CHAPTER I

How Leaders Make Decisions

Most decisions are seat-of-the-pants judgments. You can create a rationale for anything. In the end, most decisions are based on intuition and faith.
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Just a few weeks before the collapse of industry giant Enron in December 2001, CEO and founder Ken Lay told his twenty-eight thousand employees, "Our liquidity is fine. As a matter of fact, it's better than fine, it's strong." Yet at the same time he was urging employees not to panic, Lay, who had a Ph.D. in economics, sold 918,000 shares of his own Enron stock for $26 million.

Lay and other Enron executives blamed the company's collapse on Andrew Fastow, the chief financial officer, who pleaded guilty to falsifying Enron's balance sheet and conspiring with other employees to skim millions of dollars. "I think the primary reason for Enron's collapse was Andy Fastow and his little group of people and what they did," Lay said in an interview on *60 Minutes.* "But certainly I didn't know he was doing anything that was criminal."[1]

Following convictions of other Enron executives, Lay himself was convicted in May 2006 of conspiring to inflate stock prices and misleading investors and employees. Facing the prospect of spending life in prison, Lay maintained his innocence until his death two months later of coronary artery disease.

The collapse of investment banking legend Bear Stearns came on the watch of Jimmy Cayne, who had become CEO in 1993.[2] During the next fourteen years under his leadership, the company's stock skyrocketed from $16.61 to a high of $172.69 per share in January 2007. But a series of poor management decisions and the collapse of two hedge funds in 2007 plunged the Wall Street giant into a crisis unlike any other in its eighty-five-year history. In May 2008, Bear Stearns became a bargain basement steal for J. P. Morgan Chase at ten dollars a share.

Less than a year earlier, however, Cayne had reassured investors that the firm would rebound, saying confidently, "You can count on us." The former CEO would eventually admit that he was paralyzed with indecision during the firm's crisis: "It was not knowing what to do. It's not being able to make a definitive decision one way or the other, because I just couldn't tell you what was going to happen."

Here are some more famous last words from other CEOs of major corporations, spoken during the months prior to the crash of their respective companies in 2008. All of these comments indicate a serious lapse in decision-making capabilities:

> "Do we have some stuff on the books that's going to kill us? Of course not."—Richard Fuld, CEO, Lehman Brothers
>
> "We believe the probability that it [portfolio of credit default swaps] will sustain an economic loss is close to zero."—Martin Sullivan, CEO, AIG
>
> "The home-loans business had a challenging first half of the year, but . . . we think we're back on track to get that unit back to profitability before the end of the year even in these challenging conditions."—Kerry Killinger, CEO, Washington Mutual[3]

It's hard not to grimace at those statements now because there is nothing humorous about the impact of a failed organization—particularly on the employees, clients, and others who depended on

them for their livelihoods. Starting in 2007, major companies began to fall like dominos: first Enron, then WorldCom, followed by Tyco and a series of major failures in large U.S. corporations. The U.S. financial system began to implode, sending shock waves throughout the global economy. At the center of this crisis were leaders in major decision-making roles. As we know all too well by now, some of these men and women made the right calls, but far too many of them, unable to perform under increasingly higher levels of stress, made bad choices for their organizations.

At the same time, the U.S. presidential campaign was in full force. Throughout the campaign, the focus turned to which Democratic candidate could handle the "3:00 A.M. phone call."[4] In other words, voters wanted to know who could best make critical world-changing decisions. As the campaign narrowed to John McCain and Barack Obama, the question of which candidate had the knowledge, experience, and ability to make global decisions on issues such as Iraq, Afghanistan, Iran, and North Korea was foremost in the minds of American voters.

But as more financial institutions began to fail, the focus of the campaign shifted from the Iraq war to the economy, taking the momentum away from John McCain, whose strengths seemed to be foreign affairs and defense, and moving it to Barack Obama. As Fannie Mae, Freddie Mac, Bear Stearns, AIG, General Motors, and other major institutions fell apart, the focus of the campaign became which candidate would make better decisions about the economy.

If the financial crisis has taught people nothing else, it made one fact abundantly clear: we no longer live in a world where the leaders of the top companies in the United States make financial decisions that affect only America. The decisions that the CEO of General Motors or AIG makes reverberate around the world. The global financial system is woven together in an intricate web in which a slight movement by any major player will send ripples throughout the entire system. As Thomas Friedman says, the world may have become "flat."[5]

The Art of Choosing a Leader

How did we get to the point where CEOs are paid incredible salaries and bonuses regardless of the quality and effectiveness of their decisions and the performance of their companies? Have the world, and the organizations in the world, become too complex for humans to lead? Has leadership become too complex? Has the complexity of decision making in large corporations outstripped human decision-making capacity? I don't think so. But I do think that perhaps our worldview of leadership has become archaic. Many of us still buy into the antiquated notion that anyone can successfully lead a large corporation or be successful in a high-level government position.

This is America, after all, the land of opportunity. "You can be anything!" we tell our children. But is that really the truth? Can anyone be a *Fortune* 500 CEO? Can anyone be the head of a Hollywood studio? Can anyone lead a platoon, a ballet company, a high school, a town council? Of course not. But telling our children, "Well, you probably can't be *anything* . . . but you can be great at *something!*" doesn't exactly hit the right note. And especially in the professional world, holding to the idea that not everyone can make it to the top smacks of elitism or social hierarchies, making many people, including those in charge of identifying and managing leaders, uncomfortable.

As you will see in the chapters that follow, we actually have the knowledge to understand how the best leaders think. Yet we don't always call on it to select our decision makers and then hold them accountable. Instead we prefer to cling to the old notion that anyone who works hard can rise to the top and be successful. It's precisely because of our collective blind spot that organizations, and the leaders we put in charge of them, fail. Perhaps if we'd taken off those blinders and chosen our decision makers realistically, we could have prevented the economic meltdown and its global impact.

In addition, many may be unaware that we have the knowledge and ability to understand the complexities of leadership and decision making, that we can know what happened in organizations such as

Enron, Chrysler, Washington Mutual, and the U.S. government, and that we could have prevented the catastrophic failure of the global economy.

At the close of the first decade of the twenty-first century, the domain of leadership is reeling from the effects of questionable decisions made by supposedly smart leaders who had been placed in roles that exceeded their competence and ability levels. Lawrence Peter must be experiencing the paradoxical feelings of pride and concern: pride because he knows that his Peter principle—*In a hierarchy every employee tends to rise to his level of incompetence*—is being proven every day, and fear and concern for the country because the principle is correct.[6] The current approach to selecting leaders and not holding them accountable has created large bureaucracies populated by leaders incapable of making effective and efficient decisions or of responding to the dynamic, rapidly changing landscape of the global environment.

The leaders who uttered those famous last words a few pages back rose to the top of what were some of the largest and most powerful companies in the world. Our research at High Performing Systems indicates that CEOs of large corporations have an average IQ of 125.[7] Some CEOs we have assessed have IQs over 140. To put this in perspective, the average IQ of the general population is about 100. An IQ of 140 typically falls in the top 2 percent of IQ scores and makes those with this IQ eligible for membership in Mensa, the high-IQ society. We have not found any CEOs of multi-billion-dollar corporations with IQs less than 115. We have also found that many CEOs hold Ph.D.s. These are smart people, yet many appear to have created a culture of incompetent decision making, greed, and lack of accountability. This culture is not limited to the executive suite. It permeates deep into the hearts of their companies. ''Dumb'' decisions are being made by ''smart'' leaders at every level.

