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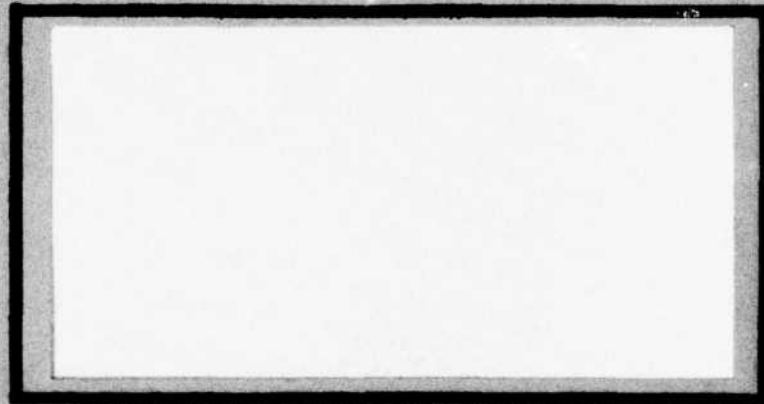
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CAREER PROGRESSION TO GENERAL
OFFICER IN THE UNITED STATES
AIR FORCE

John J. Beishke, Jr., Captain, USAF
James R. Lipsey, Captain, USAF

LSSR 4-77B

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The purpose of this research is to provide a body of knowledge that can be used in high-goal, long-range career planning. Common factors relevant to the education, background, and military experience of Air Force brigadier generals are identified and presented as a guide for the career development of Air Force junior officers. Variables assumed to be important to career development to Air Force general are identified for investigation. These variables are examined for importance to career progression through a combination of statistical testing and subjective analysis in comparing the careers of 171 Air Force brigadier generals, and 291 Air Force colonels who had been passed over for promotion. Three common career patterns are identified and presented from the analysis of the careers of the general officers. Recommendations as to the application of the study for the career planning of Air Force junior officers are presented as a conclusion to the study.

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CAREER PROGRESSION TO GENERAL OFFICER IN
THE UNITED STATES AIR FORCE

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

John J. Beishke, Jr., BA
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September 1977

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has been accepted by the undersigned on behalf of the
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fulfillment of the requirements for the degree of

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H. Col. John R. Adams, Ph.D.
COMMITTEE CHAIRMAN

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CHAPTER I

INTRODUCTION

Career planning is of extreme importance to the United States Air Force as a whole and individually to its officers. Careful planning is needed:

. . . to insure that sufficient numbers of highly qualified officers are always available to assume positions of increasing responsibility and scope throughout the Air Force and Department of Defense [25:1-1].

The individual is a critical resource. The Air Force expends a great deal of effort, time, and money each year aiding individuals in career planning. Most career guidance, however, is aimed at the next two or three assignments. The long run, in terms of a twenty-five or thirty year career, is seldom addressed in official publications of the Air Force. Hypothetical career planning to the rank of general officer is unheard-of, but such planning should be available for those junior officers who desire to work toward this goal.

When officers discuss progression to general, the comment is often heard that it's "who you know, . . . [4:257]." This may be true to some extent. However, there is a great deal the individual can do to aid his own career. Career progression paths in specific

career areas through the rank of colonel are outlined in AFR 36-23 (25). This type of planning may help an individual to attain the rank of colonel, but a different type of planning is necessary to become a general officer. It is a military tradition that officers should be generalists (9:305). To become a general, an officer must have an innovative and adaptive career with unique or unusual assignments and experiences that will broaden his managerial and professional skills (9:168). Unfortunately, very little data has been collected, and even less has been written, in the area of career progression to general officer rank. At present, there are no written guidelines in the Air Force to assist the ambitious, young officer in his drive for the top in a military career.

Statement of the Problem

Air Force officers do not have adequate guidelines available for developing realistic, long-range career progression plans for attaining the rank of general officer.

Justification

Career progression is important to the Air Force and to the individual officer. The Air Force expects returns on the investment it makes in training and educating its officers. The Air Force officer, having

committed a substantial part of his life to the Air Force, expects the Air Force to provide him with the opportunity to meet his career and his personal goals. To realize an optimum, mutually satisfying relationship, career planning is essential.

The lack of current data on long-range career planning shows a need to build or at least to initiate the building of a new body of knowledge on high goal, long-range career planning applicable to the Air Force. Existing studies in this area are of limited value to the Air Force officer for several reasons. For example, Morris Janowitz' study, *The Professional Soldier*, was published seventeen years ago with most of the data collected before 1950 (9:443). Maureen Mylander's *The Generals* deals mainly with the United States Army (16:ix). Major C. Norman Wood's research study, "Navigator Generals: How They Got There," is confined to the narrow stratum of Air Force navigators who have attained the rank of general (28:iii). The dearth of current and relevant information calls for new studies, one of which should be directed at examining Air Force generals as a group. This type of study would be designed to identify factors which were significant in assisting the current generals in their drive to the top.

Objectives

The proposed research has two objectives. The first is to identify common factors and distinctive career patterns of Air Force officers in the rank of general. The second is to present the career patterns and their key elements in a form which can serve as a guideline for officers who are planning their careers with the long-range goal of attaining the rank of general officer.

Scope

This study is limited to career progression to the rank of brigadier general. The scope is further narrowed to Air Force brigadier generals on active duty on 1 December 1976 as listed in the *Air Force Times* (19:24). The chaplain, legal, medical, and health service career fields are not included in this study because these specialized fields are not open to Air Force line officers who have entered the service outside these specific career fields.

Research Proposition

Common factors relevant to the education, background, and military experience of Air Force general officers can be identified and used as a guide for the career development of Air Force junior officers.

CHAPTER II

LITERATURE REVIEW

Published studies on general officers relating to career planning and progression are limited in number and scope. Periodically, articles in publications such as the *Air Force Times* will summarize several variables pertaining to a group of officers recently selected for promotion (7:8). The summary data in these articles tend to be superficial. Existing in-depth studies of career progression are dated and lack a feeling for the prevailing military attitudes. However, the information in these studies provides the foundation for comparing past and present data on general officers, and this comparison can be used to create a new set of knowledge concerning career patterns of Air Force general officers.

Background

Brown. Prior to 1955, there were very few scientific studies of the socio-cultural background of high ranking military officers. Almost all of the studies were biographical in nature, and focused on the individual military hero (4:236). In their studies of the American military, Mills and Janowitz referred to an earlier and unpublished doctoral dissertation by

C. S. Brown, "The Social Attitudes of American Generals, 1898-1940." In this dissertation, written in 1951, Brown had studied the social background of 465 Army generals and had reached several conclusions which Mills and Janowitz also deduced several years later. Brown concluded that the American military elite, the generals and the admirals, had many of the characteristics of the American business and political elite. They were native-born, Anglo-Saxon and were members of the professional and upper-middle class (9:81).

Mills. C. Wright Mills did an extensive study of the power circles in America in his book, *The Power Elite*, written in 1956. To Mills, the power elite was composed of men from three groups of American society, "the warlords, the corporation chieftains, [and] the political directorate [15:9]." The men in these groups were in positions to make decisions having major consequences (15:3-4), and were men who had most of what there was to be had--money, power, and prestige (15:9).

Using statistics from Brown's 1951 study, Mills described the top officers of the Army and the Navy as men of the upper-middle class, with only a small percentage of them from the working classes. These officers were sons of professionals, businessmen, and political officials (15:192).

One central point Mills stressed was that for most of their careers, the generals and admirals followed a uniform and prearranged career pattern (15:192). The training of a future admiral or general began at an early age with his way of life centered firmly within the military world. West Point and Annapolis were logical starting points for most of the top generals and all of the admirals of the mid-1950s (15:193). One important assignment that Mills emphasized as crucial for the post-World War II officer destined for the top was a tour of duty in the Pentagon, "where he may come into the view of those who count [15:196]."

Janowitz. Morris Janowitz did the first comprehensive sociological study of the military elite in *The Professional Soldier*, published in 1960. The purpose of this book was to:

. . . attempt to describe the professional life, organizational setting, and leadership of the American military as they evolved during the first half of this century [9:viii].

The study consisted of a historical sample of 761 generals and admirals appointed between 1910 and 1950 (9:443). Realizing that the career military officer is, in the true sense, a professional, Janowitz thought it proper to analyze the professional officer

. . . in terms of variables which would be applicable to any professional or elite group:

social origins, career lines, social status and prestige, career motivations, self-conceptions, and ideology [9:7].

Janowitz set forth five hypotheses which he believed emphasized the changes that had occurred in the military profession over the last fifty years. These hypotheses stressed: (1) the changing organizational authority of the military, (2) the narrowing skill differential between military and civilian elites, (3) a shift in officer recruitment to a broader social base, (4) the significance of career patterns that led to entrance into the professional elite, and (5) trends in political indoctrination of the military for the purpose of broadening its social and political perspectives (9:8-11). Janowitz concluded that the military elite of this era was:

. . . drawn from an old-family, Anglo-Saxon, Protestant, rural, upper middle-class professional background . . . [and was] strikingly homogeneous as compared with other elite groups [9:100-101].

