *population crisis*—that the size of our population generates a problem that is massive in scale and dire in consequence.

The final observation that I want to make here, then, is that the population crisis presents us with a particular kind of threat—namely, one in ‘public health’. A failure to mitigate climate change is a failure to adequately protect the well-being of the population as a whole, albeit while allowing disproportionate harm to the poor and the weak. But who, exactly, fails the population? Who is responsible for the harms of climate change? It is difficult to say, but whatever the answer is, it

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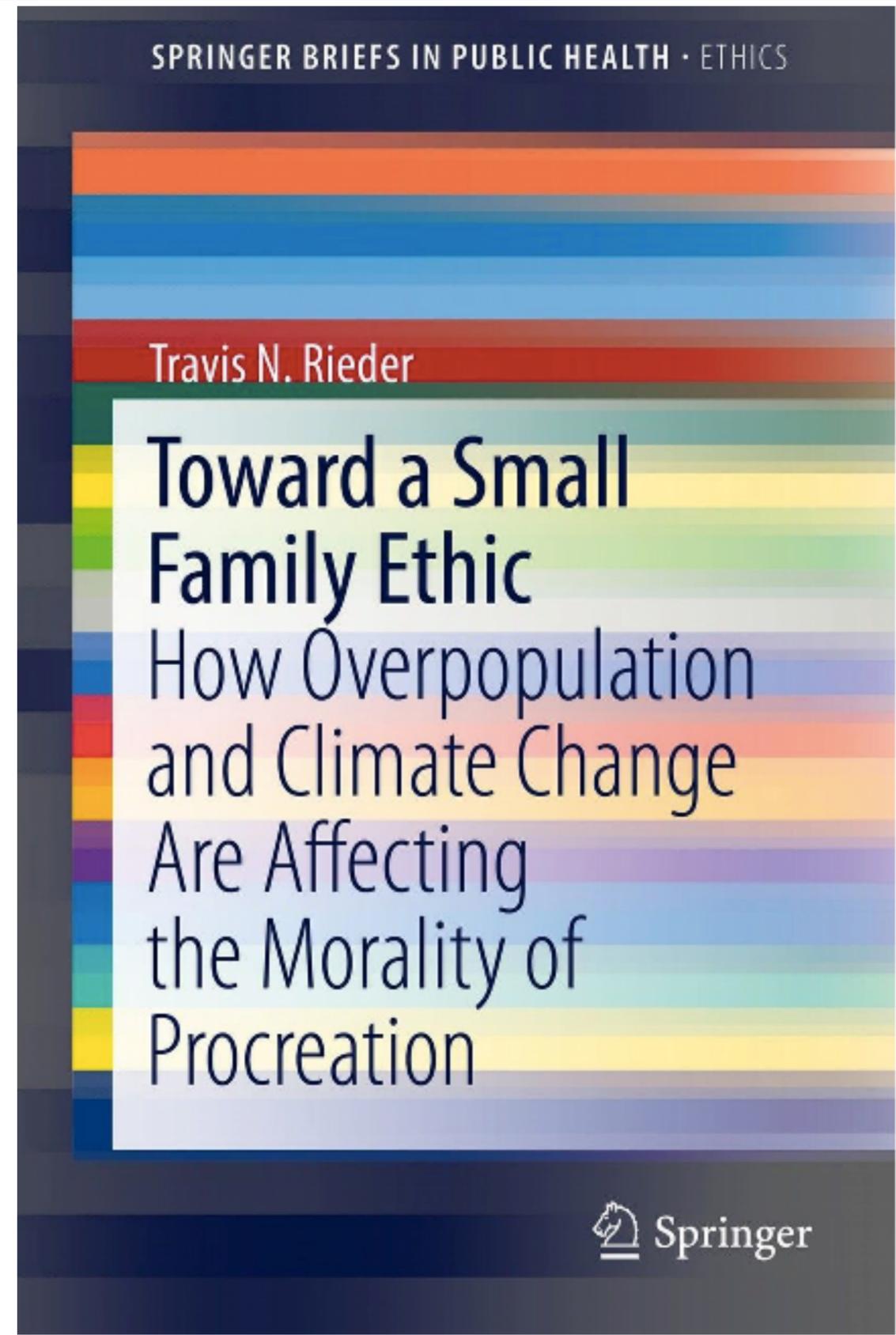
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Significant Difference : If the consequences of an act make no significant difference to the extent or severity of a moral problem, then the agent is not morally required to refrain from acting in light of the moral problem.

Another comparison to help us see the fairly radical effect that procreation has on one's emissions is by comparing it to one's lifetime, non-procreative emissions. According to Murtaugh and Schlax's calculations, the fact of carbon legacy—that is, the fact that one's children will go on to live and emit, and perhaps procreate themselves—results in the rather strange implication that the activity of having a child raises one's lifetime carbon emissions *by several times*. In particular, on the same constant-emissions scenario, **each child that an individual has adds about 9441 metric tons of carbon dioxide to her carbon footprint , which is 5.7 times the lifetime average emissions of an American's non-procreative activities (2009, p. 14).**



Principles in favor of limiting procreation :

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

Jeff McMahon 1981):

The Asymmetry: Although the prospect of pain and suffering in the life of a child provides one with reason not to create that child, the prospect of happiness in the life of a child provides one with no reason to create that child.

Rieder, Travis N.. Toward a Small Family Ethic: How Overpopulation and Climate Change Are Affecting the Morality of Procreation (SpringerBriefs in Public Health) (Kindle Locations 952-953). Springer International Publishing. Kindle Edition.

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We are left, I think, with a moral burden to have small families. The powerful reasons in favor of limiting procreation generate a demand for justification; if one fails to meet this demand, then her procreative activity is morally unjustifiable. And meeting this demand, I think, becomes progressively more difficult as one has more children. Given the moral burden to have small families, having any children at all may well be unjustifiable for many people; for some of the rest of us, the case for having one child seems fairly compelling. Might some people be justified in having more than one? Perhaps. But the burden is on them to make the case. Morality has more in its arsenal than merely obligation, duty and rights; reasons can burden us, and acting justifiably looks, to me, to pressure us towards small families.

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How do humans make decisions?

