

University of San Diego Digital USD

Dissertations

Theses and Dissertations

2014-5

Decision making and creativity: A qualitative study of MacArthur fellows

Leslie Hennessy Ph.D.
University of San Diego

Follow this and additional works at: <https://digital.sandiego.edu/dissertations>

 Part of the [Leadership Studies Commons](#)

Digital USD Citation

Hennessy, Leslie Ph.D., "Decision making and creativity: A qualitative study of MacArthur fellows" (2014). *Dissertations*. 101.
<https://digital.sandiego.edu/dissertations/101>

This Dissertation: Open Access is brought to you for free and open access by the Theses and Dissertations at Digital USD. It has been accepted for inclusion in Dissertations by an authorized administrator of Digital USD. For more information, please contact digital@sandiego.edu.

DECISION MAKING AND CREATIVITY: A QUALITATIVE STUDY OF
MACARTHUR FELLOWS

by

Leslie A. Hennessy

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy

May 2014

Dissertation Committee

Robert Donmoyer, Ph.D.

Fred J. Galloway, Ed.D.

Lea Hubbard, Ph.D.

University of San Diego

© Copyright by Leslie A. Hennessy
All Rights Reserved 2014

UNIVERSITY OF SAN DIEGO
SCHOOL OF LEADERSHIP AND EDUCATION SCIENCES

CANDIDATE'S NAME: Leslie A. Hennessy

TITLE OF
DISSERTATION: DECISION MAKING AND CREATIVITY: A
QUALITATIVE STUDY OF MACARTHUR FELLOWS

APPROVAL:

Robert Donmoyer, Ph.D. Chair

Fred J. Galloway, Ed.D. Member

Lea Hubbard, Ph.D. Member

DATE: March 24, 2014

ABSTRACT

This research study explored how eight individuals recognized for their creativity activate, develop, express, and sustain their creativity through decision making. The individuals were MacArthur Fellowship award winners. This prestigious fellowship is given to individuals who the MacArthur Foundation considers to be high-achieving and highly innovative individuals. The Fellowship recipients in this study were affiliated with either nonprofit or for-profit organizations, and all were founders of their respective organizations.

The specific goals of the research were to: (a) understand the details of participant decision making strategies and processes; (b) investigate if participants demonstrate consistent or different decision making strategies across the sample and across different decision making contexts; (c) compare the strategies and processes of participants with the established theories of decision making; and (d) understand how the creative thinkers activate, develop, express, and sustain their creativity in their pursuit of novel outcomes.

This was a qualitative study that employed face-to-face interviewing as the primary data collection method. Participants were chosen using a purposeful sampling technique in which potential participants were stratified by gender, age, and organizational type and then randomly selected from each category. Interviewees came from different regions of the United States and worked in a range of fields including physics, agriculture, computer technology, human rights, conservation, pharmaceuticals, environmental policy, and music. An interview guide was employed to give interviews structure and maximize the busy interviewees' time. Interviews lasted approximately 60 minutes. Interview data were organized into single case studies built around constructs

that surfaced during a review of the literature on both decision making and creativity. A cross-case analysis was also conducted.

The results of the study supported existing theories of decision making, though these theories are relatively abstract and this study presents richer descriptions of the decision making process than one can find in the more abstract theoretical literature. As a consequence, this study should be useful to those who want to emulate individuals who have been publicly recognized for their creativity and for successfully making decisions in areas where well-established decision making pathways do not exist.

ACKNOWLEDGEMENTS

The nature of the dissertation process suggests a solitary pursuit of new learning accomplished through the creation of an original research project. While original research may be the goal, my experience of the dissertation process is that it has not been accomplished alone. Rather there have been numerous people who have supported my efforts throughout the process.

My dissertation committee members were a key support in the creative formation of the study and generous in sharing their experience during the project. Dr. Robert Donmoyer, the committee chair, worked tirelessly throughout the process to challenge and support me. His guidance helped me shape the research design and kept me on track throughout the writing phase. Dr. Fred Galloway was always optimistic and enthusiastic about the project, and each time he saw me, he reignited my passion for the research when he inquired about the work and asked challenging questions. Dr. Lea Hubbard was the first person with whom I shared my research goal and her enthusiasm for the project emboldened me in my desire to place the creative MacArthur Fellows at the center of the study. Furthermore, Dr. Hubbard challenged me to look deeper into the data and critically think about their meaning and importance.

I also wish to thank the MacArthur Foundation. As a result of the foundation's years of work identifying and selecting creative award winners, I was able to choose research participants who had been judged to have the creative qualities I was seeking to study. Moreover, the foundation's work has allowed me to meet inspiring individuals who have had a profound effect on my view of the world.

This research was only feasible with the help of the creative MacArthur Fellows I interviewed. I thank them for their graciousness in accepting my invitation to be interviewed and for their enthusiasm throughout the project. It was their stories I told, and it was only through their revelations that I was able to begin to understand decision making and creativity. The experience of interacting with the MacArthur Fellows was also an opportunity for me to learn from role models of human achievement. I was inspired by their enthusiasm for life, inquisitive natures, determination to pursue expansive goals, and their passion for and dedication to their work.

My family was also both instrumental and influential in helping me navigate the dissertation process. My husband, Randy Kunkel, was tremendously supportive, patient, and generous with his time. He was a reliable sounding board, and this work could not have been accomplished without his sage insights and on-going encouragement. Chris and Alison, my children, played their own part in encouraging me in this process of discovery. I was touched that they frequently asked about my progress and encouraged my efforts.

Other supporters helped me extend my efforts in the work. Patricia Rhodes and Nathaniel Dunigan offered perspective and sustenance during the process. It has been my pleasure to work with them and share the doctoral journey. Jennifer Amanda Jones was also a stalwart supporter and served as my peer reviewer on the project. Her willingness to apply her critical thinking skills helped reinforce my direction and her insight helped me untangle some intricate data.

To all these individuals, and to my cohort, in general, I offer my thanks for their part in the magical journey that we have shared.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	vi
LIST OF TABLES	xvi
CHAPTER ONE: INTRODUCTION.....	1
Background of the Study	3
Theories of decision making in this research.....	4
Creativity constructs.	10
Statement of the Problem.....	11
Purpose of the Study	12
Research Questions.....	14
Study Design Overview	15
Limitations of the Study.....	16
Significance of the Study	17
CHAPTER TWO: LITERATURE REVIEW.....	19
Introduction.....	19
The Genesis of Decision Making Research	20
Decision Making: Differences in Definition and Scope.....	21
Important Studies in the Development of Decision Making Theory	23
Theories involving rationality.....	23
Section summary on theories involving rationality.	29
Decision making within organizations.....	30
Section summary on decision making within organizations.....	32
Politics in decision making.	33

Section summary on politics in decision making	37
Heuristics used in decision making.....	37
Section summary on heuristics used in decision making.....	47
The Literature Review on Creativity	47
The Genesis of Creativity Research.....	49
Definitions of Creativity	50
Divergent and Convergent Thinking Abilities.....	52
Approaches to Creativity	53
Mystical approach.....	53
Psychodynamic approach.....	53
Cognitive approach.....	54
Confluence approach.....	55
Section Summary on Approaches to Creativity.....	56
Literature Review Conclusions.....	57
CHAPTER THREE: METHODOLOGY	58
Purposes and Objectives	58
Research Questions.....	60
General Research Design.....	61
Population, Sampling Procedures, and Participants	62
Population.....	62
Sampling procedures.....	63
Potential participants.....	65

Collecting the Data	66
Initial participant contact.	66
Preinterview distribution of sample scenarios.	67
Interview protocol.	68
Administrative details.	69
Research sites.	70
Assembling the data.	71
Data Analysis	72
Coding data.	72
Case study/cross-case analysis.	73
Credibility, Transferability, Dependability, Confirmability, and Positionality	74
Credibility.	74
Transferability.	75
Dependability.	76
Confirmability.	76
Positionality.	77
Summary	77
CHAPTER FOUR: THE QUINTESSENTIAL SCIENTIST	79
Background	79
Saul on Decision Making.	80
Primary decision making processes: Scientific method.	80
Other aspects of Saul’s decision making.	81

Saul on Creativity	88
A key to creativity: A big picture thinking and a historical perspective.	89
Other aspects of creativity.	91
Conclusions.....	96
CHAPTER FIVE: THE FARMER PHILOSOPHER.....	98
Background.....	98
Wes on Decision Making.....	101
Primary decision making processes: Oughtness and obedience to a vision.	101
Other aspects of decision making.	103
Wes on Creativity	108
A key to creativity: Disparate ideas, big picture, and a reliance on history.	109
Other aspects of creativity.	112
Conclusions.....	117
CHAPTER SIX: THE PASSIONATE SOCIAL ENTREPRENEUR.....	119
Background.....	119
Jim on Decision Making.....	122
Primary decision making processes: Mental models and pattern recognition.	122
Other aspects of decision making.	125
Jim on Creativity.....	131
A key to creativity: New types of solutions and combining disparate ideas.	132
Other aspects of creativity.	134
Conclusions.....	140

CHAPTER SEVEN: REBEL WITH A CAUSE	142
Background.....	142
Susan on Decision Making	145
Primary aspects of decision making: Achieving consensus and win-win results.....	145
Other aspects of decision making.....	147
Susan on Creativity.....	151
A key to creativity: Possibility and new roles for people with disabilities.....	151
Other aspects of creativity.....	153
Conclusions.....	161
CHAPTER EIGHT: A MODERN DAY PIED PIPER	164
Background.....	164
Anne on Decision Making	166
Primary decision making processes: Information gathering, logic, and action.....	166
Other aspects of decision making.....	169
Anne on Creativity.....	175
A key to creativity: A big picture approach and tolerance for ambiguity.....	176
Other aspects of creativity.....	178
Conclusions.....	183
CHAPTER NINE: A MODERN DAY MEDICINE WOMAN	186
Background.....	186

Victoria on Decision Making.....	190
Primary decision making processes: Science, intuition, and trust.....	190
Other aspects of decision making.....	192
Victoria on Creativity.....	196
A key to creativity: Choosing an alternate path.....	197
Other aspects of creativity.....	198
Conclusions.....	207
CHAPTER TEN: THE CIVIC MINDED ENVIRONMENTALIST.....	209
Background.....	209
Wilma on Decision Making.....	211
Primary decision making processes: Analytic and action-oriented.....	211
Other aspects of decision making.....	213
Wilma on Creativity.....	221
A key to creativity: A lesson in civics and persistence.....	223
Other aspects of creativity.....	225
Conclusions.....	231
CHAPTER ELEVEN: A MUSICIAN WITH UNCOMMON RHYTHM.....	233
Background.....	233
Aaron on Decision Making.....	235
Primary aspects of decision making: Information based and action-oriented.....	235
Other aspects of decision making.....	237
Aaron on Creativity.....	241
Primary qualities of creativity: Risk-taking and persistence.....	243

Other qualities of creativity.	246
Conclusions.....	251
CHAPTER TWELVE: CROSS-CASE ANALYSIS.....	253
Introduction.....	253
Purpose of the Study.....	253
Research Questions.....	254
Methodology.....	255
Cross-Case Analysis Results.....	256
Cross-case analysis—Decision making.....	256
Cross-case decision making summary.....	275
Cross-case analysis—Creativity.....	276
Cross-case creativity summary.....	292
The Intersection of Decision Making and Creativity.....	293
Conclusions.....	294
CHAPTER THIRTEEN: DISCUSSION.....	296
Introduction.....	296
Purpose of the Study.....	296
Research Questions.....	298
Methodology.....	298
Modifications Made and Lessons Learned During the Unfolding of the Research.....	299
Nonprofit and for-profit differences.....	299
Age differences.....	301
Scenarios proposed for use in the study.....	301

The issue of emic/etic.	302
Describing the MacArthur Fellows as geniuses.....	305
A Question of Theory	306
The Limits of Theory	307
Final Insights From the Data.....	309
Differences with respect to gender.	309
Differences with respect to ethics.	310
Dealing with harsh criticism and separating emotion from response.	311
Action, persistence, and risk-taking: A trifecta for success.....	312
Another threesome that supports creativity.	313
Openness to new ideas and possibility.....	314
Failure, resilience, and learning.....	316
Implications for Practice	318
Vocation and avocation.....	318
The power of gestalt.....	318
Work ethic.....	319
Implications for Future Research.....	319
Limitations	320
Conclusions.....	321
A Postscript.....	323
REFERENCES	324
APPENDIX	
A. Interview Guide	331

LIST OF TABLES

Table 1. Study Participants and Their Work Interests256

Table 2. Approaching Decision Making Using Logic259

Table 3. Intuition, Decision Making, and Creativity282

Table 4. Tolerance for Ambiguity and the Pursuit of Creativity284

Table 5. Passion and the Pursuit of Creativity286

Table 6. The Importance of Having Support From Mentors290

Table 7. The Importance of Persistence in the Pursuit of Success292

CHAPTER ONE

INTRODUCTION

In August 1942 the leadership of the allied forces in Europe planned and executed a raid on the city of Dieppe, France. Six thousand allied troops landed on the beaches of Dieppe to capture the city from the Germans and establish a foothold for the allied forces in Europe. Regrettably, the raid was no surprise to the Germans. Also, since the Germans had occupied the city for two years, they had established significant fortifications on the cliffs overlooking the beaches and had no trouble repulsing the advancing troops. Approximately 4000 of the invading troops (mostly Canadians) were either killed, wounded, or taken prisoner on the beaches, having never advanced from their landing points (Neilands, 2005). More Canadian deaths were reported on that August day than on any other day in the history of Canada. The raid was poorly planned, had little chance of success, and represented a low point in World War II battle decision making. Click footnote to see video of the raid that is a collection of both Allied and German footage.¹

While the Dieppe Raid had been a dismal failure, it did point out the issues that the allied command faced as it made plans to retake Europe through France. There was a key problem. The Germans had occupied and fortified all of the French deep-water ports making invasion through those ports impossible. The situation was also complicated by the fact that Allied invading forces could disembark at most coastal points, but the deep keeled boats that were necessary to transport the heavy and bulky cargo of armaments

¹ http://youtu.be/MSKK_n8VWek

and supplies needed to support the invasion would require a deep-water port and dock-side cranes to offload the supply-ships' cargo.

The Allied answer to this conundrum was the secret creation of the Mulberry Artificial Harbor. Vice Admiral John Hughes-Hallett envisioned a portable harbor complete with cranes and other anchorage requirements. His unique concept of a portable harbor represented an example of creative thinking where a problem was reframed to suggest a novel solution. If a deep-water port was necessary and none were to be had on the French coast, a harbor needed to be built in England and transported across the English Channel to serve the invading forces. The decision was made to build the Mulberry Harbor, and the artificial harbor was transported across the English Channel and installed just after allied forces invaded France on June 6, 1942.

The Mulberry Harbor was a critical link that supported the invasion. It provided facilities needed to offload critical armaments—including tanks, armored vehicles, and ammunition—as well as food and medical necessities that had to be at hand to support the advancing allied forces. Port Winston, the name for the Mulberry Harbor that was installed at Arromanches France saw heavy use. In the 10 months after D-Day, it was used to land over 2.5 million men, 500,000 vehicles, and 4 million tons of supplies for the allied army in France (A. R. Lewis, 2013). Click footnote to see a description and photos of the Mulberry Harbor.²

These two scenarios taken from World War II—the failed allied forces raid on the City of Dieppe and the successful building of an artificial harbor at a place that the Germans had not heavily fortified—demonstrated a lack of creative thinking, in the first

² <http://www.britannica.com/EBchecked/media/40813/Ambulances-on-a-Whale-floating-pier-of-the-Mulberry-artificial?topicId=396732>

case, and the presence of creative thinking, in the second. In wartime, such thinking can make the difference between defeat and victory. In day-to-day living, creative thinking can also improve decision making as men and women enact their personal and professional lives.

Background of the Study

Human decision making has profoundly influenced the health and, even, the very existence of our planet. As a result, understanding how individuals make decisions has been a subject of continuing interest to researchers (Campitelli & Gobet, 2010; Kahneman, 2011; Libby & Fishburn, 1977; Simon et al., 1992). Moreover, leader decision making has impacted the progress of society through economic and governmental organizations (Kahneman, 2011; Simon et al., 1992), has affected organizational health and survival (Eisenhardt & Zbaracki, 1992), and continues to be one of the most important tasks that any leader performs (Tichy & Bennis, 2007). Eminent decision theorist, Herbert Simon, pointed out, “The work of managers, of scientists, of engineers, or lawyers—the work that steers the course of society and its economic and governmental organizations—is largely work of making decisions and problem solving” (Simon et al., 1992, p. 32).

Human creativity has also been related to the concept of decision making. Feldhusen and Goh (1995) have contended that the definition of creativity is interwoven with the definitions of critical thinking and decision making. Creativity, they have suggested, is a complex phenomenon that manifests itself as a process within humans, and the success or failure of the creative process influences outcomes. Sternberg (2006) agreed, and in his opinion, creativity may be manifested in decision making. Within the

creative process, humans may employ aspects of intelligence, knowledge, personality variables, motivation, and environmental aspects (Lubart, 1994). In the end, however, being creative is insufficient; individuals need to make decisions to use their creative skills (Sternberg, 2006). Therefore, it could be said that creativity and decision making are partners in finding solutions to problems.

Theories of decision making in this research. Humans have been interested in decision making since early times and some scholars, perhaps in jest, have suggested that humans actually modeled their decision making after the decision making practices of the 4th century B.C. Greek gods (Zanakis, Theofanides, Kontaratos, & Tassios, 2003). Since the history of decision making is lengthy, distilling decision making models into a limited number of general types may help the reader understand this age-old process. Theories of decision making, in fact, can be organized into two broad categories.

The two categories that I have created in this proposal are the Allison and Zelikow Models of Decision and the Heuristics Model. Models of Decision refers to the important work of Allison and Zelikow (1999) who described three lenses of decision making that, when examined together, could explain, or at least begin to explain, decision making. The authors' decision theory is captured in their popular book, *Essence of Decision: Explaining the Cuban Missile Crisis* (Allison & Zelikow, 1999).³ Within the Allison and Zelikow Models of Decision category, I have retained the author's original three models: the Rational Actor Model, Organizational Behavior Model, and Governmental Politics Model.

³ Allison originally published the book in 1971. In 1999, because of new materials available (including tape recordings of the U.S. government's proceedings), he rewrote the book with Philip Zelikow.

The second broad category of decision making is the Heuristics Model. I use this overarching moniker to categorize diverse research theory that involves heuristic analysis. Like the Allison and Zelikow (1999) Models of Decision category, the Heuristics Model is a combination of discrete decision making models that all use heuristic analysis as the basis for arriving at a decision. Heuristic analysis refers to the strategies and tactics that are systematically applied to a problem. Using a specific heuristic is intended to help the decision maker more accurately and more quickly solve a problem. In such theories, individuals employ various aids and shortcuts to enhance learning, illuminate strategies, and improve performance. Theories I included under the heuristics moniker are Image Theory, Cybernetic Decision Theory, Contingency Theory, Elimination by Aspects Theory, Template Theory, and Ecological Decision Making Theory. While the goal of all theories in the Heuristics Model is to simplify decision making, the success of such models depends upon the appropriateness of the strategy in the specific problem space and on the individual decision maker's ability to appropriately apply strategies for analysis.

Each of the theories in the two categories of decision making described in this research has shortcomings. There is no perfect theory that represents a comprehensive or complete theory of decision making, but the categories in this study and the underlying models that are represented embody the nucleus of relevant theories in decision making against which any new theory should be compared. Furthermore, these theories have gained mainstream acceptance by eminent decision making theorists.

Rationality-based theories. Historically, and even in present day discussions, economists have associated decision making with the concept of rationality (Simon,

1955). This concept suggested that decision makers operated from an internal locus of control and attempted to maximize their preferences and self-interests. Tversky and Kahneman (1986) claimed that, in economics, the concept of human rationality was accorded the weight of self-evident truth.

Herbert Simon's research challenged some of the assumptions of human rationality, and therefore, the whole field of economics. Specifically, Simon challenged the Hobbesian notion that people were always consistent and value-maximizing (Eisenhardt & Zbaracki, 1992). While continuing to see human behavior as purposeful and conceding that cognition was a salient factor in decision making, Simon developed a theory of *bounded rationality* in decision making that acknowledged limitations concerning the human capacity to act rationally (Morgan, 2006; Simon et al., 1992). Rationality, Simon claimed, was limited by human cognitive ability and the finite information available concerning any decision scenario. He developed the concept of *satisficing*, the notion that people do not maximize their preferences but settle for options that are simply satisfactory or "good enough" (Simon, 1955, p. 118).

Over the years many researchers have challenged rationality as a viable foundation for decision making theory (Zey, 1992). Even Simon's efforts to scale back the notion that human beings always attempt to maximize their preferences and his consideration of human rationality as *bounded* have been met with skepticism (Etzioni, 1992).

Perhaps the best that can be said about decision making theories grounded in the notion of rationality is that such theories embrace the concept that decision making is rooted in logic. While rationality is an established concept that has long been criticized,

many modern models are still built on the underlying notion of human rationality, and the concept has remained prominent in the literature (Campitelli & Gobet, 2010).

In their book *Essence of Decision: Explaining the Cuban Missile Crisis*, Allison and Zelikow (1999) renamed the rationality gambit the Rational Actor Model. In this model, decision makers have clearly defined goals and preferences that they attempt to maximize. Decisions are explained by finding a logical link between the decision that was made and the preferences the decision maker has embraced. Indeed, when one is trying to make sense of particular decisions, one normally works backwards and infers a decision maker's preferences by examining the choices the decision maker has made.

In the Rational Actor Model, organizations are anthropomorphized. The assumption is that organizations, like individuals in economic theory, have agreed upon priorities and, like individuals, are intent on maximizing their priorities. Since this may be a functional fiction in some cases, additional decision making criteria needed to be incorporated to create a comprehensive theory that would mesh well with reality. Consequently, Allison and Zelikow (1999) articulated two additional models of decision making that take into account organizational realities. One model focused on the organizational routines and standard operating procedures that constrained organizational and individual decision making options; the other focused on the political processes required for an organization or an individual to make decisions.

Organizational behavior model of decision making. Allison and Zelikow (1999) explored the need to consider the parameters and constraints of organizational behavior in decision making. Organizations' practices, procedures, and policies may inhibit decision makers from making decisions within an organization or, alternately, may require the

adherence to certain standards. Individuals, even those with significant power, may be constrained from enacting decisions in a particular way because these organizational routines prohibit or require certain behaviors and actions.

Organizational constraints may constrain decision making at both the individual and the organizational level. For example, Allison and Zelikow (1999) proposed that the Soviet missiles installed in Cuba in 1962 were not initially camouflaged because, despite an overall goal to keep the operation a secret, Soviet organizational procedures for installing nuclear units did not specify a requirement to mask construction of the site. Therefore, commanders in charge of this phase of the operation simply failed to take the additional step to disguise the construction site and the missiles. Their standard operating procedures were set based on military procedures used within the Soviet Union and not based on the overarching goals of the Soviet government in the particular situation.

Political decision making. Allison and Zelikow (1999) recognized that organizations are not living, breathing entities. Rather organizations are made up of individuals who have individual goals and objectives that may be described as political agendas. In an organizational setting, individuals get to pursue their personal agendas if they have sufficient power to force an organizational decision. If individuals do not have the outright power to force a decision, they must bargain, barter, and maneuver in order to influence decisions and impact outcomes. However, research has suggested that decision making is often made more complex because of the political maneuvering that is required in such situations (Allison & Zelikow, 1999; Eisenhardt & Zbaracki, 1992; Hickson, 1987).

For example, Allison and Zelikow (1999) pointed out that the presence of Soviet nuclear missiles in Cuba posed not only a security dilemma for President Kennedy, but also posed a thorny political issue. While President Kennedy had the power to make the decision on how to react to the Soviet threat in Cuba, he also had to concern himself with the American public's perception of his response. As a result of the 1961 failed Bay of Pigs operation where his judgment and resolve had been questioned, and because Cuba was perceived by the public to be a continuing threat, President Kennedy, therefore, had to weigh his response options to the Soviet missiles while taking into consideration political ramifications at home. He not only needed to force the missiles to be removed to protect the nation's security, but he had to also appear decisive and strong in his dealings with the Soviets and the Cubans because the Congressional midterm elections were only weeks ahead and many Democrats were running on his stated position on Cuba.

There is also a connection between the rationality and political models of decision making. Using Kuhn's (1962) definition that a paradigm refers to fundamental and critical assumptions on which theories and models are developed, it should be noted that rationality, as a paradigm, is assumed to underlie political models of decision making. While individuals may make decisions that are based on political motivation, there is always the underlying assumption that the political stance influencing the decision scenario is also rational. Once again the concept of rationality in decision making is old, but its influence is hard to dispute.

Heuristic-oriented theories of decision making. Schwenk (1984) suggested that complex, ambiguous, or uncertain decision scenarios are simplified using what he called

heuristics: strategies that serve as a way to streamline deductive efforts to reach a decision. More recently, Kahneman (2011) reiterated this point recognizing that numerous decision making theories have posited that an individual employs a variety of shortcuts and decision aids in the pursuit of a decision. For instance, Image Theory depends upon the ability of a decision maker to estimate the difference between a desired state and a current state to judge the correctness of a decision. Cybernetic Decision Theory relies on successive approximations of the current state to help the decision maker estimate moves to reach a solution. Contingency Theory uses analytic and nonanalytic aids to help solve a problem. These aids may be considered to be on a continuum; some aids being as simple as paper and pencil to calculate solutions, or at the other end of the spectrum, as complex as computer simulations. Elimination by Aspects Theory relies on a systematic elimination of possible alternatives in a search for the one best solution. Template Theory refers to the knowledge acquired by an expert that can be mentally stored in *chunks* for use in solving future problems. Ecological Decision Making Theory considers how experts use cues to investigate decision making scenarios.

Creativity constructs. While there has not been significant theory development around the topic of decision making by creative individuals, researchers have considered the nature of creativity (Sternberg, 2006). Initially researcher interest concerned how creativity could be defined and evaluated (Lubart, 1994), but more recently, with creativity considered to be a valuable commodity in the business world, teaching creativity has gained appeal (Fleming, 2012; Styhre & Eriksson, 2008).

Researchers have suggested that creative thinkers have a unique way of looking at decisions. These creative thinkers have a cognitive ability to generate original ideas and

solutions that may be used in the decision making process (Casakin, Davidovitch, & Milgram, 2010). This ability is termed *creative thinking* and is a skill that can lead to (a) noticing some obscure but important point in the situation (McCaffrey, 2012), (b) perceiving and defining problems in a different way (Gupta, Jang, Mednick, & Huber, 2012), and (c) formulating unpredictable and unorthodox solutions (Casakin et al., 2010). According to scholars who are experts in the field of creativity, creative thinkers may use different cognitive processes, have varied personality traits, may be uniquely motivated, and may favorably respond to a supportive environment (Lubart, 1994). Furthermore, the degree to which these creative capabilities are expressed by or available to an individual will impact that person's ability to be creative.

As research in creativity has a shorter history and continues to emerge, theory development in the field is limited. While researchers described earlier in this section have proposed possible attributes that may be present in creative individuals, have suggested aspects of creative thinking, and have outlined possible motivational concepts and environmental supports, there are only a limited number of creativity constructs that have been proposed based on this research.

Statement of the Problem

There has been significant research conducted on the subject of decision making, and there has also been some noteworthy research done on creative thinking, but there is a knowledge gap at the intersection of these two topics. While creativity scholars have recognized that creativity is linked to decision making (Feldhusen & Goh, 1995; Hong & Milgram, 2008; Sternberg, 2006), I have found no research that spans the two fields. As a result, no in-depth understanding has been developed about the strategies and processes

that creative thinkers use in coming to a decision. Moreover, it is unclear if creative thinkers all approach decisions in the same manner or employ unique approaches and practices to illuminate a decision. Furthermore, there has been no research conducted on how decision making by creative thinkers might or might not resemble more traditional theories of decision making that have been proposed. Finally, since there has been little research conducted in this area, there is insufficient information available to construct a typology of decision making practices used by creative thinkers, and no tenets of the process have been investigated in light of the possibility that there might be a separate theory of decision making.

In the realm of creativity research there has been little time spent studying how creative thinkers look at the process of creativity. Questions remain about how creative thinkers develop novel ideas and what processes they use to expand the impact of their innovative ideas. Moreover, there are only a few studies that have investigated the combination of attributes that creative thinkers employ in their creative process.

Purpose of the Study

This study was a partial remedy to the research shortfall described in the previous section. The study did add to the knowledge base on decision making by examining the decision making strategies and processes of creative thinkers. Relying on in-depth interviews with a sample of MacArthur Fellows who have led either nonprofit or for-profit organizations, I sought to better understand how these creative thinkers make decisions in both their professional and personal lives.

Another goal of the study was to investigate if creative thinkers demonstrate consistent decision making strategies and processes across the sample and in various

decision making contexts. From this goal, I sought to understand if creative thinkers employ unique decision strategies or if there is some commonality in how creative thinkers approach a decision.

Another purpose was to describe the strategies and processes used by creative thinkers in their decision making and remark on how their strategies and processes resemble the ones suggested by established decision making theories. In particular, I compared the strategies and processes of participant decision making with two categories of decision making: Allison and Zelikow's (1999) Models of Decision and the Heuristics Model.

With respect to the practice of decision making, another goal of the research was also to describe any new typology of decision making strategies and processes that were demonstrated by the creative thinkers. The hope was that a classification of *best practice* strategies could be created to provide insight into the overall process of decision making and that those useful practical approaches identified might help the less creative decision maker.

Additionally, if the data of the research study did suggest a pattern and consistency of decision making approaches by the participants, what could be said about any theoretical foundational premises that were observed? In simpler terms, if the study suggested a new theory of decision making in creative thinkers, what would be the foundational tenets of such a new theory?

With respect to creativity, the study investigated how the creative thinkers engaged their creativity. The study looked for aspects of creativity that support the participants' work as they search for novel solutions. The way that the participants

approach, activate, and express their creativity was also compared with how creativity researchers have examined the subject.

Research Questions

The overall purpose of this research study was to gather data that would begin to fill the knowledge gap concerning how creative thinkers make decisions. The following research questions guided the study:

1. What decision making strategies and processes do study participants use to make decisions?
2. How are the strategies and processes employed by different participants similar and different?
3. How do the decision making strategies and processes employed by the study participants relate to established decision making theories described in the scholarly literature? Specifically, how, if at all, does participant decision making relate to the Rational Actor Model, the Organizational Behavior Model, the Governmental Politics Model, and to theories that employ exploratory problem solving techniques that the study characterizes as the Heuristics Model?
4. How do the decision making strategies and processes employed by study participants relate to creativity constructs identified in the scholarly literature? Specifically, how, if at all, do creativity constructs such as intelligence and knowledge, personality traits, motivation, and environment relate to participant decision making?
5. Can a typology of decision making strategies and processes be created from the decision making dimensions identified in the participants? Do the MacArthur

Fellows' decision making strategies and processes suggest a new decision making theory, and, if so, what are the foundational premises of the theory?

Study Design Overview

In this research, I approached the decision making arena by asking creative thinkers how they go about understanding, analyzing, and constructing a decision. I wanted to investigate how individuals who are deemed to be creative approach a decision. The goal was to illuminate a broad range of decision making dimensions present in the participants.

The study examined the decision making strategies and processes of a sample of MacArthur Fellows. Individuals who have been awarded the MacArthur Fellowship have been nominated and chosen based on their demonstrated creativity and their potential for future contributions. While all MacArthur Fellows may be considered to be creative thinkers, some have demonstrated their creativity in specific ways. Of particular interest in this study were those MacArthur award winners who have used their creative skills in nonprofit leadership or for-profit leadership. Additionally, I stratified my sample to provide as much gender and age balance as possible.

Each of the eight study participants selected was interviewed. The goal of each face-to-face interview was to more fully understand the individual decision making strategies and processes of the participant. Additionally, individual creative processes were investigated to better understand how the participants activate, develop, and express their creativity. My intent was to provide a safe and friendly environment to examine and discuss this highly personal process. Furthermore, I held open the possibility that an

additional interview might be scheduled if there was a need to clarify participant responses.

Data analysis proceeded with data coding and the construction of eight cases, one for each participant in the study. I also employed cross-case analysis because the data suggested logical comparative aspects. From the data, I drew conclusions about the creativity and decision making of the participants.

Limitations of the Study

Despite this study's potential for clarifying and describing decision making in creative people, the study must be considered in the full light of its limitations. The constraining issues of the study involved questions of (a) data collection methodology, (b) researcher subjectivity, and (c) generalizability due to sample size.

This study depended entirely on accurate participant representation of internal decision making and creativity processes. As it is unlikely that all participants had eidetic memories and had full access to their personal processes of decision making and creativity, the dependability of some results may be questioned. Additionally, I had only the interviewee's word that he or she made a decision or created novel outcomes as described. While it might be posited that participants have little reason not to share their actual decision making and creativity processes, results may be more questionable vis-à-vis situations where ethical dilemmas were central in the decision scenario. In such situations, participants might have been unwilling to freely share their decisions, especially if they thought that they might be critically judged for their approaches or reasoning.

Another limitation was my subjectivity as a researcher. Since I have investigated and accessed my own strategies and processes used for decision making and creativity, I might have focused on strategies evident in my participants that resembled my own processes rather than highlighting strategies with which I was unfamiliar. Of course, recognizing this potential bias based on my personal subjectivity or what Peshkin (1988) called the *subjective I's*, helped me to overcome my partiality.

With respect to limitations of generalizability, the sample size of eight might not have generated a sufficiently wide spectrum of decision making or creativity processes that would be useful in drawing conclusions. With a limited number of participants, the range and texture of decision making strategies and creative processes might have been constrained.

Significance of the Study

There are at least two ways that this study might be considered significant. Significance may be found through (a) sample size (again) and (b) heuristic import.

I have already addressed the small sample size in the limitations section of this proposal. However, I now readdress sample size with respect to its potential significance. While the sample size of eight was not sufficient for drawing conclusions where “lawful regularities” is the goal (Donmoyer, 1990, p. 177), the data collected were useful in bringing to light important questions that might suggest the next generation of hypotheses that could be the starting place for more studies.

Also, the study provided heuristic insights (Donmoyer, 1990). Based on this study’s conclusions, individuals may be able to improve, or at least reflect upon, their own decision making practices, integrating some of the creative strategies and processes

that were illuminated. Therefore, revelations about the decision making of the creative participants provided insight and a deeper understanding of the overall condition of individual decision making and creativity in all situations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The first chapter of this dissertation argued that additional research was needed to discover how creative individuals make decisions and activate their creativity on a day-to-day basis. Additionally, though considerable work has been conducted around the notions of both decision making and creativity, there is a need to link these concepts and explore the impact of creativity on individuals' decision making processes. The goal of this literature review is to highlight and explain the importance of the pertinent scholarly research work already conducted in the areas of decision making and creativity and meaningfully join the two bodies of literature to set the stage for the proposed study that focuses on decision making in creative people.

In order to more fully understand how researchers think about decision making, the first part of this literature review discusses the decision making research broadly and then explores relevant theories that describe and explain, in more detail, how researchers consider decision making. The review pays particular attention to how various scholarly fields have contributed to our understanding of decision making, and how and why researchers have theoretically approached the field from particular directions.

In some cases, evidence from different fields of research links to each other and has served to confirm or disconfirm results advanced in other fields. However, sometimes the research discussed has not been linked, but, nonetheless, adds to the understanding of decision making.

In the second part of this chapter, literature and research that describe human creativity are reviewed. Researchers in this area have focused on how creativity is often expressed and what attributes might be present in creative individuals. Also discussed here are some of the prominent approaches to creativity.

The Genesis of Decision Making Research

The decision making literature had its genesis in two different fields: economics and psychology (Eisenhardt & Zbaracki, 1992; Payne, 1973). Even though economics and psychology are both part of the social sciences, each has its own traditions and foci. Economics and the related disciplines of statistics and operations research approach the field of decision making from the perspective of rational choice. Economists, mathematicians, statisticians, and operational research experts ground their theory in mathematical logic and pursue studies that evolved from the logical analysis of games of chance and resulted in the development of the Theory of Choice (Tversky & Kahneman, 1986). Psychologists took the field in another direction (Simon et al., 1992). This group approaches the field of decision making by analyzing how individuals assess risk and value (Tversky & Kahneman, 1986).

Despite different originating points and research foci, all decision making theory recognizes that human efforts to make decisions are a basic, necessary, and recurring challenge that involves personal determination to understand problems and opportunities. Therefore, the preponderance of decision making research aims to support this challenge by developing theory that explains and prescribes ways to improve decision making. Both economics and psychology have contributed to an understanding of decision making, but to date no unified theory has emerged.

Decision Making: Differences in Definition and Scope

Given the importance of decision making as a common and everyday human activity; understanding how individuals make decisions has long been a subject of interest to researchers (Payne, 1982; Svenson, 2003). Scholars have speculated on the process for centuries. As early as the 4th century B.C. the Greeks, notably Xenophon, attempted to make sense of economic and social decision making (Zanakis et al., 2003).

Inquiry about decision making has had alternate names. Tversky (1969) referred to the *study of preferences* and the *psychology of choice*. A few years later Tversky (1972) added a synonym, *theories of choice*, but others thought of the field as the study of *judgment and choice* (Payne, 1982). In the same article Payne (1982) also referred to decision making as the basic function of *information processing* and also as *decision behavior*. March and Shapira (1992) talked about *individual choice behavior* and *behavior decision theory*. Zey (1992) articulated what she called *reasoned choice models*.

Since there was no consensus about how to name the phenomenon of decision making, not surprisingly, scholars also had different beliefs concerning individual motivations and purposes for making a decision. Moreover, they did not agree about the conditions under which decision making occurred. Einhorn and Hogarth (1981) saw decision making behavior as *purposeful and directed*. Payne (1982) observed that decision making was employed to make a *judgment* or a *choice*. However, he noted differences in the two descriptors. He talked about *judgment* as the successive presentation of individual alternatives while *choice* was simply the selection of the most preferred alternative. Messick and Bazerman (1996) took a more general view and

commented that *judgments* led to decisions. Zey (1992) suggested that the purpose of making decisions was to maximize rewards and decrease costs. Schwenk (1984) commented that the decision process was closely linked to the concept of uncertainty. Payne (1973) concurred and identified risk as an important element in the study of decision making. In later research Payne (1982) generalized the definition of decision making by saying that it was “a highly contingent form of information processing” (p. 395).

As researchers discussed the descriptors of and motivators for decision making, the difference between decision making and problem solving came to light. Simon characterized decision making as evaluating and choosing between alternatives while he assigned problem solving the role of fixing agendas, setting goals, and designing actions (Simon et al., 1992). From this distinction one can conclude that Simon saw decision making as a process within the larger concept of problem solving, located between setting goals and designing actions. However, Mintzberg, Raisinghani, and Théorêt (1976) parsed the words differently. These researchers saw a decision as a commitment to action and a decision process as a set of actions. This suggested that the decision process was a synonym for problem solving. Suffice it to say that a number of researchers have distinguished between *problem solving* and *decision making* while other scholars treated the terms decision making and problem solving as synonyms.

In this paper I consider decision making and problem solving to be related but different. I take the position that problem solving involves taking action based on a choice of alternatives whereas decision making simply acknowledges that a choice has been made. Furthermore, my stance assumes that the goal of a decision is to maximize

goals and preferences, but the act of making a decision does not guarantee that the best choice of alternatives has been made.

The underlying factors contributing to the making of decisions has also been a subject of debate among scholars. Beach and Mitchell (1978) suggested that the decision strategy employed depended upon the type of problem, the surrounding environment, and the personal characteristics of the decision maker. Tversky (1972) lamented that decision makers might have simply looked for a decision rule that seemed sensible and was easy to defend. Payne (1982) reported that decision behavior was sensitive to minor changes in task and context. Payne also believed that an understanding of decision making had to incorporate concepts drawn from cost/benefit analysis, perceptual learning, and experience (adaptive learning). Abelson (1981) pointed to the way that stereotyped event sequences which he called *scripts* could impact decision making.

Important Studies in the Development of Decision Making Theory

The literature that I have chosen to review represents mainstream research efforts that have shaped the field. Some of the studies that I have reviewed were conducted in earlier decades, but despite their age they represent the foundational efforts in the field and still inform present-day researchers' efforts.

Theories involving rationality. The concept of human rationality that leads to the maximization of utility has been and, even today, continues to be a taken-for-granted assumption in the field of economics. As the underlying paradigm for much economic theory, rationality, according to Tversky and Kahneman (1986), was accorded the weight of self-evident truth. In the economist's world, choice was directed by utility and the goal was always to maximize utility (Simon, 1993).

Rationality and bounded rationality. Herbert Simon's research challenged the assumptions of human rationality and, therefore, the whole field of economics. Specifically, Simon challenged the Hobbesian notion that people were always consistent and value-maximizing (Eisenhardt & Zbaracki, 1992). While continuing to see human behavior as purposeful and conceding that cognition was a salient factor in decision making, Simon suggested the concept of *bounded rationality* in decision making that acknowledged limitations on the human capacity to act rationally (Morgan, 2006; Simon et al., 1992). While human decision making showed evidence of having a logical structure (Campitelli & Gobet, 2010; Mintzberg et al., 1976), Simon pointed out that humans were constrained by their limited cognitive ability and the finite information they had available to be used to make decisions (Eisenhardt & Zbaracki, 1992; Simon et al., 1992). Click the footnote to see a video interview with Herbert Simon explaining bounded rationality.⁴

Having recognized that humans have a limited cognitive ability, Simon posited (as a result of a number of quantitative studies) that, despite the fundamental and well-accepted economic theory of optimization (Campitelli & Gobet, 2010), humans were more likely to *satisfice* when making a decision. The term *satisfice* referred to the decision making practice that was part satisfying and part sufficing. Satisficing meant that decision makers chose a decision that exceeded some personal criterion or standard inherent in the decision arena rather than delaying a decision in search of an optimal alternative (Morgan, 2006; Simon et al., 1992). Mintzberg et al. (1976) added that satisficing was the result of reducing the complex environment to a series of simpler

⁴ http://youtu.be/ErnWbP_Wztk

models and that decision makers took shortcuts by only positing near term decision results.

Findings from a range of studies completed by Simon and his associates did point to the basic logic and structure that underlies decision making and demonstrated that decision making could be systematically described (Mintzberg et al., 1976). Simon's studies were foundational in decision making research, and Simon's legacy was the notion that humans, while not always faithful to logic, did investigate decision situations using some empirical standards and that the task, the characteristics of the environment in which the decision was situated, and the distinct features of the scenario were important factors in decision making (Campitelli & Gobet, 2010).

In 1978 Herbert Simon was fittingly honored for his work when he won the Nobel Prize in economics. The coveted prize was awarded for his research into the human decision making process within economic organizations and it highlighted his stature in the field. While his research did not consider the nuances of individual decision making, the groundwork covered in his research inspired the work of other scientists.

The rational actor model of decision theory. Notable authors, Allison and Zelikow (1999), introduced the Rational Actor Model in their popular book, *Essence of Decision: Explaining the Cuban Missile Crisis*. The authors explained how the model has yielded insights when considering decisions made by individual or groups of people who have a consistent value system and who proceed through the decision scenario to find a calculated solution to a strategic problem. This model has much in common with rationality theory and assumed that specific goals and objectives were defined, that alternate solution alternatives were considered, and that consequences of any solution

have been weighed to come to a *best* alternative. A choice was made when the alternatives had been considered and the most beneficial solution, often from a cost/benefit prospective, had been found. While this model suggested that individuals were purposeful, it did not guarantee a correct decision as all alternatives might not be knowable and even the best decision might not maximize results (Allison & Zelikow, 1999).

Therefore, rationality models of decision making, including Allison and Zelikow's (1999) Rational Actor Model, have shown that while human intentions are purposeful, various human inconsistencies limit the overall effectiveness of such models. However, despite the findings, rationalism, as a paradigm, still underlies many other decision making theories such as Image Theory, Contingency Theory, and Ecological Decision Theory. In fact, most decision making theories presume rationality because it is difficult to construct a theory based on irrational behavior. In other words, even in the face of substantial conflicting evidence, humans, including researchers in decision making, prefer to believe that their actions are rationally directed and can be rationally explained.

Intransitivity of preferences. Tversky, an eminent psychologist, also conducted important early research on the study of preference and choice that underpinned much of the scientific inquiry into decision making. His studies demonstrated that people were inconsistent in their preferences (Tversky, 1969). Tversky observed changes in taste that were not linked with systematic changes in the experimental model, and he deduced that the observed inconsistencies were an inherent variability or momentary fluctuation in the participant's evaluative process. From these research data and the conclusions that he

drew, he determined that preference should be defined in a probabilistic fashion since choice was not always fixed (Tversky, 1969). He joined Simon when he concluded that humans did not consistently display rationality in their decision making, but he also questioned Simon's notion of bounded rationality because that construct still assumed that preferences were fixed.

The framing of decisions. Tversky and Kahneman (1986) continued to consider the shortcomings of Rational Choice Theory and the Theory of Bounded Rationality in their research. They concentrated on the concept of *framing*. They pointed out that framing enriched and complicated the analysis of choice because research results were impacted by how a choice was presented, contextualized, and displayed.

Hypothetical scenarios presented to research participants in a laboratory setting demonstrated that framing was important in determining the choices that participants would make. In particular, participants exhibited a standard pattern of risk *aversion* in gains and risk *seeking* in losses (Tversky & Kahneman, 1986). Clearly, if two different descriptions of a scenario that both internally represented the problem and that had equal meaning, but different wordings, led to changes in decision, Simon's Bounded Rationality Theory did not account for all the relevant factors in the decision making process (Tversky & Kahneman, 1986). To state the point another way: Since changes in framing could yield different results, the principle of invariance that underpinned Rational Choice Theory and was at the heart of Simon's Bounded Rationality Theory had been challenged, and the validity of rational choice models was severely compromised (Tversky & Kahneman, 1986). Based on the findings, Tversky and Kahneman (1986) concluded that, although, human rationality theories had an intuitive appeal because

rationality had long been accepted as a given, and that it was logical to think that people would systematically pursue goals and attempt to maximize outcomes, their research showed that people did not always choose the rational alternative.

Looking back over the history of decision making research, the publication of Tversky and Kahneman's (1986) work and the authors' development of what became known as Prospect Theory represented an important point in the development of decision making theory because the study exposed the differences in how various researchers understood the process of forming a decision. These disagreements were not trivial aspects of perspective; instead they were foundational differences that could not be ignored.

The disagreement pitted the two camps against one another and more research was conducted. The disagreement was exacerbated by new research that failed to replicate Tversky and Kahneman's (1986) findings concerning framing and suggested that the reason for the discrepancy in the results was due to an incorrect or partial frame imbedded within some of the scenario questions (Eisenhardt & Zbaracki, 1992). Also, framing effects could be eliminated if transparency in the problem or high-elaboration conditions existed (Takemura, 1994). However, in spite of the recognition of a methodological flaw in the original studies, further research showed that framing issues played a significant part in decision making. More specifically, different representations of the research scenarios (i.e., different framing) did have a marked effect on research results (Kühberger, 1995).

The framing issue, a reminder that humans are not always logical and that decision making was proving to be more complex than originally believed, consumed the

research community as claims and counter claims were articulated (Simon et al., 1992; Tversky & Kahneman, 1986). However, the controversy did serve to introduce alternative theories that recognized a greater complexity in human decision making. Eisenhardt and Zbaracki (1992) pointed out that moving beyond Simon's more simplistic paradigm of single goals and bounded rationality had led to a more realistic view of decision making. However, some scientists were reticent to discard the original models of choice (Beach, 1993). This point provided irony as these scientists, refusing to accept the results of the research that pointed to the human tendency to be less than rational, were actually providing more proof of this tendency.

It was also interesting that Payne (1982), who commented on the issues of framing, posited that the perceptions of framing might in some ways be hardwired into the human organism. He noted that people were normally unaware of framing effects and that they were uncertain how to resolve such inconsistencies in judgment when framing effects were highlighted and explained.

In 2002 Daniel Kahneman received the Nobel Prize in economics and was honored for his contributions to behavioral economics in the areas of judgment and decision making under uncertainty. In his Nobel Prize acceptance speech, Kahneman praised the work of his colleague and friend, Amos Tversky, who had died before the awarding of the prize, and acknowledged that the two should have accepted the award together. Click the footnote to view the video of Daniel Kahneman's Nobel Prize acceptance speech.⁵

Section summary on theories involving rationality. Foundational issues of human rationality consumed the decision making research community from the 1950s to

⁵ <http://www.nobelprize.org/mediaplayer/?id=531-.Uu1uCB6lRWs.gmail>

the 1980s, but these stalwart researchers, nevertheless, were pioneers in the field of decision making. Two of the pioneers were awarded Nobel Prizes, pointing out, not only the value of the research conducted, but also the importance of their research to the field of decision making.

Decision making within organizations. Organizational decision making contains characteristics of individual decision making because each person in a group may make a decision based on individual concerns while involved in the process of creating group solutions. However, since organizational decision making may also require group consensus (Eisenhardt & Zbaracki, 1992), individuals within the group need to work together to agree on a unanimous or negotiated organizational response to many questions.

While individual decision making is considered a complex process, group decision making may surpass individual decision making in complexity because of the intricacy and difficulty of reaching consensus. Group decision making may also be influenced by politics, which will be discussed in a later section. Concerning group decision making, Hickson (1987) quipped, “The social process of moving toward a decision is located nowhere in particular” (p. 178).

Organizational behavior model of decision making. Allison and Zelikow (1999), using alternate logic, have also considered the need to model organizational behavior in decision making. In their book, *The Essence of Decision: Explaining the Cuban Missile Crisis*, the authors explored situations where individual decision making was not the reason for action, but rather demonstrated that decisions were more the result of organizational outputs that guided actions based on standard patterns of behavior. In

such situations, individuals were either prohibited from making certain decisions, or, alternately, were required to make certain decisions because of existing practices, procedures, or policies that prescribed direction or action within the organization. These parameters and constraints, known as standard operating procedures, at times constrained individuals—even those with significant power—from enacting decisions in the course of conducting organizational operations.

Garbage Can Theory. Since organizational considerations can influence individual decision making, this literature review considers another theory of organizational decision making. Garbage Can Theory is addressed because it suggests that non-rational behavior can rule groups.

According to Hickson (1987) when Cohen, March, and Olsen proposed this group decision making theory in 1972, its unusual name piqued interest by the research community as it suggested a less refined approach to decision making than the Bounded Rationality Theory. Indeed, Hickson commented that the authors of this theory preferred to think of decision making as a garbage can with “tangled innards” rather than as a vision of rational orderliness (p. 184).

Eisenhardt and Zbaracki (1992) suggested that the theory’s name reflected the highly ambiguous settings in which organizations made decisions and was developed because nascent decision making theory had not paid enough attention to the environment where much of decision making was conducted—in a complex, unstable, and ambiguous world. The theory postulated that organized anarchies (decision situations) were present in organizations and that they were characterized by problematic preferences, unclear technology, and fluid participation by potential decision makers (Eisenhardt & Zbaracki,

1992). Unlike other descriptive theories, Garbage Can Theory proposed that there was no clear set of preferences in an organization and that an ill-defined group of ideas was the norm. Various kinds of problems were euphemistically dumped into the garbage can, and knowledge about the problems was gained through trial and error where no clear understanding of underlying causes was shown, and participants in the process came and went with no sustained focus (Eisenhardt & Zbaracki, 1992).

On one level this theory was quite complex as it recognized a number of discrete variables that were present in organizations during decision making. However, it was also a metaphor for the messy cognitive and political processes that organizations used to reach a decision. Garbage Can Theory may not represent a comprehensive explanation of organizational decision making, but it served to encapsulate the muddle that is the nucleus of decision making in organizations. While empirical evidence only modestly supported the central themes of Garbage Can Theory, findings showed stronger support when time frames were long, deadlines removed, and institutional forces were diminished (Eisenhardt & Zbaracki, 1992).

Section summary on decision making within organizations. The way in which organizations make decisions is complex. In order to make decisions in an organization, various components must be considered: the decision type, the diversity of decision makers, and the environment in which the decision is being made. Decisions may need to take into account organizational standard operating procedures and policies, the agendas of the individuals or groups of individuals making the decision, and elements of the culture. At times, decision making results may even lead observers to suggest that

organizational decisions are just choices extracted from a garbage can and that evaluative measures in the making of the decision have been eschewed.

Politics in decision making. Politics is a complex concept that deals with how people relate to each other in society. It is commonly seen as a competition between individuals or groups of individuals that seek power and control. As Eisenhardt and Zbaracki (1992) pointed out, the simplest political decision scenario occurs when the most powerful people get their way.

The roots of political decision theory lie in the political science literature of the 1950s (Eisenhardt & Zbaracki, 1992). The political arena, and the legislative process in particular, was seen as having a “conflictual nature” that emphasized winners and losers (Eisenhardt & Zbaracki, 1992, p. 22).

Politics in everyday life involves individual efforts, or the efforts of groups of individuals, to advance specific agendas, goals, desires, positions, and interests. Politics can take the form of a power struggle, a coalition, or even an individual feud (March, 1994). Whatever the situation, political approaches to decision making suggest that self-interested agents pursue their goals and seek to satisfy their preferences.

Morgan (2006) talked about “wheeling and dealing” (p. 150), March (1994) talked about “horse-trading” and “logrolling” (p. 151), and Steinbruner (1974) used the metaphor “pulling and hauling” (p. 140) to describe the political influences in the decision making process.

In politics, individuals were often assumed to be in disagreement on the issues and engaged in “bargaining” and “coercive maneuvers” to gain advantage (Steinbruner, 1974, p. 140). Additionally, researchers noted that politically motivated individuals

could have inconsistent preferences over time, and that decision makers in such situations did not always have a stable ranking of preferences (March, 1994). Nevertheless, presumably, political actors were always trying to maximize their preferences.

