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# Barriers to career advancement: Asian Americans in the U.S. aerospace industry

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# BARRIERS TO CAREER ADVANCEMENT:

# ASIAN AMERICANS IN THE U.S. AEROSPACE INDUSTRY

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# DEDICATION

This dissertation is dedicated with humble obeisance to the lotus feet of Shri Ram.

# ACKNOWLEDGMENTS

This has been a long journey. I am now a senior citizen. I want to express my gratitude to my parents and family, who always set a shining example to follow. My wife and children have been patient with whatever ventures I embarked upon. Never questioning my motives, their love was the mast, and their well wishes always filled my sails. The journey has been a joyous one. And yet, at long last, I am glad the shoreline is in sight, and the boat is coming into the harbor.

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# VITA

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# ABSTRACT

This qualitative study explored the lack of Historically Underrepresented Population (HUP) inclusion in management and leadership roles. Specifically, why Asian Americans (AA) do not reach executive levels in southern California aerospace and defense companies (SCDCs). The AA members of HUP are among the highest educated and display model-behavior characteristics, yet, somehow do not thrive in management assignments. The U.S. defense industry has operated in a single-customer market, and that customer (the U.S. Government) is imposing social change agendas, to establish a leadership that is reflective of the company's diversity. Exacerbating the underrepresentation of AAs is a shrinking domestic defense appropriations budget and business growth opportunities overseas. These conditions present the need for the development of a diverse management pipeline that can provide needed agility in industry leadership to enable both compliance and growth.

In the course of this research, a pilot group and a main study sample of subjects were interviewed to characterize both the employee traits and their experience within the corporate environment. The study exposed environmental factors such as micro-aggressions (i.e., bullying) and other corporate impediments, as well as AA behavior traits that make this population conflict and risk averse. These qualities keep them from entering the management pipeline during their early career, where they could acquire the skills and develop the soft skills needed for later career senior management and leadership assignments. A proposed path forward to motivate aspirants onto the management track, as well as corporate behavior transformation to institutionalize AA pipelining, is recommended. The outcomes of this study provide an opportunity for transforming the leadership of the southern California defense contractors.

*Keywords*: Asian Americans, Leadership diversity, Defense contractors.

# Chapter 1: Introduction to the Study

## Background

The southern California defense industry (SCDI) has shaped the economy of the region since the 1970s (Kleinhenz, Ritter-Martinez, & De Anda, 2013). As a major employer of engineers, the industry also attracts role-model attention as an employer with a wide demographic footprint. The workplace abounds with a diversity of social and cultural attitudes and priorities. In her research, Dickerson (2010) noted that in similar situations, despite such diversity in the workforce, most leadership teams do not appropriately reflect the diversity of the employee ranks. This means that underrepresented companies are not fully benefiting from their employees' participation.

The United States Defense industry has some unique attributes, including a history of having only a single customer: the U.S. Department of Defense. The government, using this market power, imposes regulations and guidelines that control how these companies (defense contractors), operate in the marketplace and community. Some regulations, like the 1961 Affirmative Action Act (AAA; National Archives, 1961), require mandatory compliance. Others, like the 1978 Civil Service Reform Act (CSRA; Office of Personnel Management [OPM], 1978), advocate a leadership that is reflective of the company's diversity. Another unique attribute of the U.S. defense industry, driven by tenets of the 1911 Defense of Secrets Act (DSA; U.S. Congress, 1911), is that all employees with security clearance in the defense industry should be U.S. citizens. Companies comply with the mandatory AAA regulations by actively seeking out and employing a diverse engineering core. The CSRA is suggested only as guidelines, and there is little to compel employer action. The DSA had been used as an exclusionary criterion against granting non-U.S. born, U.S. citizen employees, the necessary security clearances. Over time,

this has inadvertently evolved into institutionalized exclusionary policies regarding diverse employees in senior corporate roles (Griffith, 1989).

Historically underrepresented population (HUP)[1] members represent about a quarter of the SCDI engineering work force, yet they only account for a small percentage of the senior-level leadership, and are virtually non-existent in the executive ranks (ADC1 [a southern California Aerospace and Defense Company]; B. Kim, personal communication, December 13, 2015). Davis (2003) and Dickerson (2010) researched similar issues related to women in the Federal Civil Service, identifying issues that affected their participation in the management ranks. They concluded that "navigating the upward mobility career path can prove to be quite the challenge" (Dickerson, 2010, p. 12). Although their research subjects were women in the federal civil service, especially those in the Senior Executive Service (SES) in Washington D.C., their conclusions were that the phenomenon is widespread across the civil service, as the issues limiting career growth were systemic. S. Gandhi (2009) studied women in aerospace company leadership roles, concluding that they too faced numerous systemic personal and professional issues that barred their careers. Teller (2011) looked at institutionalized mentoring in large corporations to study why several mentees still failed to enter the C-suite. Campbell (2015) concluded that HUP aspirants to the executive suite benefit from role models, but, here too, several still fail to climb the corporate ladder. This research sought to examine defense contractors in southern California to determine what systemic behaviors and conditions exist that

[1] In this paper, the term Historically Underrepresented Population (HUP), is used interchangeably with the term Underrepresented Ethnic Groups, and the term diversity. They are all used to represent members of the American population classified by the Federal Government as members of the non-White population, also known as countable minorities, and include people from different non-White ethnic backgrounds. Furthermore, the terms HUP *engineer* and the term HUP *member* are used interchangeably as appropriate for the sentence syntax.
Starting in 1997, the Office of Management and Budget and thus the U.S. Census define the following race/ethnic groups: White, Black or African American, Hispanic or Latino, American Indian or Alaska Native, Asian and Native Hawaiian or Other Pacific Islander. In terms of engineering education, or in terms of executive membership

impede career progression. More specifically, this study investigated why members of the *model minority* (P. Wong, Lai, Nagasawa, & Lin, 1998) fail to reach executive ranks in their companies.

**Problem Statement**

Following over a decade of *the war on terror*, the U.S. population is tiring of the federal government's neglect of the other parts of the economy (Deloitte Touche Tohmatsu Limited, 2015). As a consequence, defense appropriation budgets are shrinking, and, for what funds are allocated, there is fiercer competition amongst the defense contractors (Kinney, 2014). The government too, is pushing social change agendas (Department of Homeland Security [DHS], 2015), and more insistently pressuring these companies to show proof of diversity in their executive ranks. For their part, the companies are anxious about diminished domestic business prospects and thus are trying to grow their international portfolios. Defense contractors realize that change is needed to meet the challenges in the foreign markets. The southern California defense contractors (SCDCs) typically have large populations in their engineering cores, and within this core, have significant demographic diversity. As companies seek to address the government policy compliance in addition to serving emerging international customers more successfully, they tend to first look for suitable diversity candidates within their management pipeline. The research problem for this study explored why high-performing, academically credentialed, model citizen HUP engineers are absent from the management pipeline, and, when present, why they fail to reach executive levels in their companies despite business and social pressures that would seem to encourage more HUP representation.

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in corporate management, the non-White members of the U.S. population, have been historically underrepresented (HU), and thus the population is called HUP.

**Purpose of the Study**

The purpose of this ethnographic study was to understand the relationship between the individual and institutional behaviors as related to Asian American (AA) engineers climbing the corporate ladder within the SCDCs. In choosing between the various qualitative research strategies, all major approaches have some relevance. Specifically, a grounded theory approach was considered based on the prior work by Palich and Bagby (1995) and by Taylor (2004), yet, while relevant, was finally de-selected as a method, as these theories did not fully explain the current status quo. Similarly, phenomenological research strategies were also considered, but deselected as possibly tainted because the researcher himself is a member of the HUP management aspirant pool, and felt that the research could become too autobiographical. Case studies and narrative approaches also were viewed as too narrow to fully characterize the lived experience of the many AA aspirants in their environment. At this stage in the research, the inconsistencies between AA engineers' ambitions and their behaviors, as well as inconsistencies between corporate biases and corporate ethics, were generally noted as a reluctance to making the necessary behavioral changes to bridge the disconnect between individual and corporate *desires* and their concrete *actions*…the researcher refers to this as a reluctance to act, or colloquially, as a reluctance to *lace-up* for the required actions. The study consisted of identifying aspirant HUP engineers and then surveying them to determine individual and institutional barriers affecting their climb up the corporate ladder. The study identified factors that may help future AA participants thrive in the corporate environment. Participants came from the engineering and management ranks of SCDC companies.

Prior qualitative and quantitative research has been done on minorities in management and in leadership roles (e.g., qualitative research done by S. Gandhi [2009], and quantitative

research done by Clarke-Anderson [2004], amongst others), yet none has looked at the high-performing model minority aspirants, or reasons why they generally languish in individual contributor ranks. More research was needed in this area to serve as a guideline for individual and corporate behavior change to increase diversity in the defense contractor executive leadership.

**Research Questions**

This study explored *why* the status quo of underrepresentation of AAs in leadership ranks at SCDCs exists, and *what* can be done to change that. The study was guided by the following research questions:

RQ1: What are the individual behaviors that affect career progression for Asian Americans in the southern California defense industry?

RQ2: What are the institutional issues that affect inclusion of diversity in the leadership ranks of the southern California defense industry?

RQ3: What possible strategies are available for the AA management aspirants to successfully reach leadership assignments, and what solutions are available for the leadership team to increase c-suite diversity?

**Significance of the Study**

AAs make up about 20% of (U.S. citizen[2]) U.S. engineering graduates (Yoder, 2015). In the SCDI, AA engineers also make up approximately 20% of the engineering workforce (California Department of Human Resources Office of Financial Management and Economic Research [CALHR], 2015). Furthermore, AAs in the SCDI represent an astonishing 35% of the engineers who process post graduate education (Masters or Doctorates in engineering; Yoder,

[2] The distinction is made because while there are many more HUP U.S. engineering graduates, the U.S. defense contractors only hire U.S. citizens. Those with foreign citizenship are not considered in this study.

2015). Even with those statistics, AAs still have virtually no membership in senior management or executive leadership ranks (P. Wong et al., 1998) at the companies that employ them.

AAs started emerging as an engineering force during the cold war when immigrant parents pushed their children into professional education (doctors, engineers, etc.) as a means to attain the American dream (Le, 2015). This coincided with mainstream Americans[3] choosing employment immediately after their undergraduate degrees, and preferring on-the-job-training (experiential training) as a means to advance their careers (University of Texas: Counseling and Mental Health Center, 2015). Graduate engineering studies thus began to be dominated by AA students. Furthermore, it was only since the 1980s that these U.S. citizen AAs were finally able to obtain the necessary security clearances to be eligible for management and leadership assignments in the defense industry (Griffith, 1989). The census department already included AAs as countable minorities[4], and the federal AAA became the impetus to induct AAs into the workforce. The HUP engineers were recruited because of affirmative action pressures, and then were actually hired because of their exceptional technical skills. Coming from the best engineering colleges across the country, they also often graduated at the top of their class. In the corporate environment they typically just start out and then settle into, individual contributor roles. Lacking any formal mentoring, they progress along the engineering ladder, usually capping-out at technical specialist ranks.

This study advances the understanding of the individual and corporate dynamics involved in career progression for AAs in the SCDI. It also identifies subtle institutional biases and behaviors that impede career progression for AAs. More importantly, information from this

[3] The phrase *mainstream American* is chosen to represent the members of the majority population. The label *White,* typically connotes discriminatory or pejorative characterizations. That is not the intent of this research.
[4] For the purpose of this research, Asian, Native Hawaiian, and Other Pacific Islanders are all lumped together as Asian Americans.

study is useful for the AA aspirant, by providing a better understanding of the impact of his/her behavior—as related to risk taking and engaging in positive conflict—that can impact his/her career success.

**Theoretical Framework**

To frame this study, and based on review of the prior research on leadership and diversity, it is clear that many variables affect career progression. Two theorists emerge as having influenced the direction of this research (Palich & Bagby, 1995; Taylor, 2004). Palich and Bagby (1995) postulated a cognitive theory to explain entrepreneurial risk-taking and how, by challenging the conventional wisdom, those who took risks, gained. In their research, they studied risk taking by individuals in organizations, correlating it with the characteristics of entrepreneurs. The conclusion was that those who succeed in leadership were potentially predisposed to cognitively identify business situations as advantageous. This interpretation leads some individuals to view situations as opportunities, and others to view those same situations as risks. In this scenario those who venture tend to gain, and those who hesitate who tend to stagnate (nothing ventured, nothing gained). This work integrated studies by Shaver and Scott (1991) and by Dutton and Jackson (1987), who studied social situational cognition and adapted it to categorization theory. In essence, they stated that decision makers use situation-specific strategies in their actions. Those individuals who have prior history of success in stressful situations usually venture to take action. Likewise, those who have past experiences where they encountered failure with situational stress decisions usually tend to engage in passive behavior. This trend can be applied to a study of the AA population in this industry, as well as to contrast with the more-pervasive transactional leadership, or autocratic style leadership currently prevalent in many SCDCs (Johannsen, 2014).

Additionally, Taylor (2004) explored career progression issues for women in the federal government, concluding that institutional bias in the form of laissez-faire management approaches and lack of role models impede diversity aspirants' careers. The study results were generalized by S. Gandhi (2009), and applied to the defense industry. His assertion was that in addition to *individual* behavior and personal preference issues, there are also systemic *corporate* behaviors that select emotional intelligence traits (like *extraversion,* i.e., awareness of emotional atmosphere, and *self-efficacy,* i.e., ability to anticipate reactions and respond effectively) over technical knowledge credentials. This key fact is extrapolated to AAs as contrasting with their cultural values: where they view education as the primary means to achieve career success. This clash of values also impedes their career growth.

**Definition of Terms**

The defense industry has some unique attributes and descriptors specific due to the nature of the business (Schwenk, 2012). The key terms include the following:

*Security clearance*: This means ability to access specific program information. This clearance is granted to U.S. citizens, by the U.S. government, and among other topics, considers the applicant's ties to foreign nations (i.e., foreign relatives, foreign travel, foreign property, and bank accounts).

*Project management*: This means cost, performance, and schedule management of programs and projects.

*Matrix management*: This organizational structure is very prevalent in the defense industry, and is characterized as employees having two bosses: an *administrative* manager who determines employee raises and promotions, and assigns the work, and a *work* supervisor who oversees employee day-to-day execution of assigned work. This structure can lead to supervisory

dysfunctionality, where the individual responsible for employee growth is not the one with intimate knowledge of employee performance.

*Contracts and compartments*: The nature of the defense industry is that, at any given time, the contractors have several large multi-million dollar contracts all being executed concurrently. This state of affairs provides some immunity from large-scale hire/fire cycles that were symptomatic of this industry in the past, but it also means that within individual contracts, the group dynamics are very active, with teams frequently forming, storming, norming, performing, and dissolving. To a new employee this form of management and workplace dynamics can be disorienting.

*Customer interface*: This common term has specific connotations related to program access and in being able to take a technical solution and shape it into a business proposition.

*Affordability and best-value*: Providing an optimal balance between technical performance and the cost-schedule risks associated with achieving the outcome.

*HiPot*: High potential employees, able to achieve greater than two salary grade promotions within 3 years.

**Nature of the Study**

A qualitative design was used in this study to describe and explore the topic. Risk-taking phenomenology as a clue to career progression, allowed for broad, general questions about this area under investigation from both an individual and organizational perspective. In seeking a holistic picture, field data, open-ended interviews, and using words that describe people's knowledge, opinions, and perceptions were used to understand people's actions, interpersonal behaviors, and activities. This open-ended interview approach also allowed detailed investigation of organizational processes and investigation into whether the matrix-management structure

prevalent in the defense industry is an unintended, but strong, barrier to career advancement. The naturalist inquiry, conducted in (and near) the work settings, gave contextual inputs, mingling environmental issues with individual behavior. This process allowed the researcher to tie meaning to peoples' actions, and in so doing, bring out general traits that the AA aspirant can change, and, for managers, organizational techniques to increase diversity in the leadership pipeline.

**Assumptions**

Assumptions in this study relate to the premise that prior to entering this industry, AAs were top performers in their academic careers (Honda, 2010), and that as second generation citizens (because of security clearance issues), they have completely assimilated into the North American culture (Fletcher, 2000). It should be pointed out that this may not be a completely valid assumption, as some AA cultures hold on to their traditional values and behaviors for many generations (S. Lee, 1994). Research done by S. Lee (1994) is mixed, showing that some AAs have fully assimilated in the North American culture, whereas others still retain some stereotypical ethnic behavior traits.

**Limitations**

Generally, any industry will safeguard employee privacy, and the secretive nature of the SCDI takes that behavior to an extreme. It was not possible to get a Human Resources (HR) sanctioned study of the AA employees. Given their confidentiality constraint, it was not possible to gather wide-ranging statistics and thus do a truly generalized survey of how AA employees are faring in leadership ladders. Instead, population statistics were gleaned from published organizational charts and public domain data sources about engineering employment and rank (Yoder, 2015). These institutional and structural limitations were also compounded by individual

reluctance (Fletcher, 2000) to discuss personal career prospects with the researcher. Limitations of this study resulting from methodology (interviews), data (small sample size), and method of analysis (coding and correlation analysis) make the initial results specific to a few employees in one company. Although some findings may be generalizable (like behavior differences of autocratic and situational leadership style candidates versus team and servant leadership style candidates), others can be the subject of further research (such as why second and third generation AAs are still reluctant to accept situational risk to enhance their careers).

**Delimitations**

The study focused on one company (pseudonym ADC1), where the researcher is also an employee. Additionally, it was limited to AA employees who agreed to be interviewed outside the work setting. The researcher himself is an AA, and thus likely elicited empathic responses from the interview subjects. To address this, care was taken in formulating the interview questions, as well as in coding and thematic extraction. Moreover, wherever possible, conclusions were backed up with published research.

**Summary**

This chapter framed the status quo by highlighting the environmental factors that drive corporate behavior and individual characteristics that contribute to stunted career progression for motivated AAs. The U.S. defense industry and its subset, the SCDCs, employ hundreds of thousands of employees. Many are thriving and contributing at the highest levels of their creativity. However, a significant subsection of the population, the AA members of the engineering core, are frustrated in their ambitions to climb the corporate ladder. Some theorists point to individual behaviors as the cause, whereas others point to institutional biases. This research adopted a holistic perspective, acknowledging that both the individual aspirant and the

corporate management are key to addressing the issues at hand. The companies in this marketplace are highly competitive and their current management teams are very business-focused. Although there is governmental encouragement to increase diversity in the corporate leadership teams, the companies likely take a much-more pragmatic view. Does inclusion of diversity improve the business? Looking at the past and present, there is no compulsion to change; the industry is thriving. However, looking at the future, when the single-customer landscape changes to include many more international customers, such diversity in leadership provides the opportunity for these corporations to pivot and profit from the shift.

**Organization of the Remainder of the Study**

Chapter 1 presents the problem of underrepresentation of AAs in senior management and executive leadership ranks in the SCDI. The chapter provides the background and significance of the study, as well as introducing the risk-taking phenomenology that has proven to be critical for career advancement. The research questions provided with a listing of assumptions, limitations, and qualitative study approaches to support the theoretical framework. Chapter 2 presents the literature review, covering the relevant literature about the individual (the AA) and the environment (the SCDI). Notably, the literature review explores the historic or traditional opinion about career progression for AAs, and contrasts it with some current/emergent theories. Chapter 3 presents the research methodology used in the study. This includes repeating the research questions, information about the population, the sample size, instrumentality, data collection, and data analysis and validity. Chapter 4 presents the research results from the pilot and final surveys. Chapter 5 presents the conclusions, recommendations, and topics for further research. The Appendices include the Pepperdine University Institutional Review Board approval and a sample Informed Consent form.

## Chapter 2: Literature Review

Literature regarding HUP members in the defense industry leadership is sporadic. What exists either consists of ethnographic research on women who have achieved leadership positions in the industry (S. Gandhi, 2009), or phenomenological research on approaches some companies in the industry have tried in order to increase the management pool through institutionalized mentoring programs (Teller, 2011). Additionally, other researchers (Dickerson, 2010) have studied career progression for women in the federal civil service in the Washington, D.C. area, relating it to institutional barriers and lack of role models. Similarly, studies done on women's careers in nursing (Campbell, 2015) and academia (Stiemke, 2012) identified systemic issues about bias and candidate preparedness as barriers to their career progression in institutions where they are the majority population. The general theme in these prior studies was about equity; their premise was that, regarding inclusion, corporate leadership should have more diversity, simply because of percentages and ethics. While theses references have some context, they did not specifically address AAs and their representation in the leadership ranks of the defense industry. The difference is significant, as Asian Americas constitute a sizeable percentage of the engineering population at these companies, and, as a group, AAs demonstrate model minority traits, including high academic credentials and a dutiful work ethic. This study explored why some of the best and brightest fail to climb the corporate ladder, especially in SCDCs.

The literature review for this research centered on two topics: (a) what are the *individual* characteristics and actions that affect AAs' progression up the corporate ladder, and (b) what are the *institutional* issues for career advancement of AAs. To conduct this review, the findings are sorted for *historical* perspective (i.e., what has happened so far) and as well as *current* findings (i.e., to determine what experiments and emergent theories may be applicable). Specifically, the

historical review consists of literature about the defense industry and issues regarding HUPs. Then the review looks more specifically at AAs' traits and issues related to general engineer career progression. Regarding current research, the topics of microaggression and emergent motivation theories are covered, followed by a deeper look at why some personalities succeed in their ascent to the C-suite, and what management models may be practiced to enhance that progress.

## Historical Overview

This part of the literature review is foundational. That is, the review uncovers what material exists, and why. Specifically, this section explores the characteristics of the defense industry and how it operates in southern California. Then, the research looks at the demographics, and also at the systemic reasons why there is an underrepresented population. Also included in the literature survey is a summary of the prior social engineering efforts in society and in the defense industry to achieve greater diversity membership in leadership ranks. This section then focuses on AAs and what distinguishes them as a model minority, as well as how some of these traits manifest in workplace behaviors. The last part of this foundational review investigates general career growth paths, progressively narrowing the perspective to engineer career progressions, and, finally, AA status to date.

**The defense industry in southern California.** From a hodge-podge of over 50 companies, the U.S. defense contractors have consolidated in recent past decades, and now are segregated into two groups: platform makers (ships and planes) and payload providers (radars, communications systems, etc.; Scott, 1991). This consolidation has resulted in the industry being dominated by a few large companies. The shrinking domestic defense appropriations budget has led to fiercer competition among these companies as they chase fewer contract opportunities.

According to the Aerospace Industry report (Kleinhenz et al., 2013), the defense industry in southern California is characterized by both innovation and pragmatism. Innovation refers to the sense that many of the most challenging national defense problems are imagined and solved by thousands of engineers and their inventiveness (e.g., Jewell [2014], who cites the many patents awarded to the defense industry in the region). Pragmatism refers to the sense that the industry practices a for-profit business model. Few, if any, altruistic compulsions trump ongoing business priorities. The industry is also very heavily regulated; the government, exerting its market power, imposes various regulations and guidelines and uses compliance to these social engineering programs as one of the discriminators in awarding contracts. Ethics and financial transparency are mandated, but social equity, among other factors, are often only suggested as guidelines. In his essays, Kinney (2014) noted that the industry is characterized by a long culture resembling a military-like, male-dominated industry, with a bottom-line bias. Furthermore, that, the technology used in defense products were due to the inventiveness of White-collar engineering work force.

The Deloitte study (Deloitte Touche Tohmatsu Limited, 2015), noted that while there are sluggish growth prospects (<3%) over the next decade for the domestic portion of the industry, there are robust prospects (double digits) for growth in international markets. This prospect provides a sea-change opportunity to affect culture and develop a more diverse management and leadership team to better exploit the emerging overseas opportunities. A report for ProPublica (Currier, 2013) echoed similar industry transition opportunities due to a mix of domestic and international customers, as well as similar compulsions to transform the current leadership ranks.

The Aerospace Industry report (Kleinhenz et al., 2013) noted the industry-wide adaptation to the matrix management structure as a means for efficiently executing programs.

The companies operate in a matrix structure (Bartlett & Ghoshal, 1990), where *work* supervisors are not the *administrative* supervisors. Work is usually compartmentalized by contracts, and work teams are constructed/ dissolved based on contract needs and team interpersonal dynamics. Social networks and reporting structures are constantly changing, and administrative supervisors, i.e., those responsible for promotions and pay raises, are rarely in firsthand contact with their employees. Instead, they rely on work-supervisor feedback, rather than firsthand observation. Bartlett and Ghoshal (1990) noted that this tendency leads to a laissez faire management approach. The employees drift through the assignments, the managers are only loosely coupled with them. AA engineers, used to more *structure* and closer relationships with supervisors, are often lost in such ambiguity. With frequent changes in who's in charge and in who has the different types of legitimate and/or informal power (knowledge, positional, personality dominance, etcetera), the members thrive or falter depending on their emotional intelligence in navigating such dynamics. This tendency fosters a *good-old-boys* culture, where, from past associations or similar cultural connections, an inner core arises, and the lesser-known members are relegated to the sidelines and/or specialized tasks. The *mainstream*[5] engineers typically occupy positions of control and advocacy, and the HUP engineers typically settle in as knowledge resources. They are respected for what they contribute, but also not encouraged to venture far from their operating domains. Management on both sides of the matrix is typically oblivious or not motivated to intercede, mainly because the situation is how *it's always been* and *it's not broken* (Bartlett & Ghoshal, 1990) as it is.