Some of these bad decisions can be attributed to inexperience, lack of knowledge, or poor judgment. Others can be attributed to a lack of understanding that organizations are systems, and as such, are perfectly designed to produce the results they are currently getting, even if those

results are negative. However, bad decision making can also be the result of severe stress on the leader's cognitive and emotional functioning. As I pointed out in the Introduction, these two abilities—cognitive and emotional intelligences—are necessary for quality decision making.

Leaders must have the knowledge and ability to make decisions at the level of complexity required at their role level. In other words, we have to put the right person in the right job. When leaders with experience make decisions to put young, inexperienced, and unskilled leaders into positions of responsibility where they can cripple the financial foundation of the company (or stall its progress, frustrate employees, and alienate clients), they demonstrate a form of irresponsible decision making.

We begin to learn decision strategies in infancy and develop preferred approaches for making decisions. Decision strategies vary from unconscious, almost instant decisions to longer, more deliberate processes such as strategic planning. Each of these processes is discussed in detail in this book.

The ability to make complex decisions is driven by the leader's own decision-making ability, strategies, and timeliness. I explain the two major decision categories, rational and intuitive, in more detail and give examples to aid in recognizing to which category a given decision belongs and give examples of how to choose the appropriate strategy when dealing with that type of decision.

A discussion of decision making would not be complete without examining some of the more common and controversial factors, such as gender and age, that moderate the decision-making process. Each of these is discussed in turn in this book, too. Leaders are in a perpetual state of decision making throughout their waking hours, and some argue that decision making continues during sleep. Based on the results of some of the failed companies mentioned above (not to mention less famous but daily failures in countless other organizations), we seem to have some leaders who are sleepwalking.

Let's move forward and examine leadership, organizational complexity and decision making from the perspective of how leaders get

work done and the impact of complexity on the decisions they make, the time span for making decisions, and the difficulty in making decisions at the various organizational levels.

Leadership: Redefining What It Takes

In their book *In Search of Excellence,* Tom Peters and Robert Waterman suggest that significant differences exist in how leaders think, how complex organizations are, and how decisions are made.[8] All three of these factors influence the success of organizations. These findings reinforce that the core essence of leadership is decision making. Leaders make decisions throughout the day, every day. A staff is required to orchestrate a top CEO's daily schedule. Each event on the schedule represents a decision or hundreds of decisions already made and preparation for hundreds more to be made. Everything a leader does or does not do is a decision with significant implications.

The approach to leadership in large organizations has been to create bureaucracies, which are incapable of operating efficiently, effectively, and with accountability. And the anointed leaders have lost sight of what leadership is about. The solution is not more bureaucracy or more people talking about leaders with vision, but rather a change in our leadership paradigm. There was a time when leaders served the organizations they led, not the other way around.

Not only have some leaders lost focus, but many do not understand that not everyone has the ''right stuff,'' and getting the right stuff doesn't happen by attending management seminars or higher-level meetings or by being elected to a board of directors or a political office. As I mentioned at the beginning of this chapter, we seem to have a blind spot when it comes to identifying leaders, as we'd like to believe that ''anyone'' can do ''anything'' in our society.

When *Good to Great* author Jim Collins talks about getting the right people on the bus, the wrong people off the bus, and the people on the bus in the right seats, he doesn't mean this ''just happens.''[9] On the contrary, getting the right people on the bus is a deliberate and

difficult task requiring the understanding that not everyone has the right stuff to be the CEO, a senator, or a general. Assessing a leader's ability to make timely and effective decisions at role levels above where he currently works is problematic and is made worse by the belief that decision making is no different at higher levels than it is at lower levels—"Just add some zeros to the size of the budget they control." I have actually heard this comment, or versions of it, numerous times in senior management meetings, where the solution to finding the right leader was simply to promote someone to the next level. That's not to say that promoting from within is a bad solution—often the right candidate is sitting down the hall from the position that needs to be filled—but there's more to it than just moving people up the organizational chain.

It is time to change our understanding of how leaders at each level of the organization think and make decisions, especially when under stress. Studying and understanding how leaders think and make decisions can help us get the right people on the bus and in the right seats. Researchers Shelley Kirkpatrick and Edwin Locke state, "It is unequivocally clear that leaders are not like other people. Leaders do not have to be great men or women by being intellectual geniuses or omniscient prophets to succeed, but they do need to have the 'right stuff' and this stuff is not equally present in all people."[10]

The difficulty lies in determining who has the "right stuff," especially under stress. One of the most critical components of the right stuff is having the right abilities, including the ability to make timely and effective decisions at the next role level in which the leader will be working. This seems to have remained invisible to many who are tasked with the responsibility of identifying leaders with the "right stuff." Consequently organizations are heavily burdened with leaders who constrain the organization's performance. "Having the most talented people in *each* of our businesses is the most important thing," Jack Welch says. "If we don't, we lose."[11] The talented people he refers to have the abilities required to be high performers—to make timely and effective decisions—at their role level.

For the past thirty years, I have worked with organizations to identify, select, and promote leaders at all organizational levels—from frontline supervisors to CEOs and board chairpersons. Early in this journey, I discovered that there are, in Six Sigma terminology, a few critical-to-quality components required to be able to predict the potential success of a leader, not just at the CEO level but at any organizational level.[12] Each level is characterized by a unique level of complexity that requires leaders with a particular set of knowledge, skills, abilities, and experience in order to make effective decisions. An old Wendy's commercial promoting higher-quality chicken claimed that to their fast food competitors, "Parts is parts"—a sentiment that does not hold true for leaders either. Leaders are not created with equal amounts of all abilities and cannot be randomly assigned or promoted, then be expected to make effective decisions automatically.

Organizational Complexity Levels: One Size Does Not Fit All

An organization's complexity varies depending on its type and size. For example, the complexity of a $5 million local uniform cleaning company tends to be significantly less than that of a billion-dollar international uniform manufacturing company. Within an organization, suborganizations (for example, manufacturing plants) may have varying degrees of complexity. Successfully managing a particular plant does not ensure success managing a more complex plant, even in the same organization. There is a dramatic difference in complexity at the CEO level in the local cleaning company and the international manufacturer, so a CEO who makes effective decisions for a $5 million company is not ensured of the same success at the billion-dollar international level. In fact, this experience running a smaller, less complex, company might contribute to not being successful in the more complex large one. To put it very simply, parts is *not* parts.

In 1984 I was working for the U.S. Army Center for Army Leadership. One of my duties, in addition to working on how to develop high

performing leaders and battle staffs for the twenty-first century, was to evaluate new human technologies and processes that might be used to enhance leadership performance. While in this role, I met Elliott Jaques, one of the world's leading psychologists and a pioneer in human development theory, and explored his stratified systems theory of leadership, which proved to be a profoundly powerful approach to understanding leadership and leadership assessment. At its core, Jaques's theory posited that work within organizations could be divided into levels of complexity, which would then drive organizational structure and the cognitive ability required by leaders to be successful at these different levels. (Jaques had amassed a database of over 220,000 leaders from several countries.) He and his colleague, Gillian Stamp, had created an assessment process for determining a leader's cognitive ability to work at a particular level of complexity. Cognitive ability, which has an IQ or intelligence component, refers to how we bring information into our system, structure it, and create and make sense of our view of the world. Later in this chapter, I will explain this more thoroughly.

Later in 1984, I spent time with Stamp, went through her assessment process, and studied her ground-breaking techniques and methodology. She and Jaques had found a way to assess cognitive ability by having leaders look for patterns during card sorts and asking the leader being assessed to complete a series of sentence stems, for example, "The most important step in decision making is . . . ," as well as other questions. Their assessment identified a leader's current cognitive ability level that could be matched to organizational complexity and role levels and predicted growth of the leader's cognitive ability in the future.