Furthermore, elaborate bargaining that extended the decision process could have unexpected consequences and rarely did any individual involved receive all that was desired (Steinbruner, 1974). The process could bring together people who were at best indifferent to each other; manipulating their causes or wishes in such a way that no one maximized preferences (March, 1994).

Decision making motivated by politics involved both trust and distrust (March, 1994). Distrust may be assumed based on the inherent competitive struggle in which individuals were engaged in order to maximize individual preferences. However, trust also figured in the equation. Since cooperation could also be part of the politics of decision making, and since bargains could unfold over time, there needed to be some sense that cooperative efforts would not be betrayed and that bargains would be fulfilled (March, 1994). The quid pro quo of the political bargaining process necessitated, at least, a temporary assumption of trust in order for the process to work.

The political process was evident when individuals interacted, but the issue of political tensions may also exist within the individual (Morgan, 2006). Each individual has personal goals and aspirations in multiple areas of life. These goals and aspirations are underpinned with values and beliefs that have developed over the life of the individual. It is not hard to imagine that there are situations where an individual feels an internal tension between competing goals. In such situations, adjudicating between rival goals may mean negotiating between multiple personal values, each important to the

individual, that makes the decision scenario highly personal and very emotionally charged. Such situations, often rife with tradeoffs, demonstrate how complicated decision making can be even on a personal level.

While politics is a general construct that has been considered to underlie decision making in both individuals and organizations, there are specific models of political decision making. These models extend the idea of politics beyond a construct and more specifically define how politics influences decision making. Following are three such models.

Governmental politics model of decision making. This model of decision making, proposed by Allison and Zelikow (1999), emphasized the importance of politics as a way of understanding and explaining complexities in decision making. The authors discussed this model in terms of goals that were not conceived by defining a consistent set of strategic objectives. Rather the objectives were based on a bargaining platform where individuals acted and reacted in response to the way that they saw organizational goals or even their own self-serving personal goals. The model recognized that there were many players in the decision matrix, each with an individual agenda. The field of decision making was characterized by “bargaining games” (Allison & Zelikow, 1999, p. 255), and it was reminiscent of game theory strategies that were employed by individuals as they attempted to reach their foremost objectives. Furthermore, Allison and Zelikow pointed to the disparate objectives of various players that might have been due to fundamental disagreements between reasonable people or could have been characterized by issues of asymmetric information, loyalty, or payback. While the details might have seemed complex, basically this model, like all political models, recognized the political

nature of all human interactions and the complex reasons that individuals act in a particular way. It also recognized the ways that people could attempt to *stack the deck* to achieve a particular outcome. The tools of the model include agenda setting, problem framing, manipulating the structure and rules of decision making, and influencing the channels of action (Allison & Zelikow, 1999).

Force model. This model suggests that each individual participant has a preference that can be represented by a number and some amount of political power. As the individual applies the relative power, the decision outcome reflects the net effects of the force applied (March, 1994).

As March (1994) pointed out, this model is a “simple and elegant” variation of philosophies of force (p. 142). Since the model variables—power, wishes, and decision outcome are related—manipulating the variables allows for a calculation of specific results. This simple model, however, broke down because it was unable to deal with more complex sets of decisions or multiple decision makers (March, 1994).

Exchange model. This model fundamentally assumed that individuals in the political decision arena each brought resources to the relationship. Resources were varied and might include money, property, knowledge, competence, access to others, rights and authorities, and information. Each person executed trades until the process ended when there were no more legal or mutually acceptable trades available (March, 1994). This model allowed for more complexity in the decision process, but was subject to all of the issues of trust, power struggles, coercive maneuvers, and unfixed preferences.

Section summary on politics in decision making. Much like the concept of human rationality, politics may be considered a fundamental, ever present, and significant paradigm that impacts much of human decision making and has become an assumed and uncontested construct that affects the way that humans make decisions. Some individuals consider that politics are *dirty* (Morgan, 2006). Politics may be considered dirty because the methods used may be underhanded, and shifting loyalties may suggest deceit. However, people still experience politics in day-to-day interactions. Even dealings with family and friends may contain a modicum of politics.

Heuristics used in decision making. The term, heuristic, is used in this literature review to describe the various decision making theories that allude to the use of techniques in decision making that aid—or at least are intended to aid—in problem solving, facilitating learning, and contributing to the decision making process. Some techniques, such as flipping a coin, may be so basic that they have little evaluative capability; others, however, may employ more sophisticated information processing skills. Not relevant to this study and, consequently not discussed in this review, are sophisticated algorithms programmed and processed on computers.

Newell and Simon (1972) discussed *fast and frugal* heuristics that were useful procedures that helped individuals reach a decision. The authors pointed out that the key to the successful use of heuristics was (a) the characteristics of the situation where the heuristic was employed and (b) the knowledge of the decision maker using the specific heuristic. If both conditions were appropriate, heuristics could be valuable aids or *rules of thumb* in decision making.

Schwenk (1984) agreed that decision makers used heuristic strategies and processes in an attempt to simplify their decision making. Schenk's research described a number of ways that research participants used heuristics as simplifying strategies. Strategies such as reasoning by analogy, problem simplification, value trade-offs, rejection of alternatives, and assessment of risks of alternatives were used in all stages of decision making and served as a way to streamline deductive efforts to reach a decision.

Tversky and Kahneman (1974) agreed that various simplification processes were economical and might be used to make the process of coming to a decision easier. However, the authors pointed out that while heuristics may be quite useful, they could also lead to severe and systematic errors because decision makers failed to apply statistical rules appropriately. In studies, the authors discovered that individuals who had incorrect or incomplete understandings of probability, frequency, and other statistical principles (Kahneman, 2011; Tversky & Kahneman, 1974), nonetheless employed their flawed personal heuristics. Campitelli and Gobet (2010) pointed out that the heuristic flaws identified in decision making often followed a pattern and were not random.

Tversky and Kahneman (1974) did not reject the importance of heuristics, but rather suggested that these simplification measures should not be used to dismiss, underestimate, or overemphasize factors in a decision. Once again, decision making was shown to be more complex than the theories used to explain it.

The conclusions of these researchers seemed to indicate that the simplification processes were appropriate if the decision makers were correct in choosing what to simplify. But the question was: How did a decision maker learn to simplify

appropriately? Was there a process that the decision maker used that could help achieve superior results?

What follows are discussions of some decision theories that were developed to accelerate and improve the decision making process. All employ some sort of heuristic strategy to aid decision making.

Image Theory. Beach and Mitchell (1990) abandoned the game theory and rational choice gambits that had been previously favored in decision making research. In their place the authors proposed Image Theory, a theory that described two types of decisions: progress decisions and adoption decisions. Progress decisions evaluated whether past decisions were being adequately carried out and adoption decisions involved making decisions to replace ones previously made that were either inappropriate or unachievable. According to Image Theory, decision makers used a mental model to compare expected and experienced events in a search for compatibility. If mental comparisons of expected and experienced events were compatible, decision makers were more relaxed in their analysis, but should the analysis suggest a discrepancy between expected results and those experienced, a more concentrated mental scrutiny and analytical investigation of the situation was undertaken. Research findings showed that decision makers actually employed different analysis processes depending on the degree of alignment between trajectory images (Dunegan, 1993).

These different modes of cognitive processing were labeled automatic and controlled (Dunegan, 1993). Given a compatible image between current and future path impressions, also defined as trajectory images, decision makers were predisposed to implement automatic modes of cognitive processing. Dunegan (1993) characterized the

automatic mode as initiating less scrutiny of incoming cues and associated it with more mindless and less deliberate analysis of the situation. Alternately, when decision making images between current and trajectory images were not compatible, the research subjects used controlled cognitive modes of decision making that initiated more deliberation in the decision process and opened a heightened awareness path that more carefully and thoroughly analyzed alternatives (Dunegan, 1993).

Image Theory can be linked to the concept of framing for it was the frame that triggered the trajectory images that activated the associated cognitive processing mode. Dunegan (1993) pointed out that the polarity of the frame (positive or negative) caused a change in the cognitive mode of information processing that decision makers used, and so a psychological consideration was introduced into the decision process (Tversky & Kahneman, 1986).

Dunegan (1993) also suggested that the connection between framing and Image Theory provided a counter claim to the popular press notion that celebrated the benefits of a positive outlook. He pointed out that it was a positive outlook (compatible current and trajectory outlooks) that contributed to the triggering of automatic processing in research participants. Thus, he implied, people with positive outlooks were more likely to miss cues that signaled the need for a more deliberate and systematic process of controlled cognitive decision processing (Dunegan, 1993). Rather, Dunegan felt that people should look at the glass as half-empty in order to trigger the more thorough analysis of controlled cognitive decision making to confirm that current and trajectory outlooks were compatible.

Furthermore, since “a glass half empty or half full” represented an equivalent situation (Dunegan, 1993, p. 500), Image Theory demonstrated that diversity within humans can, itself, be a factor in decision making. Humans may perceive situations uniquely and, therefore, respond differently. Also, according to Tversky and Kahneman (1986), half-full and half-empty represented equivalent statements. The fact that research participants might not agree provided additional evidence that problem framing could impact decision making.

The Cybernetic Theory of Decision. The Cybernetic Theory of Decision that was pioneered by Steinbruner (1974) and Image Theory were similar in the way that they approached the use of heuristic aids. In his theory, Steinbruner likened decision making techniques to a servomechanism where decisions were implemented to approximate a result. Given the example of a cat that wants to stay warm and uses the home fireplace for heat, the theory advanced the idea that the cat moves closer to the fire as the fire cools to maintain an approximate level of warmth. In so doing, the cat has an internally established set of critical values (amount of heat), and the cat changes position only as those variables move outside of tolerable ranges. The cat can then remain warm, but avoids the need to preference order specific locations and temperatures, calculate alternatives and outcomes, and use any optimizing schemes to achieve its goal (Steinbruner, 1974). Like Image Theory, the decision maker uses approximations or heuristics implied by the decision scenario to estimate responses that aid the decision making process.

The Contingency Model. Beach and Mitchell (1978) proposed that people make decisions in an organized way. Their Contingency Model posited that decision strategies

were approached and implemented based on the premise that individual decision makers chose strategies that required the least investment of energy to obtain a satisfactory solution. While this may sound somewhat like Simon's definition of satisficing, Beach and Mitchell (1978) defined satisfactory as an optimal state. They defined three categories of decision making strategies. An aided-analytical strategy employed a guided system of analysis that utilized tools (computer, calculator, or mathematics) to determine a choice. An unaided-analytic strategy explored the dimensions of the decision where no specific tools were used to fashion a strategy. It was simply unaided mental analysis that was used. In such situations decision makers generally focused on Subjective Expected Utility (SEU) gains that were mentally calculated by the decision maker and were generally compensatory in nature. Alternately, decision makers used nonanalytic strategies that were based on simple preestablished rules that were applied by rote. A good example of this strategic decision making strategy was flipping a coin.

Elimination by Aspects Theory. Tversky (1972) posited that individuals made choices by elimination. He noted that under conditions of uncertainty, decision makers exhibited inconsistency and sometimes made different choices under seemingly identical conditions. The process of making a decision involved successively choosing between attributes until all but one decision alternative was eliminated. Any alternative that did not meet a preset standard was eliminated. The process continued until only one alternative remained.

As Tversky (1972) pointed out, the order in which the choice alternatives were presented could impact the ultimate decision. Indeed, virtually any outcome may be deduced, however inadequate, by changing the order in which the attributes are

evaluated. For example, an individual may wish to enroll in a master's program. Important to the individual may be accessibility to campus, tuition cost, and the availability of night classes. If there are six schools being evaluated, the final outcome could change based upon the order in which the alternatives are applied. Also, if the list of attributes evaluated does not include all valuable features, the outcome is even more compromised. In such a case, an individual may make the choice of schools without considering the quality of the program because this aspect was not presented for evaluation.

While the Elimination By Aspects Theory sequentially eliminated alternatives and led to a predetermined decision based on meeting specified alternatives, the theory assumed that the process of choosing would follow a strategy that sequentially weighted the relative value of attributes. However, if the sequence of processing was not established in this manner, the rational choice in the elimination process was questionable.

Tversky (1972) concluded that when individuals were looking for a decision process that looked sensible and was easy to defend to oneself and others, Elimination By Aspects Theory could appear attractive and yet could provide inadequate or inappropriate results. However, he also pointed out that in certain circumstances where approximation of conditions was adequate and the sequential choice of alternatives was appropriate, Elimination by Aspects Theory could be successfully used as an aid to decision makers.

Template Theory. Gobet and Simon proposed this theory that posited that individuals created intricate templates for decision making that became cognitive aids in decision scenarios that had complex considerations (Campitelli & Gobet, 2010). The

authors hypothesized that, based on their superior knowledge, experts in a field created the most complex cognitive templates. These templates were constructed by recognizing features or patterns in a decision scenario. As a result of using templates, decisions were not only more accurate, but were also made more quickly because time used exploring useless alternatives was saved (Gobet & Simon, 1996). While Gobet and Simon did not suggest that expert decision makers had more developed cognitive abilities, they did suppose that experts who had developed decision making templates were more likely to quickly focus on likely solutions (Campitelli & Gobet, 2010).

Chess experts, for example, are more likely to use better heuristics and evaluation functions when looking at a chessboard. Because of their expertise in the game, they have developed template scenarios that lead them to choose better moves. Furthermore, they not only evaluated more accurately, they also did so more quickly. Template Theory has also been used to explain the quicker and more accurate work conducted by expert physicists and computer programmers who, having important data available in templates, can reach a correct decision more quickly and accurately.

The heuristics that can be incorporated into individual decision making could also be expanded to schematic mental representations of event sequences. Abelson (1981) identified this sort of heuristic and he labeled it a *script*. Scripts represented the contextual understanding of events and could be used in framing decision scenarios. The framing of decision scenarios was activated if a person had a conceptual representation of a stereotyped event sequence. When the script was activated a person could expect certain events to occur in series or be related in context. Abelson identified, as an example, a restaurant scenario and posited a script around food ordering.

Abelson also suggested that scripts were a type of schema that could be compared to habits, roles, and games that played an important part in learning. The author speculated that there was a connection between scripts and knowledge acquisition that was dependent on inference processes. He also pointed out that since social reality was constructed, it could impact social behavior rules and therefore the scripts associated with a scenario. This observation introduced the idea that culture could impact scripts and might ultimately have an effect on decision making practices. Although Abelson's work was motivated by his interest in artificial intelligence, his work also had an impact on human decision making. However, most of Abelson's scripts were simple in nature, and it would be difficult to envision the possibility of scripts in more complex scenarios.

Ecological Decision Making Theory. Gigerenzer (1996) suggested that individuals would use a minimum of decision cues to find a correct answer in a decision scenario. However, he found that there was no exact number of cues that could predict a satisfactory result. In studies, the number of cues discovered before a decision was made was based on the characteristics of the individual situation. Even experts varied the number of decision aspects analyzed; sometimes only a few were considered and, in other cases, many were exhausted before a decision was made. Despite no unifying results that pointed to a practical number of cues to be examined in advance of a decision, this theory introduced the importance of the role of search in the decision process and recognized the necessity to consider detailed aspects of the situation in making a decision (Campitelli & Gobet, 2010).

Learning and intuition. As early as the 1950s, Simon suggested that the unconscious mind might be at work in a decision scenario. He even conceded that the

unconscious human mind might be a better decision maker than the conscious one (Simon, 1955).

Payne (1982), referring to an unpublished manuscript by Hammond, suggested that intuition might also play a part in decision behavior. Hammond (as cited in Payne, 1982) argued that elements of intuition and analysis might be placed on a continuum and that switching between these two modes of thought might lead to a decision solution.

Kahneman (2011) reiterated this concept, positing that intuition, as a process of judgment, was fast, parallel, automatic, effortless, associative, and had elements of emotion. Comparing intuitive (system 1) processes to reasoning (system 2) processes, Kahneman further outlined the reasoning progression of decision making as slow, serial, controlled, effortful, rule-governed, flexible, and neutral.

Einhorn and Hogarth (1981) were unequivocal in their claim that intuition was a form of judgment that was present in individual decision making. They claimed that context, described as both the formal structure of the situation and the context of the decision details, informed the decision maker and could be associated with the concept of intuition. They pointed to the importance of context in words and phrases in understanding a written passage or a conversation.

Recent work by Dörfler and Ackermann (2012) confirmed the idea that intuition was one of the least understood aspects of knowledge acquisition. They pointed out that this lack of understanding meant that we do not have a full appreciation for the complexity of cognition or consciousness. Furthermore, since intuition is a form of knowledge, it must be considered when decision making is studied and must be accounted for in decision theory. Dörfler and Ackermann argued for the validity of

intuitive knowledge and saw intuition as a valid epistemology. They acknowledged that decision makers just “know in a moment without knowing how or why they know” (Dörfler & Ackermann, 2012, p. 548).

Section summary on heuristics used in decision making. Heuristics are activated in the decision process in order to make a better and sometimes a quicker decision. To be effective, such shortcuts need to increase the chances that an individual will make a correct decision. While flipping a coin can be a decision aid, it is not generally considered a convincing or valid heuristic because most individuals recognize that such an action does not contribute to the quality of the decision despite the fact that it may supply an accelerated result. However, heuristics can, in some cases, speed the decision process and also positively impact the quality of the decision.

The Literature Review on Creativity

While researchers from the disciplines of economics, psychology, mathematics, statistics, organizational behavior, management, and philosophy have all investigated decision making (Ungson & Braunstein, 1982), the study of creativity has, for the most part, been limited to the field of psychology. Psychologists have concerned themselves with the study of creativity since the early 1950s (Donnelly, 2004; Sternberg, 2006). They have conducted research with the goals of establishing the cognitive and knowledge requirements for creativity, discovering the character traits of the most creative, identifying motivational conditions, and finding the best environments for fostering creative work (Feldhusen & Goh, 1995).

Although most researchers have examined creativity with the assumption that creativity rested within the individual, some researchers have also proposed that

creativity might alternately be defined as an outcome (Donnelly, 2004; Fleming, 2012; Lubart, 1994). These researchers have viewed creativity as a result of a cognitive process and not as an individual attribute or an effort to achieve a specific result (Fleming, 2012).

Particular areas of interest to researchers studying creativity continue to be in the realms of measuring the individual propensity for creativity, promoting the understanding of the creative mind, and teaching creativity to others not deemed to be highly creative. Parents and educators have been interested in making sure that the educational process in all schools promotes creativity in the students (Feldhusen & Goh, 1995; Hunsaker, 2005; Mildrum, 2000; Scott, Leritz, & Mumford, 2004). Moreover, Hong and Milgram (2008) have urged educators to enhance creativity through instruction and creativity programs because, as Mildrum (2000) has suggested, creative abilities exist in varying degrees in each individual and creativity improves with practice. This particular interest has spurred further research on childhood training in creativity, and there are now a number of research journals that publish research on the subject. *The Creative Research Journal*, *Gifted Child Quarterly*, and *The Curriculum Journal* are three such publications.

Business and management interests have also shown interest in creativity. In the business arena, creativity has now become an important indicator and harbinger for success, and teaching creativity has become important for business development (Fontenot, 1992; Hunsaker, 2005; Isen, Daubman, & Nowicki, 1987; Kerfoot, 1998; McCaffrey, 2012; Ramocki, 1994; Scott et al., 2004). *Creativity and Innovation Management* and *The Journal of Marketing Education* are two publications that have featured research on creativity that supports business interests.

Creativity has also become an appealing topic in the popular press. The study of creativity has now become a distinct area of study and while psychologists still generally direct the research efforts, research results are published in journals that are specifically focused on creativity.

The Genesis of Creativity Research

Zhou and George (2003) have suggested that humans could not have survived, flourished, or advanced to their current state without having the ability to be creative and that, left to their own devices, humans have demonstrated an ability to creatively problem solve. Therefore, the existence of creativity has long been accepted. However, the organized study of the tenets of creativity only began more recently (Donnelly, 2004). Researchers who have chronicled the history of creativity research commonly have pointed to the inaugural address given at the American Psychological Association by J. P. Guilford in 1950 as the beginning of widespread interest in creativity (Fleming, 2012; Sternberg, 2006; Wallach, 1970). Guilford, an eminent psychologist, suggested that creativity was an important frontier for researchers and that there was a need for research in this specific area (Donnelly, 2004).

Researchers also have suggested that there were a number of reasons that creativity remained unstudied for such a long time. From the time of Plato, creativity was shrouded in mystery and was deemed a *gift* from the muses (Lubart, 1994). Such a genesis would not have inspired research because the concept of creativity as a gift shaped the notion as a divine aptitude available to only a few and bestowed rather than taught. Furthermore, Donnelly (2004) suggested that earlier scholars considered creativity to be spiritual and, consequently, it did not lend itself to research scrutiny.

Also, early 20th century schools of psychology, including structuralism, functionalism, and behaviorism, largely ignored creativity and failed to take up a quest to understand it (Donnelly, 2004).

Definitions of Creativity

While research in creativity began in the 1950s, no definitive definition of *creativity* was established (Lubart, 1994). Even today, multiple definitions abound and while many incorporate overlapping aspects of meaning, there remain multiple designations, classifications, descriptions, and demarcations that make up the concept of individual creativity (Feldhusen & Goh, 1995). In one of the most general definitions, Feldhusen and Goh (1995) described creativity as a complex phenomenon, manifested as an individual process where the products or effects of creativity ultimately define the success or failure of the creative efforts.

Lubart (1994) defined creativity as the ability to produce novel, appropriate work in either a tangible or intangible form, and he suggested that individuals were known as creative if they demonstrated their innovative abilities on a regular basis. Furthermore, he pointed out that while there is no absolute standard for assessing creativity, creative solutions were likely to produce *stand apart* work that had not formerly been produced and was likely to provoke surprise in the viewer because the work was more than the next logical step. Hong and Milgram (2010) concurred and added that creative thinking was a mental process that led to new inventions, solutions, or synthesis in any area, and provided multiple and diverse solutions in a wide variety of life situations. McCaffrey (2012) focused on the creative ability of an individual to discover at least one infrequently noticed or obscure feature in a problem that could be used to devise a

problem solution. He posited that such creative insights surfaced as a result of problem reframing to correct a faulty or incomplete representation of the problem or depended on the recognition of a distant concept tangentially related to the problem. This creative ability has been described as an aptitude to combine disparate ideas.

Zohar (1997) added the concepts of emotion and spirit to the intellectual and thought descriptors favored in other definitions. She also added that creativity and uniqueness related to the human ability to envision, dream, and assign meaning. Thriving on ambiguity during the process of creating was a central theme for her, and she stated that creative thinking can best emerge when the mind is not busy. Kristensen (2004) concurred with the idea of sustained ambiguity and regarded an individual's ability to remain in a state of indecision longer than others as a major contributing factor important in creative thought and solutions. Kristensen also suggested the term *incubation*, which allowed an idea to process in the background of the brain when an individual moved to another assignment or simply relaxed. Theoretically, the cognitive process of creative problem solving continued unconsciously until an insight or illumination "cut across the barriers of consciousness" (Kristensen, 2004, p. 90).

Taking into consideration all of the inputs concerning the definition of creativity, Fleming (2012) concluded that creativity was the ability to accept chaos and sometimes to create it in order to challenge the status quo. Furthermore, he has defined creativity by what it is not—the status quo, best practices, and/or routine. If the reader accepts this construct of creativity, it may be helpful to understand creativity in terms of an individual's goals or desired outcomes and posit that it is the individual's imaginative search for new insights that guides the creative search.

Divergent and Convergent Thinking Abilities

A number of researchers used the concepts of divergent and convergent thinking abilities to define the term creativity. Guilford (1967) first proposed the concept of fluency, flexibility, redefinition, and originality as aspects of divergent thinking. Creative thinkers were thought to display these attributes in their search for creative solutions, and the display of divergent thinking was thought to signal a higher level of creativity (Wallach, 1970).

Fluency is a concept that concerned the generation of multiple and often unusual ideas that were used to search for a solution to a problem (Guilford, 1967; Wallach, 1970). Flexibility relates to categorical shifts or the utilization of a variety of strategies in a test scenario; redefinition refers to the ability to relinquish old ways of construing familiar objects in order to use them for a new purpose; and originality is the demonstrated ability to respond with unique or unusual answers (Fleming, 2012; Fontenot, 1992; Kurtzberg, 2005; Scott et al., 2004; Wallach, 1970).

All of the divergent characteristics were important because divergent thinking allowed the solution search to cover a broader field of loosely-related material, and the search was thought to lead to potentially multiple suitable answers (Wallach, 1970) by going off in various directions (Guilford, 1967) to find multiple alternative solutions as opposed to one correct answer (Scott et al., 2004). Furthermore, it was believed that divergent thinkers showed a strong intrinsic desire to be creative and were possessed by a “creative demon” (Brophy, 1998, p. 132).

Wallach (1970) suggested that convergent thinking was also a valuable skill in creative individuals. Convergent thought followed divergent thought in an iterative

process that helped the individual deduce an answer that was implied by the nature of the evidence, either perceived or found, within the scope of the problem. Furthermore, convergent thinking was important in ending the solution search and coming to a decision that met the criteria for successful resolution (Brophy, 1998).

Approaches to Creativity

Since creativity researchers couldn't settle on a single definition of creativity, it should not be surprising that there were multiple approaches to creativity suggested. However, most approaches shared aspects that have allowed them to be grouped by type. In this review I discuss four basic approaches to creativity: the mystical, the psychodynamic, the cognitive, and the confluence approaches.

Mystical approach. Divine inspiration and intervention are at the center of this paradigm. Dating back to the time of Plato, the gods were thought to inspire creative individuals and that creative ability was specific to a particular area of work such as poetry, painting, or sculpture (Lubart, 1994).

Psychodynamic approach. An early psychological approach highlighted the tension between the individual's conscious reality and unconscious drives (Lubart, 1994). This theory still has followers today, but more attention has been given to the following three approaches that rely less on the unconscious goals of the individual and rather more on the conscious objectives that are often at the heart of solving problems and creating novel solutions.

Cognitive approach. Cognitive abilities and knowledge were at the center of this approach to creativity. Guilford's work on divergent and convergent thinking grounded the approaches within this general category; approaches that focus on the mental abilities

of individuals and the knowledge they possessed (Lubart, 1994). Both attributes were considered important for creativity to emerge.

However, in response to this paradigm, some researchers hypothesized that too much knowledge in the form of experience or expertise could narrow focus, entrenching knowledge so that a problem would not be looked at in a new way and creativity would be stifled (Fleming, 2012; Sternberg, 2006). In such cases, knowledge could hinder creativity. Furthermore, thinking patterns that had become habits might also negatively influence creativity (T. M. Lewis, 2004). For example, traditional schools may have inadvertently hindered creativity because they have generally emphasized factual recall and rote learning that has developed a one correct answer mentality in students and has emphasized conformity in responses (Lubart, 1994).

Knowledge was also the center of another researcher controversy. While researchers considered knowledge important in creativity, the question was what type of knowledge spurred the creativity process and how much was necessary? Domain specific knowledge was defined as knowledge specific to a particular field or realm, and was generally labeled as expertise (Dietrich, 2004). Domain general knowledge was not associated with a specific field and was considered more generic in nature (Dietrich, 2004). Research concerning the importance of each type of learning has produced mixed results, and no obvious answer has been provided by researchers (Casakin et al., 2010; Dietrich, 2004; Feldhusen & Goh, 1995; Fleming, 2012; Hong & Milgram, 2010; Lubart, 1994).

While researchers do not fully understand the nature of creativity, there have been a number of tests developed to measure the cognitive aspects of it. Best known are the

TTCT—Torrance Tests of Creative Thinking and the RAT—Remote Associates Test (Lubart, 1994). However, it should be noted that these tests measure creativity, but do not suggest what aspects are important in creative thinking.

Confluence approach. Sternberg and Lubart (1993) developed a confluence approach to creativity that suggested that a combination of attributes in creative people converged to increase the chances of a person exhibiting creative talents. The approach focused on the personality and motivational variables of creative people and on the sociocultural environment that was thought to influence creativity (Lubart, 1994). Lubart (1994) identified personality traits such as willingness to overcome obstacles, the ability to see a bigger picture, the propensity to take sensible risks, the ability to tolerate ambiguity, perseverance, openness to new experiences, and self-efficacy as important in the creativity process.

Furthermore, Lubart (1994) found that motivation tended to be intrinsic in creative individuals. It provided the driving influence that linked the cognitive components of creativity to the task, and it energized the individual to keep focused on the task.

Within the confluence approach, the sociocultural environment that most influenced creativity was described as a supportive and rewarding physical and social environment (Amabile & Kramer, 2011; Sternberg, 2006). The concept of environment could be extended to the presence of role models in an environment, freedom to pursue a variety of work, sufficient time to think, a collaborative atmosphere, and sufficient resources to develop ideas (Amabile & Kramer, 2011; Lubart, 1994).

One specific confluence approach was called the Multivariate Investment Approach (Sternberg & Lubart, 1993). In this approach the researchers identified six aspects of creativity, or what they called resources, that when present in individuals could predict created giftedness. The predictors for creativity were (a) intellectual processes, (b) knowledge, (c) intellectual style (d) personality characteristics, (e) motivation, and (f) environmental context. According to Sternberg and Lubart (1993) creative people are likely to have base level resources in each of these areas and will likely exhibit high levels of some resources in one or more specific areas.

In general, the notion of confluence is thought to aid creativity when high thresholds of some components or attributes combine to spur creativity, and the sum value of the various creative aspects is more than the aspects taken singly (Lubart, 1994). In such situations, Lubart (1994) has pointed out that creativity is enhanced by the co-occurrence of two or more components, such as intelligence and motivation.

Section Summary on Approaches to Creativity

Creativity research has looked at the underlying aspects of creativity. Researchers have acknowledged the complexity of creativity and have developed detailed descriptions of the characteristics of creativity and the social environment in which individuals live, but there has been less research that describes how creative individuals employ their creativity in order to develop innovative and elegant solutions to current problems and opportunities. While researchers refer to the creative decisions that creative individuals make, they don't generally talk about creativity in terms of how these creative decisions are made.

Literature Review Conclusions

Decision making is certainly more complicated than once thought, and current theories are still inadequate to explain this common, yet unique, human process. Not only are the operations used in decision making still obscured, but there is also the possibility that researchers have not yet identified all of the important aspects of the process.

Researchers have also begun to unravel the intricacies of human creativity. While researchers still do not completely understand how creativity manifests itself, there is a growing belief that creative individuals may more easily solve difficult and multi-faceted problems. Therefore, continuing research into how creative individuals make decisions could improve society's chances of solving its most difficult problems.

CHAPTER THREE

METHODOLOGY

This research study explored the decision making strategies and creative processes of eight individuals who have been publicly recognized as highly creative thinkers. Specifically, the study employed a face-to-face interview design that explored the dimensions of decision making and aspects of creativity in a sample of individuals who have received the MacArthur Foundation's Fellowship for *exceptional creativity* (MacArthur Fellow Program, 2013) and who have also been involved in the leadership of either a nonprofit or for-profit organization.

This chapter reviews the rationale for conducting this study and reiterates the research purposes and objectives, the research questions, and then describes, in detail, the research methodology that was used. The methodological discussion begins by describing the general research design and the context of the study. In addition, the population utilized, sampling procedures, and participant selection processes are discussed, and the specific data collection and analysis procedures are described. Issues of credibility, transferability, dependability, confirmability, and positionality are also considered.

Purposes and Objectives

Decision making and creativity were at the center of this investigative work. While researchers have concluded that creative people have been able to perceive and define problems differently, notice things that have been ignored by others, and have the demonstrated ability to develop inventions, solutions, and synthesis in various areas of study (Casakin et al., 2010; Hong & Milgram, 2010), there has been little research

conducted that has investigated and evaluated the decision making strategies and creative processes used by creative individuals. This study attempted to illuminate the methods of decision making and the practices of creativity that the innovative participants employed.

This study also compared participant strategies and processes documented in data collection with established decision making theories like the Rational Actor Model, the Organizational Behavior Model, the Governmental Politics Model, and the Heuristics Model. This comparative exercise pointed out how participant decision makers used traditional techniques described in these models. The study also looked for more unusual and uncommon strategies that the participants possessed that have not been captured by existing decision making models.

This study also discussed and interpreted the creative behavior that the participants described as being part of their strategies and processes for creating novel outcomes. There was an attempt made to understand how creative insights were formed, developed, and how they influenced decision making.

Various creative constructs, outlined in the scholarly literature, were used as benchmarks for creativity. The constructs included attitudes and behaviors that generally fell into the following categories: intelligence, knowledge, personality traits, motivation, and environment.

The study looked at how participants appeared to utilize these creativity constructs and how these constructs helped them find novel outcomes. The study also identified and explained other ways that the participants appeared to activate their creativity. An assumption was also made that if participants spoke of a specific attitude or behavior as being a part of their personal creative process, or as being used in

developing novel outcomes, it was worthy of being identified and discussed in the findings.

Research Questions

The following research questions guided this research study.

1. What decision making strategies and processes do study participants use to make decisions?
2. How are the strategies and processes employed by different participants similar and different?
3. How do the decision making strategies and processes employed by the study participants relate to established decision making theories described in the scholarly literature? Specifically, how, if at all, does participant decision making relate to the Rational Actor Model, the Organizational Behavior Model, the Governmental Politics Model, and to theories that employ exploratory problem solving techniques that the study characterizes as the Heuristics Model?
4. How do the decision making strategies and processes employed by study participants relate to creativity constructs identified in the scholarly literature? Specifically, how, if at all, do creativity constructs such as intelligence and knowledge, personality traits, motivation, and environment relate to participant decision making?
5. Can a typology of decision making strategies and processes be created from the decision making dimensions identified in the participants? Do the MacArthur Fellows' decision making strategies and processes suggest a new decision making theory, and, if so, what are the foundational premises of the theory?

General Research Design

For this proposal, my *dance of design* (Denzin & Lincoln, 1998b) began with the choice of a general methodological orientation that I utilized in the research. Since I wanted to understand the decision making strategies and creative processes that were employed by the participants, the study's general methodological orientation had to be consistent with the purpose. Given the open-ended nature of my intent, Guba and Lincoln (1981) suggested that I might better understand and clarify decision making and creativity using a qualitative approach. Denzin and Lincoln (1998a) also pointed out that using this approach would allow rich insights into human behavior. Furthermore, Patton (2002) suggested that a qualitative research design would support my desire to better understand what individuals know, think, and feel. Therefore, a qualitative approach was utilized because it allowed me to better understand the decision making strategies used by the participants and aided my investigation into related creativity processes.

My next decision concerned what methodology within the qualitative orientation would best support my research goals. Because I was intent on understanding the dimensions of decision making and creativity in individuals, I chose a methodology that employed face-to-face interviewing so that I might gain the perspective of each participant (Kvale & Brinkmann, 2009). A face-to-face interview methodology was a good option because decision making and creativity cannot be discerned well through observation, as thoughts, feelings, and intentions are not visible (Patton, 2002). Also, interviewing helped me discern what Berg (1995) calls the participant's perceptions and assumptions that, in this project, must be understood to put into perspective the decision making and creativity strategies that were found.

In designing this research initiative, my biggest challenge was to identify a group of individuals who would be deemed to have demonstrated a sustained and consistent ability to create novel outcomes; that is people who were known to be creative. Since I am not qualified to judge the quality or quantity of creativity in individuals, I wanted to find a recognized and well-respected authority on the subject. I wanted this authority to demonstrate the highest quality evaluation processes in judging the nominees' creative endeavors. I have chosen the MacArthur Foundation as the recognized authority that has for more than thirty years awarded individual fellowships for creativity. This foundation is a well-respected and competent authority on creativity.

Population, Sampling Procedures, and Participants

Once I had made the decision to place MacArthur Foundation award winners at the center of the research, I needed to choose the criteria for participant involvement in the study. This section explains how the population of MacArthur Fellows was investigated, what sampling criteria were applied, and how the final participants were selected.

Population. Since 1981 the MacArthur Foundation has awarded a substantial number of fellowships to a limited number of individuals who it believes demonstrate creative skills. These individuals have a track record of significant creative achievement and have manifested the potential to continue to expand the boundaries of knowledge and human interaction (MacArthur Fellow Program, 2013). Between the years 1981 and 2013, 873 individuals have been awarded the prestigious creativity prize and have formally become MacArthur Fellows.

The MacArthur Foundation only considers grant nominations proposed by a select number of external nominators who have been confidentially appointed by the Foundation based on their expertise and familiarity with exceptionally creative people in their respective fields (MacArthur Fellow Program, 2013). Therefore, the nomination process, itself, is designed to identify the most creative individuals in a spectrum of human activity who then propose nominees for the award. After being nominated, a foundation committee of 12 people (separate from the nominating team), chosen for their breadth of experience, excellent judgment, and curiosity prepares a file and evaluates each nominee against the selection criteria. From this group of superior candidates, the selection committee chooses outstanding finalists and presents its completed files to the MacArthur Foundation Board of Directors so that the foundation board can approve and announce the yearly fellowships (MacArthur Fellow Program, 2013). Click the footnote to see a video describing the MacArthur Foundation Fellows Program.⁶

The broad-ranged, extensive, and yet focused process of selection employed by the MacArthur Foundation prompted me to define the foundation's fellowship award winners to be the population for this proposed study. The MacArthur Foundation has identified and awarded grants to creative people who in the course of their careers have made decisions that have contributed to their success. In my mind, the MacArthur Foundation is expert in discovering, evaluating, and acknowledging creativity.

Sampling procedures. Some MacArthur award winners have contributed to their respective fields by creating artistic representations in literature, music, theater, or art. These individuals are undeniably creative and their contributions to the arts are important and substantial. There are other award winners who have displayed their creativity by

⁶ <http://shar.es/QWm5J>

making important contributions to solving social problems and providing links and answers to collective challenges. The MacArthur Foundation describes these award-winning fellows as individuals who employ their creative contributions to link human endeavors, bridge unlikely fields, or creatively expand the boundaries of human knowledge (MacArthur Fellow Program, 2013).

It was this second subset of award winners that I chose to be at the center of this research. I proposed that MacArthur Fellows who had created and led nonprofit and for-profit organizations had operationalized their creativity by establishing a platform from which they could creatively address some of society's intractable problems and activate human interaction to creatively solve dilemmas. Their leadership of nonprofit and for-profits has allowed them a stage where they can maximize their impact, and it was these individuals I wanted to study.

To select my sample, I investigated each of the 873 MacArthur Fellows (awarded from 1981 to 2013) to discover those individuals who had created or led either nonprofit or for-profit organizations. To be included in the sample, award winners had to have held an organizational leadership position either before or after the MacArthur Foundation award was made. Participants also had to be living in the United States.

After identifying individuals associated with nonprofit and for-profit organizations, I separated the potential participants by gender and age. The age category identified potential participants as below or above 40 years of age at the time they received the MacArthur Foundation award. Having created eight categories of participants, I then randomly chose one participant from each category. By choosing my

sample in this way, I increased the chances that the data collected would address the breadth and depth of decision making and creativity.

After the random draw of participants, I invited each person whose name was drawn to participate in the interview process. In situations where an identified participant declined my interview request, I replaced that individual with another person randomly drawn from the same category.

Creswell and Plano Clark (2011) label the sampling strategy that was employed in this study, *purposeful sampling*, because the participants selected “have experienced the central phenomenon or the key concept being explored in the study” (p. 173). Patton (2002) adds to the description by calling purposeful sampling *information rich* and *illuminative*. My goal in employing a purposeful sampling strategy was to identify individuals who had exhibited the distinctive creative approaches, skills, strategies, and processes that I wanted to document in this research.

In qualitative studies, it is always important to make sure that enough data are gathered to reach what Kvale and Brinkmann (2009) call *data saturation*. The real world number of participants that will give a researcher all the information needed is elusive, but Creswell and Plano Clark (2011) estimate that in case study research between four and ten participants can provide sufficient in-depth information about the central phenomenon. Therefore, I was pleased that eight participants accepted my invitation to be interviewed. Having completed those eight interviews, I found that I had enough data to effectively answer the research questions.

Potential participants. On the MacArthur Foundation website, there are posted biographies of many of the fellows, and, sometimes, there is even a short video interview

with the award winner. Further information on the fellows was readily available on the Internet, and I did not find it difficult to uncover contact information.

Collecting the Data

This section discusses the details of the how the research data were gathered and saved. Included are details about participant contact and preparation, interview specifics, and interview site selection. Incorporated into the discussion are also particulars about the assembly of the data.

Initial participant contact. After I identified the eight potential participants for the study, I contacted each individual by email, extending each an invitation to be part of the study through the interview process. As it turned out, some fellows had assistants with whom I had to work to obtain approval for an interview, but, in some cases, I was in direct contact with the MacArthur Fellow on my first email.

My goal was to establish a professional relationship with the participant in order to facilitate an exchange of information in the interview process that would benefit each party. I emphasized the importance of the research in adding to the body of knowledge about decision making and creativity, and I also suggested that each interviewee might gain valuable information about his or her own personal processes by participating in the study.

In each email I identified myself as a University of San Diego doctoral student in Leadership Studies who was conducting dissertation research concerning decision making and creativity. I also attached an executive summary of the research study. I explained that I had met with the Vice President of the MacArthur Fellows Program indicating that she and the MacArthur Foundation were aware of the research study

although I indicated that the study was not sponsored by the foundation. After asking for the prescribed 1½-hour interview (described in detail later in the chapter) to discuss personal decision making strategies and creativity processes, I explained the preinterview work (also described later in this chapter), and suggested that I would travel to the interviewee's home city for the interview at a time and place that was convenient to the participant.

Preinterview distribution of sample scenarios. In order to aid the participants in identifying, analyzing, and expressing their personal decision making systems and creativity practices, I emailed participants a set of hypothetical decision scenarios in advance of our interview. Participants categorized as nonprofit leaders received the nonprofit scenarios and for-profit leaders received the for-profit scenarios.

I asked each participant to read the scenarios and consider not only the decision that should and would be made in each scenario, but also requested that each participant interrogate his or her personal process of decision making used in coming to a conclusion about each scenario. I informed participants that we would possibly discuss the scenarios and their decision resolutions during our interview.

The purpose of these sample scenarios was to give each participant practice in detecting, scrutinizing, classifying, and articulating their personal decision process within complex decision situations. It was my plan that when I asked participants to explain how they came to a decision about situations described in the scenarios, they would be able to articulate a range of decision making techniques—even some that might indicate aspects of creativity—that they employed in each scenario. Furthermore, the hope was

that the practice scenarios would help the participants develop the vocabulary to explain their personal processes of decision making.

As the interviews progressed, it became evident that most participants had little trouble identifying and explaining either their decision making practices or their creativity processes. As a result, the decision scenarios were only employed in situations in an interview where there was some question about the participant's ability to access his or her processes. In other words, the scenarios were rarely used.

Interview protocol. During my interviews with participants, my goal was to engage the interviewees in the process of discovering and describing an internal process. Kvale and Brinkmann (2009) describe this sort of interview as a *semi-structured life world interview* that, by definition, seeks the insights of the interviewee about the phenomenon being researched. To gain a participant's trust, I first assured him or her that there were no correct answers and no criteria that would score the interviewee as more or less talented. Furthermore, in setting the scene for the interview, I emphasized that I had no expectations about the answers that might be given.

Having explained the purpose of the interview to my participants, I expected to create an *openness of purpose* environment (Kvale & Brinkmann, 2009) that engaged the interviewee as a co-researcher. I wanted the interviewee to participate in the process and adopt a collaborative style where we, together, searched for the clues to how decision making and creativity arose. Also, I employed an informal conversational tone during the interview that encouraged the development of a conversational flow with the participant (Patton, 2002) and, hopefully, put my interviewees at ease. This approach made it more appropriate to ask opinion and values questions so I that I began to

understand both the participants' cognitive and interpretive processes and their taken-for-granted assumptions.

To promote reflection and to help the participant verbally describe the mental processes of decision making and creativity, I employed open-ended questioning that began *think back to a time* and *remember an instance*. Since humans do not routinely reflect on internal processes, my hope was that reflective techniques would help the interviewees access and assess their decision making and creativity processes.

I only scheduled one participant interview initially, but, at the conclusion of each interview, I asked each interviewee if I might email follow up or clarifying questions to him or her, should the need arise. I also inquired about the possibility of a second interview if data analysis brought up additional queries. During data analysis, I found that I had all of the data that I needed from each participant. As a result, I did not contact any participant for a subsequent interview.

Since I intended the interviews to be semi-structured, I created an interview guide that included an outline of topics to be covered and a list of suggested questions. The interview guide promoted uniformity by specifying certain questions to be covered in all interviews (Kvale & Brinkmann, 2009), yet allowed me some flexibility to pursue tangential conversations that often proved enlightening. Appendix A contains the interview guide.

Administrative details. I made 1½-hour appointments with participants and found that I had, at least, one full hour of questioning time per interview. The balance of the time was used to explain the study in some detail, frame the day's work in terms of the interview, and develop an atmosphere of trust and collaboration. Additionally, time

was spent signing an informed consent document and discussing confidentiality. I also offered to provide an electronic copy of the interview recording or a transcribed copy of the interview to each participant. Additionally, I offered to send each participant an electronic copy of the final dissertation.

The fact that I had 1½ hours in which to conduct the interview contributed to the fact that I was able to cover all of the interview questions in the time allotted. Therefore, additional follow up questions were not needed.

Research sites. Since it was my goal to understand how the participants approached decision making and creativity, I believed that it was important to choose interview venues that supported my research goals. I favored venues that were conducive to deep thinking, promoted a feeling of safety, and allowed participant reflection without interruption. However, I was also flexible to the needs of my participants. I asked participants where they wanted to be interviewed and asked them to mindfully choose environments where they could do their best work.

Most participants were interviewed in their place of business, usually in their private offices. One interview was conducted in the participant's home, as that was more convenient for him than his office.

Since participants lived in various states around the country, I traveled by air to conduct the interviews in the participants' home cities. I generally arrived the day before the interview so that I was not rushed to make a meeting and did not risk the chance of missing a meeting due to delayed or cancelled flights. On two occasions, when interviews were conducted in the San Francisco Bay area, I did choose to fly up and back in one day.

Assembling the data. In order to fully concentrate on the interview process and to capture the exact words of my participants, I used a recording device. The recording device allowed me to focus on the framing of clarifying questions rather than be involved with extensive note taking. In advance of each interview, I sought permission to use the recording device and explained that the recording would help me capture the exact words spoken so that I might more fully understand meanings in context when I approached the analysis stage of the project.

Each recording was labeled with a number that represented the interviewee's name, the date of the meeting, and the place of the meeting. I also took with me a preprinted form for each interviewee that reminded me to have the consent form signed, thank the interviewee, and was also used for additional notes that I occasionally took during the interview or directly after the conclusion of the meeting. On this interview form I was also able to note any nonverbal cues that my interviewee displayed during the course of the interview.

I had each interview transcribed before beginning analysis. This transcript was added to the file I created for each participant. My intent was to create an audit trail for each participant interviewed. Based on Lincoln and Guba's (1985) recommendations, the participant file included all raw data, as well as data reduction and synthesis. I also included, in the file, copies of all communications with the participant, along with process, interview, and personal notes that provided insight. The goal was to make sure that another researcher, in the future, could reconstruct how I approached and analyzed the data collected.

Data Analysis

When participant interviews had been completed, formal data analysis began. This section details how the interview transcripts were coded and how a case was constructed for each participant. There is additional discussion of the subsequent cross-case analysis that was prepared.

Coding data. Codes were established in this study to help me categorize and analyze participants' responses concerning decision making and creativity. Coding schemes considered my participants' cognitive and emotional understanding of the processes and were used to interpret underlying values, beliefs, and attitudes that influenced their strategies.

After data had been collected, I considered coding methods. For instance, a number of codes lent themselves to a themeing strategy (Saldaña, 2009). These themes captured the loudest and most attended refrains of my participants, and they also became components of an overarching theme that explained the data.

While holistic codes are, according to Saldaña (2009), a way of lumping data together, they also allowed vignettes or short personal episodes to be easily coded. I found a few holistic codes that captured and summed up a particular type of decision scenario or creativity process.

Also, I used in vivo coding to give explicit meaning to some codes when special decision making vocabulary expressed by the interviewees had been established. Wherever appropriate, I followed Saldaña's (2009) advice and selected direct participant quotes to reveal and exhibit the data and honor the participant's voice.

Case study/cross-case analysis. This research employed a case study approach. Within the case study approach, a case is the unit of analysis that has the advantage of being able to capture the unique complexities of a situation (Patton, 2002). Also, as Stake (2005) pointed out, it is through the case study approach that activity within important circumstances can be understood. Additionally, as Guba and Lincoln (1981) have stated, it allows the researcher to capture *thick description* that can help readers understand experience and perspective, is holistic and lifelike, illuminates meaning, and builds *tacit knowledge*. More specifically, as this was a previously unexplored area of research, the case study seemed a logical way to examine decision making detail and more fully understand the overall process of creativity.

In this research study, each participant was considered a case. Because the participants were individuals who each have their own strategies and processes for approaching decision making and creativity, a case for each participant was established because it could logically “encapsulate complex meanings into a finite report” (Denzin & Lincoln, 1998a, p. 100).

After each of the cases had been constructed, I created a cross-case analysis. Adding cross-case analysis facilitated a systematic comparison of the individual cases and was an efficient method to elucidate both similarities and differences (Patton, 2002). However, cross-case analysis did not sufficiently illuminate the strategies and processes of decision making and creativity. Therefore, a concluding discussion chapter was added that points out other unique processes proposed by the individual participants.

Credibility, Transferability, Dependability, Confirmability, and Positionality

For some qualitative researchers (e.g., Patton, Denzin, Lincoln, and Guba), *validity* is a problematic term. They argue that measuring validity in quantitative terms where the goal is to fit perspectives and experiences into predetermined categories of analysis is not possible in qualitative research where the goal is to understand the nature of reality by looking at issues in depth and detail (Patton, 2002). Consequently some eminent scholars, such as Lincoln and Guba (1985), have encouraged researchers to eschew the use of the term *validity* and, instead, to talk of data and the corresponding analysis as credible, transferable, dependable, and confirmable. Additionally, to eliminate the possibility of researcher bias, it was important to consider the position of the researcher with respect to the study since researcher understanding and explanations were at the heart of the interpretation of findings in this, and in most, qualitative studies. How this research study met these goals is discussed in the next section.

Credibility. Credibility is Lincoln and Guba's (1985) synonym for qualitative internal validity and is one of the quality standards by which qualitative research studies should be judged. Patton (2002) also alludes to it and ultimately claims that in order to enhance quality and credibility, the researcher has to be willing to weigh the evidence carefully.

One way that I worked to ensure credibility was by member checking. This process described by Saldaña (2009) involves consulting the study participants during the analysis phase of the research. To perform member checking in this study, I sent each participant his or her completed case and asked for feedback on the accuracy and

completeness of the draft document. After receiving and incorporating feedback from each participant, I continued with my analysis.

In order to make sure that I weighed the data carefully, I also used what Creswell and Plano Clark (2011) call peer reviewing, Kvale and Brinkmann (2009) call peer validation, and Lincoln and Guba (1985) call peer debriefing. This involved having a disinterested peer scholar, another doctoral student in the Leadership program, look at the data from the study. She performed a *devil's advocate* analysis of the data to probe and scrutinize researcher bias, meanings, and interpretations (Lincoln & Guba, 1985).

As I was writing the findings and results chapters of this project, my peer reviewer and I met twice so that she could review the work that I had accomplished to date. We discussed my overall exploration of the data, including themes and data reductions. She also confirmed my analysis and procedures. Additionally, she added some thoughts to encourage my investigation and scrutiny. In particular, she helped me more fully understand how I could write up the results section that described how participants were able to separate emotion from reaction. It was her insightful questioning that allowed me to see the various ways that the participants were able to enhance their decision making with these tactics.

Transferability. In the qualitative world, the term, transferability, has a meaning that is at least somewhat like *generalizability* (Patton, 2002). To Lincoln and Guba (1985) transferability not only means that findings can be generalized, but also means that there is representativeness based on contextual similarities. Kvale and Brinkmann (2009) conclude that analytic *generalizability* (transferability) “involves a reasoned

judgment about the extent to which findings of one study can be used to as a guide to what might occur in another situation” (p. 262).

In this study, the best way for me to approach the potential for future transferability was to create thick description of the strategies and processes used by my participants in their decision making and creativity. I did this in the individual cases. While I cannot speak to the transferability of the data and make no claims about transferability, my attention to detail may aid future researchers who may wish to make transferability judgments.

Dependability. Lincoln and Guba (1985) see dependability as a substitute for what quantitative researchers call reliability. These terms both relate to the ability to replicate a research study. The ability to replicate a study has importance because future researchers may desire to use the same methodology in a future study with different participants to compare findings. While dependability should be considered important with respect to replication of methodology, replication of results should not be the goal or even an expectation (Mathison, 1988). In order to make this study more dependable, I did create an audit trail for the study.

Confirmability. Miles and Huberman (1994) associate the notion of *confirmability* with the traditional notion of *researcher objectivity*, and they encourage qualitative researchers—who they believe can never be totally objective—to represent their research participants’ thinking with as little bias as possible. Moreover, they ask researchers to make *relevant queries* concerning the data. For instance, they counsel researchers to give explicit detail about methods and procedures, link conclusions with exhibits of condensed data, acknowledge personal assumptions, values, and biases,

consider competing theories or rival conclusions, and retain a detailed audit trail (Miles & Huberman, 1994).

In order to make this study as confirmable as possible I employed two methods. As has already been noted, I rigorously compiled an audit trail to keep a record and a complete understanding of the study for the future. Furthermore, I had a peer reviewer (Creswell & Plano Clark, 2011) consider the possibility that I might have introduced bias in the reduction and analysis of study data.

Within the study, I also created a cross-case analysis that linked the results to the data included in each case. The cross-case analysis also provided the link from each participant to the final conclusions.