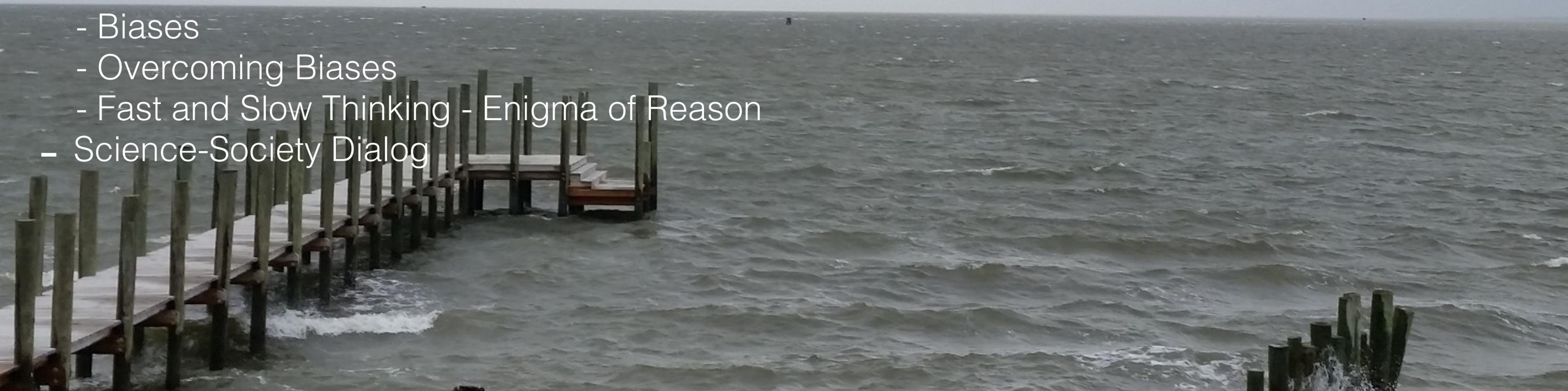
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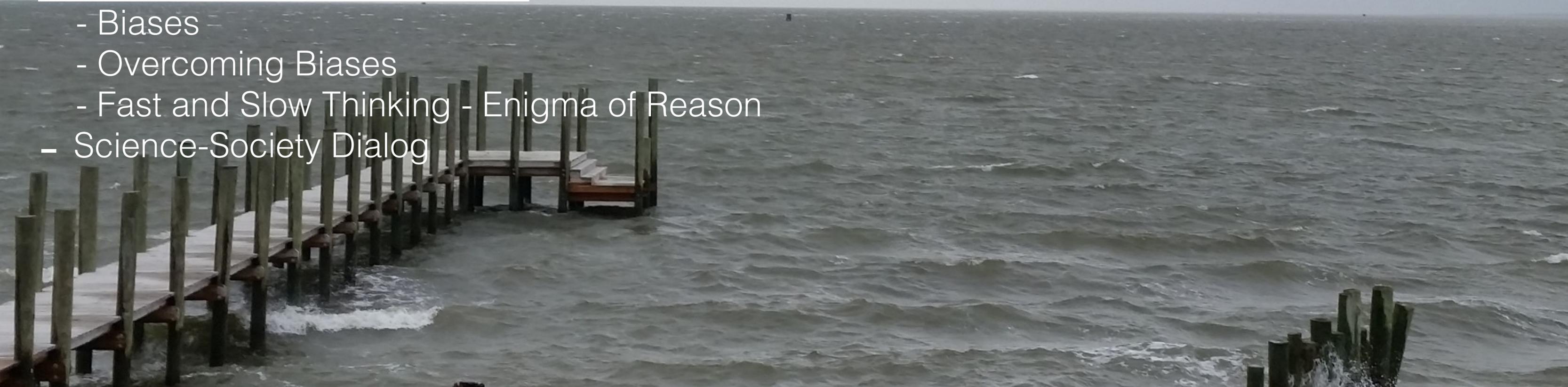
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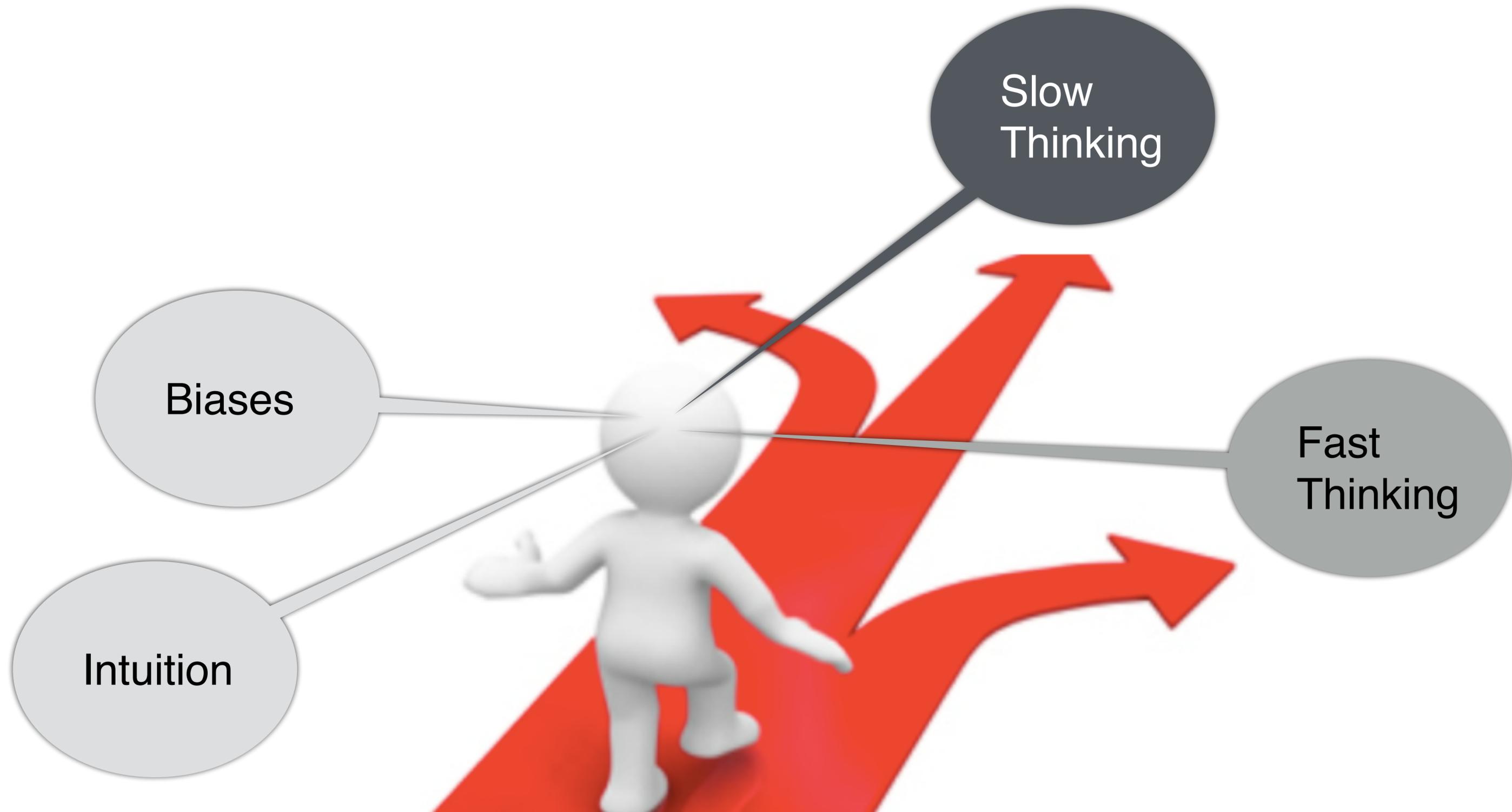


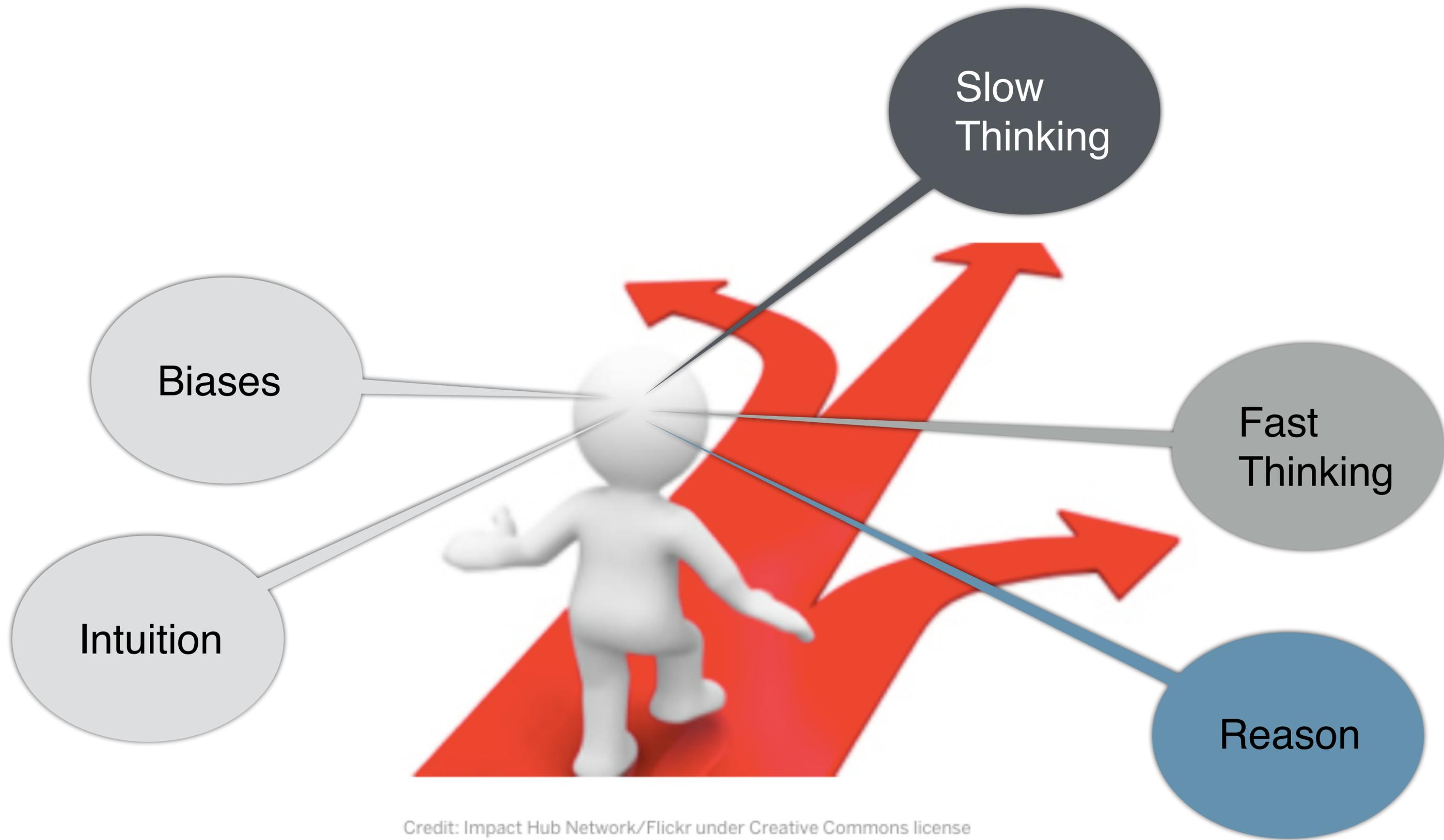
Credit: Impact Hub Network/Flickr under Creative Commons license











Decision and Human Nature: 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.

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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.

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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.

20 cognitive biases that screw up your decisions

Samantha Lee and Shana Lebowitz

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

 FACEBOOK  LINKEDIN  TWITTER  EMAIL  PRINT

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

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.



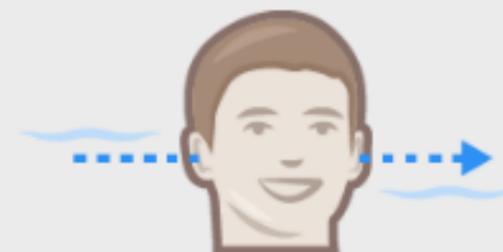
6. Clustering illusion.

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.



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.



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.