I recommended that the Center for Army Leadership work with Jaques and Stamp to incorporate their theory and assessment methodology into the U.S. military. Later that year, Jaques began to work with a colleague of mine, Owen Jacobs, the senior scientist for leadership at the U.S. Army Research Institute.[13] The cognitive ability assessment methodology implemented in the mid-1980s is still being used by the U.S. Army's senior service colleges as of this writing. (Over the years, I have refined the basic concepts into the Leadership Potential

Equation, which has proven to be a vital assessment tool for numerous organizations I have worked with.[14])

Organizations can be stratified into five levels of complexity, each with a set of defining characteristics: Production, Tactical, Organizational, Strategic, and Visionary. The following overview of the five complexity levels is in order from lowest to highest:

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- *Production:* The focus at this level is on the fundamental work of the organization—producing a product or providing a service. Typically 70 to 80 percent of an organization's employees work at this level. Examples of work at the Production level are typing reports, driving a forklift, teaching fifth grade, carrying extra ammunition for a machine gun, writing a computer program, and taking a patient's vital signs.
- *Tactical:* The focus at this level is leading the production of a product, delivery of a service or creation of something new, and organizing work teams to accomplish the fundamental work of the organization. The level of complexity of the work is relatively low and tends to be easy to understand or learn, uses linear reasoning processes, and implements single solutions to solve problems with relatively good predictability of how well the solutions will work. Examples of work at the Tactical complexity level are creating daily, weekly, monthly, and quarterly production schedules; managing the quarterly sales plan; creating large pieces of a computer program; doing annual performance counseling; and managing a quarterly school improvement plan.
- *Organizational:* Work at this complexity level is more sophisticated and at a higher systemic level than at the Tactical level. The focus is on organizing, coordinating, and managing large pieces of the organization. Examples of work at the Organizational level are managing large projects, processing improvement projects stretching out over twelve to thirty-six months, completing and implementing large computer programs, organizational alignment, business unit integration, and school district (system) realignment.

- *Strategic:* Work at this complexity level represents a profound change in the level of complexity from the previous levels. Work at the Strategic level changes from concrete to abstract. The focus is on creating, developing, and implementing strategies and strategic goals that will move the organization toward its vision over thirty-six to sixty months. Work at the Strategic level of complexity includes creating and implementing strategic plans, large-scale organizational change, mergers and acquisitions, enterprisewide compensation systems, enterprisewide restructuring, product realignment, and military combat theater strategy changes.
- *Visionary:* The focus of this level is on connecting the organization with global resources that allow reaching the organization's vision. Visionary work is complex and unfolds across very long timescales. Work of this complexity relies on a combination of innate growth of cognitive ability and experience that has resulted in the development of mental theories built over time through an extensive series of work experiences. Problems at this level have multiple solutions that branch into multiple solutions, all with multiple unintended consequences. There is no best solution, only temporary compromises and trade-offs that will evolve into new solutions through an unfolding, emergent process across time. Work at the Visionary level of complexity includes institution development, global resource acquisition, global combat theater alignment, global environmental policy, and long-range planning.

Role Level and Complexity: Matching the Leader to the Job

A leader's role level is determined by the organizational complexity level. For example, leaders working at the Tactical level are Tactical leaders and therefore must have the ability to lead work teams of Production-level employees. Examples of work at the Tactical level are supervising or managing an office or production shift, leading an infantry platoon, managing the human resources department, directing a ready-mix concrete region, and managing a school as a principal.

Leader role levels range from the most complex at the Visionary level (CEO, chairman) to the least complex at the Tactical level (frontline supervisor). The CEO role for the billion-dollar uniform manufacturer is much more complex than that of the $5 million local uniform cleaning company. The complexity of the roles of senior-level executives—vice presidents, directors, and managers—will also vary between the two companies, with the larger, more complex company having more complex leadership roles and more demanding decision-making requirements. When hiring or promoting leaders, an organization must be able to accurately match a leader's ability to the complexity of the role. Placing an under- or overqualified person in a leadership role will result in predictable negative outcomes for the leader, the leader's direct reports, and the organization.

Having worked for a highly successful company such as General Electric is not a valid indicator of a good leadership role fit with another organization. Companies often hire leaders using logic such as, "Well, this leader *must* be good if she worked for GE." Choosing someone to fill a leadership position based solely on the reputation of a previous employer can be a recipe for failure.

Learned ability, which includes job knowledge, skills, and experience, is a critical component of leadership and decision making. Selecting a former GE executive just because she was an employee of GE to run a hospital corporation or a publishing company does not make sense. Just because someone worked for an organization with an outstanding reputation doesn't necessarily mean that individual will become an outstanding leader who makes outstanding decisions, especially if she does not have the learned ability for that role level and industry. That is not to say that high performing leaders can't successfully switch organizations and assume higher role levels; however, it's not a given.

Ultimately the leader and the role level must be the right fit because the success of an organization is determined by a leader's ability to make the right decisions about the organization's resources, structure, and employees at a particular level of organizational complexity. The

leader must have adequate resources to accomplish the job, including an appropriate organizational structure, a set of followers to perform the tasks, and certain leadership skills and abilities to make effective decisions. Leadership is a function of the leader's learned and innate abilities. High performance leadership results when the leader and the organizational role level are matched properly.

The skills component of leadership comprises three factors: technical skills, interpersonal skills, and leader skills. Technical skills are peculiar to the type of industry (for example, chemical, engineering, forest products) in which the organization operates. Interpersonal skills are those required to interact successfully with other people.

Matching the leader with the right skills and abilities to the right organizational role level and providing adequate resources and followers is critical for building high performing organizations that can compete as we move into the second decade of the twenty-first century.

Individual Leader Complexity: Find the Person Who Can Do the Work

Simply put, leader complexity refers to a leader's ability to handle the requirements of his or her job. Depending on the size and type of an organization, a leader's job is often enormously complex. Two factors determine ability to work at a particular level of complexity: learned and innate abilities.

Learned abilities consist of leadership skills, technical skills (peculiar to the type of industry), knowledge of the business, work experience, and the ability to make good decisions. These are those knowledge, skills, experiences, and judgment that the leader learns throughout the span of a career from formal education, job experience, coaching, individual studies, trial and error, and practice. Ideally a leader will grow and learn across his career and be able to progress to higher leadership positions.

In reality, all leaders have limitations to what they can learn and how far up the leadership ladder they can climb. Some of the limitations are imposed by the leader's innate abilities—those hardwired abilities or

talents (for example, in music, math, or painting) that create individual differences across the population. A person can be born with an innate ability to become a great musician, an athlete, a scientist, or a CEO. All leaders have innate abilities and have discovered that some endeavors are easier than others. Innate ability as it pertains to leadership consists of four major factors: cognitive ability, emotional intelligence, motivation, and personality.

Cognitive Ability

Cognitive ability is how a leader processes, organizes, stores, and retrieves information, thus determining how she creates the world she lives in, makes sense of it, and acts on it. Cognitive ability is a key determinant of a leader's ability to be successful at different organizational role levels. Unlike learned skills, cognitive ability is not trainable; it is a hardwired ability that unfolds through a natural maturation process across one's life span. A leader's cognitive ability determines how she approaches problem solving, decision making, and interpersonal interactions. Let's look at the general characteristics of cognitive ability, going from high to low.

The higher a leader's cognitive ability level is, the lower the need for consistency in the information being processed. Consider the question, "Do cell phones cause brain cancer?" You can find as many studies that say it does as say it does not. At lower cognitive ability levels, most people would find the inconsistency in the research confusing. Their response would be: "There must be a right answer." The low cognitive ability leader may choose to ignore the data altogether or pick the data that support her position.