In summary, the SCDI is characterized by a group of highly competitive companies that employ thousands of engineers and are organized internally in a matrix structure. Furthermore,

[5] The phrase *mainstream* is used to group the majority population members – i.e., the White members of the population. Using *White* or *Caucasian* to describe this population, seems pejorative, and thus a more neutral phrase

the industry is evolving from a domestic-only model to a mix of domestic and international customers. This context provides an opportunity for change.

**Historically underrepresented population.** The term historically underrepresented population (HUP, or underrepresented minority, URM) has been used to identify members of the American population, who compared to their population numbers, are not similarly enrolled in education and industry. Over time, this term has become more inclusive, and in the context of this research is used to identify members of the AA engineering community.

Alden (1974) looked at women and minorities in engineering, and using *oriental-sounding-names* as a selector, counted that, out of approximately 500,000 engineering graduates in 1973, about 27,000 (or about 5.5%) were Asians. He did not distinguish U.S. citizens from foreign students. He indicated that, using 1970 U.S. Census data, Asians represented less than 1% of the U.S. population, or that Asians in the U.S. chose engineering education at rates approximately five times greater than their population numbers. Forty years later, Terenzini, Lattuca, Ro, and Knight (2014), in their report on America's overlooked engineers, noted that, with regard to engineering education, AAs represent about 12% of the graduates, compared to about 3% representation in the general population. In contrast, White and African American engineering graduates were at 53% and 4%, respectively, compared to their representation rates in the general population of 60% and 15%, respectively. This means that AAs select engineering and graduate at a rate that is four times greater than their population numbers. Whites and African Americans, in contrast, participate at par with and at one-third of their population numbers, respectively. In their widely cited work, P. Wong et al. (2014) researched why AAs prefer engineering and why they excel in the field. Their conclusions regarding AAs selecting engineering education is that the immigrant parents, or families with strong cultural identities to

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like *mainstream* or *majority* is chosen.

their countries of origin, see engineering as an *honorable* profession, and one that offers employment stability. Then, regarding why AAs excel in engineering studies, they concluded that typical AA students tended to please their parents and teachers, and studied hard to earn their praise. While simplistic, this conclusion is backed up by research done by Harper and Quaye (2009) and Strother (2015), who explored minority STEM (Science, Technology, Engineering and Math) students and why some excelled. Their research indicated that those who succeeded in engineering studies were more focused in their endeavors. They extrapolated this to consider emotional intelligence (EI) traits versus intelligence quotient (IQ) scores, arguing that lower EI traits were correlated with higher graduation rates. They concluded that minority students who thrived in engineering, being less socially adept, were simply less distracted (i.e., partied less, and studied harder). Research by Virnoche and Eschenbach (2010) and Lord, Layton, and Ohland (2014) looked at first generation students (i.e., immigrants or children of immigrant parents), and concluded that non-cognitive retention factors like goal orientation and family values were deterministic predictors of students completing their STEM education.

The over-representation of the AAs in engineering graduation rates also translates in similar over-representation in employment. Data from the California Department of Human Resources Office of Financial Management and Economic Research (CALHR, 2015) salary and employment survey for the Southern California defense (Aerospace) industry, confirmed this disproportionality (approximately 15% of engineers are identified as AAs, when it includes all engineering disciplines in the SCDI). The reason why AAs are then classified as HUP members is because of their underrepresentation when it comes to leadership and senior management membership in the companies that employ them. To validate this finding, population data were collected using published organization charts and self-selected ethnicity identifiers by AAs at

ADC1 (B. Kim, personal communication, December 13, 2015): a SCDC. At this contractor, out of 24 jobs identified as President or Vice President, none was occupied by AAs. Furthermore, out of 194 jobs identified at Director Level, only four (approximately 2%) were occupied by AAs. An unofficial count using the same published organization chart revealed that, at this same contractor, out of approximately 13,500 employees, approximately 6,000 were engineers, and approximately 1,100 of these engineers were identified as AA (B. Kim, personal communication, December 13, 2015).

In summary, AAs represent about 15% of the engineering graduates, and over 15% of the engineering population in the defense industry in southern California. However, AAs represent less than 2% of the senior management pool, and 0% of the executive leadership.

**Model minority traits.** During the Great Depression, the U.S. government began identifying certain groups as minorities as a prelude to the recent affirmative action legislations (National Archives, 1961). During the 1960s, concepts about race, ethnicity, and stereotypes were formally codified, and the U.S. Census started collecting statistics about these racial and ethnic groups. In his paper titled "Inventing Race," Skrenty (2002) noted that researchers discovered that some groups fared better than others, and thus started labeling them as *model*. Over time, he noted, more and more of the success attributes (e.g., education, income, crime rates, family stability, etc.) were found in the AA population. Thus, the designation of this group as *model minorities*. Coincident with this trend, according to Yuan (2015), the term model minority was also coined in the 1960s to initially describe the Japanese and their post war success in America. Over time, the two usages coalesced, and the term has been has been generalized to represent all Asian ethnic groups. Wikipedia defined *model minority* as a group that is perceived as having more success in terms of income, education, family stability, and low

crime rates ("Model Minority," n.d.). According to the definition, they are generally not boastful of their accomplishments, preferring to contribute more quietly to society or community.

Following this 'model minority' designation, researchers began looking at the characteristics and impacts of this group. Kamibeppu (1998) focused his attention on U.S. higher education, and, as stated previously, found that AA representation rates in engineering disciplines had increased significantly from the time of Alden's (1974) research. Following Kamibeppu's (1998) research, there was an abundance of anecdotal articles about the positive attributes of the AA communities. As a consequence,these positive-attributes research fueled a transformation in the AA community, from identity denial (Cheryan & Monin, 2005) to fuller self-awareness (Arana & Smith, 2015) within the community. The concept of a career *glass ceiling* was already well established in regard to women and some minorities (African Americans particularly), in addition to being well researched (Dickerson, 2010; S. Gandhi, 2009;). However when researchers (e.g., Le, 2015), looked at AA traits and consequences, they discovered, along with the positives, there was an emerging impatience about their career ceiling: the *bamboo ceiling*. The AAs had done remarkably well. They had good education, worked at good jobs, and earned a good living. With regard to the American dream, this group was referred to as a bright and shining example of what can be achieved through hard work and patience.

*The Economist* (2015) stated that although AAs still face racism and other discriminations, the inflated expectations were creating a sense of insecurity about failure and thus possibly damaging their family reputation. B. Wong (2015) called this "a blessing with a curse" (p. 1); although they saw themselves as better prepared and better accomplished (i.e., superior), they were not able to translate this status to better careers. In the University of Texas

Counseling and Mental Health Center's (2015) guidelines, they noted that, as a group, AAs struggled with stress and feelings of hopelessness. *The Economist* echoed similar ailments in the workplace for the AAs, noting, "Engineers are nerds, but within that self-selected group, Asians are even more nerdy" (p. 10). Adding to their frustration is their Confucian attitude; "You don't argue. You don't contradict authority" (p. 10).

**Career progression and barriers to career progression.** The last foundational topic in this literature survey covers engineering career progression. To put AA underrepresentation in executive ranks in proper context, it is necessary to understand engineering career trajectories.

In his *Engineer-to-Leader* series, Cerri (2015), noted that entry level salaries for engineers are typically 30% higher as compared to entry level salaries for other disciplines (notably finance and management graduates). He went on to state that as the engineers progress in their technical careers, the salary gap widens. Typical engineering salary grades are defined as Engineer, Senior engineer, and Principal engineer. This is then followed by a bonus pay portion of the engineer career, including Chief Engineer, Engineering Fellow, and Principal engineering fellow. According to data published by the CALHR (2015), at the top end of the engineering ladder, compensation packages are comparable to senior director compensations. The other employees (i.e., those in finance and management assignments) start out lagging behind the engineer's salary. These positions include jobs like Business planning, Program management, Product marketing, Contracts administration, Customer relations, etc. Senior level bonus pay grades for management include, Manager, Director, Vice President, and President. In the early career assignments, according to CALHR, management-track employee salaries consistently lag behind engineering salaries. These business and accounting background people, do however, accumulate a breadth of experience in the business. Although typical engineers stay narrowly

focused in their technology, during this phase of their careers, finance and management graduates are exposed to and trained in project management, financial control, customer relationships, decision making, etc. This makes them prime candidates to take on profit-loss responsibilities, and thus eligible to earn bonus-pay compensation commensurate with their risk-taking and results. This process happens in positions like Manager, Director, Vice President, etc. Through this trial-and-error process, they also acquire proficiency in people management and in leadership. Cerri (2015) stated that when engineers start to question their career directions and begin to desire managerial controls, they are out-priced from the learning-grades for such ladders. Their high salaries and seniority make them poor choices for entry-level management assignments. Furthermore, according to Cerri, lacking the early career trial-and-error tempering, those rare engineers who are selected for management roles usually founder, and often visibly (Liu, 2010). The success trajectory, according to Steger (1985), Tremblay, Wils, and Proulx (2002) and Louie (2014a), is early career hopping. That is, while the salary gap is still (reasonably) small, to switch back and forth between engineering and management assignments. This process allows interested engineers to gain necessary business experience as they continue their engineering careers. The question remains, which engineers choose to switch and which choose the more linear engineer career trajectory?

Rosete and Ciarrochi (2005) studied EI versus IQ as indicators for career progression. They found that less than 10% of the executives they surveyed had above average IQ scores, concluding that IQ was not well correlated with career growth. Goleman (1998), in his chapter "Beyond Expertise," noted that a new yardstick was needed to evaluate criteria for career success. He conceptualized EI traits to include (a) self-awareness, (b) self-regulation, (c) social skills, (d) empathy, and (e) motivation, and stated that mastering these was the key to career success.

For engineers, mastering such *soft skills* (Louie, 2014b) is unfamiliar territory. Soft skills refers, among other things, to engaging in social communication (e.g., chit chat), not being too technical, using analogies, adaptability, teamwork, receptivity to feedback ,and being situationally aware. Summers (2004) conclude that engineers are mostly logical and rational, but proficiency in EI requires a change in their frame of reference for which they are not prepared academically. Long before Goleman, Steger (1985), had developed similar conclusions based on his study of civil engineering careers.

Typical engineering career trajectories include progression from entry-level positions to progressively more senior technical specialist ranks, culminating in Engineering Fellow (or Chief Engineer) designation. At numerous points along this journey, opportunities are available for transition to a management ladder. Initially the management track jobs are semi-technical, with small cost and schedule responsibilities, leading to larger supervisory assignments. As the employee progresses, the management trajectory job diverts from *developing*-technology assignments to *using*-technology jobs: from *doing work* to *getting work done*. This is certainly a trial-and-error journey, but successful aspirants learn and grow (Donnell, 1955; Monster.com, n.d.; Ohio University Russ College of Engineering and Technology, n.d.). Allen and Katz (1995) noted that only a small percentage of engineers (32%) choose the management ladder. Using normal statistics, one would assume that, regardless of ethnicity, this rate would apply to all engineers. However, data from ADC1 (ADC1 is a typical defense contractor, and looking informally at available population and salary grade data), indicate that AA engineers choose the management ladder less than 5% of the time. Clues to AA underrepresentation in leadership ranks are found here; AAs simply do not enter the management development pipeline in sufficient numbers.

Davis (2003) and Dickerson (2010) concluded that common career barriers included not having the right connections or patronage (43% complained of being stereotyped, 19% said their careers were blocked by their supervisors, 18% expressed a lack of career aspirations, 11% felt pressure from family, and 8% felt pressure from friends). Woo (1994) echoed this finding in her books on the glass ceiling and AAs. She analyzed aspirant scholarship and ambition versus institutional and individual biases, concluding a complex and subtle interaction between ethnicity and organizational cultures clashes to inhibit AA careers. In her longitudinal study on minorities and career progression, Engelbrecht (2014) noted that issues that minorities faced a decade ago (in the 1990s and 2000s) are the same issues they face today. That is, even today (2014), career progression of minorities is impeded by internal, societal, and organizational barriers. As noted in the propose statement, there is sparse specific research on high achieving AAs in the defense industry, but based on studies regarding career barriers for other HUP groups and on women in the aerospace industry (S. Gandhi, 2009), the emergent themes are that both the individual and the organization collude to inhibit career growth. Individuals are neither prepared nor motivated for the stresses of management, and the organization is also neither prepared nor motivated to develop diversity in leadership.

In summary, the foundational part of the literature review looked at the industry, the affected population, and career options and impediments. The industry is in transition from a single customer marketplace to a global market. This transition will require different leadership skills to thrive in this more global market. The affected population too is becoming more self-aware, but will have to take specific actions to increase their preparedness and motivation. Regarding the career trajectories, engineers are, as a group, not well versed in soft skills, and, as the literature review shows, the AA population is even less prepared for the self-change needed.

The literature review now moves from foundational topics to looking at current research. The purpose is to review emergent research on why AAs behave the way they do, and what can be done to motivate them to take action. Additionally, this next section explores why an ethical organization allows such disparity, and what can be done to change that. The literature review looks at micro aggression research and motivation theories that are applicable to both individuals and the institution. Additionally, the emergent research review looks at leadership traits using personality tests and management models, and their impact on increasing diversity in the leadership ranks.

**Current Findings**

Goleman (1998) wrote about what it takes to succeed in one's career. He stated that the higher the position, the more EI matters. In the foundational part of the literature review, it was noted that engineers are generally not well versed in such soft skills, and as a group generally typically do not successfully climb the corporate management and executive ladders. Further, AAs are also neither well prepared nor motivated for the pressures of a management career, seeking instead a low-risk, low-conflict technical career. This portion of the research looks at societal issues and biases and how they affect individual motivation, especially motivation for AAs to enter the management pool. Additionally, this literature review summarizes key leadership traits, and under what organizational constructs (i.e., environments) minorities thrive and grow their careers. Significantly, the literature review looks to assess altruistic motivations (for fairness and for ethical reasons) versus more pragmatic business reasons for change (will change help the business grow?).

**Microaggression.** As U.S. society evolves, so does the manifestation of discrimination change from direct display to subtle interchanges reflecting bias: from Jim Crow laws where

racial segregation was institutionalized to affirmative action directives where the government is mandating deliberate steps to eliminate blatant discrimination. A new phenomenon called microaggression has emerged. Here, brief yet commonplace occurrences of discrimination occur. Gujilde, Brewer, and McNeil (2015) noted that some minority communities—like women, African Americans, genders and sexual orientation preference groups (i.e., the LGBT community)—have achieved significant numbers and/or substantial political power to push back. He found that their self-awareness and self-confidence allows greater recognition and thus rejection of microaggression type discrimination. For the LGBT community, there are still problems, but Gujilde et al. noted that, with greater awareness, within the community and within society, there is better management of impact of microaggression. In other studies (Khushbeen & Singh, 2015), researchers noted that the deniability and contextuality of microaggression actions (verbal, physical, environmental) make it hard to differentiate intention. The perpetrator (aggressor) may genuinely have meant the act as flattery or naively was unaware of target individual's perceptions. Conversely, Khushbeen and Singh (2015) also noted that the subject (target or perceiver) may be hypersensitive and *looking for discrimination* (victim mentality): that is, occasionally taking innocent and genuinely unintentional acts as deliberative and discriminatory. In this flux, societal microaggression behavior grows intentionally or unintentionally as a means for venting pressure. Over the course of a year in their research, Khushbeen and Singh (2015) noticed that microaggression was most often practiced against those who could be physically distinguished (i.e., by appearance) from their colleagues.

Wang and Kleiner (2001) looked at discrimination against AAs, cataloguing its origins, forms, and history. The infamous events they cite are the 1882 Chinese Exclusion Act and the deportation and incarceration of Japanese Americans citizens during World War II. In context of

microaggression, they noted that if a person is White or African American, he/she is assumed to be a U.S. citizen. However, AAs, and Latinos are automatically assumed to be foreigners. In quoting statistics, they noted that the AA population in the United States grew by 141% and 99% during the 1990s and 2000s, respectively. Comparatively, White and African American populations grew by only 6% and 13% during the same time period, respectively. Wang and Kleiner concluded that with AAs' increasing population numbers, xenophobic reactions against them are also on the rise.

Kim (1999) picked up this theme and postulated a racial-triangulation concept where racial dynamics are moving beyond Black and White. In summary, "Whites dominate Asians, and Asians are superior to African Americans. But because AAs are seen as foreigners, thus are assumed as unable to assimilate" (p. 110). Their brand, as the *model minority*, only further exacerbates the rivalry, resulting in Whites and African Americans resenting AAs' achievements. Supporting her argument, Kim presented racial discrimination and aggression incidents, including the 1984 LA riots and race-based quotas for University of California admissions, in support of her call for social action.

Demianczyk (2015) noted that individuals, compared to normal circumstances, experienced increased psychological impact from microaggression in the form of anxiety, depression, substance abuse, and etcetera. Supporting Gujilde et al. (2015), he stated that different ethnic groups and different individuals have different impact and different consequences as a result of microaggressions. More simply stated, African Americans and sexual orientation preference groups (i.e., LGBT community members) react aggressively to microaggression, whereas AAs tended to have more passive reactions, tending to internalize effect of the aggression. Similarly, the two aforementioned groups tended to share and bond

together when faced with aggression, whereas the AAs tended to hide their feelings and thus were isolated from support groups. However, Demianczyk also noted that individual personality types also had individual coping/reaction methods, quite apart from their group stereotype. The stronger, more self-assured individuals (i.e., those with more pronounced EI traits) generally withstood the aggression better (or reacted against it more constructively).

Nadal (2011) used a theoretical classification schema to develop and validate a racial and ethnic microaggression scale (REMS) based on African American, Latino, and AA sample populations. He postulated that discriminative (i.e., denigrating) messages are communicated through subtle behaviors and statements that may be transmitted unconsciously. However, because he views these acts as unconscious, his research focused on the target, rather than on the perpetrator. The taxonomy of the principal elements of microaggression were based on what the individuals felt as assaults, i.e., based on race and ethnicity, did the subject get (in decreasing order of importance), the individuals experienced:

- A feeling of inferiority
- An implied sense of criminality or of being a second class citizen
- A sense of invalidation
- A feeling of being stereotyped or of exoticization
- Such behavior pervasively in the society or environment
- Micro-aggression that was often setting specific

His findings were based on a random population sample, and are pertinent to this research because they reflect the environmental (societal) background faced by AAs. Nadal (2011) pointed out that AAs were most sensitive to environmental factors, i.e., their portrayal in movies and magazines, and that microaggression mostly took place in the workplace. In contrast,

African Americans felt microaggression mostly because they felt they were assumed to be second class citizens or criminals. Latinos felt microaggression mostly through a conveyed feeling of inferiority, and only specific to the setting (i.e., at work versus in their neighborhoods). Nadal's study did not assess the perpetrator's perspective. The root assumption was that this is an unconscious act: something that is engrained in the aggressor.

Bullying is related to microaggression. It also causes biological and physical effects on the target, who experience emotional, cognitive, and behavioral effects that affect their work performance and attitude. Studies (e.g., Sue, 2010) conclude that bullying is deliberate and persistent and is often about power and control, whereas microaggressions and microassaults are categorized as unintentional or intentional and not as overt. The ability to *hide in plain sight* and the sense of plausible deniability allow a more pervasive atmosphere of microaggression that would not be tolerated for bullying. Sue's (2010) study went on at length about how to identify and remove microaggression from the workplace, mainly focusing on awareness and targets' reactions.

The aforementioned references all pointed to deleterious effects of stress on workplace performance. AAs are somewhat atypical in handling workplace stress. Noguchi (2009) noted that during their academic career, for the AA student, an A grade was considered average. The burden of being a model minority placed a very high expectation on students, and Noguchi stated that AA students internalize these expectations and then put in superhuman effort to meet them. He concluded that this is a self-perpetuating behavior, where the hard-work/high-achievement ethic becomes part and parcel of their behavior in their academic and work careers. This immigrant-driven behavior is then carried forward by first and second generation descendants.

In summary, all the aforementioned studies (Damienczyk, 2015; Gujilde et al., 2015; Khushbeen & Singh, 2015; Kim, 1999; Nadal, 2011; Noguchi, 2009; Sue, 2010; Wang & Kleiner, 2001) looked at this topic from the victim of microaggression's perspective. None looked at the perpetrator's perspective. The assumption is that either this is unconscious behavior (i.e., the perpetrator is unaware) or deliberate behavior (the perpetrator is a bully). The studies point out the impact on performance and behavior of the target individual due to stress caused by a pervasive atmosphere of bias. In the defense industry, after several decades of the AAA, overt and blatant bias and bullying are rejected, but insidious latent bias remains. Moreover, it is this remnant that is partly responsible for a lack of diversity in the C-suite. This research looked at the target's perspective, i.e., what does the AA feel at work, and how/why he/she can change his/her behavior. However, significantly, this study also investigated the institutional perspective, i.e., what permits such behavior and how/why it can be changed.

**Motivation theories and leadership theories (the individual).** A basic primer is provided before looking at relevant research on change, motivation, and applicable leadership styles. Blanken (2013) summarized several common leadership styles, including, (a) charismatic, (b) innovative, (c) command and control, (d) laissez-faire, (e) pace setter, (f) servant, (g) situational, and (g) transformational, and put them in context of when such leadership styles are most applicable and effective. These are common labels and well presented in general literature and will not be restated here. Blanken (2013) noted that, from a leader's perspective, the general consensus is about adaptability of leadership style: that is, personal preference and aptitude shape the style that is needed when it is needed. Blanken went on to state that most leaders are not very versed in theory, and tend to have accumulated on-the-job experiences that they use (along with their personality) as a basis for their intuitive selection of style. According

to prior research (S. Gandhi, 2009; Teller, 2011), the leadership style most used in the defense industry is laissez faire. That is, the executive leadership mostly trusts their management team and employees to do their assigned tasks. They tend to trust the skill and experience of their teams to be self-directed. Likewise, defense industry leaders tend to believe this leadership style leads to greater job satisfaction and increased productivity. Then, when required, leaders adapt situational styles, thereby displaying either pace setter or command and control leadership, depending on the circumstances and people involved.

In his *Handbook on Leadership*, Bass (1990) also detailed concepts and theories of leadership. Along with detailing the personal attributes of leaders, he discussed power and legitimacy in an organization. Specifically (echoing Goleman, 1998), those who possess *expert* knowledge are often (in the long term) not those who also achieve *legitimate* (corporate rank) power. Although Bass advocates for transformational leadership, where goal alignment takes place because employee motivation is internalized, he acknowledges situations, where due to transactional relationships and group diversity, an adaptation of leadership styles is required. Furthermore, the leadership styles needed by an organization change over time and due to circumstances. In Bass's research, there is a general preference for empowering styles like democratic and egalitarian leadership versus autocratic and authoritarian leadership. He notes antecedents and correlates of consideration, initiating structure and related factors for describing the behavior of leaders, and ends up highlighting that laissez-faire leadership is only more effective than motivation to manage when the management team is already proficient and performing well. This finding adds context to this research in that, from a leadership's perspective, the current team makeup is already viewed as performing well. It is only when the impending changes to the marketplace (e.g., governmental pressures to diversify the leadership

team membership and emerging global market opportunities) are factored in that there is a need for change in the leadership team.

In *Communique*, Shullman (2009) debated if leaders are born or made. In her analysis, she looked at leadership traits and behaviors across several industries, especially where the leader was a diversity candidate. She concluded that the leadership role has become increasingly complex, and that, while there are inherent characteristics in an individual's personality, much of what is required from a successful leader can be taught. This conclusion is pertinent and critical to this research topic. Whatever AAs bring to their jobs and careers can be augmented by learning. Shullman described a leader-learner, noting that leadership attributes can be identified and used as learnable pieces in a structured curriculum. She used a Leader-Member Exchange (LMX) model (Graen & Uhl-Bien, 1995) for training leaders, noting that the most effective learning and teaching take place in an *inner-circle,* similar to Graen and Uhl-Bien's (1995) in-group concept.

Concerning human motivation theories and AAs in organizational settings, pertinent research is provided by Pinder (1977), by Palich and Bagby (1995), and by Shaver and Scott (1991). Pinder provided a basic primer on motivation theories: from needs-based motivation theories (Maslow, Alderfer, Herzberg, McClellan, etc.), to more contemporary theories (cognitive, goal-setting, self-efficacy, equity etc.), and across several situations of motivation. Pinder ultimately concluded that action occurs at the intersection of motivation and emotion. His assertion, shared by others, is that *internal* motivation (autonomy, belonging, meaning, etc.) is a stronger, more sustained motivator than *external* motivation (fear, rewards, competition, etc.). Although this is helpful as foundation, it is also relevant to this research because it points to the notion that to get AAs motivated to enter management career tracks, it is necessary for them to

want to do so *internally*. That is, they have to *connect* with the process and end result of a management career.

In looking at the positive and negative aspects of motivation, Palich and Bagby (1995), studied risk taking by individuals in organizations, correlating it with the characteristics of entrepreneurs. Palich and Bagby proposed that those who succeed in leadership may be predisposed to cognitively identify business situations as advantageous. This interpretation leads some individuals to view situations as opportunities, and others to view the same situations as risks. In this scenario, those who venture tend to gain, whereas those who hesitate who tend to stagnate (nothing ventured, nothing gained).