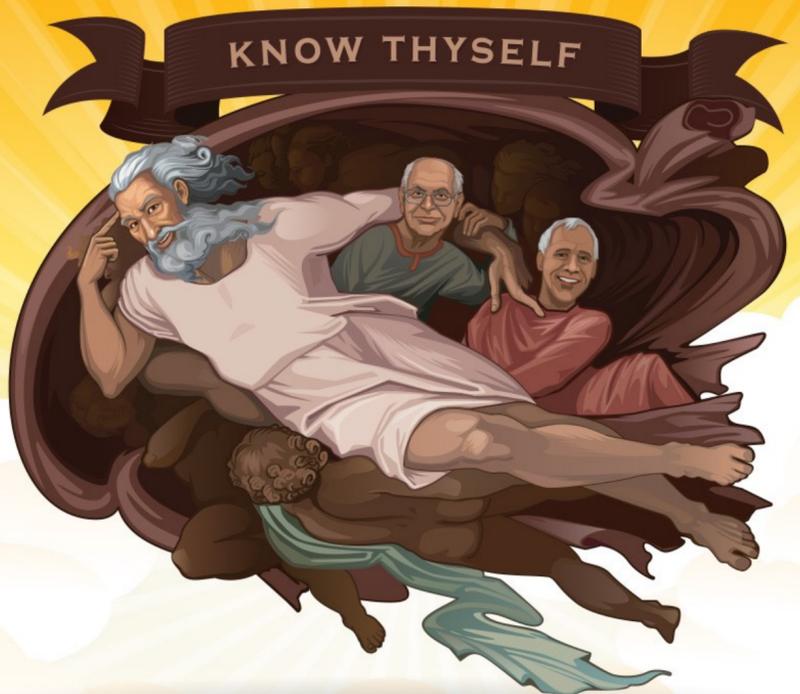
Sociologists have found that **we love certainty** – even if it's counterproductive. Eliminating risk entirely means there is no chance of harm being caused.



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

Decision and Human Nature: Biases



anchoring

The first thing you judge influences your judgment of all that follows.

Human minds are associative in nature, so the order in which we receive information helps determine the course of our judgments and perceptions.

Be especially mindful of this bias during financial negotiations such as houses, cars, and salaries. The initial price offered is proven to have a significant effect.

sunk cost fallacy

You irrationally cling to things that have already cost you something.

When we've invested our time, money, or emotion into something, it hurts us to let it go. This aversion to pain can distort our better judgment and cause us to make unwise investments.

To regain objectivity, ask yourself: had I not already invested something, would I still do so now? What would I counsel a friend to do if they were in the same situation?

availability heuristic

Your judgments are influenced by what springs most easily to mind.

How recent, emotionally powerful, or unusual your memories are can make them seem more relevant. This, in turn, can cause you to apply them too readily.

Try to gain different perspectives and relevant statistical information rather than relying purely on first judgments and emotive influences.

curse of knowledge

Once you understand something you presume it to be obvious to everyone.

Things makes sense once they make sense, so it can be hard to remember why they didn't. We build complex networks of understanding and forget how intricate the path to our available knowledge really is.

When teaching someone something new, go slow and explain like they're ten years old (without being patronizing). Repeat key points and facilitate active practice to help embed knowledge.

confirmation bias

You favor things that confirm your existing beliefs.

We are primed to see and agree with ideas that fit our preconceptions, and to ignore and dismiss information that conflicts with them.

Think of your ideas and beliefs as software you're actively trying to find problems with rather than things to be defended.

"The first principle is that you must not fool yourself - and you are the easiest person to fool."

- Richard Feynman

dunning-kruger effect

The more you know, the less confident you're likely to be.

Because experts know just how much they don't know, they tend to underestimate their ability; but it's easy to be over-confident when you have only a simple idea of how things are.

"The whole problem with the world is that fools and fanatics are so certain of themselves, yet wiser people so full of doubts."

- Bertrand Russell

belief bias

If a conclusion supports your existing beliefs, you'll rationalize anything that supports it.

It's difficult for us to set aside our existing beliefs to consider the true merits of an argument. In practice this means that our ideas become impervious to criticism, and are perpetually reinforced.

A useful thing to ask is 'when and how did I get this belief?' We tend to automatically defend our ideas without ever really questioning them.

self-serving bias

You believe your failures are due to external factors, yet you're personally responsible for your successes.

Many of us enjoy unearned privileges, luck and advantages that others do not. It's easy to tell ourselves that we deserve these things, whilst blaming circumstance when things don't go our way.

When judging others, be mindful of how this bias interacts with the just-world hypothesis, fundamental attribution error, and the in-group bias.

backfire effect

When your core beliefs are challenged, it can cause you to believe even more strongly.

We can experience being wrong about some ideas as an attack upon our very selves, or our tribal identity. This can lead to motivated reasoning which causes us to double-down, despite disconfirming evidence.

"It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so."

- Mark Twain

barnum effect

You see personal specifics in vague statements by filling in the gaps.

Because our minds are given to making connections, it's easy for us to take nebulous statements and find ways to interpret them so that they seem specific and personal.

Psychics, astrologers and others use this bias to make it seem like they're telling you something relevant. Consider how things might be interpreted to apply to anyone, not just you.

groupthink

You let the social dynamics of a group situation override the best outcomes.

Dissent can be uncomfortable and dangerous to one's social standing, and so often the most confident or first voice will determine group decisions.

Rather than openly contradicting others, seek to facilitate objective means of evaluation and critical thinking practices as a group activity.

negativity bias

You allow negative things to disproportionately influence your thinking.

The pain of loss and hurt are felt more keenly and persistently than the fleeting gratification of pleasant things. We are primed for survival, and our aversion to pain can distort our judgment for a modern world.

Pro-and-con lists, as well as thinking in terms of probabilities, can help you evaluate things more objectively than relying on a cognitive impression.

declinism

You remember the past as better than it was, and expect the future to be worse than it will likely be.

Despite living in the most peaceful and prosperous time in history, many people believe things are getting worse. The 24 hour news cycle, with its reporting of overly negative and violent events, may account for some of this effect.

Instead of relying on nostalgic impressions of how great things used to be, use measurable metrics such as life expectancy, levels of crime and violence, and prosperity statistics.

framing effect

You allow yourself to be unduly influenced by context and delivery.

We all like to think that we think independently, but the truth is that all of us are, in fact, influenced by delivery, framing and subtle cues. This is why the ad industry is a thing, despite almost everyone believing they're not affected by advertising messages.

Only when we have the intellectual humility to accept the fact that we can be manipulated, can we hope to limit how much we are. Try to be mindful of how things are being put to you.

fundamental attribution error

You judge others on their character, but yourself on the situation.

If you haven't had a good night's sleep, you know why you're being a bit slow; but if you observe someone else being slow you don't have such knowledge and so might presume them to just be a slow person.

It's not only kind to view others' situations with charity, it's more objective too. Be mindful to also err on the side of taking personal responsibility rather than justifying and blaming.

halo effect

How much you like someone, or how attractive they are, influences your other judgments of them.

Our judgments are associative and automatic, and so if we want to be objective we need to consciously control for irrelevant influences. This is especially important in a professional setting.

If you notice that you're giving consistently high or low marks across the board, it's worth considering that your judgment may be suffering from the halo effect.

optimism bias

You overestimate the likelihood of positive outcomes.

There can be benefits to a positive attitude, but it's unwise to allow such an attitude to adversely affect our ability to make rational judgments (they're not mutually exclusive).

If you make rational, realistic judgments you'll have a lot more to feel positive about.

pessimism bias

You overestimate the likelihood of negative outcomes.

Pessimism is often a defense mechanism against disappointment, or it can be the result of depression and anxiety disorders.

Perhaps the worst aspect of pessimism is that even if something good happens, you'll probably feel pessimistic about it anyway.

just world hypothesis

Your preference for a just world makes you presume that it exists.

A world in which people don't always get what they deserve, hard work doesn't always pay off, and injustice happens is an uncomfortable one that threatens our preferred narrative. However, it is also the reality.

A more just world requires understanding rather than blame. Remember that everyone has their own life story, we're all fallible, and bad things happen to good people.

in-group bias

You unfairly favor those who belong to your group.

We presume that we're fair and impartial, but the truth is that we automatically favor those who are most like us, or belong to our groups.

Try to imagine yourself in the position of those in out-groups; whilst also attempting to be dispassionate when judging those who belong to your in-groups.

placebo effect

If you believe you're taking medicine it can sometimes 'work' even if it's fake.

The placebo effect can work for stuff that our mind influences (such as pain) but not so much for things like viruses or broken bones.

Homeopathy, acupuncture, and many other forms of natural 'medicine' have been proven to be no more effective than placebo. Keep a healthy body and bank balance by using evidence-based medicine from a qualified doctor.

bystander effect

You presume someone else is going to do something in an emergency situation.

When something terrible is happening in a public setting we can experience a kind of shock and mental paralysis that distracts us from a sense of personal responsibility. The problem is that everyone can experience this sense of deindividuation in a crowd.

If there's an emergency situation, presume to be the one who will help or call for help. Be the change you want to see in the world.

reactance

You'd rather do the opposite of what someone is trying to make you do.

When we feel our liberty is being constrained, our inclination is to resist, however in doing so we can over-compensate.

Be careful not to lose objectivity when someone is being coercive/manipulative, or trying to force you do something. Wisdom springs from reflection, folly from reaction.

spotlight effect

You overestimate how much people notice how you look and act.

Most people are much more concerned about themselves than they are about you. Absent overt prejudices, people generally want to like and get along with you as it gives them validation too.

Instead of worrying about how you're being judged, consider how you make others feel. They'll remember this much more, and you'll make the world a better place.