In contrast, the high cognitive ability leader understands that there is no single answer and tends to look at the implications of cell phone use in the organization or how to put in safeguards just in case the phones do cause cancer. She does not let the inconsistency prevent her from making a larger decision in which cell phones play a role.

Almost any topic contains some level of data inconsistency: what financial markets are going to do in the future, when the construction

industry will rebound, which airlines will survive, and whether we need more F/A-22 Raptors (currently the world's most advanced fighter aircraft). The key is that high cognitive ability leaders rise above the level of inconsistency and make decisions.

Leaders with lower levels of cognitive ability are constrained by the information they receive. Information must be consistent for them to make sense of it. High cognitive ability leaders, by contrast, rely on themselves to provide missing information, look for more novel information, and search across more domains to find information. They show greater certainty in judging inconsistent information and are more focused on long-term strategies than low cognitive ability leaders are.

The leader with high cognitive ability uses multiple dimensions when processing information. This multidimensional approach creates a high probability that the leader will match some facet of herself with a facet of another person during interpersonal interactions. This leader is more inclined toward assimilation of information about herself than a leader with lower cognitive ability is. Thus, leaders with high cognitive ability show a propensity for receiving feedback. They seek out information about themselves, are open to feedback, and assimilate this information into knowledge about themselves. With this expanded knowledge and confidence, they can more easily find some aspect of others with which they can connect, and this connection allows them to gain more feedback and knowledge.

A leader with high cognitive ability perceives herself as being more complex than the average individual. In a decision-making situation, she might delay longer and submit a more complicated decision. Her interpersonal interactions tend to result in greater perceived similarities between herself and more senior people. She may perceive differences between herself and others more accurately than a leader with lower cognitive ability does. This complex internal structure results in a greater perception of the external environmental structure, which can manifest in intrapersonal conflict.

The high cognitive ability leader recognizes when she is communicating with others who are at a lower or higher cognitive ability. When talking to a lower cognitive ability leader, she recognizes that person's simpler language structure, linear thought process, and shorter-term focus and will understand that the lower cognitive ability leader might not get what she is saying. When she is talking to someone of equal or higher cognitive ability, she may find that the conversation moves faster and is more enjoyable and stimulating.

Low cognitive ability leaders tend to use fewer dimensions when processing stimuli, resulting in fewer and less complex information domains and a lower probability of matching some facet of themselves with that of another person. They tend to contrast themselves with others and are less open to feedback. In their interpersonal interactions, they tend to perceive themselves as being more similar to their peers and less similar to their superiors. They are predisposed to be more rigid and concrete in their thinking. The accuracy of their predictions about others is directly proportional to the amount of information they have about others. Their ''concreteness'' filters out more aspects of the external environmental structure, particularly when under stress.

Low cognitive ability leaders tend to have a relatively narrow set of interests and knowledge domains, although they may have in-depth knowledge in a few areas. Consequently they look for others who share one or more of their interests. Unlike the high cognitive ability leader, they do not have a broad range of areas of expertise they can use to connect with others.

The bottom line is that leaders with high cognitive ability are able to process greater amounts of information and operate more successfully in complex environments with a higher level of inconsistency and ambiguity than can leaders with low cognitive ability. As they rise to higher role levels in an organization, the problems they face become more complex and ambiguous. These leaders with high cognitive ability tend to perform well at upper organizational echelons.

Emotional Intelligence

Emotional intelligence focuses on the interpersonal and emotional aspects of innate ability.[15] It can be defined as a person's innate ability to perceive and manage his own emotions in a manner that results in successful interactions with the environment and, if others are present, to perceive and manage their emotions in a manner that results in successful interpersonal interactions.[16] Emotions and emotional intelligence play key roles in the decision-making process. (Emotional intelligence and its impact on decision making are more thoroughly explored in Chapter Three.)

As leaders advance in role level and responsibility, emotional intelligence becomes increasingly important in determining their likelihood of success. High emotional intelligence tends to be an enabler of other key leadership success factors.

Motivation

Motivation is a combination of work aspiration (the role level the leader aspires to reach), motivators (what drives the leader to be fully engaged at work), demotivators (what causes the leader to lose interest in work), and a drive for results (the leader's need to achieve). In general, motivation is highly associated with job performance and promotability. Research supports the idea that motivation has an innate core. Some aspects of motivation—for example, a desire to work in the health care field if one's parents were doctors or nurses—may be due to environmental influences. However, a drive for success and a need for achievement and power seem to be innate.[17]

Motivation can also be viewed as an energy or driving force that moves a leader to action. The leader wants the project to succeed, so she puts in extra hours to ensure its success. She wants to be promoted, so she attends school at night and on weekends to complete an M.B.A. It appears that Jimmy Cayne, the former CEO of Bear Stearns, reached a point in his career where he was more motivated to play bridge than to lead his company.[18] When a leader's dominant

motivation shifts—temporarily or permanently—it changes her focus and behavior.

Personality

A leader's personality tends to be hardwired so that most of his core preferences for interacting with people, gathering information, decision making, and general orientation to life change little over the course of his life. These preferences influence how he perceives stimuli—or doesn't perceive them. Personality influences how he interacts with others, makes decisions, and leads in general.

Although personality has a significant influence on how a leader leads and makes decisions, we will not spend much time on the topic in this book. Numerous other books are dedicated specifically to leadership and personality, such as Roger Pearman's *Hardwired Leadership,* which would make excellent supplemental reading.[19]

Decision Complexity: Find the Leader Who Can Make the Right Decisions

The fundamental core of leadership is decision making. Everything a leader does or does not do is the result of decisions. Every day leaders are called on to make decisions, routine and nonroutine.

Routine decisions are made frequently and have standard responses based on experience: the more times a leader has made a particular decision, the easier it becomes to recognize the problem and make the appropriate decision again. A manufacturing supervisor, for example, occasionally has an employee who does not show up for work. The supervisor most likely has solved this problem many times before and knows what decisions have to be made to find someone to work the absent employee's shift. Many problems of this nature that occur throughout the day are easily solved based on experience. Such routine problems require standard decisions. Examples are shown in Table 1.1.

Nonroutine decisions arise out of never- or rarely seen situations. (For perhaps the most searing example, think of all the nonroutine

TABLE 1.1 Routine Decisions by Role

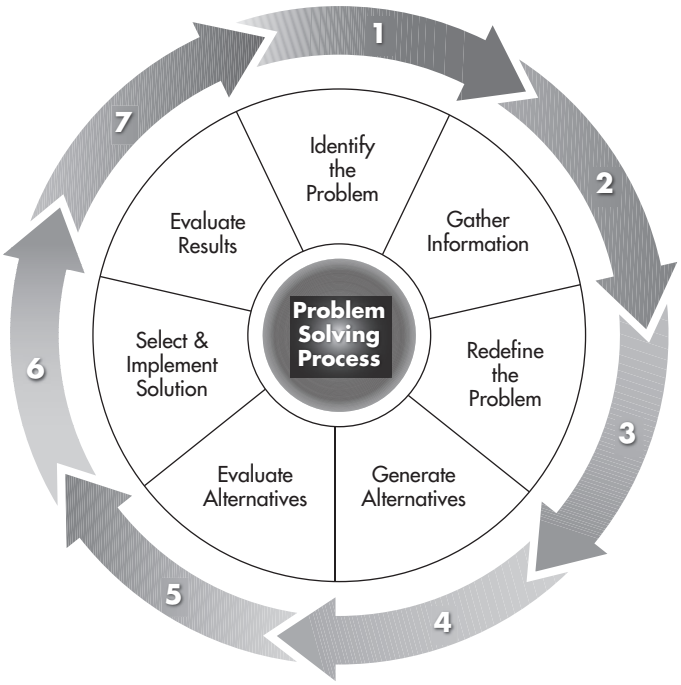
Leader	Routine Decisions
Manufacturing supervisor	Attendance report Overtime report Absenteeism
Commercial pilot	Plane inspection Takeoff checklist Landing checklist
School administrator (principal)	Safety checks Curriculum design Parent meetings
Brigade commander	Task force organization Troop deployment Security
CEO	Weekly financial review Weekly production review Quarterly financial report

decisions that had to be made on September 11, 2001.) In most cases, there is no standard or best solution. Decisions of this nature tend to be extremely complex and ambiguous and will be difficult for the leader to make effectively. Most basic leadership training classes include instruction on how to solve problems and make decisions, including nonroutine ones, using a standard problem-solving and decision-making model. The typical model consists of the seven steps shown in Figure 1.1.

