

**ASIAN AMERICAN ENGINEERS IN THE
MASSACHUSETTS HIGH TECHNOLOGY INDUSTRY:
Are Glass Ceilings A Reality?**

by Shirley Mark

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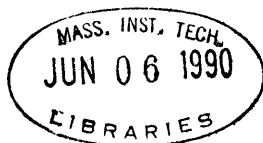
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Abstract

This thesis critically examines the concept of the Asian American as a successful "model minority." I have studied engineers in the high technology industry in Massachusetts and found that, despite large numbers of Asian American engineers, they are underrepresented in the upper echelons of management. Contrary to popular perceptions, Asian Americans are not free of discrimination in the workplace, but, in fact, face an invisible "glass ceiling" preventing professional mobility. Glass ceilings are barriers caused by subjective attitudes, for example, stereotyping and cultural biases, and not objective constraints, such as linguistic ability.

Due to the limitations of aggregate data on the Asian population, I have based my research on interviews with Asian American engineers (including managers), and non-Asian managers and personnel directors. The interviews included an attitudinal survey, including such variables as ethnicity, gender, age, generation in the United States, educational background, and work experience, as well as the interviewee's perception of their status. Asian American engineers at "Dynamic Computer Corporation" (pseudonym) in Massachusetts is presented as a case study.

I have found both subtle and explicit forms of prejudice and discrimination preventing professional mobility for Asian American engineers. This includes structural biases related to personnel evaluations and promotions within high technology internal labor markets, and the prevalence of racial and cultural stereotypes. The structural biases combined with stereotyping has resulted in the career tracking of Asian American engineers as well as the presence of barriers to entering management. The findings of this case study serve to disprove, at least in part, the Model Minority Myth, and give a basis for scholars and the Asian American community to look more critically at the socioeconomic status of Asian Americans in the United States.

Thesis Supervisor: Edwin Melendez, Assistant Professor
Readers: Tunney Lee and Evelyn Nakano Glenn

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Introduction

One prevalent image of Asian Americans* in mass media is the "model minority" success story. The story may be about Asian* students being "overrepresented" at Ivy League colleges, or it may profile the successful professional, particularly those in the sciences and high technology. The prevailing ideology is, "Asian Americans, *against all odds*, have succeeded." According to these stories, Asian Americans have reached the upper echelons of society--social, intellectual, professional, and political--and are accepted and respected in mainstream America.

The hypothesis for this study is that Asian American professionals have not "made it" to the upper echelons of society, despite large numbers with high educational attainment. Kim and Hurh (1983) argue that Asian Americans generally experience a serious problem of transforming their high educational achievement into favorable occupational mobility in the labor market. As a result, they suffer relatively more from underutilization of educational attainment than whites and are oftentimes in positions where they are underemployed. Chinese, Pilipino, and Japanese males, when compared to majority males, are employed proportionally more in occupations that require less education than they have acquired (Hsia 1988; Kim and Hurh 1983; Li 1980; U. S. Commission on Civil Rights 1978: 20). Kuo (1979) echoes this point:

"those Asian Americans who are employed experience great difficulty in obtaining promotions and other benefits associated with career advancement. They are also generally excluded from positions of power and influence, though a high proportion are professionals and technical workers."

JayJia Hsia (1988) has analyzed the earning differentials between Asians and those of whites. Based on educational attainment, the starting salaries of engineers vary greatly

*the term "Asian American" refers to people of Asian descent who are permanent residents or citizens of the United States. In my usage in this thesis, the term "Asian" will be inclusive and used interchangeably, unless otherwise specified.

between Asian Americans and their white counterparts. For example, among Ph.Ds in the sciences or engineering employed by the U. S. government, native-born Asians earned a median annual salary of 10 percent less than that of whites. In private industry, foreign-born Asians earned 8 percent less than that of native-born whites, and 10 percent less than foreign-born whites. According to a National Science Foundation Report (1982), within computer science or engineering, Asian American median starting salaries were 3 percent to 5 percent less than their white counterparts.

The high technology industry has expanded significantly during the past twenty years, particularly between 1974 and 1985. During the same period, the Asian population tripled. In Massachusetts, many Americans of Asian descent and also recent Asian immigrants have entered the high tech industry as engineers. Have large concentrations in this industry resulted in greater career opportunities for Asian Americans, or, do certain "glass ceilings" exist preventing advancement? In reality, few Asians are in upper-level engineering positions, and fewer still in management.

This thesis project is an exploratory case study of Asian American engineers at one leading employer in the high technology industry, Dynamics Computer Corporation (pseudonym), in Massachusetts.

What are Glass Ceilings?

I have found that "glass ceilings" are a reality for the majority of Asian American engineers at one high technology firm. That is, Asian American engineers can advance professionally only to a certain level, at which point an invisible barrier prevents further occupational mobility. I have found that Asian American engineers are underrepresented in high-level engineering positions and in the management structure overall.

The results of this research and findings of extensive interviews has resulted in a "definition" of the term, "glass ceilings." In this study, I will use the term to characterize situations where one or more of the following mechanisms preventing professional mobility are in place:

- (1) the career "tracking" of Asian Americans to particular fields/areas of work, denying access to other arenas. For the high technology dual career track, the ceiling may be lateral (barrier to management track), or hierarchical (barrier to upper levels of engineering). This will be elaborated on further in Chapter One.
- (2) subtle and oftentimes subjective biases (based on race, gender, culture, etc.) that constitute discrimination (for example, the effects of stereotyping and cultural biases)
- (3) a lack of access to standards and expectations regarding one's performance and career mobility goals. . . (that is, do Asians know what they need to do in order to advance?)

The existence of one or more of these situations results in an underrepresentation of Asians at the upper levels of engineering and management, combined with a disproportionately (large) number at the lower-levels. This study attempts to redefine labor discrimination for professionals, particularly where the barriers are known to exist but are more difficult to identify.*

The concept of racially-based labor discrimination is not a new one. Labor discrimination can range from denial of entry into a particular occupation or industry, to professionals who, despite educational qualifications and experience, cannot enter management's ranks. The concept of a "glass ceiling" demands a new way of thinking about discrimination because of the new form it has taken on. Nevertheless, I have found substantial evidence

*A Federal court judge in Washington, D. C., Gerhard A. Gesell, on May 14, 1990, handed down a ruling in a sex discrimination case to give a partnership position in one of the nation's largest accounting firms, Price Waterhouse. The woman was denied the promotion in 1983 because of negative sexual stereotypes. This case is apparently the first where a court has awarded partnership in a professional firm as a remedy for discrimination based on sex or race. (*New York Times*, May 16, 1990) This court ruling is significant in setting legal precedence for future cases of gender or racial discrimination.

which points to widespread discrimination against Asian engineers which exists at the management and executive levels of the firm studied.

Little has been written about Asian American professionals in the workforce. Large numbers of both Asian Americans and foreign students from Asia have attended colleges and universities in Massachusetts since the 1960s. Many eventually settled in the state to pursue their careers, be it in academia, business, or in the science and technology field. Engineers were selected for this study because it is the second most popular field of study for Asian Americans following Business and Management.* (Hsia 1988)

Dynamics Computer Corporation (DCC) was selected for this case study primarily because it is one of the largest computer manufacturers in the United States, and one of the largest private sector employers in Massachusetts. It is considered a model company with regards to its affirmative action program and for its company-wide "Diversity at Work" program to promote multicultural awareness. In-house workshops and seminars are conducted on a periodic basis to address the issues of race, ethnicity, and gender in the workplace. The goal is to promote a racially and culturally tolerant workplace. Given this reputation, and the fact that there are large numbers of Asian American engineers at Dynamics, one might expect the work climate to be more supportive of Asians entering management. The findings of this study show, however, that it is still very difficult for Asian American engineers to advance into management positions.

There are particular limitations to this type of study. First, it is difficult to obtain data at either the firm level or industry wide. The data that is available is not broken by ethnicity, and for the diverse Asian American population, it presents an oversimplified and

*Asian Americans' five top choices in rank order were Business and Management, Engineering, Life Science, Computer Science, and Health Science. (Hsia 1988)

generalized picture, and is virtually useless for the purposes of this study. Second, the nature of glass ceilings is such that data would not necessarily be a useful measure of discrimination. Third, because the structure of high technology labor markets is unlike that of other industries, there is a need for new ways of analyzing and measuring discrimination and which are not based on aggregate data (Fuller 1989). Thus, I decided to use qualitative research, primarily interviews, to analyze the main characteristics of this new labor market and assess the status of Asians in it.

For this study, I interviewed Asian American engineers and also non-Asian personnel managers at six locations in Massachusetts. Through these interviews, I found large discrepancies between the views and experiences expressed by the Asian engineers and those voiced by non-Asian personnel. It is clear that stereotyping, cultural conflicts and misunderstandings, combined with a basic ignorance about the Asian American workforce has coalesced into a situation which has nurtured and perpetuated "glass ceilings" for Asian American engineers. The interview findings reveal that many subjective, oftentimes invisible, barriers exist denying occupational mobility. I will argue that, due to a complexity of factors--including those characteristics of glass ceilings stated earlier--Asian Americans have systematically been denied promotions to the upper echelons of management in high technology companies in Massachusetts.