Positionality. Before I conducted the interviews, I examined my personal process of decision making and aspects of creativity that I believe I possess. During the interview process, I made a concerted effort to put my own processes aside and only consider the words of my participants. In other words, I countered my potential bias by *owning* my attachment to my own decision making and creativity strategies. Furthermore, I challenged myself to discover new and alternate strategies. After the interviews were complete, I was confident that I had spent the required time to gather a good understanding of how my participants personally approached decision making and creativity.

Summary

My goal in this study was to investigate the decision making strategies and creative processes used by people who are acknowledged to be creative. I selected participants for the study from the ranks of the MacArthur Foundation Fellows Program

because these award winners, having been carefully screened in a rigorous selection process, have been recognized for their creative achievements and for their potential to produce additional creative outcomes in the future. In tapping these individuals as research participants, I accepted the celebrated foundation as the authority on creativity.

In choosing my sample, I identified and selected those award winners who have led either nonprofit or for-profit organizations. I also stratified the sample to provide gender balance and attempted to also select participants in age ranges.

The study employed in-depth personal interviews of approximately 1½ hours. The goal of the interviews was to understand each participant's personal decision making strategies and creativity processes. Interviews used a semi-structured interview guide. A quiet site for interviewing was chosen so that my participants could have a calm atmosphere in which to concentrate.

During data analysis, individual interviews were coded using a variety of techniques: themeing, holistic, and in vivo codes. After coding was complete, an individual case was created for each participant. The eight cases were compared and contrasted in a cross-case analysis chapter and unique aspects of the interviewees' decision making and creativity were discussed in a concluding chapter.

CHAPTER FOUR

THE QUINTESSENTIAL SCIENTIST

Background

Saul is a physicist by training. He has spent his career as an inventor working at what he referred to as the “edges of applied physics.” The numerous companies that he has founded, for example, have made advancements in robotics, solar power, wind power, and the storage of natural gas for use in automobiles.

In his work, Saul has a predictable method of operation. As a discrete product or group of products emerges and matures within one company, Saul allows that technology to be spun off and exist as a separate company with separate leadership. He then continues to investigate and develop other ideas for new products within the original company “lab.”

In the lab, Saul likes to work on projects that support humanity. A friend of Saul’s has coined the phrase *smiley face* technologies. Saul described these smiley face technologies as those that have made humanity happy: the slinky, legos, and ice cream. Embracing the ethos of such technologies, Saul likes to create his own smiley face technologies that represent, for him, things of beauty that produce human joy and happiness. He is currently excited about a wheeled trampoline that will be electrically powered and can be steered. This trampoline would allow the jumper to travel along a roadway as he bounces on the trampoline. As the trampoline jumper bounds forward, the trampoline would also move forward and remain below the jumper so that forward progress can be made.

Saul is devoted to his work. As he discussed decision making and creativity in the interview, he almost always gave examples that were work-related. Moreover, he tends to look at the world through a lens that values hard work. He subscribes to the Nike slogan, “Just do it.” Furthermore, he discounts the term genius and lauded the value of intense work, logical analysis, and critical thinking that in the course of a lifetime, he believes, will produce more accomplishments. He stated, “I really don’t think that there are any geniuses. I just think that there are people who work hard and rigorously; if you work hard and rigorously, you will be perceived as a genius.”

Not only does Saul work hard to invent physical products, he also acknowledged that “thinking about thinking” is important and that he has spent significant time over the past years reflecting on his reasoning processes with the goal of improving them. He said that a person needs to “think rigorously” in order to be successful. He admitted that he often railed “against weak thinking” so his self-analysis helped him examine the important rudiments of thinking. He preferred to share his thoughts on decision making and creativity with me in his own way, and, as a result, we did not employ the sample scenarios that I had sent to him in advance of the meeting.

Saul on Decision Making

Saul’s ability to understand his own decision making strategies and processes was evident early in the interview. He seemed to have a deep understanding of the elements of his decision making, and he answered questions thoughtfully and in-detail.

Primary decision making processes: Scientific method. As a trained physicist, Saul reveres science and approaches decision making using science’s tools. He repeatedly stated that he values scientific experimentation to solve problems and make

decisions. He was adamant that decisions in his companies are made on the basis of scientific evidence. He and his staff pursue knowledge systematically by formulating a problem and creating a hypothesis, collecting data, and testing the hypothesis. He stated, “The only process-based thinking that I subscribe to is scientific method” and when he talked about his company, he stated, “We are constantly doing physical and mathematical analysis on all manner of systems and things.” He also talked about using “hard predictive tests” to make decisions about the efficacy and usefulness of company projects.

In short, in work-related decision making, at least, Saul is a self-described “slave to the physical laws of the universe” who acknowledged, “Physics is a harsh mistress.” Saul’s work and the decisions he makes in his work have always been subject to the realities of the physical world. Of course, like any good scientist, Saul couples his commitment to empirical work and empirical evidence with a commitment to analysis and logic in making decisions. Indeed, Saul considered logic to be a primary strategy for decision making.

Other aspects of Saul’s decision making. In addition to touting the virtues of logic and analysis, Saul also talked about specific procedures and strategies he uses to operate logically. He even allowed that, in some instances, he brackets his logic and uses a more emotional approach to decision making. The following sections discuss, in detail, some of the more important and interesting processes that Saul uses to make decisions.

Intellectual combinatorics and estimation. For example, Saul discussed his use of what he referred to as *intellectual combinatorics*. The term, *combinatorics*, comes from mathematics and refers to the enumeration, combination, and permutation of sets of

elements. Saul, explaining the notion of his process, described *intellectual combinatorics* as a matrix constructed from problem variables. He indicated he uses this exploratory framework to investigate the various permutations that make sense in the situation being explored. Permuting through possible combinations of variables can lead to the discovery of a problem solution and is an important way that Saul makes decisions about projects. He described his process of *intellectual combinatorics* as follows:

I constantly have a number of problems running around in my head—if I run into a barrier—I try something else. The problem is that there is no downtime. If I’m not sleeping well, I just cycle through some of these things and occasionally—like the 38th time—things change and you have some insight. So it is just a lot of hard work thinking of all the possibilities.

Estimation was another specific strategy that Saul discussed in the context of explicating his notion of decision making. Estimation helped Saul make the large number of decisions presented in his daily work life so that work could proceed on a project. He noted that he was “extremely good at estimating the time and money cost of anything.” As a result, he pointed out, “math [can make] decisions very easy.”

Disdain for conventional wisdom in decision making. While touting the virtues of empirical investigation and logic in making decisions, Saul also described his disdain for others who operate and make professional decisions in other ways. He said that people who do not employ scientific methodology are tinkering and noted, in his colorful vernacular, “I have contempt for hacking, tinkering, trial and error, and fucking around.”

Saul also linked non-empirical investigation to the notion of conventional wisdom. He suggested that conventional wisdom is akin to taking things “on faith” and that such faith is the antithesis of rigor in understanding. Again, in his colorful language, Saul said, “Unfortunately, I think what conventional wisdom means to most people is a

whole bunch of bullshit assumptions that are probably wrong.” Saul’s disdain for approaches to decision making that are not built around scientific rigor repeatedly surfaced during the interview.

Minimizing ambiguity. While Saul was clearly committed to systematic scientific experimentation and sees decision making through the scientific-method lens, he does not practice the scientific method in precisely the same way that, say, scientists in universities might practice it. While university culture often promotes a degree of tentativeness and caution and, even, at times, embraces ambiguity, Saul’s commitment to creating products makes him abhor such things. Saul, for example, discussed the negative impact of ambiguity on his work. He stated that he has to make decisions in his job every day and that a failure to make decisions impedes his productivity. As a result, Saul believes ambiguity can cause a stall in the decision making process. It can keep him from taking action.

In a rare show of anger, Saul suggested that wallowing in ambiguity is equivalent to “navel gazing.” Furthermore, he pointed out that indecision is the enemy of productivity and creativity. Given his drive to provide society with practical products to solve human problems, he expressed annoyance with anyone who suggests that he unnecessarily defer a decision.

Of course, Saul’s calculated impatience and intolerance for ambiguity has costs; costs that Saul readily acknowledged. Saul pointed out, for example, that when you do work “at the edges” of applied knowledge, you have to accept the possibility that not all decisions will be correct. He even conceded, “I make more errors than most people.” However, Saul explained that errors are a “fight against stupidity.” The most important

thing, he stated, is to make errors quickly and then learn from them. In supervising projects, he is always determined to make decisions as quickly as possible to speed the project, is good humored when he errs in decision making, and is determined to not be discouraged by past errors.

Decision making within the family. During the interview, Saul spoke mainly about decision making that he experienced at work and most of the examples that he recalled were associated with his work. Saul, after all, is passionate about his work and spends much of his time on his projects. However, Saul also commented on decision making within the context of his family and in his personal life. What Saul said about decision making in these contexts was somewhat different than what he said about decision making at work.

Among other things, Saul noted that, in the family context, he reserved the right to be more emotional in making decisions. He stated that the nature of his relationship with his family members (Saul has a wife and young son) leads him to make “irrational decisions . . . just chosen for pleasure or joy.” Saul even added a bit of quantification to his description of the approach to decision making in the family context by noting that, with his family, he makes “huge numbers of irrational decisions based on purely the biochemical rush that I get from the love or thrill or whatever.” In short, the scientist who spent a significant amount of time during the interview touting the virtues of using the scientific method and rigorous analysis to make decisions at work, unapologetically abandoned his commitment to empirical evidence and logic when discussing his approach to decision making within his family life. Saul, in fact, made this point a bit more colorfully:

We all do the things that we do to get laid. We are social animals, and we do these things for recognition of some kind, and it's that recognition that gives us the pleasures of human interaction. I think that we are motivated when the teacher says *good job* and when the lover says *thank you*.

Ethical decision making. Saul discussed another type of decision making in which he does not employ the scientific method: ethical decision making. He acknowledged that an *ethical calculator* would be helpful to compute the “complicated ethical tradeoffs” inherent in many decision scenarios, but he also noted that the complexity of the decision making process in the ethical domain has from time-to-time confounded his ability to fashion good decisions. Saul used the metaphor of choosing between alternate coffee brands to illustrate his point. He stated that humans are stymied by such tradeoffs as recycling issues, environmental concerns, and labor practices. In the end, the variables are so numerous and the impact of each relevant variable is so difficult to measure that the correctness of choices is difficult to ascertain. In short, Saul recognized that every choice has consequences, but because the ultimate consequences are difficult to calculate, and results may or may not be as anticipated, humans are not equipped to calculate exact outcomes in all cases.

Saul did acknowledge that the ethical issues in decision making within his work concern him. He pointed out that almost any product that he can build has the potential to be redirected from its original purpose. While he might design a product for one purpose, he suggested that his products could be exploited for other, possibly, unethical uses. “If you are an engineer,” he noted at one point, “you realize that every single thing that you ever engineered can be used as a weapon, except maybe the slinky.”

In light of the need to make decisions and realizing that ethical tradeoffs were too complex to develop a calculator for decision making, Saul simply sought to do “good”

rather than “evil” and has adopted the golden rule as an operating imperative. Moreover, he pointed out that, in the simplest terms, he wishes to optimize “human happiness.” Operationally, this means, among other things, that he does not develop certain ideas to the product stage that almost certainly could be used as weapons, even though he knows that virtually anything he develops may have weapon potential.

Decision making in the political realm. When asked about the impact of politics in his decision making, Saul noted that decision making in the political realm requires different ways of operating than those employed in the laboratory. The most obvious difference: Political decisions do not involve the scientific method.

Playing politics and, consequently, making political decisions, is sometimes important because, according to Saul, non-scientists generally exhibit a lack of imagination and knowledge about science. Consequently, he is required to “bridge the imagination gap” by creating a good story for those who are not immediately struck by the importance of his scientific discovery itself. The need for such storytelling strays into the political arena because it requires the introduction of additional factors beyond scientific data to influence the more general acceptance of the work. Saul, in fact, talked explicitly about how politics and storytelling combined:

Typically the things that I do are risky and expensive so there is plenty of time for nervous people—meaning people with money—to have second thoughts, so you just need to tightly manage them. People love a love story so being a good storyteller helps. People want to be heroic and be part of the invention. Allowing them, whether they deserve it or not, to be part of the process is super important. You want to make all of these people take ownership so really this is just glorified storytelling.

Using standardized operating procedures judiciously. As has already been noted, Saul repeatedly associated work-related decision making with the use of scientific

method, which he defines as rigorous and standardized empirical research. As a result, parts of Saul's organization are regimented and standardized in conducting and overseeing the scientific testing that is a main function of the laboratory. This regimentation and standardization that included a good deal of standard operating procedures, however, is only part of the story of Saul's lab.

When rigorous testing is needed Saul allowed that he had developed the laboratory into a standardized, relatively bureaucratic, and tightly organized environment where his employees are expected to be "technically rigorous" at certain times in the invention process. Saul, however, also appreciates the importance of not stifling original thinking and innovation in other parts of the creative process. Consequently, Saul's organization has another side to it. In some areas of the factory, pure speculative investigation is the norm and, consequently, another atmosphere pervades this area. In this part of the lab, Saul prefers a less regimented setting—one that encourages trying new methodologies, testing the previously untested, and thinking largely outside of the scientific box.

This separation of functions, an almost bifurcated organization, appears to represent the way that Saul sees the functions in his work. By adopting a two-pronged approach to creativity, he uses his multiple creative gifts to discover and discern new ideas—in a sense he employs *a science of discovery* in innovative phases of a project—then he switches to a *science of verification* to prove his creative propositions. In this way he employs the best of his creative talents and the best of his scientific knowledge and expertise, combining them in sequence to innovate.

Saul's employees understand the different parts of the organization and the reasons for the alternate approaches. They are comfortable with the duality, but Saul noted that a visitor, focusing on the innovative side of the business, had commented that it appeared to have the atmosphere of an "adult Montessori." Using the word *playful* as a noun, Saul concurred that, at times, the staff participated in what he described as "doing a lot of playful."

From what Saul told me, it is clear that he, too, has two sides to his work persona. While he is scientifically rigorous when he needs to be, he also does a whole lot of playful on the road to creativity. This emphasis on the importance of being playful became quite clear when I asked Saul about his personal creativity.

Saul on Creativity

In this section of the case, the discussion switches to a focus on Saul's creative processes. In discussing creativity, Saul rejected the concept of *creative decision making* as a process. He explained that he considered the term redundant because he believes that all decision making is creative. That seemed to be a definitive statement until he later told me that creativity and decision making did not normally occur for him at the same time, although he acknowledged that he did have creative thoughts, or at least thoughts that led to creative insights.

With respect to his creative processes, Saul seems to be in touch with the practices that work best for him. Saul claims that creative thoughts cannot be "forced." For example, he rejects the idea that brainstorming techniques can be used to heighten or promote creativity. Rather, Saul endorses what might be referred to as distraction techniques. He claims that creative thought is more likely to emerge for him when he is

doing mundane tasks and not actively thinking about a problem. He described his process as follows:

Sometimes you just have to load in your brain the boring, the menial that has to be done—it has to be done—like writing grants—like budgets—balancing the payroll. There are things that, I don't know, I'm just as likely to have some creative thought at that moment.

Saul also noted that he always works on multiple projects at one time. Putting aside one project for another one allows for work to progress on both, because thought barriers on one project are sometimes overcome when working on another project.

A key to creativity: A big picture thinking and a historical perspective.

Given that Saul focuses on inventing novel products for society, I was interested in hearing his thoughts on how he activates, develops, and sustains his creativity. The interview began with Saul describing the important ways that his thinking activates his creativity.

Big picture thinking and analysis. When I asked Saul about the source of his creativity, he lauded the value of what he referred to as *big picture* thinking. By this he meant that when he is working on a problem, it is important to look at the associated scientific principles and express them in more generalized and overarching statements that explain a problem in terms of a “physical system.” If flawed reasoning is detected in the explanation of the physical system, a more nuanced and corrected lens might then be hypothesized. Such an improved lens could then lead to discoveries in the field.

In talking about the nature of big picture thinking and statements, Saul stated:

And you just look at the whole world through these statements [big picture statements]—I guess some people call these things lenses. It's a hypothesis, and then you test that hypothesis on a whole bunch of examples and, occasionally, that serves something useful.

For example, Saul discussed his big picture look at natural gas storage and how that helped him reinvent a new technology. Automobiles powered by natural gas were initially designed with a single large natural gas reservoir that had the shape of a SCUBA tank. According to Saul, this tank shape was simply an “accident of history.” In reality, tanks for storing natural gas do not need to be large in diameter. By looking at the constructs that guided early scientists, Saul was able to see that there was a faulty assumption about how natural gas should be stored. Having discerned the faulty scientific assumption, Saul could improve the design of natural gas storage by correcting the faulty assertion and implementing a revised scientific picture that more accurately conformed to scientific fact. In this case, Saul replaced the large and unwieldy tank design with one that stored the same amount of natural gas in a small diameter chamber, albeit long, that could be folded to fit into an automobile infrastructure. The tank, in effect, looked more like human intestines packed into the body. The effect of this design change allowed for a more functional automobile design that did not have to incorporate a large diameter storage tank.

In this situation, the key to Saul’s understanding came from analyzing the need for a SCUBA-shaped tank to store natural gas. Recognizing that scientists had incorrectly accepted the premise for the storage of natural gas, he was able to metaphorically step back from the situation and look at a big or bigger picture to find a more functional scientific solution.

History as a catalyst for creativity. Saul’s endorsement of the concept of big picture thinking became even more understandable when he discussed the impact of history on enhancing creativity and contributing to big picture knowledge of a field. In

particular, Saul claims that people who are preeminent and notably creative in their fields are also extremely knowledgeable about the history of their specific areas of expertise. Specifically, such experts understand their specific area of expertise in the context of the early pioneering scientists who did the initial work in the specific area of concern. He stated that history was not only important in understanding the “why” and the “what” of a field, but also “the when—the timeline of this thing and all of the “who’s” that came before . . . that’s the historical environment.” This understanding of history is important because a current researcher, having studied the field and having understood the context of earlier work, might be able to recognize a shortcoming in past understanding and/or application of physical laws. Furthermore, he or she might then be able to solve a long standing problem by more appropriately applying a principle of physics and/or by employing new technological advances not available in earlier times. In other words, new eyes on a project might be able to correct the errors of the past.

Other aspects of creativity. During the interview, Saul spent a good deal of time talking about his creative processes. When he had fully explained his reliance on big picture thinking, he moved on to discuss other important aspects of his creativity.

Expertise and experience: A double-edged sword. Saul discussed the importance of expertise and experience in specific fields. He acknowledged, for instance, that some level of expertise and experience is an underlying foundation for developing new products because expertise and experience are needed to support the scientific method. In virtually the same breath, however, Saul also discussed the possibility that expertise and experience could be a hindrance to creativity. He talked about the “jaded” experts who might fail to see possibilities and who might not end up asking the right questions

because of their entrenchment in current theory. What Saul was saying in this exchange is that those who are experts and very experienced in a particular field may be so connected to the accepted theory of that discipline that they are unwilling to consider alternative hypotheses. If that is the case, such experts may fail to see new ways of approaching and analyzing a specific situation.

Consequently, Saul suggested that creative thought is likely to be enhanced when a person is new to a field. Those who are new to a field are more likely to ask appropriate questions that can lead to new perceptions and discoveries.

How did a highly experienced scientist like Saul overcome the double-edged issues of expertise and experience? He did it by following his own advice: He works on projects in various fields where he has to continue his learning to be effective, thereby avoiding personal dullness, apathy, and entrenchment.

Combining disparate ideas supports creativity. Saul also expressed the belief that educated people, the so-called experts in a field, can become too compartmentalized in their knowledge. He noted that the disciplines of biology, chemistry, and physics have been segmented to the point that expertise is very narrow. This, he felt, could inhibit creativity. In his own work, Saul preferred to think of himself as a natural philosopher who could understand and apply scientific concepts from all three fields to the process of solving scientific problems. Specifically, he said, “I am more of a subscriber [to the idea] that we all should be natural philosophers. Otherwise, all you are merely doing is throwing up artificial distinctions that will ruin your scope.” What Saul meant by this statement was that attempts to specialize narrowly in a field could discourage the combining of disparate ideas because knowledge is too narrowly defined within a field.

Instead of allowing his scope to be ruined by specialization, Saul prefers to combine ideas taken from various fields to improve his insight into novel products.

Rigorous thinking and being new to a field helps creativity. Saul’s talk of scope also led to a discussion about his conceptual understanding of expertise. Saul talked about expertise as it related to new insights and new discoveries. He pointed out that creativity, or the ability to be creative, is more concerned with the ability “to think rigorously” than it is concerned with any specific expertise. He also noted that the Ph.D. process should teach the rigorous thinking that is required for creativity. If this is accomplished, according to Saul, a person should be able to “contribute to any field in about six to twelve months [after studying the field].”

Saul also pointed out that being new to a field was important to creativity. In talking about such newness, he said:

I think the fact that they are new to the field is the pertinent point. I had an old professor who said that the best teachers are those people who learned yesterday—you are still excited—you learned this new thing—you are asking a whole lot of questions, and you’re excited about learning.

Saul’s decidedly different take on expertise and its relationship to creativity pointed out how he views creativity. He appears to be touting the importance of critical thinking skills and an enthusiasm for a project—an enthusiasm that is often present in someone new to a field—as important predictors of creativity.

Intuition and creativity. When I inquired about intuition as a catalyst for creativity, Saul was skeptical. He does not consider intuition to be an important aspect of his creativity. However, he did connect intuition with decision making. Saul defined intuition as a form of decision making using sparse data. He suggested that the brain integrated information from past experience and projected forward outcomes based on

that earlier experience. The combination of a good memory and the quick permutation of options is the essence of intuition, but ultimately it is, according to Saul, still mental calculation.

To be precise, Saul said, “It [intuition] is the capacity to have a good memory, permeate quickly through options, and really getting [to the heart of the matter]—intuition is a dance—it is the fancy word for being able to do those calculations.” So while Saul de-emphasized intuition in terms of its creative impact, he did concede that it was a sped-up variation of decision making.

Persistence as a requirement for creativity. In the earlier discussion of Saul’s decision making strategies, Saul’s use of *intellectual combinatorics* was highlighted. There the focus was on how Saul used a combinatorics matrix of problem variables as a decision making aid. Saul’s use of this heuristic—which requires a rather tedious and exhausting substitution of variables—also can be used to demonstrate Saul’s persistence when attempting to solve problems. This level of persistence illustrates the old saying that creativity is far more perspiration than inspiration. Saul acknowledged this fact when he talked about the “need to be naturally tenacious or stubborn.”

A willingness to take risks. According to Saul, and also discussed in the literature review, risk-taking is also an important characteristic of creative people (Sternberg, 2006). Saul, in fact, is proud of his willingness to take calculated risks both personally and in the companies he has founded.

For example, Saul mentioned that his organization’s work on solar cell control required new developmental research in bellows design. Overcoming the reticence and disagreement of five Ph.D. designers, Saul allowed a young intern to experiment with a

new concept in design. The risk-taking paid off when the intern's design worked during testing. Saul was proud of the fact that, despite the objections of others and some misgivings of his own, he gave the go-ahead to spend money and time on experimentation that resulted in the development of a new design concept.

Passion as a motivator in creativity. Passion is an important motivator for Saul, and he talked about the importance of having passion in his life. He stated that passion was a necessary ingredient for creativity and that it was a key to success in his world. Saul repeatedly explained his creativity in terms of his passion and acknowledged that this emotion is at the heart of not only his work, but also his life.

Early in the interview Saul noted, "I guess I don't really know what passion really means, but I am passionate about everything that I do so . . . I don't do anything half-assed." He continued:

I don't believe anyone can do anything that they are not passionate about. When we hire people we show them all of the things we are doing and I tend to say—which of these things ignites their passion and encourage them to work on that and not work on something that they don't feel like doing.

He continued on to propose that passion has a physical component:

Yea—I know what passion is—I guess it's some dopamine. You should understand that I bring my larger opinion about the human body—we are really just a bag of chemicals—so passion is just some particular set of chemical reactions that gives you that thrill. So I guess I only do work that makes my dopamine and oxytocin and serotonin receptors get fed.

However, Saul also noted another reason to only work on projects about which he is passionate: Humans have a finite lifespan. Therefore, he does not want to waste his time and does not have tolerance for working on projects about which he is not passionate.

Environment as a motivator for creativity. Before our interview began, Saul proudly took me on a tour through his workshop and offices. His organization is housed in an old and well-preserved factory that exudes the history of its early occupants. The structure was built in the 19th century and has been a working factory since construction. Saul felt that the building's first entrepreneurs are in some way still present, and, to honor them, as well as to remind himself and others of the great legacy of the building, he displays artifacts of their work. He said he wanted to acknowledge "the history of thinking and human endeavor" present in the factory.

Beyond honoring the former occupants of the building, Saul thinks that the sort of place where he works can influence his current projects. He remarked that an "environment is creative" and that, in and of itself, the environment can support the work done there. As we spent time discussing the importance of working in a supportive physical environment, Saul likened it to a feng shui that helps inspire innovative thought. To him, the physical space in which he operates is essential to his creative process.

Conclusions

Saul's work is a major impetus in his life, and the innovative products that he creates represent that work. The companies that he has founded have brought to life innovative products in robotics, solar power, wind power, and the storage of natural gas for use in automobiles. While Saul does not necessarily tire of his inventions, he has recognized that he contributes the most when he is working on radically new technology that has the potential to change the face of whole industries and fields. Therefore, when the technology has been invented or reinvented, he is ready to move on to new challenges, allowing others to see to the details and particulars of the final product.

Saul has been trained as a scientist, and he repeatedly stated that he follows the prescribed rules of scientific inquiry in his decision making. Even though the scientific method is at the heart of his professional activities, with his family Saul readily confesses to a more emotional decision making process. It is an interesting juxtaposition.

Beyond the scientific method, Saul's decision making is characterized by his disdain for conventional wisdom and his abhorrence of ambiguity in the decision process. He also uses an unusual heuristic to aid his decision making: A process called intellectual combinatorics helps Saul suggest creative possibilities and analyze decisions.

Saul's excitement about creativity is palpable, and the intensity with which he speaks about it makes him unforgettable. He values the importance of taking a big picture look to stimulate critical thinking and creativity, and he specifically touts the importance of understanding the history of a field or project. Persistence and risk-taking are both center-stage attributes that Saul exhibits, and he wants his work environment to have a positive feng shui so that his creativity can be activated or, at least, enhanced by the environment in which he works. Saul also finds that combining disparate ideas helps him create novel outcomes.

Saul's passion for his work is driven by his desire to create practical and novel products that solve human problems, and these products are designed to be things of beauty that produce human joy and happiness. Since Saul's passion for his work is so strong, he is likely to go forward to make more discoveries, create more new products, and solve additional problems. He will continue to be the quintessential scientist.

CHAPTER FIVE

THE FARMER PHILOSOPHER

Background

Wes is a trained biologist, botanist, and has a Ph.D. in genetics. He lives and works in the rural Midwest. It is here that Wes and his wife founded a nonprofit organization. After more than 37 years, Wes continues to lead this nonprofit as its CEO.

The nonprofit was established to address agricultural practices that have had a long-term negative effect on the environment. Wes claims that the detrimental practices in farming began more than 10,000 years ago when humans first developed agriculture. Rather than preserving the ecosystem and working in concert with nature, man, instead, tried to either ignore or subdue nature as he attempted to grow crops.

From the earliest times, farmers planted seeds to grow annual grain crops. This planting meant tilling the soil to remove the natural vegetation and then planting gathered seeds. While the farmers succeeded in harvesting crops, they also damaged the native soil with annual tilling that caused soil erosion and degradation. Furthermore, the early farmers removed the diverse native plant community to create new cropland that was established with a single plant monoculture. This unnatural state of monoculture set the stage for pathogens and insects to multiply.

In recent times farming has become even more of an industry and many farms specialize exclusively in a particular crop. It has become routine to find acres upon acres of a single plant type. As a result, natural ecosystems have been destroyed. When diversity and perennial plants were absent, farmers had to compensate for the loss of ecological integrity with herbicides, insecticides, fungicides, and over-fertilization, all of

which can have a negative impact on the planet. According to Wes, the overall result was the creation of an *agri-culture* that perpetuates itself by providing profits to those companies that supply inputs to agriculture while ignoring the long-term hazardous effects to the environment.

While the problem of agriculture began when the first nomads settled in groups and planted crops, a growing world population has exacerbated it. With more land being tilled to grow grain, soil erosion and degradation has steadily increased and will eventually reach disastrous levels if farming methods are not changed. Furthermore, in more recent years, when the dangers of greenhouse gases were discovered, Wes' mission became even more important because greenhouse gas emissions emanating from farming activities are the second largest source of such gases in the world. Hence, Wes believes it is imperative for the farming industry to reconsider its practices and processes in order to halt, or at least reduce, the ongoing damage to the environment.

Wes' answer to this problem was to develop a fundamentally different agricultural. His plan is to grow various types of perennial crops that will be planted in the same field. This answer will drastically reduce the need to annually till and replant fields, and the combination of plants species in a field will mimic the vegetation of the natural and healthy prairie ecosystem. Only by recognizing the inherent problems of agriculture and taking action to reduce the ecological devastation of current practices, can man mitigate the damage of the past and, as Wes said, "increase options for future generations."

On the grounds of Wes' nonprofit organization, scientists develop new ensembles of genes for grain, oilseed, and legume perennials in the laboratory, greenhouse, and

field. The organization is, in simple terms, a plant breeding facility. The scientists investigate the potential of domesticating wild species of plants through selection processes and also work to hybridize plants by crossing different varieties. In both cases, the long-term goal is to develop multiple plant perennials for future commercial planting.

Wes wants to make sure that the decision making of the earliest farmers has been explained, and the need for reform is understood. This is important so that not only farmers, but also the consuming public, are alerted to the ongoing environmental dangers of current farming techniques. Ultimately, Wes wants to reform agricultural practices and, through activism, recreate the agricultural industry to be friendlier to the planet. In effect, this means that Wes and his organization seek to provide a compelling alternative for farmers. This, however, is a large undertaking as farming today represents not only a modern-day agricultural industrial complex, but also the historical practices that can be traced back to Biblical times.

While this description of Wes and his work might lead the reader to see Wes as a scientist pursuing innovations in farming, Wes has another side to him that is equally interesting. While Wes recognizes, values, and adheres to scientific methods, he also views human existence as more than an organized system perpetuated by the rules of science. While not classically trained as a philosopher, Wes values the search for wisdom through an understanding of life. He thinks deeply about man's purpose on earth, and he makes his decisions and conducts his life based on his personal philosophy. In the interview he spoke about man's relationship to the earth and his place in the universe. In sharing his personal philosophy of life, Wes spoke about his personal feeling of humility as he contemplates the immensity and the grandeur of the universe.

Specifically, he spoke about the creativity of the earth and the relationship of mankind to the earth:

I don't think that we can destroy all of life; the earth is sufficiently creative. In fact, I have written that the only creative force at work in the world is the ecosphere, and that the artist at the easel or the scientist at the bench is a pipsqueak creativity—that their creativity is a result of the creative miraculous skin in which we are embedded. It [the earth] has priority in every way.

Furthermore, Wes recognizes that mankind, as a species of the earth, is worth saving because mankind has a unique place in our world and is literally the only species that understands the history of the world. When speaking about mankind's journey through time, Wes said that humans have been:

Cycled through the supernova at least twice, that we're children of the heavens—that at varying temperatures the elements were cooked, and that the ancient seas did set the pattern of ions in our blood, . . . and that we're products of the simian line . . . in a journey.

I came away from the interview with a better understanding of Wes' approach to decision making and a better grasp of his creativity. Wes' discussion about the importance of man's role in protecting the earth helped me better understand his passion for his work. Moreover, I came to understand that Wes' scientific training and his philosophical outlook inform both his decision making and creativity.

Wes on Decision Making

Wes is a scientist who values logic in decision making. He did, however, also speak at length about other decision making processes that influence his search to determine the best solution in any set of circumstances.

Primary decision making processes: Oughtness and obedience to a vision.

Wes used the term "oughtness" to define one of his important decision making processes. He described oughtness as his "summary motivator." What Wes was describing in the

term, oughtness, was his personal belief that all decisions should be filtered through a framework of how the world ought to be. However, he was not only talking about how things should be in his own personal world, but also about a larger worldview of good, a perspective that considers priorities well beyond any one person or family. Wes discussed how his personal sense of “oughtness” was created by a “neuro-network.” This expression, neuro-network, is Wes’ shorthand for his basic ethical framework that was laid down in his brain during childhood as a result of the teachings of his mother. In discussing those teachings, Wes confirmed his mother’s staunch commitment to Christian principles when he said, “She was a serious Christian.”

Wes noted that this notion of the neuro-network of oughtness was the genesis of his belief that humans are “not called to success, but rather to obedience to a vision.” Wes explained the relationship between decision making and obedience to a vision by offering an example. He spoke of a time, early in the existence of his organization, where it seemed to him that, for the good of his family, the most logical and sensible decision, at least financially, would be to return to a steady university teaching position and abandon the dream of reforming agriculture. However, his daughter, having her own neuro-network of oughtness, taught by her parents, challenged her father’s suggestion by saying, “But I thought you always said we’re not called to success, but rather to obedience to our vision.” Having been reminded by his daughter of the need for individuals to stay firm in their beliefs, not wavering or bowing to lesser goals or to fears, Wes reaffirmed his commitment to his organization and his worldview. He decided to continue to fulfill the mission of the nonprofit that he had created. He has been doing this ever since, steadily funneling, at least his work decisions, through a lens that considers

how he can be obedient to the vision that he has set down for his organization and for the world.

Other aspects of decision making. For Wes decision making has many facets. In this section Wes talks about other aspects of his decision making process. He explains some special features that he suggests help him in both common and unique decision scenarios.

Ethical decision making. Our discussion continued with Wes' reflections on ethical decision making because morals and ethics are really at the heart of Wes' concerns about oughtness and obedience to a vision. He said that ethical issues occasionally surface in his work. However, he does not seem to have trouble making decisions in those circumstances. In order to give an example of an ethical situation, Wes spoke of a specific time when his organization had been offered a substantial grant to work on developing an experimental grain. Recognizing that the funding arrangement would give ownership rights of any newly-created germplasm to the funder's organization set off warning bells for Wes. Given this unacceptable requirement, Wes quickly put an end to discussions, recognizing that such a condition would violate the goals of his organization to develop grains to be freely used by farmers of the world. Wes preferred to remain true to the mission of his organization, even though remaining true to the mission meant turning down over one million dollars in support. As in many other areas of decision making, Wes is guided by the principles that he avowed when he created the organizational mission so many years ago.

The need for action. During our conversation, Wes also talked about, what I would call the third leg of his worldview. Beyond oughtness and obedience to a vision,

Wes talked about the necessity for action after a decision is made. He said that his organization was created to go beyond “pumping its fist and saying ain’t it awful?” For Wes, decision making has to promote action in order to be effective. While recognizing a problem is an essential step in solving that problem, no substantial good can be accomplished unless decisions are made and actions are taken to change the situation and remedy the problem.

Decision making by focusing on the long-term. Wes also pointed out that the mission of his organization will not be fulfilled in his lifetime and that, while he would see “some mileposts of progress,” he needs to continuously recruit others who believe in the vision of the organization and who will carry on the work when he is gone. He once again referred to his underlying decision making principle of oughtness when he said, “In a way, it is a recruitment of those that have a sense of oughtness,” meaning that only those individuals who share his vision and his sense of obligation to do the right thing environmentally would ensure the continuation of the organization after Wes’ tenure is complete. Therefore, Wes only asks those who share his philosophy to join his organization.

Decision making is like a jazz score. Wes used the metaphor of jazz to describe the process of human decision making, in general, and his personal style, in particular. He said, “You kind of put it together as you go; you don’t have a score that you’re following.” In saying this, he suggested that decision making, at times, is not a concrete process that can be prescriptively followed. Rather Wes appeared to be relating his decision making process to a more relaxed and, perhaps, a situational based process that was dependent on the nature and details of the decision scenario. Later he generalized

the serendipity of decision making by saying of decision making, “It’s a mystery.” From these sorts of comments, it might be surmised that Wes is not in touch with his decision making strategies and processes, but this is not really the case. Rather Wes is engaging more of his philosophical side as he uses the metaphor to describe life. Moreover, in his daily work life he described very concrete ways of making decisions.

Force out knowledge to gain understanding. While Wes first claimed decision making to be mysterious and often improvised, he subsequently described rather specific decision making procedures. He spoke, for example, about the importance of curiosity in seeking solutions to problems and described the need to “force knowledge out of its categories” in a search for answers that can indicate necessary actions. Wes elaborated on his process of “forcing knowledge out of its categories.” He noted that if you can understand knowledge in a deeper way and outside of its established categories, there is what he called “a yeasting of substantive thought that has a chance to grow.” This yeasting, he said, can give you a “different configuration,” and hence a deeper or different understanding of the knowledge.

Putting it all together, Wes’ decision making sequence seemed to involve (a) the activation of curiosity, (b) thoughtful contemplation to look at knowledge in a different way—outside of its standardized categories, and then (c) taking action based on the contemplation. The entire process, of course, was filtered through the lens of oughtness that was a required screen for ethical behavior.

Scientific method and decision making. Since Wes is a trained scientist, he also described his decision making in terms of the scientific method. He discussed comparative studies of plant growth in test plots of annual and perennial sorghum. He

pointed out how the canopies of the perennial plants were more completely established earlier in the growing season and how that meant more sunlight captured and therefore more potential yield from the perennials. He also discussed his organization's trained scientists, all with Ph.D.s, who continue to conduct studies in the plant laboratory. They, he said, "have plants in the ground . . . they design experiments . . . they take data."

The danger of hubris in decision making. According to Wes, scientists sometimes suffer from a serious shortcoming. He pointed out that they have a tendency to "appropriate the unknown." A good friend, Wendell Berry, brought this point to Wes' attention. Both Wendell and Wes use the word *appropriate* as a transitive verb that means: to take or make use of without authority or right. Wes discussed this appropriation in light of the human tendency toward hubris. As an example, he talked about how scientists discuss the nature of randomness. He pointed out that when scientists say that something is random, they believe they are discussing "a verifiable observation," but Wes thinks that they may sometimes simply have "a limit of perception." Wes concluded this part of the discussion by recalling that hubris is the quality about which the Greeks warned. He said that it has led to much human misunderstanding and a common overestimation of man's abilities and insights; something, Wes said, that scientists should always guard against.

Counteracting conventional wisdom in decision making. In a similar vein, Wes discussed how conventional wisdom can be a drawback to real understanding and can ultimately interfere with defensible decision making. Fortunately, Wes believes that he has the ability "to not be tyrannized by conventional thinking," and this helps him make better decisions.

Wes' discussion of the problem of conventional wisdom included a discussion of aphorisms that have gained popularity in the media and in common parlance. For instance, he said that he does not want to think *outside of the box*, *speaking to the choir*, or *give an elevator speech*. In each of these cases, he was saying that such aphorisms belittled and belied the importance of personal interactions. He stated that he would rather *think inside the box*, by which he meant that it is important to think of the box as the ecosphere and/or the ecosystem, and that thoughts about protecting the ecosystem have to start by focusing inside to have real impact. In a similar manner, he suggested that it is more important to deepen the discussion with the so-called choir so that important ideas can be shared. Rather than taking the elevator and making a pitch or brief speech during the ride, Wes indicated that he would prefer to take the stairs, step-by-step, either up or down, so he can carefully explain his message and communicate its importance. In relating each of these examples, Wes impressed on me the danger of accepting thinking that he considered "shallow and conventional," and he suggested that only a deeper understanding of important issues would lead to better decision making.

Decision making in the political realm. Wes recognized another danger to his organization. He discussed the potential harm of politics that surfaced from time-to-time. While he did not mention the issue with respect to staff and family, he did discuss the nature of political interactions with funders. He said that, in some cases, funders want him to work on projects and issues outside of the organizational mission. Wes was clear that this is unacceptable and pointed not just to the potential issue of mission *drift*, but also to the fact that he will not accept funding for research projects that are outside of the "area of our [his own and those who work in the organization] passions."

The use of standard operating procedures. During the interview, Wes did not spend significant time talking about the day-to-day running of his organization. While he did describe the operations of the lab and the experimental farm in terms of the scientific method employed there, he had little to say about how hierarchy and standardized policies might impact decision making within the organization. Undoubtedly, policies and procedures do play some role in the organizational lab where scientific experiments are being conducted, and scientific method must be followed. Also, Wes did acknowledge that he is guided by what might be termed a strong Midwest principle that obliges him to consider the financial ramifications of his actions. Wes said that, in terms of organizational policies, “we’ve always finished in the black,” referring to the organization’s focus on being fiscally responsible. Furthermore, Wes recognized the need for other procedural reporting that is required by government agencies like the Internal Revenue Service.

During the interview, Wes spoke with authority about his understanding of the factors that go into his decision making and discussed in considerable detail the decision making strategies he employs. However, as we moved into a discussion on creativity, he was less sure that he had important thoughts to communicate. However, despite his initial hesitation, Wes ended up having a great deal to share on the subject of creativity.

Wes on Creativity

Initially, Wes wanted to make clear that he does not consider himself to be creative. When I asked him why the MacArthur Foundation might have considered him for a creativity award, he simply stated that he thought the foundation was relying on and responding to his knowledge of plant genetics based on his Ph.D. in that field.

Furthermore, he dismissed the notion that he engages in anything that can be called *creative decision making*. Rather he stated that the novel ideas promoted by his organization are simply self-evident truths: When you've got "something right in front of you . . . you act on it."

During the interview, however, Wes displayed his creativity in many ways. Wes the farmer and Wes the philosopher both had things to say about creativity.

A key to creativity: Disparate ideas, big picture, and a reliance on history.

Wes explained his creativity in terms of a number of strategies that he uses to activate his thinking. This section outlines the strategies that Wes foregrounded in our discussion.

Combining disparate ideas to be creative. Wes likes to combine knowledge in new ways; a trait often observed in people who are known for their creativity (McCaffrey, 2012). He told me he has an ability to combine disparate ideas and turn traditional "notions on their heads." He stated that he is consistently interested in looking for the "relatedness of the seemingly unrelated." It was this propensity that led Wes to what he called his epiphany about agriculture. Wes explained that before his organization was formed, he had been reading a General Accounting Office study on soil erosion and that report worried him because, despite the conservation measures attempted, soil erosion seemed to him to be as bad as in the 1930s. Around the same time, Wes took his students on a field trip to the Konza prairie. He noted that, unlike the grain crop land, the untilled prairie did not suffer from soil erosion. When he examined the two situations in his mind, he realized that the major difference was that farmers planted annual grain monocultures and that the natural prairie supported perennials where no tilling was needed. Furthermore, the prairie landscape supported a polyculture while

farmers nearly always grew crops in monocultures. Bringing the disparate concepts of farmers' fields and natural prairie growth together with the concern about soil erosion gave Wes the moment of clarity that became the foundational concept of the organization that he was later to form. It was Wes' creative ability to see this connection and the disconnection between the two that sparked his creativity.

Of some import in this story is that Wes has a Ph.D. in genetics. Even he questions whether or not he would have had his epiphany if he had not been trained in the field. He acknowledges that he might have understood the problem through observation, but wonders if he would have had the courage to act on the knowledge. Even if he had been able to figure things out solely through observation, of course, Wes' academic training allowed Wes to leverage his understanding of agriculture's problem into an organization that has the capacity to do something about the problem.

The contribution of big picture analysis to creativity. Being able to stand back from a situation and consider the broader circumstances surrounding that situation is a trait that creative people often exhibit (Sternberg, 2006). In our discussion Wes did not disappoint in this matter. He talked about how he takes a big picture view of his work in three ways. First, he collaborates with scientists from around the world to solve the problem of agriculture. He does not just look at soil erosion in the United States, but also laments the faulty practices of agriculture in other parts of the world, understanding the realities of the situation in terms of global impact. He understands that problems such as soil erosion are systemic and that the problems of one country are likely to affect other countries, as in the case of greenhouse gas emissions. Wes' big picture analysis contributes to his creativity because his understanding of the global nature of agricultural

evils, and the related solutions, has attracted the attention of the scientists around the world. In gaining international support, Wes has been able to use his creative skills to build social and political capital for his organization.

Wes also looks at a big picture in a second way that supports his creativity. When he talks about the cost of bringing products to market, he recognizes more costs than many farmers and agricultural experts do. For instance, he counts as costs: soil erosion, chemical contamination of land and water by pesticide and fertilizer run off, greenhouse emissions, and the environmental costs of using additional fossil fuels in the agricultural process. Pointing out that the energy investment in farming is undervalued in expense calculations, Wes looks at the biggest picture of costs to the environment and reminds us that even if agri-business, made up of those companies that provide the herbicides, insecticides, fungicides, fertilizer, and the fossil fuels, does not recognize these costs to society, they are real costs and someone has to pay them.

Lastly, Wes takes a big picture look at the mindless and dangerous shortsightedness present in agri-business. He has a name for this shortsightedness. He calls it *technological fundamentalism*. Defining the word fundamentalism as a strict and literal adherence to a set of basic principles, Wes is talking about a negative connotation of this word where adherence to dogma, in this case agricultural dogma, is shortsighted and mindless. Wes claimed that the humans in industrial societies are infected with technological fundamentalism. Being as technological fundamentalism is a shortcoming of the agricultural community, Wes has used his creative talents to foreground the inadequacies of agricultural accounting and emphasizes the self-serving nature of agri-business.

History as a catalyst for understanding. Wes also augments his understanding of the big picture by using the lessons of history to enlighten his understanding of a situation. He uses history to help him understand today's issues because, by understanding the motivations and precepts of earlier times, he can shed light on the human condition as he observes it today. In effect, Wes uses creative analysis to uncover and understand the metaphors and analogies of history. He can then relate these concepts and issues to present day life. For instance, he explained how he incorporates the concepts of big picture and history to inform his thoughts concerning current Middle East struggles. He described how having read the *Epic of Gilgamesh*⁷ has influenced his understanding of Middle Eastern culture and politics. Recognizing how the epic story, written so long ago, portends some of the problems of the present has helped Wes understand current day political and social issues in the Middle East. Wes talked about this understanding as the need to “honor the mythmakers [the authors of such ancient texts]” in order to gain an enhanced understanding of mankind's existence.

Other aspects of creativity. When we had finished discussing the way that Wes uses disparate ideas, big picture thinking, and history to activate and develop his creativity, Wes continued to share various aspects of behavior that he indicated support his search for novel outcomes. The conversation was lively and Wes' penchant for using metaphor and aphorisms made the conversation memorable.

Creative visionary style. Wes, like the authors of epic stories, may also be counted as a mythmaker. His creativity rests with his ability to tell stories and to express

⁷ Multiple anonymous authors wrote this epic story, perhaps the oldest written story on earth. It was originally written on 12 clay tablets in cuneiform script. It is about the adventures of the historical King of Uruk (somewhere between 2750 and 2500 BCE) who goes on a journey to find the secret of immortality.

his vision in such a way that his followers understand and respond to the vision that he sees for the future of agriculture. He draws on his ability to paint a picture of a better future based on agricultural advances that he sees coming from his organization. Wes' ability to express his vision is inherently creative because being able to express how the world will change when agriculture is friendlier to the environment creates for his staff and donors, a more concrete expression of the organization's mission and more clearly illustrates the value of the work. In discussing this, Wes explained that the organization's success is a result of having a "consecrated constituency" of followers. By this he means that his ability to fashion a vision of the future has given others an aspirational goal that keeps the vision resilient over time.

Wes also demonstrates his creative visionary style in his statements about the tangible product that his organization has now created. The first grain that will be marketed commercially is called Kernza. This perennial grain has been created in the laboratory and fields at Wes' organization and is now being grown on the experimental farm. Samples of the grain are available in small quantities. Wes recognizes the importance of this tangible first product as "the material representation of our values." With a first product available, albeit in small quantities, Wes can tell more stories and engage more followers, sharing his aspirations in tales about how the future will be.

Tolerance for ambiguity. In the literature review, it was mentioned that having a tolerance for ambiguity is a trait that creative people often demonstrate (Kristensen, 2004; Zohar, 1997). Wes noted that he was comfortable in a state of ambiguity because, as discussed earlier, it set the stage for him to force knowledge outside of its categories. He pointed out that when he forces knowledge outside of established theoretical

categories, he initially generates ambiguity for himself that can trigger his creativity. For that reason, Wes welcomes ambiguity and stated that while we all have the desire to resolve ambiguity, “If we’re going to count ourselves as grownups, we’ve got to be able to tolerate ambiguity.” He continued by saying that a person would know when he or she was embedded in ambiguity. That would be when “you were featuring questions that don’t have answers.” Then Wes concluded his discourse about the importance of ambiguity by pointing out a paradox. He said, “You could almost say that if you’re asking questions that have an answer, you’re probably asking the wrong questions.” Perhaps in this interchange Wes was sharing part of his creative process—he looks for creative answers and creative possibilities in previously unanswered questions.

A willingness to take risks. The propensity to take risks—like having a tolerance for ambiguity—is considered to be a personality trait of creative people (Sternberg, 2006). Wes, as mentioned earlier, was willing to take a risk to establish his nonprofit organization. When Wes and his wife committed themselves to the work of the nonprofit, the risk was, according to Wes, “huge.” Yet Wes was willing to put aside his financial concerns and begin the work of the organization.

Persistence as an aid to creativity. Persistence is another character trait exhibited by people who are considered to be creative (Sternberg, 2006). When Wes told me about a devastating fire six weeks into the organization’s existence, it made me realize how close he must have been to relinquishing his dream to build an agricultural nonprofit. He told me that the fire destroyed the organization’s main building and all of its accumulated tools and books. According to Wes, all that remained were “some ideas,” and, with no insurance, the future looked bleak. However, despite his despair, he demonstrated his

persistence to succeed and somehow managed to rebuild. When I asked if his passion for the mission was what carried him through, Wes acknowledged the role of passion and added that a good night's sleep was also curative. While passion and sleep may have been curative, this vignette of organizational history is also a great reminder of Wes' persistence.

Another bit of evidence that speaks to Wes' creative nature is his persistence in continuing with the organization's work for over 37 years. Wes has remained true to the mission that was first envisioned and still exudes passion for the work. Even more impressive is that the work is not near to completion. Cycles of plant breeding are long and creating a commercial perennial grain will take even longer. The first grain, Kernza, is not yet farmed extensively or sold commercially, though 90 acres of the grain are being grown in Minnesota. In fact, the organization's website states that it hopes to release the first seeds for commercial planting within a decade. In other words, not only has Wes spent 37 years waiting for his first perennial crop, but he also must continue to persist as he has a number of years more to wait to see the first commercial product.

Passion supports creativity. Many creative people are strongly motivated to accomplish their goals. This is the case with Wes. Passion for improving the planet's health is Wes' motivator. Actually, it would be an understatement to say that Wes is passionate about his work. Wes used the word often in our discussion, and the intensity of his words was evident. Not only did Wes suggest that a person needs to work in the area of his or her passion, but, in what I came to think of as a *Wes-ism*, he shared his personal understanding of the relationship between passion and reason. He said, "Passion without reason is hysterical. Reason without passion is sterile." This memorable adage

seems to have defined Wes' life, and he cannot and does not want to separate the two. The passion that Wes has for making agriculture more sustainable couples with reason, and the two undergird his creativity.

Mentors as a catalyst for creativity. Another aspect of creativity that is often described in the literature is the tendency for creative people to seek out mentors (Lubart, 1994; Sternberg, 2006). Wes discussed how mentors are important in his life. He explained how peer mentors have influenced his life by challenging him to take a “wider perspective.” In particular, he prefers to associate with peers who can teach him and who are “careful serious thinkers.” However, while his mentors sometimes come from a scientific background and even from an agricultural tradition, this association is not imperative. He spoke of engineers and poets who are his mentors and friends. After some time spent reflecting, Wes pointed out that many of those who he most trusts as mentors come from a tradition of history and literature. Granting that he collected people around him who had eclectic backgrounds, he talked about them as all having superior intellects and demonstrating a desire to more fully understand world issues. Specifically, Wes said, of his mentors, these people have “a lot of mind at work.”

Wes also spoke about people in the environmental movement who serve as mentors and as a source of inspiration. Specifically, he talked about when he speaks publicly at meetings where environmentalists or sustainable Ag people gather. He said, in those situations, he could see the spirit within those people and he could think, “By golly, we just might be able to pull out of this nosedive.” Of course, he was speaking about a figurative nosedive in referring to the concerning environmental problems facing the planet, in general, and agriculture, specifically.

Wes' passion for the relationships that he has with peer mentors represents his desire to rekindle his fervor for the work that he conducts. As important, his peer relationships help Wes feed his inner philosopher.

The physical environment of the organization. In addition to the intellectual support of mentors that can stimulate creativity, the physical environment may also be a catalyst for innovation (Amabile & Kramer, 2011). I asked Wes to explain how the environment of his organization supported his creativity. He suggested that the nonprofit's rural setting in the Midwest was "somewhat isolated . . . from the dominant culture." He liked this fact and was happy to be away from the stimulation of the city. Furthermore, he pointed out what I had seen as I entered the grounds of the organization. There is a river running through the property, abundant animals and birds, and a large variety of native plants. Wes expressed both the importance of his physical surroundings and reiterated his hope for the world when he said, "I may not be optimistic, but it's easy to be hopeful because you have the good examples." In this statement he was referring to good examples of agriculture and the overall beauty of nature that were evident on the organization's grounds.

Conclusions

Wes, a trained scientist, recognizes that our society is unsustainable. Furthermore, agriculture, as an industry, has an overall negative impact on the ecology of the planet. As a result of recognizing this fact, Wes is developing a solution to the problem. The perennial seeds that his nonprofit is creating and testing may not be ready for commercial planting in the next decade, but if the organization can be sustained for long enough, Wes argues the grains will one day be available to transform agriculture.

This transformation is necessary because today's agriculture depends on a routine that consists of tilling of the soil and replanting of annual seeds. This practice is causing soil erosion that has large-scale negative implications for the planet. Furthermore, the tendency for farmers to plant their crops in monocultures means that acres of the same crop can mean that pathogens have an easier time invading the host crop.