Note that problem solving is just a series of decisions. It is also important to remember that if you make the right decision but make it at the wrong time or in the wrong way, the net result is a bad or ineffective decision. Timing is critical.

Similar models are taught in business schools, Six Sigma black belt training, process improvement classes, and other courses where leaders are required to solve problems and make decisions. This process is typically thought of as a logical, rational problem-solving and decision-making process. Examples of nonroutine decisions are shown in Table 1.2.

FIGURE 1.1 The Seven-Step Problem-Solving Model



In the past thirty years, I have trained thousands of leaders to make nonroutine, difficult decisions using the seven-step process above. I taught these leaders that it is imperative to fully understand the problem to be solved, gather all the relevant facts and data, reevaluate the problem to ensure that what was initially believed to be the problem is actually the problem and not a symptom of the problem, generate multiple solutions, use various analytical techniques to compare and evaluate potential solutions, select and implement the best solution, and evaluate how well the solution works.

The decision-making strategy for solving nonroutine problems requires this logical sequence. Over the years, however, I have found that most leaders tend not to follow these steps in making most decisions. When I observe them make quick decisions, in particular, it appears as

TABLE 1.2 Nonroutine Decisions by Role

Leader	Nonroutine Decisions
Manufacturing supervisor	Technology implementation New product line
Commercial pilot	Both engines shut down Passenger heart attack Smoke in cockpit
School administrator (principal)	School shooting Redistricting Major budget cut
Brigade commander	Successful enemy cyberattack Major strategy change Combat deployment extension
CEO	Acquiring a new company Replacing the CFO Nonprofitable quarter

if some other process is being used. A phrase often used in organizations is "Ready! Fire! Aim!"—referring to leaders making decisions without appearing to have all the facts available. (Many times this process seems to work, and we will explore this later in this chapter.)

The opposite of a rapid-fire decision-making style is called "analysis paralysis." This is when the leader gets bogged down in gathering and analyzing data to the degree that decisions are made very slowly or not made at all.

I often use the Emotional Quotient Inventory (EQ-i) to measure a leader's emotional intelligence.[20] Its Problem Solving scale assesses the degree to which a leader uses a logical decision-making process, such as the seven-step model in Figure 1.1. In fact, it is not uncommon for leaders who have demonstrated the ability to make tough decisions and solve difficult problems to score low on this particular EQ-i scale. And when they receive low scores, they tend to push back and say something to the effect that "I make difficult decisions throughout the day, every day. My job is about making decisions. I don't know how you can say that I'm not a good problem solver." In fact, when I look at their actual

ability to solve problems and make decisions, too often I see a disconnect between their score on the Problem Solving scale and their actual ability. I believe the reason for this disconnect is that this scale is assessing the leader on how well he or she follows traditional problem-solving steps. Many leaders use this formal process for solving problems and making decisions only in certain circumstances (primarily nonroutine), which might cause them to get a lower than desired score on the scale.

Decision Strategies: Pick the One That Works

Leaders use two basic decision strategies to make decisions: rational and intuitive. Each uses different decision-making processes, and each has its own utility and blind spots. Each is also a trade-off between analysis and speed, conscious and unconscious processes, and comparative solutions and one solution at a time.

Rational Strategies

The rational decision-making strategy tends to be a logical, sequential, analytical, conscious, well-thought-out process that takes time and typically involves others. It generates and compares multiple solutions, then chooses the best solution for implementation. It follows a logical, sequential process designed to ensure that the decision maker considers all data, generates appropriate alternatives, and then evaluates alternatives before a solution is chosen and implemented. The problem-solving steps presented earlier are some of the basic tools of the rational strategy.[21]

Strategic planning is an example of rational decision making that is appropriate for the situation and works well. Planning of this nature tends to be relatively complex, mostly nonroutine, and carried out across an extended period of time. It is not uncommon for strategic planning to take several months to complete. It is also not uncommon to see trained decision makers using a similar process when purchasing a car, refrigerator, cell phone, or other item when there are several options from which to choose.

Rational decisions tend to be much more complex, more conscious, and of longer duration than intuitive strategies; use more methodical data collection and analysis; and may involve a longer-term impact on the organization.

Intuitive Strategies

In his book *Blink!* Malcolm Gladwell proposes that most decisions are made in the "blink of an eye"—that within two seconds we have made a decision.[22] We appear to have been "thinking without thinking." And according to Gladwell, these "blink" decisions are not only critical for survival situations, but are also how we make most complicated decisions.

Intuitive decisions are made very quickly, automatically, emotionally, and mostly unconsciously, and this is the type of decision usually made in routine or emergency situations. Leaders apply unconscious processes to make intuitive decisions throughout the day. There are two prominent intuitive decision-making models: the observe-orient-decide-act loop and recognition-primed decisions.

Observe–Orient–Decide–Act Loop

Colonel John R. Boyd, a retired U.S. Air Force fighter pilot, designed a way to "out-decision" his opponents by using an intuitive process to make faster decisions. He developed a reputation for being able to start air-to-air combat with his plane in a position of disadvantage and within forty seconds or less to be on the tail of his opponent. Legend has it that Boyd never failed to defeat an opponent within forty seconds, earning him the nickname "40 Second Boyd." Boyd called his decision-making process the observe-orient-decide-act loop (OODA). OODA was created as a model of how humans make Tactical decisions and as a way to teach fighter pilots how to make decisions faster than their opponents—to operate inside their opponent's OODA loop.[23]

The loop aspect of the model indicates that the process is repeated over and over as the situation constantly changes. You must change faster than your opponent changes, always keeping him confused and off balance. Harry Hillaker, one of Boyd's colleagues, once

summed it up in an interview: "The key is to obscure your intentions and make them unpredictable to your opponent while you simultaneously clarify his intentions. That is, operate at a faster tempo to generate rapidly changing conditions that inhibit your opponent from adapting or reacting to those changes and that suppress or destroy his awareness. Thus, a hodgepodge of confusion and disorder occur to cause him to over- or under-react to conditions or activities that appear to be uncertain, ambiguous, or incomprehensible."[24]

The OODA loop appears simple on the surface, but it has many layers, mathematical equations, and decades of work, making it a deep and rich model. Over the years, the application of Boyd's model has been extended into numerous fields, from other branches of the military to business where leaders have to make relatively quick decisions.