This study is not intended to be definitive, but to look at the impact of stereotypes and cultural biases on career opportunities at one company. The interviewees' responses demonstrate that opportunities for professional advancement are oftentimes determined by these subjective variables. I hope to open the door for further discussions of Asian American professionals as a "model minority" and the impact of this stereotype on race relations in the workplace.

Chapter One will introduce the context for this study. I will provide an overview of the development of the high tech industry in Massachusetts, discussing the unique nature of high tech's internal labor markets. Chapter Two will present the Asian American "experience" as it relates to this issue. This includes an overview of immigration history, a profile of the Asian American community, and the emergence and significance of the model minority myth on Asian American professionals, particularly engineers. I believe that the model minority image has served to the disadvantage of Asian American professionals. Chapter Three will introduce "Dynamics Computer Corporation" in Massachusetts as a case study. The interview findings reveal more specifically the consequences of stereotypes on the occupational mobility of Asian American engineers. The final chapter will analyze the significance of the research and make recommendations.

Chapter I: High Technology in Massachusetts

Massachusetts has been at the forefront of innovative research in the sciences and technology for a century, due to a large extent on the concentration of universities of higher learning. The most renowned include the Massachusetts Institute of Technology in Cambridge. More recently, the computer industry has skyrocketed since the 1950s with such innovators and entrepreneurs as Dr. An Wang, founder of Wang Laboratories, and "Stephen Smith" (pseudonym), founder of Dynamics Computer Corporation.

In the 1970s, the high technology industry in Massachusetts was responsible for 25 percent of the new jobs, or 132,000 jobs, created between 1976 and 1984. The growth rate was 67.7 percent, triple the overall growth rate of 22.7%. These new jobs consist primarily of systems analysts, electrical and electronic assemblers, and engineers. (Mass. DES, 1985 and 1986)

Due in part to the decline in the high tech industry beginning in the mid-1980s, management has emphasized greater efficiency and flexibility in adapting to the changing economic conditions. At the manufacturing level, thousands of manufacturing workers were laid off; professional staffing was also affected by the hundreds. At some companies such as Dynamics, workers are being retrained to take on new jobs within the company. Based on interviews with management, I discovered that for engineers and other professionals, the value of team effort, flexibility, "trouble-shooting" skills, interpersonal skills, and integration into the internal social networks are all the more important during this period. The value of the "specialist" or expert is diminishing. How will all these changes impact the Asian American engineer?

In this chapter, I will first discuss internal labor markets based on traditional, hierarchical career ladders and compare this model to that representing the "flexible" high technology labor market. The unique nature of high tech labor markets is such that it warrants a new way of assessing the nature of internal labor markets. Second, I will analyze this "new" labor market and its effects on career mobility for engineers. Chapters Two and Three will discuss in greater depth the situation facing Asian American engineers in high tech labor markets.

Internal Labor Market Structures

The high technology industry is a young industry, less than thirty years old. Because of this, and because there are characteristics unique to a science-based industry, this section will introduce labor market concepts as it relates to high technology. Rosabeth Moss Kanter articulates this well in her 1984 paper, "Variations in Managerial Career Structures in High Technology Firms: The Impact of Organizational Characteristics on Internal Labor Market Patterns."

Kanter describes the "classic functional-line ladder career" based on traditional, matured corporate bureaucracies, as:

1. functionally based careers, with movement up a long ladder in a single function,
2. a close connection between the reporting chain reflected on a formal organization chart and the usual sequence of job moves,
3. career movement that is largely linear and vertical, with moves implying promotions to a high hierarchical level,
4. a career arena identified with a large chunk of the organization, due to high organizational centralization--moves that take place under the same general manager and within the same defined unit,
5. reluctance of units (for example, divisions) to exchange managerial personnel,

6. a long process of development from entry-level management jobs to making key business decisions, with a large number of moves in-between,
7. achievement of a general manager post (or top management position) relatively late in the career.

These patterns have been associated with tall hierarchies, vertical communication orientations, a functional bias in organizing activities, relative centralization, and slowly changing technology. (Kanter 1984)

For an example of a strong, internal labor market, Noyelle (1987) gives the example of workers in the insurance industry.

"Workers would enter the job ladder at the very bottom straight out of high school, starting as messengers or file clerks. Through on-the-job training and seniority, they would move up the ranks. Over the years, many could expect to make their way up to technical, professional, or managerial positions. . ."

The traditional management structure was clearly defined and easy to understand. Any entering employee, especially paraprofessionals and professionals, would be informed of the rules and policies which govern the organization, and which determine one's salary and career promotions. An employee, depending on his/her personal ambitions, could in a relatively simple manner, develop a personal plan for career development. This may be worked out with a supervisor or personnel representative, or one may pursue it individually. In a larger organization, this plan may include transfers to other departments so that a greater understanding of the functioning of the organization can take place, or to develop additional expertise. It may also include enrolling in an educational program to gain new skills or to attain advanced degrees.

Kanter contrasts the functional-line career ladder to the newer high technology firms where the above organizational structure seems to have broken down in most of the larger companies. In the high tech industry, managerial careers are characterized by:

1. many more options for career growth and for non-traditional moves,
2. a limited functional identification,
3. a weak connection between the reporting chain on an organization chart and the actual sequence of job moves,
4. career movement that is often nonlinear or lateral,
5. a career arena that encompasses many units of the organization rather than just one,
6. frequent exchange of managerial personnel across units,
7. a rapid process of development from entry-level management jobs to positions making key business decisions, in relatively few moves,
8. attainment of a general manager-type position (or position on a chief executive's staff) relatively early in the career.

By all appearances, it seems that there is more flexibility, and more variations to career mobility in high tech firms than is the case in traditional functional-line ladders. The problems which can arise in these "flexible" situations will be discussed later in this chapter.

Kanter has identified four characteristics of high tech firms which are also useful to understanding the labor structure:

1. Decentralization. Due to complex differences between products and philosophic preferences, these firms tend to divide themselves into a large number of relatively autonomous divisions, each complete with its own general manager, and for each major function, staff heads who report to the division's general manager.

At Dynamics, the groups are divided by research area and product line, and there is a general manager and cost center manager for each group. Under each general manager, there are a number of supervisors, followed by project leaders. The project leaders are usually technical leaders supervising the substantive work of a technical team. Project leaders generally do not take overall responsibility for managing all aspects of the employees--that is the role of the supervisor.

2. Matrix organization. This concept refers to a situation where a manager or professional has reporting relationships in two directions, or, along two dimensions of a matrix. This is an attempt to decentralize decision making while sharing particular specialists across functions. Lines of reporting to "authority" tend to be very loose in these situations.

At Dynamics, several of the engineers interviewed reported to two different groups. One may be based on an area of functional expertise, and the other may be a project group where s/he is assigned as a DCC internal consultant.

3. Emphasis on team effort and other participative vehicles. For a number of reasons connected with the age of high technology firms, the age of their work forces, the complexity of operations, the speed of change within them, and the propensities of entrepreneurial founders who are often still present as forces, high tech firms often use a large number of interdisciplinary task forces or special project teams to develop new procedures or to solve problems.

Kanter argues that the team method has a number of implications for managerial careers. Teams create relationships across functional boundaries, and also may serve as training grounds for people who otherwise would have no opportunity to learn about particular issues or to demonstrate their skills with respect to them. For older top managers, task forces or teams often serve as an opportunity for challenge and recognition that is no longer possible in their jobs. Thus, these mechanisms are useful for both those in the early as well as later stages of their careers.

4. A fourth issue facing high technology firms is a need to motivate and retain technical talent. This has led companies to search for ways to reward outstanding technical performers who wish to remain "individual contributors" because they are more enthusiastic about technical than managerial work or lack the skills to become managers but have a great deal of technical expertise to contribute.

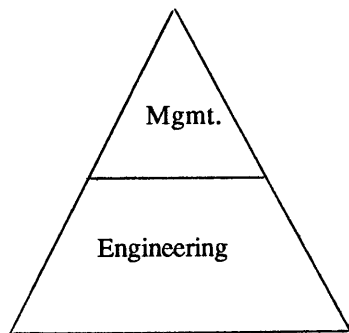
At DCC, the dual career ladder is the structure which was implemented precisely for this purpose. This will be discussed and analyzed later in this chapter.