Janowitz also discussed career patterns of the military elite. One of the basic hypotheses of this study was that an officer, by following a prescribed career pattern performed with high competence, could gain entrance into the elite. A prescribed career included command and staff school, war college, and proper command and staff assignments (9:168). However, to reach the very top of the elite, an officer

needed a more innovative and adaptive career. True, he still needed to follow the elements of the prescribed career, but he needed to have unique or unusual assignments and experiences that would broaden his managerial and professional skills (9:168).

Warner et al. A comparison of the social characteristics of civilian and military leaders was done by Warner, Van Riper, Martin, and Collins in *The American Federal Executive*, published in 1963. The authors examined social origins such as occupational mobility, geographic origins, and educational backgrounds. Their results, obtained in the late 1950s, compared favorably with those of Janowitz. One statistic showed that 9 percent of the military officers had fathers in the military while 57 percent of the fathers were either business owners, executives, or professional men (27:323). Another statistic showed that 11 percent of the military wives had a father in the service while surprisingly, 19 percent of the wives of civilian professionals had fathers in the military (27:93). Unfortunately, the authors did not address the rank of the military father-in-law.

Coates and Pellegrin. Coates and Pellegrin did an analysis of the military profession in *Military Sociology*, published in 1970. Using data drawn from a

wide range of published and unpublished sources, the authors presented a summary and interpretation of American military institutions and military life. They analyzed the social origins of all ranks of military personnel principally through the use of data abstracted from an unpublished and previously classified Department of the Army study by Rufus C. Browning, "Social Origins of Military Personnel" (4:267). Browning's study concluded that an actual difference existed in the social class origins of officer and enlisted personnel, and that officers, as a group, came from higher socio-economic classes than did enlisted men (4:272).

Jennings. A study of the civilian side, and occasionally the military side, of the drive for the top positions in an organization was presented in *Routes to the Executive Suite*, by Eugene Jennings. One important point Jennings emphasized was the mobility of an executive. The young executive must seek positions in middle levels that can lead him to the chief executive office. He must know and get "into the routes that do not terminate below the chief executive [10:37-38]." The same concept applies in a military career. An officer cannot stagnate in one career field if he expects to make it to the top (9:168).

Jennings found that in specific corporations, certain career routes produce more top executives than others. Marketing, for example, produced the presidents of IBM, while engineering was the route at Boeing Corporation (10:38). As individuals were selected for top positions from these routes, the routes were reinforced. Individuals are also inclined to internalize the values of a company, and those who have succeeded have tended to have values similar to those of their superiors (10:41).

Jennings saw a winning couplet existing in both the military and civilian organizations. This couplet is the relationship between a sponsor and the crucial subordinate. The sponsor pulls the subordinate up while the subordinate boosts the sponsor (10:169-70). The concept of multiple sponsors and multiple crucial subordinates also holds true in the military (16:148).

Just. Ward Just devoted one chapter of his book, *Military Men*, to United States Army general officers. In his book, Just used his rather dry sense of humor to make his points quite clear. He borrowed the phrase "stations of the cross" to describe the important career accomplishments which were necessary for promotion (11:111). His "stations" contained many factors which were also common in other studies of the military

elite. These factors included graduating from West Point, fighting in a war, making a good name for oneself, getting an advanced degree, and serving in special assignments (11:109-116).

Just noted that not all career accomplishments could be taken at face value. An example was special duty as a general's aide. Serving as an aide was a definite boost for an officer's career. However, Just made a good point by quoting a colonel who wondered ". . . whether these guys advance because they are generals' aides, or because generals pick unusually able men as aides [11:114]."

Mylander. Maureen Mylander provided some interesting data and conclusions in *The Generals*, a study of United States Army generals. Published in 1974, her study includes statistics which identify significant areas to which Air Force data could be applied to determine important factors in career progression. Some of these areas include civilian education, military education, and career assignments.

Mylander's theory on how to stand out among the outstanding can be applied to all military services. The following statement especially rings true:

Unofficial theories on getting ahead, military style, invariably boil down to this: "You can't make it just by hard work, and you can't make it

just by politicking. You have to work like hell and politic like hell" [16:143].

When Army promotion boards met, there were typically more "water walkers" (top-rated officers) than promotion slots available (16:143). However, certain conditions existed which did serve as differentiators for Army officers:

(1) below the zone promotions, (2) attendance at special schools, (3) having a sponsor, (4) being associated with a first, and (5) in rare cases, being indispensable (16:145-152).

Mylander found that certain career requirements exist in the Army. She quoted Major General John C. Bennet, Commanding General of the Fourth Infantry Division (Mechanized) in his description of these requirements. These requirements are listed in Table 1 with the approximate Air Force equivalents. Although Bennet had, in effect, described his own career, Mylander stated that these requirements appeared to be fairly standard for the Army (16:159).

In her study, Mylander also compiled a list of do's and don'ts for the would-be general (Tables 2 and 3). Most important, however, she pointed out that "the *sine qua non* for generalcy . . . is selection for a progression of troop commands [16:73]."

Wood. The most recent study of Air Force generals was done by Major C. Norman Wood in "Navigator

TABLE 1
TYPICAL ARMY CAREER REQUIREMENTS
WITH AIR FORCE EQUIVALENTS*

Army	Air Force	Desired Time in Each Position
Company Level Duty	Squadron Level Duty	3 years
Command a Battalion	Command A Squadron	2 years
Command a Brigade	Command A Wing	3 years
Serve as an Instructor	Same	2 years
Staff Functions	Same	
Personnel		1 year
Intelligence		1 year
Operations		1 year
Supply		1 year
Tour HQ USA	Tour HQ USAF	2 years
Joint Staff	Same	2 years
Advanced Schooling Staff and War College Graduate School	Same	4 years
Changes of Station	Same	<u>22 years</u> <u>3 years</u>
TOTAL		25 years

SOURCE: Maureen Mylander, *The Generals*, New York: The Dial Press, 1974, pp. 158-59.

*Air Force equivalents added. This table does not suggest that Air Force officers must accomplish the same duties as Army officers, but illustrates similar positions in Air Force terms.

TABLE 2

DO'S FOR WOULD-BE GENERALS*

Graduate from West Point [Air Force Academy]
Join the Regular Army [Air Force]
Choose a combat branch [fly]
Look sharp
Work hard
Pick the right sponsor
Command at each level
Go to war
Win medals
Marry a wife who loves the Army [Air Force]
Get high visibility jobs
Keep your career branch happy
Work at the Pentagon
Serve on a board or study
Attend staff college
Attend war college
Get an advanced degree
Teach at West Point [Air Force Academy]
Look good on paper
Articulate well
Keep ahead of the power curve
Play golf
Play the odds

SOURCE: Maureen Mylander, *The Generals*, New York: The Dial Press, 1974, pp. 159-60.

*Air Force equivalents added in brackets.

TABLE 3

DON'TS FOR WOULD-BE GENERALS*

Specialize
Have an oddball career pattern
Antagonize the boss
Get a bad efficiency rating
Fail an inspection
Hunt headlines
Get bad press
Be overly critical
Buck the system
Live off post [base]
Marry a wife who drinks
Run up debts
Have kids with long hair

SOURCE: Maureen Mylander, *The Generals*, New York: The Dial Press, 1974, p. 159.

*Air Force equivalents added in brackets.

Generals: How They Got There." This limited Air Command and Staff College professional study covered the years from 1964-1974 and examined the career patterns of the twenty-three navigator generals in the Air Force during this period (28:1). Unfortunately, in trying to determine career guidelines for general officers, Wood discovered that ". . . no specific guidelines can be found in USAF regulations or manuals [28:9]."

The most interesting aspect of this study was Wood's development of hypothetical career progression patterns. He identified seven career paths that had proven successful for the navigator generals (28:58-64). All but one of these generals had entered a new career field outside the navigator career field. Changing career fields was the primary means by which navigators had won promotions because it had allowed each to detach himself from the navigator label and to seek career advancement in a different career field (28:65).

Summary

In analyzing the literature, one prominent feature stands out. Nearly all of the variables scrutinized by the different authors were common to two or more of the studies (9; 10; 11; 15; 16; 27; 28). The result is an encompassing group of variables which can be used as the basis for study of the career progression of Air Force brigadier generals.

Social origins and family background were prominent variables studied by Coates and Pellegrin, Janowitz, and Warner (4; 9; 27). These variables included geographical region of birth, occupational mobility as traced through careers of preceding generations of families, and marital status.