Recognition–Primed Decision Model

The recognition-primed decision model (RPD), one of the best known and most studied rapid decision-making models, was developed by Gary Klein and explained in his book *Sources of Power.*[25] Klein is a psychologist who studies decision making by "living in the field" and observing leaders making decisions in real time. He has lived on aircraft carriers and in firefighter camps and has participated in military exercises and in many other environments that require rapid decision making. His research team has been called in to study some of the most infamous fast decisions, such as the shooting down of an Iranian Air Bus in 1988 by the *USS Vincennes.*

On the heels of the Iran-Iraq war, the *USS Vincennes,* a U.S. Navy–guided missile cruiser commanded by Captain Will Rogers, mistakenly shot down an Iranian civilian airliner on July 3, 1988, over the Strait of Hormuz, killing all 290 passengers (including sixty-six children) and crew aboard, sparking an intense international controversy. The U.S. Government claimed that Air Flight 655 was mistakenly identified as an attacking F-14 Tomcat fighter by the *Vincennes* crew, who had been warned of a possible attack.

Yet it was determined that the *Vincennes* was inside Iranian territorial waters at the time of the attack and the airliner was within Iranian airspace. The United States and Iran reached a settlement over the incident in 1996, with the United States agreeing to pay $61.8 million as compensation for the Iranians killed. Poor decision making and lack of training have been cited as contributors to the deadly attack.

Klein's work focuses on intuitive decision making, where leaders use their experience to quickly evaluate the situation and make fast decisions. A fireground commander looks at a house or building that is on fire and immediately begins shouting orders as to how to fight the fire or to get away from the building because it is about to collapse. Often the commander does not realize he was making decisions. He just thought that what needed to be done was obvious.

Klein's research indicates that in fast-moving, dynamic environments like firefighting, police work, and military combat where decisions have to be made in under sixty seconds, an intuitive-type decision-making process is used almost exclusively. He has found that even in situations favoring rational decision making, about 80 percent are made using the intuitive style. This type of decision making seems to be in conflict with the rational decision-making strategy taught in most business schools.

As Klein continued to collect data and study how decisions are made under time constraints, he developed the RPD model. Unlike the rational decision-making model taught in leadership courses and business schools, leaders rarely seem to follow a formal seven-step decision-making process, especially when under time constraints. Most decision making does not tend to be an exercise of generating and comparing alternative courses of action until the best one is chosen. What leaders actually do is to go with the first solution they come up with that they think might work. The solution is evaluated on its own merit. Leaders often do not generate or compare alternatives. This finding is in stark contrast to what is normally taught about how leaders should and do make decisions.

The RPD model sizes up the problem by recognizing cues that are tied to prior experience. These cues identify decisions that have worked before in similar situations and thus are primed to come forth as solutions. When a primed solution materializes, it is evaluated by using mental simulation. The leader imagines how the solution will be implemented and to what degree it will work. (Table 1.3 shows the steps and actions.)

The objective of the RPD model is to find a solution rapidly that will work. Generating and evaluating a long list of problems in a fast-moving problem space is inefficient and might lead to failure. After US Airways Flight 1549 hit the flock of birds as it was ascending, the plane had approximately three minutes until impact with the water. Captain Sullenberger had to make numerous decisions and take certain actions for everyone to survive. He made the decision to attempt to land on the Hudson River within seconds. There was no time to have a brainstorming session, generate thirty or forty possibilities, eliminate redundancies, consolidate similar ideas, expand on them, evaluate each idea in a weighted decision matrix, choose the optimal solution, plan its implementation, communicate it to others, and execute the plan. Captain Sullenberger appears to have used a decision-making process

TABLE 1.3 Klein's Recognition-Primed Decision Model Steps and Actions

Recognition-Primed Decision Steps	Actions
Assess the situation.	Judge it familiar.
Evaluate a course of action.	Imagine how it will be carried out.
Select an option.	Look for the first workable option.
Develop a solution set.	The set is usually very small.
Generate and evaluate options.	Generate and evaluate options one at a time.
Adjust the option.	Spot weaknesses, and find ways to avoid them.
Take action.	Be poised to act, not paralyzed.

similar to Klein's to choose a workable solution rather than work toward a perfect (maximized) solution.

Herbert Simon spent his career studying decision making and won the Nobel Memorial Prize in Economics in 1978 for his work. Simon, a psychologist and economist, made many advances in the field of decision making, but two of his contributions, satisficing and bounded reality, are particularly relevant to the RPD model.[26] The technique of satisficing allows a solution to be chosen that is not perfect but is sufficient to provide a satisfactory solution to the problem. The RPD model chooses the first solution that might work (a satisficing approach). Simon discovered that in most cases, trying to choose a solution using a maximizing (optimal or perfect) approach tends to be unrealistic and inefficient because the leader is making decisions in an environment where all the information about the problem and possible solutions are unknown. The leader is operating in a bounded reality, which makes the satisficing solution the most efficient, especially under time pressure. Most leaders use the satisficing technique even though they might not be aware they are using it.

Mental simulation is an important component of both Klein's RPD model and Simon's satisficing technique. During mental simulation, the leader imagines the implementation of the chosen solution and plays out the solution in her mind. If the solution does not appear to work, then it is either modified or discarded and another solution is selected; the simulation process starts again. For example, you have a flight out of the Atlanta airport tomorrow at 10:00 A.M. You need to decide when to leave your house for the airport. There are three basic parts to your mental simulation: (1) depart from your house, (2) travel, and (3) arrive at the gate. You know that you like to be at the gate an hour prior to flight time. That means you need to be at the gate at 9:00 A.M. The travel will take two hours. The latest you can depart from your house is 7:00 A.M. When you run this simulation, it appears to give you a workable solution.

As you might imagine, mental simulations require the use of mental resources. Klein found that most leaders are limited to a maximum of three moving parts (depart from your house, travel, arrive at the

gate) and six steps (load the car, get in the car, drive to the airport, park, go through security, travel to the gate) during mental simulations. Going beyond three parts and six steps overtaxes most leaders' cognitive resources, especially under time pressure. It is possible for leaders to use a chunking process of combining several steps so as not to exceed the three-parts, six-steps rule. Reducing the mental resources required for the simulation may allow for larger simulations. In the airport example, drive to the airport, park, go through security, and travel to the gate were chunked into one part: travel.

Boost Your Working Memory with Chunking

George Miller coined the phrase ''the magical number seven, plus or minus two'' in relation to how many pieces of information the human mind can hold in working memory at one time. Quickly read the sequence of numbers that follows, then look away and try keeping them in your working memory; and, without looking, say the numbers in sequence: 3409112001.

This ten-digit sequence exceeds most people's seven-digit working memory capacity–unless you notice something familiar about the digits. For example, 09 could be the 9th month, 11 could be the 11th day, and 2001 could be the year. Miller called this *chunking.* Now you remember 3, 4, 09, 11, 2001–five chunks of information instead of ten. Some people might chunk 09112001 together, reducing the total pieces of information to three chunks. If 34 is your age, you might have only two chunks to remember, 34 and 09112001.

Source: Miller, G. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review, 63,* 81–97.

Even with chunking, some simulations are too complex to do mentally, especially when you have many other actions competing for your mental resources. We will see later how stress can significantly reduce the amount of information you can hold in memory. Captain Sullenberger had to ''just focus on flying the plane'' and not allow himself to be overwhelmed by the competing demands for his mental resources—especially fear.

A significant portion of decision making takes place in the unconscious, where it appears that there are fewer limitations on the number of pieces of information you can manage. The downside to solving problems in the unconscious is that you are not aware of how you arrived at the solution. You have to trust your instinct to use intuitive decisions. As we will see later, there are times to make intuitive decisions and times to make rational decisions.

