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www.debiasbydesign.com

DEBIAS

By Design

A Leader's Guide to Thinking Errors
& Better Decision Making

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An abstract graphic design featuring a complex network of white lines that resemble veins or a circuit board. These lines are set against a background of various shades of green, ranging from dark forest green to light lime green. The overall effect is a modern, organic, and technical aesthetic.

CHAPTER 1

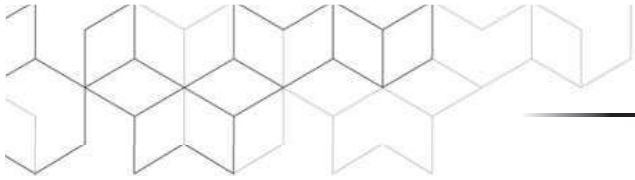
INTRODUCTION:
DEBIASING YOUR
DECISION BY
DESIGN

“

Not to laugh, not to
lament, not to detest, but to
understand.

- Baruch de Spinoza

”



DEBIAS BY DESIGN

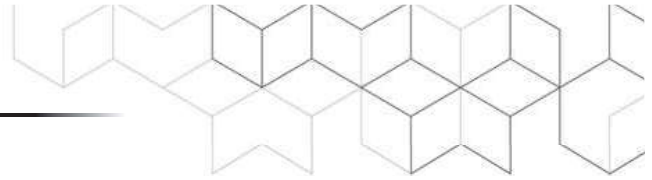
Welcome to the *Debias by Design* book. The fact that you are reading this introduction must mean that you already have a heightened sense of awareness regarding biases and understand the great importance—and detrimental effect—that they have on our creativity, planning, decision making, and learning (to name but a few domains that they affect).

You may have already come across magazine articles, newspaper pieces, blog posts, or presentations that mention how our brain takes mental shortcuts—so-called heuristics—which may lead to optimal decisions but may deviate from rationality and thus lead to cognitive biases. This book will take this understanding to the next level and—perhaps more importantly—will equip you with specific countermeasures against detrimental biases, especially those that you are most vulnerable to.

Care for a few dive-in examples? Let's frontload the book with a set of concrete examples to bring biases alive and show their relevance.

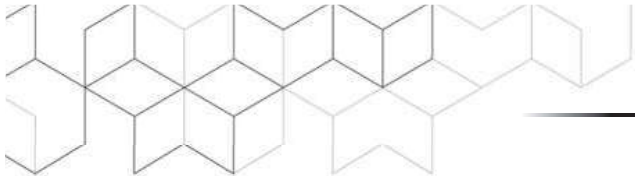
Consider the following situations at work:

1. You have to come up with novel ways of winning customers.
2. You must decide which people should make up a team.
3. A colleague asks you to help with a difficult problem and what your take on it would be.
4. A machine that you operate has broken down and you need to find the faulty part fast.
5. You are asked to decide whether to continue funding a problematic project or not.
6. A major corporate initiative has failed and you are asked to analyze how this happened.
7. You need to explain your company's strategy to your staff.
8. Your boss asks you to assess how long a new system will take to be set up and running.



What do these diverse challenges have in common? They are all constellations where you might be susceptible to biases affecting your reasoning. Here is how biases may affect your reactions to these tasks:

1. When trying to come up with novel ways to win customers, you may be stuck in the current way of doing so (the status-quo bias) or simply replicate what others are doing (the herding bias). Because of your biases, you may fail to come up with something new and useful.
2. When allocating people to a team, you may favor those who you know well or who are similar to you (in-group bias) instead of choosing the people with the best fit for the task. This will lead to an ineffective team and a higher risk of failure.
3. When helping out a colleague, you may be tempted to overestimate your own understanding of his or her situation or your own knowledge in the domain (overconfidence bias). You may thus give advice that you're not in a position to give and make things worse rather than better.
4. When finding the faulty part in a complex machine, you may just look for indicators that confirm your initial assumptions and miss important cues for other parts (confirmation bias). You may waste important time or forgo your chance of finding the solution altogether.
5. When deciding the fate of a problematic project, you may decide to continue it despite it being very unlikely to succeed simply because you have already invested so much time, money, energy, or personal commitment into it (sunk-cost bias). You may thus risk wasting even more money and time for a hopeless cause.
6. Assessing a failed corporate initiative, you may fall into the outcome bias and only look at things that went wrong instead of looking at the general picture with a balanced view. This forgoes the chance to look at things objectively and learn from them fully.
7. When explaining a strategy to your staff, you may forget how difficult that strategy actually is to comprehend (as you have been working on it for a while) and explain it in very difficult terms to your colleagues. That is the so-called curse of knowledge at



work. It will put the success of the entire strategy at risk, as strategy execution also depends on the staff's understanding of the strategy.