Wes' answer to these two problems is his plan to create new perennial strains of grains, oil seeds, and legumes that farmers can plant in mixtures to mimic the plant varieties found on the natural prairie. These new perennial plant varieties should help reduce soil erosion, and the planting of various crops in the same field should inhibit insect infestations.

In addition to being a farmer, Wes is also a philosopher. This is important because it was through Wes' philosopher side that I was more fully able to understand both his decision making and his creativity. Wes' philosophical worldview of oughtness, obedience to a vision, and action orientation all play major roles in Wes' life. Also, it is Wes' philosophical self that has sustained his passion for work through the years. It is also likely that the philosopher in Wes is the reason that he has been able to gather a committed following, or what Wes terms a "consecrated constituency," to continue the work of his nonprofit.

In the final analysis, Wes may be a scientist by training, but his worldview is also influenced by his wisdom as a philosopher. Since Wes exhibits this dual nature, the interview was all the more interesting because Wes presented wisdom from both sides of his identity. In effect, the way that Wes spoke, his ideas, and the stories that he told, made him, in my mind, the farmer philosopher.

CHAPTER SIX

THE PASSIONATE SOCIAL ENTREPRENEUR

Background

Jim was trained as a rocket scientist and had early aspirations of entering the NASA astronaut program. While Jim never realized his dream of space travel, he has put his considerable skills to work in other ways.

Using his skills as a scientist and as a leader, Jim created a number of for-profit organizations in Silicon Valley. However, after gaining extensive experience in the traditional world of business, Jim wanted to commit his energy exclusively to giving back to society. He founded and continues to lead a nonprofit that has an overarching mission to alleviate what Jim calls “pain points” in society.

The specific mission of the nonprofit Jim founded is to create significant positive social change using technology to drive mission accomplishment. When Jim talks about significant positive social change, he is referring to large-scale endeavors that will meaningfully change the lives of groups of people. Among other things, the organization has been involved in the development of software and hardware to support people with disabilities and individuals who work for various human and environmental advocacy groups. However, despite the work accomplished for disability and advocacy groups, Jim wanted to make clear that the organization that he leads is not an advocacy group; rather it is a technology company focused on promoting “social change through technology.” This means that Jim is not advocating for specific groups of people, but rather is providing those groups with technological tools that will help them accomplish their goals.

The organization fulfills its mission in an unusual way: The nonprofit pursues projects that for-profit organizations are ignoring or have discarded. In some cases, the for-profits have developed the technology 99% of the way, but are not willing to take the product to market because the technology in question would not make money or would not make enough money to be viable in terms of corporate profit goals. However, Jim and his staff are willing to take over the development of the technology and go, according to Jim, the last *social* mile to bring a product to market. Recognizing that the product might not make a lot of money, but also recognizing its importance to certain individuals or groups, Jim's company completes the project so that it can have a positive social impact.

As Jim described the structure of the nonprofit in more detail, he pointed out that it was an organization modeled after a standard Silicon Valley venture capitalist model, "but [the variables] were tweaked for social good." That means, Jim added, "instead of making ten times the investment for our investors, we want to make ten times the impact for society."

While the company is designated as a 501(c)(3) charity, it is one of a newer breed of nonprofits that has adopted a social entrepreneurial approach. The nonprofit has created programs that provide revenue sources so that it is largely financially self-sustaining. While the nonprofit does accept donations from individuals and does seek funding from the government and philanthropic organizations, it is not totally dependent on external support and so does not have to spend as much time seeking funding.

The products that have been developed within the organization are varied. Jim's company has developed an optical character reader for use by individuals who are sight-

impaired or who have other *print* disabilities.⁸ The optical character recognition (OCR) technology allows virtually any printed text to be read to an individual. To go along with the OCR technology, Jim organized the development of a library where interested individuals can gain access to books that have been scanned into an appropriate digital format so that they can be read aloud with synthetic voices. This service allows clients more choices in reading and, ultimately, promotes independence from human assistants.

In the human rights field, the organization has also generated positive social change by creating software, services, and training for human rights advocates. The software application allows human rights defenders to gather, record, encrypt, save, and secure data that document human rights violations. The information is automatically copied to a secure network for later access; consequently, in threatening situations, the program and all of the program data may be deleted from the host computer in the field to protect the personal safety of the human rights advocate.

Jim and the nonprofit he founded have also been active in the environmental field. He and his team of engineers, for example, have created software to support ecologists and conservationists. The software has been designed to help environmental groups plan and manage their efforts to protect natural resources of various kinds.

While Jim and his staff pursue the development of numerous and, often, quite diverse products, the products all have the same overarching goal: They provide technological solutions for the world's problems. Jim is excited about making a difference in society by solving problems. He said, "It's about making a difference . . .

⁸ A person with a *print* disability cannot effectively read print because of a visual, physical, perceptual, developmental, cognitive, or learning disability.

about solving problems . . . [and] the most exciting, juicy problems that I can imagine are social problems.”

Jim on Decision Making

As mentioned earlier, Jim is an engineer. When he discussed his decision making strategies, skills from his engineering background were emphasized.

Primary decision making processes: Mental models and pattern recognition.

When I asked Jim to explain his decision making process, he gave me a great deal of detail about the way that he uses *mental models* in his process of decision making. In general terms, mental models represent the ways that an individual recreates a current or prospective reality in his or her mind. The internal representation may be simplified and not contain complete details of a situation, but the replica constructed in the mind may still be a useful way to explain the essence of a situation. When individual models are mentally constructed, resolutions to the problem scenario are also noted and can be recalled when similar situations arise. Over time, a series of mental models can be constructed to use as overlays of common decision scenarios. Various categories are defined, delineated, and stored as frameworks to be accessed as aids in decision making.

The use of mental models, according to Jim, is his primary way of understanding a decision scenario and serves as the basis for much of his decision making. His mental models shape his view of the world, and he uses the framework of his models to consider personal actions and solve problems. In explaining how he uses mental models to solve problems, he told me that he tries to figure out: “Is this one of those or one of these things?” By this, he was referring to the mental categories that he has stored in his brain. He pointed out that most problems fit into one category or another. Jim’s categories have

previously proven to be helpful decision aids because when a decision scenario is categorized, the mental model also has a range of decisions stored that would work in the situation.

He gave an example of how he uses mental models when he is trying to persuade someone to accept his point of view. He noted that, as a discussion developed with an individual, he used his mental models to classify that person's arguments. When he had organized the arguments within his mental model, he could then discern what arguments he should use to counter the other person's points. Jim could, in effect, evaluate people in terms of his internally created categories and having done so, could fashion arguments that would likely be successful to convince the person to agree with his position. He said that during a conversation with a person, he might be struck with the thought, "Oh, this is the way that we are going to . . . convince this person to become a supporter of ours." In other words, Jim was saying that, by using his mental models, he could first determine the category of the argument, fit that argument into his already created model, and, from that point, he could figure out the arguments that he should use to successfully get his points across to convince another person to agree with him. Jim's mental models are a representation of how he sees the world; how he categorizes ideas and events in order to bring order to his decision making. He appears to have a significant range of mental models so that he can effectively deal with most decision situations.

In most situations Jim depends on the mental models he has already constructed for solving problems. However, he did concede that, from time-to-time, a problem did not fit into a predefined category. In this situation, Jim indicated he created and stored, in his mind, a new category to accommodate the novel situation. However, the creation of

new categories required that Jim really look at the nature of the problem to make sure that it was substantially different and really required a new category. These potential new category problems would undergo an in-depth evaluation that required Jim to look—or, to use his words, to “dig into” the problem—for proof that a new category was needed. The problem would have to be significantly different, and the resolution to the dilemma would also have to have meaningful differences. Since Jim’s mental models have been meticulously developed over time, the need for a new model is a rare occurrence.

When Jim discussed his decision making, he noted that the development of mental models required the recognition of patterns in a decision scenario. When a pattern is identified repeatedly in various decision scenarios, it can then be categorized as a recurring reality that can be integrated into a more complex mental model. Because the mental model represents both the decision scenario and the potential outcomes, it is available for use should a new scenario with the same underlying description of reality present itself.

With a smile at the irony of the situation, Jim acknowledged that, as an undergraduate engineer, his field of study and specialty subject had been pattern recognition. In those early years, he had been attempting to get machines to differentiate between objects. In fact, one of his most exciting classes, as an engineering student, was learning how to design technology that would allow a computer to distinguish various sorts of military targets (e.g., different types of military tanks). After graduation, this pattern recognition theory became central to the development of one of his products—the optical character reading machine, which, as has already been noted, has the ability to distinguish letters of the alphabet and read the words formed.

Other aspects of decision making. Jim's understanding of his personal and business decision making seems to be a reflection of his engineering background.

Following are his remarks on various aspects of his decision making that are associated with logic and analysis. Also included in the section are Jim's responses to diverse decision making situations that stretch him to use other aspects of his decision making.

Analytical decision making. Jim is a scientist by training, so it is not surprising that he described his decision making as "analytical," built on a "platform of rational thinking," and based on gathered "information." Furthermore, he pointed out that he understands the laws of physics, so anyone who suggests a course of action that "violates the second law of thermodynamics" is going to have trouble getting that action approved. In other words, Jim was saying that he recognizes that scientific laws governing the physical world cannot be violated in any situation.

Exploring the consequences of decisions. Jim also talked about his process of decision making as "running the scenarios" to see what decision consequences or conclusions might be anticipated in any specific situation. In particular, he talked about decisions that involved a tradeoff. He pointed out that he liked to "break down" the key elements of a decision, "weigh" the alternatives, and look at different options in terms of their specific consequences. As Jim talked about tradeoffs, he said:

For the kinds of decisions we make around here, it's what do I need to know? Let's try to find out more information that's not going to fundamentally shift the goal and . . . [in terms of the problem], breaking it down, weighing this thing. Coming up with different scenarios for solving the problem because there's really an A or B solution.

Jim was making the point that tradeoffs had to be evaluated in terms of their possible outcomes (solution A or B) and that his decision process involved analyzing the

potential outcomes in order to maximize the quality of the solution. In other words, Jim uses analytical examination to focus on the potential consequences of a decision.

In another example, Jim talked about how he might make a decision in the presence of a tradeoff that involved a family situation. Using a predetermined set of scenarios that I had Jim read, he talked about a tradeoff between supporting family at home and taking a job overseas. He said that in such a situation he would consider the decision in the following way. He would evaluate solution A. “If we do this [move overseas without children], are we going to leave our kids with really trusted family friends or a sister-in-law?” These alternatives represented one possible solution. Looking at the other side of the tradeoff Jim said, “Could I stay in this area [geographic area] and could I make an adequate living?” This was alternative B where Jim would leave his job rather than take an overseas assignment without his family.

The tradeoff decision scenario would be decided by looking at the consequences of the alternative decisions—A and B. In this particular case, Jim told me that he would prioritize for his family’s wellbeing. He said, “I have made a pretty explicit decision to prioritize family over wealth in my career. It’s a decision that I’m quite comfortable with.” By this, Jim meant that the tradeoff detailed in the scenario could be broken down into the alternative solutions and metaphorically weighed to determine the best solution based on what Jim saw as the consequences of each alternative. The result of the analysis indicated that this was really a question of family health versus financial gain, and he was inclined to think that family health would provide the best solution to the tradeoff.

Decision making as a funnel. In work situations where the tradeoff decision to be made involved which product to promote, Jim uses a funneling technique. The funnel that Jim described was a metaphor for the decision making process in this sort of situation. Beginning with 100 ideas, the process of selecting a long-term project proceeded in successive steps to eliminate the weakest ideas. The ideas were successively evaluated based on their relative merit and fit with the company. When the selection had netted about ten product ideas that might actually make sense and could be created, other criteria were applied. For instance, Jim mentioned that a potential project might be moved higher on the selection list if it fit more readily with already established business channels or partners. The ultimate goal was to select one idea a year to develop. However, ideas rejected in one year might be picked at another time because, as Jim said, “It may just be that they [the ideas] need another year or two to gestate before we really go to town with them.”

Political decision making. In our discussion, Jim suggested that political decision making in his organization had two forms. He spoke about the process of political maneuvering in the workplace that was not beneficial to the company. He also spoke of external political decision making, the *big P* politics, that, according to Jim, had some merits, and about which he believed he needed to learn more.

Internal politics in an organization are detrimental, as far as Jim is concerned, because a politicized work environment serves no good purpose. However, Jim did not see politicization as a big problem in his organization. He felt that he could control politics through established “cultural norms” and by promoting a meritocracy that made political maneuvering less effective.

With respect to external politics, or, to use Jim's terminology, politics with a big P, Jim was more tolerant of the need for political thinking and the value of political maneuvering. He saw big P politics as a skill in getting things done, especially in the United States federal legislative process. Jim even described politics as another kind of technology, a technology that is "as complex as any technical field I've been involved in." Given the field in which his company operates, Jim recognizes that he needs to understand how to get things done in a big P political environment. He needs to continue to learn how to operate competently in this arena.

As we talked more about politics and political decision making, Jim pointed out that politics could be considered another decision making constraint that needed to be considered. He compared it to other constraints such as financing, getting permission to act, or attracting partners. Jim also added that the real danger with politics was not knowing when there were political issues in play. He explained this point with an example. One of the projects that Jim had promoted in Washington was a humanitarian landmine detector technology that needed an export license from the federal government. However, what he had failed to understand in his enthusiasm for promoting the project was that there were reasons why critical players in Washington—such as the Defense Department, the State Department, and the Department of Commerce—did not want explosives detecting technology more widely available to the world. Having failed to understand that the explosives detection technology had wider political ramifications, Jim's company failed to get export permissions necessary for the landmine detection project, and the project was discontinued. In other words, a failure to understand the political nature of a situation can lead to a project failure.

Ethical decision making. The landmine detection project example that Jim used to demonstrate his early naiveté about politics also brought to the forefront the subject of ethical decision making. As a result, I discussed with Jim how he made ethical decisions in the company. When asked about ethics, Jim began by focusing on employees' behavior or, to be more precise, misbehavior.

Specifically, Jim stated that he saw ethical constraints as “boundary conditions” in the decision making process of his organization. Going outside of the boundary conditions would result in an ethical violation that could lead to an employee being fired. Such situations have only occurred rarely in the history of his organization, but when an employee commits an ethical violation, there is the potential for immediate termination.

Jim, however, also acknowledged that most errors did not result in firing. Pointing out that in a company known for its innovation, product development errors were not firing offenses because firing someone for taking a calculated risk that didn't pay off would, as Jim said, “kill our culture.” Therefore, the normal remedy for such errors was to learn from them, try something different, and move forward with the project.

The complexity of ethical decisions was also discussed. Jim pointed out that sometimes there is no easy answer to questions about how to deal with complex ethical issues interwoven into business decisions. Moreover, he noted that there is a paradox in “complying with unethical laws” when working internationally in the human rights field.

However, this complexity did not deter Jim from trying to hire ethical employees. He confirmed that having a strong moral character is an employment requirement and that the new hire interview process tests for “ethical shortsightedness.” The test involves

proposing a question that indirectly raises ethical issues and seeing how a job candidate answers the question. This test, administered during the interview process, according to Jim, “enables me to find out the person who has ethical shortsightedness. Not really bad, but, just, they’re obviously missing something that I consider important. If they’re missing it now, they’ll miss it in the future.”

Standard operating procedures and practices. While Jim explained that some situations made ethical decision making intrinsically complicated, he did not think that decision making in his organization was complicated by organizational procedures and practices. Rather he was able to clearly explain when standardized procedures and practices made sense and when they were not effective. He noted that his organization was well known for its revolutionary strategy. By this, he meant that the organization was innovative and working to solve problems in new ways. Jim pointed out that, when pursuing innovative breakthroughs, organizational procedure and standardization were absent, and the project followed a more open and experimental approach to encourage and support innovation. However, while innovative phases of a project might have a looser organization and employ less-than-standardized operating procedures, when the project had to “go to scale [to full production levels],” there was a need for standardized policies and procedures to achieve the goal of providing technology for a reasonable price.

The danger of burning bridges. Jim shared with me a final decision making caveat. He discussed his disdain for *burning bridges* in the workplace. Jim pointed out that, in the nonprofit world, the enemy is not another nonprofit that shares the same mission, but rather it is the human rights violators or environmental polluters that are the

adversaries. This being the case, it was not productive to pursue a zero-sum game with other nonprofits. Furthermore, he pointed out that while nonprofits compete for funds and potentially for staff, this is a relatively minor issue and that burning bridges and *demonizing* others over such matters is not a good use of time. Rather he promoted having a cordial relationship with other nonprofits, recognizing that, even the toughest nonprofit, or for that matter even for-profit competitors, might someday be potential partners.

Jim's analyses of the important elements of his own decision making were not only thoughtful, but also very specific. Given his revealing introspection, I was eager to move on to the subject of his creativity. In the next section, Jim's thoughts on creativity provide more insight into the man and his company.

Jim on Creativity

When I asked Jim if there were times when he made *creative decisions*, he told me that creative decision making, as he understood the term, was not a part of his decision process. He did concede that there might be times when a creative insight could occur during the course of making a decision. He indicated, however, that the introduction of creativity into the decision making process was not the normal state of affairs. Most decisions that he made were connected with the practicalities of running a business and, consequently, were mostly routine.

Although Jim rejected the concept of creative decision making, Jim did have much to say about how new ideas were initiated in his world. At times, Jim was hesitant to use the words, creative or creativity. Rather he preferred the terms, innovative or innovation. Nevertheless, despite this nuanced distinction, Jim shared with me the ways

he approached his work that all speak to what can be characterized as his creative nature. In particular, he spoke of two important creative processes that have served him well in his role as a social entrepreneur.

A key to creativity: New types of solutions and combining disparate ideas.

During our interview, Jim noted that he, like many other people in the technical field, has a passion for solving problems. Specifically, he said, “Solving problems is the thing that I’m the most enthusiastic about, and I think it motivates me.” He went on to say that what he likes about problems, beyond understanding how to solve them, is figuring out the nature of the difficulty so that he can look for and fashion new sorts of solutions that may have never before been tried. Jim pointed out that, for his organization as a whole, “Solving problems in a new way is the most exciting thing that we get to do.” In this statement, Jim’s emphasis was on the words *in a new way*. His organization is always looking for novel ways to solve problems because it is through novelty, according to Jim, that significant gains can be accomplished.

One way that Jim creates novel solutions is by repurposing technology from one application to another. In effect, Jim works to develop alternate ways to use accepted technology. As discussed in the background section of this case, Jim, as a student, learned about technology that could recognize various types of military tanks. These weapons systems could direct munitions to strike specific targets. When Jim repurposed this technology, he helped develop optical character recognition software that was the key technology that allowed printed text to be read aloud. The optical character recognition (OCR) technology is similar to the tank targeting technology, except, instead of distinguishing between various types of military tanks; the computer is tasked with

identifying specific letters of the alphabet. Despite the obvious differences (in size, shape, and purpose) between military tanks and letters, Jim was able to understand that the same computer technology was underlying both problem scenarios.

Jim's ability to repurpose the software from a wartime pursuit into a revolutionary technology that supported people with disabilities represents an example of Jim's desire to solve problems in new ways. Despite the fact, that there was no new science invented, Jim, through his organization, was able to provide important new technology to the disabled world and solve an age-old problem for people who cannot utilize books in the traditional way. Jim's ability to find new ways to utilize technology is a real talent and, despite Jim's modest evaluation of his skills, he is indeed inventive, resourceful, and imaginative: He is, in effect, creative.

While Jim did not claim any particular creative skill in his ability to develop new products, he did understand the potential importance of innovation using ideas from other fields or areas of study. In our discussion, he referred to this process as bringing together disparate ideas.

As we considered the possibility of innovation through disparate ideas, Jim made a distinction between what he called *deep search* and *shallow search*. Shallow search, according to research Jim had read, involved any attempt to innovate that involved incremental improvements to a product while deep search was an attempt to fundamentally remake the way of looking at a product or its markets. The primary way to accomplish deep search that Jim described was to bring together disparate ideas.

Jim discussed an example of using deep search in bringing together disparate ideas when he explained his creation of a unique sort of library. Bringing together a

Napster approach⁹ and the idea of an on-line library resulted in the creation of a book sharing project that allowed individuals to scan their own books and share them with others. In creating this new sort of library, Jim was able to offer significantly more literary selection to his clients that have print disabilities. He was also able to reduce the cost of providing the accessible books by more than a factor of ten. Jim's ability to creatively combine disparate ideas while using a deep search strategy had the power to recreate how people consider libraries. His innovation has forever changed the lives of people with disabilities because he was able to bring to life his inventive idea.

Other aspects of creativity. After Jim had shared his strategies on searching for new ways of doing things and combining disparate ideas, Jim discussed some of the other ways that he activated, developed, and sustained his creativity. This part of the interview highlighted how Jim's creativity has been shaped by his experience as a leader in various organizations.

Creativity as a learned process. When Jim volunteered his thoughts on the creative process, he pointed out that he did not believe in pure inspiration as the only catalyst for creativity. Rather, he hypothesized that what individuals called creativity was often a skill that had been learned and honed over time. Even in artistic areas like art and music, Jim stated that practice and the understanding of the theory involved in the artistic endeavor were often likely to be more important than what is normally meant by the term creativity. He said, "When I look at a creative process, . . . a lot of these things involve the mastery of technique and technology and analyzing the problem." He added, "Maybe putting your own signature on it, that makes it uniquely you, but a lot of these processes [creative processes] are learned." In other words, Jim was supporting the idea that the

⁹ Napster is company that introduced an Internet based peer-to-peer sharing of audio files.

more individuals learned and practiced within a chosen field, the more they would be *perceived* as creative.

Being innovative means embracing continuous learning and being eclectic.

Since Jim views creativity predominantly as a learned process, it seems natural that Jim would be invested in continuous learning. In order to support continuous learning, Jim reads numerous journals and articles to expand his knowledge. Jim confirmed that he reads about new ideas in his field of primary expertise and has extended his reading to all areas where his organization is active in order to expand his understanding of the issues facing his organization.

Jim also talked about a need for a deep understanding of topics. Jim pointed out that a deep understanding translates into a person being able to explain the subject to others. According to Jim, if someone claims to have such an understanding yet cannot explain that subject to him, then that means “they don’t [really] understand it.”

Furthermore, since he likes to bring together disparate ideas, Jim’s interest in eclectic fields of study could be predicted. He said that in order to be innovative, “reading many journals that are not in [my] field is important.” He claimed that his eclectic search for knowledge was “an intentional process of being open to more ideas.” Once again, Jim was talking about creativity in terms of a directed, focused, and, even, a somewhat systematic process rather than one that is inspirational in nature.

Recognizing innovator’s dilemma. Jim not only spoke about what he did to encourage creativity within himself and his company, but he also warned of a particular issue that sometimes causes organizations to fail over the long-term. According to Jim, “innovator’s dilemma” is a condition that blinds successful entrepreneurs from seeing or

acting on new opportunities.¹⁰ Citing economic interest as a factor that may impair clear analysis of situations, Jim suggested that this shortsightedness could keep ostensibly creative people from continuing to innovate in a field because they did not want to move on from their initial ideas. Jim, however, said that such problems could be overcome by developing exit strategies that, for example, would require selling older technology to make room for new innovative technology and products. In the case of Jim's organization, an older product, the reading machine for the blind, developed from the optical character recognition software, was sold to another company in order to concentrate on the book sharing library idea. In exiting the older field, Jim demonstrated that he understands how creativity can be hindered by innovator's dilemma.

The big picture. When Jim is in the process of creating new and innovative products, he is able to step back and look at a broader perspective of the world. This ability helps him consider which projects he should select to provide the most help to communities in need. He discussed with me the importance of looking at the "larger patterns of how things change in society." The understanding of how societies change is important because the forces associated with societal change influence Jim's work. In talking about the future of the organization, he used a supertanker metaphor. He noted that large ships (like an organization) take time to change course. Being able to anticipate forces that portend societal changes, in other words, helps Jim guide his nonprofit so that the organization can continue to innovate in the most appropriate areas.

Jim provided two examples: Some years ago Jim noted increasing societal concern about both human rights violations and environmental issues. As noted earlier in this case, this recognition resulted in the development of software and other products for

¹⁰ Clayton Christensen popularized this term in his book *The Innovator's Dilemma*.

related advocacy organizations. As already mentioned, in the human rights field, a software application now allows human rights defenders to gather and secure information and images that document human rights violations. The information is automatically copied to a secure network for later access. This means that the software residing on the advocate's computer may be deleted to protect the personal safety of the human rights advocate who may face grave danger in recording local events. Jim and his team of engineers have also created software to support ecologists and conservationists. This software has been designed to monitor environmental conditions and evaluate how environmental interventions are progressing.

Current events confirm Jim's understanding of the growing need for software to support both human rights and environmental activists. Because Jim was able to take a big picture view of the world a few years ago, he was able to anticipate the products that would be required. He was then able to have products ready when the need became great. In anticipating the need, Jim demonstrates how his ability to see future needs is a creative ability that supports other aspects of his innovative organization.

Calculated risk-taking supports innovation. Whenever new products are developed, there is a risk of failure. However, without at least some level of risk, no real innovation is possible. When Jim talked about risk-taking, he volunteered that his risk-taking is "calculated." By this, he meant that if the risk factors were known and the problem situation was understood, he would embark on a creative project and would "stick with it past the difficulties, but not hold on to something that's obviously going to sink." In the past, this strategy has worked for Jim. He pointed out that he had helped start seven for-profit companies, and "only five failed."

The role of patience. Jim is not only a calculated risk-taker; he also demonstrates a certain amount of patience and impatience. According to Jim, both patience and impatience can help him create innovative products and introduce innovative processes. On the one hand, Jim recognizes his impatience with the status quo can be a good thing because it makes him eager to take action to create change. However, Jim also warned that showing impatience when trying to accomplish change within an entrenched system can lead to failure. Noting the pace of change in Washington, as an example, Jim was realistic about timelines for change and recognized that “breaking eggs” would not speed change or increase his chances of success in the entrenched Washington environment. He crystalized his thoughts in this way. “For me, it’s been a process of being impatient about the results, but not so impatient to work against the objectives.” Reiterating this point, he also said, “If I tell people that they’re idiots, it may not accomplish my objective.”

Jim’s impatience with the status quo and his patience with an entrenched system are both indicators of his creative nature. His impatience has given him a willingness to overcome obstacles: a trait that might be expected in creative people. However, his patience also supports his creativity when he works for change in the United States legislative system that may be one of the most difficult to penetrate.

Passion as motivator. When Jim discussed his motivation for the work that he does, he began by saying that, generally, scientists do not have a reputation for being passionate about their work. However, despite his scientific education, passion is an emotion that motivates Jim. Furthermore, passion has nourished his love for his work. Specifically, he said, “It’s the enthusiasm for the work that has sustained me.” This

fervor keeps Jim returning to work to find new projects and products that will improve the lives of others. Jim's creativity is fired by his passion for the work, and his passion nourishes him as he continues his work.

Figuring it out and getting it done. Beyond his passion for the work, Jim is motivated by his interest in problem solving and his desire for, as he says, “getting things done.” Specifically, Jim says that he gets “a lot of reward out of getting things done . . . that’s become my motivational structure” and presumably another key to his innovative style.

With so many goals to accomplish and so much more to do, Jim talked about how he is continually “challenged” to complete more objectives. Fortunately, Jim also expressed his “deep optimism” that engineers and scientists, over time, would be able to figure out the solutions to difficult world problems.

Mentors help you find your way. As we talked about things that had helped Jim be successful, he emphasized the importance of mentors. He explained how while in university, he had the privilege and benefit of having professors serve as mentors “every step of the way” and that senior executives had served the same role when they had given him time and advice during his days in Silicon Valley for-profit startups. Jim talked about learning from mentors who “knew the ropes” and could give him information and advice that went beyond any information available in a book. Pointing out that mentors often had “the secret sauce” concerning various topics, he has relied on and continues to consult with mentors. He modestly added, that now in some roles, “I’m the mentor.” Overall, the role of mentor is important to Jim and he emphasized that mentors had

supported his development of expertise and encouraged his innovative goals in his organization.

Conclusions

Jim is a passionate social entrepreneur and scientist. He whole-heartedly believes he can make a difference in the world. He has already accomplished many things, but the work is not complete. He has many more ideas for products that will improve the social sector.

After many years in the for-profit world, Jim founded and leads a nonprofit that has created numerous and varied products that help improve the lives of people with disabilities. Early in his career, he revolutionized reading options by creating an optical character reading machine that could support people with print disabilities in their search for independence. When he had optimized that industry, he turned to the related world of libraries and created a new way for individuals to share scanned books. In addition, he has developed software for advocacy groups, and this software helps monitor and record human rights violations and helps environmentalists in their work.

In order to be financially viable and sustainable, Jim's company creates products that provide a revenue stream for the organization. This reduces the need for extensive fundraising and allows Jim to focus on his innovative products.

Jim approaches problems and their associated decisions using a mental knowledge base that he has created. Based on experience, Jim has developed a series of mental models that represent the patterns that he sees in decision making scenarios. These patterns help him more fully understand the decision scenario and help him categorize problems so that they can be more easily evaluated and resolved with already established

solution templates that he has mentally formulated. In other words, he first evaluates a decision scenario in terms of his mental models. When he detects a match with an already established mental model, he activates the preestablished decision response strategy to help him formulate a decision.

Jim displays multiple creative talents and his success in the nonprofit world has come from his ability to see where already developed technology may be re-deployed for additional good in different fields and from his ability to combine disparate ideas to create new products and services. He is continuously learning so that he can add new skills to his repertoire, and his passion sustains the hectic schedule that he pursues. Ultimately, this rocket scientist has made a difference in the world by creating what he refers to as “positive social change through technology” and has passionately pursued a career as a serial social entrepreneur.

CHAPTER SEVEN

REBEL WITH A CAUSE

Background

Susan is an international human rights advocate. The mission of the nonprofit organization that she co-founded and has led for more than 30 years is to empower people around the world who have disabilities. The mission is accomplished by advocating for human rights and by promoting the inclusion of people with disabilities in international exchange and international development programs.¹¹

The organization's focus on advocacy translates into work that is done globally to advance disability rights and leadership. The organization serves people with disabilities in the United States and also helps promote disability legislation abroad.

The goal, according to Susan, is to look at federal legislation in terms of rights. Susan explained, "I mean the whole disability thing is about just having the same rights as everybody else. It really just boils down to that." Susan spoke about how previously passed legislation in the United States required physical accommodation for people with disabilities so that they could have easier public access to work environments and other public settings. This legislation has, both literally and metaphorically, opened doors for people with disabilities. According to Susan, the issue of rights for those with disabilities in the United States has come a long way, but still has room for improvement. However, details of access and accommodation are not as assured in other countries, and Susan's organization wants to foreground the need for disability legislation enforcement around the world.

¹¹ International exchange refers to intercultural exchange such as college study abroad programs. International development refers to foreign assistance provided to developing countries for building the capacity needed to implement sustainable solutions to problems.

Susan also takes disability rights a step further by advocating for what she calls *infiltration*. Infiltration is Susan's word for a kind of advocacy that is accomplished when people with disabilities take the initiative to educate themselves on the policies and practices that surround and support various societal activities and roles. In advocating for infiltration, Susan, literally, wants people with disabilities to bring themselves and others with disabilities directly into existing programs. By doing this, people with disabilities can serve in more roles and can simultaneously provide information, expertise, and guidance to society to ensure that people with disabilities will continue to be successful as participants and leaders in existing programs.

Infiltration, according to Susan, is the next step after "inclusion." Susan explained infiltration as an action that requires people with disabilities to "push beyond preconceived notions of what's possible" and challenge themselves to change the world. Ultimately, Susan says, it is about using your *chutzpah* for the greater good.

In addition to bringing disability rights to the foreground through legislative measures and infiltration, Susan's organization also sponsors a leadership conference. Women with disabilities come from around the world to participate in an annual leadership symposium that is designed to build leadership skills and strengthen networking among the participants.

Susan suggests that leadership provides an important way that people with disabilities can participate in society. While many people have failed to see disabled individuals as potential leaders, Susan's organization is working to change that perception. By supporting leadership development, Susan hopes that people with disabilities can more often and more vocally advocate for themselves. Susan retains the

hope that such self-advocacy can help disabled people more fully join in society and participate in attempts to improve the world.

When I interviewed Susan, her organization had just completed its signature women's leadership training. The women who attended the meeting embraced the motto, *loud, proud, and passionate* with the intention of becoming more visible in the world. The women come to the conference because they share a belief that their disabilities need not keep them from accomplishing their personal goals, and they also seek the company of like-minded women with whom they can network and study leadership concepts.

Susan's organization also provides specific information to other businesses and organizations on how to increase disability inclusion in such activities as study abroad, international volunteer teaching, and work exchange programs. In this way, Susan's organization works to make sure that disabled students and young workers have opportunities to participate in international exchange and development programs—programs that have not traditionally sought out disabled participants.

The mission of the organization is personal to Susan. She became a wheelchair user over 30 years ago after injuries from an automobile accident ended her ability to walk. However, rather than focus her life as one constrained and framed by disability, Susan has set her professional and personal goals based on her abilities. After her accident, she applied for and received a Rotarian scholarship for study abroad. She studied in Australia and then traveled the Oceania region after school was over. Not only was she adventuresome enough to travel throughout Australia, she also flew to New Zealand where she and a friend, like many other young tourists of the era, hitchhiked around the country. Susan's friend also used a wheelchair; consequently, they were two

young travelers in wheelchairs, hitchhiking together in New Zealand. According to Susan, it was an experience of a lifetime, but Susan, in telling me about the trip, focused on the great adventure, seen through the eyes of two young people, and simply dismissed the disability part.

As Susan shared her thoughts with me about decision making and creativity, she mainly used examples from work situations. Of course, since she is passionate about her work, this is understandable.

Susan on Decision Making

Susan introduced interesting aspects of decision making during the interview. She talked about her reliance on the input of her work colleagues in making decisions. Furthermore, Susan also has a clear preference for fairness in all of her work, and a sense of fairness is a major theme in both her personal and organizational decision making.

Primary aspects of decision making: Achieving consensus and win-win results. Although Susan is a major contributor of ideas in the workplace, she asks other trusted associates to comment on, add to, and help her decide whether or not to implement an idea. Remaining open to the voices of her colleagues, Susan and her team test ideas and forge them into final concepts that are evaluated for implementation. Susan listens to her trusted colleagues, inside and outside of the organization, because she believes that they are brilliant, have good intentions, and their styles complement each other. When the leadership team concurs on a decision, Susan is confident that the decision is sound. Ultimately, she relies on the team's consensus as a "good barometer" concerning the rightness of an action. Susan also listens to outsiders, even those people who say negative things, because there may be "kernels of truth" in their opinions.

This method of consensus building has helped Susan make decisions—especially program decisions. Not only is consensus building helpful in evaluating good programs, it also, according to Susan, leads to “an environment that creates creativity.” What Susan meant by this statement was that consensus decisions with regard to new ideas for programs are, in effect, a way to increase and confirm creative ideas.

While gaining consensus is a primary decision making tool and also a creativity tool, Susan has another decision making tactic that is central to her decision making: She prefers *win-win* decisions that maximize outcomes for everyone.

Susan spoke of her desire to create decisions that work on many levels and for all concerned, and this is what she means by the term *win-win decisions*. Whether the decision is one that affects only those within the organization or one that affects collaborative efforts with other organizations, Susan works to maximize benefits for all. She talked about this effort in terms of “the best that we could possibly do.” Win-win appeals to Susan because she is a believer in partnership and collaboration.

Susan, for example, talked about how her organization had worked with the international exchange community. International exchange organizations work to provide opportunities for people to experience other cultures. Such organizations provide exchange clients opportunities to live and work abroad. Susan’s organization was able to provide important information on the physical accommodations necessary for people with various disabilities—including information about accommodation for people with visual and mobility disabilities. As a result, the exchange organizations are now able to offer more accommodation for people with disabilities, and, therefore, more opportunities to

travel abroad. Also, international exchange groups have more disabled people applying to their programs. In effect, Susan fashioned a win-win situation for both groups.

Susan granted that not all of her organizational decisions have worked well. However, when organizational decisions have been implemented, and the results of the decisions lead to less than successful outcomes, Susan is ready to enter what she called the *fix it* mode. In such situations, she works to fix problems by creating a repair solution that considers everyone's needs and works to everyone's benefit. She was talking about such situations when she said, "Is there a way we can come out of this where it's still a win-win?" While Susan declined to give a specific example because she was talking about issues concerning organizational employees, she was referring to how she and her staff work to find win-win solutions when problems have arisen in the workplace. Granting that she might sound a bit "Pollyannaish" (like Pollyanna who always showed infectious optimism), Susan wants to make her best effort to resolve issues by maximizing outcomes for all concerned.

Other aspects of decision making. When Susan had finalized her thoughts about gaining consensus and promoting fairness, she turned her attention to other aspects of decision making. The following section discusses other diverse aspects of Susan's decision making that underscore how she approaches work and her personal life.

Standardized policies and procedures used in decision making. During our conversation, Susan and I also discussed how standardized policies and procedures affected her efforts to make organizational decisions. In this realm of decision making, Susan also looks to maximize the positive impact of decisions and, in effect, make them win-win. She told me that policies and procedures in her organization are attempts to be

fair and transparent, and that any employee manuals are written with a goal of being fair to all concerned. Furthermore, Susan emphasized that rules are simply guidelines and that exceptions are permissible. Using equity as the guide, Susan is willing to publish a general policy that can be “tweaked” if circumstances warrant it. Since every circumstance cannot be envisioned when writing a manual, Susan indicated she prefers to have the final say if extraordinary circumstances emerge that might warrant an exception. In such cases, she makes exceptions based on her view of fairness for everyone.

Political decisions promote fairness. Susan’s belief in fairness also spilled over into our discussion about political decision making. She feels that in the political process of making laws, the primary goal is to ensure fairness for all citizens. Moreover, since Susan’s organization primarily engages in the political process in efforts to protect and promote the disabled community, she wants to make sure that the legislative process creates fair laws to protect the rights of people with disabilities. Such laws, she said, are particularly important because “policies that have teeth seem to be what’s needed to break the historical discrimination that’s happened.” Susan stated that if people with disabilities cannot count on societal fairness, then strong laws are necessary to protect the rights of those who have a disability.

Susan discussed the term politics in another context. While she feels that political maneuvering is generally negative, she also believes that politics can be important to her organization. She granted that it is necessary to be politically savvy in dealing with Washington politicians and that her organization has learned the basics in operating in such environments. However, she pointed out:

I really try not to let anything [be] negative—not to say bad things about anyone. Do what you have to do to get what you need to have done, but not to get immersed in the negative side [of politics].

Going beyond the politics of Washington, Susan described the politics involved in relationships with funders. Pointing out that sometimes these relationships also have political aspects, Susan said, “Whenever you take money, there are strings attached. To take money and think there are no strings attached, I think, is naïve.” Susan went on to say that violating the organization’s mission is not acceptable when playing politics with funders. She also acknowledged, however, that some compromises are possible to accommodate funders’ wishes. Nevertheless, she was adamant that an organization should not compromise its ideals and said, “There’s a line, and you have to decide how much you can compromise, and what is it that you won’t do.”

Ethical decision making. When Susan and I came to the end of our conversation about politics, our discussion seemed to naturally transition into a conversation about ethical decision making. Following her point about the potentially unethical aspects of some funding requests, Susan shared with me that she and her organization are seldom faced with ethical dilemmas. She is not exactly sure why that is, but she assured me that her brain is attuned to recognizing immoral or unethical aspects in decision making. She said that her response would be an immediate *no* and that any project with an unethical aspect would be “shut down.”

Reflection in decision making. There are times when Susan’s response to a suggestion is not so automatic and definitive as it is when she is confronted with an ethical dilemma. Sometimes the decision path is just not clear and, unless there is a real urgency in making a decision, Susan and her team prefer to employ what she calls a *DN*

strategy. DN refers to *do nothing*. Such an approach is suggested when no alternatives in a scenario are attractive, and reflection may be required to help illuminate the best solution. The DN strategy may be in place for only a short time, until thoughts on the situation can percolate and alternatives can be more fully conceived and understood, or the DN strategy may be in place longer because the problem scenario yields no viable solution in the short-term and must be shelved until reflection clarifies alternatives.

There is another role that reflection plays in Susan's decision making. Beyond the notion of a decision percolating, Susan also recognizes that reflection on the past helps her focus on the future. She discussed this process with enthusiasm. She commented, "I love reflection, but every time I'm reflecting, part of me is reflecting and part of me is going to the future." What Susan was describing in the reflection process was her ability to understand the aspects of past experiences and evaluate the value of those experiences. Then she is able to redirect the experience into the future to hypothesize how the next experience can be different or improved. Recognizing that one experience is in the past and cannot be changed, Susan still wants to imagine the next iteration of an experience and focus on how it can be adapted. Concerning reflection, Susan said, "Reflection is like thinking, analyzing isn't the right word, but it's like putting all the pieces together."

Susan's understanding of her personal decision making strategies was extensive, and she was able to explain how her decision making processes were linked with those of her colleagues at work. In the next section, Susan discusses her creativity, including how she remains open to creative possibilities in her search for novel projects and outcomes.

Susan on Creativity

Susan suggested that the work that she does in her organization reflects her creativity in empowering people with disabilities. She is not sure, however, that she employs *creative decision making*. Even when she reflected for some time on the concept of creative decision making, Susan was not able to articulate a clear understanding of the role of creativity in her decision making. She did acknowledge that some of her creativity was “ingrained,” but could not say, for sure, whether her decision making was ever creative. Since one of Susan’s primary decision making styles involves consensus, it is possible that the decision scenario and the people with whom she collaborates to make decisions influence whether or not creativity is employed in the decision making process.

However, even though Susan was not sure about the utilization of creativity in her decision making, she, like other MacArthur Fellows interviewed, talked about various components of her creativity. Some of the components that Susan mentioned are similar to those observed in other fellows, and some are unique. The following section outlines the major ways that Susan said her creativity is demonstrated at work.

A key to creativity: Possibility and new roles for people with disabilities.

Susan discussed her creativity in terms of achieving goals by implementing new ideas. She explained her desire to be “totally open to possibility” so she can accomplish goals never before attempted. She said that her ability to embrace possibility is “freeing” and sometimes is “a really good thing” because even though, at times, she has little experience in an area, she is willing to move forward with an idea.

To explain how she looked at possibility, she said, “I’m totally comfortable with the fact that I don’t know what I’m doing.” By this, she meant, that she would not let a lack of experience in any given area keep her from exploring alternatives in that field. Furthermore, she pointed to the negative effects of “deficit thinking” that often keep people from attempting activities because they are convinced, sometimes by others or even by their own reasoning, that a lack of experience or not knowing enough will undermine the ability to be successful in an activity. Susan’s ability to be open to possibility is part of her creativity because her ability to disconnect experience and knowledge from the possibility of success allows her to dream bigger dreams and seek bigger challenges.

To more fully explain this point, Susan noted that doing something new might not produce perfect results, but it is the attempt that is important. She is also not concerned that others might be able to do a better job. Rather than being limited by the prospect that others might be more skilled, Susan said, “If someone has a better idea and can do it better, then so be it. Let them bring it on.” What Susan meant by this quote is that she believes in her ability to fashion good outcomes and she does not feel threatened by the ideas of others. Susan is reinforcing the concept that good ideas, rather than experience, can yield great successes. Furthermore, she is pointing out that action is required. Simply having good ideas does not get the job done.

Since Susan is willing to try new things, it is not surprising that she encourages others, especially other people with disabilities, to investigate and seek new roles in society. However, when Susan brings people with disabilities into new roles, she often finds that others who are not living with disabilities do not believe that the person with

the disability can fully participate in mainstream activities like community leadership or activism. She told me of a meeting with a government agency employee who said, “Well, we don’t think people with disabilities are going to be the future leaders of the world.” Fortunately, such negativism only emboldens Susan in her quest to empower people with disabilities.

While Susan understands that people with disabilities have not historically been considered leaders or potential leaders, Susan and her organization are working to change this situation, first by raising awareness of possibilities for people with disabilities within the general public and, then, by helping people with disabilities get the information, training, and encouragement that they need to seek out and be successful in new groundbreaking roles. The result is that Susan uses her creative abilities to envision strategies to empower people with disabilities and also works to change societal stereotypes about people with disabilities. Her final word on the subject during the interview was a quote from a disabled woman who participated in the latest leadership conference. That participant said: “Don’t try to live up to society’s expectations of you; they’re much too low.”

Other aspects of creativity. Susan’s discussion about a search for new ideas and about new roles for people with disabilities was thoughtfully shared. While Susan foregrounds these aspects of her creativity, she also added other carefully considered aspects of creativity that she employs in her search for novel outcomes.

Combining disparate ideas. Susan identified and described one of her favorite ways of creating innovative strategies for people with disabilities. She talked about her ability to creatively combine disparate ideas taken from various environments to develop

an idea that may never before have been considered or may have been previously discarded as unrealistic. For instance, Susan told me that her response to the government employee who doubted the leadership ability of those who are disabled was to create and schedule a leadership seminar for women with disabilities. She wanted to bring leadership training to the disabled community, in effect, bridging two worlds that had not previously been joined in any substantive manner. As part of the leadership training, she even arranged for the women, all with disabilities, to participate in a *ropes*¹² course. During the day of ropes challenges, several women who used wheelchairs participated, including one person who was quadriplegic. When the experiential day was complete, the women with disabilities were able to marvel at all they had accomplished. In creating the leadership event, Susan had a two-fold opportunity: She was introducing aspects of leadership to the women, and she was creatively encouraging them to realize their leadership potential.

Real creativity means generating excitement about taking action. While Susan is, what might be called, an idea generator who brings together disparate ideas, she also recognizes that just putting forward an idea is insufficient. She knows that she also needs to champion the idea and get others excited about it. She says, of her ability to create excitement about her ideas, “My job is to get everybody as excited about it as I am because if I’m the only one . . . [excited about an idea], it won’t happen.” As an example, she recalled a time that she suggested that the assembled attendees of a leadership conference create a music video. Susan said that she was able to “spark” enthusiasm for

¹² A ropes course uses physical challenges, often relatively extreme tests, to teach leadership principles.

the idea and that the resulting video is now a YouTube sensation with more than 24,000 hits.

Not only does Susan understand her role as cheerleader, she also confirms that her ultimate goal is to take action and actually accomplish a stated goal. Pointing out that her creative ideas have to actually promote action, she said, “It has to become real. It has to affect people. It has to make a difference in somebody’s life.” She summed up her position by saying, “I think that I’m an idealist, but I’m also a realist. I’d much rather have a small idea and really make it happen than have some big idea that never happens.” Because Susan wants to accomplish her dreams by actually taking action, she will never settle for a dream that achieves less. Susan, like many MacArthur Fellows, is not interested in lofty visions without down-to-earth results.

Tolerance for ambiguity and controlled chaos. Before Susan finds the best way to take action, she may need to pass through a creative space that is imbued with ambiguity and chaos. For some, living in this space is difficult because it may require an ability to suspend judgment until a clear action path becomes obvious. Susan, however, while well aware of this nebulous gap, is happy to operate in this space. She said, “I love ambiguity.” In discussing ambiguity, she explained that the space was satisfying because “there’s no right or no wrong [answer].” Pointing to the connection between creativity, ambiguity, and chaos Susan stated, “Ambiguity and, sometimes, a bit of chaos and then let it settle—I think that’s part of the creativity thing.” In addition, as she spoke about controlled chaos, she acknowledged her sense that “there is no order, but eventually there will be an order.” In all of these statements, Susan accepts the fact that creativity, for her, may begin in chaos and ambiguity, and then, over time, an order emerges so that her

creation can be complete. Fortunately, the interim of ambiguity and chaos, does not discourage or dissuade Susan; rather she sees it as a, sometimes, necessary state that portends a good result.

Persistence and creativity. Beyond embracing ambiguity and chaos, Susan also recognizes her persistent nature. Creative people, according to the literature review, are often persistent (Sternberg, 2006). This is because they may need to persist over time in order to see their creativity emerge in its fullest form. Moreover, doing anything for the first time generally results in the need for more effort and persistence.

Susan gave me an example of her persistence. Many years ago she had seen a photo exhibit that was made up of portraits of African American women who had changed the world in their roles as activists. The photos of the exhibit had also been made into a book to commemorate the exposition. Susan realized the potential for creating a parallel exhibit featuring the portraits of women with disabilities who had changed the world. Not only did Susan want the exhibit, but she also wanted the book. Regrettably, no one was willing to fund either project. However, after numerous years of suggesting the idea to potential donors, Susan was able to obtain funding. At the time of our interview, the portrait book of women with disabilities had just been published, and the exhibit was debuting in a downtown museum. A national tour schedule was also being negotiated.

Impervious to hurtful words. Susan's creativity is also enhanced by another characteristic that she displays. While she has not been subjected to discrimination because of her disability, Susan pointed out that she is not affected or deterred by attempts at discrimination. Furthermore, while she has also heard insensitive and

dismissive words that are cruel and hurtful, the remarks and the people who intone them do not dishearten her. Susan said, “I don’t internalize anything,” and she added, “It’s their problem—about them.” In refusing to let what people say penetrate her psyche and deter her from her job, Susan not only deflects the vitriolic words of others, but she also turns the discrimination into a powerful incentive to accomplish her goals. She is, in effect, animated by the hurtful comments, and she is even more enthusiastic about accomplishing her goals.

When Susan initially told me that she is not disheartened by hurtful words that concern her disability, I considered that Susan was just expert at hiding the hurt that came from those thoughtless and unkind words. However, over the course of the whole interview, I came to understand that Susan really is able to dismiss the words of people who would reject her for her disability or see her as a “nonperson.” In talking about the discriminatory actions and words of some people, Susan said, “Are you kidding? The absurdity has always hit me so directly.” Moreover, she pointed out that she does not get angry because of personal insults; rather, she said, “I get angry about injustice.” The creative part finally emerged in its full form: Susan can transform the cruel and hurtful words directed at her into a resolve to defeat injustice on behalf of the entire disabled community. This seems to be a very creative answer to those who would dismiss her.

Risk-taking supports creativity. As mentioned in other cases, calculated risk-taking is often seen as a personality trait in creative people (Sternberg, 2006). Susan, like other MacArthur Fellows, is willing to take calculated risks. She described the calculated part of her risk-taking as having “my safety net built in.” By this, Susan meant that she carefully evaluates and monitors organizational program risks by minimizing or limiting

downside risk. For instance, she pointed out that she always makes sure that sufficient tickets have been sold before the night of a major fundraiser so that the fundraiser will, at least, break even and negative financial results can be avoided. She summarized this concept by saying, “We raise money before we spend money.”

When creating novel activities during an event, however, Susan is less concerned about risk. She sees novel program activities as a challenge that she would like to pursue, and she is willing to take the risk—in this case, without a safety net. For Susan, new activities within programs are part of the calculated risk-taking that she routinely seeks.

When novel activities in programs do not work out as planned, Susan takes the problem in stride. She conveyed her confidence in herself and her organization, by saying, “It’s okay. That didn’t work. Now, what’s next?” In this way, Susan demonstrates her equanimity in the face of failure and her resilient belief in herself. She has the courage to accept failure and move on without fanfare.

Intuition and creativity. When I asked Susan about her understanding of intuition, as it related to creativity, she told me that while some people felt that intuition was a synonym for gut feel, she is more inclined to believe that previous experiences inform what others define as intuition. However, she does not entirely rule out the possibility of another type of knowing. She suggested that she may develop a creative idea based partly on intuition, but she is likely to augment intuition with additional kinds of information. She said about intuition: “It’s more an art than a science,” and she indicated that, at times, “my intuition is probably just a bit off.” In other words, Susan inferred that it is all right to consider intuition, but it probably is not reasonable to trust in it entirely. For instance, she would not embark on a project that she considered to be

creative simply on the basis of intuition. Rather she would augment intuition with more systematic investigations.

Passion as a catalyst for creativity. Rather than being influenced by intuition, Susan attributed her excitement for a project as a manifestation of her passion. Susan claimed to be “driven” by passion, and the emotion is a strong and central motivator in her work.

Susan’s passion has even been translated into a slogan that her organization uses. As mentioned earlier, the disabled women that the organization serves claim that they are *loud, proud, and passionate*. This theme reverberates through the organization’s leadership literature and is the central theme of the music video created by the last leadership conference attendees. Furthermore, Susan sees it as part of her leadership role to infect others with her passion for the work. She even talked about forming relationships with others so that they would “catch” her passion. Click footnote to see the music video.¹³

While Susan claims that her passion is a positive emotion that she focuses on the disability rights field, she also acknowledges that the emotion is, at least partly, a negative emotion—anger. Susan can feel anger as she thinks about the unjust ways that disabled people are treated in the world. However, taking both the positive and negative aspects of her passion, she uses passion to motivate herself, her organization, and her leadership students.

Mentors who support creativity. Creative people often report the existence and support of mentors in their lives (Lubart, 1994; Sternberg, 2006). Susan does not like the word mentor, but prefers to speak of role models in her life who have helped shape her

¹³ <http://youtu.be/uxxomUVsSik>

worldview and who have demonstrated a “philosophy of life” that she wishes to emulate. In talking about her parents, Susan said, “It’s more like they modeled—they modeled behavior for me and they modeled a philosophy of life and an attitude of joy.” Susan’s parents, both Holocaust survivors, must have been exceptional role models to emphasize the joy they found in life rather than dwell on the dire circumstances that they had to endure before Susan was born. However, according to Susan, they were “the most positive people I have ever met.” They did not let the past destroy their lives. Rather, they embraced life with an attitude of joy and positivity.

Susan’s parents also displayed self-starting and creative behavior that served as an example for their daughter. Susan’s mother was a world-class figure skater and her father spoke nine languages, which were all self-taught. Susan’s parents encouraged her in her pursuit of new goals and new endeavors—passing on their *can do* attitude.