The U.S. Marine Corps implemented a version of Colonel Boyd's OODA loop decision-making process into its doctrine in 1989. The intent was to enable leaders to make decisions faster and better than the enemy could. This decision-making philosophy was consistent with Sun Tsu's belief that "speed is the essence of war" and Napoleon's belief that intuitive decision making was a "gift of nature" and critical for success in war.[27]

General Charles C. Krulak, the thirty-first commandant of the U.S. Marine Corps, coined the term "strategic corporal" and described the role it will play in the "three block war." A three block war is described by the Marine Corps as a conflict in which Marines may be confronted by the entire spectrum of tactical warfare within hours, all taking place in an urban area the size of three city blocks. A Marine corporal leading a fire team of four Marines will have to react almost instantly to visual cues in the environment and deploy his team against the enemy while taking into consideration hostile, neutral, and friendly forces in this limited space. Military leaders must be able to make intuitive decisions. To assist Marines in making effective intuitive decisions, General Krulak began implementing a version of Klein's RPD model into the Marine Corps for his strategic corporals in the late 1990s. It has also been evaluated for use by the U.S. Army.

In the chapters to come, we'll examine the latest neuroscience research on different decision-making strategies that leaders use. If you understand the whys and hows of decision making, particularly when people engage in it under stressful conditions, you'll be better able to recognize what makes an effective, decisive leader.

Using the Perception-Appraisal-Motivation-Action Model: What Was Sullenberger Thinking?

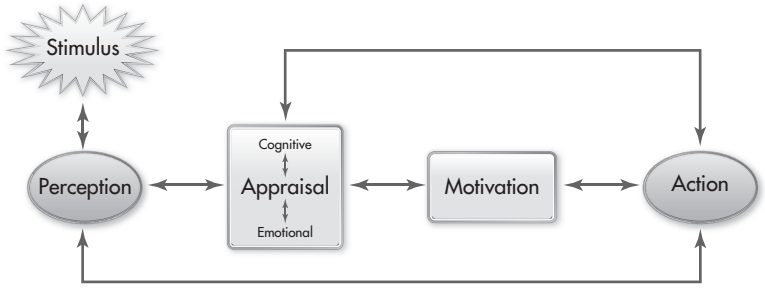
It makes sense to wrap up this discussion of decision making with one more look at US Airways Flight 1549, an event that called for a sweeping number of decisions that fell into just about every category, from routine to nonroutine. Let's look at one final model that can serve as a comprehensive model for both rational and intuitive strategies.

The Perception-Appraisal-Motivation-Action model (PAMA) provides a way of looking at and discussing the very complex information processing that takes place in the brain during decision making.[28] PAMA is admittedly an oversimplification of what is really happening, and the steps in its process do overlap somewhat: but this model provides a means of visualizing and talking about how decisions are made from a macro perspective. Each component in the process, shown in Figure 1.2, is described next using examples from US Airways Flight 1549.

Stimulus (External/Internal): "Birds"

The PAMA model is activated when a Stimulus is detected. The Stimulus can originate from outside the leader, such as seeing the Hudson River, or from inside, such as having a thought about a situation.

FIGURE 1.2 Perception-Appraisal-Motivation-Action Model



Source: Thompson, H. (2005). Exploring the interface of the type and emotional intelligence landscapes. *Bulletin of Psychological Type, 29*(3), 14–19.

At 15:26:37, or 3:26:37 P.M. Eastern Time, Captain Sullenberger enters a PAMA cycle by expressing his reaction to the aerial view of the Hudson River (the Perception of a Stimulus, an Appraisal of the Perception, a Motivation to express his Appraisal followed by the Action of making a comment) by saying, "Uh, what a view of the Hudson today." First Officer Skiles acknowledges the comment with, "Yeah," and continues with the After Takeoff Checklist: "Flaps up please, After Takeoff Checklist." Sullenberger responds at 15:26:54 with, "Flaps up" and thirteen seconds later at 15:27:07 with, "After Takeoff Checklist complete."

Sullenberger has several PAMA cycles running concurrently, and these cycles are transitioning in and out of consciousness. He and Skiles are going back and forth between the view of the Hudson River and the After Takeoff Checklist.

Think about the PAMAs involved when a person is driving to work. Driving is a relatively complex task. Simultaneous PAMAs are engaged for driving, navigation, rush-hour traffic, tuning the radio, a conversation with your passenger, a cell phone call from your spouse, checking your hair in the mirror, the presentation you have to give to your boss when you get to work, wondering why your boss is such a jerk, and, speaking of jerks, what about the one who just cut you off and now you will have to wait through the traffic light again, which means you'll be late to brief the boss jerk and so on. Your PAMAs move in and out of consciousness. The majority of a leader's PAMAs are running on autopilot in his unconscious.

At 15:27:10, Captain Sullenberger, three seconds after stating that the After Takeoff Checklist is complete, consciously perceives the Stimulus (the birds) and says, "Birds." This was *one second* before the plane made contact with the flock of Canada geese (15:27:11). As the birds made contact with the plane, First Officer Skiles said, "Whoa." The impact of the birds can be heard on the voice cockpit recorder as loud thumps and thuds, followed immediately by a shuttering sound. At 15:27:12, one second after contact, Skiles expresses an expletive, and the captain follows at 15:27:13 with, "Oh yeah!" Like Schrödinger's cat, the box has been opened, and all PAMAs collapse into consciousness as the birds strike the plane's engines.[29]

Perception (Conscious/Unconscious): "Oh [Expletive]"

The Perception of the Stimulus may be conscious or unconscious. For example, most stimuli are perceived unconsciously. In fact, the whole process from the origination of the Stimulus through Perception, Appraisal, Motivation, and Action can take place in the unconscious. There are always numerous PAMA cycles in process in the unconscious, and most never make it into consciousness. At 15:27:11 the bird strike PAMA is dominating the captain's and first officer's consciousness.

Flight 1549's impact with the birds generated numerous Stimuli that set hundreds of conscious PAMAs in motion for the 150 passengers, 3 flight attendants, and 2 pilots. At least one passenger sees fire coming from one of the engines and sends a "final" text message to his wife. Another sees some of the birds go by as gray streaks. Almost everyone hears the thuds of the birds and notices the sudden engine silence and the "tennis shoe-in-the-dryer sound" coming from one of the engines. They also feel a sudden forward deceleration, and their weight in the seats goes from heavy, the result of the g-force produced from the plane's upward acceleration, to lightness, due to the plane's suddenly beginning to descend at approximately eighteen feet per second. These and the Stimuli coming from the reaction of the other passengers initiate many PAMAs in each person.

In many normal situations, the PAMA process may become conscious only at the Motivation phase and the leader then realizes that he wants to take an Action. For the passengers on Flight 1549, many PAMAs have begun competing for space in each passenger's consciousness, but there is room for only seven pieces of information in consciousness, plus or minus two. For most people in situations like Flight 1549, fear-generated PAMAs tend to dominate consciousness.

Appraisal: "We May End Up in the Hudson"

The Appraisal phase takes place immediately on Perception of the Stimulus. The Appraisal is designed to make sense of the Stimulus and then create an appropriate Motivation followed by an appropriate Action. Keep in mind that the whole process from Stimulus to Action

may take place in seconds or less, making it seem as if there were no Appraisal or Motivation phases.

Captain Sullenberger sees the birds (Stimulus 1) and completes a PAMA cycle in less than one second and knows he cannot avoid the birds. One second after he sees the birds, he hears their contact with the plane (Stimulus 2), which updates his PAMA cycle. He feels the deceleration and hears the change in the engine sounds. His Appraisal of the Perception Motivates him to begin the Action of assessing the damage. He hears the first officer say, "Uh-oh," and sees both engines' revolutions per minute rolling back (Stimulus 3). Sullenberger is now in his third update of the PAMA cycle and tells the first officer, "We got one rol—both of 'em rolling back." It has been five seconds from sighting the birds to confirming that the engines are shutting down. Sullenberger has run at least three updates to the bird PAMA cycles during this five-second period and has now initiated several more—some conscious, some unconscious. Two separate components play major roles during Appraisal: cognition and emotions.