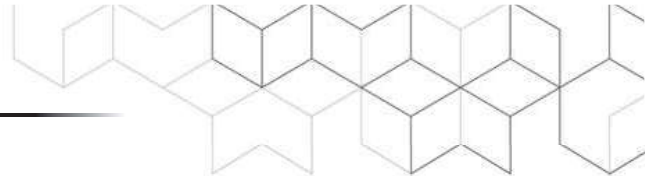
8. When assessing the time needed to develop a system, you may be overly optimistic and neglect some of the details of such a task and thus indicate too short a time span (this is the so-called planning fallacy). As a consequence, the resulting plan and milestones will be unrealistic and lead to stress and the misallocation of resources.

These are simple yet representative examples to illustrate the ubiquity of biases in business and their destructive potential. It doesn't take much to build a basic awareness of biases, and doing so is a first step toward better decisions. If your job involves making many consequential decisions, then systematic debiasing must be a top priority. *Debias by Design* is such a systematic debiasing approach. It is a concise and applicable guide to rid yourself of thinking traps and help yourself, your team, and your organization make better decisions. The book will not only help you have a better awareness of biases at work. It will give you a simple and actionable mnemonic—the Decision TUNER—to consistently reduce the likelihood of biases affecting you negatively

Besides the tools and techniques and the many examples of debiasing, this book also offers a wealth of evidence on which biases really matter for managers and professionals. Our own survey among 500 managers (and their bias rankings) gives you a sense of where to focus when bias-checking your decisions. This survey also revealed that debiasing is not yet done systematically, as more experienced managers give more weight to it than less experienced ones. Why not learn from this experience and make debiasing a priority for yourself as well? To help you do so, we take a design approach in this book.

So why is this book called *Debias by Design*? There are two main reasons.

First, design designates a planned, deliberate, and systematic effort to achieve an outcome. In our context of reasoning and decision making, this deliberate effort strives to reduce bias from your decision making by building debiasing routines and devising



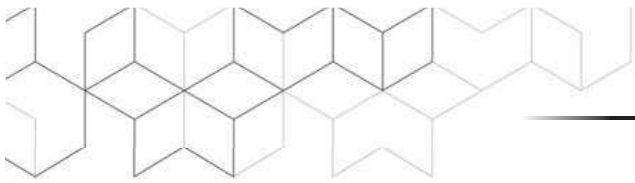
a decision design that allows you to be aware of your biases and counteract them whenever they surface.

Second, as design is also a highly visual practice, we strongly believe that visualization, the tangible, graphic representation of your thoughts, allows you to better keep your biases in check. In fact, you will find numerous simple visual techniques in this book (especially in chapter 4) that can help you reduce your biases. Throughout the book, we make use of illustrations to illuminate and clarify biases. We have not only visualized the most important biases in a simple and accessible graphic format (using just two arrows at a time); we have also represented our empirical findings about biases in management graphically so that you can gain an overview quicker and so that our results may be more memorable and hence actionable in everyday working contexts.

In chapter 2, we provide an instructive bias tutorial that gives a systematic overview on the need-to-know biases and how they come about. If you want to improve your bias literacy, then this is the chapter on which you should focus first.

Chapter 3 then shows which of these biases matter the most in the view of today's executives. It also relates the biases to managerial decision styles and thus sheds lights on the question of who is particularly prone to fall into certain biases. This chapter also shows the current status of debiasing practices and their deployment in organizations. If you want a reality check on the topic of biases and wish to identify your specific bias weakness, then give this chapter a close reading.

Chapter 4 then provides our answer to the challenges discussed in the previous chapters: the Decision TUNER approach to debiasing your own thinking. You will find simple principles and visual tools to strengthen your bias immune system, so to speak. In the chapter, we don't stop at the individual level but also consider debiasing on the team level and how entire organizations can build debiasing into their policies, processes, and infrastructures. If you already know a lot about biases but want to know how to fight



them, then focus on this chapter. This is your key chapter to actually doing something about biases in decision making.

The fifth and final chapter wraps up the book with a recap of its key findings and recommendations, but also open questions and future avenues. One such future development regards the combination of human and algorithmic biases and what they could mean for effective debiasing approaches.

If, at that point, you are still thirsty for more insights about biases and want to expand your knowledge of biases beyond the most important ones, then you can dig into the appendix, where we have provided a comprehensive list of dozens of biases that have been identified through research. You can also find an interactive version of almost 200 biases at our site bias.visual-literacy.org, including their clustering, references, instructional videos, and links to further information. For now, however, let's start to build a solid understanding of the key biases that are need to know for anyone working in organizations today. Let's dive into chapter 2.