24 cognitive biases stuffing up your thinking

Cognitive biases make our judgments irrational. We have evolved to use shortcuts in our thinking, which are often useful, but a cognitive bias means there's a kind of misfiring going on causing us to lose objectivity. This poster has been designed to help you identify some of the most common biases and how to avoid falling victim to them. Help people become aware of their biases generally by sharing the website yourbias.is or more specifically e.g. yourbias.is/confirmation-bias

© This poster is published under a Creative Commons BY-NC-ND license 2017 by Jesse Richardson. You are free to print and redistribute this artwork non-commercially with the binding proviso that you reproduce it in full so that others may share alike. To learn more about biases you should definitely read the books Thinking, Fast and Slow and You Are Not So Smart. The illustration above is a reference to Michaelangelo's 'Creation of Adam' which many believe depicted the human brain in God's surrounding decoration. The godfathers of research into cognitive biases, Daniel Kahneman and Amos Tversky, are pictured alongside the Christian God above.

Download this poster at www.yourbias.is



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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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.

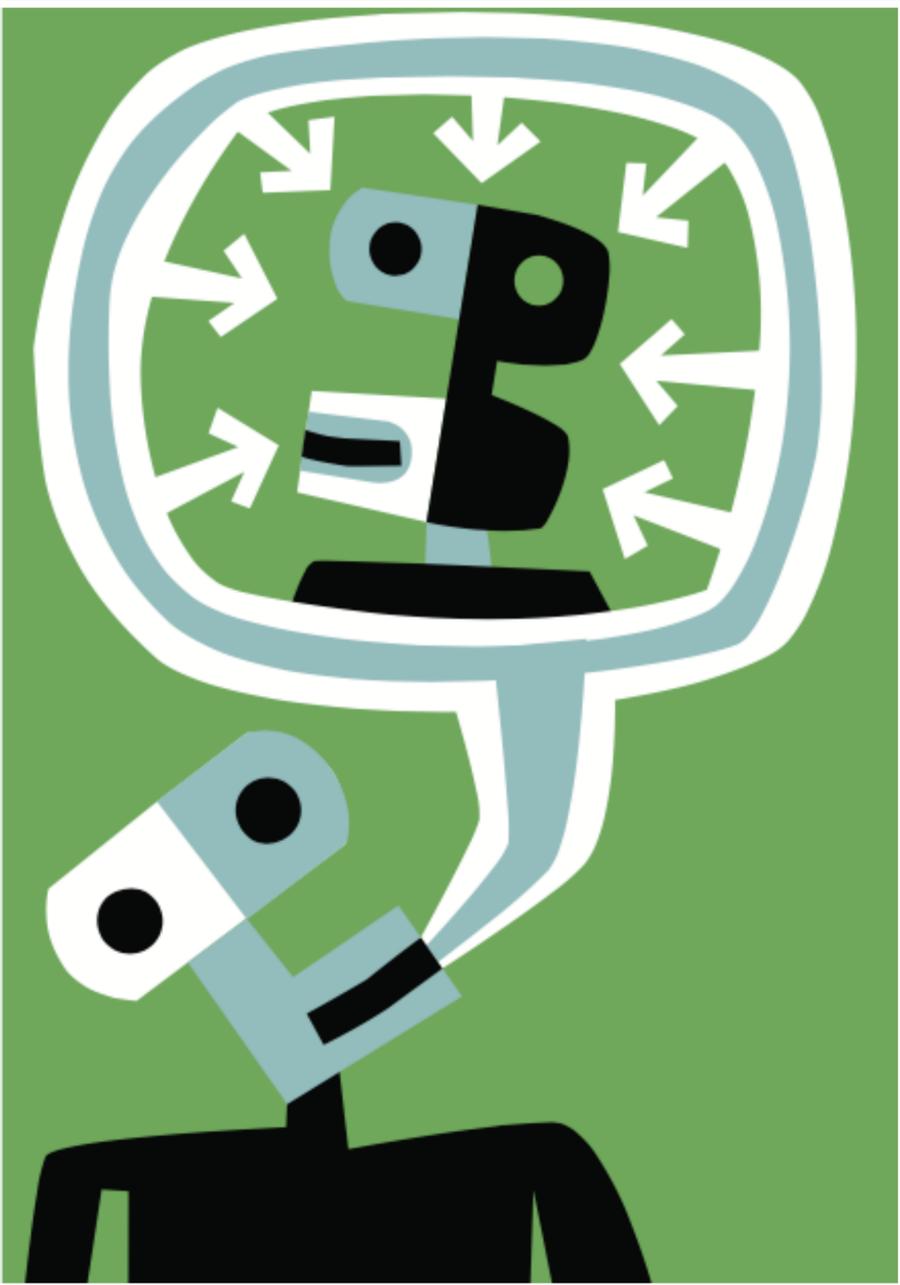
Decision and Human Nature: Overcoming Biases

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.

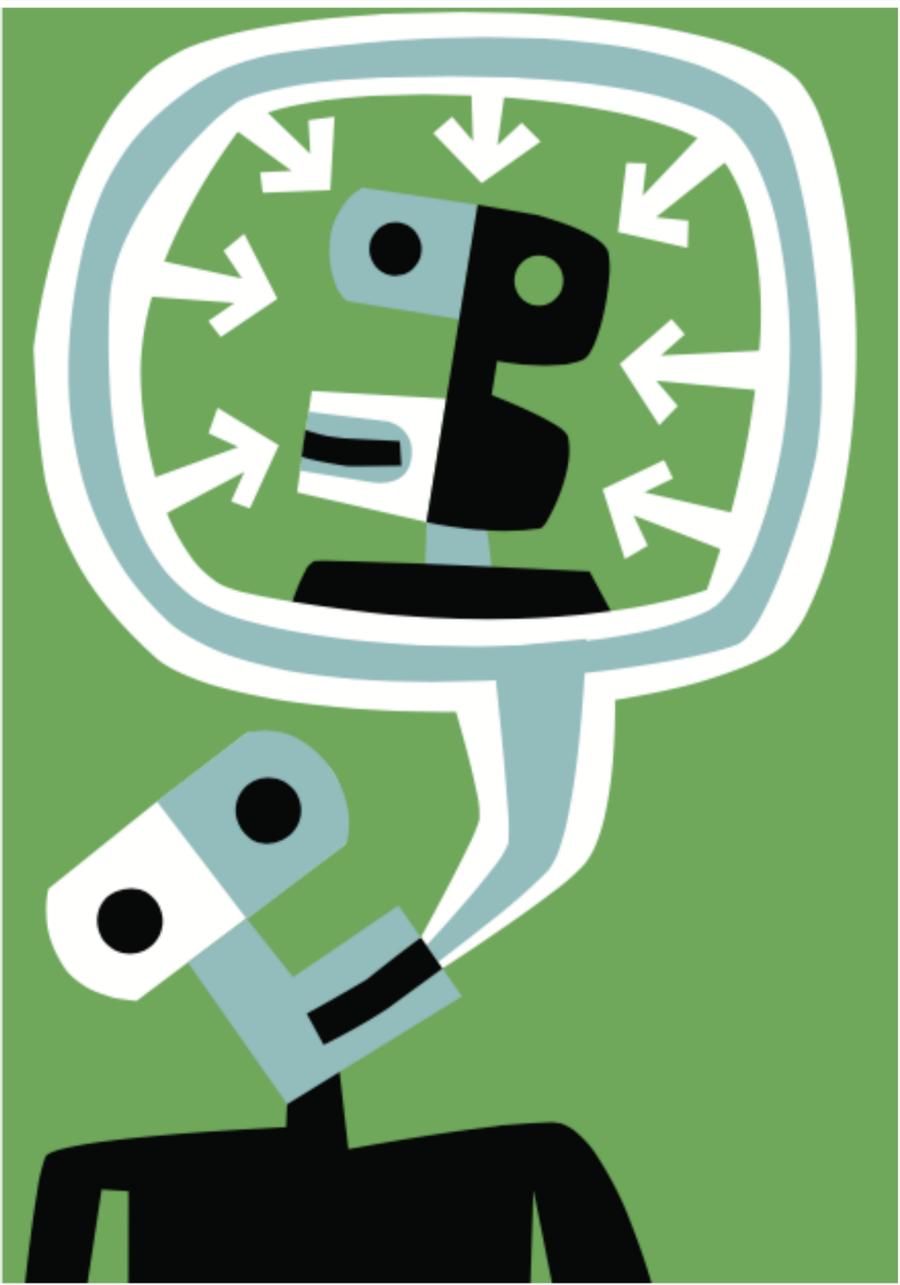


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Ask about the proposal

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?