Workplace colleagues may also serve as role models and support creativity. Susan spoke about how her co-workers contribute to a creative workplace atmosphere. She spoke about collegial work that brought together different ideas that, when combined, enhanced creativity. She said, “I’m always looking for people who are very innovative or have a way of thinking of things that’s out of the ordinary.” Such colleagues, she said, bring “different pieces that I don’t have.” While Susan did not use the word, diversity, it was as if she was speaking about the value of diversity in the workplace.

Hiring more than expertise. In order to ensure the diversity that is needed to support and encourage creativity, Susan wants to hire the best person for a job. When we discussed how she chooses candidates to work in her organization, she touched on the

various characteristics that employees need to have to be successful working with her. In large part, Susan referred to the need for more than expertise in a job. She talked about the creative aspects that are necessary to be successful. In talking about the best people to hire, Susan said, “I would probably weigh more heavily on their ability to think, to be creative, to be positive, to be innovative because if you have someone with a lot of expertise, and they don’t have all those other qualities, it is not going to work.” Susan implied that to work effectively with her, employees needed to share her creative approach and be open to possibility. Furthermore, she pointed out, that experience was only one factor important in the hiring process. Other attributes, including creativity, must be present in order to develop a cohesive and appropriate fit with other team members.

Conclusions

Susan advocates for people with disabilities. She has created and continues to lead a nonprofit that promotes not only societal inclusion for those with disabilities, but also encourages societal infiltration. Infiltration is Susan’s word for a kind of disability advocacy. To infiltrate, Susan encourages people with disabilities to bring themselves and others with disabilities directly into existing societal roles and programs. When this occurs, people with disabilities can lead the way in promoting diversity and inclusion. Moreover, those with disabilities can provide important information, expertise, and guidance to ensure that organizations have correct information so that they can appropriately support people with disabilities as they participate in existing programs and services. Susan is the role model for her organization and for self-advocacy, as she has been a wheelchair user for more than 30 years.

Consensus and collaboration are important ways that decisions are made within Susan's organization. Susan depends on her team of executives to help make decisions and to plan and execute various organizational programs that promote disability inclusion in international exchange, international development, and leadership training. If the organizational executives reach a consensus, Susan is inclined to believe that the decision is sound.

Susan is also convinced that decision making is improved when a win-win philosophy is employed. This means that outcomes need to be maximized for all involved; not just Susan's organization. Even if a decision goes wrong, fix-it solutions need to be win-win.

When it comes to creativity, Susan prides herself on being open to possibility. Possibility refers to any creative option that may, or may not, have ever been tried in a particular situation. Susan often gravitates to creating a program that has not previously been attempted. Furthermore, Susan does not think that experience is a prerequisite for creativity. She is content to forge ahead to implement her creative ideas even if she has not had prior involvement in a field. She even laughingly comments that she is completely content with not knowing what she is doing.

In looking for creative solutions, Susan is good at combining disparate ideas, is open to ambiguity, and even to chaos. She is also persistent, willing to take risks, has a passion for her work, and has been guided by mentors that have influenced her worldview.

Susan's vision for the world is that disability will become an unimportant issue in determining the roles that people take in society. She wants to dismantle all types of

barriers for people with disabilities. Furthermore, she wants to permanently alter negative stereotypes and change society's expectations about people who live with disabilities. Said another way, she wants to see those with disabilities empowered to take their equal and rightful place in society and ultimately have a chance to fulfill their dreams. Susan's passion for her work positions her as a champion for the rights of the disabled. She is a classic example of a *rebel with a cause*.

CHAPTER EIGHT

A MODERN DAY PIED PIPER

Background

Anne lives and works in the beautiful Sierra Nevada Mountains. She has long been concerned about the future of the region, and, as a result, she created an organization that works to safeguard the unique features of the area. These features, according to Anne, are ones that give the area its physical beauty; the mountains, lakes, and forests are magnificent. Moreover, these natural features remain untouched and unspoiled by human sprawl and pollution. They draw visitors and residents to the region that want to savor the natural and pristine environment. Consequently, keeping that environment healthy is critical to the economic health of the region.

The organization that Anne created oversees the development of the region. The members of the organization are individuals who recognize that both the region's natural beauty and its economic potential contribute to the overall social welfare of the whole region. Members understand how the various aspects of the region are inextricably linked and that successful future development depends on making sure that growth is both sustainable and viable.

Anne wanted the members of her aspirational organization to embrace a total agenda for the Sierra Nevada Mountains that included concerns for the environment, for business needs, and for the overarching desires of people who lived, or would like to live, in the area. At the outset, she expressed the goals for this imagined organization as ones that would promote a healthy local society that combined “a foundation of strong social capital, natural capital, and financial capital.”

Anne envisioned that her forward thinking members would understand that the environmental quality of the area was an economic asset and would work to reduce tension commonly present when environmentalists and business people work together. People, according to Anne, needed to “stop thinking of it as a choice between environmental quality and economic excellence.” Rather, she felt that environmental quality was “a key component of economic excellence.”

To make her dream organization a reality, Anne decided to approach business people with her idea for a nonprofit organization. Anne chose business leaders as prospective members because she knew that business leaders are often opinion leaders within their own communities. She needed these people who had local credibility to champion the vision that she had laid out for the nonprofit organization.

Anne also wanted business leaders from throughout the Sierra Nevada region. If this was to be a veritable regional effort, she needed to find members from many communities who understood her vision and would be willing to take up the challenge of making her vision a reality within their local areas.

In particular, Anne believed that the founding members needed to be able to “step outside of their comfort zones” in order to engage their friends and business associates in this holistic approach to economic development. Recognizing that some business people see environmentalists as extremists and that some environmentalists see business people as narrowly focused on profit, Anne’s initial members were challenged to bring the “new-fangled message” to their communities in an attempt to basically change societal norms.

Anne started her forward-thinking nonprofit organization and found all of the prominent *out of the box* thinkers who would be willing to join and promote the nascent organization to others. Moreover, her core group came from different parts of the region.

Anne also recognized the need for the membership to share concerns, obstacles, and problems with each other. Given that the members were spread all over the region, there needed to be some way to bring them together. Anne, as head of the new organization, solved this problem by arranging seminars on such common concerns as town planning strategies and fiscal stewardship, as well as on negotiating and problem solving skills.

Moreover, Anne created an organization where her members could feel at home, had a safe place to learn about regional issues, and could confer on how to establish a new way of doing things for the overall benefit of the region. In the interview, Anne shared with me her decision making strategies and processes for creating and sustaining the organization and explained her approach to creativity.

Anne on Decision Making

Anne is a no nonsense and practical leader. During the interview, her description of her decision making strategies seemed to reflect this general approach to life. She spoke confidently about her approaches to decisions and shared candid examples of her experiences.

Primary decision making processes: Information gathering, logic, and action.

Anne commented that her decision making is supported by the information that she gathers from people involved in the decision scenario and her analysis of that information. She said that when she considers a decision, she is “able to think things

through clearly, get information from a lot of people, and [then] make decisions.” Once she has the information and has thought through the decision, her path is clear.

Concerning the progression of the decision process, she said, “Get the information, think it through. Let’s do this. Boom, boom, and then no revisiting the decision. No agonizing.”

Anne talked in-depth about her information gathering. To explain her process, she described the early months before her nonprofit was formed when she was interviewing potential members. She spoke about the single sheet of paper that initially defined the organization as she envisioned it. As she traveled around the region to enlist members, she demonstrated her information gathering skills. She asked prospective members:

What do you think? Is this a good idea? Is this a bad idea? Is this something you would want to be part of? If you were part of something like this, what kinds of things would you want to work on?

While Anne has a defined way to gather information, analyze it, and then make a decision, she did not suggest that all her decisions are correct. However, even if a decision turns out to be incorrect, she remains unconcerned. She commented, “I mean, you make a wrong decision, but it’s, like, you know—you made the decision, you know why you made the decision.” She implied that even if a decision proved to be incorrect, she knew that she had made the decision based on the most up-to-date information available at the time. Therefore, it was not the decision process that was the problem, but rather the fact she had had insufficient or incorrect information available when she initially made the decision.

Anne also mentioned how using logic gives her clarity in her decision making.

She said:

I have sort of a clarity—I have an ability to kind of see my way through decisions that some people think are really hard. There is a kind of a . . . logic, there's almost a . . . logic tree. If this, then that . . . it's just clear, and it's not a hard decision. It's an easy decision.

Anne expanded her explanation of decision making when she discussed how she makes decisions in the presence of tradeoffs. She explained that such situations require going back to the fundamental aspects of the decision. Given a tradeoff, Anne indicated she asks herself, “What are we really after? What are we really trying to get done here?”

Action is an important aspect of decision making for Anne. She was animated as she discussed her need to see some sort of action as the outcome of her decision making.

She was unequivocal when she said:

I'm only interested in doing this work if we're aggressively moving the ball down the field, and if we're not going to move the ball, if we're all going to sit and have a huddle for a couple of years, I'm out of here. I'm not interested in that.

To make sure that I understood the point, she emphasized the previous statement by saying, “Forward mo.” By this, Anne was referring to forward motion. She required action and forward movement after making a decision. A lack of action was anathema to Anne.

In discussing her occasional frustration with a lack of action-oriented decision making, Anne said, “You don't bring on somebody like me and keep me locked in the closet.” Anne prides herself on decisiveness and will not waste her time on work that does not allow her ample opportunity to take action and achieve results. Allowing that not all people share her need for action, Anne realizes that some people “would not have

a really good time working with me because they . . . would feel like they were driving off a cliff every day.”

Anne continued by talking about her interest in starting new projects on a regular basis. She described her method of operating as “having a lot of plates going” at one time, and she said she was hopeful that “no big plates will drop.”

One concern that Anne expressed about her own quest for action was that she sometimes ended up not extensively consulting others for their decision making input. In such situations, she ended up with unhappy associates who did not feel that they had had sufficient opportunity to contribute input to a decision. Anne said that they often said such things as, “Wait, wait a second. We haven’t had a chance to weigh in on that.” In such cases, Anne recognized that she was leaving people behind, but she hurried to say that it was not out of disrespect for the input of others, but rather that she was opportunistically taking advantage of a situation in order to create results. Calling her impatience to take action “a blessing and a burden,” she clearly considered action more important than the need to placate others by consulting them.

Other aspects of decision making. While Anne’s primary decision making strategies and processes involve information gathering, logic, and action, she uses other aspects of decision making to augment her primary processes. Some of these processes are situational, but they generally reflect the various thought processes and considerations that she employs when she looks at a decision scenario.

Strategic planning helps in decision making. Recognizing the ongoing problem of staying focused on organizational goals, Anne favors creating a strategic plan that can help an organization formulate an agreed upon basis for taking action and can give her a

framework in which she can safely operate. The goal-making process also creates a roadmap for all associates that delineates primary and secondary goals. Furthermore, the strategic plan meets the more general goal of helping outsiders more easily understand organizational objectives.

The creation of a strategic plan requires insiders to define and come to agreement on specific organizational goals. Therefore, Anne uses the strategic planning process to bring order to her organization and help insiders and outsiders more easily understand the scope of the organization's responsibilities. In some cases, according to Anne, this is helpful because different organizational members have different, and, sometimes, even competing goals they wish to promote. Consequently, having a metaphorical roadmap, written and available for view, can be helpful and reassuring. At the very least, it can keep the organization from straying from its core goals.

Political decision making. The use of a strategic plan also helps Anne with issues of politics in an organization. The strategic plan can prevent or, at least, reduce political maneuvering because a clearly defined strategic plan makes politically motivated behavior less effective.

Anne wanted to discuss the influence of politics on decision making in other ways. Separating small and big P politics, Anne said that her small P politics are an ongoing problem for her because, as mentioned earlier, she is not always sufficiently sensitive to the need to keep others informed about planned activities and, occasionally, fails to seek advice before acting. Sometimes she even knows she will get in trouble for this failure to inform others, but she does not delay her action. This is because taking action is, in Anne's words, "so the right thing to do." However, Anne did acknowledge,

“Probably it would be better if, as soon as I know I’m doing that [acting without seeking advice], I figured out the strategy for catching people up rather than worrying about it [organizational members’ upset and anger] later.”

Anne described big P politics as United States governmental politics and pointed out that her “sensitivity nodes” are very acute when such politics are in play. By this, she meant that politics, or the playing of politics, is an ongoing concern, particularly, in the environmental field. Since press on environmental issues can often promote mixed reactions from the public, Anne prefers to keep her organization out of the political limelight. For instance, Anne recognizes that how her organization is presented in the press will impact organizational members and their relationships in the business community. As a result, she wants to be sensitive to her members’ concerns about politics.

Reflection in decision making. As mentioned earlier in this case, Anne wants to make action-oriented decisions and also wants to take action quickly once decisions are made. However, Anne did acknowledge that there are times when she does not have the capacity to quickly make a decision. At such times, and if a decision is not needed immediately, Anne is willing to sit back and reflect for a period of time before making a decision.

Anne relies on reflection if a problem is “sticky” and if she lacks a clear decision path. According to Anne, reflection, as a strategy, can help clarify not only the right thing to do, but can also sometimes suggest how a decision can best be accomplished.

Ethical decision making. Anne explained one example of a decision that required reflection and also highlighted how she thought about ethics in decision making.

She told me that she had been concerned about how to deal with a long-time associate who was no longer able to fully engage in organizational meetings. This person, a long-time and trusted colleague, could no longer fully participate in deliberations about the organization. However, while others suggested that Anne just stop sharing organizational data in order to avoid a difficult conversation, Anne preferred to deal more directly with the situation. Upon reflection, Anne decided that the best way to honor the long-time contributions of the person and keep her own personal integrity intact was to have a forthright exchange rather than let the problem linger.

Another example of ethical treatment that Anne presented to me concerned the *demonizing* of a fellow environmental activist. Anne explained that there is an environmental “terrier,” as Anne characterized him, working in the state of California. He is a very action-oriented, and, oftentimes, a very effective operator in the environmental movement. However, many times, local environmentalists belittle this man, claiming that he is motivated by a desire for personal aggrandizement; they think that he is a puffed up braggart. In their rush to judgment, Anne shares that these people are “So mad at his [personality] foibles . . . that they couldn’t even acknowledge what a valuable role he played [in a specific environmental confrontation].” Anne sees the dismissal of the man as an ethical violation because others have made biased and unreliable judgments based on personal dislike and stereotyping. Anne would prefer to not demonize the man and likes to give credit where credit is due, even if she has reservations about his personality. Anne pointed out that she prefers to keep informed about what the man is doing and has met with him to keep open a channel of communication despite the reservations of others.

In her ethical decision making, Anne connects ethics with integrity. She prefers to exhibit fair-mindedness and personal directness. She does not want to mince her words and hide her intent.

Rules of the game. In addition to talking about dealing ethically with others, Anne discussed the importance of having an organization that has agreed-upon rules of conduct. The rules that Anne likes to have in place are an extension of Anne's desire to be transparent about her motives, and they reflect her basic sense of integrity.

While others might think of these rules as standard operating procedures, Anne referred to these expectations about interpersonal conduct as *rules of the game* that have been put in place to dictate behavior. Such rules might be as simple as common courtesy or timely response to email inquiries. However, the prescribed rules of conduct that Anne was describing also included the tenets of successful collaboration that she sees as important underpinnings of any organization's decision making. In talking about a specific collaborative project, Anne said, "Collaboration has to work. It has to be in the interest of each of [the collaborators] . . . otherwise, they shouldn't do it." For Anne, standard operating procedures were connected with all sorts of behavior that characterizes social interaction.

Anne also noted that too many rules could result in organizational paralysis because excessive rules could result in "tying us up in knots." In such cases, too many rules inhibited decision making and impacted the ability to take action. The most advantageous and productive place to be, according to Anne, was where rules were pragmatic so that decision making could proceed effectively and result in action.

As Anne considered rules of the game, she pointed out that power dynamics in an organization could obscure and even, at times, trump established rules. After noting that she does not work well with “hierarchical control freaks,” she also noted that those people who like hierarchy in relationships often resort to “power games” and are uncomfortable with “nuanced and irregular relationships.” What Anne was saying, in this discussion, was that while she thrives in nonhierarchical relationships, is used to having nuanced dealings with others, and is not interested in power games, others with whom she sometimes collaborates prefer more traditional hierarchical relationships in the leadership structure. When Anne bumps up against such people, there is often discontent that erupts into power struggles. In other words, Anne has an easier time, and fewer interpersonal conflicts, if others with whom she works mirror her approach to organizational leadership. Moreover, she thinks that more gets done—decisions and action—when colleagues can work in a fluid relationship that is directly focused on the desired goals.

Bumps in the road. Even when Anne is allowed to operate with little hierarchy, she still has come to expect what she calls *bumps in the road*. When we talked about how she responded to unexpected occurrences in organizational projects and programs, Anne was very clear that she has a high tolerance for challenges and expects things to go wrong in the process of accomplishing goals. Anne pointed out that she is “not easily rattled” and that “if nothing goes wrong then you’re probably not putting yourself out there enough.” She extended the discussion to say, “If you’re doing something challenging, you’re going to definitely run into bumps in the road, and you should expect those.”

Anne has even developed an analogy for organizational and project challenges. She describes such challenges as “skiing the bumps.” This phrase is a skiing term that refers to mogul skiing where snow obstacles (bumps) are present on the skiing hill, providing the skier with additional challenges in descending the slope. Anne used this skiing term as an analogy to encourage others to gravitate towards challenges; in other words, ski the bumps. To extend the analogy, Anne said, “Falling down in the middle of the mogul field is not a failure, it’s just a bump in the road.” She completed the analogy by saying, “I just think that [dealing with problems] is a very normal part of getting anything done.”

When Anne says she has a high tolerance for dealing with bumps, she is indicating that she is flexible and resourceful in dealing with project problems. All of this implies a need for creativity and creative responses to organizational challenges. In the next section on creativity Anne clarified the subject and shared key thoughts about creativity.

Anne on Creativity

When Anne and I concluded our conversation about decision making and began our discussion about creativity, she was quick to say that she thought that creativity should be part of all activities and that the notion of being creative was equivalent to regularly producing “high quality, interesting, new ideas.” Furthermore, Anne compared the act of creating to being “on our game all the time.” She also felt that it was important for leaders to “figure out how to encourage and support more creativity in other people.”

While Anne talked about the importance of creativity, she was adamant that the term should not be connected with the concept of genius. She said, “All this business

about genius, I think is just ridiculous.” Rather than connecting creativity with mental superiority, Anne commented that creative people share three traits. She said that creative people tend to think outside of the box, are very energetic, and they love what they do. Anne defined thinking outside of the box as a willingness to work and operate in an unusual way, using different approaches, and taking risks to accomplish goals using new methods.

When I asked Anne about the term *creative decision making*, Anne said, “Hopefully creativity is part of everything we do, every decision, every action, every planning process.” Somewhat ironically, she also was sure that she did not make creative decisions. Rather she referred back to her earlier observation that her decision making was defined by her clear thinking and action-oriented approach to solving problems and making decisions. It was as if she was saying that creative thoughts were central in the process of decision making, but that the creative thoughts were a precursor to the later process of decision making. In other words, Anne seemed to indicate that the two processes were separate, but the first process—creativity—informed the second process—decision making.

A key to creativity: A big picture approach and tolerance for ambiguity.

During our discussion, Anne explained how she constructed opportunities for groups to look at the big picture in order to enhance creative collaboration. Anne called this big picture view, the *interspace* approach. She described this method as finding a space—an interspace—where multiple interests could be satisfied. Anne explained it this way. “If you develop a range of solutions that might meet one person’s needs and a range of solutions that might meet another person’s needs, you’ll find that there’s some overlap

there.” What Anne was suggesting is that solutions, even to tough problems, often can be found in the overlap. If opposing sides could look for the overlap and give up their precise and detailed a priori positions, more progress could be made in creatively finding solutions.

Anne noted, for instance, that when she brought groups together to discuss business and environmental issues, not all people shared the same views on specific issues, but they, at least, had a common view of the larger picture; that is they shared the same hopeful vision of prosperous communities inhabited by people who were able to enjoy nature’s gifts. Since the various members shared some general community goals, Anne wanted to keep highlighting those general goals so that the group would focus there rather than on the specific details of individual positions that were more likely to cause intergroup conflict. According to Anne, if an interests approach is taken, individuals are less likely to take sides over an issue and end up screaming at each other. Of course, Anne was pointing out the futility of such interactions, recognizing that little is gained when a situation devolves like this.

Anne suggested that her strength is in helping people see the big picture and helping them look for the interspace. According to her, there is a “certain sophistication about process that’s required to . . . tease out those solutions that will work for lots of different people in the room.” Recognizing that people typically bring their positions rather than their more general interests to the table, Anne seeks to turn the zero-sum game of positions into a big picture expression of a win-win based on the commonality of interests.

Anne creatively approaches such problem scenarios. Her recognition of the difference between position and interest is, itself, somewhat novel and, consequently, more than a little creative, and her nuanced approach to collaborative decision making has helped her bring groups, often with opposing positions, through successful negotiations. For me, Anne seems like the pied piper of the past who helps lead others in a search for creative answers to weighty problems. It is her creative process of dealing with issues, and her persistence in that process, that seems to help establish a platform for accord rather than a continuing atmosphere of discord.

In Anne's experience, a big picture view of the world is related to her high tolerance for ambiguity in a situation. Anne recognizes that she will only fully understand the big picture as a situation develops. She calls this situational progress an "organic development." For instance, as a project advances, Anne says she is willing to follow a path that is not "mapped out in advance." In following the path, she is also willing to make a "course correction," if necessary. She said, "I don't need to know four steps down. I just need to know two steps down, and then once I get two steps down, the other two steps will become clearer." This tolerance for ambiguity requires Anne to have faith in the process. She must be willing to trust that solutions will be revealed as the process develops.

Other aspects of creativity. When Anne had finished discussing her propensity to take a big picture view and her tolerance for ambiguity, she continued sharing other aspects of her world that she believes are associated with her creativity. These various facets of creativity are diverse and broad. They do, however, provide a more detailed sense of Anne's creativity.

Intuition and creativity. According to Anne, intuition does play a role in creatively finding solutions. However, Anne defines intuition in a somewhat nontraditional way. Rather than defining it as an alternate way of knowing, she links the term to big picture thinking. She says that intuition is more common in women because women have “a lot of connective tissue in [their] brains.” This additional connective tissue helps women “see things in a more holistic and integrated way.” The holistic and integrated nature of women’s brains, therefore, allows them to more easily view situations in the big picture framework that Anne sees as contributing to a more creative look at a situation.

Creatively bringing groups together. Anne’s ability to think holistically also helps her be creative in another way. She is able to see the synergistic nature of environmental and business concerns in the Sierra Nevada region. Being creative enough to understand how environmental and business interests are interconnected, she was able to envision the types of people that she wanted as members in her nonprofit organization. They were people who inherently understood the nature of the overlapping interests of environment and business, and they were people who would be willing to fight for both interests in creating development plans for the region.

Having identified the prospective membership, Anne then needed to find the funders that would help jumpstart the nonprofit organization she was starting. The challenge was that while members were from the business community, the funders occupied environmental camps. Here Anne needed another creative approach to securing funding for her organization. She needed to convince environmental funders to provide

money for an organization of business people. While this dilemma might have stumped other people, Anne understood how she could solve the problem in a creative way.

Since Anne's background is in both environmental and business organizations, she understood the potential disconnect between the membership and the funders. In order to manage this issue, she decided to foreground her business experience in soliciting members and put her environmentalist experience in the background. However, since her organization was created as a nonprofit, she understood that it was her past experience as an executive director of an environmental organization that would be attractive to funders. Anne unabashedly acknowledged that she adapted her pitch to her audience and made sure that she persuaded both groups to support her newly forming organization. She, in effect, hedged her position—new members saw her as basically a businessperson, and funders viewed her as an environmentalist. In bringing together these two groups, Anne showed how she could foster economic success for the region by creatively bringing together traditional adversaries.

Risk-taking makes life more interesting. In bringing together the business members and the environmental funders, Anne was taking a substantial risk: What if the two groups could not find common ground? For Anne, this sort of risk-taking is commonplace. It is also, according to creativity researchers, the sort of risk-taking that marks individual creativity (Sternberg, 2006).

During our interview, Anne noted that she has a very high tolerance for risk. She added that her husband even suggests that she has the heart of venture capitalist. She looks for risky projects, revels in their creation, and is actively involved in their undertaking. In short, Anne is willing to take risks that go beyond, what might be

considered, calculated. Moreover, she also pointed out that risky endeavors are more interesting, and they are the sorts of projects that “create change” which Anne seeks in her work.

Passion for her work enhances creativity. Anne is motivated by passion for her work. Passion for work was discussed in the literature review and was identified as an attribute often seen in creative people (Lubart, 1994).

Anne’s passion inspires her creativity. As a way of indicating how important passion is to her, Anne shared with me the advice that she gives young people setting off in their careers. She said, “I’d say [to young people] it doesn’t matter a red hot damn what you do as long as whatever you do it’s something you really like to do. Pick something you really like to do and just go do it.” These are not just words of advice for others; this is Anne’s mantra in her own life.

As a matter of fact, Anne claims that she can only be successful if she is passionate about what she is doing. She notes that her passion for her work is connected with her energy level. The more passion she has for a project, the more energy she has to work on the project.

Persistence as a requirement for creativity. If passion is what motivates Anne, persistence is what sustains her. According to Anne, people who work around her claim that she is persistent. For example, when Anne tells the story of recruiting business members from the Sierra Nevada region, she talks of the long hours of driving to meet people from various parts of the region. Furthermore, she spoke of the repeated meetings with prospective members to finally claim a meager check for one or two hundred dollars that represented the fee for membership in the organization. These stories speak to her

persistence in getting the organization off the ground and her general approach to life that recognizes that persistence is imperative if a person is going to solve difficult problems.

Collaboration and creativity. Despite the fact that Anne's organization was founded by a tentative accord between two traditionally opposing groups—business people and environmentalists—Anne has, over the years, forged a collaborative partnership between the two groups. This is part of the success of Anne's creativity. She has brought together, and kept together, two groups that are traditionally foes in the real world.

Anne's success also stems from the fact that she values collaboration as a way to stimulate creativity. However, she warns that if collaboration turns into a zero-sum game, it is “a poison” to efforts to achieve a consensus. Furthermore, she is adamant that collaboration has to result in action and achievement. The worst result would be that collaboration ends with work on a project that “grinds to a halt” or is so labor intensive that it results in “collaboration fatigue.”

Anne has occasionally been concerned about this collaboration fatigue in organizational work, and she warned about the frustration “people who are action-oriented can feel in a collaborative process because they're very results-oriented, and they feel like it's gumming up their works to have to involve so many people in what they're doing.” However, she pointed out that, because she is action-oriented and can evaluate information quickly in order to come to a decision, she is able to help others move along in the decision process. In other words, she has the creative ability to help others find clarity in complicated decision scenarios, and she is also able to help others learn an analysis process that supports the collaborative effort.

Mentors support creativity. Like many creative people, Anne, has benefited from mentors (Lubart, 1994; Sternberg, 2006). These mentors have helped support Anne's creativity and have served as teachers and idea generators. She also pointed out that she is always "on the look-out for how to steal good ideas from people and to learn from them." In this discussion, Anne was not really talking about stealing in a negative sort of way, but rather was using the expression to point out that she values what she calls "memorable work" and likes to acknowledge it by emulating ideas suggested by mentors.

Anne also wants to hire people who can be her mentors. She wants the best and brightest and really is activated by the opportunity to work with creative people who are like-minded. She also talked to me about her role as mentor to others. She values this role, and, at the time of our interview, was actively involved in a formal mentoring program, sponsoring an emerging nonprofit executive in her organization. Recognizing that people are the key to teaching others skills, Anne wants to encourage others to "take risks and . . . put themselves out there with some really cool idea."

Conclusions

When Anne became clear that the environmental health and the financial health of the Sierra Nevada region were inextricably linked, she knew that she wanted to create a nonprofit organization that would bring together thoughtful leaders from business to promote and protect all of the region's assets. The organization that was to be created needed to help its members learn about sustainable growth and learn how to encourage people with different agendas to work together. Anne created the organization and set into place a powerful cadre of business people who would work to make the region environmentally and economically sustainable.

Anne eschews the idea that environmental interests do not logically fit with business interests and dismisses the social norm that suggests that there is a need to choose between environmental excellence and economic prosperity. Rather she demonstrates her creativity by demanding solutions where both environmental excellence and economic prosperity are maximized.

Anne has led the decision making in her organization by making decisions based on gathered information and logic. She is extremely action-oriented and wants decisions to lead to activities that solve dilemmas and create change. She, however, does expect there to be bumps in the road. When obstacles surface, Anne encourages herself, and those around her, to work through problems and continue the forward motion that leads to achievement of organizational goals.

Anne demonstrates her creative abilities by helping those around her understand the big picture. Moreover, she helps people creatively solve disputes and fashion win-win solutions by having them practice standing back from their positions on important subjects and working to see if common interests can be found. By focusing on interests rather than positions, Anne takes advantage of the interspace to find solutions to difficult problems.

In the process of planning a project or seeking change, Anne is content with ambiguity and knows that solutions may be emergent. She simply trusts that a dispute resolution process will succeed if everyone is willing to make an honest effort to work together.

Ultimately, Anne likes to connect different kinds of people in an effort to achieve her goals. She is a catalyst for bringing together unlikely allies, and she serves as a novel kind of pied piper to help groups creatively solve problems.

CHAPTER NINE

A MODERN DAY MEDICINE WOMAN

Background

Victoria's dream is to live in a world where all people have their basic needs met. In particular, she wants more equity in the availability of health resources, and she wants to make sure that those who are "voiceless and invisible" can avail themselves of modern medical solutions.

Fortunately, Victoria has positioned herself to help the world's poorest attain better medical care. She is a social entrepreneur in the pharmaceutical industry, and she develops new drugs and medical solutions that help poor people. However, Victoria's work is not limited to the laboratory work of the scientist; she also seeks social justice for people of the developing world through her work.

After receiving a Ph.D. in Pharmaceutical Chemistry, Victoria was employed by an American biotech company and came to understand the issues surrounding so-called *orphan* drugs and diseases. An orphan drug is a pharmaceutical agent that has been developed to treat a rare medical condition called an orphan disease. Orphan diseases are often life-threatening conditions, but they do not affect substantial numbers of people in the West. As a result, an orphan disease does not create a profitable drug market and for-profit companies do not routinely seek a drug solution for the disease because there is little or no profit in the work. The term orphan drug is also used to describe a drug that is used to treat a condition that is present among poor people. Even though many people may suffer from such a disease or condition, there is little or no profit in creating drugs for poor people in the developing world. As a result, drugs, once again, are not

developed for these deadly diseases because for-profit pharmaceutical companies have no profit incentive to create a curative medicine.

Victoria, however, is interested in social justice. For her, social justice means helping the very poorest of the world get the medical attention that they require and deserve. Recognizing that the for-profit model that generally requires a solitary pursuit of profit was simply not the way to approach a wider health concern and solve a social justice issue, Victoria looked for another way to bring lifesaving drugs to the poor in developing countries.

Since a for-profit business model, by its very nature, could not help Victoria reach her goals, she created a nonprofit organization to develop and distribute low-cost medicines to developing countries. Victoria approached philanthropic organizations for the funds to create a new drug, or repurpose an older drug, for use in the fight against diseases commonly found in developing countries. For example, visceral leishmaniasis, the second most deadly parasitic disease in the world following malaria, was killing two hundred thousand children a year in countries like India, Bangladesh, and Nepal, where families of children who suffer from this disease often live on \$1 a day. There was no effective treatment regimen for the disease, and even the less effective treatment protocol that cost \$300 was not a viable solution because the parents of children suffering from the fatal parasite could not afford the medicine. Victoria's organization developed antibiotics that cured the disease for a fraction of the former cost, making treatment a real option for all families with children afflicted by the parasite.

Over time, Victoria's organization developed numerous drugs using the nonprofit model. However, Victoria realized that the nonprofit financial model lacked the

flexibility and process capability to support her larger organizational goals. Said another way, Victoria recognized that the nonprofit model was limited by its structure and power potential and could not support the sweeping goals that she wanted to pursue to solve the health problems of the poor. While the nonprofit financial model was sufficient to support nonprofit research and the creation of drugs, it could not allow Victoria's organization to achieve the broader and more impactful goal of reaching the actual patients and serving their specific needs. Victoria wanted to reach these patients, not just by producing the actual drugs, but also by bringing appropriate treatment to them in their communities.

Victoria decided that another business model was necessary to solve these intractable world health problems that she saw and wanted to address. She envisioned a new model as a mix between the for-profit and nonprofit business models. The new way of doing business would take the workable features from the for-profit and nonprofit worlds and blend them to work in her specific world of drug research and pharmaceutical distribution.

The value of the nonprofit model, Victoria realized, was its focus on mission and no concern with shareholder profit. However, the shortcoming of the nonprofit model was that it required repeatedly identifying and securing funding for expensive projects. Victoria understood, from experience, that fund raising could take significant time; she recognized that the continual need to secure funds was a distraction for an organization. Also, the nonprofit model frowned on paying high salaries (in large part because funders and boards objected to high salaries), and Victoria knew, again from experience, that competitive wages needed to be paid to research scientists who were operating on the

cutting edge of drug development. As she considered the problem, Victoria discerned from the financial facts of the matter before her, that the new business model that she needed was a hybrid—in this case, it was an organization that was mission driven but, still, financially viable.

Moreover, Victoria recognized that taking medicines to the world's poorest people was not just about creating the drug formulas, but was also about manufacturing, warehousing, distributing, and training local providers about the product that she had developed. She needed to include these large-scale and expensive systems in her new model. Victoria called these expensive support systems the *engine* for the deployment of the drugs developed, and she recognized that, without these important systems, she could not have a truly significant impact on the global health of poor people.

This engine that was missing from Victoria's current nonprofit could, however, be found in a for-profit partner. A well-selected partner could provide both the engine for the manufacture and distribution of the product and could also supply the financial funding for drug development.

Victoria found a suitable for-profit partner. She then created a new hybrid organization that developed and brought to market an effective, reversible, and long-acting IUD birth control device that could compete in the for-profit market in the United States. Her for-profit partner, a well-respected and recognized pharmaceutical company, was allowed to manufacture and sell the newly created product to this rich market at full margin. The partner then paid Victoria's organization a percentage of each sale (a predetermined royalty). The partner would also distribute the medical devices at substantially lower prices to developing nations that had a great need for the product, yet

had a reduced ability to pay full margin prices. In both cases, the partner was also obliged to use its extensive support systems to develop the marketing, distribution, and training necessary to make sure that the product was successfully distributed to all locations where it was needed.

In effect, Victoria allowed her for-profit partner to sell the medical products created by her organization, and, in exchange, Victoria was able to secure an ongoing revenue stream for her organization. This ongoing revenue stream would fund future drug development, creating a sustainable social enterprise. Also, she was using her partner organization's substantial engine to achieve her mission-related goal of distributing the product in poor countries. This mission-related goal would promote the empowerment of women around the world—a significant social justice accomplishment.

Victoria's hybrid nonprofit organization continues to focus on addressing important problems. It continues to develop new drugs and medical devices for sale around the world, and it also supports the needs of the world's poorest people. In speaking about the creation of the hybrid model, Victoria said that it was an attempt to “give birth to a solution, a potential solution to reduce disparity. It's to carry forward those who have been left behind.”

Victoria on Decision Making

Victoria's approach to decision making provides an unusual combination of decision making attributes. In the interview Victoria shared her faith in decision making using science's principles and also highlighted the importance of other ways of knowing.

Primary decision making processes: Science, intuition, and trust. Victoria is a trained scientist and she has come to rely on science's tenets as a way of knowing and as

a way of making decisions. What Victoria likes about science is that it not about “male or female. It’s not about power or structures. It’s about nature and truth.”

For Victoria, however, science’s ways are insufficient because, in science, if you cannot measure something or you cannot prove something, it’s not judged to be true. According to Victoria, while knowledge can be gained through science, science does not have the full answer because knowledge can be gained in other ways.

Intuition, according to Victoria, goes beyond what science allows us to understand and enters into another realm of knowing. “It is,” she told me, “a knowing beyond the five senses that we have mapped, and that we understand, and that are measurable.” In other words, intuition is how a person knows something by feeling it.

Intuition has played an important role in Victoria’s life. It was because of intuition that she left her job at a for-profit drug company and began her first nonprofit pharmaceutical organization. Furthermore, her intuition serves as a gauge concerning people. Her intuition is particularly helpful when she must choose a business partner, and she tends to rely on her instincts in such matters. In honoring her intuition, Victoria has not been disappointed and has now come to really trust this particular way of knowing. While Victoria still relies on science in many ways, she also acknowledges that a significant portion of her decision making is prompted by her intuitive sense of what is right.

Victoria also considers trust important in her decision making. She believes that her intuition will guide her choice of business partners and, once chosen, trust is the best foundation for a business agreement. In speaking about the lack of trust in the world, Victoria said:

It's [trust that is] really lacking in our world. We want to get there [to trust] through surrogates like contracts and legal agreements and requirements and laws. We can really only go so far with that. When we make the biggest leaps, it is where we have trust.

According to Victoria, trust is about surrender:

It's releasing control. That means that it is not about me. . . . It's trusting that your partner, who you don't really know, wants this more than you do, and is going to put more effort in than you do, that that's a possibility, and how could that be so? Just believing in that possibility is a huge trust.

While this combination of science, intuition, and trust can influence Victoria's decision making and subsequent actions, Victoria also uses other decision making strategies and processes to guide her. She knows that decision making has multiple facets and that goal attainment depends on using various approaches.

Other aspects of decision making. In the last section Victoria had interesting things to say about her diverse ways of making decisions. In this section additional aspects of Victoria's decision making are foregrounded. Together the two sections give a broad overview of Victoria's varied approaches to decision making.

Negotiating with potential partners. Victoria has a good track record working with partners because she is an expert negotiator. She understands that business requires the give and take of negotiation, and she criticized legislators in the United States Congress, very much in the news at the time of our interview, for not understanding this simple fact.

Victoria confided that, when dealing with for-profit partners, she emphasizes the mission that guides her nonprofit and, in so doing, she sets the stage for success. Victoria also indicated that she identifies what she calls her "must haves," and begins her process of negotiation by stating those requirements. According to Victoria, for-profits venerate

the concept of mission and often accept her declaration of must haves as non-negotiable items when she frames her needs in terms of the organizational mission statement. In other words, for-profits, according to Victoria, accept mission-related bottom lines as inviolate and non-fungible negotiating points.

Victoria knows that the products she offers her partners are excellent and that what she is selling is attractive to a potential for-profit partner. As a result, she takes a strong negotiating position and has high expectations in her negotiating goals. She certainly does not take a begging-for-money attitude. When discussing interactions with a potential for-profit partner, she explained how she proposes the deal:

You want this beautiful product? We're going to dance in front of you and show you how beautiful it is. It comes bundled with a provision for the poor. Here's how you do it. Here's what it looks like. Here's what it costs. We're going to lead it [the partnership]. You have to work with us on it. They don't separate. You take them both together, or you don't take anything [the markets for the rich and the poor].

For-profits may take some time to fully understand the partnership that Victoria is proposing and not all accept her terms. However, there are organizations that do understand the components of the partnership and completely comprehend its financial appeal. These organizations step up to become full partners with Victoria and her organization. While the structure of Victoria's organization is somewhat unusual, once a potential partner organization understands the responsibilities and benefits of partnership, the partner organization's leadership generally is intrigued by the possibilities and is likely to want to participate in the joint venture.

Political decision making. When we talked about the presence of politics in her organizational decision making, Victoria was quick to say that she always steers clear of what she called big P politics. Being in the business of caring for women's reproductive

health has made Victoria shy about taking center stage in that discussion. She preferred, she said, “to stay below the radar” because all the technical work in which she engaged kept her busy, and she did not want to be sidetracked into the energy-consuming political debate on the subject.

In discussing little P politics, Victoria reminisced about earlier times when she ran a more traditional nonprofit where funder politics were customary. She talked about how she needed funders to give her money to develop new drugs and medical devices. In those days, funders sometimes approached Victoria with ideas of their own about drug development strategies. However, if the project proposed was not a fit with her organization’s vision and technical capacity, Victoria always rejected the project. Sometimes, funders were dismayed and, even, at times, angry when she refused their money. In such cases, Victoria was left with the political fallout of her decisions and had to explain to the funder that mission trumped money.

Ethical decision making. While Victoria did not have trouble making the little decisions that came her way, she did have more consternation about some ethical decisions that, from time-to-time, were present in her organization. The nature of the ethical decisions—and the ethical dilemmas that prompted them—generally surrounded the concept of informed consent. The problem consistently arose for Victoria when she was conducting clinical trials in poor countries and her organization attempted to enroll subjects in the trials. According to Victoria, the ethics of the situation “got muddy” when informed consent was really a sham requirement for participation in the trial. This occurred when Victoria was dealing with exceptionally poor people who were dying and had no alternatives but the free clinical trial that Victoria was running. In such cases,

there was no real consent because there were no alternatives, and people had no real choice about withdrawing from the study. Also, at times, scientific explanations of the treatment were so complex that subjects could not fully understand the nature of the risks and so were not adequately informed of the dangers inherent in participating.

Despite the fact that such situations are common in drug trials in developing countries, Victoria still worries about the ethics of the situation. In the end, there is no solution to the informed consent ethical problem, but Victoria has always made sure that her clinical trials do not risk the health of subjects, and she makes sure that she engages health care providers who work at the local level in the decision making process.

Another potential moral dilemma that Victoria discussed was one concerning an unethical use of her contraceptive IUD. Victoria pointed out that the low cost and high efficacy of the product might lend itself to forced birth control. In such cases, women might be required to accept the birth control device that could prevent them from conceiving. Victoria explained the concern when she said:

In the developing world we are going to take it down to cost of goods [selling cost would be equal to cost of manufacturing]. We may get to the point where it's too good an option for governments to say no to. . . . Women may be forced to have it.

Victoria indicated that her organization would keep a watchful eye for any such situations. She added that only limited quantities of the product would be shipped to any one nation and that replenishment cycles would be monitored to prevent the unethical use of the product.

Standard operating procedures. While Victoria might have to continually monitor the possible development of ethical dilemmas that are a consequence of the decisions she and her organization make, she was more readily able to monitor and

control the way that standard operating procedures (SOPs) informed organizational decision making. She said, “I must say that, within this organization, there are some employees who are all about SOPs and straight and narrow. But everyone can’t be like that. We have got to have some *creatives*.” By this, Victoria meant that while standard operating procedures might be required in the drug approval process, creative thinking and independent decision making were necessary in the process of formulating the drugs and creating new chemical compositions. Victoria understood the value of each type of thinker and recognized that each served a valuable purpose in different areas of the organization.

Victoria on Creativity

Victoria spoke to me about her own creativity and her need to express it in her work. She pointed out that the regulatory procedures for drug development are formulaic and tedious, but, she also noted that, despite needing to adhere to these prescribed procedures, she has opportunities to express her creativity. She said that if her job was only about the rote activities associated with securing Federal Drug Administration approval, “who would want to do this work?”

Though Victoria expressed a need to be creative in an enterprise that had a fair amount of repetitiveness built into it, she also understands that an atmosphere of intense creativity can also be tiring, especially for her staff. She pointed to the balancing act needed in her organization. Speaking of creativity, she said, “Yeah, call it in when you need it. When you have a whole team to care for, not everyone can manage that—the intensity of it [the creative atmosphere].” Therefore, Victoria acknowledged that the process of seeking creative insights and producing creative products can be, in some

ways, as taxing on staff as the repetitive nature of other aspects of work in the organization.

When we discussed the term *creative decision making*, Victoria was convinced that there was such a thing. She acknowledged, for instance, that her development of the hybrid business model for her current organization was a product of creative decision making. She noted that during her two years of research before she began operating the fledgling organization, she had looked for alternate models with no success. Therefore, when she finally hit on the current hybrid structure for the organization, she understood the value of its novel components. However, Victoria acknowledged that not all of her decision making can be termed creative. Sometimes, the work was just about making routine decisions to move the work forward.

A key to creativity: Choosing an alternate path. In talking about her creativity, Victoria frequently used the word *path*. For instance, Victoria talked about finding a path to a solution and then following the path to reach goals. However, when the initial path she followed to a solution was blocked or led to a dead end, that's when Victoria said that her creativity really emerged. In discussing the path process, she labeled the paths with letters. She said, "It's often because we don't like A or E [paths]. So, okay, we have to create some more [paths] even if we don't know today whether there are any—we're going to work on it." What Victoria meant by this statement was that finding creative solutions can be about taking a path that has not previously been taken. It may sometimes mean searching for alternatives that no one has tried before or that no one has tried in the particular situation being confronted. However, when a solution to a problem is hard to discern, a path to the solution needs to be actively sought.

Victoria elaborated on the process of finding paths. She said, “It’s not black and white. It’s not yes or no. It’s a maybe.” She also pointed out that creativity sometimes emerged when researchers stepped back from the apparent problem: “Step back,” Victoria said at one point. “Do not choose right now. We’re at a fork. Back up and get off of the fork. Do not choose. Let’s create some more paths.”

Other aspects of creativity. In our discussion Victoria was clear that her central approach to creativity involved the discerning and following of new paths to discover novel ways of doing things. In the next section Victoria elaborates on how to discover these new paths.

Experimenting to discovery. When Victoria began her search for a new hybrid business model that was suitable for use in nonprofit pharmaceuticals production, she had some fundamental business experience that came from her days of drug development in the for-profit world. However, she had no specific advanced education in business. As she sought to develop her first nonprofit pharmaceutical company, she considered the possibility of attending a master’s program in business (MBA) to increase her understanding of the central concepts of commerce. She wanted to better understand how business worked, but she was also seeking feedback on her ideas for a revolutionary nonprofit business model that could be used to develop drugs. When she consulted others for advice, they dissuaded her from embracing a traditional business curriculum. They advised Victoria that seeking an MBA would not advance her goals. Furthermore, they said that the results of attending a traditional business school would be counterproductive: “You will be convinced that your ideas will never work,” they told her.

Victoria did not want to be told that her ideas would not work. What she really wanted to do was to conduct the experiment that her scientific background told her would prove or disprove her hypothesis. Although she had been told that she was contemplating building an organization that did not “financially make sense,” she still wanted to test the theory and gather data about the efficacy (or lack of efficacy) of the new model she envisioned. According to Victoria, sometimes, “it’s really good to be naïve.” The results of the experiment demonstrated that, although some might have characterized her as naïve and inexperienced, she was correct in her assumptions about the viability of the new hybrid organizational model. In short, she proved that a nonprofit organization can develop and deliver lifesaving drugs to the poorest populations of the world and also be financially self-sustaining.

Conventional wisdom can negatively impact creativity. As Victoria discussed her process of creating the hybrid nonprofit business model, she also, more generally, talked about the connection between conventional wisdom and creativity. She pointed out that some of the greatest discoveries in the world do not emerge from the work of the most experienced scientists. She felt that the problem was that experts frequently failed to conduct unconventional experiments. Instead, they were more likely to accept the conventional and conformist teachings of their peers and never really investigate the validity and/or viability of alternate arguments.

While Victoria did not give a specific example, she talked about experienced scientists who would be unlikely to experiment with a new idea. She said, “They’ll say, that will never work. Why try that? Oh no, that’s ridiculous.” What Victoria was indicating by such comments was that experienced scientists might be hampered and

constrained by the very fact that, as she said, “they know too much.” Giving more detail about the phenomenon, Victoria continued, “There’s a funny reality in science—sometimes the hottest scientific findings are revealed by graduate students, not the professors, simply because the student was too ‘dumb’ to know the experiment would never work, so they performed it, and voila! ” In other words, a highly-educated scientist may experience an entrenchment of knowledge that keeps him or her from seeing new possibilities. Victoria, in recognizing the shortcomings of what might be termed, conventional wisdom, just preferred to do an experiment to test a theory, and, in so doing, refused to be held back by the beliefs of others.

Surrendering to a call. During our interview Victoria talked, in great detail, about how her creativity was connected with a calling. This calling was described as “an imperative,” an imperative to pursue work with and for the poor. She described the calling in more detail. She said, “It was a spiritual calling for me. When I say I have to do it [develop drugs for the poorest in the world], I think I would have gotten sick if I didn’t.”

Victoria believes that she is a medicine woman from the past and that her work is what she is here on earth to do “this time around.” Her calling, she told me, came in the form of a sign from the universe. The sign seemed so obvious to her that she proceeded with little fear because she knew that her actions were what the universe expected of her. She saw the gap that needed to be filled, knew what needed to be done, and had the skills to do it: She just needed to get started. It was her calling that motivated her creativity and gave it form.

In the interview, Victoria told me that she not only felt compelled to pursue her work in drug development, but she also discussed the process in terms of “surrendering” or “releasing” to her calling. She wanted to make sure that I did not interpret the verb *surrender* as related to weakness, but rather, she told me that she considered surrender to be part of what she referred to as a middle space. In discussing surrendering, she said, “You don’t surrender and roll over and die. It’s not that kind of surrender. But it isn’t go out and do battle and die either. The point is not to die. It’s to be in that middle space.” When Victoria talked about finding the middle space, she seemed to mean that she is called to find the purpose for her life through her work. The middle space is a place from which she can accomplish her goals effectively without continuous struggle and suffering, and it is here that she can creatively apply her understanding of nonprofit pharmaceutical development to achieve her goals.

Tolerance for ambiguity. Having a tolerance for ambiguity is also a part of Victoria’s surrender and also, presumably, a contributor to her creativity. The inability to know or understand is something with which Victoria can be comfortable. Also, ambiguity is likely to precede surrender. Victoria said of ambiguity, “You become more comfortable with it. I can’t say you ever welcome it, but you can recognize it. All right, here we go again. Time to let go [surrender].”

Victoria even equated a tolerance for ambiguity with a sense of delayed gratification. She called the experience *delayed gratification* because she realizes that she might need to wait for a revelation in order to understand a situation. In talking about accepting ambiguity, she said, “Accepting that you cannot understand all of it right now. It’s just not the right time, but it [understanding] will come.” This ability to delay

gratification and live in a state of ambiguity allows creative notions to incubate and percolate into fully formed creative ideas.

Risk-taking can lead to growth. Victoria has found that tolerating ambiguity serves a real purpose in her life. In a like manner, risk-taking is essential in achieving her goals.

Victoria described her risk-taking in terms of a simile. She said that learning to take risks is like flying on a trapeze. She spoke of how the trapeze artist must swing from bar to bar. She noted that the performer can only transfer from one swing to another by letting go of the first swing before the second trapeze is within reach. Hence, Victoria said, a person needs to trust that he or she can survive in the “space between the trapeze bars” where one is literally falling. This, according to Victoria, is the embodiment of risk—the understanding that you can survive the risk. Adding that the veritable leap of faith can feel like quicksand for a period of time, Victoria believes that this place of risk is “where you really shine and where a growth opportunity is.” This place, for Victoria, may also be where creative thoughts are born.

Victoria has learned to seek risk so that she can learn and grow, but she also realizes that others may be afraid of the risk. In such cases, leaders need to support those who are frightened. Ultimately Victoria equated risk-taking to a gift in life. She asked rhetorically, “Do you want to receive the gift?”

Creativity may involve acting like a child. During our conversation, Victoria and I talked about the apparently natural way that children accept their personal gifts and talents. She discussed how children seem to easily believe in themselves and express their capacities without embarrassment. Victoria also noted it was only later in life that

self-doubt begins to plague individuals and restrict their self-expression. Victoria, by her own assessment, is not overwhelmed with self-doubt and continues to express her gifts and talents even into adulthood. She told me that she believes that she is actually “ordinary,” but that she has “a lot of courage or . . . [is] a little bit crazy.” What Victoria seemed to be saying was that, for some reason, she has maintained the courage she had as a child and does not fear fully expressing herself.

The childhood courage that Victoria possesses also translates into a willingness to take chances that others commonly avoid. This conversation brought us back to the trapeze simile where Victoria likened taking chances to the efforts of a trapeze artist. Victoria reminded me that the trapeze artist may have some fear and that fear may serve a good purpose in keeping a person alive, but ultimately being paralyzed with fear will not get the job done. Upon reflection, Victoria agreed that her courage is an important part of her creativity because it gives her the desire to try new things and undertake new projects.

Bumps in the road can encourage creative success. According to Victoria, bumps in the road will always be part of creating new projects. One sort of bump that Victoria talked about is a problem or development that unexpectedly surfaces during the course of a project. Such bumps should not hinder a project, but may require a change in strategy. Another kind of bump, according to Victoria, can be people who, before or during a project, attempt to discourage Victoria from achieving her goals. However, this second kind of bump (i.e., the discouraging people type of bump) ultimately can have a positive effect on a project. According to Victoria, rather than allowing such people’s criticism to dissuade her from accomplishing her goals, she is more likely to redouble her efforts in response to the negative remarks of others. This means that people who

Victoria considers to be bumps in the road might actually improve Victoria's chances of completing a project successfully.

In short, Victoria recognizes that the presence of people who tell her she cannot do something, or cannot have something, can energize her, helping her to stay motivated to achieve a goal. She told me the story of a well-meaning female professor who counseled Victoria to remain single and childless if she planned to pursue a career in pharmaceutical development. Victoria listened to the professor's advice, and, then, became determined to prove her wrong. This pattern of redoubling efforts in the face of discouraging words has been repeated throughout her career. Others, for example, warned her that she could not create a self-sustaining nonprofit, and Victoria concluded she needed to prove these naysayers wrong. Not only did she think the idea was sound, but she also refused to take no for an answer or let others take away her personal sense of power in the project. Victoria was adamant that she had the power to create her dream organization, and she ultimately proved that no one could dissuade her with advice that would eclipse her dream. Her creativity was able to emerge because she was not disheartened by the discouraging words of others.

Motivated by passion. As was noted in the literature review, Lubart (1994) suggested that passion can be a key ingredient of creativity. Victoria's passion certainly was evident when I interviewed her. Her passion centers on helping poor people in developing countries get the medical treatment that they deserve. In particular, Victoria is determined to provide for the health needs of women and children living in poverty by creating drugs and medical devices that can bring a modicum of modern medicine to this

underserved group. The same determination also motivated Victoria to create a very different kind of organization: one that serves both first and third sector goals.