CHAPTER 2

A BIAS TUTORIAL

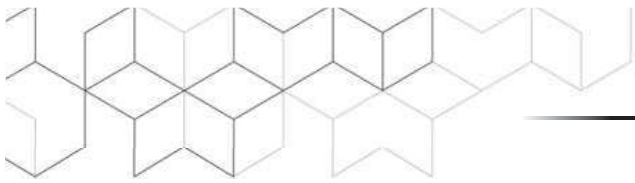
This chapter highlights the influence of cognitive biases on managerial decision making. It shows how biases flaw decisions and why they are an intricate part of our thinking and decision making. This chapter also provides you with a structure of all decision-making biases, a typology that helps you understand “what can go wrong” within the phases of a decision-making process. Additionally, this chapter offers a deep dive into 15 specific cognitive biases that are the most common and recognized in decision practice.

“

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

”



Have you ever experienced situations like these before?

- “There was a case where two fresh graduates applied for the same job at the same time. Both had the same qualifications. The gender is the only difference. In the recruiting choice made by the interviewer, the compensation offered to the male candidate was higher than the salary offered to the female candidate.” (This is a so-called “unconscious bias” or a case of stereotyping.)
- “We had to make a decision quickly this time, so we only used the facts we had at the time, which led us to make the wrong decision because we hadn’t given it enough thought.” (Availability bias)
- “We were working with another team to work on an important strategy-implementation project, and both teams had different opinions on how to proceed. In the end, we went to our traditional strategy-execution approach, although the context was now quite different.” (Problem-solving set)
- “We once had a project in which we invested a lot of time and money and thought we could finish it, so we pushed ourselves to finish it, even though we knew we couldn’t, and, as a result, we failed miserably.” (Sunk-cost neglect)

These situations were described by managers from Forbes Global 2000 companies who we asked about decision flaws in their managerial decision making. These are all typical decision-making situations

FUNCTIONAL FIXEDNESS 01

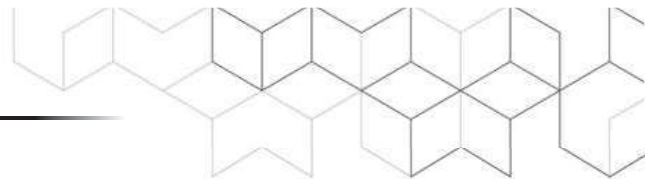
Spotlight: The Most Dangerous Biases

We struggle to innovate how we do things, as we do not consider alternative ways of using techniques, tools, artifacts, objects, or concepts due to their traditional use. They are “fixed” to the original design function. This leads to less options or solutions than otherwise could be generated by thinking more divergently and creatively.

Typical Behavior: “I used tools, resources, or data only in the traditional way and did not envision other ways of how they could be used more effectively or differently.”

Bias Category: Narrow Focus

DEBIAS BY DESIGN



influenced by a specific type of thinking error: cognitive biases. Cognitive biases are also known as cognitive simplifications or cognitive illusions and best described as *systematic, non-random* deviations from *rational thinking*.

Thus, cognitive biases influence the outcome of a decision negatively. We rely too much on simplification heuristics (“mental shortcuts” or simplification biases). We may also try to tweak our perception to achieve consistency and coherence in our perception of ourselves and the world around us (verification biases). And we may try to approach pleasure and avoid pain in decisions (so-called regulation biases).

As a result, situations like the ones above are often common in all kinds of human decision making, from private decisions to strategic decisions in institutions and companies. Think of situations where decision makers have ignored information that contradicted their views (confirmation bias) or situations where more effort was put



IN-GROUP FAVORITISM (IN-GROUP BIAS)

02

Spotlight: The Most Dangerous Biases

People tend to favor people from the same cultural group (team, nationality, social background, education) that share a common set of beliefs, behavioral norms, and behavioral expectations. This has consequences in terms of allocation of resources, group diversity, group dynamics, and cooperation.

Typical Behavior: “I preferred people from my own department over people from other departments, just because they are from my own department.”

Bias Category: Self-serving Evaluation



PLANNING FALLACY

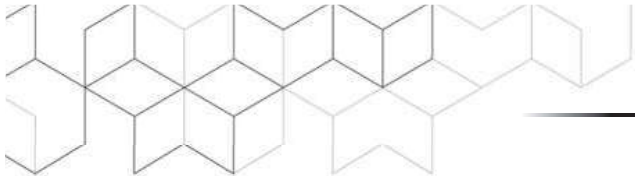
03

Spotlight: The Most Dangerous Biases

In planning future endeavors, people tend to underestimate the time a task will take, even if they have knowledge that previous tasks took them longer to complete than originally planned. They are overoptimistic in their prediction of implementation matters, over and over again.

Typical Behavior: “I planned too optimistically, even if I should have had enough experience from past planning failures.”