This approach is backed up by research conducted by Shaver and Scott (1991) and earlier work by Dutton and Jackson (1987), who studied social situational cognition and adapted it to categorization theory. In essence, they stated that decision makers use situation-specific strategies in their actions. They stated that those individuals who have a prior history of success in stress situations usually venture to take action. Moreover, those who have past experiences where they encountered failure usually tend toward more passive behavior. In context of this research, this can be applied to study the AA population in this industry, and can be used to contrast with the more pervasive transactional leadership, or autocratic style leadership currently prevalent in many SCDCs (Johannsen, 2014).

A complementary look at motivation theories is provided by Schmieder-Ramirez and Mallette (2007), who suggested a six-factor environmental scan of the organization to find driving factors for change. In their SPELIT (Social, Political, Economic, Legal, Intercultural and Technological) approach, they advocated that individual and organizational driving factors (motivation) can be extracted and categorized. For context of AA and a lack of diversity in

SCDCs, such an environmental scan is inferred. Using ADC1 as a representative organization, the analysis reveals the following findings.

***Social environmental analysis.*** According to Bartlett and Ghoshal (1990), SCDCs operate as a matrix structure, where work supervisors are not the administrative supervisors. For such matrices in the defense industry, they note that work is usually compartmentalized by contracts, and work teams are constructed/dissolved based on contract needs and team interpersonal dynamics. Social networks and reporting structures are changing constantly, and *administrative supervisors*—i.e., those responsible for promotions and pay raises—are rarely in firsthand contact with their employees. They instead rely on work supervisor feedback, rather than firsthand observation. This system, prevalent in the industry, lends itself to a laissez-faire management approach. Bartlett and Ghoshal (1990) noted that the employees drift through their assignments and managers are only coupled with them loosely. In context of this research, AA engineers who are typically used to more structure and closer relationships with supervisors, are often lost in such ambiguity (B. Wong, 2015; The Economist, 2015).

***Political environmental analysis.*** Bartlett and Ghoshal (1990) pointed out that the characteristics of corporations with a matrix organization afford employees with both opportunities and risks. In their research, they observed that, in matrix (and projectized) organizations, with frequent changes in who is in-charge and who possesses (at different times), the different types of legitimate (i.e., derived from rank and budget authority) and/or informal power (i.e., derived from subject matter knowledge, or personality dominance, etc.), team members either tended thrive or to falter. This correlated with their EI skills in navigating team and environmental dynamics. Bartell and Ghoshal (1990) assert that a matrix organization dynamic fosters a *good old boys* culture, where, from past associations or similar cultural

connections, an inner core arises, and the lesser-known members are relegated to the side lines and/or specialized tasks. In the course of their research, Bartlett and Ghoshal (1990) hypothesized that the more senior engineers end up occupying positions of control and advocacy, and the newer engineers typically settle in as knowledge resources. They are directed towards technical problem-solving assignments, and usually not encouraged to venture far from their operating domains.

***Economic environmental analysis.*** According to Schmieder-Ramirez and Mallette (2007), economic environmental analysis typically focuses on the production and consumption of resources. However, as described by Kleinhenz et al. (2013), in the defense industry, the economic environment is mostly controlled by the specificity of the contract at hand. However, with hundreds of simultaneous contracts, individual work teams face unique economic challenges. Some contracts are flush with resources and can execute their assignments with sufficient budget and time. However, other contracts are awarded very competitively, and the work teams that are assigned to perform on such contracts struggle with inadequate budgets and schedules. Thus, a culture of abundance and of scarcity can coexist in adjacent work teams (Dewees, 1989).

***Legal environmental analysis.*** The domestic defense marketplace is a single-customer market. The U.S. Government is the only buyer, and using that market power imposes some very strict regulations. Some, like Dodd-Frank and TINA (Truth in Negotiation Act) are about financial transparency and accountability. The DSA had, in the past (Griffith, 1989), been used as a discriminatory rational to keep first generation U.S. citizen (who could not get required security clearances) out of more senior management roles. Over time, this led to subtle exclusion of most minorities from the management pool (Griffith, 1989). Still other regulations, like the

AAA, and the related CSRA, are used as leverage to advance the governing administration's social agenda. While generally referred to as *guidelines*, these social regulations provided the impetus to recruit HUP engineers.

***Intercultural environmental analysis.*** The single-customer culture is often mirrored at SCDC in their management team make-up (Fletcher, 2000). Like the DOD (Department of Defense) customer, the leadership at ADC1 is generally exclusive of any AA candidates. With the pivot to international markets, this single-customer model is evolving, and is reinforcing a need for diversity in leadership to understand and thrive in such multiculturalism (Hambrick, Cho, & Chen, 1996). As studies by Yuan (2015) and Cheryan and Monin (2005) regarding multiculturalism and model minority traits reveal, cultural differences exist within the members of the engineering community, as well as between the management teams and AA members. In summary (Le, 2015), the AA engineers display a harmonic behavior, with a head-down, nose-to-the-grindstone work ethic. Le (2015) summarized that the AAs usually lack the gregariousness of their counterparts. Tying this with Bartell and Ghoshal's (1990) findings of laissez faire management, the matrix structure in SCDCs tends to obscure the intercultural and adaptation issues experienced by the AAs.

***Technological environmental analysis.*** The SCDCs often characterize themselves as *engineering* companies, because the products they develop are often state-of-the-art, and highly engineered to meet the needs of the war-fighter. As noted by Kleinhenz et al. (2013), the AA engineers are most adept in this environment, and often recognized as leaders in their technological fields. In his series on *engineer-to-manager,* Cerri (2015) noted that those engineers who successfully transition into management do so by growing beyond the *details* of

technology, into *uses* of technology. They are effectively able to connect problem to the solution, and tend to delegate the product development details to colleagues.

***SPELIT analysis summary.*** In summary, the literature used to conduct the SPELIT survey reveals driving forces that can be used in the remedy part of this research. These driving forces are summarized in Table 1, which shows that AAs struggle in the matrix structure and are generally naïve about internal politics. Furthermore, the legal environment is changing because of regulatory pressures. The gaps in intercultural awareness and entanglement through technology could be leveraged as pathways to organizational behavior change.

Table 1

*SPELIT Environmental Scan*

| SPELIT Drivers | Driving Force #1 | Driving Force #2 | Driving Force #3 |
|---|---|---|---|
| Social | Matrix structure | Supervision styles | Teamwork |
| Political | Authority & power structure | Coalition & Interest groups | Group think |
| Economic | Shrinking defense appropriation budgets | Resource allocation | Global opportunities |
| Legal | Government regulations | Compliance audit | Ethical behavior |
| Intercultural | Awareness & concern for diverse population | Capturing global customers | Building a diverse leadership team |
| Technological | Expert (knowledge) power | Technology focus | Innovation & adaptability |

To further study organizational behavior, a literature-survey based SWOT (strengths, weaknesses, opportunities and threats) analysis was also performed. This is useful in summarizing the internal and external factors characterizing the environment and providing motivation for change.

***Strengths.*** Companies in the SCDI are generally organized in a matrix-management structure (Bartlett & Ghoshal, 1990). This allows flexibility to perform on numerous varying duration, varying budget contracts by constructing/dissolving team membership as the situations require. Bartlett and Ghoshal (1990) characterized this dynamic as *organized chaos*. The Deloitte

study (Deloitte Touche Tohmatsu Limited, 2015) noted that in this matrix structure, multiple contracts coexist, and the SCDCs are less susceptible to the hire-fire cycles that were prevalent in the 1980s and 1990s. Importantly, Bartlett and Ghoshal noted that this structure is highly effective in bringing required expertise to address problems at hand. For management and engineers alike, this structure leads to a high sense of personal empowerment and accomplishment.

***Weaknesses.*** However, since people report to multiple managers, the principal challenge in the matrix organization is ambiguity (Bartlett & Ghoshal, 1990). Workers in a matrix often describe it as confusing regarding who to report to and how to prioritize work. Cerri (2015), in his *engineer-to-manager* series noted that, over time, those engineers who can adapt to this organizational ambiguity by networking and accepting the short-tenure of teams tended to succeed in growing their careers. In contrast Le (2015) and *The Economist* (2015) both noted that AA engineers generally seek hierarchy, clarity, and stability, and find the constant change in the different working styles of different managers within a matrix perplexing. Many have described the tension between work manager and administrative managers, or reported feeling ignored. Furthermore, because the team membership is always transitory, management tends to categorize cultural differences as part of the storming/norming/forming/performing behaviors (Tuckman & Jensen, 1977).

***Opportunities.*** According to Dominick, Reilly, and McGourty (1997), in the transient nature of the matrix, the iterative adoption through trial-and-error for employees provides an opportunity for change and helping SCDCs become learning organizations to grow their organizational behavior. Dominick et al.'s conclusions were that, because there were new members being added to the teams, there was opportunity for them to assert newer dynamics,

and not simply accept status-quo as the permanent behavioral norm. When combined with appropriate coaching (through mentoring or through education), dis-orienting behavior could be tackled preemptively, and accommodations made for different personalities and cultural backgrounds.

***Threats*.** In commenting on the characteristics of a matrix organization, Burns and Wholey (1993), noted that in such a boss-less/formless state of confusion, managers and engineers both display a tendency towards anarchy, commenting that employees don't feel responsible to any boss. There are near-constant power struggles, which are rationalized by managers who feel compelled to jockey for power (Robbins & Judge, 2011). Breaugh (1978) confirmed this dynamic, referring to it as *groupitis*, where the transient dynamics of the matrix tends to favor group decisions. According to Breaugh, a dominant individual or group could sway the outcome, right or wrong. It is hypothesized that for AA engineers, who like structure, the noted chaos is viewed as perhaps making illegitimate, often, exclusionary decisions. The model minority perspective by Le (2015) noted that AAs fear neglect (or disregard) through non-attribution of their contribution by their supervisors, thereby potentially diminishing their self-worth.

**Personality characteristics and selection**. Since Goleman's (1998) work on EI, the topics of traits, personality, and self-concepts have been analyzed as indicators of career success. Conducting research on students and their academic performance, Ferrando et al. (2011) found a significant positive correlation between EI traits and academic performance. In their study, the control variables were intelligence, personality, and self-concept characteristics, implying that, over and above these, students who display strong EI traits do well in their academic careers.

Taking this further, in an attempt to identify and use personality measures to support career progression, Nideffer (n.d.) analyzed personality variables and developed a list of big-five factors. These included:

1. *Surgency*, meaning sociability, gregariousness, assertiveness, and leadership type behaviors.
2. *Emotional stability*, including calmness, steadiness, and self-confidence.
3. *Conscientiousness*, to delineate individuals who display focused hard-work ethics, versus, for instance, those who are impulsive, irresponsive, or undependable.
4. *Agreeableness*, to separate those who display cooperation, sympathy, and are warm and good natured versus, for instance, those who appear to be aloof, or are cold and distant.
5. *Intelligence*, usually associated with being imaginative, cultured, broad-minded, and curious, versus those who seem to be concrete, practical, and, perhaps, narrow minded.

Compared to Goleman's (1998) EI traits (self-awareness, self-regulation, internal motivation, empathy, and social skills), these are similar, but grouped slightly differently. Nideffer (n.d.) summarized his research by stating that it was easy enough to compare individuals using these five dimensions and their performance outcomes. Of course, scales and values were specific to specific situations, but generally, such traits can be used effectively in the design of performance enhancement programs. For instance, surgency can be related to leadership factors related to self-esteem and control. Emotional stability can be related to a leader's ability to focus and control his/her emotions like anger and frustration. Conscientiousness can be related directly to the leader's willingness to make personal sacrifices and his/her ability to concentrate under

stressful situations. Similarly, agreeableness can be related to a leader's extroversion/introversion, as well as his ability to persuade. Finally, intelligence can be traced to a leader's analytical skills, speed of decision making, and multi-tasking abilities.

Rothstein and Goffin (2006) looked at the ability of personality tests to predict career progression by putting research into practice. They drew the following conclusions:

- Personality measures can indeed be used to predict job performance.
- The Nideffer (n.d.)/Goleman (1998) five-factor measure is a popular and sufficient means to gauge personality; however, data must be scaled appropriately based on the situation at hand.
- Thus the choice of appropriate personality measure and its proper scaling (based on analysis) is key to higher correlation with job performance.
- Being that the personality measures are existing measure of the individual, actual job performance correlation is, by its nature, a future measure also dependent on circumstance. This finding implies that individuals can be selected for leadership development based on personality measures, but actual career progress or on the job performance is situational and circumstantial.
- Finally, *faking* is possible. An individual can be coached to score high on the personality traits measures, but may not actually possess these traits. Goleman (1998) also warned about faking EI as well.

Rothstein and Goffin (2006) lamented about the proliferation of internet based personality tests (computer aided testing or CAT), and how it was both a blessing (wider usage) and a curse (easily misapplied and misinterpreted). HR-guide.com (n.d.) tackled this controversy head-on, and in fact advocated CAT as a cost-effective means to perform personality tests.

Choosing similar but slightly different traits (i.e., extroversion, emotional stability, agreeableness, conscientiousness, and openness to experience), they listed several advantages to using personality tests and advocated using these to predict performance. They asserted that such pervasive testing can actually reveal more information about the aspirant's (leadership candidate's) abilities and interests, and in fact can be performed repeatedly on groups to evaluate and screen candidates. The danger with this perspective, according to Viswesvaram and Ones (1999), is that repeated and pervasive use of CATs, make it more prone to *faking*, where test-takers become even more proficient at adjusting their answers to achieve a desired outcome. Furthermore, they pointed out that there is still some debate about the validity of the use of personality tests, because so much of the career progress outcome is also situationally dependent on uncontrolled circumstances. Still, in addition to DISC and MBTI tests, HR.com (n.d.) recommends the following measures: (a) *the personal attribute inventory*, which consists of positive/negative answers using Gough's Adjective checklist for attitudes; (b) *the personality adjective checklist*, an objective probabilistic measure based on empirical data on personality styles and related theoretical inference; (c) *the cross-cultural adaptability inventory*, which evaluates flexibility, acuity, resilience, and autonomy; and finally (d) *the California psychological inventory*, a multipurpose questionnaire to assess personality characteristics that are important in everyday life.

Rounding out this subject is research by Anderson (2008), who also studied personality assessment in leadership selection. His investigation included job analysis, validity studies, and impact analysis. The conclusions were that personality assessments alone are not the sole determinant of performance, but can be used effectively in conjunction with other sources (interviews, simulations, etc.) to increase the likelihood of career success. Significantly,

Anderson (2008) pointed out that most successful career trajectories include: (a) candidate preparedness, including motivation and personality tempering based on prior assignments; (b) situations and circumstances where leadership is practiced, implying that in some situations, no one would succeed, and, others where a unique combination of external factors make the difference in career trajectories; and (c) coaching and consequences of failure, where successful career trajectories usually depend on an enabling organizational where there is *pull* for the candidate.

In summary, personality characteristics can be deterministic in career success, but screening for these is subjective. Additionally, personality characteristics are alone not a sufficient condition for career growth. Many external conditions must be considered. In context of AAs wanting to get into management, this implies that they must be motivated and prepared. However, the organization must also be motivated and prepared. This is true for any leadership aspirant, but, more so for the AA aspirant for the aforementioned reasons.

**Management models (the organization).** Finally, turning to the environment and organizational factors that are effective for career growth and diversity, references are found in S. Gandhi (2009), Dickerson (2010), Mancl and Lee (2015), and W. Lee, Cross, and Ogilvie (2015). These will be discussed in the following paragraphs.

S. Gandhi (2009) looked at gender equality in SCDCs, summarizing the lived experiences of women in executive management roles. Pertinent to the research on AAs and leadership roles, women in SCDCs are also disproportionately represented in leadership ranks. In his qualitative research, Gandhi was able to list how the women achieved their appointments, as well as their on-the-job experiences as leaders. To the first research question regarding leadership ratings, he used the Kouzes and Posner (2003) Leadership Practices Inventory (LPI) to rate participants'

practices (competencies) in regards to (a) modeling the way, by clarifying values and by setting the example; (b) inspiring a shared vision, by envisioning the future and by enlisting others; (c) challenging the process, by searching for alternatives and by experimenting and taking risks; (d) enabling others to act, by fostering collaboration and by strengthening others; and (e) encouraging the heart, by recognizing contributions and celebrating values and victories. His findings were that, as a group, the interview subjects worked collaboratively, rarely "took out a weapon" (p. 68), and compromised pragmatically to reach consensus.

To the more substantive second research question regarding women leaders' career paths, and behavioral expectations, his approach was to ask 14 open-ended questions focused on (a) career progression and leadership style, (b) barriers and obstacles, and (c) behavioral expectations. His findings regarding the disparity of women in SCDC executive ranks were varied, and included: (a) personal choices regarding family priorities (*mommy-track*), (b) willingness to emulate their counterparts (*act like a man*), (c) tempering experiences in the management pipeline, and (d) general gender bias in the management hierarchy. In the context of research on AAs, many of these themes have relevance, and as the literature review demonstrated, many of the traits and environmental issues these women faced are parallel to the traits and environmental issues that AAs face in their career aspirations.

Dickerson (2010) also studied women, but in the federal civil service: specifically those in the SES in the Washington D.C. area. Her quantitative research was based on survey results that correlated demographics (i.e., seniority, race, education, and level of responsibility) with career-progression variables (e.g., career satisfaction, glass-ceiling issues, motivation, and positive and negative advancement factors). The research particularly focused on the issues related to (RQ1) career-mentoring and (RQ2) the availability of role models and informal

networks. Citing similar disproportionality statistics on women in the workforce as S. Gandhi (2009), Dickerson made similar arguments using the 1978 CSRA advocating a "leadership of the administrative service reflective of the nation's diversity" (p. 299). On the topic of mentoring, Dickerson summarized that, like Graen and Uhl-Bien's (1995) LMX model, mentoring is a tool that can help aspirants gain entry into previously exclusive networks where they get the expert instructions (i.e., coaching) to navigate career obstacles. In the civil service, she concluded, there are no incentives for formal mentoring and what practice exists is very informal. On the topic of role models and informal networks, she concluded that those women who do succeed in their climb up the career ladder are generally not viewed as role models, nor do they facilitate any networking. Her research revealed a laissez-faire approach to management, where there was little systemic *pull* to diversify the leadership sector. In context of this research on AAs in SCDCs, there are many parallels. As the literature review has shown, AAs tend to be introverts, and are generally naïve about the corporate politics regarding career growth, especially to the executive ranks. This notion is reflected in Dickerson's (2010) research, and the researcher hypothesizes that it might be a trait common to all minorities as they attempt to populate previously privileged groups.

In their qualitative research on the topic of mentoring and Asian scientists and engineers, Mancl and Lee (2015) studied career issues for Asian women aspiring toward management careers in engineering professions, specifically tenure track positions in engineering colleges. They looked at mentoring preferences and processes. Pertinent to the research on AAs in industry, the subjects in Mancl and Lee's research showed similar stereotypical behavior as noted in the model minority portion of this literature review. The conclusion was that mentoring had to be institutionalized, i.e., mentors had to be assigned to Asian aspirants, because their

tendency was to not seek out such *favors*. The subjects saw the process as obligatory, and felt *honored* to be mentored. Being mentored was viewed as a privilege to be earned and thought of as reserved for a privileged few. In their research, Mancl and Lee concluded that formal assignments and institutionalized deliberateness were crucial for successful mentoring, and, when implemented, usually led to successful career projections.

W. Lee et al. (2015) also looked at Asian women in engineering, as well as applicable strategies to recruit, retain, and grow them in the profession. They benchmarked sharing, learning, and implementing practices and compared effective and unsuccessful approaches. Focusing first on recruitment, they advocated a screening process that mimics the personality-trait based approached, as noted by Rothstein and Goffin (2006) and by Viswesvaram and Ones (1999), with similar conclusions that these tests are only one part of a successful career enrichment process. The next topic about retention is closely related to work done by Dickerson (2010), where she advocated mentoring and role-model networks. W. Lee et al. noted that many management aspirants, but especially AA management aspirants, have self-doubt, and thus seek to exit talent pools when they encounter failures. However, an institutionalized mentoring program, coupled with effective mentors (i.e., those who are skilled in motivation and in coaching), can be useful, especially in the context of their subject population. Finally, implementing or institutionalizing such programs so aspirants can be identified and groomed routinely is necessary in order to grow a sufficient population. Their argument is based on a natural selection process where many enter the talent pool, but only a few mature to senior organizational assignments.

Having repeated confirmation from the literature review about what it takes to successfully grow a diverse management pool, the most commonly referenced management

model is Graen and Uhl-Bien's (1995) LMX model. For minorities, and especially for AAs, researchers advocate this personalized approach as most effective. During their academic career, according to Le (2015), AA engineers excelled because the rules for success were well structured. That is, the prescribed syllabi were well defined, as were grading rubrics. Then, in their post-graduate studies, the AA engineers often work closely with advisors, who, over the course of their studies, mentor and coach them through to graduation. Le went on to state that the AAs reciprocate by following the rules, being diligent and rigorous, and generally focusing on the *knowledge* aspect of the task. Acquiring *expert-power* (as characterized by Schmieder-Ramirez & Mallette, 2007), they took on hard problems and prevailed through personal hard work. During their post-graduate studies, the AA engineers thrive in an LMX environment (Graen & Uhl-Bien, 1995). That is, through role-taking, role-making, and routinization, their graduate advisor succeeds in building and sustaining trust and respect. The graduate advisors demonstrate behaviors consistent with coaching, including empathy and patience, while avoiding aggression and sarcasm. These graduate advisors gradually bring students to an inner circle of intimates, where they acquire the expert instructions required for their dissertation and graduation. The AA engineers thrive in such a nurturing environment.

In contrast, in the work environment, according to exhaustive research by Raynor and Ahmed (2013), there are usually no codified rules for success. Companies are focused on profitability and sustainability, and usually promote those who can provide differentiators and can generate revenues. The AA engineers in the corporate environment typically just start out and then settle into individual contributor roles. Lacking any formal mentoring in the prevalent matrix environment, they progress along the engineering ladder, usually capping out at technical specialist ranks. Based on findings by Thomas (2001), AA engineers are often not as skilled in

the give-and-take of the work culture, and often lack the self-confidence characteristics as noted by Goleman (1998) in his work on EI. Le (2015) noted that, by and large, AAs tend toward conflict-averse assignments. Miles (1976) and March and Shapira (1987) both went on to assert that AAs also tended to be risk-averse, meaning that AA engineers usually *go along* (acquiesce) rather than risk losing face through possible setbacks.

Given the constraint of a matrix structure that is pervasive in the SCDCs, a formalized mentoring program with institutionalized mentor-protégée assignments seems to be beneficial to the individual. The LMX model, which seems to cater to minority aspirants, has been cited repeatedly as a successful approach to recruiting, retaining, and growing a diverse management pool.

**Conclusion**

The literature survey included a foundational review of the situation regarding the individual (i.e., the AA engineer) and the SCDI. Building on this foundation, the literature review looked at current findings about motivation, personalities, and management.

Regarding the foundational review, the defense industry has been operating in a single customer market that is evolving to a more international customer base. This marketplace transition is an opportunity for leadership team transition to become more inclusive. Regulatory pressures and natural ethical considerations compete with the pragmatic business interests. Management attitude and actions can generally be summarized as, *it is the right thing to do, but, it must also make business sense*. Inclusion of diversity members in a company's leadership has to be motivated by more than mere altruistic purposes. Despite their percentage of representation in the general engineering core, AA engineers are a reluctant recruits for management assignments. Engineers, as a group, seem to be naïve about connecting early career back-and-

forth tempering that is necessary for the stress of supervisory and leadership assignments. AA engineers are selectively more reluctant because, according to Le (2015), they appear to be less versed in the soft skills as identified in Goleman's (1998) EI traits.

Turning to current research, the current manifestations of bias (regarding preference and selection) seem to be emerging in the form of microaggressions. This subtle form of discrimination is insidious in that it affords plausible deniability to the practitioners. The outcome for the subject population is the same: exclusion from leadership ranks. This is exacerbated by the prevalent matrix management structure, where, in the laissez-faire style, it leaves the structure- and stability-oriented AAs adrift in the corporation. Lacking any role models and formalized mentoring, they tend not to act on their career frustrations, and often realize too late that choices they made in their early careers are key to advancing up the management ladder. The research advocates a mentor-protégée model, along with Graen and Uhl-Bien's (1995) LMX theory. There is some advocacy in the HR community for using such recruiting screens based on personality tests, but also some caution expressed that such screens only identify candidate's willingness and aptitude, and are only somewhat correlated with actual outcomes of career growth.

The research goes on to caution that situations and circumstances also play a large role in career outcomes. The management model that is most widely advocated seems to be an institutionalized approach that includes expert mentors and an allowance to learn from failure. There is scant data specifically on AAs in leadership assignments in the SCDC. Most research findings in the literature survey are based on different populations (often including only women or only considering race, and only occasionally focused on AAs) or industries (i.e., looking at the civil service or just looking at members of academia). However, many are still pertinent as they

echo across many of the findings uncovered in the literature review. The character of the industry and the lived experience of women executives are directly relevant to this research. Furthermore, the studies on AAs and their individual and environmental characteristics are also relevant as part of the self-image and struggle they must contend with in realizing their career aspirations. Finally, the mentoring recommendations are relevant because practice across many similar situations has shown that mentorship is effective in recruiting, retaining, and growing HUP member aspirations in management and leadership.