Academic and military education variables were discussed by Janowitz, Just, and Mylander (9; 11; 16). The academic aspect dealt with the importance of an officer obtaining a graduate degree. The military side pertained to professional military education and the significance of attending certain military schools. The three authors mentioned above, as well as Mills, included specific sections in their studies on the importance of a military academy education and the part it played in future career advancement (9; 11; 15; 16).

Other variables examined by Janowitz, Just, Mills, and Mylander included duty assignments and career paths (9; 11; 15; 16). These authors pointed out that there were certain key assignments, such as staff duty at the Pentagon and command of a unit, that were important for career progression. Mylander and Wood treated model career paths as a sequence of operational and school assignments which, ideally, an individual should obtain in order to succeed (16; 28). Wood went

so far as to present seven models for navigator career progression (28).

This literature review confirms the fact that current literature available on career progression of Air Force general officers is very limited and applicable only to a small group of officers. There is a great deal of statistical data provided in the sociological studies previously mentioned, but these studies do not specifically address the commonalities of career progression for Air Force general officers. This study addresses that problem.

CHAPTER III

METHODOLOGY

This chapter describes data collection, testing, and analysis methods. Hypothesis tests were performed on specific variables to compare two groups of Air Force officers, brigadier generals and colonels. The variables that were tested and analyzed are listed in Table 4. Data from the Air Force brigadier general population were analyzed against data from a random sample of Air Force colonels for whom promotion was unlikely. Statistical tests were conducted on the variables to reveal whether there were identifiable differences in the two groups of officers. Descriptive statistics were compiled for additional analysis of career progression factors of general officers.

Description of the Universe, Populations, and Sample

The universe for this research was composed of the two populations being studied. One population consisted of all Air Force brigadier generals on active duty as of 1 December 1976 (19:24). The other population consisted of Air Force colonels on active duty with a date of rank prior to 1 January 1970. This date of rank for colonels was chosen to insure that the members in the

TABLE 4

VARIABLE LIST

No.	Variable	Values	Measurement Scale
1	Military Rank	Brigadier General, Colonel	Ordinal
2	Place of Birth	Each of the Fifty States, Washington, D.C., Outside of the U.S.	Nominal
3	Region of Birth*	Outside of the United States Pacific [California (CA), Oregon (OR), Washington (WA), Hawaii (HI), Alaska (AK)] Mountain [New Mexico (NM), Arizona (AZ), Colorado (CO), Utah (UT), Nevada (NV), Idaho (ID), Wyoming (WY), Montana (MT)] West North Central [N. Dakota (ND), S. Dakota (SD), Minnesota (MN), Iowa (IA), Nebraska (NE), Kansas (KS), Missouri (MO)] West South Central [Oklahoma (OK), Arkansas (AR), Texas (TX), Louisiana (LA)] East North Central [Illinois (IL), Indiana (IN), Ohio (OH), Michigan (MI), Wisconsin (WI)] East South Central [Mississippi (MS), Alabama (AL), Tennessee (TN), Kentucky (KY)] South Atlantic [Florida (FL), Georgia (GA), S. Carolina (SC), N. Carolina (NC), Virginia (VA), W. Virginia (WV),	Nominal

*These regions compare to those used by Janowitz with the exception of the addition of Alaska and Hawaii to the Pacific states (9:445).

TABLE 4--Continued

No.	Variable	Values	Measurement Scale
		Maryland (MD), Delaware (DE), Washington, D.C. (D.C.)] <i>Middle Atlantic</i> [Pennsylvania (PA), New York (NY), New Jersey (NJ)] <i>New England</i> [Maine (ME), Vermont (VT), New Hampshire (NH), Massachusetts (MA), Connecticut, (CT), Rhode Island (RI)]	
4	City Size at Time of Birth**	Under 5,000; 5,000-24,999; 25,000-99,999; 100,000-499,999; 500,000-1 million; over 1 million	Ordinal
5	Marital Status	Single, Married	Nominal
6	No. of Children	0 to 8 (8 is the highest observed value)	Ratio
7	Highest Level of Education	High School, Bachelor's, Master's, Ph.D.	Ordinal
8	Type of Educational Institution (BA/BS)	Public (State College or University), Private, Military Academy	Nominal
9	Air Force Institute of Technology Graduate Degree	Yes, No	Nominal

**The population criteria are the same as those used by Mylander (16:342).

TABLE 4--Continued

No.	Variable	Values	Measurement Scale
10	Completed Squadron Officer School (SOS)	Yes, No	Nominal
11	Completed A Staff College	Air Force, Army, Navy, Armed Forces, No	Nominal
12	Completed A Senior Service School	National War College, Air War College, Army War College, Naval War College, Industrial College of the Armed Forces (ICAF), No	Nominal
13	Source of Commission	U.S. Air Force Academy (USFA), U.S. Military Academy (USMA), U.S. Naval Academy (USNA), Aviation Cadets, Reserve Officers' Training Corps (ROTC), Officer Training School (OTS)/Officer Candidate School (OCS), Direct Appointment	Nominal
14	Aeronautical Rating	Pilot, Navigator, Nonrated	Nominal
15	Combat Experience	World War II, Korea, Vietnam, Combination, None	Nominal

TABLE 4--Continued

No.	Variable	Values	Measurement Scale
16	Highest Level of Command Experience	Wing, Group, Base, Squadron, Detachment, None	Ordinal
17	Served As A Squadron Commander	Yes, No	Nominal
18	Served As A Wing Commander	Yes, No	Nominal
19	Worked in the Office of Secretary of the Air Force (SOA) or in Department of Defense (DOD)	SOA, DOD-Pentagon, DOD-U.S., DOD-Foreign, Combination, None	Nominal
20	Highest Staff Position	Headquarters U.S. Air Force (HQ USAF), Major Command (MAJCOM), Numbered Air Force (NAF), Wing, None	Nominal
21	Joint Staff Position	Interservice, International, None	Nominal

TABLE 4--Continued

No.	Variable	Values	Measurement Scale
22	Served As A General's Aide	Yes, No	Nominal
23	Age When Promoted to Brigadier General	41 to 55 years (range of observed values)	Ratio
24	Total Commissioned time when promoted to Brigadier General	19 to 29 years (range of observed values)	Ratio
25			

sample had met promotion boards several times and had failed to be selected for brigadier general. This provided a distinct differentiation between the two populations.

The brigadier general population consisted of 171 officers (19:24). Brigadier generals in the chaplain, legal, medical, and health services career fields were excluded from the population because these specialized fields are not open to Air Force line officers. Census data were used to analyze variables dealing with the brigadier general population.

Data for the colonels were gathered from a population of unknown size because no specific estimate of the total number of colonels with a date of rank prior to 1 January 1970 could be provided by the Assistant for Colonel Assignments (AF/DPOC) (5). Specialized career fields were excluded from the colonels' population to provide consistency with the generals' population. A simple random sample of 291 colonels with a date of rank prior to 1 January 1970 was used for statistical testing.

Data Sources

Data were obtained from several sources. The primary source of information for the generals was *Biography*, a short biographical history on each general officer, published by the Secretary of the Air Force, Office of Information (26). The primary source of data

for the colonels was Air Force Form 1715, Officer Brief, obtained from the office of the Deputy Chief of Staff, Personnel, Assistant for Colonel Assignments (AF/DPOC) (24). Air Force Pamphlet 36-1, *Air Force Register*, was used as a backup reference for source of commission, aeronautical rating, and educational data for both groups of officers (22). The final sources of data used to supplement all of the previous sources were articles from the *Air Force Times*. These articles contained statistics on source of commission, aeronautical rating, and educational level of officers selected for promotion (7:8).

Data Collection Instrument

A structured instrument was used for collecting information already available in the generals' biographies, the *Air Force Register*, and the officer briefs obtained from AF/DPOC (Appendix A). As data were collected on an officer, this instrument was completed as an aid in obtaining consistent, complete, and organized data.

Accuracy of the Data

The structured instrument required only the recording of objective data about the individual officer. Data collected were considered consistent for both groups of officers because information was taken from official government and military records, and from civilian publications generally considered as reliable sources of information about the military and its personnel.

Validity of the Instrument

The validity of the instrument is ". . . its ability to measure what it aims to measure [6:120]." The structured instrument was concerned with objective variables that were shown to be common to several research writers (9; 10; 11; 15; 16; 27; 28). The research variables were designed to obtain knowledge of factors that were important to the analysis of career progression. Variables were developed similar to those used by Janowitz and others, but the instrument also included areas that were pertinent to a study of Air Force officers only. Therefore, the structured instrument provided ample coverage of the objective data for Air Force generals and colonels.

Hypothesis Testing

Testing and analysis of the data were conducted using the chi-square test. Chi-square (χ^2) tests were conducted on data derived from a combination of sample and population statistics. The variable RANK was compared to each of the other variables listed in Table 4. Five variables (4, 6, 22, 23, 24) were collected for use with descriptive statistics only and were not tested against other variables using the chi-square test. All testing was conducted at a confidence level of 95 percent. This resulted in an alpha (α) value of 0.05, the value commonly accepted by behavioral scientists for hypothesis testing (12:170).