In speaking about her work, Victoria spoke about two ways that passion motivates her. First, she said that passion expressed as anger and frustration can channel her energy. In speaking about anger and frustration, Victoria acknowledged, “It can channel and bring forth, and call forth a force that is needed.” She did not deny that these negative emotions, as she called them, could arouse her to action, but she noted that over the long-term they are not sufficient motivation to accomplish a project. Furthermore, Victoria counseled that passion should not be used to “battle, or to argue, or to fight” because this is a waste of energy.

What is really needed to sustain activity and complete goals is a second dimension of passion. Victoria described this dimension as the ability to “roll with the current.” If a person can do this, his or her passion may be put to better use and more can get done than through actions fueled by anger. The passion of anger and frustration, in other words, is like a fire that burns hot and quickly, but the passion that is associated with thoughtful determination may give off less initial heat, but burns over a longer time. It is this second type of passion that helps sustain concerted efforts and activates creativity to find the best solutions to problems, according to Victoria, and it is this second dimension of passion that helps Victoria accomplish her goals.

Collaboration through partnerships. Victoria discussed how partnerships and collaboration also helped increase her creativity and accomplish her goals. As discussed earlier, Victoria’s sustainable nonprofit business model depends on having a for-profit partner that can bring certain business skills to the partnership and can collaborate on

getting goals accomplished. However, while Victoria needs some specific skills and business attributes in her partners, she also thinks that doing business through partnership and collaboration results in a better general outcome for all concerned. She said:

Partnership is extraordinarily important in our world. . . . You get the best, the most from partnerships . . . [and within partnerships] you're the most nimble, and you're the most responsive. It is, I think, the way of the future, if you really want to be innovative.

Victoria also discussed the Western world's notion of partnership: Partners are individuals or groups of people with whom one collaborates because they have power and skills that are needed by the partnership. Victoria, however, is not completely convinced that this definition is accurate and complete. She also likes to partner with individuals and groups who do not have power and obvious skills that might enhance the power of the partnership. She believes that those who she calls "voiceless and invisible" also have something to contribute. It is her belief that a discussion with the poor can help the partnership and lead to more innovative work. Victoria pointed out that, if she wants to provide products and services to the poorest, she needs to consult with them to ascertain what they need and how it can best be provided. As we concluded our discussion about partnership and collaboration, Victoria summed up her thoughts about the search for good partners. She said, "If you actually want to disrupt or shake up the world a little bit, or lead change, or, God forbid, have impact, you really need people who think differently."

Mentors are there to support your passion and help you be creative. Beyond partners, Victoria spoke of the people who had supported her when she was developing the theoretical concept for a sustainable nonprofit pharmaceutical research company. She

spoke about how these people—her mentors—were positive people who just wanted to support her dream. Her advice to others:

Find the people you can talk to about it [your dreams] who are positive in some way. They may just be looking into your eyes, and they may know nothing about what you want to do, but they see that you're passionate about it.

In short, for Victoria, mentors need not have technical expertise. Rather they must be naturally optimistic and must be capable of understanding mentees' personal passion for a project. Mentors can be catalysts for success, in other words, even if they simply listen to a person's excitement and just encourage the person to act.

Conclusions

Victoria has a dream to improve the lives of the poorest people of the world by bringing them the lifesaving drugs and medical devices that they need and deserve. She has the educational background to be able to develop new drugs and medical devices, and she has the creative insight to find ways to deliver her product at little or no cost. While for-profit pharmaceutical companies normally conclude that it is too expensive to market drugs to the poor, Victoria has found a way to deliver the drugs very inexpensively to the poor, and she has accomplished this while making a profit. She is, in effect, creating a nonprofit pharmaceutical company that is financially sustainable.

Victoria's education was influenced by the canons of scientific method, and she honors the values of observation and proof that underpin science's framework. Furthermore, she understands that making decisions using the tenets of science is important. However, Victoria has come to understand another type of knowing that extends beyond science. She has accepted the value of intuition, and she understands that trusting her intuition is an important part of the way that she makes decisions in some

situations. When she works as a scientist she is using her brain to calculate and evaluate outcomes. When she uses intuition to make decisions, she is depending on her heart to help her decide on correct courses of action. Both types of decision making are important to her, and she is adamant that both have contributed to her success.

Though Victoria values intuition, she likes to conduct actual experiments to see if her more intuitive, creative ideas are viable. She also worries that conventional wisdom can squash creative ideas and warns against accepting the entrenched beliefs of others. She has an ability to tolerate ambiguity and to take risks to achieve her goals. Furthermore, she has the courage of her convictions—a courage that sustains her when others think what she is doing will not work.

Victoria counsels that looking for new paths will improve a person's ability to be creative, and the process of surrendering to a calling can help creativity fully emerge. Mentors also support her, and she depends upon them for insights and encouragement.

All of Victoria's creative traits are nourished by her passion for the work that she pursues. She seeks collaborative partners who understand the creativity of her nonprofit solution, and she partners with them only if they believe in her goal to reduce disparity in health care. Ultimately, Victoria has used her creativity to extend her global reach, and she has become a modern day medicine woman.

CHAPTER TEN

THE CIVIC MINDED ENVIRONMENTALIST

Background

Wilma is a chemist by training and president of a chemical laboratory and consulting firm in Louisiana. While she does have some paying customers in the area, 75% of Wilma's business is pro bono consulting. She has spent more than three decades providing technical assistance to citizens and communities who have been victimized by environmental polluters. She is a crusader who fights to stop corporations from polluting and advocates for the cleanup of toxic waste sites.

More often than not, it is a citizen-led group that seeks Wilma's help to fend off polluters. Clients are often from poor communities along the Mississippi river who cannot pay for her services. Despite their lack of resources, Wilma never turns people away. She understands the dire circumstances of communities that seek her help, and, if she does not help, no one else will. She is a community's last and best hope to stand up to the large corporate polluters that often seem oblivious or indifferent to the environmental disasters they create.

Since Wilma has seen how communities can be torn apart by the introduction of environmentally hazardous waste, she wants to help keep a disaster from developing and also wants to influence responsible parties to clean up toxic dumps created in years past. The devastation to communities can be financial and medical. Financial consequences may occur in the near-term. The medical devastation may also be quickly felt or, in some cases, it may not be evident for years.

When community groups ask Wilma for help, she provides expertise in chemistry to understand the nature, source, and severity of the pollution. She also is willing to interpret data for her clients, giving them an understanding of what the pollution means—and will most likely mean in the future—to the local residents. With the information that Wilma provides, communities learn about the current environmental conditions and the ramifications of the current conditions. They also learn to advocate for themselves. In short, Wilma prepares the community to make decisions about the problem that is present in the community and helps them formulate a strategy to fight the problem.

Wilma will even present the results of her testing, on behalf of the communities she is helping, to corporations and governmental agencies. However, while Wilma will support local activist groups with her expertise and help them make choices and consider options in the fight, she does not make decisions for a community. Rather, she seeks local leadership to spearhead the fight. She wants the community to take the lead and be vested in the struggle to protect or improve their local environment.

Wilma's work has caught the attention of governmental regulators and agencies that monitor environmental issues. She is well-respected and has served on various advisor committees supporting the Environmental Protection Agency (EPA) and the Department of Energy (DOE). In such settings, Wilma can bring to light the local environmental devastation that she has witnessed and can champion the cleanup of past environmental disasters. Moreover, she is at the center of the legislative process so she can recommend laws and help support the passage of laws to protect the environment. She also makes herself available to oversee the creation of policy and practice guidelines for the implementation of newly passed legislation.

Wilma's technical assistance to individuals and communities has often proved to be valuable, and her efforts to empower communities in their environmental fights have been instrumental in creating change for many poor communities. However, she does not present herself as a savior of the environment and is hardly likely to engage in screaming matches at community hearings. Rather, she possesses a quiet dignity that is powerful and difficult to deny. She represents a voice of reason that is persistent rather than shrill.

Wilma on Decision Making

My interview with Wilma provided me with an interesting opportunity. Wilma works in an environment that is often confrontational so her description of her decision making gave me a more nuanced understanding of how decision making can impact results in such situations. This section describes some of the ways that Wilma responded to adverse circumstances and emphasizes her dedication to consistent decision making.

Primary decision making processes: Analytic and action-oriented. Wilma is a trained scientist who is committed to analytical, logical, and fact-based decision making. As observed in some of the other scientists that have been interviewed in this research, Wilma analyzes facts present in a decision scenario and makes her decisions based on the logical outcomes that are likely to be important in a case. For Wilma, however, logical outcomes are of two sorts. The first logical result is the chemical analysis of samples taken from a contaminated site. The second result, which is rooted to a great extent in the first result, is an analysis of how the poison in the samples will impact the health and overall well-being of area residents. Both outcomes are important, but the second result can, literally, influence people's lives.

In discussing her process, Wilma noted that she takes her decision making seriously. She said that she needs to deal with “the technical, environmental, and human health issues that are going to impact . . . the whole community.” Wilma talked about decisions in terms of a *path*. For Wilma, a decision path involves the total decision scenario: both the short-term and long-term consequences of the decision and its chances of success. The latter is especially important because a community and those who advise it must know, “Are we going to be able to win or are we spinning our wheels for an effort that in the long run we’re not going to win.”

In order to assess the chances of winning an environmental fight, Wilma wants to be sure that all aspects of her decision process are always “thought through” and “forward thinking.” Wilma summed up her decision making process by saying, “I’m just always very careful in making decisions.” It seemed evident that Wilma understands her responsibility. She recognizes that environmental devastation may have significant long-term medical and financial effects; she knows her advice to communities can have life and death consequences.

Despite the importance of the decisions that Wilma faces, she claims that she does not agonize over the process. Once a decision has been made, Wilma can move on to the many other issues in her hectic work schedule. However, Wilma did concede that, from time-to-time, when she has “bitten off too many trips or too many things to do in one day,” she may hesitate for a moment in assessing her ability to meet everyone’s needs. She quickly noted, however, “It always works out.” In effect, Wilma does not agonize over the serious decisions that she faces, but rather has more concern over her busy schedule and how she will attend to all of the requests that she has received.

No matter what processes Wilma uses to make decisions, they always result in action. An example that demonstrates Wilma's predisposition to act is her response to the aftermath of Hurricane Katrina. The county where Wilma lives was severely affected by the hurricane. Despite damage to her personal property, Wilma immediately went into action to help others who had suffered devastation and to monitor the environmental impact of the storm. Despite the fact that the Federal Emergency Management Agency had rented all of the local trucks for their purposes, Wilma found a way to get much needed supplies to outlying areas by transporting supplies by rail and boat. She also continued to disseminate technical information to the public on the environmental impact of the storm and established an *alert* process to warn of potential health hazards.

Wilma's response to Hurricane Katrina highlights her commitment to linking decision making to action. She said, "There wasn't a decision whether or not you did it. It was needed. You did it."

Other aspects of decision making. The following section expands on Wilma's decision making strategies and processes. In addition to other topics, Wilma explains the important impact of political decision making in her world and the concern she has about ethics in the world of environmentalism.

Political decision making. While Wilma wants her decisions to connect with action, she recognizes that she may, sometimes, be deterred from taking action because of the politics associated with a decision.

Politics, or, to use Wilma's words, "the game of politics," is present in all of Wilma's environmental work for the poor communities of the region. Furthermore, Wilma highlighted what she considered an ironical aspect of her life: She disliked

political science courses in school and sought only to study the physical sciences, yet, because of her work, she is now smack-dab “in the middle of the political game.”

Wilma, in fact, acknowledged that the success of her work is largely dependent on politics, and that politics drives everything about her work. As has already been noted, Wilma is part of the political decision making hierarchy. As an advisor to the Environmental Protection Agency and the Department of Energy who participates and gives advice on various environmental committees, she takes part in the creation of laws and governmental policies. She also makes recommendations to these agencies on proposed legislation and helps them determine how laws should be enacted. Furthermore, as an advisor, she has access to the highest levels of these government agencies. She can bring examples of community concerns right to the head of an agency, and she works on a day-to-day basis with the career bureaucrats who staff the agencies. Wilma said, about her work on the advisory committees, “So, suddenly you were able to work with all of these people within the agencies and bring the situations to them that were going on in the community that needed attention.” Wilma pointed out that her unprecedented access taught her about the political process, allowed her to learn how to present the information necessary to sway the agencies, and convinced her that she should use her access judiciously.

As we discussed the nature of political decision making, Wilma acknowledged that politics had another positive effect. Since Wilma only comes to a community after a formal committee has been established locally, she has seen the effect that community activism has had on individuals in the community. She spoke of how unsophisticated and largely uneducated people, mainly women, gained confidence in their activism and

learned to speak out about the problems that they saw in their communities. As a result of their initial activism with Wilma, these women became more self-assured. It was as if Wilma had helped the women build their capacity to take action by helping them understand that they could exercise personal power even against large, well-funded polluters.

In addition, the initial activism seemed to energize people to further action. Some of the activists, seeing that elected officials were unwilling to step up to do the right thing for the community, were so incensed that they were willing to run for office in the next election in order to shine a light on the problem. Wilma described it this way.

As a result [of the political activism], people started running for school board, for state representative, for state senator, for city council, and saying I can do a better job and represent the issues. We had quite a few members become elected officials as a result.

Furthermore, these concerned citizens who had discovered their activist abilities were willing to step up and help organize committees and fight polluters in neighboring communities. Wilma described the transformation of the local leaders by saying, “They become leaders, and they lead their group, and, then, when a similar situation occurs in another area, they go and help that group organize.”

In such circumstances, the net result of Wilma’s work is very positive. Not only does she help communities fight the polluters and would-be polluters, she also builds capacity for budding leaders to take up the challenges of community action. They become activists and campaigners for the larger social good. They develop a desire to protect their own neighborhoods and, also, may acquire an affinity for helping other communities. They learn that the political process can empower their fight and transform them into self-assured leaders who can effectively advocate for their communities.

While Wilma spent significant time explaining how politics could have a beneficial effect on her work, she also noted that in some instances, politics could have a very negative effect. When people choose to use politics as a weapon, the results could be devastating.

Wilma explained that politics does not only refer to federal, state, or local government processes and that politics can go beyond the jurisdictions of elected officials. For instance, there are church politics. In one example, Wilma explained that a nascent community action committee was seeking participation and support from their community on an environmental issue. The local church priest was willing to mention the initiative in church and write about the issue in the weekly bulletin. The company that was named as the polluter became angry at the church's stand and, actually, appealed to the bishop to have the priest stop interfering in the matter.

Moreover, in this case, and in others that Wilma discussed, accused polluters make the environmental issue a political one by establishing their own community support committees that act as a counter balance to the community committee that is seeking or has sought Wilma's help. In such situations, the community can be divided on the issue. Wilma calls this the "split" where multiple community committees claim to be representing the interests of the community. In one case, a polluter was even willing to pay money to his committee of supporters for committee members' continued backing. Politics, in such cases, Wilma noted, is very messy and can lead to conflict within the communities at the center of the conflict.

Standard operating procedures and processes. Just as political decision making can be both a help and a hindrance in Wilma's work, so, too, standard operating

procedures (SOPs) can both help and hurt in environmental disputes with polluters.

During our interview, Wilma addressed the sorts of situations involving standard operating procedures that she has faced.

With respect to how SOPs helped in her work, Wilma pointed out that a violation of rules was the easiest way to stop a polluting activity. Whenever someone acts in a way that violates agreed-upon laws or rules, the only requirement necessary to stop the activity is to show how the rules and regulations are not being met. Wilma said:

You have sets of rules, sets of laws that everyone has to comply with. When you're looking at situations in communities . . . you see are they [the laws] being complied with? Where are they in violation and then you have to start bringing up those situations.

In short, when laws and regulations are not being followed, then government agencies are obliged to stop the activity. In some cases, state and local government agencies are in violation of their own rules, but the process of stopping the activity is the same. In either case, the work that Wilma needs to do is simply to demand enforcement of the established rules.

Wilma, however, pointed out that, sometimes, standard operating procedures and processes, in effect, sanction polluting activity and have the effect of making polluting lawful (or at least seem lawful). This happens when a loophole subverts the intent behind laws, and the loophole can be used to legally justify polluting activities. Wilma discussed such a case. She explained that a law had been passed in a nearby parish (the local term for county) that allowed individuals to apply for a permit to build a fishpond. However, once the permit was issued and the pond built, the individual made money by allowing hazardous waste to be dumped into the pond. When the community realized what was happening, it formed a committee and contacted Wilma. She helped the committee get

the rules changed and stopped the dumping of hazardous waste into the so-called fishponds. However, severe environmental damage had already been done. Wilma said:

We had 55 waste sites. We were able to get rules changed so no new ones went in. We were able to get three put on Superfund and cleaned up by the oil companies. Then the oil companies came to us and said, okay you made your point. You've got three on Superfund. We're now willing to work with you to get some of the others cleaned up voluntarily, and we worked with them to voluntary clean up [some sites]. The lack of rules and implementing the rules drove the process.

Wilma's point was that laws can be problematic: If the laws contain loopholes, they remain in effect until new laws are enacted. In this case, the rule changes took time, and the polluters continued until the rules were changed.

Standard operating procedures and processes can also be confusing and nonsensical, especially the SOPs of government. Wilma spoke of her experience after the disastrous BP Gulf of Mexico oil spill in 2010. As BP conducted operations to contain the oil spill, its employees used sprayed dispersants to battle the spread of the released oil. The dispersant being used was highly toxic to humans and wildlife. When Wilma got complaints from oil rig workers that they were being sprayed and were getting sick from contact with the dispersant, she reported the incidents to the EPA. This resulted in oversight by the US Coast Guard. Coast Guard representatives were tasked with seeing that no dispersant was sprayed in gulf water areas where humans were residing. However, when complaints came in to Wilma from individuals on the coast that were being sprayed with the same dispersant, Wilma was told that the coastal area was covered by different regulations and there was no prohibition in place to stop BP spraying the toxic substance on people who were located on land. Wilma said, "People all around the coastal areas were being sprayed. People would call . . . and they kept going [agents

of BP spraying the dispersant].” However, according to Wilma, the regulations simply did not preclude the spraying of the toxic dispersant on land—even if humans were reportedly getting sick from contact with the chemical. In this case, the rules did not protect people, and Wilma was forced to seek changes to the rules through the political process: a process that is exceedingly slow.

Ethical decision making. Just as standard operating procedures and processes can have an impact on decision making, so can ethical considerations affect how decisions are made. Wilma shared with me her concern about the lack of integrity that she has witnessed in her environmental work in the Gulf region. For example, she spoke about an ongoing case in which an out-of-state company, seeking the contract to establish a toxic waste storage site, was literally buying support from the community by giving some influential community members money in exchange for support for the company’s contract bid. Despite being denied the permit twice, based on the company’s inadequate technical know-how, the company seeking the permit was once again active in the community trying to sway the process by literally paying off community members to campaign for the company’s contract acceptance.

The issue of integrity concerned Wilma in this situation, and she also noted that there were long-term health concerns at stake that make the ethics violations even more egregious. Wilma, in fact, stated that in this case that was just described, there were:

Huge health impacts . . . and this small part of the community will receive the financial benefits of an industrial waste site being located in their community . . . and the human health issues are going to impact . . . the whole community.

What Wilma was noting in our discussion was that the question of ethics has multiple facets in this situation. Wilma pointed to the issues of integrity concerning a

blatant scheme to bribe certain members of the community and also pointed out how, in some cases, unethical actions can allow a minority of people to undermine and damage a whole community.

Wilma also chafed at another ethical issue that she sees at work in environmental cleanup situations. She noted that after an environmental disaster makes the news, the companies involved often make statements and run ads that try to minimize the environmental impact of the situation. Such statements are made in an attempt to mislead people. In the case of the 2010 gulf oil spill, for example, Wilma indicated that deceptive ads gave the country and the world the wrong impression about the severity of the oil spill. She said that BP was completely incorrect when it announced in ads, “Everything is fine, the oil is all gone, there is no health impact, there is no environmental impact, it’s all gone.” These statements, according to Wilma, were “totally wrong.” Rather, the oil was floating subsurface in the Gulf and it “contaminated the water column and the sediment.” Wilma got very agitated about this particular situation. She noted that there were many other examples of basically the same deceptive tactics being used to calm people down and minimize the public outcry about environmental disasters. Wilma’s concern about the ethical dilemmas in her work extends to this sort of behavior, and she is incensed when others eschew integrity and use bad faith in their dealings with the public by misrepresenting the facts.

Reflection is useful in assessing the work. Wilma shared with me a final process that she uses to augment her decision making. She explained that, when a case is complete, she likes to reflect on how the situation was resolved. She referred to this process as “always looking back and seeing.”

The process of looking back also involves considering what alternate tactics might have been used to present and argue the case. Wilma emphasized that reflection was not ultimately rooted in a concern for how past cases were argued. Rather it was about how to do a better job in the future. The process of looking back, in short, involved the analysis of past tactics but with an eye toward how future case presentations might be improved.

In our discussions, Wilma was definitive and clear about the processes she employed to make decisions. Perhaps this was because she has been active in her environmentalist role for so long and has had the opportunity to repeatedly examine and reflect on her decision making. As we completed our conversation on decision making, I was eager to move on and hear what Wilma had to say about creativity.

Wilma on Creativity

As we began our discussion about creativity, Wilma, like many of the other MacArthur Foundation award winners I interviewed, was quick to disavow possessing any personal creative ability. She pointed out that the MacArthur Foundation award surprised her because she had really only thought of people in the arts as having creative abilities, and she did not consider that her work was really anything that others might consider to be remotely creative. However, during our conversation, as she reflected on the receipt of the award, she did allow that her approach to helping communities fight the toxic waste sites present in their neighborhoods and combat the arrogant polluters that are willing to inflict more damage did have a certain uniqueness in its approach. Furthermore, upon reflection, she pointed out that her work did result in some positive outcomes. As she warmed to the topic, she added that since communities receive her

technical expertise and consulting advice at no charge, the business model that she has created is very unusual.

Wilma's down playing of her creativity did not really surprise me as she is a very humble person who seems to shy away from the limelight. Furthermore, it seems that she focuses on two things in her life: her work and her family. The time that she spends with work is substantial, as there seems to be no end to the local environmental problems that need Wilma's expert help. The balance of her time she spends with her husband, children, and grandchildren. As a result, it is possible that before the day of our interview, she had not taken the time to consider the range and depth of her talents.

As the discussion on creativity continued, Wilma was quick to remind me that she is a scientist and had been schooled in logic and analysis. As a result, she explained, any creativity she might possess would likely be associated with her technical abilities. In the interview process, it was as if Wilma had never considered possible aspects of her creative self, other than her association with, and commitment to, science. However, by the end of the interview, she did concede that while her creativity is led by her scientific side, it is possible that she just did not "sell that [the creative] part" of herself as a real asset.

Although Wilma was not entirely sure about the genesis of her creativity, she is sure that she does not engage in anything that resembles *creative decision making*. Rather she felt that the two processes were separate. She might possibly be creative and she might make decisions, but she does not join the two aspects of herself to make creative decisions.

A key to creativity: A lesson in civics and persistence. In the interview, Wilma described her work in terms of the chemistry that is needed to understand the environmental issues at stake in any one community. However, while Wilma foregrounds the chemical analysis work and other aspects of the tasks that are involved with helping communities decide on how to fight polluters, there is a bigger goal that is at the center of Wilma's work.

When Wilma appears in a community to participate in a fight against polluters, she concedes that she is teaching the communities to advocate for themselves and is helping them realize that they should expect better treatment for their neighborhoods. While, on the one level, Wilma is helping create a healthier physical environment, she is also, on another level, helping the poor people in these communities gain independence and personal empowerment. The citizens learn how to combat a system of deep-rooted prejudice and through activism recreate a more just environment.

Wilma's creativity shines here. She becomes the civics teacher for the neighborhood leaders. Without fanfare, she teaches leadership principles to her local students.

Civics is not the only subject that Wilma teaches. Wilma also demonstrates the value of persistence to her students. She is extremely persistent, and she doggedly pursues her goals. Wilma demonstrates her persistence as she approaches the numerous problems in her work. She has often been harassed, and her office has been burglarized on a number of occasions. An even greater concern was the drive-by shooter that interrupted her work and whose bullet broke the office window above her desk. However, Wilma understands the importance of her work and continues to persist. She

said of her need to persist, “If I back off, they’d win. That’s not appropriate because the communities need help whether or not I’m being harassed. You have to be very persistent.”

Wilma did acknowledge the gravity of the drive-by shooting incident, and she did make changes after the incident. In order to make her working conditions safer, she moved her desk away from the window and installed burglar bars. She also has her husband pick her up from work if she is there after dark. While these changes to Wilma’s routine are superficial and have little chance of keeping her safe, they speak to the commitment that Wilma demonstrates in her work. Even when her life is threatened, Wilma is not deterred. It is as if she is conceding that her cause is larger than her personal needs and even larger than her life. Said another way, Wilma’s persistence is at the heart of her efforts. It is her persistence that underpins her creativity.

In addition, there are other ways that Wilma demonstrates her persistence. She is often the sole intermediary between communities and the various agencies and departments that are in place to protect communities from environmental dangers. It is Wilma who makes the myriad calls to government officials and local chemical manufacturing facilities to report the various environmental concerns of the public. She makes countless calls to report toxic emissions from manufacturing plants, contacts corporate executives about unreported spills, and updates federal agencies about unauthorized or inappropriate uses of toxic chemicals. Wilma talked about her need to follow up on every complaint that she received. She talked about the sorts of conversations she had. She said:

I call EPA and say, “Got another complaint—the workers are being sprayed—it’s making them very sick.” They go, “We’re not spraying where there are

mammals.” I said, “Well, I’m getting complaints that you are.” I keep calling every time I get a call.

Wilma’s persistence is legendary and often does result in positive changes.

Because she will not give up, because she persists over and over, Wilma has created a well deserved reputation as a terrier when it comes to issues of environmental concern. It is as if her adversaries have so much respect for her, or, at least, for her persistence, that they feel forced to do something about her issues, if only to stop the calls. In making her point about the importance of persistence, Wilma said, “You have to be very persistent because you always get that push back and that push back is hoping . . . that you will go away.”

Wilma’s persistence also serves as a model for the communities she serves.

Those communities learn that Wilma’s persistence pays off and, hopefully, community leaders learn that they must emulate Wilma’s tenacity to be successful in their own way. Wilma serves the communities by example, and her dogged pursuit of justice for the community can help local leaders increase their own staying power. In effect, Wilma noted that the road to social justice is never easy; so persistence is a critical quality to have.

Other aspects of creativity. Wilma foregrounds the importance of being civically minded to her clients and demonstrates the value of persistence. She also reveals various other traits that suggest that she is creative. This section outlines some of the other ways that Wilma projects her creativity in the world.

Using science to make her point is creative. As we talked about creativity, Wilma warmed to the discussion. She spoke about her commitment to protect the environment. She discussed her proactive stand against polluters and pointed out that she

is often pitted against the large chemical and oil companies that are often at the center of toxic waste controversies. It was then that she shared with me a creative way that she deals with her adversaries. She told me that these large corporations are willing to review her data and listen to her arguments because they have come to understand that her data will reflect accurate and appropriate monitoring and collection techniques. Furthermore, she will present the facts in a way that does not sensationalize the data. On this subject, Wilma said:

The issue is when you develop information for the community it has to be correct. There are a number of people that take things and make it something it is not, and then you're constantly trying to correct that inaccuracy—so the information has to be correct.

Wilma went on to say:

When I come up against industries, or industrial facilities, or even government agencies, they'll say we don't always agree with you, but we understand that the information you have is correct.

Herein lies Wilma's creativity. While other environmentalists may be willing to present half-truths and exaggerate or dramatize the results, Wilma meets her adversaries head on, presenting only verifiable and accurate information. She frames her work in terms of verifiable science rather than environmental extremism. Because of this, Wilma is never accused of bad-faith or demonizing her opposition. While chemical producers and refineries definitely see Wilma as an opponent, they also understand that she may have important information to share with them and that she will always advocate for the environment using a voice of reason. In fact, her adversaries have come to respect her, knowing that she depends exclusively on science to make her points.

In stating her point another way, Wilma noted that many of the corporations that she confronts are so large that they are capable of making their own "weather." Their

emissions and releases into the atmosphere are so overpowering that they change the local climate. While it may seem surprising, Wilma pointed out; such large organizations may lose sight of their overall impact on the local community and may be totally unaware of the scope and intensity of their emissions. Unscheduled and accidental emissions may not be detected and reported, but Wilma's attention to the data brings clarity to the situation, and the corporations do see that Wilma is just trying to get at the truth. They come to understand that she wants to make things better and does not have a vendetta against them. This creative way of dealing with the powerful corporations can sometimes even promote a sense of partnership—environmentalists and industrialists—committed to fixing a vexing problem.

Since Wilma's monitoring of the adjacent residential and commercial communities can be trusted, some companies have come to see the bigger picture associated with their activities and have learned that they need to police themselves and their other potentially polluting neighbors. For instance, Wilma explained one situation where a large company recognized that it was allowing toxic chemicals to be released into the environment. A chemical facility manager said, "I'm really sorry—you were right. I am having that many accidental releases that are impacting the community and I'm going to do something about it." Certainly there are intentional polluters who are unhappy to see Wilma at their door bringing attention to the nasty chemical mess that they are creating and spreading, but others are open to her observations and can be persuaded to act as more respectful members of the communities in which they do business.

Since Wilma does not demonize her opponents and because she can be expected to present her data without bias and dramatization, she has the respect of her opponents. These characteristics support Wilma's creativity because when she joins the corporations in seeking an equitable and reasonable solution she can get more work done.

In being honest and forthright, Wilma also demonstrates that she prefers to look for the good in people and organizations. Instead of assuming the worst, Wilma gives people the benefit of the doubt and asks them to join her in solving a problem rather than assuming that they are the problem. She always seeks to focus on the problem rather than mechanically assigning blame.

Being a role model means bringing out creativity in others. In the literature review of this research study, it was noted that being a mentor or role model can support creativity in others (Lubart, 1994; Sternberg, 2006). When Wilma approaches people and organizations with an open mind and makes no negative assumptions about them, she is serving as a positive role model. She is demonstrating that direct and candid behavior decreases the chance that others will think that she is trying to manipulate them or a situation. As a result, everyone can be more candid and more work can be accomplished.

As the interview continued, the subject of being a role model changed into a discussion of mentoring. Wilma pointed out that she had personally benefitted from mentors. Her mentors were her parents, and she had also benefited from the advice of her high school science teacher who had encouraged her to continue her education in the physical sciences. Wilma praised her mentors as strong presences in her life that had helped her form her life's goals and learn how to accomplish them. While she did not

specifically mention mentors as catalysts for creativity, she did assert that their support was inspirational and helped her develop as a professional and as a person.

Now, however, Wilma has an opportunity to pass on her knowledge by mentoring others. She said, “Mentoring teaches you that everything that you know in life is important.” In particular, Wilma spoke about how she mentors the community activists that invite her to help them work through their community environmental crisis. She said, “Mentoring others who are the community experts [activists] is helping them gain the knowledge that they need to make decisions.” Furthermore, Wilma conceded that, in a larger sense, she is instilling and reinforcing a nascent confidence in the community leaders so that they can feel empowered by their work. According to Wilma, “When something is going wrong, they [the community activists] call, and say, did I make the right decision or did I say the right thing—and then you explain . . . that yes [they did a good job]—it’s keeping their self-confidence up.”

Wilma’s mentoring supports her creativity because, in this process, she can raise the self-confidence of the burgeoning activists in poor communities so that they feel that they have the power to control their destinies. She is also teaching a life skill that can make a difference in both present and future circumstances. In other words, Wilma is reinforcing the creation of an empowered group that can advocate for the current environmental issue and will also carry the skill forward to help solve other social justice problems that may develop in the future.

Passion for the work. Not only does Wilma serve as a role model for poor communities, but she also demonstrates a passion for her chosen work. According to the

literature on creativity (Sternberg, 2006), passion is another trait that is often noticeable in creative people.

Wilma describes her passion as a desire to help poor communities solve their local environmental issues. She pointed out to me, several times, that it is her goal to support every community that requests help with such problems. In discussing her commitment to help the community, Wilma said that she wants to be there for them, “every inch of the way.” Furthermore, she said, “If you give each community a little bit of help, they [the local leaders] can make such a difference in their community.” Reiterating her desire to creatively seek social justice for her poor communities and to always support their needs, Wilma finalized her thought by saying, “that’s why I try not to say no [to community requests].” Wilma’s passion for her work sustains her and is an underlying quality that allows her to pursue social justice in such a creative way.

Risk-taking is part of the work. While risk-taking is a predictor of creative work, Wilma shrugged off the fact that her work involves risk. Moreover, the risk that Wilma confronts is physical danger, and she is the only MacArthur Fellow interviewed who routinely goes to work facing such job hazards. Hers is not a risk of failure in a project: Wilma faces potential retaliation by people who are opposed to her work and want to hurt her.

Regrettably, the drive-by shooting incident, mentioned earlier, is not the only threat of physical violence or risk in Wilma’s life. She also mentioned that a current project, located in California, has become so dangerous that the community committee that she consults with in the San Francisco Bay area now hires a bodyguard to escort her to and from the contentious meetings—that is, all of the meetings. However, Wilma is

stoic in her belief that the work must go forward. Her last word on the subject was, “Even if I stop doing it [community advocacy] right now, people don’t forget what you did, so it’s not like it’s going to erase it and make it all go away.”

In the end, Wilma’s risk-taking directly supports her creative way of seeking social justice. Wilma inspires others to keep up the fight despite personal risks.

Conclusions

Wilma’s environmental consulting firm does not have a goal of maximizing profit. Since 75% of her time is spent with clients who are accepted on a pro bono basis, there is not that much time left to fulfill the needs of paying customers. However, Wilma has no plans to change her business model because her real interest is in helping poor communities understand and stop the environmental polluting that has plagued their towns. Moreover, she wants to help those communities get legal support and backing to require offending organizations to clean up the toxic dumps so that the hazards of the toxic waste do not end up being a permanent health hazard to town residents.

Another important goal of Wilma’s is to teach the poor communities to advocate for themselves so that powerful organizations will no longer try to take advantage of them. Wilma, in effect, wants to help communities overthrow their legacy of poverty and seek social justice by promoting and protecting their own interests.

Wilma pursues her decision making using an analytical approach that she learned as a science student. She is inclined to gather information, impose logical analysis, and make facts-based decisions. Another important quality of her decision making is that it is predicated on action. Wilma lives in a world where action can save lives and improve the

quality of lives, so she is predisposed to take action in order to get the results that she wants.

In terms of her creativity, Wilma's success is bolstered by her legendary persistence. The long time that it takes to bring a case to court, adjudicate it, and have a final decision makes persistence a trait that is critical. Furthermore, Wilma is known for her willingness to take risks, her passion for her job, and her ability to serve as a role model.

Wilma is also creative in the way she approaches her work as an environmentalist and as a disguised civics teacher. She demonstrates to her community activists—that is, her students—that they need to fight for their rights and that such a fight will make them stronger. In the broadest look at Wilma's work, she is teaching both her clients and adversaries that forthrightness and honesty are important values.

Wilma also counsels that it is important to recognize the rights of all people and that it is inappropriate, and certainly illegal, to take advantage of individuals and communities because they are poor. Wilma gives individuals and communities the tools to fight environmental battles and supports their personal growth as they mature in the process. Taken in total, Wilma's help for her client communities is not only about the chemistry of the laboratory. It is also about a personal chemistry that helps transform individuals and communities. Wilma supports communities with her scientific work and gives them a dose of civics for good measure.

CHAPTER ELEVEN

A MUSICIAN WITH UNCOMMON RHYTHM

Background

Aaron has had extensive training in violin performance. He could have made a living as a full-time performing artist, but he preferred to redirect his talents to creating a nonprofit arts organization that focuses on youth development and works to increase race diversity in classical music performance. Aaron formed the organization when he was only 25 years old and now, 18 years later, he still pursues the work with an enduring passion.

The genesis of Aaron's interest in music was seeing and hearing his adopted mother play the violin. She inspired his love of music, in general, and his affinity for the violin, in particular.

Aaron noticed when he was a young musical student that his biracial heritage made him the only person of color in his music classes and, even at times, the only person of color in audiences listening to classical music. Additionally, he was in his 20's before he became aware of the existence of the few African American composers and musicians who had been recognized in the classical music world. Realizing that minority musicians were uncommon and that the delights of classical music were not part of many people's lives, he pondered how he might introduce the pleasure of classical music to others. He wondered how he might leverage his privileged musical education at well-respected academies and with famous and gifted teachers to help others of color learn to appreciate classical music. He also wanted to find a way to help young minority students

learn how to play instruments so that they could increase their chances of establishing careers in classical music performance.

It was when Aaron was working on his master's degree in violin performance that he recognized that there might be a way that he could help aspiring minority musicians achieve their dreams to perform classical music in a professional setting and could also introduce school age children to the joys of classical music. During those student years, Aaron conceptualized the nonprofit organization that he would eventually create. He sought and received funding from a number of sources, including the music department of his own university. When the die was cast and the nonprofit was established, it was only a matter of time until he gave up his budding career as a full-time performing violinist, electing, instead, to further his vision of musical education for minority students through the mission of his newly created nonprofit.

The efforts of the nonprofit have intensified over the years. Now, its programs have multiplied, and it has been a successful catalyst in promoting minority inclusion in the world of classical music. One program developed by Aaron's nonprofit helps students from urban, underserved public schools learn about classical music and the instruments of the orchestra. Another program provides promising young African American and Latino music students with scholarships in classical music education at prestigious universities; yet another offers help in securing solo performances with major orchestras around the country.

While Aaron's love of music motivates him in his work, it is the chance to initiate and support social change that sustains him. Aaron realizes that he has introduced thousands of students to classical music and that this is a good thing. He also realizes

that the arts, in this case classical music, can lead social change. Through his efforts, Aaron has sought to bring about significant social change by increasing inclusion and diversity in the world of classical music. Aaron is sure that his organization is making a difference because he has watched the classical music community slowly embrace diversity.

As Aaron spoke to me about his decision making and creativity, he talked about how he liked to transform challenges into opportunities. In his work, Aaron accomplishes this goal through his efforts to bring musical opportunities to minority students who need his organization's help to learn about the pleasures of classical music and the possibilities of a musical career.

Aaron on Decision Making

In the interview Aaron articulated his decision making strategies and processes seemingly without effort. He has thought about his approaches to decision making and was able to clearly express not only how he makes decisions, but also his overriding goals in decision making.

Primary aspects of decision making: Information based and action-oriented.

Whenever someone uses a word that defines an absolute, it indicates to me a level of certainty that is worth investigating and confirming. Therefore, when Aaron told me that he *never* makes a decision “without having the widest possible breadth of knowledge about whatever can relate [to the decision],” I wanted to explore the depth of his conviction. In our conversation, Aaron reiterated his commitment to collecting information before committing to a decision. He said, “Over everything that I do, I try to

gain as much knowledge as possible.” He continued by saying, “I usually try to first understand what everybody else is doing and what are the pros and cons?”

Aaron also explained that his information gathering extends to hypothesizing about the consequences or ramifications of a decision. For example, in talking about the hiring process at his organization, Aaron pointed out:

There are few things that are more costly to the organization than a hire. We take a lot of time—we do it quicker than most—but we take a lot of time to determine a new team member because the ramifications are so great. The consequences of a bad decision are so great.

While Aaron wants organizational decisions to be made based on available information, he made it clear that organizational people closest to the decision should make the determination or choice. He stated, “With decisions that are related to [the organization], I usually defer to whichever team member’s primary goals it is. One of the biggest weights [in determining a decision] is whatever they think is the best route and course of action.”

When Aaron continued his discussion of decision making, he pointed out that successful decisions and creative ideas require a follow-up action to be considered effective. He said, “For example, MacArthur [the MacArthur Foundation] isn’t awarding people because they sat around and had great ideas, it’s because they put those ideas into action.” Aaron was quite emphatic about this point. He continued by saying, “We look at this in our young people, and I talk to them all the time—I . . . [say] it’s absolutely great to have talent, but it’s meaningless unless you realize it.” Aaron’s final comment on the topic summed up his point: “Imagination requires action to actually be creative.” To Aaron, action is the key to successful creativity, and inaction—dreaming alone—represents great folly and waste.

Aaron also speculated on why people might fail to take action or initiative, as he sometimes calls the process of taking action. His assessment was that a fear of loss kept people from making a decision to act. He said:

It's tough because that loss is real. Not everyone is going to risk it. Not everyone wants to, and, I think, that's one of the interesting things that I've encountered in some people that I've talked to, or even, mentored . . . [I have realized] that some people actually don't want to take the initiative—they don't want to take the risk.

Aaron, however, had more to say about inaction and the risks of not taking the initiative. He said, "I think, too often, people don't look at the risk of inaction." In such circumstances, Aaron speculated that a failure to take action might lead to regrets. At one point, he posed a series of rhetorical questions about what he might say to himself as he reflected on his accomplishments in life:

Will I have done what I wanted to do? Will I feel like I didn't squander my time or spend it in a way other than what I would have wanted to do? Did I let unnecessary fears keep me [from accomplishing my goals]? To me, that's a huge risk and far greater than a lot of other risks that may seem greater in the short-term.

Aaron shared final thoughts on the matter of inaction and the missed opportunities that result from inaction. He first pointed out that missed opportunity could represent different things to different people, but, no matter what opportunity was missed, there was a consequence to inaction, a consequence that might not always be experienced immediately but that would eventually be felt in the long-term. He explained:

It's not the scope or breadth of what you are doing . . . It's the quality of it [the action] and what it means to you. For some people that may be affecting social change . . . For other people, it might be inventing something or it might be building something. Whatever that is, I think people do need to try to assess the long-term risk or consequences of inaction.

Other aspects of decision making. Aaron spent a large portion of our interview time discussing his primary decision making approaches and goals. He did have time,

however, to share additional aspects of his process. The next section details these additional areas of decision making.

Reflection and listening to the ideas of others. After Aaron had shared with me his ideas about the need to take action, he moved on to talk about how his decision making was influenced by other aspects of life. When I asked Aaron how reflection might impact the way he made decisions, he, at first, associated the term, reflection, with a look back at past successes. He said, “Sometimes my wife will say, “You see blah-blah-blah—what you’ve built” and he continued, “That kind of reflection, I just don’t do.” Rather, Aaron stated, “I tend not to reflect on the past unless there is some purpose. I’m far more focused on the future and what’s coming.” He went on to say that reflection was only important “as it relates to informing what it is we are going to do [in the future]. In other words, reflection can help to inform this next decision.” The point that Aaron was trying to make was one that other MacArthur Fellows I interviewed for this study also made: Reflection is useful for seeing how new decisions might be changed or enhanced based on an analysis of decisions made in complementary situations in the past. In other words, past activities, including decisions made, can inform future decisions.

There is another way that reflection aids Aaron’s decision making. He spoke of how valuable insights and viewpoints could come from conversations with outsiders, especially funders. He said, “Funders have valuable information and perspectives. They see . . . hundreds of grantees’ work. They have seen a lot of things fail . . . [and the funders have] information we can benefit from.” At the very least, according to Aaron, funder views and ideas are likely to generate “internal conversations” that may spark new concepts and important reflections.

Political decision making minimized. Since Aaron generally values what funders have to say about organizational programs and operations, he did not emphasize any substantial concern with funders interfering with his organization's mission and influencing the direction of the organization politically. However, he did hypothesize that, since mission was so central to the running of his organization, there was little chance that a funder would be able to co-opt the organization's work.

The one area where Aaron did think that politics could potentially be detrimental involved the interpersonal relationships that operated in office settings. He recognized that employee personalities and relationships might inhibit the best decision making at work and that, in some cases, decision making could devolve into petty politics. However, he pointed out that such damaging relationships rarely were present at his place of work because each of his employees was tasked with accomplishing specific goals. Goals, Aaron suggested, tended to focus conversations around specific tasks and were likely to minimize the destructiveness of politics. Aaron said, "People don't talk about things that aren't relevant to the organization and its goals. The conversations we have are focused on that. Other things just aren't relevant. They are not discussed."

Standard operating procedures are not considered appropriate. Just as Aaron, for the most part, discounted political maneuvering within the organization, so too, he also considered most forms of standard operating procedures unimportant in his office. In fact, he said, "Probably if you were to ask . . . no one would even know [the term] SOP. They would [say], 'What?' They'd have absolutely no idea." According to Aaron, the reason his staff does not institute unnecessary SOPs is because, just like in the case of political considerations, Aaron focuses organizational employees on "goals and results"

and, in this case, organizational objectives trump interests in building hierarchical “protocols.”

Aaron does concede that some protocols have been put in place so that the organization can “act in a unified fashion.” For example, Aaron said, “We use the same software or data base systems because that’s what enables us to act as a unit—those types of things. That’s really the core criteria. We don’t just put processes in place for no reason.” To extend and amplify his point, Aaron mentioned that attendance at meetings is not required and stated, “No one should attend a meeting if it doesn’t affect the results that they are trying to achieve.” Ultimately, such freedom from standard operating procedures also translated into what Aaron termed a “very flat organization.” This preference for little hierarchy within the organization was employed because a simple operational hierarchy meant, according to Aaron, that the organization would likely be more “responsive to change.”

Ethics is about integrity. As our conversation on decision making continued, I asked Aaron how ethical decision making was approached within his organization. Aaron talked about the fact that the need for ethical decisions, per se, was largely absent from his organization. He was pleased with this state of affairs and attributed it to the fact that his personal integrity serves as a guide for the organization.

Aaron did, however, mention that his students, from time-to-time, did have issues with integrity. Aaron believed that it was his responsibility to counsel students about this matter. He said that he told students what he thought integrity encompassed: Integrity is about “the decisions that you make when no one is looking.” In telling me about his interactions with his students, he further explained the paradox of integrity when he said,

“No one may ever know about these decisions.” What Aaron was pointing out to his students was that integrity is lost even when no one finds out about an ethical slip. Furthermore, he implied that each person must protect his or her personal integrity at all times in order to be judged an ethical person.

Throughout the interview, Aaron was very specific about how he approached decision making. He had no trouble with the questions posed, and he worked to give me information about and examples of the way he approaches decision making. He also was eager to share how decision making and creativity combined in his world. The next section describes what he said about how he discovers his creativity and awakens his imagination.

Aaron on Creativity

Aaron is an artist, and he prides himself on doing everything creatively. When I asked him if he thought creativity and decision making were related, he did not hesitate at all. He said, “I think they are both totally intertwined.” He then added that, with the exception of the “mundane logistical,” all decisions he and his organization made were creative. He quickly corrected his reference to what he initially referred to as mundane logistical decisions, however, and explained that even the smallest decisions—such as which pens to purchase—could be, and usually were, creative. He said:

We are sometimes creative about what kind of pens we would get. We would look and say, ‘Well, do we have these pens? Or do we want pencils? The pencils with the lead—do we have to buy the lead? Maybe we shouldn’t . . . really be writing much at all. We should really only use our computers—do we need pens at all?’

Aaron described the sorts of questions he articulated in talking about the purchasing of pens as thinking “outside the box,” and he pointed out that he hoped that

every decision considered in the organization would be approached in such a way and that the goal would be to make all decisions creatively. Aaron finalized his comments on the subject by saying, “While we may not actually employ creativity with every decision, it’s there in the vast majority of [our] decisions.”

Without being prompted, Aaron also volunteered that his entire organization is linked to, and is an extension of, his personal creativity. He said, “I’ve always viewed [my organization] as an instrument of my artistic creative endeavor.” In other words, Aaron’s organization is the expression of his own creativity and a platform from which he can share his creativity with the world. Moreover, it is the platform for expressing the social justice issues of diversity and inclusion that are so evident in his organizational mission.

However, Aaron was not finished—he had more to say about how his organization was linked to his personal creativity. He enthusiastically clarified the role of his organization when he said, “The parts of [the organization], to me, are the equivalent of the parts of a violin—vastly different and diverse, but acting in a unified way to bring about some type of creative artistic social impact in others.” What Aaron seemed to be saying was that his organization was an instrument (both literally and figuratively) of his creativity, and it contained the resources that he needed to fight social injustice. Since Aaron’s organization employs over forty people, his ability to combine the diverse individuality represented in his employees is a creative accomplishment in itself.

As we continued the conversation, I asked Aaron if the entire organization was centered in creativity. He said, “The results that we want [to achieve] relate to social change, but everything about how we do that utilizes creativity.”

With this initial look at how Aaron sees the intersection of his organization and his creativity, I was eager to explore other aspects of Aaron's creativity. The following sections discuss his excitement about the subject and describe the aspects of creativity that he finds to be most important in his life.

Primary qualities of creativity: Risk-taking and persistence. As discussed in other cases, risk-taking is considered to be a trait often observed in creative people (Sternberg, 2006). In Aaron's case, he demonstrates his willingness to take risks in some areas of his organization. When it comes to finances, Aaron is risk adverse, and he characterizes his organization as being very financially conservative. However, when he conceives new programming, Aaron is much more likely to take risks. He observed, "A lot of the work that we do requires the risk of doing something that hasn't been done before." Explaining the relationship of new endeavors and risk, Aaron affirmed that doing things differently always means incurring some level of risk. This risk, however, is necessary, he believes, because old ways of doing things have not brought the desired change so taking a different approach has become necessary.

When talking about risk, Aaron also noted, "If you have nothing, and you are just trying to build something, there is really no relative risk—if your efforts fail, you are left with nothing." The point made here is that it is only when you have something to lose—money, position, or, perhaps, peer respect—that you confront a risk of significant loss. Therefore, when Aaron was forming his organization, he did not consider that he had anything to lose because there was no significant presence of minority musicians in the classical music world. However, now, there is more to lose because he has established

his organization and has attained some measure of success in accomplishing his diversity and inclusion goals.

Aaron warns that having something to lose can inhibit risk-taking, or as he terms it, initiative. He wants to guard against losing his initiative. He shared his concern about lack of initiative: “I am consistently shocked by the lack of initiative on the part of people, and it seems that the more secure their job circumstances and lives, the greater the decrease of initiative.”

Aaron concluded the discussion of risk-taking as a necessary component of creativity by returning to his commitment to promote social change and create a better world. Specifically, he spoke about how racism used to be an “active prejudice.” According to Aaron, in this day and age, racism is not overt, but may nonetheless be present in a lack of initiative to take risks to accomplish change. Aaron talked about this lack of initiative in terms of a “lack of action” and “people’s neutrality” with respect to increasing diversity and making sure that all races have a chance to have a place in the arts. He indicated that this more subtle form of racism was concerning, and that it was his job, and the job of his organization, to remedy the situation by continuing to present talented minority musicians to the public. By developing and promoting talented minority musicians, he was taking action to challenge others who appeared to be complacent.

When it came to the subject of persistence, Aaron did not mince his words. He told me how important he thought this characteristic is in promoting creativity and overall success in life. He said, “If you do not have persistence, you won’t be able to surpass or overcome whatever those challenges are that present themselves.” More

emphatically, he stated, “Persistence is the absolute key to success.” He gave me two examples of persistence in his life and in his work.

First, there was the time that he wrote a book about his life experiences. He told me how he received a letter from a potential publisher that said that his submission was “one of the worst drafts that he [the publisher] had ever seen.” Aaron has framed that letter for his office wall, and, beside it, he has placed a copy of the completed book edited and published by another company.

Another example of persistence was related to the start-up of his nonprofit arts organization. In this instance, Aaron was counseled by his father, his music professors, and the dean of the music school to give up the idea of creating a nonprofit organization to encourage and promote the work of minority musicians. All of these authority figures pronounced the idea unachievable and utter folly. Aaron told me opponents of the idea said, “It’s not realistic. You certainly can’t live on a paycheck from doing this nonsense thing [the nonprofit organization]. Why don’t you just practice [your violin]?” Today, as the president and founder of his organization, Aaron demonstrates that his would-be counselors were wrong. Moreover, the awarding of a MacArthur Fellowship completes the parable of persistence. Aaron has demonstrated that his persistence can support his creativity.

When I asked Aaron about his ability to persevere, especially in light of discouragement from authority figures such as his father and professors, he acknowledged that he listened to each of the arguments that was presented and then made his own assessment of the risks. Also, acknowledging a bit of a “rebellious streak,” he pointed out that in such situations, “The only thing that would stop me is my own

assessment that it [the task in question] really is impossible for me to accomplish.” In other words, when Aaron has analyzed a situation and is determined to accomplish a goal, it is difficult, if not impossible, to dissuade him.

Aaron made another point about persistence and its relationship with creativity. He equated persistence to a sense of striving to succeed and noted that success is admirable. However, he did not equate an unsuccessful project with being a failure. When talking about a project that has failed, he said, “Tons of projects fail and initiatives fail.” He continued, “The idea that something you did failed . . . is just not a negative.” However, Aaron’s next sentence showed how he really perceives failure. He said, “The negative is that you never tried.” He went on to say, “People fail when they fail to act.” Ultimately, for Aaron, a lack of persistence, and the resulting idleness represent the fast track to failure.

However, Aaron does not try to sugarcoat the notion of persistence. He points out that persistence also means that, when he sends letters soliciting monetary support for his organization, on average, he receives fifty rejection responses for every donation. He notes that persistence often means just staying positive and continuing to work.

Other qualities of creativity. After explaining the essential nature of risk-taking and persistence in his creative world, Aaron continued to explain how he creates novel outcomes. This section describes the personality traits, motivators, and environmental influences that support Aaron’s creativity.

Impatience that does not show. Beyond displaying the characteristic of persistence, Aaron also admits to being very impatient. In discussing the term impatience, Aaron pointed to a nuanced distinction in his definitions of the term.

According to Aaron, impatience can involve a dislike for waiting for action or it can be discussed in terms of a sense of urgency. Aaron pointed out that the former might negatively impact others while the latter enhances his creativity and, presumably, the overall creativity of his organization.