**Summary**

Chapter 1 introduced the research by framing the lack of AA representation in leadership ranks in SCDCs. The problem is both significant and contemporary because the industry is in transition, and the opportunity exists to make changes. However, significantly, the benefits of a more diverse leadership team, especially one that is inclusive of model minority members, is both ethical and pragmatic. The altruistic benefits are obvious, but it is hoped that, over time, the internationalization of the SCDC marketplace will actually benefit because of diversification in their leadership ranks. Chapter 2 covered the prevalent research in two parts: a foundational part that caught up with why the status quo is what it is, both from an institutional perspective and from individual behaviors and circumstances; and a second half, which addressed current findings on the effective motivation models and methods to move the individual and help organizations to *lace-up*. That is, for change to happen, the individuals and the organization members need to take action and change the status quo.

Chapter 3 follows with the study's methodology, including details about the research method, design, target population, and sampling processes. Chapter 4 presents the results and data analysis. Finally, Chapter 5 summarizes the conclusions of this research.

## Chapter 3: Methodology

This chapter deals with the research methodology. Specifically, in this chapter the research questions are reaffirmed and the ethnographic research procedure described. This is augmented with details about how the research was designed. That is, the target population and related ethics of informed consent and confidentiality are discussed, and the data collection and subsequent data analysis methodology are presented. Finally, this chapter deals with research limitations, validation and credibility.

The area of this research is significant in that it examines the quandary about why some of the best and brightest members of the engineering community (AAs) fail to reach the executives ranks in their companies. Notably, AA underrepresentation in the leadership ranks of the SCDI. There is statistical information about AA underrepresentation (the *what*) in leadership, but scant explanation about *why* they (the AAs) are not included, and virtually non-existent prescriptions about successful strategies for their inclusion (the *how*) in leadership roles at SCDCs. This is because the literature survey in Chapter 2 showed the problem to be multi-faceted. There are clearly *individual* behaviors that affect risk-taking by members of this community, and *institutional* selectivity about who might be suitable as an effective business leader. Exacerbating this question are sensitive subjects like cultural stereotypes, race, bias, and organizational proclivity towards homogeneity. Far from being an altruistic mission to develop an inclusive leadership team, businesses are usually more pragmatic about selecting only those who can deliver results. This selection of leaders is often based on candidates' past performance and reputation (as an indicator of future performance), and also depends on the specifics of circumstance and situation. The problem thus lies in the lack of AA representation in development pools, where management aspirants are tempered and reputations are developed as

managers and as leaders. It is from such talent pools that potential leadership candidates are eventually elevated. The research questions then narrow to *why* AAs do not enter these development pools and *what* can be done to increase their participation in such early career diversification.

**Research Questions**

In Chapter 1, three guiding research questions were raised, and during the literature survey, three supporting hypothesis were generated. These hypotheses sought to understand the reasons *why* AAs are underrepresented in senior and executive leadership ranks, and perhaps, then to suggest *what* can be done to improve the status quo.

RQ1: What are the individual behaviors that affect career progression for Asian Americans in the southern California defense industry? The associated hypothesis (Palich & Bagby, 1995) is that perhaps in their early careers, the AAs choose to stay within the technical ladder, and are thus salaried out of the tempering (more junior) assignments in the management ladder. That is, they might miss early self-selecting opportunities for risk-taking and thus miss valuable career lessons from the early smaller successes and failures. This research investigates causality with this assumption.

RQ2: What are the institutional issues that affect inclusion of diversity in the leadership ranks of the southern California defense industry? The associated hypothesis is that the current leadership members display higher EI traits (Teller, 2011), and if this a reason in their selection. This research investigates if soft skills like situational awareness, standing-out, self-aggrandizing, self-assurance, socialization and networking skills, willingness to engage in positive conflicts, etc.

during the early career is perhaps a prerequisite for selection into, and then success in, the management track, especially in a matrixed laissez-faire environment.

RQ3: What possible strategies are available for the AA management aspirants to successfully reach leadership assignments, and what solutions are available for the leadership team to increase c-suite diversity? The associated hypothesis is about specificity for AAs, or whether the individual and systemic barriers to successful ascension to the C-suite, is generic to all (Campbell, 2015; Clarke-Anderson, 2004; Dickerson, 2010).

The overall positivist bias in this research is that, after an understanding of the problem(s), the prescriptive outcome must aim to improve the career trajectories of the subject population (individual benefit), and that this diversification in leadership ranks must be good for the business (organizational benefit).

**Research Method**

For this research, the philosophical worldview (Creswell, 2009) was that of a pragmatist. That is, the research is problem-centered, real-world practice oriented, and pluralistic. The associated strategy was to do qualitative ethnographic research, including using: (a) use of natural setting, (b) using the researcher as the key instrument, (c) using multiple sources of data, (d) using inductive data analysis, and (e) focusing on the participants' meanings. The emergent design was interpreted through a theoretical lens (Palich & Bagby, 1995), and the interpretation is a holistic account of the phenomenon. The plan included sorting available data on the AA engineering population in SCDCs (specifically at ADC1) for candidates in their early, middle, and late careers for a possible-future and lived-past perspective of their career

trajectories. Once the target population members were identified, the researcher choose to selectively use informal and unilateral versions of personality-trait tests, i.e., purposeful selection (Boyatzis, 2009; Hallenbeck, McCall, & Silzer, 2006) as a gauge for readiness and aptitude, and, then, conducted face-to-face scripted interviews with volunteer subjects. The research was conducted using traditional ethnographical methods (Creswell, 2009) and included: (a) developing the general research questions (and the hypotheses), (b) selecting the site and subjects that are specific to this industry and included volunteer AA engineers, (c) gaining access via solicitation and permission, (d) collecting relevant interview data, (e) interpreting the data using the theoretical and experiential works, and (f) developing conclusions.

**Design Appropriateness**

Qualitative research, using a pilot study preceding the main research, is was deemed most appropriate for this field of study. Furthermore, because scant statistics exist on AAs behavior and attributes of those who are either aspiring to become leaders or those who have become leaders in the SCDCs, quantitative research (which requires numerical data to test hypothesis and to make predictions) methods were not suitable. This lack of data, and lack of access to confidential personnel data (i.e., employee performance reviews, managerial recommendations etcetera) are prohibitive to any statistically significant investigation or interpretation, assuming that such quantitative data even exists in company HR records.

Mixed methods research requires similar availability of data, or an ability to generate such statistical data to support research. Very blended data (i.e., data that blends all minorities into one group, from which it is not possible to extract AA-specific information), or broad statistical data (i.e., data that includes all industries, and is not specific to SCDCs) is of little use for this research, as it blurs the applicability of the findings to the specifics of AAs and

leadership assignments in SCDCs. This industry is unique in that it exists under a single-customer model (the United States government), and has a citizen-only prerequisite for employment. The statistical fact of AA under-representation in leadership ranks is a starting fact for this research, but the real focus is in understanding the underlying reasons for this under-representation.

This qualitative research focused on the phenomenon of AA under-representation, and sought to interpret the situation in the subjects' own meanings. While this type of research (qualitative) creates an altruistic change agenda, the strength of a qualitative approach is to extract interpretations of the data that address both sides of the issue: individual preparedness and their perceptions of institutional willingness. Furthermore, the face-to-face interview style was chosen to elicit feelings that may identify the basis for the disproportional membership. The open-ended questions were most appropriated for a guided investigation into the behavior of the subjects (the AAs) and of their perceptions of the corporate environment. Change, it is hypothesized, *begins with the individual*, where M. Gandhi (1930), in reference to India's struggle for independence noted that it's not superman who will lead us but, one amongst us. President Obama (n.d.) echoed this in a speech, stating, "Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change that we seek" (p. 3).

**Target Population**

This study was conducted at a SCDC (ADC1) with AA employees who, after solicitation, volunteered to participate. Some purposeful selection, using informal and unilateral personality-trait tests, was used to pre-screen the group for face-to-face interviews. Because the study focused on the perspectives of AA engineers with past or future C-suite aspirations, the criteria

for selection included the results of an informal personality-trait screen. Out of the researcher's convenience, demographic boundaries focused the research on SCDCs. However, to some extent, some of the conclusions could be applied to AA populations, regardless of location within the U.S.

**Sampling Methods and Related Procedures**

The sample for this study consisted of approximately 300 AA engineers in ADC1's southern California site in their early and later career stages from the pool of approximately 1,100 engineers who self-identify as AA engineers in the ADC1 in various locations across southern California (data obtained from the ADC1's Asian Pacific association [APA] Employee Resources Group [ERG] membership rolls, and connecting that with published company organizational charts). This convenience selection approach was adopted to facilitate the face-to-face interview phase of the research. From this group, a smaller random group of 50 individuals was solicited to voluntarily participate in the research. Fifty agreed to participate. Data from ADC1 indicated that approximately 300 AAs are in their late career and thus, approximately 800 are in their early career.

A further slicing using 10/90 factoring was done to randomly pull out a five-person pilot group of participants (10% of 50), which was used to validate and refine the interview script and collect improvements prior to the actual field data gathering effort. The pilot study was followed with the main group interviews and included 15 (30% of 50) members of the AA engineering community members who volunteered to participate in the study.

**Ethical Issues, Informed Consent, and Confidentiality**

The researcher's personal brand of ethics is utilitarian, i.e., taking those actions that yield the greatest good for the greatest number. Furthermore, to specifically avoid defense industry

time charging-policy violations, for the researcher and for the subjects, all face-to-face interviews were conducted during lunch or after work, and never during work hours or on company premises. As stated earlier, the research was focused on finding the correlation behind AAs' lack of inclusion in the leadership ranks at SCDCs, and individual and organizational behaviors. However, the research strove to do so in such a manner that no harm would come to the individual or to the institution(s). The data gathering was thus non-attributional to the individuals or to the SCDC that was used as the representative organization.

Before the research was started but after IRB exemption was granted (Appendix A), the researcher took the necessary steps to protect the human subjects. All subjects are above 18 years of age and all voluntarily participated in the research. No monetary gifts were offered to subjects to participate in the interviews, nor did the researcher try to gain participants' approval to take part in the study by misleading them. All subjects signed an informed consent document.

The researcher solicited volunteers using a cover letter outlining the research objectives, and providing explicit instruction on what the research process would be. The solicitation letter gave volunteers an opt-out option any time during the study and indicated that any data gathered would be non-attributional. Each potential respondent signed an informed consent form, a copy of which can be found in Appendix B. The consent form clearly stated that participation was voluntary, there were no incentives or penalties associated with participation, and the participants could choose not to participate or withdraw from the study at any stage of the research without consequence. Furthermore, to preserve anonymity, all names and any other identifiers were deleted from the 45-minute face-to-face interview transcripts. The solicitation period lasted 2 weeks, during which the researcher again requested participation in hopes of increasing the

acceptance rate. As stated previously, 50 respondents agreed to participate in the study. Out of these subjects, 10% (five people) were purposefully segregated for the pilot phase of the study.

**Instrumentation**

Three different instruments were used to conduct this research: (a) an initial demographic screen of the ERG data to find AAs in early, mid, and late career stages; (b) an informal, researcher-conducted personality screen based on estimated DISC profiles of the volunteers; and finally (c) a face-to-face scripted interview. The initial demographic screen (similar to techniques used by Leedy and Ormrod, 2001) relied on HR data and ADC1's APA ERG membership name list to find the approximately 1,100 engineers who self-identify as AAs, out of a total engineering population at ADC1 of approximately 6,000 engineers. Using the *directory services* address sort, the researcher narrowed this list to approximately 300 at ADC1's southern California campuses. Further sorting was done by arbitrarily picking approximately 50 AAs as subjects known to the researcher for the study.

Then, the researcher conducted informal personality screening, relying on pioneering work done by Spencer and Spencer (1993), who listed various leadership competency characteristics. Similar to Goleman (1998), these included (a) motives, i.e., *why*; (b) traits, i.e., behavior; (c) self-concept, i.e., their values and self-image; (d) knowledge, i.e., subject knowledge about the business; and (e) skill or the subject's ability to perform the task of leadership. In order to gauge respondent aptitude for management assignments, the researcher chose to make use of standard and ease to use online tools, and estimated respondent DISC personality profiles (www.123test.com). This researcher-estimated approach was possible because the respondents were known to the researcher. There is some research basis for such stratagem, and researcher used techniques as noted in Rothstein and Goffin (2006) for estimating

the DISC traits (dominance, influence, steadiness, and compliance). While no one trait-type is a necessary characteristic for leadership, the use of this informal version of personality tests to identify trait types helped diversify the type of leadership styles represented by the respondents. The objective was to select a varied group, with assumed varied traits.

The final instrument for the research was a script to guide the (approximately) 45-minute face-to-face interviews. Here, the interview guide followed Creswell (2009) to explore the barriers, tactics, and strategies needed on their career path. It was felt that a guide (script) was necessary to stay on-track during the interviews, while still allowing flexibility to explore the subject area.

**Interview questions.** This consisted of three parts (S. Gandhi, 2009): (a) the warm-up questions about background, career progressing, and motivation; (b) the specific questions about their barriers and enablers for career growth; and (c) the behavioral questions related to risk-taking and EI traits like positive conflicts.

A. Section One – personal background, career progression and motivation questions
    1. Why did you choose to be an engineer?
    2. How has your career progressed so far?
    3. What are your measures for a successful career?
    4. What are your impressions of the qualifications and characteristics of a senior manager & leader in this company?
    5. Why do you want to be a ‘business’ manager (and/or a leader) at this company?
    6. Describe what in your opinion are the aptitudes and credentials required to be a successful manager/ leader at this company?
B. Section Two – career barriers and enablers

7. Describe some of the barriers that you've faced in your career so far?
8. In context of leadership aspirations, what are some of the barriers you've faced in joining the management pool, and in developing the required management skills and attributes?
9. What are some institutional, environmental or other enablers that have helped you in your career progression?
10. In your opinion why are there so few Asian Americans in senior management of leadership ranks at this company?
11. What, in your opinion should be done by the individual (you) and by the organization (company) to enable more AAs to successfully aspire to the leadership ranks?

C. Section C – behaviors and EI traits

12. Do you think you are unique (different), and how does that manifest as discriminant behavior (positive or negative) in your career aspirations?
13. How would you describe 'soft skills' traits in yourself, like self-aggrandizement, self-assurance, socialization, risk-taking, assertiveness, engaging in constructive conflict, etcetera…? And, how important do you think these are for a successful leader?
14. Anything else you would like to add – as either prescription or as caution to colleagues with similar aspirations?

**Data Collection**

IRB exemption was granted in early March 2016, and target population sorting, solicitation of volunteers, and arrangements for interviews were also done in March 2016. The

sorting and screening parts of the sample-size and target population were fairly routine. Candidates were identified using data from published organization charts, using last-name criteria. Then, using name lists from ADC1's APA ERG and Directory Services' data, the researcher sorted for AA engineers in the company's southern California campus. The solicitation was done informally, using word-of-mouth and personal contacts to request participation. Once the test population members were identified, the five-person pilot group was purposefully selected as 10% of the volunteers. The 45 minute face-to-face interviews were conducted off-site, either in a nearby cafeteria or at a nearby restaurant. The actual interviews were conducted in early March (pilot group) and mid-March 2016 for the main group of subjects. Interview transcription and data analysis was performed during March 2016. Chapter 4 and Chapter 5 were written in late March 2016.

Extensive use of Saldana's (2009) coding manual guided the first and second cycle of coding. During the first cycle, the researcher used in-vivo coding to develop a code list for categories and sub-categories. During the second cycle (thematic extraction), in order to develop the core category, the early career volunteers were sorted from the late career respondents to generate a longitudinal view of the research topic, etc. This integration and triangulation (i.e., the link between cause and effect) yielded an individual and organizational frame for discussion of the findings, and was used to validate some of the hypotheses associated with the research questions.

**Limitations, Validity, and Credibility**

The main issue with regards to limitations addresses the consequences of how this research was bounded. The research was narrowly focused on the underrepresentation of AA engineers in C-suite roles at SCDCs. Furthermore, confidentiality concerns and the

organization's concerns about granting access to the researcher for such a study limited the research to volunteer subjects, who were assured that their inputs would be non-attributional. The data were collected during March 2016, and are somewhat specific to this time frame. The SCDI is undergoing transition from a domestic-only customer to increased portfolio of international customers. Many of the findings are tempered with job-security themes and uncertainty about the pending change in administration after the U.S. presidential elections in fall 2016.

In looking at the validity of the research, the core concern is whether this research is valid for the scope of the research? That is, could the methodology and findings be extended to other situations? First, it is important to consider sample size: out of (approximately) 13,500 employees at ADC1, approximately 6,200 are engineers. Out of this, about 1,100 are self-identified as AAs. Approximately 300 work in the southern California area campus. A sample of 50 candidates (known to the researcher) was identified from these 300. Actual purposeful screening, testing, and interviews were conducted on 20 volunteers. As ethnographic research, this is deemed to be a sufficient sample (Mason, 2010).

This paragraph addresses the credibility of the findings, by asking if these are these a true representation of the lived experiences and aspirations/ impressions for the research subjects? Furthermore, will this help to increase their membership in leadership roles? Each individual is unique, shaped by his/her background, experiences, expertise, and attitudes. This research looked at AA underrepresentation in leadership at SCDCs. After that narrowing, and given the sample size and the specificities of time and place, the findings were deemed valid for the purpose of the research. The objective was to discover why AAs are underrepresented in leadership roles, and

what might be done to increase their participation rates. The research findings accomplished this objective.

## Data Analysis

**Pilot study.** A pilot group consisting of (approximately) 10% of the volunteers was identified to practice the script and to refine the interview logistics. These candidates were selected purposefully (Coyne, 1997) out of the volunteer pool based on their ability represent a spectrum of inputs. Face-to-face interviews were conducted, to flesh-out the logistics and to anticipate the interview dynamics, prior to the main study. Content validity was obtained through literature review (S. Gandhi, 2009) and generally confirmed the approach for addressing the research questions (and their associated hypotheses). Interview scripts, audio-recording, and note-taking logistics were adjusted as a result of this pilot study.

**Final study.** The final study followed the pilot study, and benefited from the practice provided in the pilot. The researcher was better able to steer the discussion, and better able to stay on track. The in-interview audio-recordings and note-taking were also simplified by capturing the key words using a list of code words developed in the pilot. Both the pilot data and the main study data were non-attributional, and the audio-recording transcription was aided by using the researcher's shorthand notes and memory.

## Summary

This chapter described the research design, setting, sample size, participant selection, and related logistics on data gathering. Specifically, it discussed the development of the interview script for the face-to-face discussions. This was a focused study about AA underrepresentation in leadership ranks at SCDCs. The research methods relied on the lived experiences of the subjects as they discovered the individual and organizational behaviors and circumstances for career

advancement. It may be tempting to generalize this study to all C-suite aspirants, especially any engineering aspirants on the management ladder. However, such generalizations must be made with caution. It might be true that many engineers are lacking in soft skills needed for successful career trajectories in management and leadership assignments (Alden, 1974; Cerri, 2015), but the AA aspirant brings some unique attributes that are specific to his/her career progression. This research explored if their underrepresentation is due to how they present themselves and how the organization perceives them, perhaps as possible leaders.

The initial population sorting and purposeful-selection screening was used as a method to narrow the volunteer field, and to make the research feasible within the constraints of time and budget. Validity of this sample and its pertinence to the breadth of this research are tied to this constraint. However, face-to-face interviews are an established (Creswell, 2009) method for qualitative research, and the coding techniques also have basis in Saldana's (2009) work.

The next steps in the research were the preliminary examination by the doctoral committee, and an IRB authorization to proceed. Chapter 4 restates the research questions and their associated hypotheses, and presents the data from the pilot study and also the main study, which incorporated updates to the interview script. Chapter 5 presents the research findings and their implications for possible action.

# Chapter 4: Results and Analysis

This chapter presents the findings of the research conducted after obtaining exemption approval from the Pepperdine University IRB (Appendix A). The application for exemption was sought primarily because all subjects are adult volunteers, and could opt out of the survey interviews at any time in the process. The interviews were mostly audio recorded, and all personal identification information was stripped to maintain subject and employer confidentiality. All participants were convenience sampled from a self-identified population of AA engineers working in the SCDI. A pilot study consisting of five subjects preceded the main study consisting of 15-subjects. This chapter replicates the research questions from Chapter 1, and provides representative responses and cursory analysis for the 14-open ended interview questions posed during the pilot and main study phases of the research. Further detailed coding (round one is in-vivo coding) and thematic extraction (round two using KWIC, key words in context, and also metaphors and analogies; Gläser & Laudel, 2013), and linkage to research questions is done in Chapter 5. The pilot and main-group responses are kept separate in this chapter. The respondents had some apprehension regarding audio-recording, and confidentiality. All personally-identifiable information was deleted from the transcripts, and to further the sense of anonymity, participant descriptions are provided *after* the section on main-body interview responses. The chapter thus concludes with this demographic summary of the pilot group and main study participants, and compares them with the larger population of AAs in this industry.

## Research Questions

The research questions developed in Chapter 1 are restated subsequently. In Chapter 1, three guiding research questions were raised, and during the literature survey, three related hypotheses were generated. The research sought to understand the individual *and* institutional

reasons *why* AAs are underrepresented in senior and executive leadership ranks in SCDCs, and then to suggest *what* perhaps can be done to improve this status quo.

RQ1: What are the individual behaviors that affect career progression for Asian Americans in the southern California defense industry? The associated presumption (Palich & Bagby, 1995) is that perhaps in their early career, AAs choose to stay within the technical ladder, and are thus salaried out of the tempering (more junior) assignments in the management ladder. That is, they might miss early self-selecting opportunities for risk-taking and thus miss valuable career lessons from the early (smaller) successes and failures. This research investigated causality with this assumption.

RQ2: What are the institutional issues that affect inclusion of diversity in the leadership ranks of the southern California defense industry? The associated conjecture is that the current senior leadership is probably completely neutral, and only aspirants who display strong EI traits (Teller, 2011) are likely picked for the management leadership pipeline. This research investigates if soft skills like situational awareness, standing-out, self-aggrandizing, self-assurance, socialization and networking skills, willingness to engage in positive conflicts, etc. during the early career are perhaps a prerequisite for selection to, and then success in, the management track, especially in a matrixed laissez-faire environment.

RQ3: What possible strategies are available for the AA management aspirants to successfully reach leadership assignments, and what solutions are available for the leadership team to increase c-suite diversity? The associated hypothesis is that such strategies are generally also applicable to any C-suite engineering aspirant

regardless of demographics (Campbell, 2015; Clarke-Anderson, 2004; Dickerson, 2010). The research attempted to differentiate what may be AA-specific issues, and what may be general engineering-aspirant issues related to career growth. The overall objective of this research was that, after developing an understanding of the problems, the prescriptive outcome aimed to improve the career trajectories of the subject population (individual benefit), and that this diversification in leadership ranks must be good for the business (organizational benefit).

The research process included a pilot study of five individuals who were purposefully selected (Coyne, 1997), and a 15-person main study, based on a convenience sampling from a pool of approximately 50 individuals who expressed interest in participating in the research interviews. The interviews were face-to-face, one-on-one discussions with 14 questions divided into three parts (S. Gandhi, 2009). These included: (a) the warm-up questions about background, career progress, and motivation; (b) specific questions about their barriers and enablers for career growth; and (c) behavioral questions related to risk-taking and respondents' EI traits. The interviews delved into participants' unique background, barriers, and enablers encountered during their careers, and their perceptions of the behavioral expectations for/of senior leadership. The interviews were conducted in March 2016, after obtaining Pepperdine University's IRB approval, and responses from the pilot and main study are noted in the next section.

**Pilot Study Data**

During the pilot phase of the study, five individuals from the subject pool were selected to flesh out the interview mechanics and test out the question clarity. All respondents were selected purposefully to provide a more rigorous overview of the research topics and process. The pilot phase allowed the researcher to vary setting (library versus coffee shop), recording

(audio versus in-interview note taking), and interjection (to explain questions and elicit meaningful responses). Audio recordings were done with respondent permission, and only one respondent declined the use of an audio recorder. All interviews started with some informal chit-chat, and with respondents signing the informed consent forms.

The pilot group (identified as PGR1 through PGR5 – Pilot Group Respondent #) was also selected to increase sampling variation. By coincidence, all five pilot group members were males. The 14 open-ended questions were broken into three groups, allowing for a natural break in the conversation while enabling an enhanced flow and focus during the interviews. This allowed the researcher to use the same script of questions, simultaneously allowing the respondents to answer the questions candidly. The respondents had preview versions of the interview questions.

**Section A: Personal background, career progression and motivation questions.** Questions one through six were designed to determine individual backgrounds, motivations, and characteristics.

***Interview question 1*.** Why did you choose to be an engineer? The purpose of this question was to ascertain initial professional aspirations and allow the respondent to share some early personal background about his/her career journey. All respondents spoke of family expectation during their high-school years, and the sense of pride they experienced by gaining entry into high-ranked engineering colleges. Uniformly, they went on to comment on family traditions (and pressures) for a job-oriented education. They also commented about their solitary college experiences, where they shunned college life social distractions as they were expected to maintain their record of high grade point averages (GPAs). Respondent PGR5 was typical of the group. “My parents expected me to be an engineer (or doctor). I was good in technical subjects. No other field attracted my attention. I was basically a nerd all through my college and post-

graduate studies." Many elaborated, stating a need for an education that would assure employment immediately after graduation, and ensure steady employment throughout their career. Many also mentioned a family tradition where their father and siblings were also engineers.