The above characteristics and changes mentioned in human resource needs not only changes traditional career paths of internal labor markets, but the standards and variables by which to measure job performance. Based on the criteria of team effort, flexibility, "trouble-shooting" skills, interpersonal skills, and integration into the internal social networks, it becomes more difficult to objectively evaluate a worker's performance, and I have found that there are many more "opportunities" for subjectivity and personal biases. Supervisors are required to evaluate their workers not only on their job performance in terms of work produced or product developed, but also greater weight is given to the more

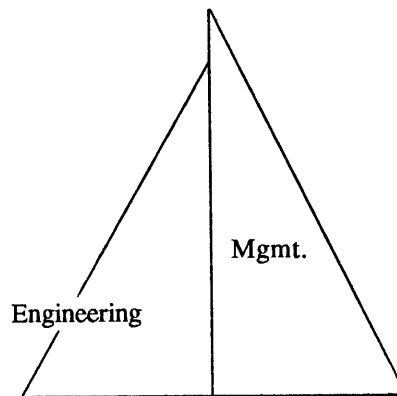
subjective, more difficult to measure, variables such as interpersonal skills. Inherent to this informal, flexible structure is less accountability to objective criteria and processes.

Dual Career Ladders

Through interviews with employees at Dynamics and other high technology companies, I have found that another key characteristic of high technology firms is that of the dual career ladders. "Dual" career ladders refers to the two-tiered structure which places the technical/engineering career path on one side, and the management path on the other. The two tiers are theoretically parallel to each other. In other words, the traditional hierarchical structure where manufacturing was at the lower tier, technical/engineering expertise in the middle, and management in the upper tier of the company structure is not relevant at most high tech firms. In place is a new structure where the contributions of engineers are valued and compensated comparable to that of managers.



Traditional Career Ladder



High Tech Dual-Career Ladder

Dual careers ladders began early in the industry, at least twenty years ago for some companies. The purpose of implementing this new structure was to attract and retain valuable technical personnel who were not interested in management. Prior to this time, engineers and other technical specialists were in a career track where management was the

standard path to pursue in order to receive increased influence and salaries. However, many engineers were not interested in management--supervising personnel, managing budgets and other administrative details, etc.--and thus were poor managers. They were unhappy, and management was not functioning in an efficient and effective manner. The engineering or technical parallel of the management ladder was subsequently created to address this problem. The new career track allowed those who chose to remain as individual technical contributors to do so while at the same time they could advance in their careers.

The high tech internal labor market structure raises many questions, such as: does greater flexibility result in greater opportunities? While innovative, what have been the particular effects of the dual track structure on the occupational mobility of Asian engineers? I believe that the high tech labor market is designed in such a way that there are many problems in the implementation process and in its accountability to workers. There are many inherent assumptions and values, and the resolution of existing conflicts is not obvious. For example, I have found that "management culture" is perceived as a white, male culture. Racial minorities and women are not included in this culture. As a result, while the dual career ladder is ideal for the person who is aggressive in his or her career pursuits particularly for white males, for the majority, it obscures the channels of command and thus channels of opportunities. Chapter Three, the case study of Dynamics, will demonstrate the actual effects of these assumptions on career opportunities for Asian American engineers. Next I will assess and evaluate the success of dual career ladders in high technology firms.

Evaluation of Dual Career Ladders

As mentioned earlier, I believe there are many weaknesses to the dual career ladder system in place at many high tech companies. First, the implementation of the engineering ladder has not been completely parallel to that of management. In most companies, the highest level of engineering reaches only the mid-management level, comparable to that of a division manager. Engineers are still restricted from upper-level decision-making positions. Gene Dalton, a professor of organization behavior, has been quoted as saying, "Success in our society is becoming a vice president, not a super senior scientist." (Berkman 1989) He argues that this social corporate structure is unlikely to change. Thus, while managers would agree that the technical expertise of the engineering cadre are very critical to a company's success, these talents and contributions are "rewarded" at a lower value than that of general manager. Considered a model company, Dynamics has the highest level engineer just at the vice president level.

Second, Kanter's flexible organizational structure combined with the vague structure of the dual ladder has resulted in foggy and unclear lines of command and responsibility. There are excessive "opportunities" for subjectivity and personal biases of supervisors to influence an engineer's performance review. Berkman, in *Electronic Business* (March 20, 1989), argues that in order for the dual ladder system to work, it needs to: (1) clearly spell out criteria for promotions, and (2) give scientists more than cash rewards, but some influence as well.

Berkman presented the case of National Semiconductor Corporation, where it developed a matrix of ten factors to be used to judge a worker's performance. "The matrix replaces nebulous job descriptions of two or three paragraphs--and clarifies for both employee and management what technologists need to accomplish to be promoted." The majority of

firms, however, are lacking in this process of informing worker's of standards and expectations for evaluating one's work. I believe that only with clearly spelled out responsibilities and standards for evaluation can the employees be judged fairly and objectively.

To conclude, the implementation of dual career ladders was innovative and addressed the issue of compensating technical expertise. For Asian American engineers, however, the situation is more complicated, and the actual benefits not as obvious. There are particular issues to Asian Americans as a racial and cultural minority which interfere with the ideal implementation of the dual career ladder.

Chapter Two, "The Asian American Connection," will provide an overview to the general situation Asian Americans face in U. S. society. Asian Americans have faced immigration restrictions and exclusion, racist violence, and discriminatory practices throughout 140 years of settlement in the United States. This, combined with an omission of Asian American history from education and mass media, resulted in a fundamental societal ignorance which led to racism and stereotyping.

This background is critical to understanding the current situation of Asian American engineers and the "glass ceiling" phenomenon. I believe that many Asian Americans have selected the sciences and engineering precisely because it was viewed as an "objective" profession where race and cultural factors would not interfere with one's career mobility. The flexible, informal internal labor markets of the current high technology industry, however, proves otherwise. The interviews show that there are, in fact, tremendous barriers based on subjective variables which lead me to believe that career mobility at high tech firms is similar to that of other [traditional] labor markets where social networks and

politiking are essential to advancing one's career. Chapter IV (case study) will analyze in greater detail the effects of the dual career ladders on Asian engineers at Dynamics Computer Corporation.

Chapter II

The Asian American Connection

Stereotyping, the overly-generalized portrayal of a group of people (for example, based on race, religion, gender, or class), has existed as long as humankind. Stereotypic images distort and dehumanize the affected group, and they also greatly influence the attitudes and actions of other members of society.

Asians have been victims of stereotyping since the Opium War between the British and China in the 1840s. These early images portrayed the Chinese as opium smokers, sneaky, evil, and not to be trusted. Over time, similar stereotypes were transferred from the Chinese to the Japanese immigrants, and later to other Asian national groups. Today, the Asian "success story" is new in form, but qualitatively it is as narrow and one-dimensional as the earlier stereotypes. The "model minority" image portrays Asians as a successful immigrant, who through hard work and perseverance, has achieved the American Dream in a very short period of time. Because stereotypes have long influenced public attitudes and actions targetting Asian Americans, it is important to look critically at the images presented, to challenge the accuracy and assess the consequences on the Asian American community.

This chapter will present the emergence of the model minority success story and subsequent effects on the Asian American community. I will counter this portrayal with the reality of its current situation. Most important, I will analyze the effects of this stereotype on the career choices and opportunities of Asian American professionals.

Are Asian Americans the Model Minority?

Since the 1960s, one image or "stereotype" has prevailed in popular media depicting Asian immigrants and Asian Americans. This image portrays the Asian American as a recent immigrant, a good student, a technical genius in the sciences and technology, and a

successful professional. According to this commonly accepted portrayal, Asian Americans have overcome all odds and have reached socioeconomic parity with mainstream America. And, most important, Asians have succeeded as a result of hard work and perseverance and should be held up as a "model" for other racial minorities in the United States.

"It was in the 1960s--when the plight of Black Americans was occupying the nation's attention as it tried to cope with their assertive demands for racial equality--that two of the nation's most influential print media presented to the American public a portrait of Asian Americans as a successful model minority."
(Chun 1980)

The context and time period in which this image emerged is critical to understanding how one image can have such a deep impact on American society. It was during the height of the civil rights movement that the model minority thesis appeared, beginning with a 1966 *New York Times* essay by William Peterson, "Success Story, Japanese American Style." From that time until today, the media has consistently chosen to focus on this one-dimensional aspect of a small sector of the Asian community. Publications which featured these stories include *U.S. World and News Report*, *Newsweek*, *Time* magazine, and the *Los Angeles Times*. (Chun 1980) Television shows (such as the "MacNeil Lehrer Report" and "20/20") have also highlighted the Asian American success story.

The disproportionate attention given to this myth is due to several factors. One, the country was in the midst of tremendous turmoil, when the majority of its citizens were questioning the role and responsibility of government, and challenging many of its decisions and actions (for example, United States involvement in the Vietnam War). The Black Pride and Black Power movement was on the upswing, led by such leaders as Malcolm X and Martin Luther King. Popular sentiment demanded an end to the racial and economic inequality and other injustices faced by Blacks, other racial minorities, women, and many others. It was also during this period that the immigration restrictions for Asian nations were lifted, and large numbers of Asian immigrants started to arrive in the late 1960s. Because of particular

clauses in the law which gave preference to those with skills needed in the U. S., the composition of the new immigrants did include a sector of educated and skilled elite. It was with social unrest combined with an influx of Asians that the upper sector of the immigrants were placed on a pedestal and portrayed as the new "Americans."