For all tests, the null hypothesis (H_0) was that no significant difference existed between brigadier generals and colonels for the variable being tested. The alternative hypothesis (H_1) was that a significant difference existed in the degree in which the variable appeared in each of the groups (20:199). The hypotheses can also be stated as follows:

$$H_0: \chi_s^2 \leq \chi_c^2$$

$$H_1: \chi_s^2 > \chi_c^2$$

where χ_s^2 is the ". . . measure of departure of obtained frequencies from the frequencies expected by chance, [χ_c^2] [12:168]." When the value of χ_s^2 is greater than the value of χ_c^2 , the null hypothesis is rejected and a statistically significant difference is established between the two groups of officers.

Statistical Test

The variables tested in the hypotheses were measured on at least a nominal level scale. Nominal level data ". . . consists of an unordered series of frequencies [20:196]." No assumptions can be made about the underlying continuity or shape of the population distribution. Therefore, the nonparametric chi-square test was used (20:196).

The chi-square statistic, χ_s^2 , was computed using the formula

$$\chi_s^2 = \sum \left[\frac{(f_o - f_e)^2}{f_e} \right]$$

where f_o and f_e are the observed and expected frequencies of variable values (12:167-68). Textbooks, such as those by Kerlinger (12) and Siegel (20), offer further discussions of the chi-square test methodology.

If the chi-square test resulted in the acceptance of a difference between the two groups of officers, then a contingency coefficient was calculated to determine the magnitude of the relationship (12:171). This coefficient, C , was computed using the formula

$$C = \sqrt{\frac{\chi_s^2}{\chi_s^2 + N}}$$

where N is the total number of observations from the contingency table set up to compare the variables (20:195-202). The value of C ranged between zero and an upper limit approaching 1.00. As the value of C approaches one, the difference between the two groups of officers becomes greater. To equate the contingency coefficient to a zero to one scale for any square table, the formula $\sqrt{(k-1)/k}$ was used to calculate the upper limit of the coefficient where k equals the number of rows. For any other size table, values must be calculated for both the

columns and the rows. The following formulas were used to calculate the column value and the row value, respectively:

$$C \leq \sqrt{\frac{k-1}{k}} \quad C \leq \sqrt{\frac{r-1}{r}}$$

The higher of these values was used for the upper limit of the contingency coefficient. The corrected value of C was found by dividing the contingency coefficient by the upper limit (13). The textbook by Siegel offers further elaboration on the contingency coefficient (20).

The contingency coefficient has several limitations. It has no mathematical sign, and it cannot reach 1.00, the absolute measure of association (12:172). Therefore, the coefficient was not the only measure of association used for comparison of the variables. The contingency coefficient, the significance tests, and the descriptive statistics were all evaluated along with subjective data to interpret the available information.

Computation of statistics for analysis was accomplished using the *Statistical Package for the Social Sciences (SPSS)* subprogram, CROSSTABS (18:218-48). The subprogram computes the values for chi square, the degrees of freedom, and the contingency coefficient, and also prints a contingency table of the observed variables. The SPSS subprogram FREQUENCIES was used to produce frequency tables for descriptive statistics (18:195-202).

Criteria Test

Two decision rules were used to determine if variables and specific values of the variables were important to career progression. The variables fell into two groups. The first group contained variables which impacted on an officer's consideration for promotion to brigadier general. The second group contained variables that distinguished the brigadier generals from those colonels who were passed over for promotion.

The decision rule for the first group is that when more than one-half of the generals and one-half of the colonels possessed a specific value of a variable, this value and the variable were considered important to career progression. Thus, the variable and a specific value of that variable were important in attaining the rank of colonel. If the individual could not attain the rank of colonel, then he had no chance to be considered for promotion to brigadier general.

The second decision rule is that when the number of generals who possessed a value of a variable exceeded the number of colonels who possessed that same value by ten or more percentage points, that variable and the specific value were considered important to promotion to brigadier general. This rule infers that possession of a specific value of a variable increased the chances for promotion to brigadier general. It was possible for a

variable to be considered important under both decision rules. These two decision rules have been combined, and are referred to as the 50-10 Rule in the remainder of this study.

Assumptions and Limitations

The research design includes a number of assumptions and limitations which were recognized in order to conduct the research, perform analyses, and draw conclusions in the time available and under the existing conditions.

Assumptions

1. Information drawn from data sources was accurate.
2. The random sample of colonels was representative of the population.
3. Information drawn from other research was valid.

Limitations

1. Time available for work on the thesis was limited, particularly for data collection.
2. The contingency coefficient has inherent limitations. First, it has no mathematical sign to determine direct or indirect relationships. Second, there is no absolute measure of association because the coefficient can never reach one. However, it does provide a

practical, useful, and well recognized measure to aid in interpreting the relationships of variables within a data base.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Variables that were considered as potentially important to career progression to Air Force brigadier general are analyzed and discussed in this chapter. Based upon the relative importance of these variables, several career patterns for the general officers and typical profiles of the generals and colonels studied have been developed.

Data Review

Data for analysis came primarily from two sources. First, official biographies were used to analyze the careers of 171 of the 191 Air Force brigadier generals on active duty as of 1 December 1976. Second, officer career briefs from a random sample of 300 Air Force colonels with a date of rank prior to 1 January 1970 were obtained from AF/DPOC. Officer Effectiveness Reports were not included in these briefs because of their confidentiality. After excluding the doctors, lawyers, chaplains, and other groups with special promotion systems, 291 colonels' records were analyzed in this study. Data for both groups of officers studied were considered representative because population

data were used for the generals and data from a large, random sample were used for the colonels.

In addition to the data from the biographies and the career briefs, supplemental data on source of commission and professional military education were obtained from the *Air Force Register* (22). All data from the various sources were considered reliable, as they were derived from official government records on each individual officer or provided by Air Force agencies from official records.

Data were measured on at least a nominal level scale. The χ^2 test was used to statistically test the variables to determine if significant differences existed between the generals and the colonels. If the χ^2 test resulted in a significant difference between the two groups of officers, a contingency coefficient was calculated to determine the magnitude of the relationship. Because of the weakness of the contingency coefficient test (12:172), little emphasis was placed on this measure in evaluating the data. Any coefficient with a corrected coefficient of .5 or less was considered to be insignificant. To determine if variables were important to career progression, two decision rules were used. First, when more than one-half of the generals and one-half of the colonels possessed a specific value of a variable, this value and the variable were considered important to career progression. Second, when the number of generals

who possessed a value of a variable exceeded the number of colonels who possessed that same value by ten or more percentage points, that variable and the specific value were considered important to promotion to brigadier general. It was possible for a variable to be considered important under both decision rules. These decision rules were combined and were called the 50-10 Rule. This rule was used as the major differentiator between the two groups of officers. For variables that were measured on a ratio level scale, a mean value was calculated.

Personal Background

Variables in this section were analyzed to see if social factors in an officer's background had a significant effect on his career. Data were also used to provide descriptive data for the profiles of the generals and the colonels.

Place of Birth. The χ^2 test showed that there was a significant difference between the two groups of officers in relation to place of birth (Table 5). The corrected contingency coefficient (.3643) indicated that the magnitude of this difference was small. In analyzing the descriptive statistics, no one particular state produced a disproportionately large percentage of generals or colonels. The percentage of generals and colonels appeared to be distributed in close proportion to the percent of

TABLE 5
COMPARISON OF PLACE OF BIRTH VS. RANK

State	Percent of U.S. Population*	Colonels		Generals	
		Frequency	Percent	Frequency	Percent
AL	2.2	4	1.4	5	2.9
AK	**	0	0	1	0.6
AZ	0.4	1	0.3	2	1.2
AR	1.5	4	1.4	6	3.5
CA	4.6	17	5.8	6	3.5
CO	0.8	3	1.0	3	1.8
CT	1.3	7	2.4	0	0
DE	0.2	0	0	1	0.6
DC	0.4	3	1.0	1	0.6
FL	1.2	7	2.4	4	2.3
GA	2.4	6	2.1	3	1.8
HI	**	1	0.3	0	0
ID	0.4	1	0.3	1	0.6
IL	6.2	20	6.9	6	3.5
IN	2.6	6	2.1	5	2.9
IA	2.0	6	2.1	1	0.6
KS	1.5	0	0	3	1.8
KY	2.1	7	2.4	2	1.2
LA	1.7	3	1.0	5	2.9
ME	0.6	0	0	0	0
MD	1.3	4	1.4	0	0
MA	3.5	10	3.4	2	1.2

*Computed from U.S. population figures from 1930 (21:12).