***Interview question 2.*** How has your career progressed so far? The purpose of this question was to start their introspection regarding their choice of careers and about choices, aspirations, and results of their career efforts. Again, universally, all respondents talked about the need for financial security, which led them to this industry that is generally immune to out-sourcing (and could lead to layoffs) and has a tradition of well-paying jobs (Kinney, 2014). They mentioned that generally they had no specific career goals beyond employment. They also spoke about wanting a large measure of technical challenge in their jobs; however, most admitted that this was likely a carry-over sentiment from their studies, where they were engrossed in technology. All respondents in this pilot group had post-graduate engineering degrees. In this pilot group, their career durations varied from 15 years to 35 years, meaning that they were in the middle to late portions of their careers. PGR2 summarized the general sentiment of the respondents.

> Ambition? No, I was security oriented. Wisdom of the day was to stay for 5-years and then jump to avoid salary compression. A number of folks did that. I got into interesting work. I was rapidly promoted early in my career and that convinced me to stay. I had rapid early growth, got commensurate high salary, and lots of accolades. I liked being an engineer. I was good at being an engineer. I never had desire to *step-sideways* to do a *business* assignment.
>
> As regards a career change, that is, stepping back doing something else. No, I didn't want to do that. So, perhaps, I missed out on the early career success & failures that perhaps others may have benefited from.

This statement was both profound and prophetic. The researcher had shared the interview questions beforehand, as part of the informed consent process, so the respondent knew that the

topic would shift toward why they may not be proportionately represented in leadership ranks. PGR2's response pointed towards an introspective answer regarding why he (and also they) did not progress further in his career trajectory. Part of it was also that the respondents were now reconciled with the careers they had experienced, and drew satisfaction from achieving their primary objective: to have good paying jobs and steady employment so they could take care of their families.

***Interview question 3*.** What are your measures for a successful career? This interview question was meant to have the respondent define his/her meaning of *success*, and then, to reflect back to their earlier answer to question 2 regarding career progression. The intent was to have the respondent tie their career journey so far with what they think success is. The pilot group responses were generally similar, seeming to confirm a cultural stereotype about AAs. PGR4 (quoted subsequently) was most articulate, and well captured the sentiments of the group when he talked about how he measured success beyond rank and salary. Most respondents emphasized personal satisfaction, and personal fulfillment beyond what the noted behavioral psychologist Abraham Maslow defined as basic physiological and safety needs (Robbins & Judge, 2011). The respondents verbalized what is defined by Maslow as the highest level in his hierarchy of needs – what he calls self-actualization.

> I look for organic satisfaction that is beyond recognition and salary. But I do track how I am compensated. And, I have strived for growth. In my opinion, most Asian Americans typically do not think of rank and salary as a first priority. To me success is, to do what you like to do, and, to do the best you can do. And, hopefully to get recognized and rewarded appropriately. I also think intellectual challenge and respect at work are strong measures of career success. Are you challenged in your work? Are you held in high respect by the people you work with? That's what I think, and I think that's what most Asian Americans think when you talk about career success.

The uniformity of the general response by the pilot group was striking. In this group of middle and late career respondents, there seemed to be a Zen-like approach to career success

measures, where the focus was not on personal growth as measured by outward rank and salary, but instead inwardly measured by an individual personal yardstick emphasizing satisfaction. Instead of revising their answers to question 2, the answers to question 3 seemed to *double-down* on the realities of their career situations.

***Interview question 4*.** What are your impressions of the qualifications and characteristics of a senior manager & leader in this company? This question began to probe the respondents' outward views success: in this case, to reflect on the behaviors and qualifications of the people who are organizationally senior to them in career rank. It seemed, that most respondents did not *look up:* that is, did not have critical long-term observations of senior leadership. The pilot group respondents ranged from RBP level 2 to RBP level 5 (the RBP level is the number of *ranks below the President* of the company), yet surprisingly, had only fleeting impressions of the characteristics or behaviors of their superiors. This appears consistent with their responses to question 3, where their measures of success were mostly internal. When pressed to be critically observational, PGR1 was most articulate.

> I think it's the ability to get other people to do work. To be able to realize their vision. They may not always be successful, but, often are 'Teflon' such that failures and obstacles are not personally identified with them. I think that's the secret. The decision may not be popular, or even right, but they get team buy-in. Leaders always say, "*we* have a problem. How are *we* going to fix this?" They seem to come at it with process, and seem to be able to organize and are able to say, "This is how we'll address the situation." They take the reporting and organizing tasks. I seem to appreciate that – as I like to solve the technical issues. And then, when the problem is fixed, they claim that "*I* led the people. *I* achieved this result." I'm not jealous, because I enjoyed the challenge in the problem.

This dynamic seemed common amongst the pilot group respondents. Most shared a similar behavior, where they disliked and thus avoided the organizational and communications chores, and seemed satisfied as long as they were engaged in the technical scope. Only after further conversation did the respondents start to reflect on comparing their soft skill traits (again,

the respondents had read all the interview questions beforehand, so they could readily relate to the context and use of keywords). While it was not an *ah-ha* moment, these middle and late career engineers noted that their career were what they were because of the tactical and situational choices they made. Over several such episodes, they admitted that their career preference was to seek technical challenge repeatedly.

PGR2 went on to say that "being the brightest bulb" was not a necessary criterion for leadership. It was instead "an ability to make decisions," especially when there is insufficient data. He noted that his personal preference was to be "more sure" before venturing even an opinion.

***Interview question 5*.** Why do you want to be a "business" manager (and/or a leader) at this company? This question evolved during the pilot phase. The original presumptive "*Why* do you want…" was changed to a more general "*Do* you want..., and, *why*." Here, the respondents were fairly pragmatic about the reality of their career trajectories. They may *have* wanted such roles at one time, but none actively *wants* such a role at this time. When pressed, to correlate with their answers to question 2, they concurred that their careers, as PGR2 said, "Just happened," rather than through any deliberate effort. The thought of being a *business* manager, i.e., a manager with profit-loss responsibilities, was not generally a career objective for the participants. The most complete answer was given by PGR4.

> I came here to be fully engrossed in the "business" aspects of the business. I have aspirations, but, am more tempered now. There are very few opportunities I'd actually act on. I've stopped looking – because I know I'm not that person. I don't have some attributes – to be emotionally removed from the people. I find that concepts like inclusion etc. are not lived out in the daily lives of our executives.
>
> I don't claim to be Mother Theresa – but I'm in the lower end of the folks who give stress. I think sometimes my bosses "expect me to be a SOB." I'm just not comfortable being that. So they don't know how to deal with me.

This self-selection out of the leadership track was a fairly typical response, and consistent with the previous answers. The pilot group chose not to chase the brass ring because they associated leadership—especially senior leadership with the tougher kinds of soft skills (like self-aggrandizement, engaging in conflict, and assertiveness)— with behaviors uncharacteristic of their identity. In fact, they expressed a desire for the opposite side of these soft skills, i.e., team credit, conflict resolution, and consensus seeking preferences.

***Interview question 6.*** Describe what in your opinion are the aptitudes and credentials required to be a successful manager/leader at this company? This question further probed participants' personal career desires, and tied with question 4 to discover what it actually took to successfully climb the corporate ladder. Given that the responses to question 5 indicated a lack of motivation to pursue such trajectories , the responses were more hypothetical, and generally painted the successful aspirant's aptitudes and credentials negatively. After further conversation, more balanced answers appeared, simply reflecting the general lack of personal investment in such aspirations. Here, PGR2 was most articulate and comprehensive, and generally covered the opinions expressed by others.

> In a technology and defense company like ours, to truly be successful, a leader needs some amount of technical understanding, but not necessarily be deep in the domain. "Sort-of" knowing is sufficient. A successful aspirant needs to demonstrate a leadership style which can leverage experts. They are a stronger contributor than simply a technical expert. Because that leader can integrate these experts and forge a successful path forward.
>
> Also, I think, there has to be persistent drive. To be successful, you have to want it. You have to continually want it—even if you occasionally get set back. I think those who succeed, try and try again. They sharpen their skills to monitor and overcome their or organizational weaknesses.

The last part of PGR2's answer was consistent with several others' responses. Their conclusions were that, without persistent motivation and a willingness to sacrifice, successfully

reaching the top management echelons does not happen. Others mentioned, as PGR5 noted, a "deliberate serendipity," where they meant that career success is also, as PGR1 said, a "matter of chance. Being at the right place at the right time." However, participants had to want the promotion nonetheless, so when opportunity did come, they were available.

Another overtone emerged about those who are successful in their management aspirations. A majority of the pilot group respondents coined similar code-words seen as institutional realities. PGR3 was clearest about this institutional reality. He stated, "You gotta be White. The reason is simple, because all our customers and government staffers are White. And, you've got to be one to deal with one. They are not diversified. They talk the talk, but they are not." This sentiment did not mean there is any overt racism in the organization: in fact, far from it. At their peer level, they all went to great lengths to explain that they never witnessed or experienced any discrimination. They felt it was more subtle. PGR3 called it by the popular term, "microaggression," meaning that it is real, but never something that one could point to. As he stated, "It's just a reality."

**Section B: Career barriers and enablers.** With the self-examining questions concluded, the interview shifted to institutional topics and respondents' perceptions about enablers and barriers. Again, it seemed that, even with this purposefully selected pilot group, the respondents had not thought deeply about this aspect of their career. Some had been in possession of the interview questionnaire for several days before the interview, but even then, still seemed to search for answers.

***Interview question 7.*** Describe some of the barriers that you've faced in your career so far? The pilot group respondents were all males in the middle or later stages of their careers, and tended to answer questions 7 and 8 (presented subsequently) together. It was only with a bit of

clarification that the respondents were able to differentiate their general work experience (question 7) from their career aspiration experiences (question 8). The initial set of responses were about respondents' entry in the profession and early career, and then later, about their middle career. The general experiences were all positive and similar. All held post graduate degrees, often from prestigious institutions, and all were recruited by their employer before graduation. PGR5 said it best, and generally captured the essence of the replies from the other respondents.

> I had a PhD from XXXX, and was offered a job long before I graduated. That was 30 years ago. I remember, ADC1 offered me such a ludicrously high salary that my advisor, could not believe it. He used to boast that I was his brightest and highest paid PhD.
>
> At work, I found the people I worked with were smart, and likeable. I enjoyed the work, and worked hard at challenging and stimulating problems. I was recognized as a HiPot [high potential employee], and was rapidly promoted during my early career. Eventually I was cleared and I was able to work classified programs. This opened more opportunities for me, and I got a chance to work on even more fascinating technology. For several years I was fulfilling my every ambition career wise and salary wise.

The general responses were similar: aggressive recruiting, high pay, exciting work, good work surroundings, and good people to work with, coupled with rapid promotions up the engineering ladder. No barriers were mentioned.

***Interview question 8*.** In context of leadership aspirations, what are some of the barriers you've faced in joining the management pool, and in developing the required management skills and attributes? As the interview questions shifted to respondents' career progression and their professional experiences in meeting their aspirations, responses to question 8 had to be separated deliberately from responses to question 7. Again, since the respondents generally expressed no active career growth aspirations, responses to this question were more reflective of a time when they did have such aspirations. Here too, some respondents mentioned that their early aspirations were related to steady employment and challenging work. Furthermore, their early rapid

promotions met or exceeded their career goals. In terms of specifics related to plateau-period career goals and any barriers that they encountered, the responses were best summarized by PGR2.

> After a few years in the company, I was in a position where I was most technically needed. My own nature was that I didn't venture to unfamiliar domains. Subsequently, I often felt I was indispensable, and felt pressure to stay in this domain (i.e., technical expert in xxxx technology). Had I pushed, there may have been other opportunities, but I was content with what I did. I think, even if I had ventured to other tasks and domains, I doubt if I would have turned out differently. Despite my early career growth, and early designation as a HiPot, I feel that I'm no shooting star as far as career.
>
> The path to VP is not through excelling in technical domains. You have to be a manager of people and products…instead of doer of tasks.

This feeling of plateauing was expressed by several of the pilot group respondents, who all generally commented on early career growth and feelings of expert power (French & Raven, 1959). This seemed to be consistent with their answers to questions 3 and 5, where their general measures of a successful career were not rank and salary, but instead technically challenging work and a feeling of fulfillment in accomplishment. Again, no barriers were mentioned despite the researcher's efforts to elicit specifics.

***Interview question 9.*** What are some institutional, environmental or other enablers that have helped you in your career progression? The respondents were ambivalent about the in-place institutional enablers. These included employee resource group (the same place where they self-identify as AAs, and from where the researcher first obtained the name list of potential interview subjects), company management clubs (which provide members socialization opportunities with upper management), mentoring programs, diversity and inclusion initiatives, and various forms of affirmative action programs. Most of the respondents acknowledged that these programs existed and were available, but, from personal experience, participation in such forums did not yield any benefit other than socialization. Several pilot group respondents admitted that they

once belonged to such minority and aspiration groups, but had stopped being active years ago. Most felt the enablers were effective, as PGR2 put it, "If you really want it," but merely casual participation was ineffective. The most comprehensive and critical summary was provided by PGR1.

> First and foremost, you have to "want to be a manager." I mean, you have to be comfortable "getting others to do work for you." The first enabler is you yourself. In a push-pull environment, to grow, you have to push as much as someone has to pull.
>
> Then it's mentors. And, well, they certainly help. Especially young engineers who are new to the matrix, and may be lost. Well, at any point in our career, it always helps to have a coach. To be able to partner-up with someone more experienced. Help with initial learning, to speed up coming up to speed. I think the mentors are effective if both sides are committed. I mean, I'm committed, but, my mentor is just going through the motions. It's all informal.
>
> Then, it's someone taking a chance on you. I mean an individual, someone, who gives you that initial investment. I mean, someone has to take a risk in you. To have enough trust in you. Getting that first break was not easy for me.
>
> I don't know if there are any effective enablers for U.S. Asians. We are generally too passive, and when we do get noticed, we tend to mumble abut team and then super modestly about our accomplishments and contributions. Well, we just don't stand a chance against others who are more out-spoken, and are more adept in navigating the workplace politics.

PGR1 was unknowingly resonating with a literature survey finding about chaos theory (Levy, 1994), where organizational change is initiated because of an unusual event. In this case, as PGR1 stated, "Someone taking a chance." This topic seemed to open up the conversation regarding the lived experience of the AAs. The respondents talked around their career aspirations, but when asked specifically about why they may have plateaued, they genuinely searched for reasons. This introspection emerged as a preview of the key research findings: about individual motivation and about institutional enablers.

***Interview question 10.*** In your opinion why are there so few Asian Americans in senior management of leadership ranks at this company? This question was the heart of the interview,

and focused directly on AAs' lack of participation in leadership ranks. The prior line of questions laid the foundation for the respondent to reflect on his/her lived experience, and then to generalize it against the backdrop of statistics (shown in the demographic tables at the end of this chapter). When the researcher showed data and pointed out the minimal leadership-assignment participation rates by AAs, the respondents became quite expressive. At the core of the answers was the feeling that it is not an easy topic to unravel. The respondents noted that these are mixed reasons for low participation rates, involving the individual (and individuality), and involving an institutional passivity, where they felt that there is no active pull for this demographic group. The summary sense was that the AA individual is not persistently motivated toward career growth, and the institution does not actively seek out any demographic member for advancement. With a passive individual and a passive institution, there was simply no push, and no pull. PGR1's comments captured the general summary of responses.

> You need leaders, and you also need workers. Not everyone can be "chiefs"…you also need some "Indians." I think AAs prefer to be "Indians." But a lot depends on the individual. We're after all unique. AA are more consensus building as opposed to the hard charging…go out and tell someone to do this/that…we're more team builders. We want to do things together. Non AA are more individualistic…willing to break a few eggs. But some AAs are also willing to break a few eggs—but we're not as effective. We tend to be more bookish type, study, rather than act-out.

> Security clearance is a sort of general topic…where folks have used that as a barrier to keep you out. If you don't have that clearance, then you can't come in. And, if you're not part of the clique…then you can't get it either.

Some expressed another tone. It was first voiced by PGR3 in response to question 6, but also echoed by others including PGR5, who noted,

> Maybe the BoD [board of directors] is looking for certain demographics. Asian are not considered as a minority—not recognized as a minority group. Other ethnic and gender groups are counted, we're not. I don't believe in quotas—I mean giving the "White privilege" to everyone, but, the reality is that for U.S. Asians, there is a glass ceiling.

> Because we're never, it seems, the right person at the right place. Often the leadership roles are not advertised, so, often we don't even know there is an opening for U.S. to strive for. Leaders, it seems, are always "appointed." You cannot compete…and they are not actively seeking a sub-group member. All this talk of "diversity" is just talk.

This critical look at management practices may be feigned, or may be a natural progression from the line of questions. The researcher is a member of the AA community, so perhaps it was an empathic opportunity to vent previously unspoken feelings. Or, perhaps, it was indeed a genuine perception by the pilot group respondents regarding AA participation in leadership ranks.

***Interview question 11.*** What, in your opinion should be done by the individual (you) and by the organization (company) to enable more AAs to successfully aspire to the leadership ranks? This question was an attempt to break the seemingly negative reflection by the respondents, who seemed to have slowly drifted from being satisfied with their job and career, to latent feeling of frustration about an institution where there were impediments to their career aspiration. Question 11 was placed as a curative question: to have the lived experience of the respondents serve as a guide to the aspirants and to the institution leaders where they work. This strategy worked, mostly. The respondents were all successfully able to change from reflective to prescriptive mode, and were able to offer constructive advice to effect change for others. Universally, they all started with saying, "It's too late for me, but…" (PGR2). PGR4's comments were directed towards the individual and PGR3's towards the institution leaders. PGR2 stated,

> I think the individual must strive for it. I think from the start, I'd say that "young man, what do you want?", and "what is your plan to get it?" Once you have a plan, then, assess yourself, and if you need help, find a mentor, to help you assess yourself. Fix your gaps, in the soft skills that are needed to thrive. You have the skills to survive, but to thrive, you need different skills. Take risks. Get comfortable with being uncomfortable. Seek out stretch assignments in business and marketing. Talk about yourself, boast about your contributions. Push for your goals. Be super best. Get noticed, so you get clearances early, and can start dealing more with customer care-abouts more directly.

PGR3 offered,

> For the managers and leaders, I would suggest, to organically feel that diversity is helpful to the enterprise. More than complying with regulations, these are some of the best and brightest, but, like diamonds, they are buried. First, I'd tell them to seek out and single-out high potential AAs. Then, actively mentor them, despite their reluctance. Then, take a chance, and give them riskier assignments. Coach them through successes and failures. Show then it's OK to fail, but, you have to always give it your best effort. I'd tell them that "you'll not be disappointed." These are some of the best employees, and can be some of the better leaders. Just give them a break.

There appeared to be a bit of preachiness in some comments, especially in some respondents who talked about fair play and open opportunity. It seemed that some respondents were introspective, wishing that someone had led them during their formative career phase so that they would be closer to their goal. When the researcher pressed on that point, they quickly reverted back to being satisfied with their career attainments and staying true to their stability-seeking nature. The respondents seemed content to advise, but did not volunteer themselves to *lace up* and get into the race, confessing that "it's too late for me" (PGR2).

**Section C: Behaviors and EI traits.** The next group of questions continues the prescriptive theme and tries to differentiate the AA engineering experience from a general engineer experience. It seemed to the researcher that that some introversion and non-aspirational traits were perhaps common with the general engineering community, not just with AA engineers (Donnell, 1955).

***Interview question 12*.** Do you think you are unique (different), and how does that manifest as discriminant behavior (positive or negative) in your career aspirations? This question sought to understand the respondents' self-image, and if that self-image hindered or enabled their career aspirations. Given the general level of stability-bias career contentment in this pilot group, the respondents' answers were similarly skewed toward consensus and conformity. Many pilot group respondents talked about the uniqueness of all individuals, and yet also about how they

perceived themselves as average in their abilities. PGR2 said, "I think we all are unique, but, no I'm not uniquely gifted. In that I'm different, but average different." They seemed to quickly discount their technical prowess, and instead focused on what they brought to the team efforts. When pressed for more insights, PGR4 was able to articulate some sentiments that reflected most respondents' answers.

> I thrive on exploiting differences. So, I think I'm different or unique in any group. Being different is a double edged sword. Everyone is comfortable in their zones, and reluctant to venture out of their zones. And, this AA aspect of being different is a disadvantage—at least for me. From my own personal experience—I'm ok with it. I've accepted it.

Some of the respondents' answers also touched on discriminatory stereotyping. PGR3 noted that "As an AA I'm visually different, so they remember me. Then they stereotype me." This is consistent with assertions made by Kushbeen and Singh (2015), who noted that microaggression is most prevalent when there are visual clues for differentiation: big/small, fair/dark, male/female, etc. PGR1's comments were representative of the group's responses.

> I don't think I'm different. I think I'm average…average Asian. But also more average like colleagues who are shy, quiet, "do your stuff" types. Each is good at some niche. Some are better in this than at that. I do see some folks taking the credit of others…and claiming it as their own. I think we don't tend to do that as much.

The respondents felt that being different was a visual feature, and being AA they stood out more. PGR2 said, "We're not Europeans. They blend in, we stand out." When pressed to contrast that trait for women or African Americans, PGR2 replied, "Yes, but they have political clout. We don't. We're too few to count."[6]

***Interview question 13*.** How would you describe "soft skills" traits in yourself, like self-aggrandizement, self-assurance, socialization, risk-taking, assertiveness, engaging in constructive conflict, etc.? And how important do you think these are for a successful leader? This question

[6]Asian Americans are not a countable minority. The responder is not using a formal definition of *count*, and instead is using his own language to make the point.

sought to tie together the attributes needed for leadership and to confront the respondent with his/her self-assessment. In earlier questions, it was clear that academic prowess (i.e., strong technical skills) were only a partial component of what it takes to be a leader; other skills are needed as well. In their responses, the subjects reflected on how they might rate themselves against those who they saw in leadership roles. Several stated that, regarding soft skills, as PGR3 said, "I am getting more adept as I get more experience in this environment and in this society. My own style is to minimize conflict, to be consensus seeking. To avoid controversy." PGR1 summarized the sentiments this way;

> All important. I personally don't do much/ any of this. I see many folks who succeed, display these traits frequently. I tend to let my work speak for me. I don't boast/ advertise. A certain amount of brashness helps. Otherwise you're viewed as part of the flock and don't stand-out enough to be noticed. I know I'm rooted in some skills, and do not venture far from that base. I don't socialize these days. I used to do that…but "If they like you, they like you," and "if they don't, then they don't."

To some of the specific soft skills listed, the general self-ratings were toward less than average capabilities against their mainstream counterparts, as well as an acknowledgement that they should strengthen their soft skills. PGR5 said,

> Would be beneficial to demonstrate to people – in a positive way. But not in a negative way. I like harmony for the greater good…rather than for the personal good. Maybe that's why I didn't rise. I'm not self-centered so much.

The general consensus was that in additional to technical skills (which they had) and soft skills (which they could strengthen), successful ascension in the corporation also required luck. PGR5 said, "Soft skills: definitely a plus, but, may not be the only credential. Being at the right place at the right time is also very important. Sometimes the only key." Others, like PGR2 said, "I don't know if I can convince others to take risk just on my say-so. It also takes some sponsorship and active mentoring."

***Interview question 14*.** Anything else you would like to add – as either prescription or as caution to colleagues with similar aspirations? This exit question was perfunctory, added as a catch-all. Most respondents were positive about the topic, the interview, and the process. As a compliment to the researcher, PGR3 said, "Interview and questions are well structured. They lead you to deeper meaning and more meaningful answers. The questions are also comprehensive." However, some were more reflective, and PGR1 gave a representative concluding statement that captured the essence of why AAs are under-represented in leadership ranks.

> It doesn't matter if you have the right answer or not. It matters that you raise your hand and answer first. Boldness, risk taking. I've seen that…people stand-up and spew out an answer…but then the manager says…its okay, she knows what she's doing. When I know she's as lost as I am. But she raises her hand. I'd tell engineers to raise their hands. It counts for something.
>
> Have a drive—be clear, have a plan. If it's technical…chase that. If its management ladder…then plan and chase that. "Don't think that just doing good work will get you ahead." You've got to do more. In fact that alone may not even be necessary—it's how you project yourself to others.

PGR5 added, perhaps autobiographically,

> For the individual, I'd say: Everyone should aim for the sky and reach for it – by making yourself visible. Network. Present yourself in leadership assignments. Take risks. Meet the right people. Socialize. Brag a bit about yourself. Don't be so disparaging, don't be so modest and understated. A bit of bravado. Show interest in moving up. Ride the coat tails of a leader. Get noticed.
>
> To the management, I'd say: To provide opportunities. To provide directions (coaching) to aspirants. They are not following-up with the promises that seem to make. Mentoring. And then see where their aptitudes guide them. Opportunity, by positively selecting them. Coach them through stretch assignments. Step-by-step, grow the candidates.
>
> Give us a chance – take risk and help us succeed. Help those who want to grow.

This hint of LMX (Graen & Uhl-Bien, 1995) and Lorentz theories (Levy, 1994), without reference, ties well with the literature review findings.

In summary, the pilot study affirmed the interview process logistics, primarily by giving the researcher practice in the dialogue process and allowing the subjects to more freely ideate during the conversation. The sample size was small, so while confirmatory glimpses were emerging, it was hard to draw any significant correlations to the research questions. The next section details the main study.

