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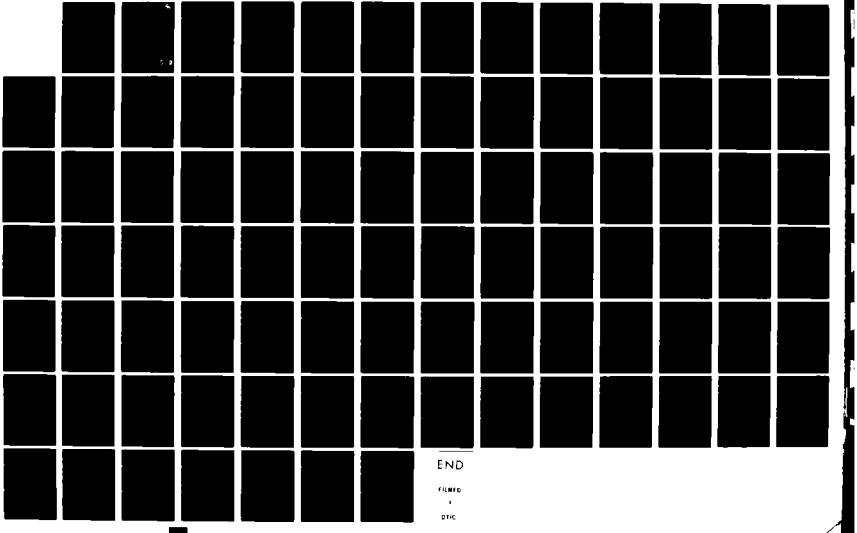

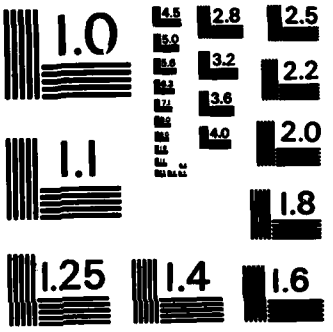

Preference Migration, A Case Study: Motivation Factors Behind the Decision Making Process of Army Officers

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A thesis submitted to The George Washington University, Washington, D. C., in partial fulfillment of the requirements for the degree of Master of Arts.

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PREFERENCE MIGRATION, A CASE STUDY: MOTIVATION FACTORS BEHIND THE DECISION MAKING PROCESS OF ARMY OFFICERS

By

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I. MIGRATION AND DECISION MAKING

Although the literature dealing with human migration is voluminous, it is largely of a fragmented nature because of both the variety of disciplinary viewpoints employed and of the traditional distinction among migration at different scales (e.g., intraurban, interurban, rural-urban, inter-regional). One common research viewpoint considers migration as the movement of people from one areal unit to another, such as between census tracts at the intraurban level, or between states or provinces at the national level. This conceptualization of migration as a movement across political or statistical unit boundaries results from the availability of most data only at an aggregated level. Thus, much of the knowledge of the spatial aspect of migration lacks specification of exact locations, specification that is useful for understanding the site, and situational attributes of the origins and destinations which are important in the locational decisions of the migrant.[1]

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[1] This viewpoint has also led to a rather arbitrary definition of a migrant, based upon the crossing of areal unit boundaries. Complications that arise from such a definition are discussed by D. J. Bogue, Principles of Demography, New York, John Wiley and Sons Inc., 1969, p. 757.

Geographers are becoming increasingly interested in describing behavioral processes and the spatial patterns which they generate. One type of behavior which contributes to spatial structure is the way people make locational choices. Central Place Theory is only one of many areas of human geography where assumptions about the spatial behavior of individuals are incorporated in explanations of spatial structure. Indeed, Curry has focused attention on the problem of developing theory from postulates which do not inherently contain the deduced facts which interest us.[2]

The migration process involves households or individuals making decisions and moving their residences and activity spaces to other locations. There is a variety of circumstances surrounding individual moves, and there are different degrees of participation of individual migrants in the decision-making process. Some individuals are directly involved in the process, whereas others, such as young children, do not participate directly in the decision but have their interests taken into account.[3]

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[2]L. Curry, "Central Places in the Random Spatial Economy," Journal of Regional Science, 7, no. 2, (Supplement 1967), p. 218.

[3]Curtis C. Roseman, "Changing Migration Patterns Within the United States," Resource Papers for College Geography, 77-2, (1977), pp. 3-4.

In discussing specifics of the migration decision, one must separate ideas relative to the decision "to move" from ideas related to the decision "where to move."[4] Although it is recognized that the two decisions are often hard to distinguish and are sometimes made simultaneously, it is necessary to think about the two individually to understand the total migration process.

