



I invite your thoughts and recommendations on this book under development: *Integrating scholarly SJDM research with widely read books*



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Background

Recent years have seen a broadening of public interest in the cognitive side of decision making and a series of widely read books:

- Kahneman, Sibony & Sunstein (2021) *Noise: A Flaw in Human Judgment*;
- McGinnins (2020) *Fear of Missing Out*;
- Silver (2015) *The signal and the noise: Why so many predictions fail – but some don't*;
- Kahneman (2011) *Thinking, Fast and Slow*;
- Thaler & Sunstein (2008) *Nudge*;
- Schwartz (2009) *The Paradox of Choice: Why More is Less*;
- Gladwell (2007). *Blink: The Power of Thinking Without Thinking*; and
- Gladwell (2006) *The Tipping Point: How Little Things Can Make a Big Difference*.

These books – while popular – focused on human judgment and decision making and not on the optimal models grounded in math, probability, and operations research, that people try to use intuitively. This book will attempt to bridge these two areas of decision making – intuition/cognition and the math/quantitative.

The Goal of this Book

Until now, books on decision theory and decision making have come from one of two disciplines – Psychology or Management Science. Within the discipline of Psychology, decision theory is part of Cognitive Psychology, where the focus is on understanding how people make decisions, and this can include heuristics, Prospect Theory, how people weigh gains and losses, when people prefer a sure thing over a risky thing, behavioral traps, utility, and related topics. Management Science texts focus on the application of mathematical models to solve real-world practical problems. The models used in Management Science are developed in the more theoretical field of Operations Research.

It is my goal in this book to bridge the gap between Psychology and Management Science and show how some of the optimal models of Management Science can be integrated into people's thinking when they make a decision intuitively.

Do you think these are the most important topics to include?

- 1. Introduction:** Today's focus on making better decisions. The reader will be introduced to the focus of the book with an explanation of why there is a growing interest in decision making, some interesting and recognizable examples, and a summary of recent publications. The reader will be shown some of the logical foundations to decision making that they probably already use intuitively.
- 2. The Decision-Making Logic and Basic Math People Already Use Without Realizing It.** An introduction to the concepts of probability will start with some simple examples, including probabilities associated with flipping a coin, the role of probability in a decision to purchase a low-cost non-refundable reservation or a higher-cost refundable reservation, and simple probabilities associated with roulette. The reader will see they already intuitively use probabilities. Certainty, risk, and uncertainty will be discussed.
- 3. Decision Trees.** Pascale's Wager with God as an example of a simple decision tree. The reader will be guided through how to add clarity and detail to decisions using decision trees for a structured and analytical approach.
- 4. Decision Strategies.** Strategies to achieve the highest payoff (maximax), avoid the worst loss (maximin), eliminate inferior alternatives (dominance), achieve the highest long-term payoff (expected value), and what to do when probabilities cannot be determined. How to calculate the value of perfect information.
- 5. Prospect Theory and Heuristics.** Prospect Theory and how people value gains and losses differently. Heuristics will be discussed as the quick rules of thumb people often use – either knowingly or unknowingly -- the availability heuristic, the representativeness heuristic, anchoring and adjustment, and others.
- 6. The Effects of Question Wording and Framing.** Elizabeth Loftus, especially her earlier work on eyewitness testimony. More recent research, including on "fake news" suggesting that people will draw conclusions – fallacious or veridical – based on how a news item is worded.
- 7. Behavioral Economics.** The recently developing field and recent publications will be summarized and linked to cognitive psychology.
- 8. Signal Detection Theory.** The cognitive and perceptual processes of detecting a simple stimulus or a developing state of reality. The Theory of Signal Detection with its categories hits, misses, false alarms and correct nondetections, will be used to explain and understand medical tests, the shoot-don't shoot decision, how a jury in a criminal trial will try to separate the signal from the noise to arrive at a verdict, and how we all try to make decisions based on complex and contradictory incoming data.
- 9. OODA Loop.** Wouldn't it be nice if we got to make two moves in chess or checkers for each single move our opponent makes? The OODA Loop (Observe, Orient, Decide, Act) is a model for quick real-time decision making, whether that be as we face a human opponent or a state of nature.
- 10. Multi-Attribute Utility Decisions.** Life is filled with decisions and options that include many different factors – money, comfort, health, happiness, future opportunities, time demands, etc. The reader will see how to identify the important attributes to consider, how to assign numerical values to each option, how to compare alternatives, and how to identify the best option.
- 11. Decision Making in Conflict.** What constitutes a win or a loss under conditions of conflict and what strategies should the decision makers in positions of offense or defense use to succeed? The differences between a dispute and a conflict. Decisions in negotiations. Examples will be provided from history and armed conflict but also from business, politics, and litigation. The advantages and disadvantages of offense and defense, the importance of timing, competitive intelligence, and what constitutes movement.
- 12. Game Theory as Applied to Real-World Situations:** Several game structures and where these can be seen in the real world, including zero-sum games, nonzero-sum games, cooperative vs noncooperative games, simultaneous-move vs sequential-move games, games with perfect information vs. games with imperfect information, symmetric vs. nonsymmetric games, two-person vs. n-person games, iterated vs. noniterated games.
- 13. Behavioral Traps in Decisions.** The two most common decision traps: sunk cost and the Tragedy of the Commons.
- 14. Dealing with Indecision by Understanding What Causes It.** Fear of Missing Out and Fear of Better Options. FOMO and FOBO cause people to delay acting on any decision and instead wasting time and energy making the same decision over. Indecision can be exacerbated by the continuous blizzard of choices and options viewed on the internet and can lead to Fear of Doing Anything. While the individual delays, the world can move on.
- 15. Bringing it all together: Making Decisions Using Cognition and Math.**