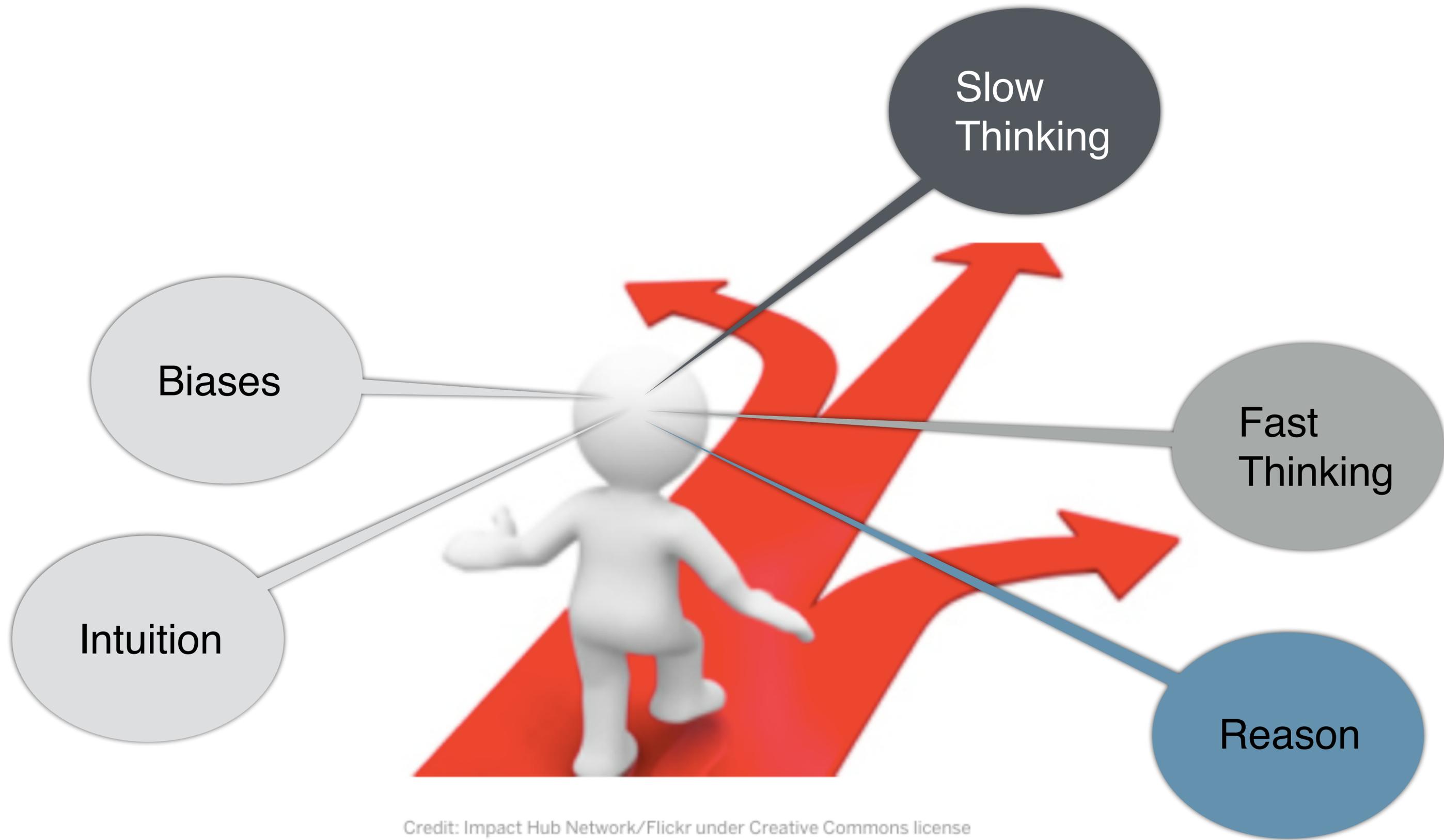
Have the team conduct a pre-mortem: Imagine that the worst has happened, and develop a story about the causes.

12

CHECK FOR LOSS AVERSION

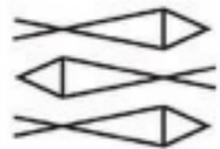
Is the recommending team overly cautious?

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



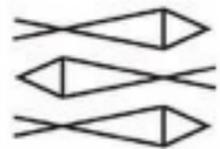
THINKING, FAST AND
SLOW

DANIEL KAHNEMAN



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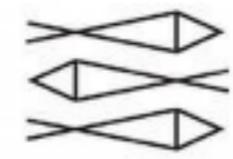
Herbert Simon on Intuition:

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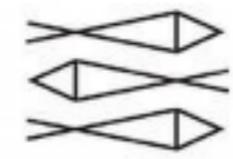
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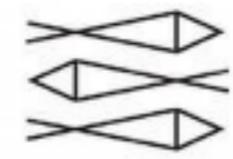
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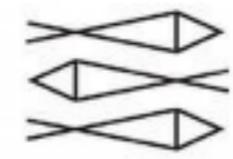
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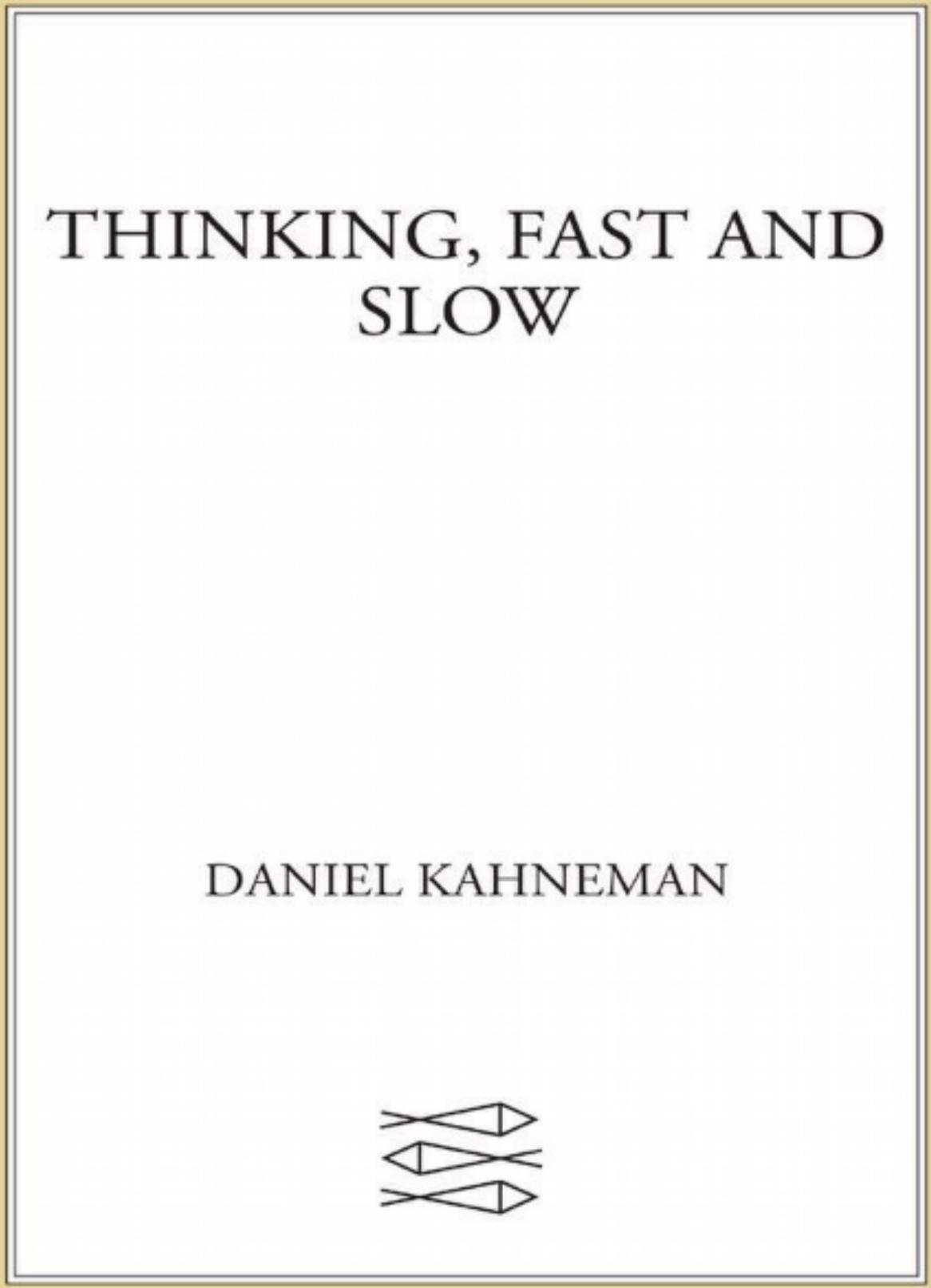
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The spontaneous search for an intuitive solution sometimes fails—neither an expert solution nor a heuristic answer comes to mind. In such cases we often find ourselves switching to a slower, more deliberate and effortful form of thinking. This is the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

Kahneman, Daniel. Thinking, Fast and Slow (p. 13). 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.

HUGO MERCIER · DAN SPERBER

The Enigma of Reason



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.