**Main Study Data**

As word got around that volunteers were being interviewed for this research, the purposeful convenience sampling evolved into snowball sampling (Biernacki & Waldorf, 1981), where volunteers were themselves petitioning to be interviewed. The researcher had kept the interviewee names confidential, and certainly kept all responses non-attributional. Apparently the pilot group respondents themselves advocated to their colleagues to seek the researcher out. Clearly, they felt that the process was a positive, cathartic experience, and would benefit if a wider diversity of voices were included. Out of the pool of 50 from which the five pilot group members were selected, 15 more (referred to as MSR1 through MSR15 – Main Study Respondent #) were selected for the main study. The pilot study gave the researcher practice, and simplified the logistics regarding signing the consent form and agreement to record. Question 5 was modified during the pilot phase, and after this change, no other changes to the interview script were made for the main study, even though questions 7 and 8 were often answered together. The researcher was also better prepared for the drift to negativity in question 10, and thus was better able to steer the interview toward constructive topics.

**Section A – personal background, career progression and motivation questions.**

***Question 1.*** Why did you choose to be an engineer? Out of the 15 respondents, nearly all spoke of family traditions and of naturally selecting engineering because of their proficiencies in

the hard sciences in high school. Table 2 shows the response distribution, and compares it with the pilot group responses.

Table 2

*Question 1 Response Distribution: Selection of Engineering Career*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Sibling in Engineering | 80% | 87% | 85% |
| Family encouragement | 60% | 93% | 95% |
| Good in STEM | 100% | 100% | 100% |

The most common response was noted by MSR3, who said, "I was good in math, and my family wanted me to earn a 'good' income. Engineering provided that." This theme was consistent throughout the respondents and an early indicator of their work ethic, cultural values, and hierarchical upbringing. Most also cited that their siblings or parents were also engineers. This was best stated by MSR2; "I was good in Math, physics. Plus my father, grandfather were engineers. Tradition. And I wanted to have a professional career. Soft education in my family is not equated with steady employment or better income." There was some diversity in opinion, or at least self-deprecating sentiment expressed by one respondent, MSR5, who said.

> I didn't choose to be an engineer. Didn't think I was smart enough. It was in post graduate school that I changed to engineering. I rebelled against my parents, joined the military. But eventually landed right side, on my feet.

***Question 2.*** How has your career progressed so far? Out of the 15 respondents, nearly all spoke of being satisfied with career progress and their current trajectory and situation. The respondent group is fairly diverse, and includes varied RBP levels (2 through 5), gender diversity, and varied length of service (3 through 35 years). The researcher is reluctant to group the respondents into one behavior, but despite this diversity the similarity in responses for career satisfaction is striking. Table 3 shows the response distribution and compares it with the pilot group responses.

Table 3

*Question 2 Response Distribution: Career Progression*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Generally satisfied with career | 100% | 93% | 95% |
| Still looking for more career growth | 20% | 60% | 50% |
| Missed opportunity regrets | 0% | 7% | 5% |

With regard to career ambition, the responses were nearly evenly divided, with a slight majority still remaining ambitious about their next career step up. MSR3's response is representative of the career aspirant subjects, both hopeful and realistic.

> When I started I first thought if I could obtain this level [department manager] I'd be successful, Today, I'm looking for the next level – to be a director before I retire. I believe I have a reasonable shot at that goal. My ambition grew with each promotion. I want to get from level to level. But I don't think I can ever get to VP to be honest.

For those who have plateaued, the responses were similar, as MSR8 stated:

> Initially my career grew pretty fast. I was appreciated for what I could do, and got accolades and promotions rapidly. Then, my career plateaued. I think it's not atypical. And, expected, after so many years in this industry, I'm realistic. And, generally, I'm satisfied. I get paid well. I get challenging work. That's a lot more than most folks can say.

The respondents who were still ambitious were early and mid-career engineers, whereas the respondents expressing satisfaction and resignation were mid-career and later-career individuals.

***Question 3*.** What are your measures for a successful career? Out of the 15 respondents, there were large similarity in replies. Most acknowledged that rank and salary were a measure, but quickly added that, for them, it was more of a combination of measures: primarily job satisfaction, followed by relationship attributes. Several female respondents also expressed work-life balance issues as a measure of career satisfaction. What was striking was that only one seemed to be driven by rank and salary. He said, "For me, rank and salary are the only true success markers" (MSR15). Table 4 summarizes the distribution of responses to question 3.

Table 4

*Question 3 Response Distribution: Successful Career Measures*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Only rank and salary | 0% | 7% | 5% |
| Only people and satisfaction attributes. Not rank & salary | 40% | 20% | 25% |
| Combination of factors, including Rank & Salary | 60% | 80% | 75% |
| Work-life balance emphasis | 0% | 20% | 15% |

With regard to measures of a successful career, typical responses were best characterized by MSR4.

> It's a combination of factors. Satisfaction is paramount. Your sense of contribution. Being able to pass on your knowledge. Rank and salary are how other people feel about you – not how I feel about myself. This is not so critical. I think rank and salary is if other people give you opportunity – not something that I think is a measure of successful career. Success to me is "I'm happy with what I'm doing."

MSR7 also captured this sentiment well:

> It's not Rank and salary. It's the people you work with and how you impact their lives both as a group and as individuals. Satisfaction from work. Excitement from work. Interacting with people. All are my measures of a successful career.

Again, despite the researcher's reluctance to stereotype the subjects into a common cultural mold, the sentiment expressed by a large number of respondents, that success is a combination of factors, is probably shared by many diverse population subgroups. Judge, Higgins, Thoresen, and Barrick (1999) developed a five-factor model, noting that career success factors vary across the subject's life span. In early career they do look at external (extrinsic) measures (like status, salary, accolades), and at mid-career they express career success as a combination of status, salary, and actual job attributes (challenging work, job stability). Towards the end of the career, the authors note that most subjects tend to have internal (intrinsic) measures (job satisfaction, people, and impact of their work).

***Question 4.*** What are your impressions of the qualifications and characteristics of a senior manager and leader in this company? As was noted for the pilot group, this group did not have any scholarly observation of senior leadership qualifications or characteristics, and mostly only spoke anecdotally about their impressions from brief encounters with executives, or based on stereotypical impressions of executives they imagined. Out of the 15 respondents, and in the context of a technology company, many characterized the executives as not having strong technical prowess; MSR10 stated that they "Don't have to be the brightest bulb." When the researcher provided data showing that out of the big-five SCDCs, four were led by engineers, all possessing post graduate degrees from top ranked universities, some modified their response to include technical capabilities as one qualification, but adding, as MSR13 said, "These executives have gone well past their degrees." Several others characterized executives in idealized (generalized) light, based on their impressions or expectations from leadership.

Still, there were gender differentiators, where many female respondents felt that being a male was a critical qualification to be an executive (not counting the *soft* VP assignments in law, HR, communications etc., but just looking at those in P/L [profit-loss] positions in the C-suite. S. Gandhi's [2009] research was based on female executives, but none of these females were in P/L assignments). Others talked about the customer (the U.S. Government), anecdotally citing those decision-maker demographics, and concluded that another critical qualification was that, as MSR8 put it, "Only Whites reach there." Finally, several added to the aforementioned sentiment by anticipating question 10, mentioned that being Asian was probably a disqualification. Table 5 shows the response distribution for respondents' impression of executive behaviors and characteristics.

Table 5

*Question 4 Response Distribution: Leadership Qualifications and Characteristics*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Technical attributes are critical | 60% | 40% | 45% |
| Soft skill attributes are paramount | 100% | 80% | 85% |
| Negative attributes in executive behavior | 0% | 40% | 30% |
| Have to be White | 0% | 33% | 25% |
| Have to be male | 0% | 27% | 20% |

With regard to idealized or anecdotal qualifications and characteristics, MSR3's response is representative of the group.

> I don't believe they are the smartest people in the company. What they have is executive presence. They have the critical thinking. They know how to exercise the people with the skills. They know how to identify talent. And they know how to utilize the talent. They reward their teams. They form high performing teams. And, they are all great communicators. Communications, Executive presence, they identify talent…not the smartest nor the most capable. Not necessarily nice people. Executive presence does not mean nice or friendly. It is self-assured, being able to command respect. Self-confident. Command respect from people working for you and from people you're working for.

With regard to being male and/or White, and not Asian, the sentiment was captured in MSR9's and MSR6's responses. MSR9 said,

> I've seen people at a lot of different levels at this company when I first came on board I had an opportunity to work with the VP and director level now I'm working with program managers and directors. The people in the high C level leaderships are very A type risk takers. Willing to point. Also very high male ratio versus females I think that's across the company here. Definitely not a lot of Asians but definitely seeing a lot more Caucasians in leadership.

MSR6 added to the racial preference conversation by stating,

> White privilege – its more than just skin color. It is something you're born with. If you're born White, certain doors open for you. It's just a fact in the U.S. And, if you are from another culture, you have to "become White." That's why this is called a melting pot. You succeed if you are White. Different from multi-culturalism, where each group competes with the other. So you have to have to have the characteristics of the White culture.

Overall, answers to question 4 evoked similar reflection by the respondents, and started entering the deeper levels of this research. Starting from this question, the respondents seemed to become more eager to engage, and were often more animated (or excited) when they provided their inputs.

***Question 5***: Do you want to be a "business" manager (and/or a leader) at this company? Why? This question was modified from *"Why* do you want…" to, "*do you* want…and, *why*?" Several respondents did not aspire to the C-suite, but these were also mid/late career respondents who cited family life as their priority. Several early to mid-career respondents did have such ambitions, with the exception of several women respondents, who also cited family life as a priority. As for the main reason why they did not aspire to more senior positions in the company, some cited a lack of necessary credentials (e.g., soft skills), and others cited a reluctance to pay the price for such a career climb. The main group is significantly more diverse (as a minimum, it includes gender diversity), and their responses reflected such diversity of opinion. Table 6 summarizes their preference to be/not be an executive in this company.

Table 6

*Question 5 Response Distribution: Leadership Aspirations*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Want to be a bigger leader | 40% | 33% | 35% |
| Family-life balance reasons for not seeking bigger leadership roles | 40% | 20% | 25% |
| Lack of critical softs-skills for not seeking bigger leadership roles | 40% | 27% | 25% |
| Unwilling to change to seek bigger leadership roles | 60% | 40% | 45% |

Regarding desire, MSR5's responses were most articulate both in capturing his sense of ambition and in explaining the lack of desire in some others.

> Yes, because I am testing myself. Like Man against nature, it's man against this environment. How do I flourish? It's a growth thing for me. Every year I must grow. Every experience I must learn. Must adapt. I think everyone at one time wants to grow. But for many, maybe, they had negative experiences, and now they are afraid to grow. They saw taking chances hurt them. So, now they don't take chances. We need to help them. I was very lucky in my career.
>
> We are all different, in how we were raised by our parents. In some cases they are taught you can do this or that, and it's ok to try and fail. But to try. In other cases, they teach the children, why you want to be stupid, and take risks. It all depends on that cultural values that we carry.

In this response MSR5 captured themes from the literature review, where Palich and Bagby (1995) where cited the risk experiences of entrepreneurs, and how that shaped future attitudes towards risk. With an already stability-seeking culture (Honda, 2010), this risk-averse and change-averse behavior is expected. Regarding the change-aversion topic, the responses by MSR15 and MSR7 are representative. MSR15 stated,

> No at this point. Because of family life is priority for me. A couple of years ago, I'd have said definitely Yes. But the more I have interacted with executives, I see how much they work. And, I see how they talk with each other – so abrasive. I don't want to do that. It's not worth it for the monetary reward.

MSR7 said,

> No. Being an executive takes you farther away from the technical. This is what I enjoy. It's not worth the work-life balance trade. Being close to the technical hardware is much more satisfying than money or esteem. People who do become leaders are driven. Its important how you get there. Do you get there by climbing over people?

***Question 6*.** Describe what in your opinion are the aptitudes and credentials required to be a successful manager/leader at this company? The responses to this question, when taken together with responses to questions 4 and 5, and especially for those respondents who no longer had upward career aspirations, the subjects also tended to attach negative characteristics in answering this question. Conversely, those who had aspirations to climb the corporate ladder provided positive attributes and credentials. However, some also added a new element: luck.

Others thought about the context of this research and colored their answers with cultural differences when describing leadership qualifications. Out of the 15 respondents, the distribution of key/summary characteristics are noted in Table 7.

Table 7

*Question 6 Response Distribution: Successful Leadership Aptitudes and Credentials*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Technical prowess | 40% | 47% | 45% |
| Soft skills/People skills mastery | 100% | 100% | 100% |
| Timing & Luck | 40% | 60% | 55% |
| Network | 60% | 60% | 60% |
| Alpha characteristics | 60% | 80% | 75% |

In some responses, the statistics are somewhat misleading, as some respondents did not explicitly mention an aptitude or credential, so, the statistic is misleadingly depressed. Given that, it is striking that networking and alpha characteristics figure so prominently in their replies. The large mention of luck (or serendipity, or being the right person at the right time) is also perhaps reflective of the Asian culture. As was mentioned during the pilot phase commentary, the respondents had ample opportunity to preview all the interview questions, so they knew well in advance the context of this research. Perhaps this was a bias in their responses, when they also tried to link Asian traits with what they felt were traits for a successful leader. This is evident in MSR10's response.

> Need a little bit of luck. You are going to take a little bit of risk, and you will be dependent on other people to perform for you. They may or may not perform. Luck plays a big role here.
>
> Timing is huge. Right person at right place. Couple that with ability (IQ, EQ) to take the opportunity.
>
> The network helps. I think there is *push* – where the person really tries to make himself noticed. There is also *pull*, where some active mentor, actually advises you on roles, and perhaps also on performance.

> Adaptability – ok situation changed – what are you going to do? Got to know your weaknesses – how do I compensate. How do I surround myself with those who make up for that weakness? And, that goes to self-assuredness. You have to be strong enough internally to ask for help. Most Asians do not ask for help – and then they internalize, struggle, stress-out. And they end up not liking and not wanting growth. This does not mean self-deprecating all the time, but as leader, you have to show leadership in front of the group. Then credit the group for success. Middle management you have to be collaborative. Upper management you have to be genuine. For those who fake it, we call them "shining monkey," eventually that stumble of fall, or escape. To be truly effective, team is the key to success – even at the top.

Further on the Asian culture issue, MSR2 echoed several other respondents' comments.

> It's a culture issue. In Asian culture the saying is "The loudest duck gets shot. Here the saying is "The squeaky wheel gets the grease." It's a fundamental difference in how we approach the work and leadership aspirations. We think by blending in, the quality of our work will get U.S. promoted. In the beginning it does. But, later, it does not help …in fact it is a pigeon-hole if we are really good in what we do. They think we're not suited for other work. Or, that "Let's leave them in this job, because they are the best at doing this or that." They never look at our aspirations. And, we never express our aspirations. Also, we want to be more humble, more respectful. When we say something in meetings they try to be outspoken – they think they are being disrespectful. Here, they just move on. We take it personally. It's that stigma of risk-reward that has negative reinforcement.

**Section B – career barriers and enablers.**

***Question 7.*** Describe some of the barriers that you've faced in your career so far? As was noticed during the pilot study, responses to question 7 and 8 were generally lumped together. Many tended to answer both simultaneously, and others skipped one or the other. It was only with some effort on the researcher's part that the respondents addressed question 7 with general work experience barriers and answered question 8 regarding career aspiration barriers. Many respondents did not recall any specific barriers, but touched tangentially on what would be called microaggressions (Fletcher, 2000): where brief and commonplace interchanges have intentional or unintentional slights. MSR8 noted, "We're visually different, being Asian." This may have been viewed as a barrier, but was only made explicit in a few responses. Table 8 summarizes the major categories of responses to question 7.

Table 8

*Question 7 Response Distribution: General Work Environment Barriers*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Self-inflicted (mistakes) | 0% | 13% | 45% |
| Family-work balance issues | 20% | 47%* | 40% |
| Gender | 0% | 33%* | 25% |
| Language skills | 20% | 27% | 25% |
| Access & Clearance | 60% | 27% | 35% |

*Note.* *The percentage statistics are misleading. These include 100% of female respondents.

Two respondents admitted to being argumentative with the wrong people. They admitted that, in a meeting, they disrespectfully disagreed with key people who went on to either become leaders or complained to people who were in leadership roles. They felt this interchange squashed their careers. MSR13's response captures this sentiment.

> I think a lot of it has to do with who you know. If you're in the right circles then there's no barriers. If you're not in the right circles, they won't ask you, you won't be involved. A lot of it is network related. If you're not part of the inner circle or the circle that makes decisions that's conceivably a barrier. I got into an argument with XX, and bang!, he went right to my boss. I guess if it was someone else, it might have turned out different,

Regarding work-life balance, all female respondents and a few male respondents cited this as a barrier. MSR15's response expresses this feeling.

> I think as Asian woman we tend to be soft spoken. Family is very important to U.S. So, I need a job where there is flexibility to take care of my children. That does not mean, we cannot be strong, or we cannot meet deadlines, or pull all-nighters. We can be better, we can be more calm, are better able to handle tough situations. But, we cannot be so spontaneous – we need time to arrange affairs. I don't think the company evaluates U.S. in that skills. They just pigeon-hole U.S. women. I think Asian women would be very good in crisis and tough situations.

Regarding language skills, many expressed being flustered or at a loss of words, and were seen to struggle in communications. This is captured in MSR3's response, "I was not born here. I have a communication challenge. I am stereotyped as a foreigner – even if I'm a U.S. citizen." Finally touching on one of the literature survey themes (Wang & Kleiner, 2001), several

commented about the career delay in getting clearances, and thus enduring a frustrating period of years working, as MSR14 put it, "in the dark." MSR14's fuller comments included:

> And, then there's that security clearance thing. Without this, I know I'm not going anywhere upwards. I work for people who are way junior to me, but I'm always kept in the dark. I get bits and pieces – just told to "do this." No chance to help with trade or optimization. It's been frustrating.

***Question 8.*** In context of leadership aspirations, what are some of the barriers you've faced in joining the management pool, and in developing the required management skills and attributes? When specifically asked about barriers to *career growth*, the respondents reverted to some of the aforementioned themes regarding work environment like, security clearance and program access, and mommy-track stereotyping. Others added that weakness in soft skills like presentations, communication, effective networking also adversely affected career growth. No specific mention of microaggression as had appeared in some responses to earlier questions, perhaps because the respondents felt that was already mentioned. During the pilot study, the researcher had found that correlating some earlier answers tended to skew the interview, instead of eliciting natural responses from the subjects. Thus, during this set of interviews, the researcher allowed them to progress more naturally, without trying to corroborate with prior answers. As a result, the career barrier answers tended to be anecdotal, and more spontaneous, versus a bit more reflective and scholarly. Table 9 summarizes the key findings.

Table 9

*Question 8 Response Distribution: Specific Career Growth Barriers*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Ambition, or lack there of | 40% | 40% | 40% |
| Comfort zone or risk tolerance | 40% | 33% | 35% |
| Gender | 0% | 33%* | 25% |
| Matrix and ineffective mentoring | 20% | 27% | 25% |
| Access & Clearance | 60% | 27% | 35% |
| Cultural attributes & behaviors/values | 40% | 47% | 45% |

*Note.* *The percentage statistics are misleading. These include 100% of female respondents.

The responses of several subjects are articulately summarized in MSR4's answers.

> Being an Asian woman, with PhD, I don't think I'll be in the position I am without these credentials. I think these have helped me. But I see others with less qualifications in same place, even higher. I think they don't see me because I'm soft spoken. So, I think being a woman has also been a barrier in this company to climb.
> Security access helps, but is not the only credential. It takes several years before I got clearance, so I missed many opportunities. Make it harder early to get cleared. So I missed the inside conversations. And only get there late.
>
> And, it's the matrix. It's new to U.S. What I notice is my manager and my project lead don't know what exactly I do, and can do. I have no role model, and no senior confidant, I mean mentor, who can guide me. In XXXX when I was doing my PhD, I worked one-on-one with my advisor, and this was the secret to graduating. Here there is no one.

The researcher made no attempt to correct grammar in the conversation, and the audio-transcription is copied verbatim. This does not imply that the responder was inarticulate, it just meant that occasionally, he had to weave through the syntax to fully understand the meaning. In MSR4's response there is an echo of the LMX theories (Graen & Uhl-Bien, 1995) cited in the literature review. The summary was that Asians coming from a hierarchical home culture easily adapted to academic life, where the LMX model was prevalent. However, in the work environment, especially in SCDCs, with their matrix organizational structure, there is a lag in adapting. This lag, as MSR4stated, often robs the AA employee of early career diversification opportunities.

***Question 9.*** What are some institutional, environmental or other enablers that have helped you in your career progression? As mentioned in Chapter 1, and again in the literature review in Chapter 2, the SCDCs are heavily regulated, and are required by law to provide Affirmative Action policies. In addition, the companies have several Diversity and Inclusion initiatives, mentoring programs, employee resources groups, and management clubs, to mention

just a few. Many of the responders were unfamiliar with all the provisions that companies provide to give equal opportunities and level the playing field. Once that backdrop was established, the interview questions continued along a more meaningful path. Many expressed unawareness, and others admitted that they viewed these as "social clubs" (MSR11), or as passive infrastructure. MSR15 likened it to "gym equipment in an apartment complex. It's there for you to use, but, no compulsion or encouragement." Others, mostly those who prioritized family-work balance, cited a lack of time, or an "artificiality" (MSR8) in these institutional enablers that didn't attract them. The key findings are summarized in Table 10.

Table 10

*Question 9 Response Distribution: Institutional, Environmental Enablers*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Aware of company enablers | 80% | 73% | 75% |
| Participated in enablers | 40% | 33% | 35% |
| Benefited by enablers | 0% | 7% | 5% |

The general consensus was that these enablers are, as MSR10 noted, "passive, and the company management also is doing lip-service" to the regulations and guidelines. A sampling of comments is provided as reference.

- MSR5: We have the structures in place. Nothing like that has helped directly. It's all about networking. But these are passive enablers. No one is going to take you by the hand and push you. It's up to you.
- MSR2: Rotation and network efforts are lip service. They are just window dressing to meet regulations.
- MSR7: I think that these all are passive enablers. It's a double edged sword. The company does like to promote females, but then your male counterparts remind you that 'oh by the way, you only got that promotion because you're a woman'. There is

no way you can win. The flip side is if you do succeed very well in communicating or working with the customer and are qualifying on merit – then, again you're reminded, oh she's using her female to succeed. There is no win for the woman. You're criticized because you're a token, or you're criticized because you're a woman. The enablers do not enable.

- MSR12: Do I really want to be part of the Management Club or is that a sucking up activity? Well, maybe so. I remember going to a few events, but I didn't think too much of it and dropped out.
- MSR8: I haven't used these enablers. I don't think they helped me or anyone else.
- MSR13: I haven't been involved. Do they help? They may help some people but I suspect its not going to be very useful. The network should be a smaller network of people you work around with or see daily. Those networks are more of a society. Is it a career growth? I don't believe it does. I haven't used it I don't believe in it. I don't think it does.

There was a positive comment from MSR3, who seemed to echo a literature review theme regarding Lorentz's chaos theory of change (Levy, 1994). In describing luck and serendipity, he commented that

> I was just given a chance. One day my manager just asked me to be a department manager. I was ready, I said yes. It's been 2 years, and I'm ready for the next challenge. I learned a lot. I also brought in two section managers who are AAs, hoping that they do the same for others. I think this was my Director's own initiative, not something he did to meet some goal or guideline.

***Question 10.*** In your opinion why are there so few Asian Americans in senior management of leadership ranks at this company? This was the core question of the research, and provided a variety of answers. The respondents had anticipated this both from the informed

consent and the prior line of questioning. The themes in the responses are familiar, as the previous questions had touched on them. Most commented on soft skills, opportunity, and microaggression (bias). There appeared to be a reflective moment for many respondents, and some answers seemed autobiographical. The key findings summary is provided in Table 11.

Table 11

*Question 10 Response Distribution: Reasons for AA Underrepresentation in Leadership*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Soft skills expertise & cultural issues | 80% | 73% | 75% |
| Opportunity and preparation | 40% | 53% | 50% |
| Microaggression (bias) | 20% | 33% | 30% |
| Role models – lack of | 20% | 33% | 30% |

The predominance of respondents noted that AA underrepresentation as a fundamental clash of preparedness. AAs are hired (generally) for technical capabilities, and then stay in this domain during their formative career. When they start to express career aspirations, they appear to be either too senior for the learning grades, or indispensable in the jobs they are performing. However, most respondents internalized the lack of representation, attributing to ambition (lack of), or other cultural traits, rather than finding institutional issues that have prevented prior aspirants (if any). When pressed about career plateauing, most expressed a general satisfaction with their ascent so far, and assumed that others before them had likewise similarly plateaued because of the length of the journey. The comments from MSR11, and MSR9 are representative. MSR11 stated,

> I think if you ask, if it's U.S. or if it's the company. Then, it is something in U.S. The way you grow up. I was not asked to raise my hand in class. I was raised to be conforming, to be collective. Consensus seeker. Try to get along. You stay silent in front of more senior people. It think it's all about culture. We are taught that knowledge is enough for career – the best will get promoted.
>
> In Asian culture, you're told, "You have to pay your dues before you get something." And, here, that "due," it's much shorter. So you have to know when

> opportunity is there. The opportunity window closes. It passes you by. Nobody is gonna wait for you. You have to go get it. In Asian culture, we're not told to go get it. But to wait for your turn.

MSR9 stated,

> It is also in the company. They don't look for U.S. But I'm sure if you're purely American, you have a better chance. So, we have to work more. If you don't look the part, it doesn't mean you're not going to get it, but you have to work harder. And, our industry is not that much used to foreigner. Other technical industries maybe are, but ours is so White – because the customer is the government.