**Not Available

TABLE 5--Continued

State	Percent of U.S. Population*	Colonels		Generals	
		Frequency	Percent	Frequency	Percent
MI	3.9	8	2.7	3	1.8
MN	2.1	10	3.4	7	4.1
MS	1.6	5	1.7	3	1.8
MO	3.0	6	2.1	9	5.3
MT	0.4	4	1.4	0	0
NE	1.1	9	3.1	1	0.6
NV	0.1	0	0	0	0
NH	0.4	1	0.3	1	0.6
NJ	3.3	8	2.7	2	1.2
NM	0.3	0	0	0	0
NY	10.3	21	7.2	16	9.4
NC	2.6	4	1.4	10	5.8
ND	0.6	3	1.0	4	2.3
OH	5.4	15	5.2	12	7.0
OK	2.0	6	2.1	2	1.2
OR	0.8	1	0.3	2	1.2
PA	7.8	14	4.8	10	5.8
RI	0.6	1	0.3	1	0.6
SC	1.4	5	1.7	1	0.6
SD	0.6	2	0.7	3	1.8
TN	2.1	5	1.7	7	4.1
TX	4.7	19	6.5	10	5.8

*Computed from U.S. population figures from 1930 (21:12).

TABLE 5--Continued

State	Percent of U.S. Population*	Colonels		Generals	
		Frequency	Percent	Frequency	Percent
UT	0.4	6	2.1	2	1.2
VT	0.3	0	0	0	0
VA	2.0	10	3.4	2	1.2
WA	1.3	2	0.7	4	2.3
WV	1.4	4	1.4	1	0.6
WI	2.4	7	2.4	1	0.6
WY	0.2	0	0	0	0
FOREIGN	NA	5	1.7	0	0
Total	100.0	291	99.7	171	100.4

$$\chi^2_S = 69.150$$

$$\chi^2_C = 43.773$$

$$C = .3608$$

$$\text{Corrected } C = .3643$$

*Computed from U.S. population figures from 1930 (21:12).

total U.S. population of each of the 50 states and the District of Columbia, with New York producing the highest percentage of both generals and colonels, 9.4 percent and 7.2 percent respectively. The largest difference between the two groups of officers within any one state was 4.4 percent in North Carolina, which had 1.4 percent of the colonels and 5.8 percent of the generals. Applying the 50-10 Rule, place of birth was determined to be insignificant in career progression for both colonels and general officers.

Region of Birth. This variable was also determined to be insignificant to officer career progression. The χ^2 test showed that no difference existed between the two groups of officers in relation to region of birth (Table 6). Using the 50-10 Rule, no single region could be identified that produced a significantly larger or smaller percentage of either colonels or generals in proportion to regional population.

City Size at Time of Birth. Over one-half of the general officers were born in cities with populations over 25,000 (Table 7). This percentage (52.0) is significantly higher than that of the Army generals in Mylander's study, which showed that 38.4 percent of the Army generals studied had been born in cities with populations over 25,000 (16:342). Janowitz had concluded in his earlier

TABLE 6
COMPARISON OF REGION OF BIRTH VS. RANK

Region	Percentage of U.S. Population*	Colonels		Generals	
		Frequency	Percent	Frequency	Percent
Outside U.S.	NA.	5	1.7	0	0
Pacific	6.8	21	7.2	12	7.0
Mountain	3.0	15	5.2	8	4.7
W. North Central	10.8	36	12.4	30	17.5
W. South Central	9.9	31	10.7	23	13.5
E. North Central	20.6	56	19.2	25	14.6
E. South Central	8.1	21	7.2	17	9.9
South Atlantic	12.9	44	15.1	24	14.0
Middle Atlantic	21.4	43	14.8	28	16.4
New England	6.7	19	6.5	4	2.3
Total	100.2	291	100.0	171	99.9

$$\chi_s^2 = 12.081$$

$$\chi_c^2 = 16.919$$

*Computed from U.S. population figures from 1930 (21:12).

TABLE 7
CITY SIZE AT TIME OF BIRTH
(GENERALS ONLY)

City Size	Frequency*	Percent
Under 5,000	45	26.3
5,000 - 24,999	37	21.6
25,000 - 99,999	24	14.0
100,000 - 499,999	40	23.4
500,000 - 999,999	8	4.7
1,000,000 - or more	17	9.9
Total	171	99.9

*Computed from 1920 or 1930 U.S. population figures, depending on which year was closest to year of birth (14:177-189).

study of the military that 66 percent of the Army generals in 1950 had come from essentially rural backgrounds. Air Force generals followed the same pattern as the Army, since most of the Air Force generals of 1950 had been recruited from the Army. Seventy percent of these generals had rural backgrounds (9:86). This change of almost 20 percentage points in the social origins of Air Force general officers probably reflects the trend of American society in changing from a predominantly rural society to an urban society.

Marital Status. All of the officers in this study were married (Table 8). However, a determination of the degree of importance of marriage in career progression could not be made from the format of the data that were reviewed. As Janowitz pointed out, the belief that marriage is important to an officer's career has long persisted (9:192). Because data concerning the spouse's background and role in an officer's career were not available, no direct analysis could be made relating the effect of marriage to a general's or colonel's military career. Inasmuch as 100 percent of the officers in this study were married, the assumption was made that marriage plays a significant role in career progression.

Number of Children. The average number of children in a general's family was three. Almost 95 percent of the generals had at least one child (Table 9).

Academic and Professional Military Education

This section analyzed variables dealing with the academic and military education of the generals and the colonels to determine if such variables had a significant effect on career progression to general officer.

Highest Level of Education. The χ^2 test showed that there was a significant difference in the level of education between the generals and the colonels. The corrected contingency coefficient (.2866) indicated that the difference was small (Table 10). However, evaluation by the 50-10 Rule showed that this variable was quite significant in career progression to general officer. There was a large difference between the two groups of officers in the percentage who had achieved graduate degrees. Almost 72 percent of the generals had master's degrees as compared to 47.4 percent of the colonels, a difference of over 24 percentage points. Further analysis of the statistics indicated that having a doctoral degree did not increase the chance of being promoted to general officer. This may be due in part to the smaller number of positions at the brigadier general level which require a highly specialized education.

A recent issue of *Air Force Magazine* published statistics on educational levels for Air Force line officers. The data showed the highest level of education

TABLE 8
COMPARISON OF MARITAL STATUS VS. RANK

Marital Status	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Single	0	0	0	0
Married	291	100.0	171	100.0
Total	291	100.0	171	100.0

TABLE 9
NUMBER OF CHILDREN
(GENERALS ONLY)

Number of Children	Frequency	Percent
0	9	5.3
1	9	5.3
2	44	25.7
3	59	34.5
4	37	21.6
5	8	4.7
6	2	1.2
7	2	1.2
8	1	0.6
Total	171	100.1

Mean: 2.9 Children

Percent of Generals Having Children: 94.7

TABLE 10
COMPARISON OF HIGHEST LEVEL OF EDUCATION ACHIEVED VS. RANK

Highest Level of Education	Officers Air Force-Wide	Colonels		Generals	
		Frequency	Percent	Frequency	Percent
High School	3.4	57	19.6	10	5.8
Bachelor's	64.9	75	25.8	32	18.7
Master's	30.0	138	47.4	123	71.9
Ph.D.	1.3	21	7.2	6	3.5
Total	99.6*	291	100.0	171	99.9

$$\chi^2_s = 30.323$$

$$\chi^2_c = 7.815$$

$$C = .2482$$

$$\text{Corr. } C = .2866$$

*Remaining 0.4 percent were professional degrees. Statistics were computed for Air Force line officers (1:134).

for 85,651 line officers on active duty as of 31 December 1976. The breakdown was as follows: 1.3 percent of the officers had doctoral degrees; 30.0 percent had master's degrees; 64.9 percent had bachelor's degrees; and 3.4 percent had only high school diplomas (1:134). These percentages are significantly different from the percentages of the generals and colonels in this study. Thus, a master's degree was considered to be an aid to making colonel and even more important to making brigadier general for two reasons. First, this degree can provide the education needed for certain higher level technical or managerial positions. Second, obtaining an advanced degree denotes an intellectual acumen which is assumed to carry over to other aspects of an officer's career.

In analyzing this variable, it was noted that many of the officers had received their master's degrees while attending a professional military school, such as a war college or a command and staff college. During the 1960s and continuing into the 1970s, universities such as George Washington, Georgetown, and Auburn had or still have cooperative degree programs in which officers receive credit toward master's degrees for courses taken at a professional military school (16:95-96). As an example, an officer could receive between 15 and 24 hours of credit toward a master's degree from some universities by attending

Air War College (17:11). Over 45 percent of the generals and 36 percent of the colonels in this study who had master's degrees had received them through such programs.

Type of Educational Institution. There was no significant difference between generals and colonels as to whether they had attended public, private, or military undergraduate institutions, using both the χ^2 test and the 50-10 Rule (Table 11). Of those officers having bachelor's degrees, the generals had a higher percentage of military academy graduates. However, this difference was not large enough to make this variable significant in career progression to general officer.