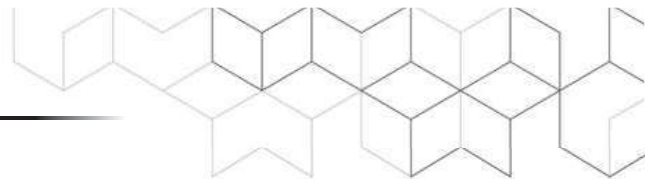
Bias Category: Overconfident Implementation



into a specific project even when everyone knew that it wouldn't go well (escalation of commitment) or situations where anecdotal stories from one customer were taken as the basis for a decision without counterchecking if this was even an issue for most other customers (selection bias). Or take change situations: How often did decision makers choose the status quo over a change (status-quo bias), did not make a decision because of its ambiguous outcome (ambiguity effect), chose the solution that they always apply in such situations (conservatism), or just did something because many others did the same (bandwagon effect)?

Research has identified more than 190 different cognitive biases (see our overview in the appendix) that may affect our individual and group decision making. Biases that limit our rationality affect our decision processes and outcomes. Biases lead to the over- or underestimation of risks. They provoke suboptimal allocations of resources and inhibit individual learning and cycles of improvement. They foster hasty decisions and block out options and alternatives.

This chapter will help you learn more about the background of why and when cognitive biases strike and what we can do to recognize them, both in advance and within a decision-making process.



2.1. BACKGROUND FACTORS THAT DRIVE COGNITIVE BIASES IN DECISION MAKING

All decisions are prone to cognitive biases, but some are more prone to be biased than others. There are external factors that make biases more likely, such as the degree of uncertainty, incomplete information, or the complexity of the decision environment. But internal factors can also contribute: the cognitive abilities of the decision makers, their perception of the decision environment, and their decision strategies and heuristics. Combined, these factors raise the so-called “boundedness of rationality” in decisions and contribute to individual susceptibility to cognitive biases in decision making.¹

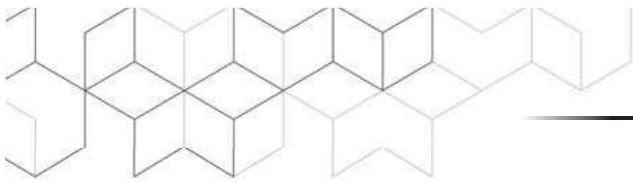
The first external factor, uncertainty, refers to the predictability of a dynamic environment and its impact on a decision. Uncertainty, can mean, for example, how customers react to a new product or to a new way of communication. It could also be uncertainty about how competitors and suppliers act when markets change.

Incomplete information, the second external factor, addresses the aspect that we lack information about environmental and organizational factors. We do not know everything outside ourselves or our organization. This can be due to limited resources to gather the information or limited time.

A third external factor of bounded rationality is complexity: the variety of external factors to consider and how they are intertwined. This could be factors like the number and interdependencies of business partners, customers, or competitors.


These three factors raise the probability of being a victim of cognitive biases in decision making, as they influence our ability to be rational in our decisions and make biased decisions more likely.

¹ The concept of bounded rationality was developed by Herman Simon and James Gardner March (March & Simon, 1958).



Another set of limiting factors of rationality in decision processes is due to internal factors, the individual thinking predisposition of the decision makers themselves, like the cognitive ability of the decision maker. The analysis of individual differences in cognitive ability follows the concept of the tripartite mind. This concept is based on the dual-process theory in psychology, which explains what determines our thinking and reasoning. One process is called system 1, the intuitive, fast, automatic, and unconscious thinking and deciding. This system is responsible for most of our every-day decisions and very helpful in a “decision-friendly” environment where we can rely on our experience and intuition. The second process is called system 2, the deliberated, conscious, systematic, and rational thinking and deciding. System 2 thinking happens when we deliberately reason about a problem, weight different perspectives, or follow a specific and conscious decision logic.² Both systems combined determine our

² More details on system 1/system 2 thinking and reasoning: Evans, J. S. B. T. (2008)



AVAILABILITY BIAS **04**

Spotlight: The Most Dangerous Biases

Events and information that can be more easily recalled are estimated as more probable and more important for a decision. This leads to neglecting more important information that is harder to retract from our memory or harder to collect from other sources.

Typical Behavior: “I used only the information I could recall quickly and easily for a decision.”

Bias Category: Simplified Reality



CURSE OF KNOWLEDGE **05**

Spotlight: The Most Dangerous Biases

(Self-attributed) experts tend to assume that others (novices) have the same degree of knowledge as they have. This tendency to ignore the possibility of less informed or more naïve perspectives about a certain issue enhances information asymmetry in decision-making processes, especially in the phase of evaluation and choice of options.

Typical Behavior: “In a business discussion, I falsely assumed that my colleagues have the same level of knowledge as I do.”

Bias Category: Hasty Evaluation