***Question 11.*** What, in your opinion should be done by the individual (you) and by the organization (company) to enable more AAs to successfully aspire to the leadership ranks? In this prescriptive question, the researcher was trying to elicit curative suggestions. There was a general respondent reluctance to give career advice, especially from the subjects who admitted to having no aspirations. Those that gave recommendations thought that the advice is for others, not for themselves, at least not at this stage of their careers. Most respondents finally were specific about what the individual should do, but only a few ventured at what the company management should do. So, while there was a recognition of the issue, the setting of question 10 led them first to internal solutions, but generally what they should have done or what junior peers should do. With regard to advice for management, the responses were subdued, suggesting idealistic approaches, but also stopping short of mandating inclusion. The distribution of responses is summarized in Table 12.

The respondents seemed to be repetitive, bringing up themes and suggestions from prior responses, often saying, "I answered that before" (MSR10, others). Others, like MSR5 and MSR2 gave more comprehensive answers. MSR5 said,

> Early in your career, admit when you need help. I don't see Asians admitting when they need help. It's vital to seen as a team player. Go out and network like crazy. But be purposeful – not just fill-up a dance card. Try different things that challenge your

> comfort-zone. Also, stand your ground. We concede too easily and too often. Finally, practice persuading others. It's a very key skill – to sell your perspective to others.

MSR2 offered,

> To the management, I'd say, it's a percentage numbers. But overall, it's a small percentage. We may be 15% of the engineering population, but they are 85%. Its simple math. We have 6-times less chance to rise. So the first step is to increase the numbers in the pipeline. We'll do well, if we're in the pipeline. Then, work us hard – so we learn success and failures. This way we get stronger. Team us with coaches, who will help us. Not just lip service.

Table 12

*Question 11 Response Distribution: Individual and Institutional Changes Needed*

| Individual options | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Networking | 80% | 60% | 65% |
| Standout | 20% | 40% | 35% |
| Get uncomfortable – venture out | 20% | 40% | 35% |
| Develop soft skills – effective communications | 80% | 60% | 65% |
| Take a chance on Asian (active mentoring) | 0% | 33% | 25% |
| Internalize diversity (believe in benefits) | 20% | 27% | 25% |

**Section C – behaviors and EI traits.**

***Question 12.*** Do you think you are unique (different), and how does that manifest as discriminant behavior (positive or negative) in your career aspirations? Most respondents had similar answers. They saw themselves as unique, but average unique. This in their opinion was neutral in regard to helping/hindering their careers. They didn't stand out, but were also seen as collaborative and contributive. Moreover, where it mattered, they were recognized for their technical capabilities. The distribution of responses is shown in Table 13.

The respondents were ambivalent about characterizing themselves as uniquely different. They were unique, but were quick to add that, "So are others" (MSR13). The typical response was summarized by MSR1, and reflects the conflict the responders felt in answering this.

> I think I'm different and unique. But it depends. In some technical issues, I'm average, because mostly in groups and teams, we all contribute. In management meetings, I think I'm different, but perhaps not appreciated, or not thought of as a key contributor.

Table 13

*Question 12 Response Distribution: Individuality Impact on Career Aspirations*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Different/ unique? | 80% | 93% | 90% |
| Mostly Helpful? * | 60% | 80% | 75% |
| Mostly Barrier? * | 60% | 73% | 70% |

*Note.* *Many respondents could not decide if this helped or hurt, or both.

***Question 13.*** How would you describe "soft skills" traits in yourself, like self-aggrandizement, self-assurance, socialization, risk-taking, assertiveness, engaging in constructive conflict, etc.? And, how important do you think these are for a successful leader? Here there was broad agreement that such soft skills are critical for leadership. Moreover, many admitted that these far outweigh technical aptitude. Others were reluctant to completely dismiss technical prowess, noting that one SCDC CEO has a PhD in Engineering, but that "He's gone far beyond that degree" (MSR12). Table 14 summarizes the key findings.

Table 14

*Question 13 Response Distribution: Assessment of Soft Skills Traits in Respondents*

| | Pilot | Main Sample | Total (both groups) |
|---|---|---|---|
| Above average soft skills | 0% | 7% | 5% |
| Below average soft skills | 80% | 80% | 75% |
| Critical for leadership | 100% | 100% | 100% |

*Note.* *Many respondents could not decide if this helped or hurt, or both.

The responses were revealing. They all admitted that soft skills critical for leadership, and critical for a successful climb to the C-suite. However, nearly all admitted that they were on the whole below average on several critical soft skills. This brought home MSR5's admonition in response to question 10, "Get comfortable with being uncomfortable." There was no *aha*

moment as the interview progressed, as many dismissed their ambition or the realities of successful career trajectories. It seemed that many were reflective, and were expressing what they know is their reality about their chances in this industry. A few, the early career engineers, seemed more determined to ascend the corporate ladder, and likely may take the conversation to heart perhaps work on these gaps. The summative answer was captured in MSR1's sentiments.

> This is smart versus savvy. The company can hire the smarts, but savvy is a rarity. Like Captain Kirk and Mr. Spock. Spock was smarter, but not savvy. Kirk was not as smart, but he was a leader. That team between smart and savvy is also important. That is a leadership trait too. You have to show some alpha-skills. But not all the time without being also a team player. It's never a one-person effort. Also, you have to be smart enough and deliberative enough to make consistent good judgment. Be polished in your responses. Master the language. Master presentation skills.

***Question 14.*** Anything else you would like to add – as either prescription or as caution to colleagues with similar aspirations? As the interview ended, most respondents were pleased with their responses. They were subsequently given an opportunity to review the audio-recording transcripts for any identifiable markers. However, many also took the opportunity to relive the interview. Without exception, none wanted to change their answers. One parting remark from MSR12 was memorable.

> I think developing leadership skills is critical in younger people. This shapes their destiny more than a PhD in engineering. Section manager, IPTLs are the foundational roles that Asians must try and master. It's in the early career that you learn success and failure. It's here that you establish and build a reputation. It's here that you develop risk tolerance and get to know yourself – get that self-confidence to ask for help when needed. It's here that you learn presentation skills. And, it is here that you learn hard work and smart work habits.
>
> I think that why management should take hiPots and give them killer assignments. They are best tempered here. And, help them succeed. There are very few opportunities, and they come at the most unexpected times.

In summary, the main study fleshed out similar findings from the pilot study. The preceding section provided a sampling of the responses. In Chapter 5, the task is to develop code

words (in-vivo coding) and then to extract themes (using contextual words, metaphors and analogies) for the conclusion. The remainder section in this chapter contains the sample demographics.

**Demographics**

This section provides the statistical data regarding the pilot group and main study respondents. In aggregate, there were five pilot group respondents (referred to as PGR1 through PGR5 in the data presented previously), and 15 main study respondents (referred to as MSR1 through MSR15 in the data presented previously). Table 14 provides general demographic data including education, gender, service years, their RBP level (rank below president, with President's rank being 0), and country of ancestry. Table 15 gives the male/female distribution of the respondents, and compares this with publicly available company data. Table 16 tabulates the education level summary from Table 14, and includes approximate general statistics from company public data. Table 17 tabulates the RBP levels based on publicly available company data and compares this with the study respondents.

Table 15

*General Demographic Data*

| Study | Subject | Education | Gender | Service years | RBP level | Country |
|---|---|---|---|---|---|---|
| Pilot | PGR1 | MSc | M | 25 | 5 | China |
| | PGR2 | MSc | M | 30 | 3 | Japan |
| | PGR3 | BSc | M | 30 | 3 | Korea |
| | PGR4 | PhD | M | 30 | 2 | Korea |
| | PGR5 | PhD | M | 30 | 4 | India |
| Main | MSR1 | BSc | M | 30 | 2 | China |
| | MSR2 | BSc | F | 15 | 5 | India |
| | MSR3 | PhD | M | 20 | 3 | Korea |
| | MSR4 | PhD | F | 7 | 5 | China |
| | MSR5 | MSc | M | 20 | 3 | India |
| | MSR6 | MSc | M | 30 | 4 | Japan |
| | MSR7 | MSc | F | 30 | 3 | Japan |
| | MSR8 | MSc | M | 25 | 5 | India |
| | MSR9 | MSc | F | 10 | 4 | India |
| | MSR10 | PhD | M | 5 | 4 | China |

(continued)

| Study | Subject | Education | Gender | Service years | RBP level | Country |
|---|---|---|---|---|---|---|
| | MSR11 | PhD | F | 3 | 5 | Iran |
| | MSR12 | MSc | M | 30 | 4 | Japan |
| | MSR13 | PhD | M | 20 | 3 | China |
| | MSR14 | BSc | M | 10 | 5 | India |
| | MSR15 | PhD | F | 5 | 4 | China |

*Note.* *RBP level (rank below president)

0 President
1 Vice President
2 Director/ Chief Engineer
3 Department Manager/ Engineering Fellow/ Program Manager
4 Section Manager/ Team Lead/ Supervisor
5 Individual contributor

Table 16

*Gender Distribution*

| | Male | Female |
|---|---|---|
| Pilot Group | 100% | 0% |
| Main Study | 67 | 33 |
| General AA population in ADC1 | 85 | 15 |
| General Engineer population in ADC1 | 90 | 10 |

Table 17

*Education Distribution*

| | BSc | MSc | PhD |
|---|---|---|---|
| Pilot Group | 40% | 40% | 10% |
| Main Study | 15 | 33 | 52 |
| General AA population in ADC1 | 50 | 25 | 25 |
| General Engineer population in ADC1 | 80 | 15 | 5 |

Table 18

*RBP Distribution*

| | Individual | Supervisor | Manager | Director | VP | President |
|---|---|---|---|---|---|---|
| Pilot Group | 20% | 20% | 40% | 10% | 0% | 0% |
| Main Study | 33 | 33 | 25 | 7 | 0 | 0 |
| General AA population in ADC1 | 90 | 8 | 2 | 0.2 | 0 | 0 |
| General Engineer population in ADC1 | 80 | 12 | 6 | 2 | .3 | 0.02 |

**Summary**

This chapter presented the research data from the pilot study and the main study. A total of 20 subjects were interviewed from a prospective pool of 50 candidates. The first five subjects were considered as part of the pilot study that worked out the interview logistics and vetted the interview questions. The main study immediately followed the pilot study, without any modification to the open-ended interview script of 14 questions. Although the answers were segregated, summative comparisons were provided in the main study write-up. The write-ups included sample responses from the subjects to capture the verbalized sentiment of the responders. The key summative findings were that the subjects could separate individual issues and institutional issues that affected career progression, but were generally self-centered, and offered specific internalized answers. For curative or institutional issues, the answers were more idealized or anecdotal.

The next steps were to take the audio-recording transcripts and code them to reveal themes that answer the research questions. The results of this process are presented in Chapter 5. Chapter 5 will also present conclusions and implications for possible actions, and further research.

# Chapter 5: Conclusions and Recommendations

This chapter presents the conclusions based on the data presented in Chapter 4. Included here are the tie-ins to the research questions, and implications for individual practice and the institutions' policies regarding career progression for AAs in the SCDCs. The research recommendations focus on practical steps based on statements made by interviewees. Recommendations for further study are provided as a guide for future research efforts. The present study was intended to determine (a) if career aspirations of AAs were being realized (conclusions 1-9), (b) if the institution enables or hinders their career progression (conclusions 10-14), and (c) possible paths forward for both the AA leadership aspirant and the SCDCs for which they work. Each of these conclusions relates to the research questions.

## Coding, Sample Size, and Data Saturation

An often-asked question in qualitative study relates to sufficiency of data. For *quantitative* research, if the answers were based on some scale, for instance a Likert scale (Robbins & Judge, 2011), this study's sample of 20 individuals represents about a 95% confidence level, with a margin of error of approximately 20% (~+/- 20%). Here, confidence level represents *how often* the true percentage of the population would pick an answer. Taken together with the margin of error, it means the researcher is 95% sure that the answers provided are accurate to within 20% margin of error. Of course, in *qualitative* research, the answers are not numerically tabulated, but derived from coding and thematic extraction based on expressed opinions to an interviewer's enquiry.

Regarding sample size, Mason (2010), examined sample size in 560 doctoral qualitative studies, concluding that the average sample size was ~30. However the distribution was non-random, and many studies (a statistically significant number), used sample sizes in multiples of

10 (10 subjects, 20 subjects, 30 subjects etc.), implying that the sample size was likely determined non-scientifically. In further examining data saturation, Mason's conclusions were that sample size is adequate if there are diminishing returns from additional data. That is, as the study goes on, more data does not mean more information. Of course, this also relates to the aim of the research. Mason went on to discover that the broader the convergence criteria, the quicker the saturation point. That is, small studies with modest claims reach saturation faster. Larger multi-disciplinary studies with high fidelity aims require more data to saturate. This was true in this research as well. Coding the data from the 20 respondents quickly revealed that, across the transcripts, there were several consistently repeated words and several recurring themes. There were no outliers in any of the findings. The researcher is thus fairly confident that most or all of the perceptions that might be important were likely covered, and collection of new/more data would not shed any further light on the research topics.

As regard to reducing the data without losing meaning, two rounds of coding were performed. Round 1, in-vivo coding (Saldana, 2009), was aided by some pre-coding and preliminary in-interview jottings. Then, thematic extraction—what Saldana (2009) calls focused coding—of both analytic (i.e., essence categories) and descriptive themes (Thomas & Harden, 2008) was performed to bring together and integrate the data. To address researcher's influence (bias, beliefs, interests), interview transcript coding was cross-checked by cohort colleagues who were not connected with the research. A total of 82 unique key words were identified in round 1, and a total of 14 themes (round 2) extracted from these. These form the basis for the conclusions stated subsequently.

## Research Question Findings

**Research question 1: Conclusions for individual behaviors.** Research question 1 asked: What are the individual behaviors that affect career progression for Asian Americans in the southern California defense industry? The following conclusions relate to this question, and provide insights into why AAs seem to have career progression issues, especially as they aspire for RBP levels 2, 1 and 0. The main conclusions related to RQ1 are that the AA employees display culturally stereotypical behavior, including risk aversion, conflict avoidance, and needing mentors. Additionally, they seemed to lack motivation, struggled with program access, had issues coping with the matrix organizational structure, suffered systemic microaggression, and did not display many of the soft skills needed to thrive in the SCDC work place. These conclusions are discussed in detail in the subsequent individual paragraphs .

***Conclusion 1: Family and cultural issues negatively affect career.*** The researcher had intuitively expected to find differences between first versus second and later generation AAs, especially regarding socialization experiences, career goals, networking, and sense of ethnic identity (Chen, 2004). The lack of differentiation here is likely indicative of a conflicted cultural identity: of simultaneously being American and being Asian (Cheryan & Monin, 2005). From the data it seemed that, regardless of ancestral separation, there was no discernable difference between the respondents regarding the influence of parents, or in some of the stereotypical behaviors (family orientation, employment security, and predilection for technological assignments) at work. Where there was difference in respondents' answers, it was in longevity of employment, regardless of ancestral separation. Respondents with fewer service years (i.e., those who were younger) had better articulated social skills like networking and self-confidence, as compared with mid and later career engineers (who tended to prefer smaller social circles and

smaller variety in work). Like Chen's (2004) findings, the respondents all admitted to some racial stereotyping, consistent with what Kushbeen and Singh (2015) had found in workplace discrimination of visually different population groups.

The conclusion is that, although many immigrant communities may struggle with assimilation, for AAs, these cultural tendencies persist regardless of ancestral generation, and they thus lag behind in their display of required soft skills. This tendency depresses their career trajectories.

***Conclusion 2: Risk aversion behavior leads to self-exclusion.*** In Palich and Bagby's (1995) research, they found that risk taking and positive experiences with risk outcomes (March & Shapira, 1987; Shaver & Scott, 1991) were keys to entrepreneurial behavior. In looking at their careers as enterprises, the general tendency for the mid to late career AA engineers was to avoid risk situations. These late career respondents, and many female respondents, indicated a gradual self-exclusion from earlier career diversification, citing prior negative experiences with risk situations or family life balance issues consistent with findings by Terenzini et al. (2014). This early career diversification is a key for later career advancement (Cerri, 2015). The AAs, noted that "It's a numbers game, at only 15% population in our industry, we're not favored five out of six times" (MSR3). In contrast, the early to mid-career AA engineers were more willing to "take a chance on career" (MSR5), and thus to "network like crazy" (MSR5) in order to find opportunity. This may be related to the emerging political clout of countable minorities (women, African Americans, etc.), who were starting to show population numbers increase in SCDCs due to Affirmative Action efforts (Campbell, 2015; Clarke-Anderson, 2004), leading to a growing presence and acceptance of minorities in the corporate leadership structure.

The conclusion is that this reluctance to take a chance where there is risk means the AAs, shy away from *stretch and growth* assignments, thereby limiting their career progression. This may be true for many demographic subgroups (women, other minorities) in this industry. AAs, in turn, may benefit from the gradual diversification of the workplace.

***Conclusion 3: Conflict aversion is a detriment to career growth.*** In her dissertation on soft skills and penetrating the executive ranks, Dickerson (2010) cited that, the women (who were the subjects of her research) earned success when they displayed positive conflict engagement skills. She concluded that, when they acted as *doormats*, their opinions and thus their clout were diminished. Of course, overly aggressive behavior (what she called *super Alpha*) was also a career detriment, but striking the right balance of assertion and drive were keys to standout behavior. This ability to stand out from the crowd gets people noticed, and thus become candidates for possible stretch assignments (Hallenbeck et al., 2006). According to Louie (2014a, 2014b), in his papers regarding career paths for engineers and the impact of soft skills, if standout behavior is practiced earlier in the career, the longer-term dividends and skill expertise are positive. In his dissertation, S. Gandhi (2009) also found that women who reached the C-suite did so based on firmness and persistence. Consistent with conclusion 1, regardless of generational status, AAs tended to be consensus seeking, and (nearly universally) avoided conflict situations. They would say, "I'm soft spoken and I go to meetings with a Yes mind-set" (MSR4). Without standout behavioral skills, the likelihood of their being noticed is likewise diminished.

The conclusion is that, preferring to go along and get along (March & Shapira, 1987; Miles, 1976), AAs are not viewed as sufficiently standout in assertiveness and drive. This limits their displays of leadership behavior, thereby limiting their opportunities for leadership

assignments. This may be similar to workplace experiences of women and other minorities, including AAs, who may benefit from a growing emphasis of EI and its role in the industry.

***Conclusion 4: Role models and mentors are needed for advancement.*** Teller (2011) studied structured leadership mentoring programs in SCDCs and concluded that, when *actively* implemented, mentees (i.e., protégés) gained advancement opportunities, improved leadership skills, and generally performed better in their roles. However, he also cautioned that most SCDCs implement *passive* mentoring programs, meaning that the relationships and engagements were ad-hoc, and more miss than hit. His recommendations were to fundamentally change these programs by enabling and training the mentors and by assessing protégé progress longitudinally. Given the inclination to introvert behavior (Arana & Smith, 2015) and an insecurity bias to not ask for help (Thomas, 2001), respondent answers confirmed that none actively engaged in any mentoring programs at work. A common answer was, "They are just window dressings to meet regulations" (MSR2).

Furthermore, in her dissertation, Dickerson (2010) concluded that role models are crucial throughout the career advancement process. With no AAs at RBP1 or at RBP0, the thematic analysis of the data shows that the AAs generally felt alone, or certainly felt as if they were charting new territory. Their risk aversion (conclusion 2) and modest non-self-aggrandizing behavior (conclusion 1) meant that they rarely *pushed* their way to the top. As MSR4 said, "I was never asked to raise my hand in class." They tended to wait to be *pulled* up to the next level. Without a role model to emulate or an active mentor, they just drifted in the matrix organization (Bartlett & Ghoshal, 1990).

The conclusion is that, AAs, lacking role models and active mentors are less competitive in the workplace when it comes to soft-skill dominated selections into the management pools.

Therefore, their leadership aspirations maybe realized up to the point of certain lower rank management roles, but, on their own, AAs cannot seem to penetrate the more senior ranks. Other minorities too, like women and African Americans, face similar issues, but their growing political influence in society gives them a stronger advantage versus AAs, who are not considered a counted minority.

***Conclusion 5: Lack of persistent motivation as a career inhibitor.*** Several studies the literature (Baruch, 2004; Fitzsimmons, Callan, & Paulsen, 2014; Onyx, 1998) have pointed to persistent motivation as a key requirement in successfully reaching the C-suite. In this, Fitzsimmons et al. (2014) specifically pointed to on-again/off-again ascension motivation and being discouraged by long career plateaus, as factors affecting career progress amongst minorities. S. Gandhi (2009) also identified the *mommy-track* as a self-exclusion (or delay) regarding career aspirations. Shaver and Scott (1991) had noted that prior experiences with risk outcomes affect current behavior in risk situations. That is, if the subject had negative prior experience in some situation, then he/she is more likely to avoid such risk situations. For career aspirations, after rapid early-career growth, the subjects settled into a malaise regarding career *push* (conclusion 2). Many of this study's respondents noted work-life balance issues, and others expressed discomfort with outwardly displaying *want*. MSR4 said, "When you get opportunity, then family comes along." Likewise, PGR2 noted, "I get paid well. I have challenging work. I am not looking for more."

To the larger sentiment expressed by many of the respondents about *luck* and necessity of being the right person in the right place, the study found respondent answers consistent with their academic LMX experiences (Graen & Uhl-Bien, 1995). Specifically, that the respondents relied more on *pull* from the top, instead of *push* from the bottom. It seemed they were never the right

person at the right time, primarily because they stopped looking (mid and later career respondents) or self-excluded (females, regardless of career tenure) when opportunity came. Others (early career aspirants) felt that they "wanted to stay close to the technology" (MSR8), choosing to remain *doers* of technology, rather than *users* of technology. This desire to stay *technical* is a noted career handicap for engineering employees (Liu, 2010; Tremblay et al., 2002).

The conclusion is that AAs tend to self-select out of the management ladder by mid-career because their progress plateaus. They compensate by staying technical, further opting out of later career management opportunities. The AAs are somewhat unique here, in that their stronger academic credentials enable this track, perhaps more so than for other URM groups.

***Conclusion 6: Late career security clearances as career inhibitors, but with the marketplace internationalizing, there is renewed opportunity.*** The AA engineer is visually different from the general population. With this difference, comes stereotypical responses. As noted by Cheryan and Monin (2005) and again in Gujilde et al. (2015), different minorities evoke different responses (see more discussion on this topic in conclusion 8 regarding microaggression subsequently). Gujilde et al. and others noted that, people tend to form opinions based on first impressions, and that physical appearance is critical for that first impression. AAs are perceived, at first impression, as foreigners, and thus, in the defense industry, there is an initial momentary hesitation to share technical details (D. Kim, 2012). The more egregious events of World War II leading to the internment of Japanese Americans are extreme examples of such bias, and today there are no discernable overt discriminations that the respondents felt over the course of their careers. However, many noted that they received their security clearances several years after joining the workforce. As MSR3 noted, "[I] am stereotyped as a foreigner,

even if I'm a U.S. citizen." In this industry, without security access, there is no access to inner-circle communications, and no exposure to customers. This delay in getting security clearances snowballs into delayed opportunities to contribute to business development, and lack of starter roles in being accountable for profit/loss type assignments. It appears that early in their careers, the AA is simply passed up for program access and thus from promotion considerations[7], and thus self-select (by choosing) remaining technical contributors. What typically follows is, as respondents noted frequently, a phase of rapid promotions because of their technical expertise. As PGR2 noted, "In my early career, I was propelled technically. I received a rapid series of promotions." Adding that, "I received my clearances several years after I started working here."

As noted in Chapter 2, Tremblay et al. (2002) and Louie (2014a) all noted that early career hopping, even within a company, is a foundational base for career growth, as it provides the employee with a good trial-and-error experience with various parts of the enterprise. Denied this experience early in their careers because of lack of clearance, the AAs get priced out of such opportunities later in their careers.

The conclusion is that the delay (sometimes by years) in getting clearances also delays opportunities for career diversification. This delay, combined with their self-stated below-average display of certain soft skills (like self-aggrandizement and effective organizing and communication skills), affects their career growth. With marketplace internationalization opportunities, the security access issue is diminishing, but working on soft skills remains a key limiter to career aspirations. In this industry, the AAs are somewhat unique, as they are more frequently viewed as foreigners versus women or African Americans.

[7] The researcher does not believe any overt act of discrimination takes place in this industry. The industry is bound by numerous government regulations and by internal ethics to provide equal opportunity and a level playing field for all employees. There are many affirmative action programs which enable fair employment practices.

***Conclusion 7: Matrix environment also depresses career progress, but can be an opportunity if certain soft skills are improved.*** The SCDCs adopted matrix operating structures decades ago (Kleinhenz et al., 2013). For the AAs, entering the industry from academia, where their experience with leadership was mostly LMX-oriented (Graen & Uhl-Bien, 1995), the transition to workplace norms is significant (Malloy, 2012). Encountering a laissez-faire management approach, and with their (self-described) below average soft skills expertise, AAs appear to struggle acquiring the necessary (average and above average) workplace skills (Bartlett & Ghoshal, 1990). As MSR7 said, "The matrix is confusing, and we take a long time to adapt," adding, "You have to learn very fast, or opportunity passes you back."

The conclusion is that, while many new engineers may not have experience with a matrix operating structure, AAs are uniquely handicapped because of their weak soft skills. A laissez-faire management style only exacerbates their assimilation into the work norms. Thus, despite their academic accomplishments, they are not viewed as candidates for leadership opportunities, when they themselves appear to be struggling with the work structure and its processes.