Cognitive

The cognitive component of Appraisal provides the logical reasoning and intellectual processing of information received from the Perception of the Stimulus. This component moves relatively slowly (approximately 100 milliseconds) and deliberately to process and make sense of information coming into the system from various parts of the brain. It tries to control the Appraisal process by thinking about and understanding the meaning of the data. The cognitive component also attempts to maintain control of the emotional component.

The cognitive component identified the objects as being too close to avoid and calculated that the "birds" (information received from the emotional component) would hit the plane. It will later identify the birds as Canada geese. When the Stimulus evolves to the birds' hitting the plane, the PAMA cycle is updated, with the cognitive component now reacting to the bird strikes and processing the strike data. This process is overwritten with the new set of data: engines becoming quiet and

changes in horizontal and vertical acceleration. The cognitive portion of the Appraisal says, "This is not good."

Emotional

The emotional component of the Appraisal process moves extremely quickly to process and interpret data, create a Motivation, and initiate an Action. There is a strong predisposition toward survival. Data are interpreted in a fuzzy manner. That is, incomplete data are interpreted by the best pattern available.

The emotional component recognized the pattern of the objects as belonging to the general category of "birds" and instantly (approximately 25 milliseconds) fed "birds" into the Appraisal process and triggered the verbal response (Action) of "Birds" from Captain Sullenberger. The captain's and first officer's brains are now experiencing a chemical bath. Hormones, such as adrenaline, are gushing throughout their brains and bodies, increasing heart and breathing rate (along with many other changes that are discussed in Chapter Four) in preparation to engage in some type of new and heightened Action. Fear is instantly present. Captain Sullenberger later stated in an interview, "I felt the adrenaline shoot straight through my heart." At this point the emotional component is trying to dominate the process. Captain Sullenberger also stated, "I knew I had to block out everything except flying the plane."[30] It was crucial that fear not be allowed to dominate his Actions.

The emotional component is designed to produce automatic responses in the event of potential danger. These responses are based on instinct, learning, and prior experience. This was Captain Sullenberger's first experience with losing both engines close to the ground. Fortunately for the other 154 people onboard this flight, it was not his first time bringing a plane down without power. He had once been a glider pilot, had practiced no-power landings in a simulator a few years earlier, had a lot of experience with this type of plane, was seated where he had the best view of the landmarks critical for making decisions about viable options for landing, and he had a very cool head. (Although I'm singling

out Captain Sullenberger here, the passengers were extremely fortunate to have such a strong five-person flight crew. All were heroes that day.)

Motivation: "We've Lost Thrust on Both Engines"

Motivation provides the energy required to initiate an Action. When Sullenberger heard the impact of multiple large birds, felt the g-force changes, and heard the sounds of the engines change, he was Motivated to look for damages, problems, and solutions. Eight seconds after the bird strike (15:27:18), he was attempting to restart the engines. Fourteen seconds later (15:27:32), he knew the plane was going down and sent the distress call: "Mayday! Mayday! Mayday! Uh this is uh Cactus fifteen thirty nine [should have been 'fifteen forty nine']. Hit birds. We've lost thrust in both engines. We're turning back towards LaGuardia."

At this point the updated data have been Perceived and Appraised, and the captain is Motivated to get the plane back safely on the ground. Instinct (from the emotional component) told him to go back to where he just left from, and that's what he told the control tower he was going to do. His air speed and altitude were dropping fast. He had to angle the nose of the plane down a bit to increase his air speed so the plane would not stop flying and fall out of the sky. Increasing his angle of descent increased his air speed and flying ability of the plane, but this also increased his rate of descent. At 15:28:03, the plane's flight warning computer is beginning to sound an alarm.

Unconsciously Captain Sullenberger has completed the PAMA cycle and knows that he cannot make it back to LaGuardia or any other airfield. There are only two choices: crash into a populated area, killing everyone on board and possibly many people on the ground, or try to land on the Hudson River. The National Transportation Safety Board flight tracking system reveals that Flight 1549 is already moving toward the Hudson River. At 15:28:05, departure control gives Sullenberger directions for an emergency landing at LaGuardia, to which he replies, "We're unable. We may end up in the Hudson." It has been only sixty seconds since the bird strike, and the captain has now voiced what will be his final decision about where to land: the Hudson River.

Action: "We're Gonna Brace"

Motivation generates Action. The Action component is the behavioral output of the system. The traffic collision avoidance system begins shouting, "Traffic, Traffic," into Sullenberger's headset, along with the predictive windshear system's warnings of, "Go around! Windshear ahead!" But the captain wanted to check one more option and asked, "I'm not sure we can make any runway. Uh, what's over to our right? Anything in New Jersey? Maybe Teterboro?" He is told that Teterboro is off to his right. The traffic collision avoidance system shouts, "Monitor vertical speed!" He tells departure control that he wants to try it—but he already knows he can't do it.

At 15:29:11 he tells the passengers over the public address system, "This is the Captain. Brace for impact!" The flight attendants begin shouting instructions in unison. At 15:29:25 he tells departure control, "We can't do it." At 15:29:28, he says, "We're gonna be in the Hudson." He is now finalizing the Action to put Flight 1549 in the Hudson River's thirty-four-degree, swiftly moving water. Captain Sullenberger is totally focused on air speed, descent rate, keeping the nose angled upward, and executing a perfect water landing. He blocks out the multitude of alarms going off, asks First Officer Skiles if he has any ideas, braces, and then makes the storybook landing—and starts a new PAMA cycle for getting everyone out of the plane and to safety.

Over and Over Again: The Recursive Nature of PAMA

You can see from the Flight 1549 example that the PAMA system is dynamic. The Stimulus is constantly changing, requiring the system to be continuously updating itself. This means that every component gets information from and provides information to every other component. Each component is continually being updated based on information and Actions generated.

Table 1.4 gives a brief comparison of the PAMA model with the two other decision strategies discussed in this chapter, and it shows the many similarities in the models. It seems clear that leaders use a

TABLE 1.4 PAMA, OODA Loop, and RPD: A Comparison

PAMA	OODA Loop	RPD
Perception	Observe	Recognize
Appraisal Cognitive Emotional	Orient	Select
Motivation	Decide	Simulate
Action	Act	Act

rapid decision-making process, especially when they are under time pressure. The PAMA model allows us to explore how the decision process works and potential pitfalls and the impact of other moderating factors such as stress.

The Takeaway on Leadership and Decision Making

In this chapter, we've looked at examples of "smart" corporate leaders in some of the largest U.S. companies who made decisions that could easily be categorized as dumb, illustrating that even proven leaders can make bad decisions under certain circumstances. That is not to say these leaders were not intelligent; rather, they lacked the right combinations of organizational complexity, role level, and individual leader complexity, and they took a wrong turn that eventually led their organizations to failure. On top of that, they lacked the right balance of cognitive and emotional intelligences that would have allowed them to make better decisions, particularly in stressful situations.

We know that effective decision making is at the core of leadership and that different types of decision environments and strategies influence leader success. Research has shown that as leaders' stress increases, two key factors determine the success of their decisions: cognitive and emotional intelligences, both of which we're about to look at more closely. We'll start with an in-depth examination of cognitive intelligence in general and the neuroscience of intelligence in particular.