Mitigation and Adaptation Studies



Classes 19+20: Decision-Making

Contents

- Wicked Problems
- Modeling and Simulation
- Economic Context
- Social and Political Context
- Decisions and Human Nature:
 - Biases
 - Overcoming Biases
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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 Dessai²

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

²Sustainability 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

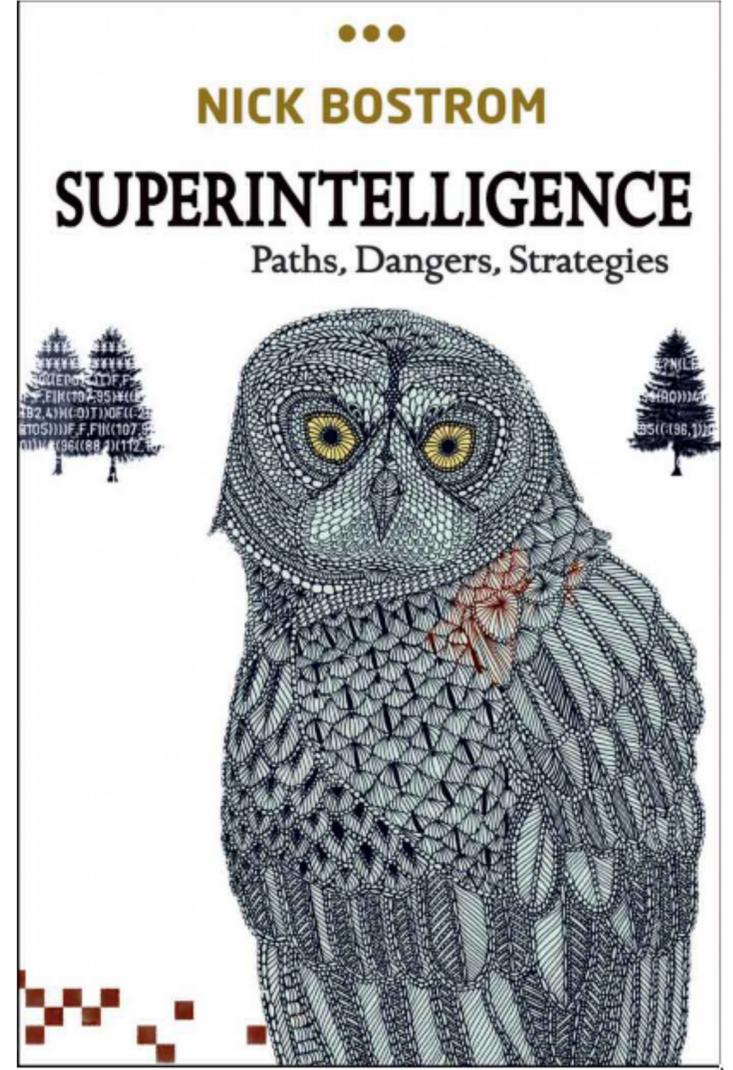
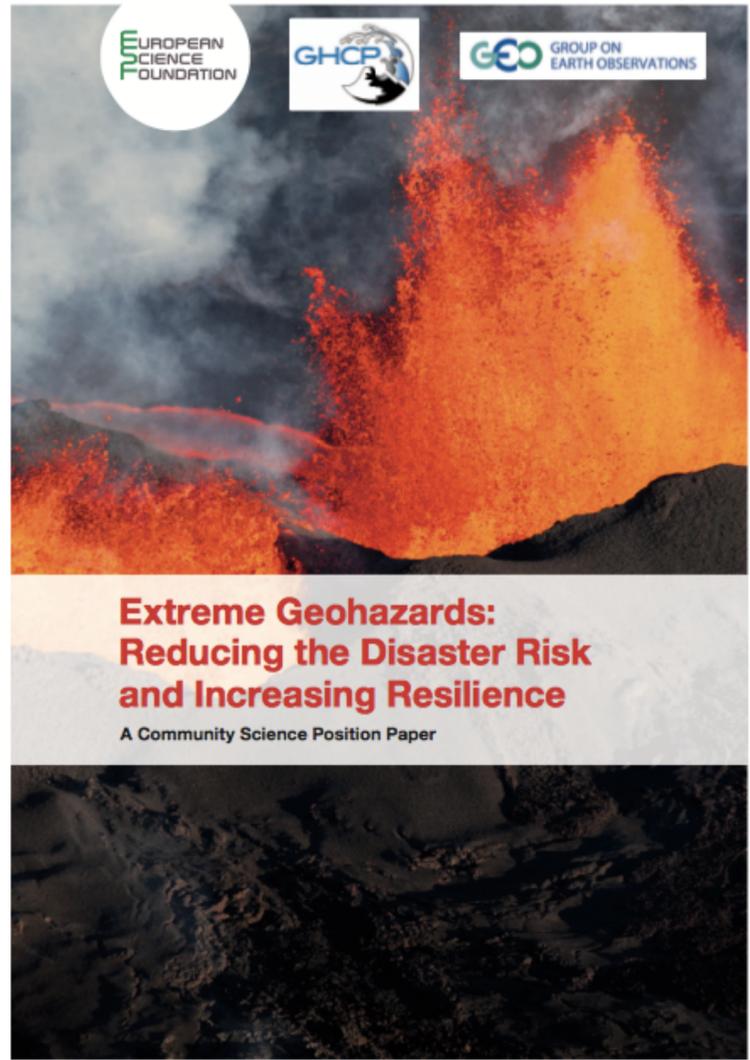
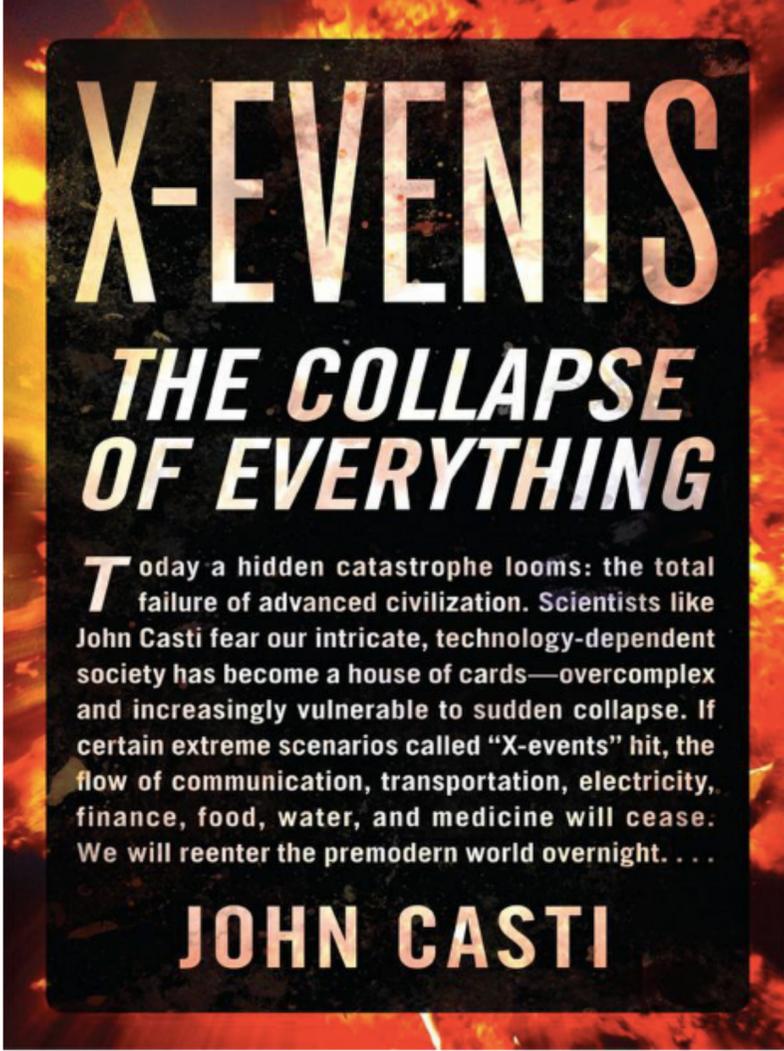
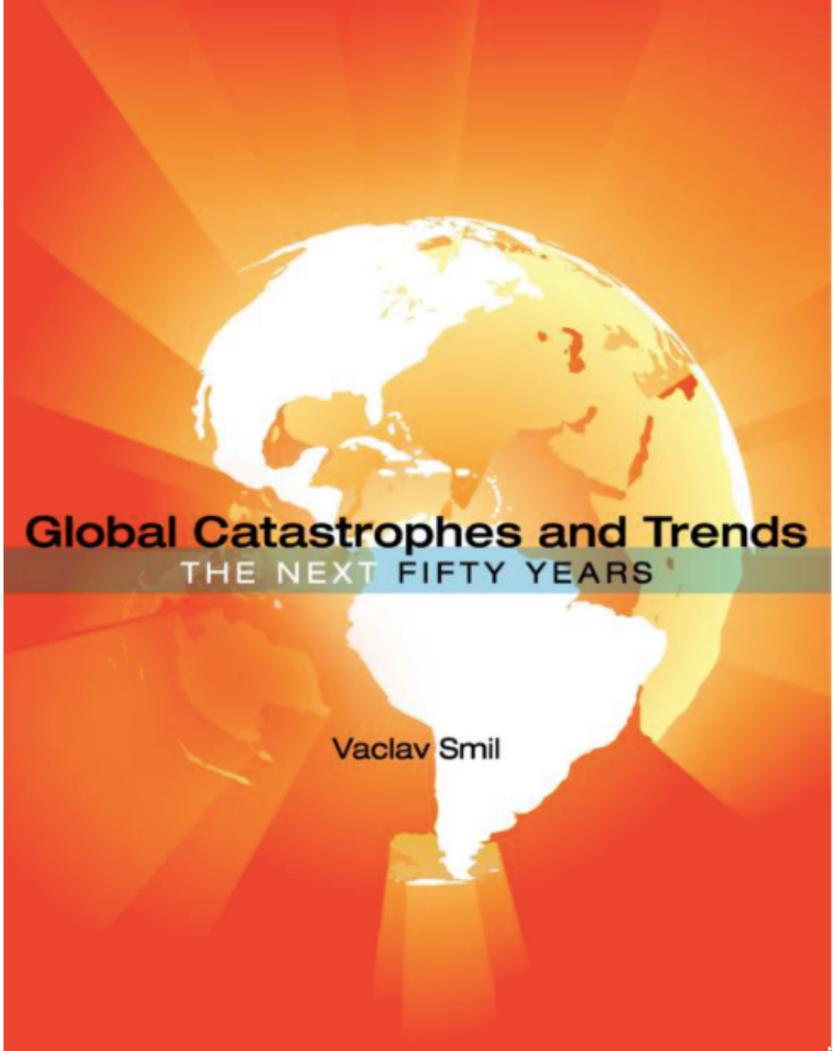
1. There has been a rapid evolution of increasingly complex science-policy models to help understand science-society interaction and to aid in understanding how to provide information to solve societal problems.
2. Despite this advancement and attention to problem solving, there is a persistent gap between 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.