Underlying the "model minority" image was the message to the Blacks and Latinos demanding social services, educational rights, etc., that, "These Asians have just arrived, and look at them. They are enrolled in colleges, and are patriotic Americans. What are you complaining about." Chun (1980) also believed there was political motivation for this image: "The portrayal of Asian Americans as a hardworking, successful group was usually accompanied by invidious comparisons to Blacks, as if to suggest that the industrious docility Asian American style was the solution to racial discrimination." Essentially, the media played the role of pitting the Asians against other racial groups and thus supporting the government's need to passify the populace at that time. Needless to say, it was not a successful effort, and the Asian American community soon followed in support of the civil rights movement, forming its own "Yellow Power" movement to demand access to services and resources for the community. Ironically, it was out of this struggle that Asians joined with Blacks and Latinos to form numerous "Third World" alliances at that time. Nevertheless, the media continued to portray Asians as the "model minority."

Scholarly and government publications soon followed in dispute or outright rejection of this success story (for example, Bonacich and Modell 1980; Cabezas and Yee 1977; Chun 1980, Kim and Hurh 1983; U.S. Commission on Civil Rights 1978; Wu 1980). Criticism of this portrayal has extended across disciplines, from economics to sociology and psychology. One argument challenges the accuracy of the data presented which asserts the "success" of Asians based on income. Because the demographics and cultural lifestyle of

most Asian Americans is not analogous to that of white Americans, the assumptions and methods for data collection and analysis are faulty, resulting in misleading data.

For example, family income is often used as a statistical measure to compare the status of Asians with that of whites. It is argued that Asians earn a higher family median income than white families nationally. Implied in this is a higher standard of living. However, because Asians tend to concentrate in urban settings where the cost of living is higher, and because there are more workers contributing to that family income, the figure is actually misleading. When the Asian family is compared with a white family in the same statistical area, Asians were found to earn significantly less (for example, in New York city, the Asian family earned 25 percent *less* than that of the white family). In addition, Kim and Hurh (1983) argue that, "In spite of relatively high education and family income, individual earnings for Asian Americans are lower than the earnings of whites, when investment factors (such as education) are controlled." That is, Asian Americans tend to have higher levels of education and lower salaries compared with their Caucasian counterparts in the same jobs. These critiques did not make it to mass media, and the image persisted and has reappeared a number of times over the past 25 years.

The model minority image encompasses many "myths," all of which contain hidden assumptions and inaccuracies about Asian Americans. First, is the assumption that all Asians are immigrants. Second is the belief that all Asians are in the sciences and technology, and are not interested in the arts, social sciences, or business. Third, is the assumption that Asians fit into a European immigrant model where after one or two generations in the United States, the children will "assimilate" and become "full Americans." I will analyze each of these assumptions at this time.

The Myth of the Asian Newcomer

Far from being newcomers, Asian immigrants have a long history of being recruited to the United States to fulfill particular labor needs at particular times in its history. During the expansion to the West in the 1800s, the Chinese and Japanese were recruited to develop the physical and economic infrastructure (eg. construction workers for the Transcontinental Railroad, miners, agricultural and cannery workers, domestics, and light industry). (Knoll 1982; Takaki 1989) In Hawaii, immigrants were recruited from Asia as well as Puerto Rico and Portugal to work on the sugar plantations. (Takaki 1989)

Immigration laws have reflected both the need for labor (in opening immigration), and also the end to that need (as evidenced by anti-Asian sentiment and violence resulting in immigration restrictions). For example, following the 1870s depression and a decade of fervent anti-Chinese violence and economic scapegoating, the first U. S. immigration exclusion law was passed in 1882, "The Chinese Exclusion Act." Numerous laws were subsequently passed either opening or closing immigration based on several factors: U. S. economic needs, racial sentiments, and foreign policy. European immigrants, however, were able to immigrate more freely during the same period of immigration restrictions for Asians. (Takaki 1989)

Thus, it can be seen that Asians have a long history in the United States and are not only recent immigrants. Asians have faced racism and economic scapegoating since the mid-1800s, when the first significant wave of Chinese entered as miners. From that time onwards, numerous discriminatory laws were passed, from special taxes targeting Chinese foreign miners (1853), to an Alien Land Act (1913) targeting Japanese American farmers, to laws preventing intermarriage between Asians and Caucasians (1906). Some form of restrictive immigration law was passed against every Asian nationality, severely stunting

the development of Asian families and communities. (Knoll 1982) As a result, bachelor societies were the norm, and the early communities shrunk over time due to death and the inability to reproduce a new generation.

The early stereotypes and racism retarded the settlement and development of Asian communities. Only Japanese men were able to bring wives over in any significant numbers but only between 1908 and 1924. The Japanese American community too was devastated, however, with World War II and the incarceration of 120,000 Japanese Americans.

The 1965 Immigration Act ended the national origins quota and with it an end to restrictive immigration for most Asian nations. Asians started to arrive in significant numbers under the family reunification clause. Others came as a direct result of a labor preference clause under the 1965 Immigration Act which favored immigrants with high levels of education and professional expertise. Unlike the earlier laborers, these new immigrants came to pursue higher education or to work as professionals. As a result, many were from a more elite, class background than their predecessors. Scientists and engineers, in particular, filled a void in the United State's technological competition with the Soviet Union. The largest number of immigrants came from Hong Kong, Taiwan, Korea, India, and the Philippines. Due to the structure of the 1965 immigration preference system, the Asian community profile today is complex and in many ways polarized economically. There tends to be a large sector of skilled professionals at the same time there is a large, unskilled working class sector.

When the doors opened in 1965, the majority of Americans had no knowledge of the five to six preceding generations of Asians who had made significant contributions to the development of the United States. Many of those early Chinese, Japanese, and Pilipinos*

who were victimized by unjust government laws, in fact, arrived prior to European immigrants. Because of the history of institutional racism, the development and growth of Asian communities prior to 1965 had been stunted.

The Asian American community today is diverse and complex, encompassing new immigrants and refugees as well as fourth, fifth and sixth generations in the United States. We need to recognize the 140-year history of contributions and struggles which has shaped to a large extent the "character" of the Asian American community. At the same time, we need to be sensitive to the situation facing Asian newcomers, both refugees and immigrants. It is only with an understanding of the history in the United States combined with an overview of Asia and Asian cultures that we can begin to understand the situation facing all Asian Americans today.

Next, I will discuss some of the factors which explain the large numbers of Asian Americans who have selected engineering for their professions.

Why Engineering?

"If one of the shared goals of our society is to provide a full range of occupational opportunities, any barriers to this should become a matter of serious concern," writes Ki-Taek Chun (1980). There are in fact a large number of Asian Americans in the engineering field, and the following are several factors to explain this phenomenon.

First, due to the opening of immigration in 1965, many Asian Americans are recent immigrants with limited English language proficiency. This often forces them into occupations where language is not a central determinant for their entrance. The sciences are

*the preferred term referring to the people from the Philippines

viewed as one of those accessible fields, where one's abilities are judged primarily on one's technical and scientific knowledge and less on communications skills. For those who immigrated as adults, the academic training and work experience in Asia prior to their arrival in the United States is also more transferable.

Second, for Asian American students whose families are recent immigrants and of working class background, the sciences are viewed as a "safe" career, safe from racism while providing job security. Their families have struggled and suffered in order to provide educational opportunities for them, and there is great pressure to select a financially secure profession.

The outcome of one survey to Chinese American youth in San Francisco in 1977 revealed that their "occupational aspirations are influenced by their 'fears of economic competition and racial prejudice, and the resultant discrimination.'" (Chun 1980) Chun argues that occupational aspirations and choice are determined in part by the likelihood of success in the real world. The social sciences, arts, and other arenas are considered too subjective and risky in terms of job stability. Thus, even today, many Asians born in the U.S. and also recent immigrants turn to the sciences and engineering due to parental pressures or out of a fear in confronting racism in their professions.

Third, in Asia as in other parts of the world, the sciences are held in high regard by society. Whether one teaches or works in industry, respect and compensation is awarded to that person. Thus, there are many foreign students and immigrants who choose the sciences as their professional endeavor, regardless of any intention to immigrate elsewhere. A similar regard is not quite evident in the United States. Here, other professions such as being a

pop singer or actor or manager in the entertainment industry are more glamorous and given prominence in mass culture.

Recent articles have focused on the fears held by white college students attending classes with Asian students. They believe the grading curve will be skewed upwards due to the high grades earned by Asian Americans. The Asian students are not respected for their scholarly work, but are held in contempt and accused of being "nerds" and "technical geeks." It is not that Asian American students are not interested in the liberal arts, sports and social activities, but I believe the root cause for the low level of participation is due to issues discussed earlier. Many Asian Americans have subconsciously prioritized their academic endeavors as a means of avoiding racism and uncomfortable social situations.

Models of Assimilation

Earlier immigration to the United States was of a different character than this post-1965 phenomenon. Most of the pre-1965 immigrants were Europeans of peasant or working class background. They originated from Ireland, England, Norway, Portugal, France and elsewhere. The majority were semi-literate or illiterate, although a small sector of educated, upper-class folks were also present. According to Takaki (1989), the assumption was that with hard work and perseverance, one could succeed in U. S. society. Following one or two generations of personal struggle to survive, a child of an immigrant had a reasonable chance of leaving the poverty of their parents.