Air Force Institute of Technology (AFIT) Degree. The χ^2 test and the 50-10 Rule showed that there was no significant difference between the percentage of AFIT graduates in each group of Air Force officers (Table 12). Both groups had almost identical percentages of AFIT advance degree graduates, 26.3 percent for the generals and 27.5 percent for the colonels. AFIT degrees did have an indirect effect on the educational level variable. Over one-third (34.9 percent) of the generals and one-half (50.3 percent) of the colonels with advanced degrees had attained them through the AFIT program. Although a graduate

TABLE 11
COMPARISON OF TYPE OF INSTITUTION FROM
WHICH BACHELOR'S DEGREE AWARDED VS. RANK

Type of Institution	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Public	127	54.3	73	45.3
Private	50	21.4	33	20.5
Military	57	24.3	55	34.2
Total	234	100.0	161	100.0

$$\chi_s^2 = 4.725$$

$$\chi_c^2 = 5.991$$

TABLE 12
 COMPARISON OF AFIT ADVANCED GRADUATE
 DEGREE VS. RANK

Advanced AFIT Degree	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Yes	80	27.5	45	26.3
No	211	72.5	126	73.7
Total	291	100.0	171	100.0

$\chi^2_s = 0.028$

$\chi^2_c = 3.841$

degree from AFIT is apparently not a significant factor in career progression to general officer per se, it does reflect the emphasis that the Air Force places on graduate education by providing graduate programs tailored to specific Air Force needs.

Completed Squadron Officer School (SOS). The χ^2 test and the 50-10 Rule both showed a significant difference between generals and colonels as to the percentage in each group who had completed SOS (Table 13). However, the corrected contingency coefficient (.1554) showed that this difference was almost negligible. Both officer groups had such high percentages of SOS graduates, 69.0 percent for the generals and 57.4 percent for the colonels, that this variable was considered important to career progression from colonel to general. The high percentage of colonels completing SOS shows that this school was also important to making colonel. An early professional school such as SOS reinforces military values and objectives in a young officer. The statistics indicate the value of this training to career progression by the large number of officers in both groups who completed SOS.

Completed a Staff College. The χ^2 test and the 50-10 Rule both showed a significant difference between the generals and the colonels in completion of a military staff college (Table 14). The corrected contingency

TABLE 13
 COMPARISON OF COMPLETION OF SQUADRON OFFICER
 SCHOOL VS. RANK

Completed SOS	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Yes	167	57.4	118	69.0
No	124	42.6	53	31.0
Total	291	100.0	171	100.0

$$\chi_s^2 = 5.657$$

$$\chi_c^2 = 3.841$$

$$C = .1099$$

$$\text{Corr. } C = .1554$$

TABLE 14
COMPARISON OF COMPLETION OF A STAFF COLLEGE VS. RANK

College Completed	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Air Command and Staff Residence Correspondence	98 38	33.7 13.0	68 17	39.8 9.9
Subtotal	136	46.7	85	49.7
Army Command and General Staff	7	2.4	8	4.7
Naval War College, Command and Staff	4	1.4	4	2.3
Armed Forces Staff	28	9.6	34	19.9
Total Completed	175	60.1	131	76.6
No College Completed	116	39.9	40	23.4
Total	291	100.0	171	100.0

$\chi^2_S = 12.283^*$ $\chi^2_C = 3.841$ $C = .1609$ $Corr. C = .2275$

* χ^2 test accomplished for total officers completing a staff college vs. officers not completing a staff college.

coefficient (.2275) showed a small difference between the two groups of officers. The 50-10 Rule indicated that the completion of a staff college was important in achieving the rank of colonel and even more important for achieving the rank of general officer. Over 60 percent of the colonels and over 76 percent of the generals had completed a staff college in residence or by correspondence. Air Command and Staff was the only staff college offered by correspondence. Thirteen percent of the colonels and 9.9 percent of the generals had completed this school by correspondence. The important fact is that more than 66 percent of the generals completed one of the schools in residence. Approximately 47 percent of the colonels completed a staff college in residence. This comparison indicates that completion of a staff college in residence was considered important to career progression to both general officer and colonel rank.

Completed a Senior Service School. There was a significant difference between the generals and the colonels in completion of a senior service school (Table 15). The corrected contingency coefficient (.3704) indicated a small difference between the two groups. The 50-10 Rule showed the importance of a senior service school to career progression in that 84.2 percent of the generals and 57.4 percent of the colonels had completed at least one such school in residence or by correspondence.

TABLE 15
COMPARISON OF COMPLETION OF A SENIOR SERVICE SCHOOL VS. RANK

School Completed	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
National War College	16	5.4	38	22.2
Industrial College of the Armed Forces: Residence	36	12.4	35	20.5
Correspondence	23	7.9	16	9.3
Subtotal	59	20.3	51	29.8
Air War College: Residence	57	19.6	35	20.5
Correspondence	13	4.5	2	1.2
Subtotal	70	24.1	37	21.7
Army War College	13	4.5	11	6.4
Navy War College	9	3.1	7	4.1
Total Completed	167	57.4	144	84.2
No School Completed	124	42.6	27	15.8
Total	291	100.0	171	100.0

$\chi^2_S = 34.034$ $\chi^2_C = 3.841$ $C = .2619$ $\text{Corr. } C = .3704$

* χ^2 test accomplished for total officers completing a school vs. officers not completing a school.

• Further analysis of this variable showed that 45.0 percent of the colonels had completed a senior service school in residence and 12.4 percent had completed either the Industrial College of the Armed Forces (ICAF) or Air War College by correspondence. For the generals, 10.5 percent had completed a school by correspondence. The vast majority of generals, 73.7 percent, had completed one of the senior service schools in residence. The large percentage of generals who completed a senior service school in residence made this variable significant to career progression to general officer.

In analyzing the importance of a senior service school to career progression, the most noticeable difference between the generals and the colonels was attendance at the National War College. Slightly over 22 percent of the generals had graduated from the National War College as compared to only 5.4 percent of the colonels. Perhaps the importance of this difference becomes more apparent when one examines a recent report on the military's senior service schools. This report showed that 36 percent of the graduates of the National War College had been promoted to general or admiral rank, the highest percentage of any of the senior service schools (17:9).

Military Experience

The final section of the structured instrument examined the military experience of each of the generals and the colonels. Variables such as source of commission, aeronautical rating, combat experience, and command and staff experience were analyzed to determine their significance on career progression to brigadier general. Three other variables relating only to the generals were analyzed for descriptive use only. Although the individual officer may not have much control over some of these aspects of his career, his performance in different assignments has a definite effect on his promotional opportunities.

Source of Commission. The χ^2 test showed that there was a significant difference between the generals and the colonels as to source of commission (Table 16). The corrected contingency coefficient (.2144) indicated a small difference between the two groups. Aviation cadets was the leading source of commission for both groups of officers. The United States Military and Naval academies composed the secondlargest source of commission, with a combined total of 32.2 percent for the generals and 23.0 percent for the colonels. No graduates from the United States Air Force Academy appeared in either the general or the colonel ranks, as they have not had sufficient time in service to be considered for promotion to brigadier general. Overall, there was not enough difference between

TABLE 16
COMPARISON OF SOURCE OF COMMISSION VS. RANK

Source of Commission	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
USAFA	0	0	0	0
USMA	50	17.2	32	18.7
USNA	17	5.8	23	13.5
Aviation Cadets	131	45.0	62	36.2
ROTC	49	16.8	41	24.0
OTS/OCS	26	8.9	5	2.9
Direct Appointment	18	6.2	8	4.7
Total	291	99.9	171	100.0

$$\chi^2_s = 18.399$$

$$\chi^2_c = 11.070$$

$$C = .1957$$

$$\text{Corr. } C = .2144$$

the generals and the colonels to consider this variable significant to career progression to either colonel or general rank.

Source of commission, however, does have an indirect effect on career progression. A regular commission is essential for an officer who intends to make the Air Force a career and who has the ambition of attaining general rank. Graduates of the three military academies are tendered regular commissions upon graduation while other officers must compete for a regular commission at specific points in their careers through a selection board process. Previously, these officers could have received a regular commission by being distinguished graduates of certain military schools; however, this practice has been discontinued in the Reserve Officers' Training Corps (8) and at Officer Training School (2). In this respect, academy graduates have a definite advantage early in their careers over their contemporaries.