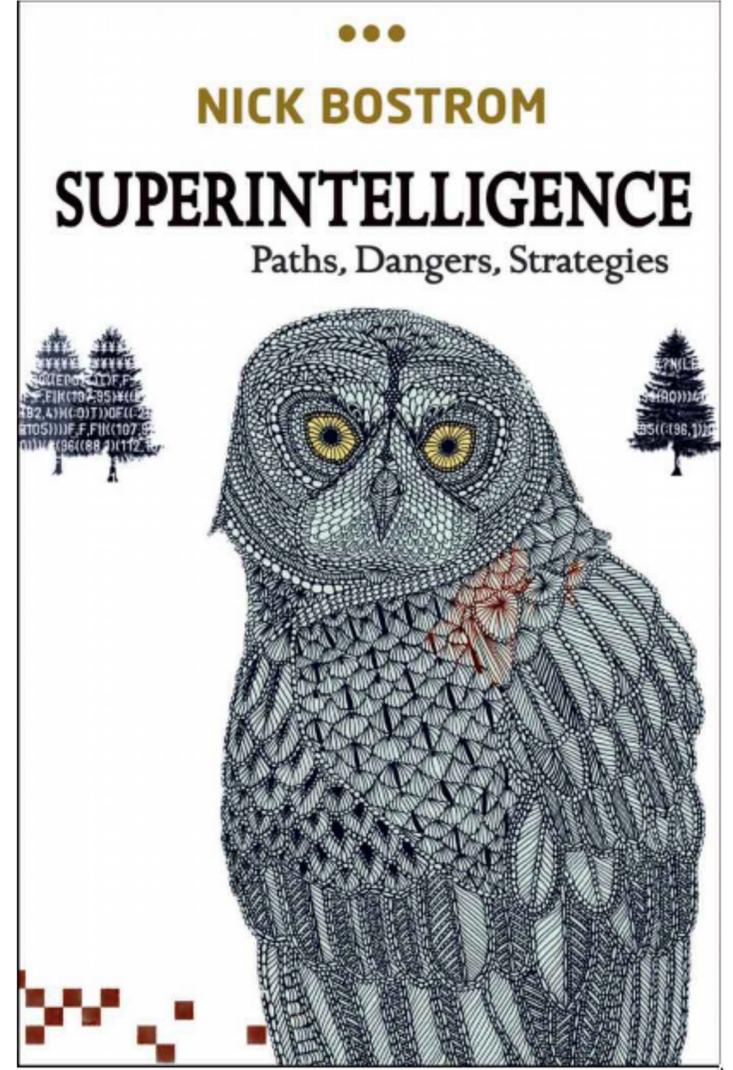
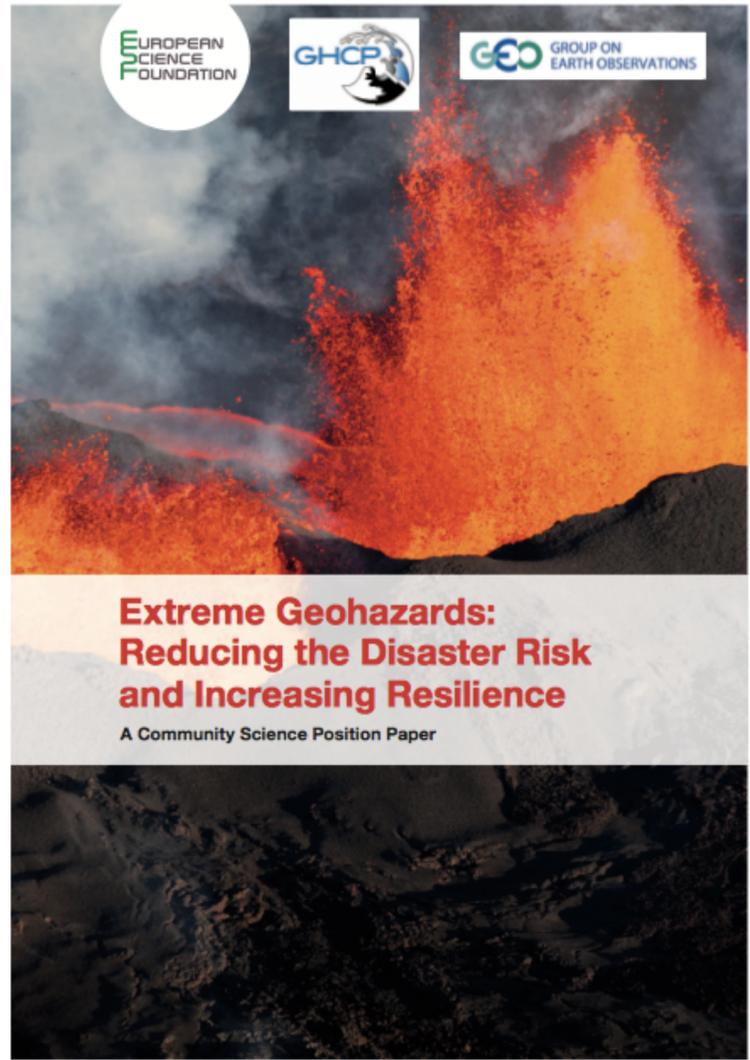
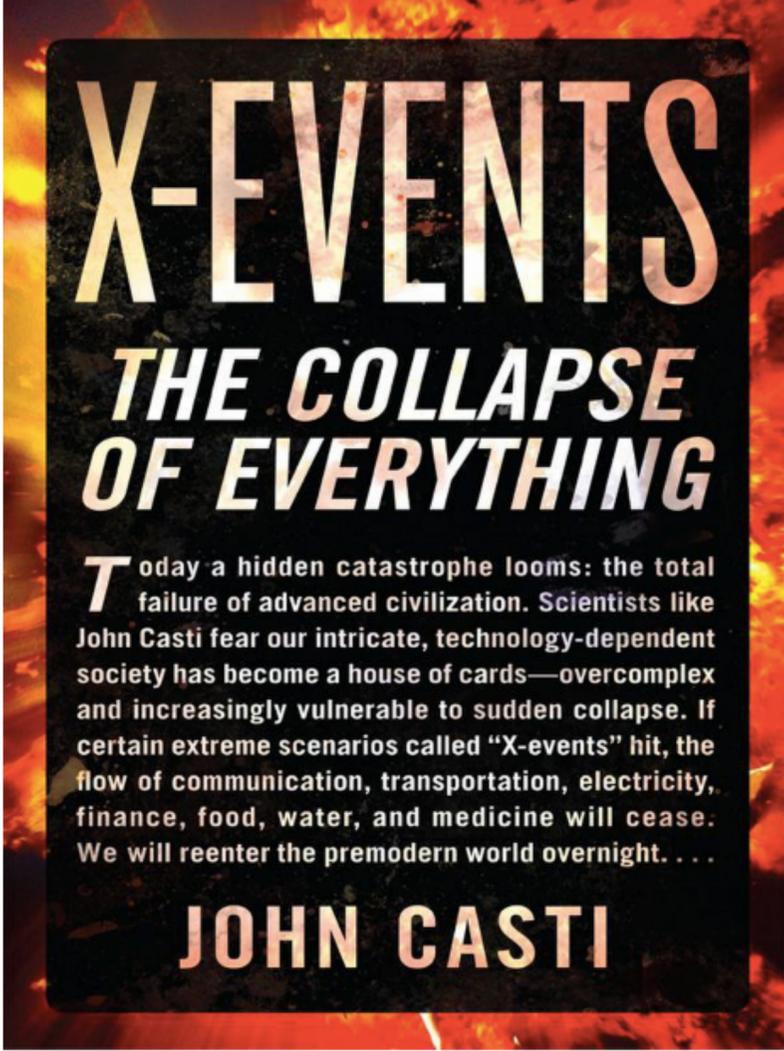
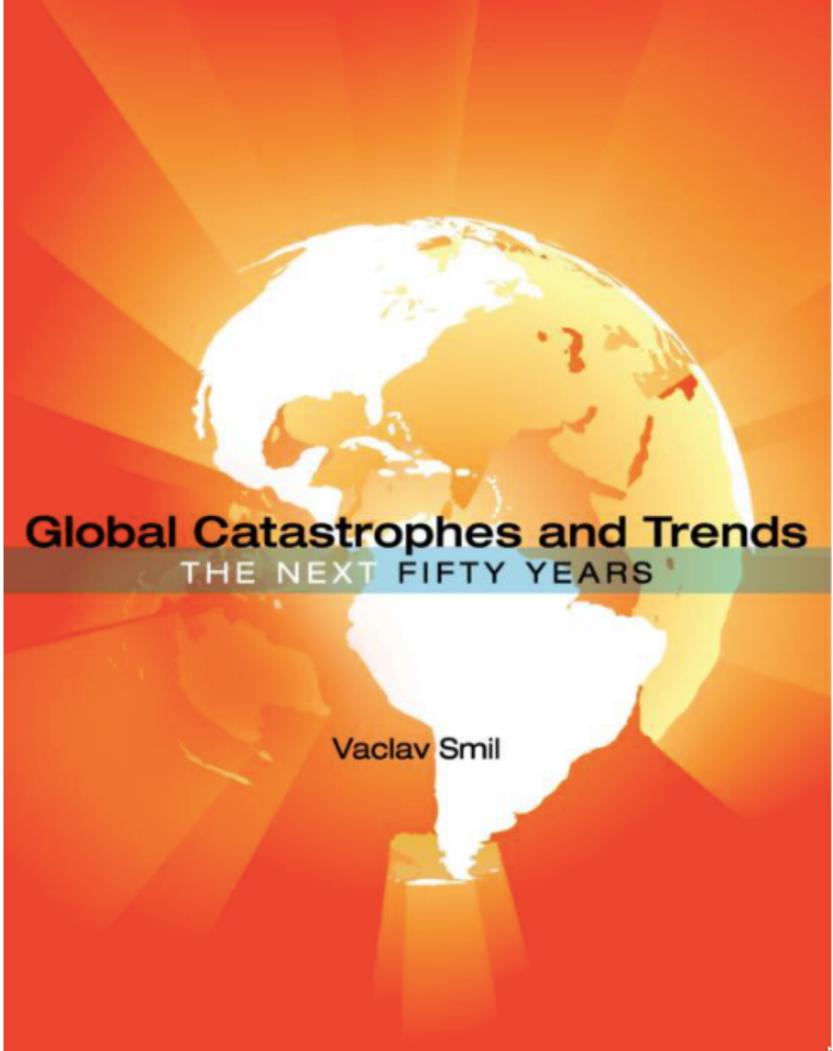
*Perspective***The Challenge of Degraded Environments: How Common Biases Impair Effective Policy****Alan Berger,¹ Case Brown,² Carolyn Kousky,^{3,*} and Richard Zeckhauser⁴**