The problem with this European immigrant model is that it ignores several important factors determining the relative smooth transition into U. S. society. First, is the factor of race and ethnicity. For European immigrants, it is true that there was tremendous antagonism directed at a number of immigrant groups (for example, the Irish). However, with the

passage of several generations, their offspring could [physically] assimilate into mainstream society with relative ease, compared to that of distinct racial minorities such as Blacks, native Americans, Latinos and Asians. Racism has always, and continues today, to influence all spheres of society, limiting access to jobs and education, housing and social services, and more. Radical though this may seem, the concept of "race" is a unique and yet integral part of the development of the United States as a nation.

Second, the European immigrant model ignores the effects of politics, foreign policy, and economic development on labor and immigration trends. Fifty or one hundred years ago, the economy was radically different from what it is today. Life was more simple, and it was true that particular groups of people (particularly Caucasians) could "work hard and succeed." The post-World War II era was also a period of economic growth and prosperity, and women and Blacks received a small share of the pie. Today, the economy is international in nature, and much more complex. The development of U. S. industries has reached a point where corporations are multinational and bigger means better. In fact, one needs to constantly expand in order to succeed. Small businesses are having greater difficulty in basic survival, and the competition for jobs has intensified. In this context, the situation for racial minorities becomes ever more tenuous.

For Asian Americans and recent Asian immigrants, there are several factors to explain the success of a small sector. First, many Asian Americans who have reached university levels have had roots in the U. S. for several generations. Their families have struggled to place education at a priority because it was seen as a way to move upwards socially and economically. The coming-of-age of Asian college students in the 1960s occurred in the context of civil rights and the opening of admissions policies at many institutions. Thus, opportunities not available earlier were now a reality.

Second, a significant sector of the post-1965 Asian immigrants were from the middle or upper classes in their nations of origin. They arrived either to attend universities for additional training, or directly entered industry. In either case, these immigrants had skills and expertise, and the United States initially welcomed them. Those who arrived in the late 1960s and early 1970s came from Hong Kong, India, the Philippines, South Korea, and Taiwan. Another example is that of the Vietnamese community. Many Vietnamese students have been hailed as impoverished refugees who in a few years have "made it" in reaching the American Dream. In reality, of those featured as "whiz kids" or valedictorians of their high schools, many of their families came from the upper elite of South Vietnam prior to its fall in 1975. They consisted of South Vietnamese officials and other members of the former elite, ruling class, many of whom had direct relationships with U.S. officials. They were political figures, military officials, businesspeople, and intellectuals. Most were well educated, and many arrived with financial resources in hand. Many were multilingual, speaking several Asian languages (such as Vietnamese and Mandarin), and also French or English. The U. S. was obliged to grant them asylum, and, as a result, the majority of this sector settled in a relatively smooth manner into life and work in the United States. While technically they are classified as refugees, the reality is, they had financial and other resources to assist them in the transition into American life and thus cannot be compared with working class immigrants. (Knoll 1982; Takaki 1989)

This group has been highlighted with the underlying assumption that the *majority* of refugees have reached the American Dream in a short period. In fact, the sector of the Asian community who are promoted as the "successful" Asian Americans are in fact a small minority, and did not "pull themselves up by the bootstraps" as popular media would have us believe. Their experiences cannot be compared with those of other racial minorities, nor with those of earlier working class Asian Americans. Were we to conduct a study of the

majority of Asian Americans (in most Asian ethnic and national groups), we would discover that the majority are still struggling to earn a basic livelihood and to obtain decent jobs with potential career opportunities.

Consequences of these Myths

The Model Minority image is a powerful image which has impacted virtually everyone in American society--regardless of age, class, or sector. Everyone has either read about it in magazines or newspapers, or has watched television specials. The prevalence and recurrence of this image, combined with a lack of knowledge about Asian American history and experiences, has resulted in a highly influential but distorted image causing tremendous conflict for the Asian American community. For the early immigrants whose offspring have left menial jobs (such as in agriculture or the service sector) for white collar occupations, this image brings pride and respect to a community long deserving. For others, this image distorts the objective situation of the majority of Asian Americans, and denies the community of its reality. In reality, most Asian Americans are still struggling to survive in a racist and economically competitive society. This image of success, in a subtle manner, justifies the continued ignorance of a community's social, economic, and political needs. It allows those in positions of power and influence to deny the existence of social needs and thus restricting the resources for addressing them. Chun has summarized well the views of a broad range of scholars:

"Asian American observers have also been concerned about the hidden, yet injurious, costs of their so-called success. They identify the hidden costs as *behavioral overconformity, conservatism, loss of social consciousness, adoption of the dominant group's stereotypes resulting in second class mentality, negative self-image, and the sense of lost identity.*" (Italics mine) (1980)

The model minority image has been challenged consistently by Asian American scholars and other sociologists since the 1970s. Yet, because there continues to be a void in our educational system which addresses the issue of Asian American Studies, little has been

done to counter it. The Asian community lacks both the access to mass media and the resources to launch the necessary media campaign to challenge and correct this image.

It can be seen that Asian Americans have a long history of struggle and contributions in the United States. This history, however, has been tainted with racism, exclusion, and violence, resulting in severely stunted community development. The role of media stereotyping played a significant role in shaping the perceptions and attitudes of non-Asians toward Asian Americans. This stereotyping continues today and is most evident in the Model Minority image. In this chapter, I provided an overview to some of the "truths" beneath the Model Minority facade. Next, I will discuss the implications of stereotypes as it has manifested at one company toward Asian engineers. The interview findings of Dynamic Computer Corporation will present in greater detail the implications of these stereotypes on the career situations of Asian engineers.

Chapter III

Case Study: "Dynamic Computer Corporation"

"Dynamics Computer Corporation" is one of the largest private employers in Massachusetts. It has been lauded as a model employer by the media, its employees, and others within the high tech industry. Dynamics is touted with regards to its affirmative action program, its decentralized structure as a means of personalizing management, its no lay-off policy, and its open and accessible atmosphere for workers to access management. Most important, DCC prides itself in being led by engineers and not traditional managers with MBA training and experience (the founder himself was an engineer). Thus, while other high tech companies also have a dual career ladder (one engineering track, one in management), the engineering track at DCC is four or five rungs higher than that of other companies, and the highest-level engineers fall just beneath the vice president level. Nevertheless, it is unclear whether Asian Americans have reached the management ranks, or whether it is a "reachable goal."

Methodology

In this study Asian American engineers and also non-Asian personnel staff and managers were interviewed. (See Appendices I to III for a sample of the questions asked.) The purpose of the interviews was to explore and document the individual experiences of Asian engineers in order to reach a deeper understanding of their collective experience. The following are some of the questions I intend to answer: Have Asian American engineers "made it" in high technology? Are they in positions of decision-making and influence? If so, how did they do it? If not, why not? What are the barriers? What are the views held by Asian American engineers about their personal career situation? How do their views compare with the perceptions held by non-Asian personnel and managers?

Fourteen Asian American engineers were interviewed. Eight came to the United States originally on foreign student visas--the oldest almost 30 years ago, the youngest three years ago. Of those who came as foreign students, the countries of national origin include: Hong Kong, India, Malaysia, Singapore, and Taiwan. Three came for undergraduate studies, while five went directly into graduate school. At the time of the interviews, all of the foreign students had earned at least a Masters degree before working, and one obtained a doctorate. The remaining six interviewees were either born in the United States, or immigrated during their early childhood. Of these, four received Bachelor degrees, one held a Masters degree, and one person held a doctorate. Members from both the "foreign student" sector and also the "native" Asian American sector were pursuing a Masters in Business Administration. All of the interviewees were fluent in English although several of the immigrants had slight accents. Exactly half of the fourteen Asian engineers interviewed were women.

All of the engineers were in the engineering track, with all but one at or below the Principal Engineer position. One Asian male was a Senior Consulting Engineer, the only interviewee who has risen above one aspect of what I consider the "glass ceiling" on the engineering track. He was not "typical," however, as he had almost twenty years of experience before entering Dynamics. In addition, his technical expertise was unique and critical to the development of one product.

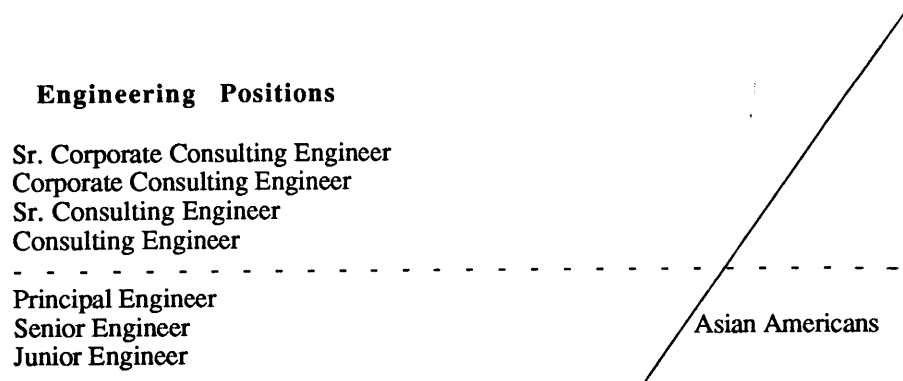
The vast majority of the Asian American engineers interviewed either presently or in the past aspired to enter the management ranks. Four engineers wanted to move up the ranks on the engineering track, while eight others hoped to transfer over to the management track. As I discussed in Chapter One, it becomes increasingly difficult to enter the management track once one is embedded in the engineering track.