***Conclusion 8: Microaggressions and workplace bias adversely affect career progress.*** After decades of civil rights legislation, overt discrimination is illegal, widely condemned in U.S. society, and specifically policed in the heavily regulated defense industry (Roosevelt, 1941). However, microaggression is hard to discern, and thus is very hard to legislate or regulate. The key issue is in the definition of microaggression, which includes intentional *or* unintentional slights. The overt act of discrimination can be more clearly ascribed to the perpetrator, but these subtle acts of microaggression are more burdened on the target, as it is their perception that is the foundational criteria. Given a tendency for self-deprecation (S. Lee, 1994), and a conflict avoidance preference (Le, 2015), the AA often internalizes the stress of workplace micro-

aggression (Liu, 2010). The issues with discrimination, as noted in Chapter 2, include different manifestations for different sub-groups. Disappointingly, African Americans are perceived as having lower education and with greater criminal tendencies (Hewstone & Giles, 1997). Women are unfortunately characterized as incompetent, weaker, and possessing a family-first bias (Ross-Sherrif, 2012). AAs, in contrast, while widely appreciated for their education (Noguchi, 2009) and model-minority characteristics (The Economist, 2015), are mostly thought of as foreigners (Wang & Kleiner, 2001). In the context of SCDCs, this is a major discriminant with regard to early sponsoring of AAs for program access. As MSR5 put it, "We are often only put in for clearances after we have demonstrated unique critical technical capabilities on programs." This delay (sometimes by years), is a key depressor of career growth in this industry (Kendrick, 2009).

Additionally, as AAs tend to be viewed as model minorities (The Economist, 2015), they are also afforded a modicum of success (C. Kim, 1999), meaning that they are generally regarded as having better than average education and wealth. That is, given their family values (Noguchi, 2009), they often live in good neighborhoods, and they generally have homes in communities with 10+ school ratings (Hoeffel, Rastogi, Kim, & Shahid, 2012). In southern California, for defense industry workers, that often means homes in the South Bay, which are usually more expensive than homes farther away from the coast. While admired, they are certainly viewed as not being adversely affected in U.S. society. The SCDCs pay well above average (Kinney, 2014) in an industry that offers long term employment stability (Deloitte Touche Tohmatsu Limited, 2015). AAs don't job-hop, and typically rise well in their engineering careers. MSR1 noted as much in his statement, "I've been here a long time, and compared to others, I think I get paid well." Many others, including MSR12, reflected similar sentiments, noting, "I like the stability, I

like the pay and I enjoy the respect I get for my work." PGR2 said similarly, "Wisdom of the day was, stay for 5 years, and then job hop. I didn't do that."

The conclusion is that AAs are subjects of negative microaggression regarding their citizenship status, and are inadvertently discriminated against for doing well financially. This means that, although the AAs maybe stalled in their careers, the AAs are not viewed as being adversely impacted because of any discrimination. Their own tendency to internalize this slight makes their reaction to this discrimination passive. In contrast, members of other minorities, women and African Americans for instance, have acquired enough self-awareness and self-confidence (Sue, 2010) that they actively push back against such microaggression.

***Conclusion 9: Realization that EQ is a far greater determinant versus IQ, for career growth.*** Ever since Goleman (1998) highlighted EI as a skill as critical as—and perhaps more critical than—intelligence (i.e., IQ), the subject has sparked a lot of work-success research. Nearly all industry segments have embarked on understanding the issues and then in training their workforce and future industry leaders in this discipline. The SCDCs are following this industry trend, and at AC1, there are several leadership and EQ seminars for employees and managers. Given that background and having previewed the interview questions, the respondents were all very thoughtful in their answers on this topic. Perhaps the biggest *aha* moment during the interviews was the respondents' realization (acceptance) that career success in the workplace, when measured by rank and pay, is more attributable to soft skill attributes than sheer display of their engineering expertise (answers to interview questions 4, 6, 10, 11, and 12). Question 12 concluded the interview when the respondents reflected and compared their previous credentials and aptitude answers with their self-assessment of soft skills. Especially for mid-career and late career respondents, this confirmed their career realities, and for early career respondents, this

highlighted a skills gap for their ambition. The key leadership soft skills that were highlighted during the interview included self-aggrandizement, self-assurance, socialization and networking, risk-taking, assertiveness, and engaging in constructive conflict. These skills coupled with luck, clearances, and customer contact were identified by the respondents as keys to early career diversification trials, where respondents could learn and demonstrate the necessary experiences. Some literature correlation for these findings was identified in Baruch and Quick (2007), where the authors provided career advice from retired U.S. navy admirals as they embarked on second careers. Additional research support was found in Hall (1996), who talked about the changing nature of the implicit employment contract, and how it is evolving to a self-directed endeavor. This would build their reputation and increase their chance to be the right person in the right place, at a stage in their careers where they could take on and then successfully execute the stretch goals of their assignments (Ragins, Townsend, & Mattis, 1998).

The conclusions is that AAs when they enter the SCDC workplace, self-admittedly during the interviews, bring below average soft skills. To more fully realize their career ambitions when measured by achieved rank and salary, they must grow their proficiency in these soft skills substantially. When compared to other minorities or other engineers, AAs are typical in many of their awkward (i.e., nascent) social skills (like introversion, and generally dismissing soft skills as hokum [Pfeffer & Sutton, 2006]). However, they may be considered atypical when these tendencies are uniquely compounded with the cultural attributes of internalizing weakness. They hesitate to admit gaps and then hesitate to seek help, thinking it is a public admission of weakness. This distinction makes it harder for AAs to overcome their soft skill gaps.

**Research question 2: Conclusions for institutional issues.** Research question 2 asked: What are the institutional issues that affect inclusion of diversity in the leadership ranks of the

southern California defense industry? The following conclusions relate to this question and provide insights into what AAs view as institutional and environmental issues affecting their career progression issues. The main conclusions related to RQ2, are that the in-place institutional enablers, while extensive, are passive. Furthermore, there is workplace bias, and the constantly changing dynamics of the matrix environment confound their career progression. Although the research was one-sided, in that the institutional senior leadership were not interviewed, this was deliberate, as the research was designed to examine the current perceptions of the AAs in this industry. Interviews of the senior management is a subject for future research. However, it is likely that the senior management would either refute many of the passivity accusations and point to a conscious leadership decision to have employees manage their own career objectives, putting the burden of success on employee initiatives. This is appropriate, but given the introversion of the AAs, unlikely. Finally, the researcher's hypothesis is that the senior leadership is non-discriminatory, i.e., not selecting candidates based on their ethnic or other demographics. The only criteria for senior roles are business benefits, i.e., would selecting XYZ benefit the business, and should the selection be made on reputation. These conclusions are discussed in detail in the subsequent paragraphs.

***Conclusion 10: Passive enablers are ineffective for career growth, but active mentoring could make a difference.*** The SCDCs, with their single customer marketplace, as noted in Chapter 2, operate in a highly regulated environment. As a consequence, the non-discriminatory environment is manifested through Equal Employment Act guidelines, in Fair Employment Practice guidelines, in AAA guidelines, etc. (Kinney, 2014). The SCDCs all have established schemes that make for a more level playing field for minorities and an encouraging environment for multiple career trajectories (Kleinhenz et al., 2013). There are numerous employee resource

groups (ERGs), company management clubs, and employee rotation programs, in addition to mentoring programs, HR diversity reviews, employee satisfaction surveys, etc. As an institution, it is not lacking in enablers.

When the respondents had a direct chance to comment on this in question 9, many admitted to general lack of awareness. Others, who admitted to awareness, said they did not participate. For those who participated, many stopped going, or felt that such enablers were unhelpful. As MSR5 said in his statement, which was reflective of many respondents, "We have many enablers in place. But nothing like that has helped directly."

The passivity towards institutional career-growth enablers goes to the unique cultural pre-disposition of the AAs. They associate admitting *need* as a weakness, and seeking help, as a blemish on their reputation (Honda, 2010). No matter how well intentioned, there was simply a reluctance to use such enablers to further their careers. MSR7 explained this by saying, "It's a double edged sword." Others said, these are "social clubs, and I don't have time for that" (MSR13), or "rotation and network efforts are lip service" (MSR4).

They did feel mentoring was helpful. As MSR3 put it, "Mentoring is key. When I got my PhD, I worked closely with my advisor." MSR15 added, "I was fortunate enough to have another Asian female mentor me actively. She was high raking, and that helped me a lot." AAs come from a hierarchical background, achieved academic success under an LMX model, and in early career seemed lost in a laissez-faire matrix management model. They felt that an active mentor-protégé scheme would match their needs best: where only a small number of people would know their weaknesses and would also be championing their career development.

The conclusion is that the company does indeed have many enablers in place, but for the AA aspirant, these are passive schemes (i.e., not *pull* schemes), and do not provide many career

benefits. For this demographic subgroup, one-on-one active mentoring can be a significant career enabler. Generally, one-on-one active mentoring would likely help anyone, regardless of demographics (Teller, 2011). The other enablers, while well intentioned, are truly passive, and only benefit those who *push* their usage.

***Conclusion 11: Exclusion biases, intended or otherwise, depress career achievements.*** The flip-side of microaggression, is the perpetrator's perspective. In this research, data was collected only on the receiver's perspective. Many noted "White" bias (PGR3 is representative), and others, mentioned the "customer" as a causality factor (MSR11 for example). Still others noted that "being a female" is a handicap (MSR7 and others), some (both male and female respondents) mentioned an old boys club," and others mentioned "language" (MSR3 is one of many). There was frequent mention about work-life balance (MSR9, among others), a few mentioned "delayed clearances," and "being salaried out." Whatever the source, many AAs felt there was some workplace bias that contrived against their career aspirations, and perhaps this was the reason (in response to question 10) they noted why there are so few AAs in senior leadership pools.

This subject is complex. There is no overt discrimination, and there are numerous checks and balances in the organization to assure a level playing field at all levels of the organization. In fact, there are affirmative action participation goals for countable minorities (AAs are not thought of as a countable minority, although the Census Bureau does track this demographic difference). However, generally, the respondents felt that during their early career, they were excluded because of delayed clearances. During mid-career, they felt that they were now too senior in salary grade and felt priced out (i.e., being eligible for lower salary-grade assignments)

of (junior grade) diversification opportunities. In late career, many self-excluded themselves, as having lost higher-rank-attainment desires.

While not specifically explored during the interviews, in the research set-up, the changing market (from single domestic customer to an international marketplace) was noted as a possible catalyst to spur greater leadership rank participation by more diverse demographic groups. The institutions, in anticipation of this evolution have instituted D&I (diversity and inclusion) initiatives and are addressing reasons for lack of participation in the early management pools. The researcher suggests that such initiatives would be more effective if some of the recommendations (presented subsequently) are considered during rollout.

The conclusion is that, intended or otherwise, the respondents felt some discrimination that adversely affected their career aspirations. Other minorities (women, African Americans, etc.) all face some workplace microaggression (age, weight, etc.), and the AA is not unique in a desire for a level playing field. The melting-pot versus multi-culturalism perspective favors those who are more identified with the majority (Lowe, 1991; Thomas, 2008). However, being visually distinguishable, any subgroup must likely go the extra mile just to keep up (Rumbaut, 2015).

***Conclusion 12: Matrix issues.*** Many respondents cited issues with assimilation in the matrix environment that is prevalent in the SCDCs. The most typical comment was similar to MSR7's, who noted, "The matrix is confusing, and we take a long time to adapt." Bartlett and Ghoshal (1990) gave both the employee's perspective of issues with the matrix and also management's expectations regarding its implementation. The employee's perspective in covered in conclusion 7. The current conclusion discusses the management disfunctionality from the employee's perspective: what is known laissez-faire management as it impacts AAs.

David and Lawrence's (1978) article, written when the matrix structure was still fairly new, noted that due to confusion about who the *boss* is, some employees are *lost*. The AAs in this study echoed this sentiment. According to Corkindale (2008), after the matrix management structure had been in use for about 40 years, the key challenges remain reporting ambiguity and the constant team dynamics churn: precisely the issues that the employees in this research echoed. In his curative recommendations, Corkindale (2008) stated that there should be an active (servant) management in one side, and clear goal-focused (directive) management on the other side. The *servant* management addresses employee issues, and the *directive* management addresses project objectives. This is basically what ideally happens in SCDCs, but, in actuality, implementations based on practitioner's trial-and-error experiences provide a variety of employee experiences across the span of the enterprise. This means, some employees, sometimes, have positive experiences, and others, at other times, have negative experiences. This is what the respondents noted. Some said, "At times, it was great." Others said the opposite. MSR7 talked of "Having to adapt all the time," while MSR1 noted, "It's great for networking." This seemed to confirm respondents' opinion that success was a matter of luck: luck in the form of "who you worked for, and what projects you were assigned on" (PGR5). It is probably unrealistic to expect a uniform experience across the span of the matrix over a career, but being better prepared helped employees survive better. To achieve career objectives, of course, the employee has to thrive, not merely survive.

The conclusion is that, the matrix experience is varied, depending on circumstance. For an AA employee, management needs to be especially alert, as their tendencies are to internalize stress, and to not voice discomfort. The uniqueness of the AA aspirant, is that they would not

speak up. Other minorities may not speak out either, but, perhaps not uniformly so, based on the political power that they (e.g., women and African Americans) have achieved.

**Research question 3: Conclusions for path forward.** Research question 3 asked: What possible strategies are available for the AA management aspirants to successfully reach leadership assignments, and what solutions are available for the leadership team to increase C-suite diversity?

***Conclusion 13: AAs thrive under LMX and chaos theory can lead to organizational change.*** This conclusion was drawn from comments made by several of the respondents as they discussed their experiences. None referred specifically to any theory, but in referring to their experiences, quoted what can be construed as in-practice examples of the noted theories.

LMX refers to Leader-Member Exchange theory (Graen & Uhl Bien, 1995), which focuses on the uniqueness of the relationship between a leader and his/her protégé, rather than between the leader and their group. Those who mentioned it (MSR4, PGR4, MSR7, etc.) noted enriching and successful experiences working with their advisor in this type of one-on-one relationship. While it may not be practical for managers in the matrix structure to give everyone such sustained, individualized relationships (or as MSR5 noted, "Everyone is busy, no one has time to carry another's career responsibilities."), it may be possible to take aspirant AAs, after some validating aptitude screening, and pair them with active mentors who can be (more formally than the current informal ad ad-hoc approach) engaged with their charges. In his dissertation on an ADC (an aerospace and defense company) in southern California, Teller (2011) came up with similar recommendations as best practice.

Several respondents (MSR2, PGR5, MR9, MSR15, and others) commented on the seeming randomness of their first or their first substantial promotions. Again, without reference

to any theory, the individuals noted how, to them, it seemed that they were randomly elevated to supervisory assignments. This is Lorenz's Chaos theory (Levy, 1994) of change put into practice. In this theory, small perturbations, referred to as *deterministic chaos*, introduced in an organization often lead to larger, unpredictable organizational change. In other words, the theory can be summarized as; the present determines the future. Given the general lack of self-aggrandizement, it is likely that these respondents were either far exceeding in their performance ratings, or had otherwise displayed some standout performance or behavior. The supervisor, likely, had noticed, and then took a chance on the individual. Out of these unconnected promotion experiments (i.e., where, seemingly randomly, AAs were promoted to management ranks), two respondents (MSR3 and MSR9) both still harbor upward ambitions, and one respondent (MSR3) carried the experiment further by appointing two AAs to RBP4 roles.

The conclusion is that AAs thrive in LMX situations, and perhaps, after appropriate aptitude screening, pairings can be made with active mentors. Additionally, taking a chance is a good thing, even for management. In the ad-hoc experiments, AAs seemed to have done well. This might not be unique to AAs, and most management aspirants would benefit from such opportunities. However, the fact that since most RBP1s and RBP2s are not AAs, perhaps the aforementioned strategy will help increase the pool of candidates.

***Conclusion 14: Lace up, or actions speak louder than words.*** Several respondents, qualified their answers to questions 10, 11 and 14, with a caveat, "It's too late for me, but…" (PGR2). The advice they gave seemed consistent with lived experience and future aspiration. Summarizing the points from Chapter 4, the action steps for the individual and for the institution are noted subsequently:

- The individual must:

  - Improve soft skills, especially presentation and persuasion skills, constructive conflict engagement, assertiveness, self-confidence, adaptability, and a bit of self-aggrandizement.
  - Network purposefully, especially with customers and skip level management.
  - Engage in risk taking early in the career and diversify work experience.
  - Ask for help.
  - Engage in the basics of hard work, making sure the assigned work is done right first time.
- The institution must:
  - Provide early career program access.
  - Screen aspirant candidates for personality measures and leadership aptitude, then pair them with active, skilled mentors.
  - Take a chance and promote hiPots to early career, visible leadership roles, so they can be role models for other aspirants.
  - Actively seek out and stamp out microaggression.

In conclusion, these suggestions are applicable to aspirants from any demographic background and any institution, but are especially applicable to AAs and the defense industry. The opportunity exists to globalize the marketplace, and some of these AAs can be valuable assets beyond their traditional technology roles.

**Implications of the Findings**

**Limitations.** The study only focused on the career progress of AAs in the SCDI, and was undertaken as an ethnographic research effort with epistemological properties. Thus, the reported phenomenology regarding AA career progression may vary based on a range of factors (e.g.,

SPELIT), including the researcher's own interactions with the subject group. That is, it was conducted as a holistic investigation, based on an iterative open-ended learning process that was both interpretive and reflexive (Whitehead, 2002). In that sense, the findings are not exhaustive. Other ethnographers may uncover other attributes not noted in this discussion, or may even disagree with the findings. The study focused on AAs in SCDCs, and may not be widely generalizable to other demographic groups, or to other locations or industries.

**Recommendations for action.** Conclusion 14 lists the recommendations to put this research into practice. The steps outlined for the individual and for the institution are broad, and can be easily tailored to individual circumstances.

**Recommendations for further research.** The research focused on the lived workplace and career experience of AAs in the SCDI. The recommendations can be made more robust by including senior management perspective. Additionally, the study lacked a control group: a group representing the majority population. The likelihood of an engineer successfully climbing the ladder to RBP 1 or RBP0 is small, and this research lacks that definitive discrimination between career progression issues faced by *any* engineer and by *an AA* engineer wanting to get to the C-suite. It would also be worthwhile to follow the career progress of the above mentioned four chaos candidates' (who were seemingly randomly promoted to management ranks). Additionally, to establish research validity, the recommendations (i.e., to lace up – that is to actually start doing the activities) should be put in action. A future study can look at AA progression and compare current statistics with new data.

Another important future study could look at business benefits from leadership diversity; there is simply no published data on companies that can attribute business gains due to diversity in C-suite members. While this correlation is intuitive and ideal, it is hard to gather evidence that

can definitively say, compared to others and faced with similar circumstances, company A did better than company B because they had more diversity in the leadership team.

**Conclusion**

The research was undertaken to understand why some of the best and brightest engineering graduates, especially those who hail from *model* backgrounds, fail to achieve senior leadership ranks in the SCDI. The researcher himself is a member of this demographic group, and the research was as much introspective as it was clinical. In the end, the conclusions confirmed that education and experience were not enough for these individuals to reach executive ranks. While it may be easy to ascribe the negative outcomes, or career plateauing, to some longitudinal glass-ceiling effect, there is actually a complex set of factors that contribute to varied career outcomes for AAs in this industry. Several of these lie with the aspirant, and others are due to environmental issues unique to this industry. These sets of factors interact, and no single issue is uniquely causal with regard to AA participation rates in leadership roles.

No recipe for success emerged; it was simply not possible to determine what it takes for this 15% population to reach the 0.03% positions in the C-suite. However, preparedness (by the individual), willingness (of the institution), and serendipity (luck) need to intersect uniquely for favorable career outcomes. The study was narrow, and would benefit from future research that would eventually correlate career outcome issues of other demographic groups to obtain a general picture of how minorities fare in this industry. A ripe opportunity window exists, as the marketplace is transitioning. If AAs are prepared to move toward leadership positions, the individuals and the institution will both benefit.

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# APPENDIX A

## IRB Approval

PEPPERDINE

Pepperdine University
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

**NOTICE OF APPROVAL FOR HUMAN RESEARCH**

Date: March 02, 2016

Protocol Investigator Name: Rahul Dixit

Protocol #: 16-01-157

Project Title: Barriers to career advancement: A qualitative study of Asian Americans in the US aerospace industry

School: Graduate School of Education and Psychology

Dear Rahul Dixit:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chairperson

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives

APPENDIX B

Informed Consent Form

# PEPPERDINE UNIVERSITY

## *Graduate School of Education and Psychology (GSEP)*

**INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES**

**Barriers to Career Advancement: A Qualitative study of Asian Americans in the U.S. Aerospace Industry.**

You are invited to participate in a research study conducted by **Rahul Dixit, Ed.D candidate and Shreyas Gandhi, Ed.D** at Pepperdine University, because you are **an Asian American employed as an engineer in the Southern California defense industry.** Your participation is voluntary. You should read the information below, and ask questions about anything that you do not understand, before deciding whether to participate. Please take as much time as you need to read the consent form. You may also decide to discuss participation with your family or friends. If you decide to participate, you will be asked to sign this form. You will also be given a copy of this form for you records.

**PURPOSE OF THE STUDY**

The purpose of this study is to further the understanding of career progression issues for Asian Americans in the southern California defense industry. The study will also examine the leadership practices and strategies used to respond to these challenges, and the methods used to measure the overall success of their strategies and leadership practices. Recommendations they would make to colleagues and other Asian American engineers, in order to help them achieve success in their organizations will conclude the study.

**STUDY PROCEDURES**

If you volunteer to participate in this study, you will be asked to participate in the following activities:

1. Interview: Participate in a semi-structured interview with Rahul Dixit to discuss your experience and perspective on career progression, leadership and performance management. The interview will take approximately 60 minutes and the interviewer will take notes during the interview.

2. Follow up questions: Should the investigator need to clarify topics discussed in the interview, answer follow up questions. This should not require more than 30 minutes of your time.

3. Review interview notes (optional): Should so desire, you may review and edit the interview notes described above.

4. Research Report: Your interview, along with those of other Asian American engineers will be analyzed by the researcher for common themes and experiences. The final report will include the investigator's analysis of the themes and experiences discussed in the interviews. Your name and the name of your company will be encoded so that your identity and that of your company will be confidential. Furthermore, should you request, the notes taken during the interview can be reviewed by you and be edited to remove any personally identifying information about you or your company.

## POTENTIAL RISKS AND DISCOMFORTS

The potential and foreseeable risks associated with participation in this study include:

1. As the interview will last approximately one hour, you may become fatigued or uncomfortable with continuing. You will be able to stop the interview at any time or choose to not answer some questions.

2. The investigator believes there are no other anticipated risks.

## POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

While there are no direct benefits to the study participants, there are several anticipated benefits to society which include:

Asian American engineers in the southern California defense industry, such as the subjects, will derive significant benefit from the information and analysis developed through the interview process. Having your peer group describe the problems encountered and how they dealt with them is always enriching.

Non-Asian American engineers, and management aspirants outside the southern California defense industry, benefit from this study by having another data point to use in building their understanding of what is likely a significant opportunity and asset in their company.

Academics interested in the field of career progression will use this study as another data point which will help develop more robust models of career progression issues, for the individual and for their institutions.

Corporate Shareholders: To the extent that this study identifies issues in developing more diverse management pools, shareholders in the positively impacted corporations should experience added value.

**CONFIDENTIALITY**

I will keep your records for this study *confidential* as far as permitted by law. However, if I am required to do so by law, I may be required to disclose information collected about you. Examples of the types of issues that would require me to break confidentiality are if you tell me about instances of child abuse and elder abuse. Pepperdine's University's Human Subjects Protection Program (HSPP) may also access the data collected. The HSPP occasionally reviews and monitors research studies to protect the rights and welfare of research subjects.

The data will be stored on a password protected computer in the principal investigators home office. The data will be stored for a minimum of three years. The data collected will be coded, and transcribed using assigned non-identifiable code names. The final report will contain only code names for both the subjects and their employers.

**PARTICIPATION AND WITHDRAWAL**

Your participation is voluntary. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study.

**ALTERNATIVES TO FULL PARTICIPATION**

The alternative to participation in the study is not participating.

**EMERGENCY CARE AND COMPENSATION FOR INJURY**

If you are injured as a direct result of research procedures you will receive medical treatment; however, you or your insurance will be responsible for the cost. Pepperdine University does not provide any monetary compensation for injury

**INVESTIGATOR'S CONTACT INFORMATION**

I understand that the investigator is willing to answer any inquiries I may have concerning the research herein described. I understand that I may contact Rahul Dixit, [redacted], or Dr. Shreyas Gandhi, [redacted], [redacted], if I have any other questions or concerns about this research.

**RIGHTS OF RESEARCH PARTICIPANT – IRB CONTACT INFORMATION**

If you have questions, concerns or complaints about your rights as a research participant or research in general please contact Dr. Judy Ho, Chairperson of the Graduate & Professional Schools Institutional Review Board at Pepperdine University 6100 Center Drive Suite 500 Los Angeles, CA 90045, [redacted] or [redacted].

I understand to my satisfaction the information regarding participation in the research project. All my questions have been answered to my satisfaction. I have received a copy of this informed consent form which I have read and understand. I hereby consent to participate in the research described above.

_____

Participant's Signature

_____

Date