Aaron explained how impatience worked, or in some cases, did not work for him. Explaining instances where he was better off not showing his impatience with his staff, he said, “There may be certain times where I’m impatient about what someone is doing. Expressing that to them is not going to help them to be trained on an aspect or learn about an aspect [in the workplace].” In other words, in such situations impatience is a detriment to accomplishing a goal because displaying impatience does not accomplish the objective faster and may actually impede progress.

Aaron, however, distinguished between hiding his impatience and curtailing it. Curtailing impatience, for Aaron, meant losing his sense of urgency. While hiding impatience might, at times, be a good thing, curtailing impatience was not. This is because Aaron consistently wants to display a sense of urgency in attaining the goals set out in his work. He asserted this when he said, “I have a sense of urgency. I want everyone . . . [at work] to have a sense of urgency about what it is we do.” When I asked why a sense of urgency was necessary, Aaron discussed the importance of his organization’s mission, and he shared with me his desire for more students to have classical music in their lives. Aaron pointed out that it was important to reach as many students as possible because an introduction to classical music might make a significant difference for a person. In fact, Aaron believed that the absence of the opportunity to enjoy and participate in making music might represent, for some, a life-changing loss.

Therefore, for Aaron, having a sense of urgency for the organizational mission was a specific way that he expressed his creativity.

Passion is about loving your work. Since passion is a common trait in those described as creative (Lubart, 1994), it should come as no surprise that Aaron is passionate about his work. When Aaron had finished his fervent discussion about how important classical music was to him and how important it could potentially be for others, it seemed natural to transition into a discussion of passion. In particular, Aaron talked about the passion he feels for his life's work.

Aaron told me, "It's [passion] at the core of everything, and it's why I get up every day and don't feel like I work because I love what I do." He went on to say that there are actually two passions that he feels. Aaron has a passion for creating music on his violin. This passion serves as a "core part" and as "the greatest constant" in his life. He said that the opportunity to hear and play violin from an early age helped him develop this passion. Furthermore, the work of his organization has also sustained Aaron. It is the social agenda that he is pursuing that enabled him to "focus and work so hard in the early years." Now both aspects of his life—hearing and playing classical music and helping solve a social justice issue for minorities—are catalysts for his passion.

Looking for possibility on another path. Since Aaron is so passionate about his work, he wants to be creative in developing programs within his organization and, also, in expressing himself. In his life, he continues to search for creative possibilities and claims that he is naïve enough to still think that he can change the world. He wants to keep this naiveté and not become jaded by knowledge that can, in some instances, diminish a person's belief in possibility. He does not want to become trapped into

believing that new ways of doing things are impossible. Aaron expressed his concerns about the potential for stifling creativity when he said:

You gain more and more knowledge along the way and that could lead to more and more understanding of all the things that aren't possible. I try to have it [knowledge] steer me towards all the things that are possible.

He reiterated the point when he added that he did not want knowledge on a subject to “limit the idea that you can't do it some other way.” In short, Aaron is determined to keep an open mind to explore new ideas so that he can express his creativity.

In a continuation of the theme on possibility, Aaron mentioned a snippet of a stanza from a Robert Frost poem that talks about taking the path that was less traveled.¹⁴ He used the path metaphor to describe the metaphorical footpaths that he has taken and he noted that “taking a different path” comes easily to him.

Aaron spoke expansively and enthusiastically about this topic. This was Aaron's opportunity to really explain the source of his creativity, and he took pains to be specific and give examples of his way of looking at a subject—in this case, the path to creativity. He said:

I would look and say, ‘what are the trees made of? Should we make a new path? Do we even need a path? Can we just climb the tree? For some reason, is being in the canopy of the woods superior to taking any path? Or do we have to go anywhere? Can we just make camp here?’

I just look outside of the box and that may have just come from certain life situations where you just have to be resourceful. I'm not exactly sure where that comes from. I think that's necessary for creativity. . . when faced with decision making . . . is there just a completely different path? Being willing to consider the types of things that no one else considers.

¹⁴ Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference.

In another part of the interview, Aaron generalized his thinking about organizational creativity and talked about how his approach to doing things is unusual.

He described his organization's creative process by saying:

Is it possible that we could potentially do it a completely different way? We do a lot of things in a drastically different way than most, but we do it knowing . . . fully knowledgeable of the fact that we are doing it differently and why we are doing it differently and understanding the associated risks of that. We often look to see if there is another path.

Mentors support creativity. While Aaron has often chosen a less-traveled path of possibility, he has done so with the support of various mentors who have, according to Aaron, given him helpful feedback. He noted that their help was most beneficial when he “felt lost, and also [the mentors] just helped provide the logistical benefits of their experiences so that . . . [he] could avoid pitfalls.”

Some mentors were college professors. For instance, Aaron recalled one special music instructor who first introduced Aaron to the classical compositions of African American composers. The relationship between the two began, as many mentoring relationships do, with an authority figure acting as a counselor to a student. Over time, however, knowledge and experience were transferred in both directions. The relationship became more collegial and friendly. Aaron values such relationships and acknowledges their importance to his creativity and to his overall success. Furthermore, he wishes to pay forward the advice and counsel of his mentors by becoming a mentor, himself.

Aaron said, “I hope that I can have the kind of impact that my mentors have had [on] me.”

Conclusions

Growing up as one of the few minority classical violinists in the country pointed out to Aaron the lack of diversity in the classical music world. As a result of this experience, he wanted to see a more integrated profession. Moreover, based on his love of classical music, he wanted all people to have an opportunity to hear the classical compositions of the orchestra and have an opportunity to learn to play classical music. In order to satisfy his goals, Aaron created a nonprofit that supports the work of minority musicians and helps them build careers in classical music performance.

In terms of his decision making, Aaron is adamant that he makes all decisions based on gathered information, that he uses available knowledge to contemplate the pros and cons of a decision, and that he always considers the situational consequences before he makes a decision. He also emphasized the need to delegate authority for making specific decisions to the people who have responsibility for a department or program and who will have to live with the consequences of the decision.

According to Aaron, good decision making and creativity also require action. He said that creating, deciding, and acting are intertwined and, ultimately, inseparable. He pointed out, furthermore, that the MacArthur Foundation does not give its award for having an idea, even if it is a great idea. The important ingredient in awarding the prize is the decision making that leads to action after a good idea is formulated.

Aaron discussed how his ability to take risks was an important element or trait associated with his creativity. He pointed out that risks are inevitable in new endeavors so anyone who is interested in creative change needs to be comfortable taking at least some level of risk. He also identified another concern about the ability to take risks. He

pointed out that, over time, people had more to lose through risk-taking. As a person had experienced some success in his or her chosen field, there was more to lose if risks were taken. However, losing the willingness to take a risk could reduce the ability to continue to be creative and could ultimately stall progress.

Along with the personal characteristic of risk-taking, Aaron revered persistence as a personality trait or habit that supports creativity and overall success. He argued that people should always persevere if they have assessed the validity and rationality of their positions. Perseverance should continue even in the face of resistance from authority figures.

Aaron also talked about how his passion for his work sustained him and that he nourishes his creativity by looking for new possibilities or paths that represent novel ways of doing things. Mentors have helped Aaron create his own path in life, and he continues to value their counsel.

The interview with Aaron showcased his intense personality that has repeatedly led him to take real and poetically inspired creative paths. For Aaron, every decision is, or at least should be, creative. In the interview, he showcased his artistry in his music and his determination to seek social justice for minority musicians. He is, indeed, a musician with uncommon rhythm.

CHAPTER TWELVE

CROSS-CASE ANALYSIS

Introduction

This chapter begins with a brief review of the purpose of the study, reiterates the research questions that have guided the project, and gives a synopsis of the methodology used. The chapter continues with a cross-case analysis constructed from a look across the individual cases presented in previous chapters and is organized around answering the research questions and providing links to the literature review.

The cross-case analysis is divided into two sections: decision making and creativity. Following the cross-case analysis is a discussion that focuses on what the study's data suggest about the intersection of decision making and creativity. The chapter ends with conclusions about the main ideas of the cross-case analysis.

Purpose of the Study

Decision making is a human process that has profoundly influenced the health and, even, the very existence of our planet. As a result, understanding how individuals make decisions has been a subject of continuing interest to researchers (Campitelli & Gobet, 2010; Kahneman, 2011; Libby & Fishburn, 1977; Simon et al., 1992).

Researchers have also been interested in the study of human creativity. Creativity is understood to be a complex human phenomenon that can result in the development of interesting and novel outcomes (Fleming, 2012; Lubart, 1994).

Scholars have also related the concepts of decision making and creativity. Feldhusen and Goh (1995) contended that the definition of creativity is interwoven with the definitions of critical thinking and decision making. Sternberg (2006) agreed, and in

his opinion, creativity may be expressed through decision making. As individuals initiate their personal cognitive processes to identify and develop imaginative ideas, they realize that as a creative concept goes from an abstract representation to a concrete reality, decisions have to be made to support and confirm the imaginative idea. This is because simply being imaginative is insufficient; in order to be considered creative, individuals need to activate their creativity by making one or more decisions (Sternberg, 2006). Therefore, it could be said that creativity and decision making are partners in developing novel outcomes or solving problems.

The purpose of this study was to investigate how creativity and decision making intersect and interact in the work of eight individuals who have been recognized for their creativity. The project studied the decision making strategies and processes of these eight participants and also examined their perceptions of how aspects of creativity, acknowledged in the literature and defined by the participants, influenced the creation of novel outcomes.

Research Questions

The following research questions were employed to organize and direct the study.

1. What decision making strategies and processes do study participants use to make decisions?

2. How are the strategies and processes employed by different participants similar and different?

3. How do the decision making strategies and processes employed by the study participants relate to established decision making theories described in the scholarly literature? Specifically, how, if at all, does participant decision making relate to the

Rational Actor Model, the Organizational Behavior Model, the Governmental Politics Model, and to theories that employ exploratory problem solving techniques that the study characterizes as the Heuristics Model?

4. How do the decision making strategies and processes employed by study participants relate to creativity constructs identified in the scholarly literature? Specifically, how, if at all, do creativity constructs such as intelligence and knowledge, personality traits, motivation, and environment relate to participant decision making?

5. Can a typology of decision making strategies and processes be created from the decision making dimensions identified in the participants? Do the MacArthur Fellows' decision making strategies and processes suggest a new decision making theory, and, if so, what are the foundational premises of the theory?

Methodology

This study was an exploratory qualitative study that involved individual face-to-face interviews. As just noted, all of the participants were considered to be creative thinkers, each having been awarded the prestigious MacArthur Foundation Fellowship for innovative work. All eight participants were also leaders in either for-profit or nonprofit organizations. Four of the participants were women and four were men. Ages varied at the time of the interview, but four participants—two males and two females—were under the age of forty when awarded the MacArthur Fellowship, and four—two males and two females—were over the age of forty at the time the award was presented. During the in-person interviews, each participant discussed his or her decision making strategies and highlighted how creativity was personally activated and developed.

Cross-Case Analysis Results

Table 1 is a synoptic review of the participants interviewed. This summary is provided to remind the reader of the interests and accomplishments of each of the interviewees.

Table 1

Study Participants and Their Work Interests

Participant	Interests and Accomplishments
Saul	Inventor interested in developing useful products; especially in energy
Wes	Environmentalist developing perennial grains and improved agricultural practices
Jim	Social entrepreneur involved in repurposing software for use in the third sector
Susan	Activist who encourages full societal participation by people with disabilities
Anne	Activist determined to facilitate alliances between business and environmentalists
Victoria	Nonprofit pharmaceutical company creator who seeks social justice
Wilma	Chemist who supports community efforts to fight environmental polluters
Aaron	Nonprofit creator who supports minority participation and careers in classical music

Cross-case analysis—Decision making. In the first part of the cross-case analysis, decision making processes of the participants are compared and contrasted. In addition, the decision making strategies identified by the participants are related to the

three models of decision making that are defined by Allison and Zelikow (1999) in their seminal book, *Essence of Decision: Explaining the Cuban Missile Crisis*. For the purposes of comparison, I have retained the original model names used in the book: the Rational Actor Model, Governmental Politics Model, and Organizational Behavior Model.

The decision making section then examines the various ways that participants use decision making theories and models that fall under what I have termed the *Heuristics Model* of decision making. The Heuristics Model is an overarching name for a category of discrete decision making theories that I have considered a group because they all use heuristic analysis as a basis for arriving at a decision. Theories included under the heuristics moniker are Image Theory, Cybernetic Decision Theory, Contingency Theory, Elimination by Aspects Theory, Template Theory, and Ecological Decision Making Theory.

The decision making section continues with a cross-case look at ethics in participant decision making that developed from interview guide questions on the subject. Next is a discussion of emergent categories that were prominent in participant interviews and that go beyond a priori theory specified in the research questions. These categories were constructed from decision making caveats suggested by the participants. The section concludes with a short summary.

Allison and Zelikow models of decision making. The three lenses of the Allison and Zelikow (1999) model are discussed here. Study participants' comments relate to each of the models.

The rational actor model. Allison and Zelikow's (1999) Rational Actor Model considers decision making to be purposeful and claims that the people who make decisions based on this model have defined goals, look at consequences, and consider potential decision alternatives before they make choices. It may be considered logic-based and analytical. I compared this model to the stated decision making approaches shared by the study participants.

Many of the study participants suggested that logic is at the center of their decision making and represents their primary decision making methodology. Moreover, logical deduction strategies and evidence of analytical processes were present in the decision making descriptions of all interviewees. The findings suggest that study participants approach decision making using considerations proposed in the Rational Actor Model. Table 2 gives some examples of participant quotes on the subject of decision making.

Even though most of the participants considered decision making using an information-oriented, analytical, and logical approach, there were four interviewees who had additional ways of constructing decisions. The alternative constructs for decision making endorsed different reasoning and motivations.

Wes, for example, indicated that he is likely to base his decision making on a personal sense of *oughtness*. Oughtness, for Wes, referred to filtering decisions through a framework built around a notion of how the world *ought* to be. He suggested that decision making should always support larger ideals, and that personal desires were secondary to the needs of society. Wes, however, also appeared to use logic and analysis

Table 2

Approaching Decision Making Using Logic

Participant	Quote
Anne	I have a sort of clarity—I have an ability to kind of see my way through decisions that some people think are really hard. There is a kind of a . . . logic, there's almost a . . . logic tree. If this, then that . . . it's just clear, and it's not a hard decision. It's an easy decision.
Aaron	I try to gain as much knowledge as possible. I usually try to first understand what everybody else is doing and what are the pros and cons.
Saul	The only process-based thinking that I subscribe to is scientific method.
Jim	For the kinds of decisions we make around here, it's what do I need to know. Let's try to find out more information that's not going to fundamentally shift the goal and . . . [in terms of the problem], breaking it down, weighing this thing.

in his process of decision making. Oughtness was the bottom line criterion for decision making, but not a singular factor that was considered when making a decision.

Victoria, who might have been expected to fall in line with other individuals in the research study who had education and training in logic, analysis, and the scientific method, was the only person who embraced intuition as a critical way of knowing. While she acknowledged the need for logical and analytical decision making, she was adamant that intuition had played a pivotal role in her personal success, and that intuition was a major factor in the way she makes decisions. Victoria did not completely eschew science, however—she is, after all, a trained pharmacologist—but she believes that while knowledge can be gained through science, science does not have the full answer. When answers need to come from the heart, she depends on intuition.

Susan also embraced another way of making decisions. She pointed out that her primary process for creating answers was through collaborative and consensus decision making. Consensus and collaboration are important ways that decisions are made within Susan's organization, and she depends on her executive team to collaborate on decisions that they will eventually help to implement. Susan and her team members, however, also employ logic and analysis in the course of reaching consensus decisions.

Even those participants who emphasized the importance of logic and the scientific method occasionally had an addendum to their description of decision making that emphasized other aspects of their decision making process. For example, while Saul, a dedicated scientist was resolute that decision making at work was accomplished with logic, information, and a strict adherence to the scientific method, he also told me that, in his family life, he often chose to make irrational decisions and abandon his commitment to logic. In the family context, the heart often trumped the head, even in the case of a determined scientist such as Saul.

One point is worth mentioning with respect to the term *rational*. Only one participant mentioned the concept of rationality in discussing decision making. That lone participant, Jim, indicated that rationality, along with logic and information gathering, was used in his decision making processes. However, the fact that study participants preferred to describe themselves as logical instead of rational may reflect a simple semantic difference. The earliest decision making theorists adopted rationality as a descriptor for decision making, discussing decision making in terms of rational choice. Allison and Zelikow appear to have continued that tradition. However, the study participants, for some reason, preferred the term *logical*.

Governmental politics model of decision making has the potential to help. In their book, Allison and Zelikow (1999) considered another rationale for behavior and decision making. Their Governmental Politics Model suggests that individuals involved in a decision scenario may play bargaining games that, in the end, affect organizational outcomes. Bargaining maneuvers are attempts to influence outcomes and may reflect multiple strategic objectives. The modern day expression *playing politics* reflects the sorts of behavior and activities that are encapsulated in this model.

In this study each participant discussed the impact of politics on decision making. Not all participants, however, defined politics in the same way. Some participants differentiated between internal politics exhibited within an organization and external politics with actors such as funders and government officials. Internal politics were generally maneuvers by employees that tried to manipulate internal processes for personal gain. Such politics were understood to be detrimental to overall organizational goals and so were discouraged by the participants.

External politics were either considered to be undue pressure by funders or were related to politics that concerned United States legislative and regulatory processes. Study participants did not always consider external politics to be counterproductive. Aaron thought that funders could sometimes have good ideas and that their wide breadth of experience made them important sources of information. However, like other participants who mentioned the political nature of the funder relationship, direct interference by funders was not appreciated. Participants indicated that funder interference could lead to mission drift, and the intrusion of funders that proposed an alternate agenda was vigorously resisted.

With respect to politics that represented local, state, or federal processes, participants had mixed ideas about the benefit of politics. Jim and Aaron recognized that more things could be accomplished if politics were understood. Jim even described politics as another kind of technology, a technology that is “as complex as any technical field I’ve been involved in.” Susan and Wilma mentioned how political decision making could protect people. These two participants recognized that the laws that were a tangible product of political decision making are important aids in protecting the rights of individuals. Both felt that without the protection of laws, their clients would be at risk of being victimized. Victoria and Anne preferred to steer clear of politics because their respective areas of interest—reproductive health and environmentalism—are too high profile and emotionally charged. For them spending time in political arenas was considered time consuming and potentially dangerous.

Despite the fact that politics, or the playing of politics, has generally been considered to be a negative sort of process in American culture, the research participants generally associated the terms *politics* and *political* with a process that they considered to be legitimate. Furthermore, a number of the participants could see the importance and, sometimes, the indispensable nature of the political process.

In terms of a comparison with Allison and Zelikow’s (1999) understanding of politics in decision making, the study participants did not connect the term *politics* with a negative connotation of governmental, legislative, or even organizational bargaining and machinations; rather they preferred to highlight politics as another way of achieving results. Therefore, the participants did not appear to support the concerns expressed by Allison and Zelikow. However, since each participant is the organizational leader of a

relatively small business unit, it is possible that the detrimental effects of multiple strategic issues, goals, and foci that represent the negative impact of politics have never developed in the participant organizations. In other words, each participant leader has closely managed his or her organization in terms of objectives and outputs and, therefore, has not experienced the potentially detrimental effects of politics. Unlike the Allison and Zelikow analysis, these participants are not operating in large hierarchical organizations.

Organizational behavior model of decision making can help or hinder. Allison and Zelikow (1999) used a third lens to describe human behavior and decision making. Their Organizational Behavior Model recognizes that decision making in organizations may not depend on deliberate choices made by individuals, but may be considered as organizational outputs that occur because standard patterns of behavior have been stipulated or prohibited within an organization. These standard patterns of behavior are sometimes described as standard operating procedures (SOPs) that are organizationally embedded to dictate specific behavior in a particular circumstance.

Just as study participants had different ways of looking at politics, so they also considered standard operating procedures (SOPs) in various ways. While standard operating procedures often have been considered to be rigid manifestations in hierarchical organizations, some of the study participants looked beyond that definition and recognized that there are times when standardized procedures and processes can be a unifying way of conducting activities.

Saul, Victoria, and Jim pointed out that their organizations sometimes needed SOPs. SOPs were considered to be positive when scientific research demanded precise processes to ensure reliability and validity; in the process of manufacturing regulated

substances like drugs and medical devices; and in manufacturing settings where quality standards and manufacturing costs needed to be controlled. However, when Saul, Victoria, and Jim were promoting creative endeavors to innovate products, SOPs were considered to be inappropriate, and the three participants claimed that SOPs could hamper new product development.

Aaron, Anne, Wes, Wilma, and Susan found SOPs to be helpful when something needed to be done in a unified fashion or to conform to governmental or legal requirements. In their estimations, a standard way of doing a task could support consistent ways of treating people, could maintain reliable functioning, and could allow conformity to established governmental procedures. While not all situations called for SOPs, there were times when participants found them helpful.

None of the participants defined SOPs as a limiting function based on colliding bureaucracies or frustrating rules established by empire-building bureaucrats. Therefore, the way they defined and talked about standard operating procedures did not coincide with Allison and Zelikow's (1999) concerns about standard operating procedures that can hamstring organizational progress. The study participants, however, may have had different perceptions about SOPs because, once again, the smaller size of their organizations may have isolated them from an over-active bureaucracy. Furthermore, it seems unlikely that my interviewees would have tolerated any unnecessary regulation of the workplace.

Heuristics Model of decision making. While the various aspects of Allison and Zelikow's (1999) models of decision making were not always consistent with the descriptions of decision making offered by the study's participants, the heuristic decision

making strategies that were discussed in the literature review of this dissertation were often apparent in participants' descriptions of their decision making processes. The term *heuristics* refers to a variety of discrete decision making models that all use interpretive analysis as the basis for arriving at a decision. When such models are successful, the decision maker may more accurately and more quickly solve a problem by employing various aids and shortcuts to enhance learning, illuminate strategies, and improve performance. In this study, theories that have been included under the heuristics moniker are Image Theory, Cybernetic Decision Theory, Contingency Theory, Elimination by Aspects Theory, Template Theory, and Ecological Decision Making Theory. Following is a discussion of how some of the participants used heuristics in their decision making.

Template Theory. When characterizing his primary decision making strategy, Jim indicated he used what he called *mental models* to aid his decision making. To him, mental models were a simplified mental representation of a decision scenario. For each of the mental models that he had established, he had developed a corresponding successful decision response strategy. Over his career, he had developed a number of these models to fit various decision making situations that arose in his life.

When Jim described his mental models, his process resembled Template Theory approaches to decision making. Template Theory, proposed by Gobet and Simon (1996), posited that individuals created intricate templates for decision making that became cognitive aids in decision scenarios. These templates were constructed by recognizing features or patterns in a decision scenario. As a result of using templates, decisions were not only more accurate; they also were made more quickly because time was not spent exploring alternatives that were likely to provide substandard solutions.

While Jim did not characterize his mental models as representations of Template Theory, his discussion of his process appears to be the equivalent of the researchers' templates. Consistent with Gobet and Simon's (1996) theory, Jim indicated that he stores his knowledge of the solutions to past problems so that he can discern an appropriate solution to new problems.

Elimination by Aspects Theory. Another heuristic aid that participants identified as helpful in decision making comes from a theory called Elimination by Aspects. The theory, proposed by Tversky (1972), suggests that individuals make choices by a process of elimination. The process of making a decision involves successively choosing between alternatives, or what Tversky (1972) called attributes, until all but one decision alternative is eliminated. A decision maker, using the Elimination by Aspects Theory, sequentially eliminates alternatives with the objective of meeting specified goals. It is assumed that the decision maker sequentially weighs the relative value of attributes during the process.

Both Jim and Anne appear to use this heuristic aid in making decisions though neither was aware of the formal theory that appears to describe what they do. Jim referred to his process as a funneling process that helped him choose between potential new product ideas. He spoke of the process of eliminating possibilities and ultimately ending up with one product idea that would be developed. Anne talked about her process as a logic tree. She spoke of the alternative choices available as if they were branches on a tree. Both Jim and Anne are relying on a systematic elimination of possible alternatives in a search for the one best solution.

Contingency Theory. Contingency Theory, posited by Beach and Mitchell (1978), proposed that people make decisions using analytic and nonanalytic aids to help solve a problem. These aids may be considered to be on a continuum. Some aids are as simple as paper and pencil to calculate solutions; at the other end of the continuum are complex computer simulations. The Contingency Model suggests that decision strategies are approached and implemented based on the premise that individual decision makers choose strategies that require the least investment of energy to obtain a satisfactory solution. In the Contingency Model, an aided-analytical strategy employs a guided system of analysis that utilizes tools (computer, calculator, or mathematics) to determine a choice. An unaided-analytic strategy explores the dimensions of the decision where no specific tools are employed to fashion an outcome.

Saul appears to use two heuristic aids in making his decisions. In the interview, he talked about, what he called *intellectual combinatorics*.¹⁵ Saul, explaining the gist of his process, described intellectual combinatorics as a matrix constructed from problem variables. He indicated he uses this exploratory framework to investigate the various permutations that make sense in a design problem. Permuting through possible combinations of variables has often led him to the discovery of a problem solution.

Saul also mentioned that he routinely uses another heuristic aid in decision making. He uses estimation to make a large number of decisions presented in his daily work life so that work can proceed on a project. He noted that he is “extremely good at estimating the time and money cost of anything.” Each of the processes described by

¹⁵ Combinatorics comes from mathematics and refers to the enumeration, combination, and permutation of sets of elements.

Saul appear to represent aided-analytic strategies as they depend on mental calculation and analysis.

Image Theory. Another decision theory that can be associated with a heuristic aid is Image Theory (Dunegan, 1993). This theory developed by Beach and Mitchell (1990) looks at two types of decisions: progress decisions and adoption decisions. Progress decisions evaluate whether past decisions are being adequately carried out, and adoption decisions involve making new decisions to replace ones previously made that are either inappropriate or unachievable.

According to Image Theory, decision makers compare expected and experienced events in a search for compatibility. If mental analysis of expected and experienced events are compatible, decision makers are more relaxed in their analysis, but should the analysis suggest a discrepancy between expected results and the results that are actually experienced, a more concentrated mental scrutiny and analytical investigation of the situation needs to be undertaken. Research findings showed that decision makers actually employ different analysis processes depending on the degree of alignment between expected, or what the theory calls *trajectory images*, and experienced events.

Four of the eight participants—Wilma, Aaron, Anne, and Susan—all talked about how reflection aided their decision making. They all expressed how reflection could provide clarification of the success of past decision making and could suggest how past experience might inform future situations of a similar nature. The act of reflecting parallels Image Theory's process of aligning trajectory images. The only difference between Image Theory and reflection is that Image Theory is an evaluation of present situations, currently in process, and reflection is an interrogative process of past decisions

projected into potential future scenarios. While Beach and Mitchell (1990) who developed Image Theory are the only people who can assess the importance of this detail, it appears to me that reflection, as explicitly or implicitly defined by the study participants, approximates the definition of Image Theory. Therefore, four of the eight participants' discussions of reflection appear to provide support for the utility of Image Theory.

Ethical issues in decisions making can be avoided. At the outset of this research project, I decided that I would ask participants how they handled ethical dilemmas in their lives. The goal was to find out if decision making strategies and processes differed under the pressure of making decisions that had ethical ramifications. What I found was that participants did not indicate any apparent critical concern about ethical issues present in their workplaces, and, as a result, each participant dealt with such occurrences as matters of exception. Moreover, all of the participants claimed that they used their primary decision making strategies when faced with ethical situations. There was no alternate strategy involved. The participants did, however, want to talk about the nature of some of the ethical issues that they occasionally faced.

Victoria indicated that issues of informed consent were a reoccurring and vexing issue for her, but she had developed ways to cope with the difficult matter. Anne and Aaron were united in talking about ethics in terms of integrity. Anne indicated she felt the need to model integrity in all her interactions, and Aaron indicated that integrity was an ongoing topic of conversation with his musical students. Saul spoke of the continuing concern that he has, and virtually all engineers have, that revolves around the fact that

almost any invention may be turned into a weapon with some design changes. Saul reflected that this was a worry for him, but one that he could not control.

Emergent categories associated with decision making. During the course of interviewing participants for this dissertation research, I was alert to the possibility that interviewees might illuminate unusual decision making strategies or processes. This section describes the novel connections and the important caveats that the participants indicated were associated with their decision making. While these concepts are not associated with theories of decision making, they do represent the thoughtful contributions of my creative participants.

Separating emotion from reaction. Several of the MacArthur Fellows (i.e., Anne, Wilma, Susan, and Jim) all spoke of the need to coexist with others in their fields. Each took the time in the interview to not only acknowledge, but also to encourage, the acceptance of others' views and approaches to issues. The fact that these four chose to associate this idea with decision making suggests that the idea of separating emotion from reaction should be analyzed to gain a better understanding of the concept.

Anne warned against demonizing others. This term, for her, meant that just because others spoke about issues differently, or employed different methods to gain results, there should be no dismissal of the person's contributions based on a different approach to a situation. Even if personal habits and foibles, as she called them, might be annoying, she argued for recognizing a person's ability to get results instead of focusing on personality quirks. What she was saying was that she did not want superficial personal differences to blind her from seeing the potential of a person's ideas. She

wanted to be able to separate her emotional response from her evaluative reaction to ideas presented.

Susan and Jim proposed a more general way of interacting with others. Jim talked about not burning bridges, and Susan simply said not to be negative. Each made the point that it was important to deal respectfully with others and, in particular, Jim pointed out that it was necessary to maintain a cordial relationship, even with adversaries, because those adversaries might someday be potential partners in another situation. These two participants also seemed to be emphasizing the need to separate reaction—that is, how they reacted to a person—from their emotional response to that person.

Wilma's approach was a bit different as she was discussing her need to present herself and her arguments to others. She indicated that she wanted others to separate their emotional and evaluative reaction to her. What Wilma seemed to be saying was that by presenting only scientifically accurate data in her environmental cases, she gained the respect of her adversaries. In such situations, she acknowledged that her straightforward, unexaggerated approach modeled good-faith behavior and a voice of reason that encouraged a healthy dialogue about the environmental situation at the center of the dispute. While other environmentalists might consider presenting half-truths or dramatizing results, Wilma did not. As a result, Wilma was helping her adversaries accept her position—that is, she was promoting a logical reaction to her data rather than an emotional response to the situation. If her opponents can separate emotion from reaction, there might be a way to find a reasonable resolution, perhaps even a creative resolution, to the situation under discussion.

Since the participants chose to share these insights as we discussed their decision making, I assume that they saw these approaches to working with others as important. While this process of allowing for personal differences did not necessarily influence the decision making processes of the participants, there might have been an impact on the nature of the decisions made in any particular situation.

The requirement for action. Seven of the eight participants—Aaron, Saul, Jim, Wes, Anne, Susan, and Wilma—were adamant that action was needed to make projects successful. The remaining participant implied this need for action in the stories and examples she shared. In their discussion, some of the participants focused more on action as it was related to creativity, and some were talking simply about action following decision making. However, no matter the viewpoint they preferred, action was necessary.

As discussed in Aaron's findings chapter, Aaron said it best. He said, "MacArthur [the MacArthur Foundation] isn't awarding people because they sat around and had great ideas, it's because they put those ideas into action." He continued by saying, "We look at this in our young people and I talk to them all the time—I . . . [say] it's absolutely great to have talent, but it's meaningless unless you realize it."

In these statements, Aaron was noting the important and real connection between action and decision making. Unless action follows decision making, there can be no measurable success. Furthermore, creativity without decisive action is simply dreaming or imagining.

Saul and Jim were also determined to take action in their work. In their interviews, a recurring theme was the need to take swift action concerning the products

imagined and developed in the workplace. Saul recognized that a failure to make decisions impeded productivity, and Jim liked to solve problems so that he could trigger action. In his statements, Saul added another point. His determination to take action was fueled by the fact that he understood that there was much to be accomplished in life and that life is short. In other words, swift action is necessary to have the most impact during a human life span.

Wes' thoughts on action emphasized another point. With his focus on making positive changes in the world, Wes emphasized that action was the only way that change could be accomplished. He did not want to be limited to pumping his fist and saying "ain't it awful." Rather he was interested in making decisions to positively achieve change through action.

Anne took the quest for action one step further. Without action, she was simply not interested in being involved. She prided herself on her ability to make swift decisions, and inaction was unacceptable to her. In effect, Anne was reiterating Aaron's point about inaction, but also pointing out that she, by her nature, was a catalyst for action that should not to be wasted.

Susan's point about decision making and action concerned a movement toward successful implementation and a lack of concern about prior experience. As mentioned in her case, Susan noted that doing something new might not produce perfect results, but it was the attempt that was important. She was also not concerned that others might be able to do a better job. Rather than being limited by the prospect that others might be more skilled, Susan said, "If someone has a better idea and can do it better, then so be it. Let them bring it on." Susan was reinforcing the concept that good ideas coupled with

action, rather than experience, can yield great successes. Susan's overall message also noted that perfection, especially on first attempts, was not required.

Wilma also pointed out the need for action. She, however, focused on the need for initiating and then, importantly, continuing action. Wilma's focus on continued action is what makes her so successful in her work where sustained activity is the main source of success.

Looking at failure. Four participants—Aaron, Anne, Saul, and Susan wanted to highlight the connection between failure, decision making, and personal success. While these four study participants plainly expressed their views on the subject, several other participants hinted at it, but were not as specific in their explanations.

Aaron said it the most precisely. He noted, "Tons of projects fail and initiatives fail." He went on to say, "People fail when they fail to act." The point here is that there is a difference between a project failing and a person failing.

As mentioned in her case, Anne echoed these thoughts about failures. She talked about failed projects in terms of bumps in the road and on the ski hill. She indicated that falling down, her metaphor for failure, should just be considered a bump in the road.

Saul was unapologetic when he conceded, "I make more errors than most people." He, however, said he wanted to make errors quickly and then learn from them. Furthermore, he chooses to be good humored when he errs and is not discouraged by his mistakes.

Susan was equally nonchalant about a perceived failure. She indicated that after the review of a failed project, she simply moved on to the next project.

While it was Aaron who differentiated the two scenarios—projects and people—the others were pointing out basically the same thing: There is no long-term importance

associated with a project failure, and such instances of failure should be considered in terms of what can be learned. Once the reason for failure is understood, forward movement should continue. In other words, failed projects should not inhibit further plans, but rather should inform them.

Cross-case decision making summary. Generally, the participants were unified in their acknowledgement of logic and analysis as being important in decision making. However, four of the participants acknowledged other strategies beyond logic.

Political decision making and a concern for the constraining features of standard operating procedures were not foregrounded as problematic concerns in the participants' organizations. Heuristic devices were used by a number of participants with support seen for four of the theories that were included in the Heuristics Model: Template Theory, Elimination by Aspects Theory, Contingency Theory, and Image Theory.

There was no singular process of ethical decision making acknowledged by the participants. Furthermore, participants did not identify any alternate decision making strategies that differed from their more general processes of decision making. However, not all participants spoke at length about their specific ethical decision making activities.

While discussions of ethical decision making did not produce novel insights, participants did suggest several original ways that they approach decision making that have not been identified in other research I have reviewed. The interviewees recommended separating emotion from reaction in order to focus on important decision making considerations. They also suggested that successful decision making should result in action. This requirement appeared to be an essential feature in overall success. Failure, however, was thought to be of little importance. Participants seemed to accept

that failed projects would occur, but there was a recognition that many projects fail without a person becoming a failure.

Cross-case analysis—Creativity. According to the study's participants, there are many different aspects of creativity that they use to inform and improve their ability to fashion novel outcomes. In this section, I present the most often mentioned revelations of the participants and also describe some unusual aspects of creative thinking that were revealed. It is important to note that, in some cases, the creativity of the participants appears to be the same, and, in other cases, each participant uniquely expresses his or her creativity.

The revelations are grouped according to theme. Some themes are more closely aligned with aspects of creativity, and others seem to be more universal caveats for general success. I have included the general success caveats because the participants described these personal characteristics and habits as important foundational attributes that support their creative efforts.

The study participants presented the following themes that they associated with their understanding of their personal creativity: employing a big picture approach, combining disparate ideas, challenging conventional wisdom, the importance of intuition, acceptance of ambiguity, valuing risk-taking, the importance of passion, appreciation of possibilities and searching for a novel path, and the importance of mentors. These themes are grouped in one section. The importance of ignoring negative comments from others and the need for persistence are more broad observations that support ways to be generally successful, and they are grouped in a separate section.

Themes specifically associated with creativity. The following themes were important catalysts in the creative world of the MacArthur Fellows. Participants declared that these aspects of creativity were central to their creative abilities.

A big picture approach. Big picture analysis has been identified in the literature as a source of creativity. Sternberg (2006) and Ramocki (1994) talked about this aspect of creativity in terms of an intellectual style that employed global thinking and involved searching for novelty.

The goal of taking a big picture view of a situation has also been associated with creating novel solutions through the reframing of the problem. McCaffrey (2012) posited that creative individuals had the propensity to discover at least one infrequently noticed or obscure feature in a problem that could be used to devise a solution. In effect, he suggested that correctly reframing a problem could lead to a better understanding of problem variables and, ultimately, a potential problem solution. If incomplete or faulty problem framing was corrected or tangentially related concepts were identified in the reframing exercise, new insights might suggest new solutions.

The specific words *big picture* were actually used by some study participants to describe how creativity was activated in their work. For the participants, big picture generally referred to a conscious way that a participant would metaphorically step back from the decision situation to see the bigger issues implicit in the circumstances. Big picture analysis could also involve identifying and analyzing bigger patterns present in society that could inform the situation.

Four of the eight participants, Wes, Saul, Jim, and Anne agreed that creativity could be enhanced when big picture concerns were incorporated into the search for novel solutions. Other participants did not directly mention using a big picture strategy, but they demonstrated their use of this technique in the examples they gave. Saul's words concerning a big picture approach to understanding and solving problems were representative of the participant comments. He said:

And you just look at the whole world through these statements [big picture statements]—I guess some people call these things lenses. It's a hypothesis, and then you test that hypothesis on a whole bunch of examples and occasionally that serves something useful.

In this discussion of a big picture approach to problem analysis, there is one final point that needs to be highlighted. It is a point that was only made by two of the participants. Wes and Saul both talked about how gaining a big picture view of a situation by understanding the lessons of history could contribute to an awareness of foundational problems that could then help conceptualize a creative solution to that problem.

Wes emphasized that understanding historical issues, motivations, and underlying factors of a situation—which Wes referred to as unresolved legacy concerns—could shed light on the conditions found. In effect, Wes was saying that the answer to today's problems might be found by understanding the motivations and precepts of earlier times. Recall that Wes discussed the importance of understanding Middle East politics through the writings of early poets of the region. In effect, Wes uses the metaphors and analogies of history to explain concepts and issues in present day life.

Saul also looks at the history of a field to better understand how earlier researchers came to their conclusions. In this way he can sometimes discern logic gaps

and misunderstandings of scientific principles. If a shortcoming in the understanding and/or application of physical laws is found, Saul is in a position to correct the mistakes of earlier scientists and may be able to develop a new way of understanding a problem.

While the understanding of history is a subset of the idea of engaging in a big picture analysis of a problem, it is interesting that two of the eight participants should focus on this particular aspect in their search for understanding. In taking the time to focus on history, Wes and Aaron signal the importance of this specific sort of big picture analysis.

Importance of disparate ideas. Creativity researchers have also pointed out how creative people have the ability to think divergently and assemble disparate ideas. Lubart (1994), in particular, noted this phenomenon in creative people. Additionally, Casakin et al.'s (2010) study suggested the importance of attending to disparate ideas in creative thought. In a general sense, the combining of disparate ideas requires that an individual have a curious nature and that he or she enjoy associating and manipulating ideas and concepts to create a novel outcome.

In this study, half of the study participants, Wes, Jim, Saul, and Susan shared the idea that bringing together disparate ideas could enhance their ability to be creative. The combining of disparate ideas meant slightly different things to the participants. According to Wes, this concept was associated with a deeper understanding of subjects that he was able to acquire by unpacking the traditional concepts of knowledge. He talked about “forcing knowledge out of its categories.” This concept referred to a deeper analysis of subjects that could illuminate underlying truths that went beyond accepted conventional wisdom or societal customs. Specifically, Wes discussed how he had the

ability to combine disparate ideas by turning traditional “notions on their heads” and by looking for the “relatedness of the seemingly unrelated.” According to Jim and Saul, reading journals and research studies from diverse fields sometimes led to a combining of disparate ideas. They discussed how knowledge gained from different fields could sometimes combine to suggest novel solutions and outcomes. Susan more generally expressed the concept of combining disparate ideas when she talked about her ability to creatively combine ideas taken from various environments to develop new ideas that might never before have been considered, or might have been previously discarded, as unrealistic in her field of expertise. Her efforts have led to novel outcomes and ideas to support those who have disabilities.

Skepticism about conventional wisdom. In this study, participants said that being open to new ideas was important in creating novel solutions and outcomes. However, they added a caveat concerning the acceptance of conventional wisdom. Wes, Aaron, Saul, and Victoria were united in warning that conventional wisdom—a reliance on generally accepted ideas and opinions—could hinder an individual’s development of creative ideas. In other words, conventional wisdom, rather than being real wisdom, might actually be apocryphal, and might have a constraining effect on creativity. Study participants warned that accepting conventional wisdom without scrutinizing its value could be detrimental.

Wes and Saul shared another concern about how conventional wisdom might be harmful. Wes talked about conventional wisdom being a drawback to a real understanding of a subject. He warned that society is often tyrannized by conventional thinking and that such accepted thinking can lead to a shallow analysis that can impede

creativity and decision making. Saul also eschewed conventional wisdom for the same reasons. He just expressed himself on the subject in a more direct way, claiming that conventional wisdom amounted to a failure in rigorous analysis and resulted in, as he termed it, “a whole bunch of bullshit assumptions that are probably wrong.”

Aaron and Victoria shared another shortcoming about conventional wisdom. According to them, conventional wisdom could lead to a limiting perspective on a subject that might deter a person from thinking about alternative creative solutions; instead relying on a more conventional approach as the only choice available in a situation. In particular, Aaron and Victoria were concerned that novel approaches would be discouraged by, so called, experts. Victoria described how such an expert might defend conventional wisdom. She said, “They’ll say, that will never work. Why try that? Oh no, that’s ridiculous.” What Victoria was indicating, by her comments, was that experienced scientists might be hampered and constrained by the very fact that, as she said, “they know too much,” and that creative ideas would never be tested because experts, committed to their own entrenched beliefs would not experiment with unconventional hypotheses. Both Aaron and Victoria preferred to keep an open mind to explore creative ideas rather than be weighed down by conventional wisdom.

Aaron and Victoria’s concern about relying on traditional approaches to a problem has support from at least one creativity researcher. Sternberg (2006) called such dependence on traditional approaches—the entrenchment of knowledge. He warned that expertise in a field could lead to this counterproductive quality that could impede creativity.

The importance of intuition. Researchers have investigated the influence of intuition on both decision making and creativity. Dörfler and Ackermann (2012), in particular, discussed the nature of intuition and how it can inform knowledge gathering.

In this study, it was the women who were interested in discussing intuition's relation to creativity. Three of the four women participants believe that intuition is present, at least to some extent, in their creative processes. Anne, Susan, and, Victoria each had something to say about intuition. It was only Victoria, however, who really advocated for intuition as a key aspect of her decision making and creativity. Table 3 depicts how each of the three regarded intuition.

Table 3

Intuition, Decision Making, and Creativity

Participant	Quote
Anne	Intuition is more common in women because women have a lot of connective tissue in [their] brains. This additional connective tissue helps women see things in a more holistic and integrated way.
Susan	It's more an art than a science and, at times, my intuition is probably just a bit off.
Victoria	Intuition is a knowing beyond the five senses that we have mapped and that we understand and that are measurable.

However, while these three participants voiced their personal understanding of intuition and their thoughts on its importance, the remaining five participants either did not address the impact of intuition on their lives or described intuition in a non-standard way. Saul, for instance, defined intuition as a form of decision making using sparse data.

He suggested that the brain integrated information from past experience and projected forward outcomes based on that earlier experience. The combination of a good memory and the quick permutation of options, he suggested, is the essence of intuition.

A tolerance for ambiguity jumpstarts creativity. Another characteristic exhibited by creative people, according to the literature, is a tolerance for ambiguity. Sternberg (2006) and Zohar (1997), for example, identified this personality trait in their research. In particular, it was proposed that a tolerance for ambiguity allowed an individual to suspend judgment and refrain from analysis until facts could be acquired. Kristensen (2004) also suggested that a state of ambiguity allowed an idea to incubate in a person's brain and that, as a result, a problem solution might emerge over a period of time.

Four of the eight participants indicated that a tolerance for ambiguity was helpful to them in their search for creative solutions. Three of the four people who appreciated the appearance of ambiguity were women. Table 4 represents the participant views on ambiguity.

The remaining participants had little to say about ambiguity. They did not appear, at least, to value ambiguity as part of the creative process. However, one participant, Saul, was resolute that ambiguity was a negative attribute. He felt that his goal was to minimize the impact of ambiguity on his projects so that he could solve problems. Relating ambiguity to a form of indecision, Saul suggested that wallowing in ambiguity was equivalent to "navel gazing," and he expressed annoyance with anyone who suggested that he unnecessarily defer a decision.

Risk-taking and creativity. Sternberg (2006) identified that creative people were likely to take some risks in their search for creative solutions. His research suggested

Table 4

Tolerance for Ambiguity and the Pursuit of Creativity

Participant	Quote
Victoria	You become more comfortable with it. I can't say you ever welcome it, but you can recognize it. All right, here we go again. Time to let go. Accepting that you cannot understand all of it right now. It's just not the right time, but it will come.
Wes	If we're going to count ourselves as grownups, we've got to be able to tolerate ambiguity. A person . . . is embedded in ambiguity [when] there are questions that don't have answers.
Anne	I'm willing to follow a path that is not mapped out in advance. I don't need to know four steps down. I just need to know two steps down, and then once I get two steps down, the other two steps will become clearer.
Susan	I love ambiguity because there's no right or no wrong [answer]. Ambiguity and sometimes a bit of chaos and then let it settle—I think that's part of the creativity thing.

that creative individuals exhibited a level of risk-taking that was considered to be sensible or calculated. This meant that individuals did not take very large risks, and they understood the nature and extent of the risk.

In this research study, the participants were unanimous in their assertions that calculated risk-taking was not only important in the creative process, but was also essential in successfully completing innovative projects. Following is a summary of how risk-taking was viewed by the various participants.

Aaron summarized his feelings on risk-taking by saying, "A lot of the work that we do requires the risk of doing something that hasn't been done before." Victoria preferred to describe her risk-taking in terms of a simile. She said that learning to take

risks was like flying on a trapeze. She spoke of how the trapeze artist must swing from bar to bar. She noted that the performer could only transfer from one swing to another by letting go of the first swing before the second trapeze was within reach. Hence, Victoria said, a person needed to trust that he or she could survive in the “space between the trapeze bars” where one is literally falling. This, according to Victoria, is the embodiment of risk—the understanding that you can survive the risk. Jim volunteered that his risk-taking is “calculated.” By this, he meant that if the risk factors were known and the problem situation was understood, he would embark on a creative project and would “stick with it past the difficulties, but not hold on to something that’s obviously going to sink.”

Each of the participants acknowledged that risk-taking is inherent in developing new projects. Their conclusions indicated that without at least some level of risk, no real innovation would be possible.

Passion as the catalyst for sustaining creativity. Creative people are generally highly motivated and their motivation is intrinsic (Lubart, 1994). That means that, often, the basic and essential nature of their motivation is passion.

The study participants were unanimous in their belief that passion catalyzed and sustained their personal creativity. Passion was the motivator that kept each participant engaged in his or her creative endeavors. Additionally, passion was considered to be important in overall success. Table 5 presents examples of statements participants made about their personal passion for their work.

The sort of passion that the MacArthur Fellows articulated can be associated with another term—calling. The term calling refers to work in an area that an individual finds

Table 5

Passion and the Pursuit of Creativity

Participant	Quote
Aaron	It's [passion is] at the core of everything, and it's why I get up every day and don't feel like I work because I love what I do.
Saul	I don't believe anyone can do anything that they are not passionate about. I guess I don't really know what passion really means, but I am passionate about everything that I do so . . . I don't do anything half-assed.
Wes	Passion without reason is hysterical. Reason without passion is sterile.
Jim	It's the enthusiasm for the work that has sustained me.
Anne	I'd say [to young people] it doesn't matter a red hot damn what you do as long as whatever you do it's something you really like to do. Pick something you really like to do and just go do it.

fascinating and has an attraction that captivates the person. Each individual in this study has chosen a career path that is linked with a personal calling.

Victoria was most adamant about this subject when she noted that she would have made herself sick if she had not followed her passion and developed her calling in nonprofit pharmaceuticals. Victoria uses her passion to support and help express her calling. Victoria's passion is creating drugs and medical devices, and her calling is to provide support for those who have been socially and economically disenfranchised.

Saul loves inventing. He has a passion for seeking new solutions to problems. However, his interest in inventing also surrounds his work in physics. Saul uses his passion for inventing to find scientific answers to problems. I propose that both a passion

for inventing and a desire to creatively impact the natural sciences, that is, his calling, are the combination of circumstances that lead to Saul's creativity.

Wes' passion is agriculture, and his calling is sustainable world environmental health; Jim's passion is the use and development of technology and his calling is to help the world's disadvantaged or vulnerable. Susan's passion is the support of human rights, and her calling is the empowerment of women. Anne is, at heart, a negotiator, and her calling is sustainable environmentalism. Wilma's passion is the cleanup of environmental waste sites, and her calling is the support and motivation of poor communities. Aaron's passion is classical music, and his calling is the integration of his minority students into society. In effect, all of the fellows combine their passion with their calling.

Searching for possibilities and novel pathways. If a person wants to be considered creative, he or she needs to find new solutions and fashion novel outcomes. The question is: How do the MacArthur Fellows create their innovative solutions and see the world in a different way?

All of the study participants described how *being open to possibility* was at the center of their innovation and that it was necessary to take a novel path to achieve creative outcomes. When asked about the genesis of creativity, Susan coined the term *being open to possibility*, and others essentially said the same thing. Anne and Aaron talked about thinking outside of the box, Victoria discussed the idea of creating more paths, Jim said that he sought to innovate by solving problems in new ways, Wes wanted to revisit what he called *entrenched beliefs* in order to ferret out creativity, and Saul, ever

the iconoclast, said that his creativity was encouraged when he added playfulness in work to help stimulate creativity.

While some readers might say that each of these statements represents a simple declaration to encourage the search for creative outcomes, there is more here than that basic point. Beyond the participants' obvious search for creative outcomes is a commitment to maintain a state of mind that encourages a search for success using specific and appropriate approaches. Each of the participants seeks possibility in a slightly different way, but the specific methodology that is used fits the person. Jim does this by repurposing or expanding the uses of technology, Anne takes an *interspace* approach to solving conflict where she steps back from a situation to see overlaps in interests, Susan empowers women by bringing them together to learn from each other, Aaron uses classical music to introduce minority musicians to mainstream careers, Victoria demonstrates that interests of advanced nations can be aligned with the goals of others who are severely disadvantaged, Saul promotes innovative problem solving as a profession, Wilma stays the course to repair the environmental sins of the past while seeking social justice, and Wes demonstrates his commitment to re-creating the principles of agriculture.

Each of the participants appears to see an end goal and then pursues that specific goal using a specialized talent. It is the connection of goal and talent that creates the magic. The net result is that the MacArthur Fellows interviewed in this study have all discovered how to create a novel path to express their passion and fulfill their calling. Once they have accepted the notion of being open to possibility, they seek it—possibility—in their own unique way.

The importance of mentors and role models. Mentors, or what participants often referred to as role models, also seemed to help individuals be successful. Lubart (1994) proposed that the existence of mentors was one way that the environment could support individuals in pursuing creativity.

In this study, mentors served a variety of functions. Sometimes, they (a) pointed out an appropriate path to take to solve a problem, (b) assisted an individual in learning the ropes in an organization or project, or (c) helped participants avoid specific pitfalls. In some cases, mentors were more generally inspiring: They assisted in the formation of life goals, helped adjust and widen individual perspective, modeled adaptive and self-starting behavior, or promoted an expansive philosophy of life that was both uplifting and practical.

Mentors might come from any walk of life. In some cases they were former college professors; in other cases they were parents or colleagues. Mentors, as described by participants, however, had certain things in common: They were naturally optimistic, open to new ideas, demonstrated a desire to more fully understand world issues, and had substantial life skills. Overall, they were a source of inspiration. Table 6 provides examples of what some of the participants said about mentors.

Beyond the notion of having mentors, participants noted that they, from time-to-time, served as mentors for others. One participant, Wilma, was particularly elegant in describing her role as a mentor. She said, “Mentoring teaches you that everything that you know in life is important.” Wilma spoke about how she mentors the community activists that invite her to help them solve their individual community crises. She said, “Mentoring others who are the community experts [activists] is helping them gain the

Table 6

The Importance of Having Support From Mentors

Participant	Quote
Aaron	I felt lost and they [the mentors] just helped provide the logistical benefits of their experiences so that I could avoid pitfalls.
Victoria	Find the people [mentors] you can talk to about it [your plan] who are positive in some way. They may just be looking at your eyes, and they may know nothing about what you want to do, but they see that you're passionate about it.
Susan	It's more like they modeled—they modeled behavior for me, and they modeled a philosophy of life and an attitude of joy.

knowledge that they need to make decisions.” Furthermore, Wilma conceded that, in a larger sense, she is instilling and reinforcing a nascent confidence in the community leaders so that they can feel empowered by their work.

Themes associated with general success in life. Participants spoke at length about how creativity was activated and developed in their lives. They also, however, indicated that there were other traits that sustained them throughout the creative process. While these traits did not necessary increase their creative insights, they were traits connected with the accomplishment of creative goals.