In this chapter, I will first give an overview of the management and engineering dual career ladder structure at Dynamics. Second, I will provide an overview of the stereotypes and structures which present problems to occupational mobility for Asian engineers. The perspectives of the fourteen Asian engineers interviewed will be analyzed in comparison to the myths and perspectives of non-Asian managers and personnel representatives. Last, I will summarize the consequences of these myths on the career opportunities for Asian American engineers.

Dual Career Ladders at Dynamics Computer Corporation

Dual ladders are the "basics" of the career structure which all employees are a part of. The exact position where one is situated will determine to a large extent the future steps in one's career mobility. As discussed in Chapter One, dual career ladders were implemented for the purpose of attracting and retaining valuable engineering talent. In a technologically-based industry, engineers are greatly valued as "company assets." At Dynamics, the dual career ladder, in its ideal implementation, allows key scientific talent to contribute without being "forced" to join management's ranks in order to receive the benefits and rewards of management (for example, salaries comparable to those in management). The dual career ladder is one method of rewarding individual technical contributors with oftentimes high salaries and also some decision-making power over the work that they take on. It also grants them a greater voice in product research and development. In terms of "management," one could "manage" or be in a position of great influence from either the engineering track or management track. At Dynamics dual career ladders are standard and considered innovative, and the term "management" is broad and may encompass greatly differing tasks and responsibilities.

To characterize "glass ceilings" more specifically, barriers to professional mobility exist on two fronts: one, it is difficult for Asian engineers to transfer from engineering to management because of stereotypes about Asians and cultural biases, and second, it is difficult for Asian engineers to advance from Principal Engineer to the Consulting Engineer position because of the political nature of these promotions. Half of the interviewees believed that Asian engineers were well-represented at the lower-levels of engineering, but virtually non-existent in management or in the upper levels of engineering. The other half did not know where Asians were concentrated at DCC.



To simplify this study, I will use the term "management" to refer to engineers in either the engineering track, beginning at the Consulting Engineer level, or engineers who have successfully transferred into the management ladder. There are two types of Consulting Engineers. For example, one may be a Consulting Engineer focused solely on her or his individual technical contributions, not lead a project, nor perform any supervisory functions, and yet influence major decisions regarding whether to undertake a project or not. Another Consulting Engineer may supervise a large group of engineers along with several projects. Still, an engineer may enter the management track and be responsible for managing all aspects of a project, from product development to marketing. Engineers who transfer to the management ladder will eventually find themselves as professional managers and no longer technical contributors. Dynamics Computer Corporation, in part because its

founder was an engineer, is generally supportive and encouraging of engineers making this type of transfer from one track to the other.

Earlier, in the Introduction, “glass ceilings” were articulated as (1) the career "tracking" of Asian Americans into a particular field of work, (2) subjective biases that constitute discrimination; (3) a lack of access to standards and expectations regarding one's performance and career mobility goals. Glass ceilings results in an underrepresentation of Asians at the upper levels of engineering and management, combined with a disproportionately (large) number at the lower levels.

For this case study, I will present the perceptions of the Asian interviewees as it relates to these questions of glass ceilings at this company. My goal was to ask the interviewees to articulate their work situations and experiences in a broad manner. Their responses and commentaries to the questions are insightful and telling of the situation.

Career Tracking:

When the dual career ladder structure was implemented, it was considered innovative and key to retaining valued technical expertise. However, for Asian American engineers, the objectivity with which the structure has been implemented is questionable. The stereotypes that Asian American engineers are (1) technical whizzes, and therefore should remain there, (2) are not "management material," and (3) are not interested in management. (These will be discussed later in this chapter.) All of these manifest themselves in "career tracking." That is, because non-Asians believe that these stereotypes are true, and because there is an overall ignorance about Asian American people, the careers of Asian engineers are determined and defined for them. Rather than presenting the option of remaining in the engineering track or entering the management track, many Asians find themselves without choice. Their supervisors often encourage them to remain in engineering, or as in the case

of one engineer, the supervisor serves as an obstacle for information about how to transfer to management.

One interviewee, when asked if there were barriers preventing Asians from entering management, responded:

"I can see the barriers. If there are some engineers who are very good technically--which many Asians are--the manager will try to persuade you, convince you, to stay in the technical track because they don't want to lose you. It's happened to a lot of Asians, due in part to communication skills where the Asian might not assert his/her interests enough."

As evidenced earlier, however, remaining in the engineering track can prove to be a deadend for career advancement. Most of the engineers believed they could reach the Principal Engineer position given time. To go beyond that, however, would be very difficult. There is a commonly held perception that if one were non-Asian and a part of the social networks, one could be a mediocre engineer and still reach the Consulting Engineer position. An Asian American engineer would have to be virtually a technical genius before that opportunity would arise.

Cultural Conflicts and Stereotyping

About half of those interviewed felt that Asian engineers often did not get recognized for their contributions due to cultural behaviors. Most Asian cultures value qualities such as modesty, humility, and respect for others (especially authority figures). Characteristics such as a competitive nature, self-centeredness and aggressive behavior are generally frowned upon. The following were some responses to the question of cultural conflicts in work situations:

"One of the biggest drawbacks is Asians tend to be quiet, not flashy. Flashy people get more attention even if they're not competent."

"There are conflicts between family values--those things our parents teach us like modesty, to be humble, to work hard, etc.--which the workplace does not recognize or appreciate."

Another, who is very ambitious and hopes to eventually open his own business, says:

"Asians don't tend to promote themselves like white people. We're more accommodating, but need to make more noise. In order for Asian engineers to advance, we also need to change the attitudes of upper management."

Another engineer discussed the problems which can arise when communications problems become interwoven with technical problems. He said,

"managers don't always understand the technical issues...for example, when a problem has been solved, they don't appreciate the work you may have put in to solve a very complex problem."

Because the Asian engineer is less likely to give himself or herself credit or promote their work to their supervisor, their contributions are less likely to receive recognition.

In addition to cross-cultural conflicts, racism and stereotyping are also critical components to this study. The United States does not have a reputation for "welcoming" people from other nations. Mass culture historically, and also the political institutions, are rooted in Caucasian male culture; all other peoples and cultures are situated at a lower position on the social hierarchy.

For "outsiders" such as Asian Americans, many conflicts may arise with interaction between the two groups. In those instances, Asian Americans are generally misunderstood or ignored, and their experiences and behaviors give less "value." In other words, Asian Americans are generally "judged" based on White male standards. The next section will begin the discussion of those conflicts between Asian engineers and their non-Asian management staff.

Are Asian Americans "Management Material?"

Numerous arguments have been given as reasons for the lack of representation of Asians in management positions. While many of the Caucasians interviewed felt that it was "personal choice," that is, that Asians were not interested in management positions, the Asians interviewed felt they had to struggle against the stereotype that "*Asians are not management material.*" They argued that those in management (ie. non-Asians) believed that Asian Americans lacked the qualities necessary to be a good manager, and these qualities ranged from physical presence (one's physical stature) to Western cultural behaviors (such as assertiveness and being outspoken). Some argued that this was a false perception, due primarily to stereotypes and racism because they as individuals *did* possess "Western" values and behaviors (for example, being outspoken and assertive). Others felt that the Western values were imposed upon them without giving their "personal style," or culture, a chance to prove its potential value to management. They believed that there are many Asian cultural values which can contribute to management's goals and effectiveness. I will now explore these arguments and the responses from the interviewees.

When Asian American engineers were asked whether Asian Americans as a group faced any barriers to advancement, more than half responded negatively, denying that barriers existed. In particular, those with fewer than four years of experience were optimistic that their individual efforts and contributions would be recognized and rewarded accordingly. They believed that if they did a "good job," the company in return would compensate them with the appropriate raises and promotions. In speaking of barriers for *other* Asians to enter management, however, the majority of the same interviewees identified stereotyping and the belief that Asians are not "management material" as problem areas. Moreover, half of the interviewees acknowledged that they had witnessed dissatisfaction and frustration by

more senior Asian American engineers in their inability to advance. When asked if they knew reasons or barriers, they answered "no." By all accounts, the engineers referred to were experienced and qualified for promotions which others (ie. Caucasian males) of similar experience had received.