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.





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.



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

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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

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

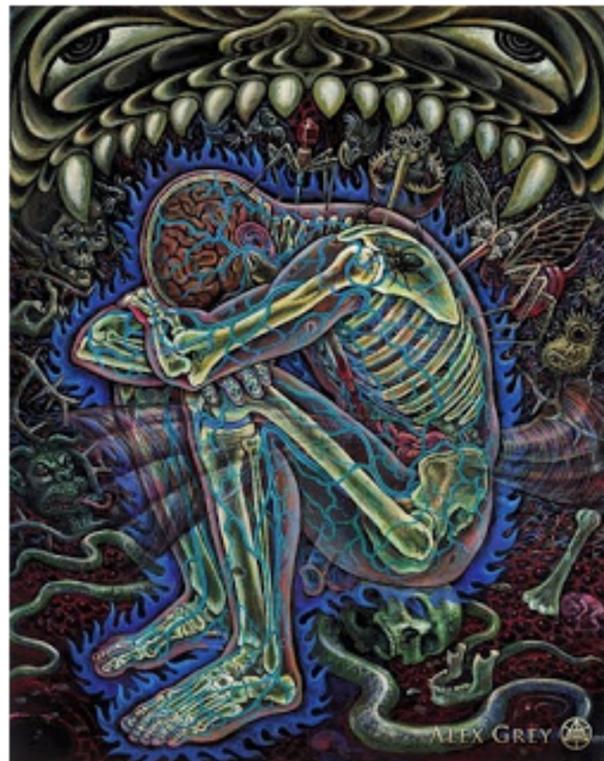
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17



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



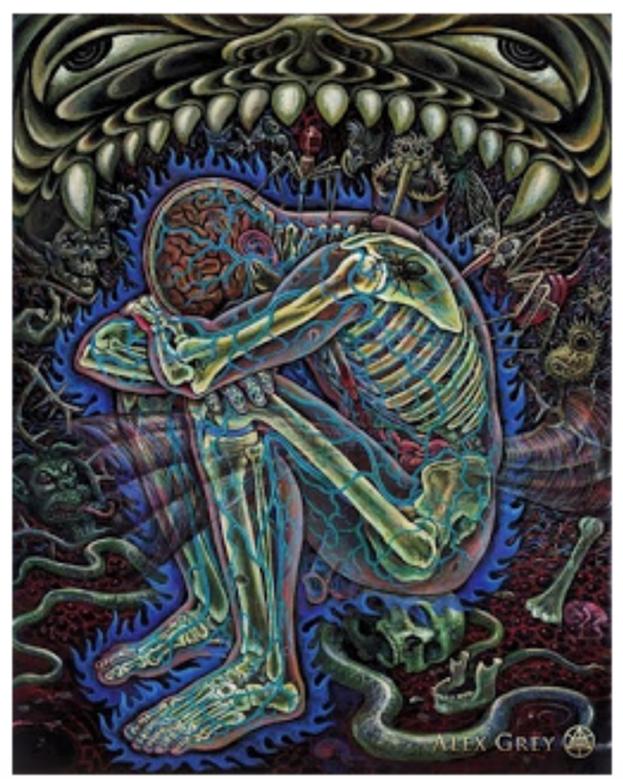
When we discuss the impending crisis of our civilisation, we mainly look at the resources our economy need in a growing quantity. And we explain why the diminishing returns of resource exploitation pose a growing burden on the possibility of a further growing of the global economy. It is a very interesting 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

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

128 4 17

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



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Language matters

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, mal-function, AI, nano-technology
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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

Science-Science Dialog

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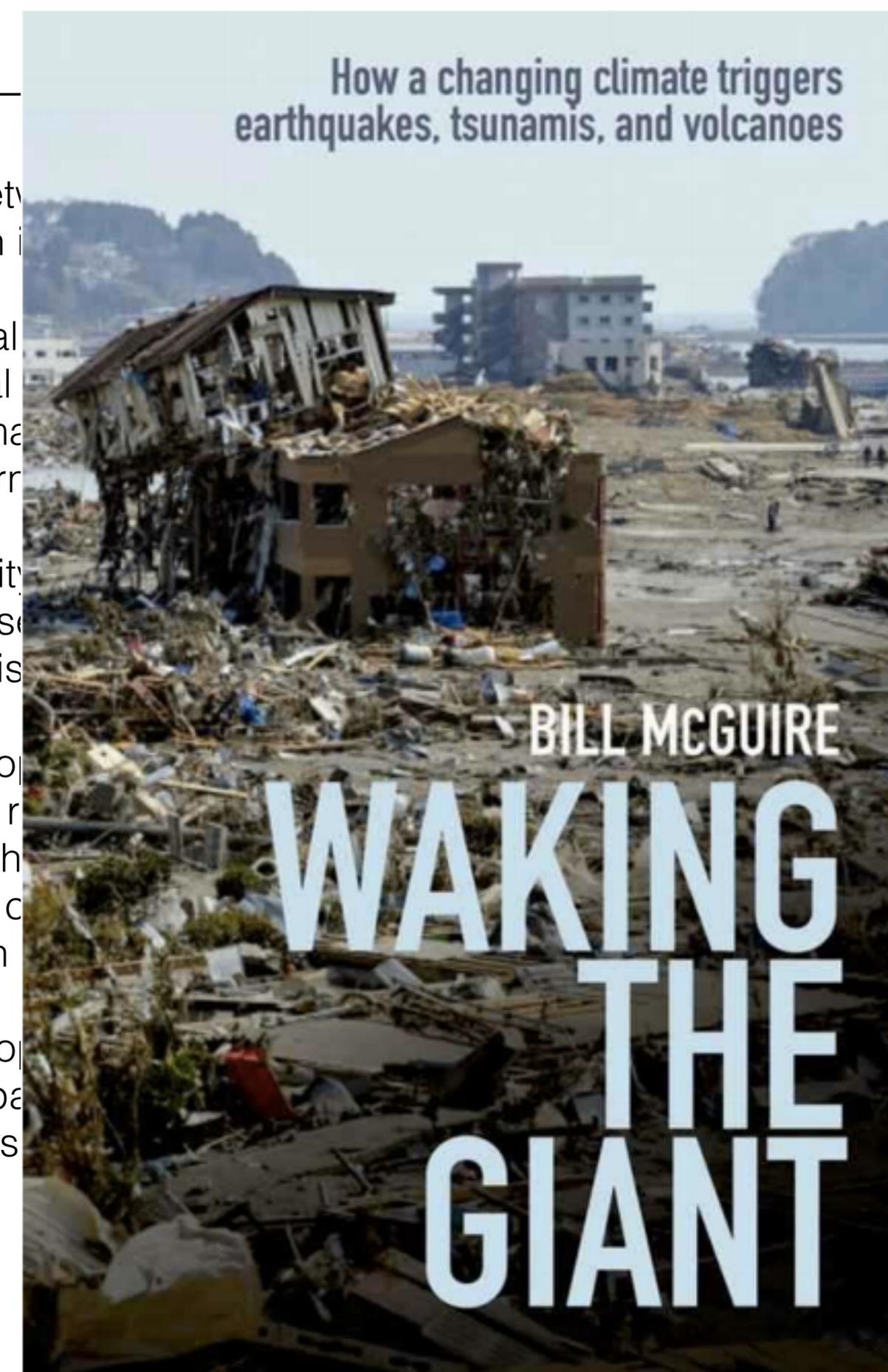
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Creating the 'Illusion of Truth'



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
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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.