The importance of ignoring negative comments. Susan, Victoria, and Aaron all indicated that discouraging or dismissive comments did not demotivate them, but, in some instances, energized their responses and galvanized their resolution to accomplish objectives.

Susan was particularly vocal in her discussion of how hurtful and dismissive words, spoken to her about her disability, have had little or no effect on her desire and commitment to achieve her goals. She spoke of how she did not internalize the discriminatory comments, even if they were cruel and hurtful. It was as if she let the words wash over her; she did not allow herself to wallow in self-pity that might ultimately impede her actions. Rather her response was one of incredulity at the personal affront. Furthermore, acerbic comments galvanized her efforts to succeed. Her response might even be characterized as anger and that anger represented a powerful force that energized her efforts.

Aaron and Victoria had a somewhat different, but related, response to personal criticism. Disheartening or discouraging remarks, especially about personal goals, were considered in terms of their validity, and then were dismissed if the comments did not appear to have worth. In addition, as in Susan's case, the criticism could be used to sustain effort and enhance determination. There might even have been some sense of a desire to prove naysayers wrong.

The tendency to proceed with goals, even in the face of criticism, might point to a self-assurance in these interviewees that supersedes the impact of others' evaluations, even when the people involved are authority figures or recognized experts. However, this ability to remain upbeat in the face of criticism seemed to be a personal quality worth noting as it helped the participants achieve their general goals.

The role of persistence in success. Creativity researchers have also recognized the role of persistence in creativity. Sternberg (2006) and Lubart (1994), for example, studied this trait and found it present in many creative people.

All eight participants acknowledged that persistence played an important role in their success. They spoke of the need for persistence as important to overall achievement, but did not necessarily connect the trait with creativity. Table 7 gives examples of individual comments about persistence.

Table 7

The Importance of Persistence in the Pursuit of Success

Participant	Quote
Aaron	If you do not have persistence, you won't be able to surpass or overcome whatever those challenges are that present themselves . . . persistence is the absolute key to success.
Saul	[You] need to be naturally tenacious or stubborn.
Wilma	You have to be very persistent because you always get that push back and that push back is hoping . . . that you will go away.

Cross-case creativity summary. This section about creativity discussed how the study participants related their tangible skills and talents to their abilities to create novel outcomes. Furthermore, it detailed some of personal characteristics and habits that participants described as important in sustaining creativity. Sometimes, however, the line between creativity and overall success was blurred. Therefore, the section distinguishes between participant aspects that supported creativity and those that supported a more overall ability to be successful. The topics of big picture analysis, combining disparate ideas, conventional wisdom, intuition, tolerance for ambiguity, risk-taking, passion, looking for possibility and a new path, and mentors were all concerned with creating

novel outcomes. The importance of ignoring negative comments and persistence were additional factors that participants described as supporting overall success in life.

The Intersection of Decision Making and Creativity

During the course of the interviews, each participant had much to say about how creativity was activated and how decision making was accomplished. Each interviewee also had an opinion about what the term *creative decision making* meant and how, if at all, it was approached and executed.

Aaron was sure that he routinely utilized creative decision making in his daily routines, and he prided himself on doing everything creatively. Victoria and Jim each acknowledged the existence of creative decision making, but also recognized that most of their daily actions involved making routine decisions to move their work forward. Anne responded in a similar way. She noted that while she would prefer to think that everything in her world had creative aspects, her decision making was rather more formulaic and resulted from deductive reasoning. Wes did not see himself as creative and preferred to focus on decision making in terms of *oughtness*. Saul took a different tack: He rejected the concept of *creative decision making* because he claimed the term was redundant. This rejection might seem to mean that he assumed that all decision making was creative. However, Saul followed up his statement about by saying that creativity and decision making normally did not occur at the same time. In short, although all decisions might be creative in Saul's mind, creativity and decision making were bifurcated: Creative thoughts or insights were conceptualized before any decisions were made about them. Although Wilma was not entirely sure about the genesis of her creativity, she was sure that she does not engage in anything that resembles creative

decision making. Rather, she agreed with Saul, that the two activities were separate. Susan, after much reflection, was just not sure if she employed creative decision making.

The statements of the participants did not lead to a consensus about the existence of creative decision making or even suggest whether creative decision making was a viable concept. The lack of consensus may be attributable to the fact that different participants were using different definitions of the term.

Conclusions

This chapter provides a primary tool for assessing and comparing the decision making and creativity of the study participants. Within the chapter a cross-case analysis of the responses articulated in the individual cases is presented within two main sections: decision making and creativity.

In the decision making section, the cross-case analysis suggested participant affinity for logical decision making, but also acknowledged that decision making could be intuitive, collaborative, might involve aspects of politics and organizational operating procedures, and could be improved by various decision making aids and shortcuts. Additionally, ethics was considered important in making decisions. The participants also identified the importance of separating emotion from reaction in decision making and emphasized a need for action in implementing decisions. The MacArthur Fellows interviewed also had a unique perspective on the concept of failure.

In the creativity section the participants focused on how their creativity was activated and developed when they take a big picture view, combine disparate ideas, are tolerant of ambiguity, and accept some risk. Moreover, they warned about accepting conventional wisdom as real wisdom without scrutinizing the facts. They also advocated

for the inclusion of passion in work, looking for possibility in new paths, and taking advantage of mentors. Moving beyond the requirements for creativity, the participants suggested that overall success was connected with the ability to ignore negativity and be persistent.

The chapter concluded with a conceptual discussion of the term, *creative decision making*. The participants provided various thoughts about this term, but due to various definitions and understandings of the concept, no consensus was formed about the existence or importance of the term creative decision making.

CHAPTER THIRTEEN

DISCUSSION

Introduction

The purpose of this concluding chapter is to review the research findings at an aggregate level and point out what the aggregate data contribute to an overall understanding of decision making and creativity in individuals who are known for their ability to produce novel outcomes.

This chapter begins by reviewing the study as a whole. There is a short description of the purpose of the research, a recounting of the research questions, and a brief description of the methodology employed in the study. Then sections follow that describe how the research unfolded during the participant encounters, how theory was considered, and how additional insights contributed to the final conclusions.

The chapter concludes with a discussion of practical applications of the research, implications for future research, reminders of the limitations of the study, and a conclusion that attempts to articulate the study's *bottom lines*.

Purpose of the Study

The purpose of this study was to better understand how the participants—MacArthur Foundation creativity award winners—were able to activate, express, and sustain their creativity through professional and personal decision making. The intersection of decision making and creativity was the focus of the study because this juncture provided both an interesting position from which to investigate the strategies individuals use to make decisions and a way to illuminate the creative processes that were used by the participants in decision making geared to solving problems.

Understanding these phenomena is important because, although researchers, in a variety of studies (Casakin et al., 2010; Hong & Milgram, 2010), have demonstrated that creative people have been able to perceive and define problems differently, notice things that have been ignored by others, and have the ability to develop inventions, solutions, and syntheses, there has been little research conducted that has investigated how creative individuals describe the decision making strategies and creative processes they use in the process of making decisions to solve problems.

To address the research goals, this study compared participant strategies and processes documented in data collection with established decision making theories like Allison and Zelikow's (1999) Rational Actor, Organizational Behavior, Governmental Politics Models, as well as with what I have labeled the Heuristics Model (i.e., a collection of aids and shortcuts described in the research literature on decision making). This comparative exercise pointed out how the participant decision makers used variations of the techniques described in these models. The study also looked for more unusual and uncommon strategies that the participants possessed that have not been captured by existing decision making models.

The study also examined how the creative MacArthur Fellows developed novel outcomes. The way the participants approach creativity in a search for novel outcomes was benchmarked against various creative constructs outlined in the scholarly literature. Additionally, the findings delineate creative strategies and processes not yet categorized by scholars.

Research Questions

The following research questions were employed to organize and direct the study.

1. What decision making strategies and processes do study participants use to make decisions?
2. How are the strategies and processes employed by different participants similar and different?
3. How do the decision making strategies and processes employed by the study participants relate to established decision making theories described in the scholarly literature? Specifically, how, if at all, does participant decision making relate to the Rational Actor Model, the Organizational Behavior Model, the Governmental Politics Model, and to theories that employ exploratory problem solving techniques that the study characterizes as the Heuristics Model?
4. How do the decision making strategies and processes employed by study participants relate to creativity constructs identified in the scholarly literature? Specifically, how, if at all, do creativity constructs such as intelligence and knowledge, personality traits, motivation, and environment relate to participant decision making?
5. Can a typology of decision making strategies and processes be created from the decision making dimensions identified in the participants? Do the MacArthur Fellows' decision making strategies and processes suggest a new decision making theory, and, if so, what are the foundational premises of the theory?

Methodology

This study employed an explorative qualitative research design to investigate the research questions. The participants at the heart of the study were MacArthur Foundation

award winners. These highly innovative and high achieving individuals have been recognized for their demonstrated creativity.

To choose the study participants, I stratified the award winners by gender, age, and nonprofit and for-profit organizational status. Having constructed and populated the selection categories, I then randomly chose one participant from each group.

I conducted individual face-to-face interviews using a semi-structured interview guide. During the interviews, each participant discussed his or her decision making strategies and highlighted how creativity was personally activated and developed. From the interview data I created a case for each participant and subsequently conducted a cross-case analysis.

Modifications Made and Lessons Learned During the Unfolding of the Research

As is sometimes the case in research projects, there are adaptations made to the methodology during the course of the research. In some cases, an understanding of why adaptations were made leads to a more comprehensive understanding of the data that were collected and the results that have been reported. This section provides insights into the modifications made in this research study and, in some cases, gives an explanation of how these adaptations might have changed the results.

Nonprofit and for-profit differences. The research design of this study was structured to compare similarities and differences between MacArthur Fellows who had founded and were leading nonprofit organizations and those who had established and were leading for-profit organizations. The research design I developed, in fact, specified that I was to interview four nonprofit and four for-profit organizational leaders. While

the selection of participants began that way, the line between nonprofit and for-profit began to blur quickly.

For instance, I had categorized Wilma (a chemist who supports community efforts to fight environmental polluters) as a for-profit participant. In the first few minutes of my interview with her, however, she advised me that, although her company was, indeed, classified as a for-profit organization for legal purposes, 75% of the company's clients were pro bono. Jim (a social entrepreneur involved in repurposing software for use in the third sector) blurred the nonprofit/for-profit distinction further when he told me that he had been involved in six for-profit startups in Silicon Valley before he founded the nonprofit organization that he currently leads. Furthermore, Jim maintains his nonprofit status but also sells products to generate profits that help financially support his organization. Victoria is also a social entrepreneur and her sustainable nonprofit pharmaceutical company partners with a for-profit company in order to generate a large revenue stream to continue her nonprofit drug development effort. Saul (an inventor interested in developing useful products; especially in energy) contracts with for-profit organizations to complete research in exchange for a fee, but he also engages in projects funded by governmental organizations.

The end result is that the study data cannot be reliably separated into the original nonprofit/for-profit categories. Perhaps this fact is actually an important finding. Of the MacArthur Fellows I interviewed, half were leaders of non-traditional organizations that operated in an environment where their organizational status was not clear-cut. Perhaps the willingness to operate in such an environment is an example of the creativity for which these participants are known.

Age differences. With respect to age, the sampling methodology directed that an attempt be made to stratify the sample by age. The idea was that half the participants selected should have received the MacArthur Foundation award before the age of forty and half after that age. Using this standard, differences in decision making and creativity might be compared based on age. While the criterion was met, it became a somewhat murky distinction because there was no standard set with respect to the timeframe between receipt of the award and the interview. To make this point clearly, I submit the following example.

One participant received the award in her late thirties and so was classified as under forty in the sample. However, the research interview with the participant was conducted fifteen years after the award was received and, consequently, at the time of the interview, the participant was in her fifties. As a result, any data on differences in decision making and creativity based on age are likely to have been obscured by the ensuing years. As a result, no attempt has been made in this research to highlight decision making and creativity differences based on age.

Scenarios proposed for use in the study. Another area where the research design did not unfold as planned was in the use of written scenarios that were prepared in advance of the interviews and were intended as prompts for participants so that they could more easily identify their decision making strategies. In the actual interviews, the MacArthur Fellow participants had no trouble identifying and describing, often in considerable detail, their decision making processes. As a result, the scenarios became unnecessary aids and were only occasionally used to clarify a decision making process. The superfluous nature of the scenarios became evident when my first interviewee

assured me that he had spent significant time “thinking about thinking” and that he preferred not to use the prompts. This participant’s dismissal and even disdain for the prompts began my initiation into the world of the MacArthur Fellows where deep introspection and self-understanding are the norm. Over the course of all of the interviews I gained the impression that a customary or traditional representation of any subject was often dismissed because it was average, and, consequently, quite limited; the participants preferred to consider topics in more expansive ways.

The issue of emic/etic. The goal of qualitative research is to understand the world of the study participants and to gain their perspective and insights about the phenomenon being studied (Denzin & Lincoln, 1998a). I connect this goal with an emic approach that seeks to understand the insider view on a subject.

In this study, the goal to seek insider views translated into a need to ask open-ended questions to maximize participants’ degrees of freedom when responding to what was asked. As a result, I generally asked questions concerning *how* a participant approached and activated either decision making or creativity. Questions that inquired into the *how* of decision making and creativity were generally asked in the early part of the interviews. This approach helped me gain a good deal of information that was stated in the participant’s own words. In the final accounting, the *how* questions of the interviews provided me with the preponderance of the data reported in this dissertation.

After I had asked all the open-ended questions suggested in my interview guide, there remained, in each interview, a need to inquire about topics that had not been volunteered by the participants. These topics were generally related to theory or literature-based constructs identified or suggested in the research questions.

The following sections address areas where I often needed to ask specific questions of the participants. This need to test participant responses against a priori theory reflected the etic or outsider view (Denzin & Lincoln, 1998a).

Organizational and political decision making. In most cases I needed to ask specific questions to understand how organizational behavior and politics were connected to decision making. Consequently, more often than not, I asked directly if a participant's decision making was influenced by organizational norms or practices and if there was a political aspect associated with decision making within the organization.

This need to ask directly may be explained by the fact that all of the participants lead relatively small organizations with a limited number of employees. In such organizations, hierarchical structures are not normally required or desired. It may also be the case that politics may not be rampant in smaller organizations where people meet face-to-face daily, and organizational culture may be largely controlled. As a result, even when asked directly about behaviors and practices suggested by the organizational and political models, the responses were limited and somewhat constrained. The standard operating procedures generally discussed were those associated with adherence to the standards associated with scientific research or practices based on a need to have a unified approach to office procedures. Responses to questions about politics, more often than not, focused on the politics required in dealing with the government or other external funders rather than on internal organizational politics.

Ethical decision making. Another aspect of decision making that was not always volunteered when participants were answering open-ended questions was related to ethics. Consequently, there were several times when I had to ask participants directly

about ethics and ethical decision making. The responses from the participants suggested that, in situations where ethics were at stake or moral considerations were necessary, the participants approached decision making using the same strategies as those used in traditional decision making scenarios. Moreover, issues of ethics did not seem to animate the interviewees. Most saw ethical dilemmas as occasional occurrences that required attention, but did not strain the participant unduly.

Questions about creativity. In the creativity discussions, most participants were able to highlight the essence of their creativity by describing examples of their novel outcomes and how they were achieved. In such cases, data from the participants were generated by using what could legitimately be called an emic approach to interviewing. Then, in the analysis phase of the study, participant explanations and examples were connected to the constructs described in the research questions. Even if the participant did not use the exact name of the construct, it was not difficult to associate the participant stories with creativity constructs. At this point my analysis was conducted from an etic perspective. For instance, when Wes (an environmentalist developing perennial grains and improved agricultural practices) talked about his ability to look for the “relatedness of the seemingly unrelated,” I was able to connect his words with the creativity construct of combining disparate ideas.

In other situations, if an approach to creativity was not related to one of the constructs outlined in the research questions, I recorded the construct as representing a novel approach to creativity. For example, two of the participants described the role of history in a big picture analysis of a situation. This characteristic had not been described in the earlier research I reviewed. Therefore, from the participants’ emic responses, I

proposed through etic analysis that this characteristic might represent an additional personal characteristic sometimes linked with creativity.

Therefore, looking back at all of the interviews, most of the data collected came from participant responses to open-ended questions (i.e., questions that were designed to represent an emic perspective). A smaller portion of answers came from more directed questions posed later in the interviews. These questions could be characterized as reflecting an etic stance. When I approached the analysis phase of the study, I linked the interview data to existing theory and, therefore, at that point, I was operating in a decidedly etic way.

Describing the MacArthur Fellows as geniuses. The MacArthur Foundation gives grants to creative individuals. The creative individuals who receive these awards are called MacArthur Fellows and they are initiated into the MacArthur Fellows Program. The news media has another name for the MacArthur Foundation creativity award. The media call these awards *the genius grants* or *genius awards*.

When I traveled to visit the MacArthur Foundation in advance of creating my dissertation proposal, I was informed that this colloquial moniker is not how the foundation likes to characterize its award recipients. Furthermore, after conducting my interviews with the MacArthur Fellows, it was evident that many of them do not like the moniker either. As a result, despite the public acceptance of the term *genius grant* or *genius award* as an abbreviation for the MacArthur Fellows Program, this study does not use this term and discourages others from adopting the genius terminology. To some this may seem a small point, but clearly to others—including most of the people I interviewed—it is an important one. Once again, this reaction could be considered a

finding. My participants' response to the genius characterization is certainly consistent with their claims that it is their persistence and hard work rather than any measure of genius that has made them successful.

A Question of Theory

In the cross-case analysis chapter, the first four research questions were answered. Various aspects of a priori theory described in the research questions were compared and contrasted with the way that the MacArthur Fellows interviewed make decisions and approach creativity. The fifth and final research question, however, is being addressed in this chapter. This is because the ramifications of the answer have wider implications for the evidence presented and for the value of that evidence.

The final research question that guided this study asked if evidence from the study could suggest a typology of decision making strategies and processes used by the participants and if a new decision making theory might be suggested based on data collected from the MacArthur Fellows interviewed.

The answer to this question begins with a reminder about the history of decision making theory. For decades, eminent researchers, including two Nobel Prize winners, attempted to create a theory of decision making that considered the intricacies of the human experience. These efforts to create a theory have met with mixed results, at best, and to date, there is no unifying theory that can predict or explain human decision making. This does not mean that the efforts have been wasted, but rather that the task of understanding decision making, while once thought to be relatively straight forward, is now understood to be complex.

This history is important because it emphasizes that an overarching and unified theory of decision making has not yet been proposed, much less accepted, by experts in the field. Therefore, by logical deduction, it seems apparent that the research question about theory articulated in this study was almost certainly overly optimistic in its reach. Moreover, the question was not composed with an informed understanding of the complexity of decision making. Therefore, the short answer to the research question is that there is no obvious typology of decision making that could be gleaned from the data generated by the study's participants. Additionally, no unique decision making theory could be generated from the study results.

Allowing that a yes or no answer does not generally tell the whole story, there is more to be said about the role of theory in making sense of decision making and also, creativity. The MacArthur Fellows did have unusual, and sometimes unique ways, of approaching decision making and exhibiting creativity.

The unusual processes that supported their decision making seemed to be triggered in the framing of the decision, in the consideration of the alternatives, and in the execution of the decision. With creativity, it was a similar story. How each participant framed a scenario, how each understood a situation, and how the creative alternatives were assembled supported a unique response to a situation. It is in these detailed areas that the MacArthur magic seems to reside. The unique ways each participant approaches these three tasks, however, may not be easily captured by any theory. The next section explores this point.

The Limits of Theory

Researchers suggest that the goal of theory is to create a plausible body of fact that can explain a central phenomenon. When theory is proposed, the phenomenon being discussed is simplified and encapsulated into a unifying structure. Theory provides the unifying structure, but the process of creating theory through simplification may also set artificial boundaries that can obscure a full understanding of the phenomenon.

Eisner (1998) has noted that theory can create a window that may explain a phenomenon; he also noted, however, that a window can only exist if encased in a wall. This metaphor of windows and walls seems appropriate here. To me, it seems that there is little use in constructing additional theories that unify some aspects of decision making and creativity if that same theory hides other aspects of the creative people studied. In other words, if a theory *wall* obscures meaning and does not allow the full extent of the phenomenon to be understood, then even though there is a gain in theory there may be a corresponding loss in total understanding.

Therefore, having completed the analysis of the study data, I am now less inclined to be concerned with creating any new theories, either about decision making or about creativity. Rather my data have impressed on me the unique differences that may be found in creative people. Since my participants have rich life histories that contribute to their decision making and creativity, I do not think it would be useful to outline a theory that would highlight their sameness in decision making or creativity and lose the details of their experiences. Moreover, the simplification of their strategies could lead to a loss of richness and nuance associated with the processes of decision making and creativity. The result might be that any theory, being unable to explain the detail, might become

irrelevant because it would not capture the essence of the subject. Rather than simplifying and encapsulating participant processes in theory, I would rather concentrate on their differences that reflect the depth and breadth of their decision making and creativity. In short, I propose that the uniqueness of the individuals I studied can only be really understood holistically. Future efforts may lead to more definitive theories, but for the moment, understanding the brilliance and uniqueness of the participants is enough of a challenge.

Final Insights From the Data

Although a new typology or theory are not outcomes of this research, there are some final insights into the data collected that are outlined in this section. These insights go beyond the data that were presented to answer the research questions.

Gender differences. The decision making strategies and processes articulated in the interviews did not seem to fall into categories that related to gender. In other words, both men and women used similar ways and words to describe their decision making. To be sure, the one person who articulated a high reliance on intuition in decision making was a woman, but other women interviewed indicated that they did not depend extensively on intuition in their decision making.

In the realm of creativity, however, there was one particular area where three of the four women expressed similar views that were unlike the views articulated by the male participants. The three women indicated that their creative process was positively influenced by their ability to tolerate ambiguity. The three were animated when they discussed this specific aspect of creativity, and they seemed to place a high value on their ability to live in a state of indecision during the time that a situation or problem unfolded.

For them, a tolerance for ambiguity and an ability to refrain from committing to a decision quickly contributed to their creativity. This position distinguished them from the males—and also one female—in the study.

Differences with respect to ethics. When decision making in this study is related to traditional decision making theory, there is no apparent room to discuss ethical decision making. So the question is: How should ethical decision making be categorized?

Ethical decision making, like decision making in other domains, could be associated with rationality or logic. This makes sense because it would seem natural that ethical considerations in decisions would also be rational and logical. Additionally, if ethical decision making does not reside within or connect to rationality, then ethical decision making would be considered a non-rational theory of decision making. This would be a difficult stance to defend.

On the other hand, some study participants clearly did not believe that ethical decisions should be subsumed under a rational approach to decision making. Wes (an environmentalist developing perennial grains and improved agricultural practices), for example, described his decision making process as being logical, but he also spoke at great length about his philosophy of *oughtness*. Oughtness, to Wes, was a filter through which decision possibilities were metaphorically pressed to ascertain the correct ethical decision. It seemed as if Wes talked about ethical decision making as a kind solution search that was connected to, but not totally contained within, rational or logical theory boundaries. The genesis for his oughtness was, instead, rooted in a religious or, at least, a spiritual connection with his mother's acceptance of Christian principles of ethics.

Other participants talked about ethical decision making in terms of integrity. Maintaining personal integrity was seen as important. It was as if ethical decision making was a measure of integrity. If ethics is a measure, then it is not really a form of decision making, and the term serves as a proxy for another conceptual decision making approach that has remained unnamed.

Dealing with harsh criticism and separating emotion from response. During their interviews, three of the participants described how, over the years, they had endured harsh criticism of their work, or, in one participant's case, dismissive and deprecating comments about her personal abilities. The harsh words spoken by others, however, did not keep these individuals from continuing their work and ultimately accomplishing their goals. It was not that the words were not discouraging and even hurtful; the very fact that the words were remembered suggests the hurt they caused. The point here is that, despite harsh criticism, these individuals were able to move beyond the reproach and keep focused on their goals.

This ability might be associated with self-assurance or self-worth or might just signal a propensity to be thick-skinned. Two participants, however, pointed out that they gauged the criticisms before considering a dismissal of the points. Neither participant rejected the ideas of others, even if they were harsh criticisms, before the words had been evaluated in terms of correctness. This tendency to attend to even the harshest criticism suggests that there is more here than thick skin or self-confidence.

The MacArthur Fellows interviewed appeared to be able to lay aside their personal reaction to others and focus only on the ideas suggested in a conversation or debate. This point was made another way during the interview process. Anne (an

activist determined to facilitate alliances between business and environmentalists) talked about her desire to look beyond distracting personal habits, or what she called foibles, to see the underlying value of ideas.

Taken together, these two abilities (i.e., the ability to deal with harsh criticism and the ability to bracket emotions and react in ways that are effective) represent something seemingly significant when one is attempting to make sense of at least some of the interviewees' success. The end result was that the study participants remained focused on their goals and undistracted by what might be termed *disruptive noise* coming from others in the environment.

The MacArthur Fellows' stories, however, were not just about the way they reacted to others. The interviewees also talked about being proactive. Three participants talked about the importance of acting in specific ways to encourage good relations that could support successful goal attainment. Jim (a social entrepreneur involved in repurposing software for use in the third sector) simply talked about not "burning bridges," Susan (an activist who encourages full societal participation by people with disabilities) explicitly endorsed the notion that all interactions should be "win-win" even when dealing with hostile and disruptive situations, and Anne (an activist determined to facilitate alliances between business and environmentalists) emphasized the importance of not "demonizing" others. These comments speak to the fact that the participants interviewed are always focused on their goals. They do not seem to have time for petty feuds, one-upmanship, or drama.

Action, persistence, and risk-taking: A trifecta for success. As mentioned earlier, all of the participants were adamant that action was a necessary part of their

creativity and overall success. Without action, creativity could not be demonstrated or recognized by anyone, including the MacArthur Foundation.

The participants also unanimously indicated that persistence is an important personal characteristic associated with goal attainment. Persistence might also be described as tenacity and doggedness—all adjectives that the participants used to describe their personal characteristics. This determination to achieve goals was also paired with a willingness to take risks in projects.

While high-risk projects were not normally undertaken, some level of risk was seen as being required in order to accomplish novel outcomes, and taking sensible or calculated risks seemed to be the norm. To summarize the point here: The MacArthur Fellows I interviewed seemed predisposed if not innately wired to act, persist, and tolerate a moderate level of risk. Given that all of the participants mentioned these three traits, it seems logical that, in concert, the three are important harbingers of creativity and overall success. The three may even be more than additive supports for the participants. The power of the three traits taken together may be exponential in nature and represent a necessary condition for creativity and success.

Another threesome that supports creativity. Big picture analysis, a tolerance for ambiguity, and the ability to combine disparate ideas were three other characteristics that were commonly present in the participants. Each of these personality characteristics was described as important for finding creative solutions to problems, and each characteristic seemed to be related to one or more of the other characteristics in this second trifecta.

When participants engage in big picture analysis—the ability to metaphorically step back to take a broader view of the situation—they need to incorporate some level of ambiguity into their process. This is because they are temporarily halting the creative process to consider additional aspects of the situation. This slowing of the process lets ambiguity creep into the workspace. Furthermore, the big picture analysis is ultimately encouraging novel and even potentially disparate ideas to enter the workspace as the individual seeks a creative solution. Disparate ideas often take the form of tentative solutions that can be tested. Logically then, there is reason to assume that participating in big picture analysis encourages a tolerance for ambiguity and at least a temporary embrace of disparate ideas.

The data from this study support this analysis. One of the participants, Wes (an environmentalist developing perennial grains and improved agricultural practices), described himself as exhibiting all three of the traits—a penchant for big picture analysis, a tolerance for ambiguity, and a willingness to combine disparate ideas. Another four of the participants spoke of having two of the three traits.

While some combination of the three traits discussed may be important for promoting creative thinking in general, this second trifecta of traits is likely to be particularly useful in environments where creative thinkers confront questions that require interdisciplinary solutions. This trifecta of big picture analysis, a tolerance for ambiguity, and combining disparate ideas undoubtedly represents an opportunity for creative individuals to leverage their creativity and solve highly complex issues when solutions require crossing interdisciplinary boundaries.

Openness to new ideas and possibility. All of the participants talked about being open to possibility in their search for creative solutions. Each participant expressed this concept differently, but all appeared to recognize that novel outcomes can only be conceived and implemented by consciously looking for the *new*. New has various dimensions and might be a new product, a new way of doing something, or a new process or product within an alternate environment. Actually the meaning of new, as that term was used by interviewees, is much more complex than the last sentence indicates, but the point is that creativity can only begin with some sort of new.

When participants described the concept of new and the processes they used to get to *the new*, they discussed a process of continuous learning. All participants seemed to value the idea that life should be structured around learning. Some talked about eclectic fields that they studied, some talked about the mentors they valued who came from diverse backgrounds and challenged their thinking on a range of topics, and some referred to the need to be naturally curious.

As a researcher, I benefitted from this natural curiosity and propensity to seek opportunities to learn that seemed to be present in the MacArthur Fellows. I initially approached the potential participants by email, citing my affiliation with the University of San Diego and my intent to do dissertation research on decision making and creativity. Despite their busy schedules, I frequently had an affirmative reply to my invitation for an interview in hours—in some cases—minutes. Saul (an inventor interested in developing useful products; especially in energy), for instance, was back to me by email in less than five minutes and the scheduling of the interview appointment took less than a half-hour in total. In fact, the only time that setting up an interview was delayed in any significant

way (perhaps for a day or two) was when either a participant was traveling or an assistant was designated as an intermediary contact.

The ease with which participants agreed to be part of the study still amazes me. I also suspect their quick responses should be treated as data. These data demonstrate the MacArthur Fellows ongoing openness to learning. They even were open to learning from a doctoral student doing dissertation research.

The participants also directly mentioned their commitment to ongoing learning. Since I was frankly amazed by the relatively easy access I had to the fellows, at the beginning of each interview I asked each participant why he or she had accepted my invitation to be interviewed. The participants provided a variety of reasons. Many, for example, indicated that they respect and appreciate the MacArthur Foundation's work and pointed out that since I was doing research that would shine a positive light on the foundation, they were interested in being involved. All of the participants, however, also mentioned their commitment to their ongoing learning and/or their commitment to supporting research efforts.

The final point about how continuous learning supports participant creativity has to do with the impressive number of creative ideas that the participants have pursued. Each of the participants has a specialized field where he or she operates, and each has already operationalized many creative ideas within that field. Moreover, each of the participants has additional creative ideas that are being implemented. It is as if the participants are regularly reinventing their creative space to include more novel ideas and products. No one is standing still. All are seeking novel ideas through their commitment to ongoing learning.

Failure, resilience, and learning. As I interviewed the various participants of the study, I noted that they often referred to failed projects that had been part of their lives. In fact, they talked a great deal about mistakes, errors, and miscalculations. Saul (an inventor interested in developing useful products; especially in energy) noted that he makes many errors, and Jim (a social entrepreneur involved in repurposing software for use in the third sector) was very open about his failed land mine project. Jim even told me that his organization had written a paper about the failure, believing that some good could come from the project if others, inside and outside the organization, could learn from the experience. As the participants talked about failed projects, they seemed relaxed and unconcerned by their lack of success. Susan (an activist who encourages full societal participation by people with disabilities) noted that if a project failed, she and her staff reviewed the program, looked for possible errors that had contributed to the failure, and then moved to the next project. It was Aaron (a nonprofit creator who supports minority participation and careers in classical music) who ultimately shed light on the significance of the term. He said that many projects can fail, but that individual project failure should not be related to a sense of personal failure. In other words, he and the other MacArthur Fellows interviewed do not seem to personalize failure or view failure as a personal catastrophe.

Instead of seeing a project failure as a reflection of personal ability, or lack of ability, the study participants preferred to think of failure in a more positive way. For instance, two participants talked about failures as being “bumps in the road.” Failure, in short, was viewed as something that can happen on the way to success. What others might characterize as a failure is viewed by the MacArthur Fellows as merely a

temporary setback. In short, the participants appear to have either an innate propensity to be resilient in the face of situations and events that might immobilize others, or they have learned to be resilient during their lifetimes and reframe the idea of failure in terms of a more easily acceptable term (i.e., a bump in the road or a temporary setback). Moreover, the participants framed failure in a fairly positive light. They saw failure as an opportunity to learn.

Implications for Practice

The MacArthur Fellows I interviewed are certainly exceptional leaders and their strategies and processes associated with decision making and creativity have much to teach others. In this section I suggest a few lessons that some readers might find useful in their own lives and leadership environments.

Vocation and avocation. Passion has already been discussed as an important variable associated with the concept of creativity. But it was not just passion, but, rather, the belief that one has accepted a calling that appears to spur the creativity of the participants in this study. In other words, a great love for a field can set up conditions where creativity is activated and decisions made are simultaneously unusual and unexpected, on the one hand, and appropriate and effective, on the other.

All of this suggests that individuals can improve their chances for generating creative solutions and making appropriate decisions by connecting their vocation with an avocation (their calling). If individuals mesh their jobs with a mission which they are committed to and passionate about, it is more likely that they can be creative and solve problems that may seem intractable to others.

The power of gestalt. As used here, the term *gestalt* refers to a combination of personal qualities that are integrated in such a way that the sum of the parts observable in a person is greater than the parts themselves. There is a common gestalt that is observable in the MacArthur Fellows I interviewed. They share characteristics that appear to influence and increase their ability to activate and support their creativity. Having these essential traits and habits gives each the base from which his or her creativity can be launched and sustained. Moreover, the characteristics and habits appear to allow a synergistic and catalytic response.

The most important characteristics and behaviors seem to be (a) an ability to take a big picture view of a situation, (b) an ability to look for a novel path, (c) an inherent acceptance that some risk is generally a necessary part of achieving a novel outcome, (d) an overriding need to turn ideas into action, and (e) a driving persistence to see a goal or project to completion. These characteristics help turn an imagined solution into an actual solution.

Work ethic. Another lesson to be learned is the importance of hard work. In talking about their overall success, the participants repeatedly talked about the effort they expended. They all rejected the notion that they were in some way exceptional. All study participants attributed their MacArthur Foundation award, and their success in general, not to being exceptional—most, in fact, rejected the genius label that sometimes is associated with those who receive the MacArthur prize—and credited their success to their persistence and effort.

During the interviews and my analysis of the interview transcripts, I repeatedly thought of the adage that states that genius is 1% inspiration and 99% perspiration. Even

if the participants' focus on effort as the significant explanatory variable for their success only partially explains the Fellows' accomplishments, the importance of hard work and persistence cannot be denied.

Implications for Future Research

The research participants in this study were all MacArthur Fellows who have been awarded the foundation's creativity grant. Each participant had also established and led either a for-profit or nonprofit organization. A future research study that concerns the same population might expand the knowledge base by selecting participants who are, once again, MacArthur Fellows, but who have chosen other types of careers. Possibly MacArthur Fellows who have served in higher education posts or winners who have excelled in the arts might be important groups to study. Being able to compare and contrast the data from different research projects that have used representatives from different pools of Fellows could conceivably help increase the understanding of the decision making of creative people and could yield important confirming or contradictory data to those presented here. One might even be able to begin to build a grounded theory about the decision making strategies employed by creative people.

To better understand the nature of decision making and creativity, a research study about other populations of creative individuals might also be undertaken. For instance, Nobel Prize winners would be an interesting group to study, and data generated in such a study could be compared with the decision making strategies and creative processes uncovered in this study.

Finally, a study could be conducted with MacArthur Fellows that investigates leadership styles and skills. The study could choose from the same nonprofit and for-

profit pools I used in this study and focus on how leadership is enacted in the participant organizations.

Limitations

Before concluding, it is important to note again that there are some limitations associated with this study. The most obvious limitation is the fact that this study relied on self-report data. Although participants had thought a great deal about how they make decisions and, also, to some extent, about the notion of creativity, their self-perceptions may be limited and/or biased.

There is also the issue of my personal ability to understand, interpret, and explain the words of the study participants. Lastly, with only eight interviews, this study is not generalizable in a way that social science traditionally conceptualizes the concept of generalizability. In other words, I may not have uncovered the full range of potential responses concerning decision making and creativity even within the subset of MacArthur fellows I studied.

Conclusions

This final chapter serves as a summation of the research. While research questions were mostly answered in the cross-case analysis chapter, the concluding ideas detailed in this chapter attempt to go beyond the research questions and provide additional thoughts on the data gathered.

This chapter also proves to be a suitable place to discuss how the research was actually executed. Adjustments were made in several areas based on unforeseen aspects of the sampling such as the distinction between nonprofit and for-profit categorization and aspects of age. An understanding of the emic and etic stances employed in the

research is also explained. A final note is added on the appropriateness of describing the MacArthur Fellows as winners of a *genius grant* or *genius award*.

The chapter also addresses the question of theory and how it may best be applied to this research. The discussion suggests that the MacArthur Fellows do make decisions and address their creativity in some of the same ways that were suggested by the a priori theory set out in the research questions. These creative people also approach their worlds using some additional unique aspects of decision making and creativity that are discussed. The chapter continues with a debate about the overall value of theory, pointing out that theory may be limiting in the sense that it may constrain the understanding of decision making and creativity. In the act of simplifying, which is a main goal of theory creation, details and nuanced meanings may be lost, and the end result may provide less clarity and understanding.

Some of the additional thoughts on the research data included unusual ways that the study participants considered decision making and creativity. For instance, there were several areas where the MacArthur Fellows appeared to have clusters of characteristics that supported their creativity and their overall success. The capability to consider a big picture, a tolerance for ambiguity, and the ability to assemble disparate ideas seemed to be characteristics that grouped together to help some participants in their search for novel outcomes. A bias for action, persistence, and risk-taking also seemed to predict general success. There were also some more interesting or novel ways that the participants considered failure, responses to criticism, and a search for *new* paths.

The chapter continues with a short section on implications for practice where readers gain insight into the practices of the creative MacArthur Fellows that may be

important to all readers. Foremost in the section are suggestions to unite vocation with avocation, adopt some of the important personal characteristics of the participants that support creativity, and accept the need to embrace a work ethic. The chapter concludes with the more traditional sections on implications for future research and limitations.

A Postscript

As this research project comes to a close, I present one final thought about the MacArthur Fellows and their creativity. A former United States poet laureate, Robert Frost, wrote about the need to understand the connections in life. In his poem, *Two Tramps In Mudtime*, Frost wrote:

*But yield who will to their separation,
my object in living is to unite
My avocation with my vocation
as my two eyes make one in sight.
Only where love and need are one,
and the work is play for mortal stakes,
Is the deed ever really done
for heaven and the future's sakes.*

This final stanza of Frost's poem reminds readers of the relationship between *avocation* and *vocation* and of the importance of bringing together *love* and *need* and *work* and *play* in our lives. Interestingly, the MacArthur Fellows live by Frost's words. They understand Frost's poetic maxim that extolls humans to connect love, need, work, and play—a way to measure the unity of *vocation* and *avocation*. Furthermore, they have dedicated themselves to working to improve the world—they do, indeed, *play* for exceedingly important, if not, *mortal stakes*. Finally, they have had a significant impact on the world and will continue to influence society. Their deeds, therefore, are done *for heaven and the future's sake*.

REFERENCES

- Abelson, R. P. (1981). Psychological status of the script concept. *American Psychologist*, *36*(7), 715-729. doi:10.1037/0003-066x.36.7.715
- Allison, G. T., & Zelikow, P. (1999). *Essence of decision: Explaining the Cuban missile crisis* (2nd ed.). New York, NY: Longman.
- Amabile, T. M., & Kramer, S. J. (2011). *The progress principle: Using small wins to ignite joy, engagement, and creativity at work*. Boston, MA: Harvard Business Review Press.
- Beach, L. R. (1993). Image theory: An alternative to normative decision theory. *Advances in Consumer Research*, *20*, 235-238.
- Beach, L. R., & Mitchell, T. R. (1978). A contingency model for the selection of decision strategies. *Academy of Management Review*, *3*(3), 439-449. doi:10.5465/amr.1978.4305717
- Beach, L. R., & Mitchell, T. R. (1990). Image theory: A behavioral theory of decision making in organizations. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 12, pp. 1-41). Greenwich, CT: JAI Press.
- Berg, B. L. (1995). *Qualitative research methods for the social sciences* (2nd ed.). Needham Heights, MA: Allyn & Bacon.
- Brophy, D. R. (1998). Understanding, measuring, and enhancing individual creative problem-solving efforts. *Creativity Research Journal*, *11*(2), 123-150.
- Campitelli, G., & Gobet, F. (2010). Herbert Simon's decision-making approach: Investigation of cognitive processes in experts. *Review of General Psychology*, *14*(4), 354-364. doi:10.1037/a0021256
- Casakin, H., Davidovitch, N., & Milgram, R. M. (2010). Creative thinking as a predictor of creative problem solving in architectural design students. *Psychology of Aesthetics, Creativity, and the Arts*, *4*(1), 31-35.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Thousand Oaks, CA: Sage.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (1998a). *The landscape of qualitative research*. Thousand Oaks, CA: Sage.
- Denzin, N. K., & Lincoln, Y. S. (1998b). *Strategies of qualitative inquiry*. Thousand Oaks, CA: Sage.

- Dietrich, A. (2004). The cognitive neuroscience of creativity. *Psychonomic Bulletin & Review*, *11*(6), 1011-1026.
- Donmoyer, R. (1990). Generalizability and the single-case study. In E. Eisner & A. Peshkin (Eds.), *Qualitative research in education: The debate continues* (pp. 175-200). New York, NY: Teachers College Press.
- Donnelly, R. (2004). Fostering of creativity within an imaginative curriculum in higher education. *The Curriculum Journal*, *15*(2), 155-166. doi:10.1080/0958517042000226810
- Dörfler, V., & Ackermann, F. (2012). Understanding intuition: The case for two forms of intuition. *Management Learning*, *43*(5), 545-564. doi:10.1177/1350507611434686
- Dunegan, K. J. (1993). Framing, cognitive modes, and image theory: Toward an understanding of a glass half full. *Journal of Applied Psychology*, *78*(3), 491-503.
- Einhorn, H. J., & Hogarth, R. M. (1981). Behavioral decision theory: Processes of judgment and choice. *Annual Review of Psychology*, *32*(1), 53-88.
- Eisenhardt, K. M., & Zbaracki, M. J. (1992). Strategic decision making. *Strategic Management Journal*, *13*, 17-37.
- Eisner, E. W. (1998). *The enlightened eye* (2nd ed.). New York, NY: Macmillan.
- Etzioni, A. (1992). Normative-affective factors: Toward a new decision-making model. In M. Zey (Ed.), *Decision making: Alternatives to rational choice models* (pp. 89-111). Newbury Park, CA: Sage.
- Feldhusen, J. F., & Goh, B. E. (1995). Assessing and accessing creativity: An integrative review of theory, research, and development. *Creativity Research Journal*, *8*(3), 231-247.
- Fleming, K. D. (2012). *The agony and ecstasy of workplace creativity: A qualitative study of how facilitators view affect in helping adults learn creativity* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3521182)
- Fontenot, N. A. (1992). Effects of training in creativity and creative problem finding upon business people. *The Journal of Social Psychology*, *133*(1), 11-22.
- Gigerenzer, G. (1996). The psychology of good judgment: Frequency formats and simple algorithms. *Medical Decision Making*, *16*, 273-280. doi:10.1177/0272989X9601600312

- Gobet, F., & Simon, H. A. (1996). Template in chess memory: A mechanism for recalling several boards. *Cognitive Psychology, 31*, 1-40.
- Guba, E. G., & Lincoln, Y. S. (1981). *Effective evaluation*. San Francisco, CA: Jossey-Bass.
- Guilford, J. P. (1967). *The nature of human intelligence*. New York, NY: McGraw-Hill.
- Gupta, N., Jang, Y., Mednick, S. C., & Huber, D. E. (2012). The road not taken: Creative solutions require avoidance of high-frequency responses. *Psychological Science, 23*, 288-294.
- Hickson, D. J. (1987). Decision-making at the top of organizations. *Annual Review of Sociology, 13*, 165-192.
- Hong, E., & Milgram, R. M. (2008). *Preventing talent loss*. New York, NY: Routledge.
- Hong, E., & Milgram, R. M. (2010). Creative thinking ability: Domain generality and specificity. *Creativity Research Journal, 22*(3), 272-287. doi:10.1080/10400419.2010.503535
- Hunsaker, S. L. (2005). Outcomes of creativity training programs. *Gifted Child Quarterly, 49*(4), 292-299.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*(6), 1122-1131.
- Kahneman, D. (2011). *Thinking fast and slow*. New York, NY: Farrar, Strauss, & Giroux.
- Kerfoot, K. (1998). Leading change is leading creativity. *Nursing Economics, 16*(2), 98-99.
- Kristensen, T. (2004). The physical context of creativity. *Creativity and Innovation Management, 13*(2), 89-96.
- Kühberger, A. (1995). The framing of decisions: A new look at old problems. *Organizational Behavior and Human Decision Processes, 62*(2), 230-240.
- Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago, IL: University of Chicago Press.
- Kurtzberg, T. R. (2005). Feeling creative, being creative: An empirical study of diversity and creativity in teams. *Creativity Research Journal, 17*(1), 51-65.

- Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Lewis, A. R. (2013). Mulberry. In *Encyclopeida Britannica online*. Retrieved from <http://www.britannica.com/EBchecked/topic/396732/Mulberry>
- Lewis, T. M. (2004). Creativity on the teaching agenda. *European Journal of Engineering Education*, 29(3), 415-428.
- Libby, R., & Fishburn, P. C. (1977). Behavioral models of risk taking in business decisions: A survey and evaluation. *Journal of Accounting Research*, 15(2), 272-292.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Lubart, T. I. (1994). Creativity. In R. J. Sternberg (Ed.), *Thinking and problem solving* (2nd ed., pp. 289-332). San Diego, CA: Academic Press.
- MacArthur Fellow Program. (2013). *About the MacArthur Fellows Program*. Retrieved from <http://www.macfound.org/programs/fellows/>
- March, J. G. (1994). *A primer on decision making: How decisions happen*. New York, NY: Macmillan.
- March, J. G., & Shapira, Z. (1992). Behavioral decision theory and organizational decision theory. In M. Zey (Ed.), *Decision making: Alternatives to rational choice models* (pp. 273-303). Newbury Park, CA: Sage.
- Mathison, S. (1988). Why triangulate? *Educational Researcher*, 17(2), 13-17.
- McCaffrey, T. (2012). Innovation relies on the obscure: A key to overcoming the classic problem of functional fixedness. *Psychological Science*, 23, 215-218. doi:10.1177/0956797611429580
- Messick, D. M., & Bazerman, M. H. (1996). Ethical leadership and the psychology of decision making. *Sloan Management Review*, Winter, 9-22.
- Mildrum, N. K. (2000). Creativity reigns. *The Education Digest*, 66(2), 33-38.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage.
- Mintzberg, H., Raisinghani, D., & Théorêt, A. (1976). The structure of “unstructured” decision processes. *Administrative Science Quarterly*, 21, 246-274.
- Morgan, G. (2006). *Images of organization*. Thousand Oaks, CA: Sage.

- Neilands, R. (2005). *The Dieppe raid: The story of the disastrous 1942 expedition*. Bloomington, IN: Indiana University Press.
- Newell, A., & Simon, H. A. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice-Hall.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Payne, J. W. (1973). Alternative approaches to decision making under risk: Moments versus risk dimensions. *Psychological Bulletin*, 80(6), 439-453. doi:10.1037/h0035260
- Payne, J. W. (1982). Contingent decision behavior. *Psychological Bulletin*, 92(2), 382-402.
- Peshkin, A. (1988). In search of subjectivity—One's own. *Educational Researcher*, 17(7), 17-21.
- Ramocki, S. P. (1994). It is time to teach creativity throughout the marketing curriculum. *Journal of Marketing Education*, 16(15), 15-25. doi:10.1177/027347539401600203
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.
- Schwenk, C. R. (1984). Cognitive simplification processes in strategic decision-making. *Strategic Management Journal*, 5(2), 111-128.
- Scott, G., Leritz, L. E., & Mumford, M. D. (2004). The effectiveness of creativity training: A quantitative review. *Creativity Research Journal*, 16(4), 361-388.
- Simon, H. A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics*, 69, 99-118.
- Simon, H. A. (1993). Decision making: Rational, nonrational, and irrational. *Educational Administration Quarterly*, 29, 392-411. doi:10.1177/0013161X93029003009
- Simon, H. A., Dantzig, G. B., Hogarth, R., Plott, C. R., Raiffa, H., Schelling, T. C., . . . Winter, S. (1992). Decision making and problem solving. In M. Zey (Ed.), *Decision making: Alternatives to rational choice models* (pp. 32-53). Newbury Park, CA: Sage.
- Stake, R. E. (2005). Qualitative case studies. In N. Denzin & Y. Lincoln (Eds.), *Sage handbook of qualitative research* (3rd ed., pp. 443-466). Thousand Oaks, CA: Sage.

- Steinbruner, J. D. (1974). *The cybernetic theory of decision*. Princeton, NJ: Princeton University Press.
- Sternberg, R. J. (2006). The nature of creativity. *Creativity Research Journal*, 18(1), 87-98.
- Sternberg, R. J., & Lubart, T. I. (1993). Creative giftedness: A multivariate investment approach. *Gifted Child Quarterly*, 37(7), 7-15.
- Styhre, A., & Eriksson, M. (2008). Bring in the arts and get the creativity for free: A study of the artists in residence project. *Creativity and Innovation Management*, 17(1), 47-57.
- Svenson, O. (2003). Values, affect, and processes in human decision making: A differentiation and consolidation theory perspective. In S. L. Schneider & J. Shanteau (Eds.), *Emerging perspectives on judgment and decision research* (pp. 287-326). New York, NY: Cambridge University Press.
- Takemura, K. (1994). Influence of elaboration on the framing of decision. *Journal of Psychology*, 128(1), 33-39.
- Tichy, N. M., & Bennis, W. G. (2007). Making judgment calls. *Harvard Business Review*, 85(10), 94-102.
- Tversky, A. (1969). Intransitivity of preferences. *Psychological Review*, 76(1), 31-48. doi:10.1037/h0026750
- Tversky, A. (1972). Elimination by aspects: A theory of choice. *Psychological Review*, 79(4), 281-299. doi:10.1037/h0032955
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124-1131.
- Tversky, A., & Kahneman, D. (1986). Rational choice and the framing of decisions. *Journal of Business*, 59(4), S251-S278.
- Ungson, G. R., & Braunstein, D. (Eds.). (1982). *Decision making: An interdisciplinary inquiry*. Belmont, CA: Wadsworth.
- Wallach, M. A. (1970). Creativity. In P. H. Mussen (Ed.), *Carmichael's manual of child psychology* (3rd ed., Vol. 1, pp. 1211-1272). New York, NY: John Wiley & Sons.
- Zanakis, S. H., Theofanides, S., Kontaratos, A. N., & Tassios, T. P. (2003). Ancient Greeks' practices and contributions in public and entrepreneurship decision making. *Interfaces*, 33(6), 72-88.

- Zey, M. (1992). *Decision making: Alternatives to rational choice models*. Newbury Park, CA: Sage.
- Zhou, J., & George, J. M. (2003). Awakening employee creativity: The role of leader emotional intelligence. *The Leadership Quarterly*, *14*, 545-568.
- Zohar, D. (1997). *Rewiring the corporate brain*. San Francisco, CA: Berrett-Koehler.

APPENDIX A
Interview Guide

Concerning the Sample Scenarios (1-3):

Let's begin by discussing the sample scenarios that you were given. Would you share with me your decision in each scenario and then share with me the process that you used to come to your decision?

As you progressed through the scenarios, can you explain any patterns or strategies in your decision making that may have become evident to you?

In normal speaking, a person sometimes says, "my decision was triggered by..." Can you explain to me if there were any specific triggers that informed your decision process?

Can you identify any underlying values, assumptions, or beliefs that may have influenced your decision making strategies and processes?

Beyond cognitive processes, are there other aspects that influenced your decision making in these scenarios?

How may creativity have been involved in making your decisions?

Sample Scenario 4 - Personal Decision Scenarios:

Now that we have discussed the first three scenarios, could you please tell me about decision making in your own life?

Think back to a time in your own life when you made an important and complex decision. Please tell me about the situation and how you came to make your decision.

Remember an instance where you were confronted with a challenging set of conditions that required you to make a choice between competing values. Please describe the situation and how you resolved it?

Were there particular factors that influenced your decision?

If there were tradeoffs in a decision, how did you deal with them?

Creative Decisions

How, if at all, does your decision making change when you are working in a creative sphere? Do you make decisions using different strategies and processes when you concern yourself with issues of creativity?

Do you understand why the MacArthur Foundation has identified you as creative? What aspects of your character or life experience do you believe have influenced the foundation's decision to award you the fellowship? Are these aspects the essence of your creativity?

Note: When listening to answers is there evidence of creativity constructs such as persistence, environmental stimulus including mentors and time to think and explore, knowledge or expertise, being able to suspend judgment and tolerate ambiguity, big picture attitude, intuition, risk taking, motivation, and courage of conviction?

Decisions with a Negative Impact

Some decisions don't work out as well as others. Would you be willing to describe a time when your decision making skills resulted in a less than optimal outcome?

Ethical Tradeoffs:

Can you recall a dilemma where you were faced with a challenging ethical decision?

How, if at all, did your process of decision making change in the ethical situation?

Decision Making Vocabulary

Can you give me an example of a verb you would use to describe your decision making strategies and processes? For instance, poking around at the corners, reading tea leaves.

Concluding Questions:

In the course of our interview, have you noticed any patterns of decision making that you routinely use or are prevalent in your process?

Can you share with me other concepts of decision making that impact your process that I may have overlooked? In other words, what question have I failed to ask that would better inform me about your personal decision making process?

Can you explain why you agreed to this interview? What was your decision making rationale for accepting my invitation to meet?

How does it feel to examine your process of decision making? Is it helpful to more fully examine your strategies and processes?