I found of particular interest the fact that while many interviewees were unable to identify barriers against their individual career mobility, they openly discussed the many barriers that Asian Americans as a group faced. These engineers felt that they were not like "the other Asians," and therefore they believed that they would be treated fairly and would not face similar problems. Because the most confident and optimistic interviewees were on the younger side, I am inclined to conclude that it is perhaps naivete which allowed them to separate their own experiences from those of Asian Americans as a whole. Those with more experience were no less confident of their abilities and yet had faced numerous barriers to advancement. The implications of this denial are that younger Asian American engineers will not be as prepared for barriers they may well encounter in the future.

One person who had only worked for one year, felt one common stereotype about Asians is that of "*being technical geeks.*" She also said Asians were seen as not being good at communication skills, and that "*being a minority, you may put in a lot of work which may not match your position or rewards given to you.*" She prefers working with people and intends to enter management.

The older sector, those with four or more years of experience, immediately identified a number of real barriers to advancement.

One woman who has been at DCC the longest, responded:

"there is not 'one of us' in upper management, so of course a glass ceiling exists. You cannot measure it. Degrees won't help, because once you get the degree,

they can always find something you won't have. The company is controlled by the majority, and we aren't in the majority so there will always be barriers preventing mobility."

An Asian male with five years of experience at DCC said:

"There is a stereotype that Asians make lousy managers, incapable of strength and authority. . .Also, racism and sexism is there. If people say it doesn't exist, they're closing it out of their minds. I've seen the careers of minorities fall by the wayside. Accomplishments often don't correlate with position. There is a single model of what it takes to be a good manager, and that is, you have to be a white male and part of that culture."

Another Asian male replied: *"Asians are technically competent, but not perceived as that social. They're the type you put in a cubbyhole and get results from. . ."*

One woman spoke of her naivete early in her career. She shared some of her personal experiences which has enlightened her to the reality of the situation: *"In the beginning, Dynamics gave me all the freedom I wanted. If there were any limitations, I was putting them on myself."* After a few years, however, she started to resent being overlooked for promotions and raises. *"I thought I shouldn't have to ask for promotions, raises, etc. I was doing my job well and assumed I would be rewarded accordingly. I was very very naive."* At another time there was an opening for a Principal Engineer in her group given to an outsider, with less experience and qualifications, without notifying her. *"I had to hold his hand. . .[After this], I just couldn't stay in that group anymore. It just didn't feel right."*

Another woman considers herself "management material." She does not see herself as a technical whiz although she believes it is important for managers to have some technical training. She considers herself an "outspoken feminist" and feels many of her ". . .white co-workers can't deal with assertive Asian women." She believes that there is a glass ceiling for all women to enter engineering management.

"Are Asian Americans Interested in Management?"

Despite a national statistic which lists "business and management" as the most popular field of study for Asian Americans students (Hsia 1988), there is a view held by many non-Asians in the high tech industry that Asian American engineers have made a conscious decision to be individual contributors at the technical level rather than enter management. A common reason given by the Caucasian informants for the lack of Asian managers is that of choice. Some believe it is "cultural" while others attribute it to poor language abilities and weak communication skills.

I discovered with interest that members of both groups--Asian Americans and non-Asians--agreed that Asians, as a "culture" were not interested in entering management. They argued that management work was not valued or given respect in the culture, and therefore, few Asians had any interest to enter this arena. When speaking of their own personal aspirations, however, twelve of the fourteen Asians interviewed were career-oriented and interested in either upper-level engineering or management.

One Asian engineer disagreed:

"I don't believe how [they] can say Asians are not interested in becoming managers. For example, it is the same argument when people talk about Asian Americans becoming politicians. They say that Asians are not interested in politics, but most people from Asian countries are in fact very political and political participation is very high in some Asian countries. . ."

When asked why there were so few Asians in management, the following is one response given:

some Asians don't enter management but it's not because they aren't interested. It's often a result of not having good communication skills, or sometimes they know that it is not a real possibility, and then they talk themselves into thinking they don't want to be managers. . ."

His general view is that many Asians would be interested and actively pursue management were there more encouragement and support.

On "Flexible" Standards for Evaluations

A key determinant for success in dual career ladders is having clearly spelled out criteria for performance reviews and promotions (see Chapter II on dual career ladders). These criteria were lacking for the engineers at Dynamics. In addition, the informal and flexible nature of the high tech labor market does not seem to "work" for racial minorities and women.

Several of the interviewees spoke of their attempts over years to develop a personal career plan but consistently coming up against a wall with their supervisors.

One interviewee who had been with DCC for most of her career at one time aspired to rise in the engineering track, but felt the barriers were too great for her as a woman and Asian. Fifteen years ago, she was demoted without an actual change in title. She had transferred to a position in the manufacturing area assuming it was a lateral move. Several years later, in an attempt to move from Senior Engineer to become a Principle Engineer in the engineering track, her supervisor informed her that she was attempting to skip one position. As it turned out, a Senior Engineer in manufacturing was a half-position lower than that in engineering. She then realized that she had been encouraged to take that position without a full understanding of the differences in career paths between engineering and manufacturing. Had she known, she may not have taken that position in the first place.

Some years later, she worked out a plan with her supervisor to become a Consulting Engineer. At the same time, he was constantly telling her, "*you're not consulting material.*" *In the mid-1980s, I started to change, and decided 'I won't put up with it, won't take it anymore.'*" She acknowledged that there existed "cutthroat competition" and that she wasn't willing to keep up the struggle with management. "*I didn't have the guts to*

fight it through anymore." . By 1987, she had given up on the idea of becoming a Consulting Engineer.

She believed she was consistently overlooked throughout her tenure at DCC "...because I was a woman and a mother, they assumed I didn't care about promotions or raises." In retrospect, she feels that being an Asian woman in itself was a major barrier to her career advancement. She shared a common occurrence in meetings:

"They won't ever listen to my ideas. . I would say something and no one listened. Two hours later a white man would say the same thing and everyone would support the idea."

Another engineer has repeatedly requested information on how to enter engineering management for over two years now, but has yet to receive it. He expressed this interest to his supervisor, it is documented in his evaluations, but he still is not clear about what he needs to work on. He works an average of 55 hours a week at the office, and studies an additional 10-20 hours a week at home.

During the course of these interviews, out of 20 employees interviewed (including Asians and Caucasians; managers, personnel representatives, and engineers), not one person could articulate a standard to evaluate and judge an engineer's performance. About half of the engineers had a *general* understanding of what is needed in order to become promoted to a higher position, and of this group, about half were somewhat satisfied with their career progress thus far.* Both managers and personnel representatives, however, were unable to articulate a set of criteria for conducting performance reviews. The response I repeatedly heard was that each project and each group had its own set of criteria, and company-wide standards were not applicable.

I believe that the informal and flexible high technology labor markets serve to the disadvantage of Asian American employees as well as for women and other racial minorities. The standards and criteria for evaluations and promotions are oftentimes based on an individual supervisor's *interpretation* of general company guidelines. There is much "flexibility," however, for individual biases and interests to interfere with an objective evaluation. I believe that clearly defined set of criteria must be established *at the time an employee is hired* so that the guidelines are clear and the worker will know what is required in order to receive a promotion. The current process and structure is too often arbitrary in its implementation.

Social Networks

The lack of access to social and professional networks have also proven to be significant barriers for Asian Americans to enter management. At Dynamics, it was no different.

The engineers with four or more years of experience tended to view career opportunities with skepticism. The majority spoke of the political nature of promotions beyond that of Senior Engineer, particularly if one were interested in pursuing a Consulting Engineer position. In order to advance from Principal Engineer to that of Consulting Engineer, one is subjected to the supervisor's standard evaluation, a peer review, and also the support and backing of several levels of management. Thus, in order to advance to become a Consulting Engineer, an engineer needs in place a fairly well-developed social network with both peers and managers. A number of Asian engineers expressed frustration at their inability to access the social networks of the non-Asian peers and managers. Others felt the

*The optimism, however, seemed to decrease the longer the employees had been with the company. Those with one to two years with the company were the most satisfied, while those with five or more years were the least satisfied.

social and political demands were too great, requiring a change in "lifestyle" and culture which they were not willing to undergo. Still others were not aware of the process for this particular promotion.

To illustrate this, one engineer spoke of the need to watch hockey games (either at someone's home or attend a live game) and drink beer, a social situation he does not feel comfortable with. One woman spoke of the difficulty of "fitting in" to social situations as a mother and wife. She spoke of the importance of social situations not only to fit in socially, but also to keep abreast of new technology. "I had a hard time keeping up with the technology because it has exploded so rapidly. . . You pick up a lot from social situations, which I was totally cut off from because I had a family to care for. . ."

I believe that all engineers should be informed of the processes and criteria for personnel evaluations and promotions at each particular career move. More important, one needs to be informed of the "weight" (that is, value) given to peer reviews and social networking with management *years* before they intend to advance from a Principal Engineer to that of Consulting Engineer. If becoming integrated into the professional and social networks are important to one's career advancement, then this needs to be clearly spelled out in personnel guidelines, particularly since the high technology labor markets are more "flexible."