Aeronautical Rating. Using the χ^2 test, there was a significant difference between the two groups of officers with respect to aeronautical rating (Table 17). The corrected contingency coefficient (.2211) reflected a small difference. However, the 50-10 Rule showed the significance of the pilot aeronautical rating in the Air Force. Two out of three colonels and five out of six generals in the study were pilots. Both navigators and

TABLE 17
COMPARISON OF AERONAUTICAL RATING VS. RANK

Rating	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Pilot	198	68.0	144	84.2
Navigator	31	10.7	6	3.5
Nonrated	62	21.3	21	12.3
Total	291	100.0	171	100.0

$$\chi_s^2 = 15.552$$

$$\chi_c^2 = 5.991$$

$$C = .1805$$

$$\text{Corr. } C = .2211$$

nonrated officers had a lower percentage of officers in the generals' group than in the colonels' group.

Using information from Wood's study, an interesting comparison was made between the aeronautical ratings of the generals and colonels studied and the aeronautical ratings of the total Air Force. Wood cited an Air Force policy letter for commanders which stated that there were approximately 39,035 pilots and 14,503 navigators in the Air Force in 1973 (28:6). This was from a total service strength of 110,000 officers in Fiscal Year 1974 (1:133). Pilots comprised 35.5 percent of the total officers, navigators 13.2 percent, and nonrated officers 51.3 percent. When

these percentages were compared to the aeronautical ratings of the generals and colonels, pilots had a disproportionately large number of officers in both ranks. The significant difference in these percentages among the pilots, navigators, and nonrated officers reflects the current overall command structure of the Air Force and emphasizes the importance of having a pilot's rating to the career progression of general officers.

Combat Experience. The χ^2 test showed that there was no significant difference in combat experience between the two groups of officers. This test was based on whether an officer had or had not been in a combat area during his career (Table 18). Both groups had a high percentage of officers who had some type of combat experience, 88.3 percent for the generals as compared to 81.4 percent for the colonels. Using the 50-10 Rule, combat experience was considered to be an important variable for career progression for both generals and colonels.

The data suggest some reasons for the importance of combat experience. First, many of the officers had held senior staff or command positions during the Vietnam War. This would tend to indicate experience in dealing with constantly changing situations under a great deal of pressure. Second, combat duty is a comparatively quick way to win medals, which look good on personnel records as

TABLE 18

COMPARISON OF COMBAT EXPERIENCE VS. RANK

Combat Experience	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
WW II	30	10.3	2	1.2
Korea	14	4.8	9	5.3
Vietnam	108	37.1	90	52.6
Combination	85	29.2	50	29.2
Total With Experience	237	81.4	151	88.3
No Combat Experience	54	18.6	20	11.7
Total	291	100.0	171	100.0

$$\chi_s^2 = 3.286^*$$

$$\chi_c^2 = 3.841$$

* χ^2 test accomplished for total officers having combat experience vs. officers not having combat experience.

well as in official photographs. Admittedly, there is more opportunity for winning medals by flying in combat. However, there are those ribbons awarded for service in a combat area as well as commendation and meritorious service medals awarded for outstanding service outside the flying operations.

Highest Level of Command Experience. The highest level of command experience through the rank of colonel was analyzed and compared against no command experience for the two groups of officers (Table 19). The χ^2 test showed a significant difference in command experience between the generals and the colonels. The corrected contingency coefficient (.4484) indicated that the difference was not significant. The 50-10 Rule showed the importance of command experience in career progression for both groups. Over one-half of the colonels and over three-fourths of the generals had held designated command positions. Other command experience was probably gained through holding such positions as program director or division chief in operations or staff areas.

The generals had a significantly higher percentage of officers who had been commanders. Almost 58 percent of the generals had been wing commanders while only 16.2 percent of the colonels had held such a command position as their highest level of command. Thus, the importance

TABLE 19
COMPARISON OF HIGHEST LEVEL OF COMMAND EXPERIENCE VS. RANK

Highest Command Experience	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Wing	47	16.2	99	57.9
Group	21	7.2	8	4.7
Base	14	4.8	0	0
Squadron	58	19.9	22	12.9
Detachment	15	5.2	1	.6
Total With Command Experience	155	53.3	130	76.1
No. Without Command Experience	136	46.7	41	23.9
Total	291	100.0	171	100.0

$$\chi^2_S = 92.955$$

$$\chi^2_C = 11.070$$

$$C = .4093$$

$$\text{Corr. } C = .4484$$

of higher level command experience was considered extremely significant to career progression to general officer.

Served as a Squadron Commander. There was a significant difference between the generals and the colonels as to the percentage who had served as a squadron commander, as indicated by the χ^2 test (Table 20). The corrected contingency coefficient (.2611) reflected a small difference. However, there was an 18.4 percentage point difference between general officers and colonels who had held a squadron commander position. More than 42 percent of the generals had been squadron commanders versus only 23.7 percent of the colonels. Two-thirds of the generals who were squadron commanders later held positions as wing commanders. Less than one-sixth of the colonels who had been squadron commanders went on to become wing commanders. The large difference in the percentage of officers in each group who were squadron commanders made this variable significant to career progression to general officer.

Served as a Wing Commander. The χ^2 test showed that there was a significant difference between the two groups of officers as to the percentage who had served as a wing commander while holding the rank of colonel (Table 21). The corrected contingency coefficient (.5576) showed a significant degree of difference. The descriptive statistics showed that 57.9 percent of the generals had served

TABLE 20
COMPARISON OF SQUADRON COMMANDER
EXPERIENCE VS. RANK

Squadron Commander	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Yes	69	23.7	72	42.1
No	222	76.3	99	57.9
Total	291	100.0	171	100.0

$$\chi_s^2 = 16.308$$

$$\chi_c^2 = 3.841$$

$$C = .1846$$

$$\text{Corr. } C = .2611$$

TABLE 21
COMPARISON OF WING COMMANDER
EXPERIENCE VS. RANK

Wing Commander	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Yes	47	16.2	99	57.9
No	244	83.8	72	42.1
Total	291	100.0	171	100.0

$$\chi_s^2 = 85.072$$

$$\chi_c^2 = 3.841$$

$$C = .3943$$

$$\text{Corr. } C = .5576$$

as a wing commander after making colonel as compared to only 16.2 percent of the colonels, a 41.7 percentage point difference. In the normal Air Force command structure, colonels usually command wings. Such a command allows an officer to demonstrate his leadership ability and grooms him for higher command responsibilities.

Being a squadron commander is not a prerequisite for becoming a wing commander. Of the generals who had been wing commanders, 51.5 percent had not served as a squadron commander. Of the 47 colonels who had been wing commanders, 74.5 percent had not been squadron commanders. This would indicate that serving as a squadron commander is only one route to higher command. Other possible routes are high level staff positions or duties as a division chief or director. The large percentage of generals who had been wing commanders made this variable significant to career progression to general officer.

Service in Office of Secretary of the Air Force (SOA) or Department of Defense (DOD). The χ^2 test showed a significant difference in this variable between the generals and the colonels. The corrected contingency coefficient (.2101) indicated a weak difference (Table 22). Using the 50-10 Rule, an assignment in this area was determined to be important in broadening an officer's

TABLE 22
COMPARISON OF SERVICE IN OFFICE OF
SOA OR DOD VS. RANK

Assignment	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
SOA	3	1.0	11	6.4
DOD-Pentagon	49	16.8	26	15.2
DOD-U.S.	31	10.7	9	5.3
DOD-Foreign	62	21.3	38	22.2
Combination	37	12.7	13	7.6
No Service	109	37.5	74	43.3
Total	291	100.0	171	100.0

$$\chi_s^2 = 17.654$$

$$\chi_c^2 = 11.070$$

$$C = .1918$$

$$\text{Corr. } C = .2101$$

experience outside his own branch of service. Some examples of such assignments were in defense agencies in the United States, such as the Defense Logistics Agency; in DOD assignments at the Pentagon; in overseas duty in U.S. embassies or in Military Assistance Advisory Groups; or working directly for the SOA. No one particular type of service dominated the statistics, although the colonels did have a slightly higher percentage of officers who had worked in such assignments. Since more than half of the officers in each group had seen service in one of these assignments, this variable was considered significant to career progression for both the colonels and the generals.

Highest Staff Position. There was a significant difference between the generals and the colonels in the highest level of staff experience, using the χ^2 test. The corrected contingency coefficient (.2331) indicated that the difference was small (Table 23). The importance of serving at higher headquarters was significant, according to the 50-10 Rule. Over 90 percent of the generals and over 80 percent of the colonels had staff experience at major command level or at Headquarters USAF. With 69.6 percent of the generals having worked at Headquarters USAF, it is apparent that such a tour of duty was significant in career progression to general officer. Such a tour provides an officer with needed career visibility and broadens his level of military experience.