The perception that numerous barriers for Asian American engineers to advance professionally was not isolated to the Asian engineers themselves. One (Caucasian) personnel manager, when asked if barriers existed, echoed the sentiments of the majority of Asian Americans engineers interviewed, speaking frankly of her perception of the barriers:

"First, the style of Dynamics culture is very outspoken and confrontational. Management expects a lot of initiative, an extroverted style, which many Asians do not have.

Second, involves stereotypes. There are many stereotypes against Asians--that they are quiet, passive, etc.--that make the Asians defensive, always reacting to them. It makes it very difficult for Asians to enter management.

And third, Asians are viewed as good technically, and the feeling is "that's where they should be."

In addition, she added that there were cultural conflicts which she felt the personnel department and management needed to be more sensitive to. One example she gave was the issue of salary reviews by peer groups. *"This practice had offended and upset several Asians who felt their salaries should be very private. They felt humiliated by the process. We need to learn how to manage Asian Americans more effectively, especially on cultural and communication difficulties."*

Conclusion and Recommendations

I have demonstrated that at one leading high technology employer, a new type of discrimination exists for Asian American engineers. I found that Asian American engineers were not in highly placed positions of respect and authority, but concentrated in the lower- and mid-technical levels.

Many explanations are given for the absence of Asian Americans in upper management. Some argue that Asian Americans lack the necessary educational background and work experience. They also argue that Asians are lacking in communication skills (verbal and written). However, for this case study, all the interviewees had education, work experience comparable to their white counterparts, and all were fluent in English. Moreover, a majority were willing to pursue additional education in order to advance professionally.

At Dynamics, many non-Asians believed that Asian Americans have chosen to remain as "individual contributors" in the engineering track, when in fact the overwhelming majority of engineers interviewed spoke of the desire to enter management. Most of the Asian American informants, and several of the non-Asians, felt that stereotypes and ignorance are tremendous hurdles Asian Americans must overcome in order to advance in either track, but particularly should they wish to transfer to management. Both non-Asians and Asian Americans agreed that Asian American engineers are viewed primarily as "technical contributors" and face barriers when aspiring to enter supervisory positions.

The most important finding, however, is that the implementation of high technology dual career ladders prove to be a structural barrier for Asian Americans, women, and other racial

minorities to enter the upper levels of management. The dual career ladder works best for those who are part of the "old boys network" (that is, Caucasian men), but poses a tremendous barrier for others. A majority of the Asian American engineers believed they could become a Principal Engineer given time, but to become a Consulting Engineer would be very difficult given the political nature of that particular promotion. This was also echoed by non-Asian personnel. It is clear that Asian Americans face stereotyping, racial and social biases which deny accessibility to the structures and processes necessary for career mobility.

Informal and flexible standards and processes for personnel evaluations and promotions has resulted in vague and arbitrary criteria. In those situations, discrimination is present, but is rooted in the company in such a manner that it is difficult to articulate its characteristics. It is even more difficult for employees to file grievances or take actions against the company. I conclude from this case study that informal and flexible labor markets are biased and flexible primarily in serving the interests of those in management, or part of the "old boys" network, and not the career aspirations of Asian Americans and others previously excluded.

I believe that "glass ceilings" are a new, more complicated form of labor discrimination affecting the professional sector. It is an "invisible" barrier because the root causes are generally based on informal and arbitrary criteria. In addition, the nature is such that affected employees oftentimes can not identify it, and as a result, are not prepared for the barriers when they arise. The manifestation of glass ceilings may include biases in the company structure, cultural attitudes, behaviors, and expectations, gender biases, or racist attitudes (whether subtle or explicit). People of color, women, ethnic minorities and immigrants are particularly affected.

This case study documented only those workers currently employed by Dynamics Computer Corporation. Through the interviews, I also learned of a number of cases involving Asian Americans (and African Americans) where disillusioned workers left to seek employment elsewhere. Some left quietly without protest, while others let their frustrations and dissatisfaction be known to management and personnel. In one case, an Asian group manager threatened to leave after a long, protracted struggle for a promotion. The company eventually granted the promotion. It seems that this is not common, however. One interviewee remarked, "If you file a grievance, you get placed on a blacklist and retaliated against later."

Thus, while the dual career ladder is a positive change for high technology labor markets overall, for Asian Americans, other racial minorities and women, the opportunities for career advancement oftentimes become blurred and unclear. The structure and processes for promotions are based not on standardized criteria, but "flexible" criteria, and I would argue, more subjective and arbitrary criteria.

I selected Asian American engineers as my unit of analysis because their portrayal as a successful "model minority" is so dominant in mass media. "Dynamics Computer Corporation" was selected as a case study because it is seen as a model employer. The findings suggest that at other not-so-progressive firms, the situation must be even worse for Asian American engineers.

Recommendations

There are a number of strategies for addressing the issue of "glass ceilings" at the workplace which meets the needs of both Asian American employees and also management. One strategy is for "special interest" groups to form caucuses to discuss their

needs. These could function as support networks for younger engineers to assist each other with career planning while learning from more experienced Asian American engineers. The group could brainstorm strategies for individuals to address their concerns, while at the same time thinking of ways the collective body might provide support. The "Diversity at Work" program at one Dynamics facility is currently experimenting with caucuses, but it has been ad hoc in nature, the objectives unclear, and thus is still in its formative stages. Also, as a management-initiated program, inherent biases may exist which make its "success" difficult to measure.

Second, management needs to address the assumptions and biases inherent in the internal labor market structures and processes for career mobility. Most important, workshops should be implemented at all levels of the organization addressing the issue of stereotypes and culture in the workplace. This information must be discussed in the context of the internal labor market structure so that necessary changes can be implemented. Oftentimes, workshops and conferences are held addressing critical concerns but no effort is made to integrate the new information into the functioning of the organization overall.

Third, management should develop programs to promote role models of diverse backgrounds and experiences. Given the changing demographics in the United States, all employers will soon need to address the issue of diversity not only at the lower levels, but also in upper management. To create a diverse leadership body is to their credit and advantage in the long term.

To conclude, the significance of this study is that it can serve to alert Asian American engineers to identify potential discrimination which may exist in the workplace, and to be offensive instead of defensive. In addition, there are also many lessons which other Asian

American professionals can draw from. While high technology labor markets are unique, I am certain that the situation of "glass ceilings" is not for Asian American professionals.

I believe that as long as distorted media images continue to dominate the mass media at the same time Asian American Studies is omitted from textbooks and educational programs, there will continue to be widespread ignorance. This ignorance leads to racism, stereotyping, and insensitive treatment of the affected group. In the meantime, Asian American professionals will need to speak louder and challenge those structures, processes, behaviors and actions which deny them professional mobility and opportunities.

Appendix I
Interview Questions for Asian Americans

Interviewee:

Date:

- A. Personal background
 - *gender/ethnicity/race
 - *American born/immigrant (what year/age did you come?)

- B. Educational background

- C. Employment history
 - (1) Why/when did you choose your field?

 - (2) Describe your work area:
 - (b) work experience
 - *number of years in industry/positions held
 - *number of years at current employer/positions held
 - *reasons for leaving other positions

 - (3) On-the-Job experiences at Current Company
 - (a) Why were you hired?
 - (b) Workteam composition (race, gender, age)
 - What is your relationship w/ coworkers?
 - Do you socialize outside of work?
 - (c) How do you feel about your job? The company?
 - (d) Where do you see yourself going professionally?
 - How far will you advance here? What do you need to do?
 - Do you expect to move elsewhere later on? When/why?

 - (4) What has been your situation re:
 - i. salary increases
 - ii. opportunities to develop/lead projects/supervise others

 - (5) How are Asians perceived by non-Asians?
 - How many Asians are there? In what positions?
 - Are there stereotypes/assumptions about Asians?

Appendix II
Interview Questions: Managers

A. Interviewee/Position:
Date:

B. Organizational Profile
(1) industry/product line

(2) labor structure/types of engineering jobs/how is work organized?

(3) recruitment--how is it done? (campuses, word-of-mouth, etc.)

(4) how are performance evaluations done? Purpose?
what is a "standard" tenure for engineers?

(5) what are the grievance procedures for the company?

(6) Is there a company policy re: affirmative action?

(C) Asian Americans

(1) How are Asians viewed by their co-workers/supervisors?

(2) Do you ever get any feedback from managers about their Asian engineers? Strong points? Particular weak areas?

Appendix III
Interview Questions: Human Resources

Interviewee/Position:

Date:

- (1) What is your role in the recruitment/hiring of engineers?
- (2) labor structure/types of engineering jobs/how is work organized?
- (3) What are the mechanisms for recruitment?
- (4) What are the mechanisms for monitoring worker productivity?
How are performance evaluations done? (frequency/purpose, etc.)
- (5) What are the opportunities for career advancement for engineers?
How does it "work?"
- (6) What are the grievance procedures?
How do employees know their rights and grievance procedures?
(Employee manual?) How are cases of discrimination addressed?
- (7) What is the company policy re: diversity (race/gender) ?
What is the company's affirmative action policy?
What is the racial/gender mix overall? for engineers?

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