TABLE 23
COMPARISON OF HIGHEST STAFF POSITION
HELD VS. RANK

Staff Level	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
HQ USAF	154	52.9	119	69.6
MAJCOM	89	30.6	37	21.6
NAF	33	11.3	4	2.3
WING	13	4.5	11	6.4
NONE	2	0.7	0	0
Total	291	100.0	171	99.9

$$\chi_s^2 = 21.001$$

$$\chi_c^2 = 9.488$$

$$C = .2085$$

$$\text{Corr. } C = .2331$$

Joint Staff Position. The χ^2 test showed that there was no significant difference between generals and colonels in joint staff experience (Table 24). The generals had a slightly higher percentage of officers who had worked in a joint staff position, with the primary difference being in international service. With service in such international organizations as the North Atlantic Treaty Organization and at Supreme Headquarters, Allied Powers Europe, the generals had a 15.7 percentage point advantage over the colonels. The conclusion was reached that joint staff experience, especially in international organizations, was important to career development, although it was not a steadfast requirement.

Service as a General's Aide. Only 17 percent of the generals studied had served as an executive officer or an aide to a general officer (Table 25). No information concerning such service was available for the colonels. This type of experience, although not essential, can be important to career progression, particularly in the area of sponsorship. As Mylander noted, in being an aide ". . . there are opportunities to meet important people (and future sponsors), to watch generals operate and bask near the center of power [16:240]."

Age When Promoted to Brigadier General. The average age when promoted to brigadier general was 46.6 years (Table 26). The youngest age at which a brigadier general

TABLE 24
COMPARISON OF TYPE OF JOINT STAFF POSITION HELD VS. RANK

Type of Joint Staff	Colonels		Generals	
	Frequency	Percent	Frequency	Percent
Interservice	79	27.2	36	21.0
International	26	8.9	42	24.6
Total With Joint Staff Experience	105	36.1	78	45.6
No Joint Staff Experience	186	63.9	93	54.4
Total	291	100.0	171	100.0

$$\chi^2_s = 3.728^*$$

$$\chi^2_c = 3.841$$

* χ^2 test accomplished for total officers having joint staff experience vs. officers not having joint staff experience.

TABLE 25
SERVICE AS A GENERAL'S AIDE (GENERALS ONLY)

Service As An Aide	Frequency	Percent
Yes	29	17.0
No	142	83.0
Total	171	100.0

TABLE 26
AGE WHEN PROMOTED TO BRIGADIER GENERAL

Age When Promoted	Frequency	Percent
41	3	1.8
42	6	3.5
43	4	2.3
44	21	12.3
45	24	14.0
46	28	16.4
47	27	15.8
48	23	13.5
49	16	9.4
50	9	5.3
51	7	4.1
52	2	1.2
55	1	0.6
Total	171	100.2

Mean Age When Promoted: 46.6 Years

promoted to that rank was 41 years while the oldest was promoted at age 55.

Total Commissioned Time When Promoted to Brigadier General. The average amount of commissioned time when promoted to brigadier general was 23.5 years (Table 27). One general had only 19 years of commissioned service when promoted, while at the other end of the spectrum, two generals had 29 years of service when promoted.

The Significance of the Variables Studied

Table 28 groups the variables studied into three general categories according to their relative significance in career progression to brigadier general. Variables were rank-ordered in each category using subjective and quantitative methods. Although not a separate variable, a regular commission was considered to be very significant in career progression and was included in the table. The variables City Size at Time of Birth, Number of Children, Age When Promoted to Brigadier General, Total Commissioned Time When Promoted to Brigadier General, and Service as a General's Aide were not included in the table, since they were used as descriptive statistics only.

Career Patterns of Brigadier Generals

Three distinct career patterns for general officers emerged from an analysis of their assignments (Table 29). The first pattern was a sequence of operations assignments,

TABLE 27

TOTAL COMMISSIONED TIME WHEN PROMOTED
TO BRIGADIER GENERAL

Commissioned Time (Years)	Frequency	Percent
19	1	0.6
20	9	5.3
21	21	12.3
22	23	13.5
23	31	18.1
24	28	16.4
25	31	18.1
26	15	8.8
27	9	5.3
28	1	0.6
29	2	1.2
Total	171	100.2

Mean Commissioned Time When Promoted: 23.5 Years

TABLE 28

VARIABLES GROUPED ACCORDING TO SIGNIFICANCE IN
CAREER PROGRESSION TO BRIGADIER GENERAL

Very Significant

1. Regular Commission
2. Aeronautical Rating
3. Wing Commander
4. HQ USAF Assignment
5. SOA-DOD Assignment
6. Attendance at Senior Service School
7. Attendance at Staff College
8. Master's Degree
9. Completion of SOS
10. Combat Experience

Significant

1. Squadron Commander
2. Joint Staff Assignment
3. Marital Status

Not Significant

1. Place of Birth
 2. Region of Birth
 3. Source of Commission
 4. Type of Educational Institution Attended
 5. AFIT Graduate Degree
-

TABLE 29
 CAREER PATTERNS
 (GENERALS ONLY)

Career Pattern	Frequency	Percent
Operations		
Pilots	75	43.8
Navigators (missiles)	1	0.6
Subtotal	76	44.4
Mixed		
Pilots	62	36.3
Navigators	3	1.8
Nonrated	4	2.3
Subtotal	69	40.4
Specialized		
Pilots	7	4.1
Navigators	2	1.2
Nonrated	17	9.9
Subtotal	26	15.2
Total	171	100.0

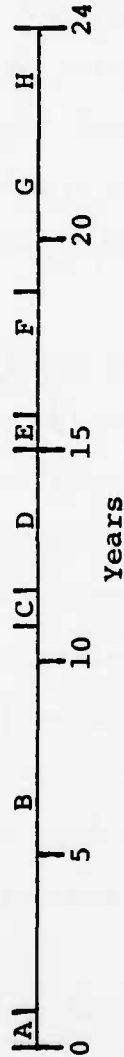
a route followed by 44.4 percent of the generals. The second pattern involved a nearly equal mix of operations and staff assignments, with the exception of four nonrated officers included in this pattern who had held positions in a wide variety of career fields. This pattern was pursued by 40.4 percent of the generals. The third pattern was a series of assignments in one career field, which resulted in a general becoming one of the top specialists in that field. Over 15 percent of the generals fell into the specialist group.

Figures 1, 2, and 3 present the three career patterns. Each pattern was based on selection for brigadier general during the twenty-fourth year of service. The pattern is divided into a number of intervals identified by letters of the alphabet along a 24-year continuum. The key for each figure lists the letter for a certain period followed by the specific year or years when an assignment is expected to occur. The key also provides specific activities for each period. Assignments and time periods were based on an analysis of the careers of the brigadier generals.

Patterns one and two have been modified to accommodate the aeronautical flying program for rated officers as specified by Air Force Regulation (AFR) 60-1. An explanation of this program can be found in the above regulation (23:Ch. 2).

FIGURE 1

CAREER PATTERN ONE: OPERATIONS ASSIGNMENTS

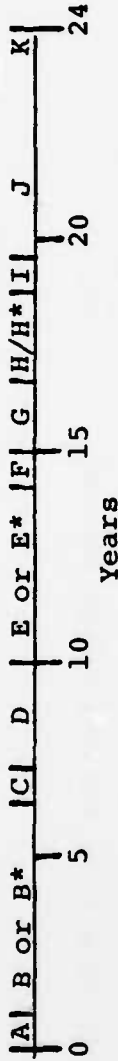


KEY:

- A - (1) Flight Training
- B - (2-11) Operations Assignments: Instructor, Evaluator, Flight Commander, Squadron and Wing Duties; Complete SOS; Complete All Flying Gates
- C - (12) Attend and Complete A Staff College / Master's Degree
- D - (13-15) Staff Work Related to Operations: HQ USAF, MAJCOM, NAF
- E - (16) Attend and Complete Senior Service School / Master's Degree (If not completed earlier)
- F - (17-18) Squadron Commander
- G - (19+) Wing Commander / Staff Duty at HQ USAF or MAJCOM
- H - (24) Selection for Brigadier General

FIGURE 2

CAREER PATTERN TWO: MIXED ASSIGNMENTS



KEY:

- A - (1) Flight Training or Technical Training
- B - (2-6) Operations Assignments: Instructor, Squadron/Wing Duties: Complete SOS/First Flying Gate
- B* (2-6) Assignment in Support Career Field: Upgrade from Entry Level AFSC/Complete SOS
- C - (7) Graduate Degree
- D - (8-10) Duty in Support Career Field
- E - (11-13) Operations Assignments: Instructor, Squadron/Wing Duties: Second Flying Gate
- E* (11-13) Staff Work/Key Management Positions in Support Career Fields
- F - (14) Attend and Complete Staff College
- G - (15-16) Staff Work: Pentagon, MAJCOM, NAF
- H - (17-18) Operations Assignment: Wing, NAF Duties: Third Flying Gate
- H* (17-18) Command A Support Squadron
- I - (19) Attend and Complete Senior Service School
- J - (20+) Director or Division Chief: DOD, HQ USAF, MAJCOM, NAF/Some Wing Commanders
- K - (24) Selection for Brigadier General