In the study of migration flows, Wolpert suggests that understanding and prediction of migration streams requires identifying the constants in migration behavior and distinguishing these from the characteristics of population composition and place, both of which evolve differently over time.[5] The decision to migrate from one place to another is not only a decision to change a specific residential environment but it is also a decision to relocate the "home base" for the household's activity space, that set of places with which the household interacts on a regular basis for work, shopping, recreational, social, or educational purposes.[6]

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[4]Lawrence A. Brown and Eric G. Moore, "The Intra-Urban Migration Process: A Perspective," Georgrafiska Annaler, 52B, (1970), pp. 1-10.

[5]J. Wolpert, "Behavioral Aspects of the Decision to Migrate," Papers, The Regional Science Association, 15, (1965), pp. 162-165.

[6]Roseman, (1977), p. 4.

The circumstances under which a move takes place are more important determinants of the extent of deliberation (the general level of deliberation about moving is low) than the characteristics of the people involved. Some circumstances, such as previous familiarity with moving or with the area or information and help from friends and relatives, seem to replace part of the need for deliberation. Other circumstances, such as the pressures of unemployment or the offer of a job or transfer in one way or the other shorten deliberation or preclude consideration of alternatives. In general, most movers consider only a narrow range of choices. The decision, therefore, represents a change in both the specific site of the household and its relative location.

Traditionally, a distinction has been made between "local movers," persons who move within the boundaries of a locality and "migrants" persons who cross a boundary while changing residential location.[7] Researchers and planners use this distinction as a convenient method of counting migrants as they affect the growth or decline of localities. Essentially this is a demographic definition--those migrating into or out of an area are migrants and those staying within are not. In terms of distance moved, for example, a great

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[7] Ibid., p. 6.

variation is possible for movers, an even greater variation is possible for migrants; and considerable overlap between the two occurs. Furthermore, there is no guarantee that crossing a boundary will significantly change the residential environment or the activity space of a household. The definition of migration can therefore provide difficulties to those dealing with specific aspects of the decision-making process.

A. Motivation and Migration.

One method of describing migration makes the distinction between: 1) partial displacement migration--residential moves that disturb only part of the household's activity space and thus are essentially local in nature whether or not a boundary is crossed, and 2) total displacement migration--longer distance moves in which not only the residence but also the functions conducted with the activity space are relocated.[8] This is an adequate classification because it effectively distinguishes types of moves on the basis of: reasons for moving, information sources used in the decision, and impact upon the household.

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[8] C. Roseman, "Migration as a Spatial and Temporal Process," Annals of the Association of American Geographers, 61, (1971), pp. 589-594.

At the partial displacement level, major locational variables are generally not related to job changes, though they may be constrained by job location.[9] They may be grouped under the categories of dwelling and neighborhood characteristics and relate to socioeconomic status, income, ethnic factors, and stage in the life cycle.[10]

At the total displacement level, factors related to economic opportunities seem to be critical; others, such as urban amenities, climate, and general labor market, are important as "environmental" attributes of general areas.[11] Another critical variable in establishing place utilities is distance--a factor that is important because the cost of travelling may inhibit the desire to remain in contact with friends and family.[12]

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[9] S. Goldstein and K. B. Mayer, "Migration and the Journey to Work," Social Forces, 42, (1964), p. 481.

[10] A. Speare, Jr., "Home Ownership, Life Cycle Stage, and Residential Mobility," Demography, 7, (1970), pp. 449-456.

[11] G. Olsson, "Distance and Human Interaction: 'A Migration Study,'" Geografiska Annaler, 47B, (1965), p. 24, and E.L. Ullman, "Amenities as a Factor in Regional Growth," Geographical Review, 44, (1954), pp. 119-127.

[12] H. ter Heide, "Migration Models and Their Significance for Population Forecasts," Milbank Memorial Fund Quarterly, 41, (1963), p. 27.

To understand the spatial manifestations of these key variables, one can conceptualize the potential migrant's view of possible destinations in terms of two basic types of place utility surfaces. At the partial displacement level, the surface is fundamentally a function of the housing market relative to the character of the household, modified by accessibility factors and the information-gathering process. At the total displacement level, the utility surface is defined by general distance attraction factors (resembling a distance biased central place hierarchy), modified by the location of friends, relatives, and areas of previous residence.

These conclusions have implications for aggregate level models of migration. Household types tend to be "matched" with dwelling and neighborhood types in modelling the partial displacement process.[13] They are not easily matched to general areas, however, and thus the modelling strategy for predicting aggregate total displacement migration flows generally has not used individual or household factors as differentials.[14] Aggregate models of total

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[13] R.H. Ellis, "A Behavioral Residential Location Model," unpublished Master's Thesis, Northwestern University, Evanston, 1966.

[14] A.M. Rose, "Distance of Migration and Socio-economic Status of Migrants," American Sociological Review, 23, (1968), pp. 420-423.

displacement migration are commonly of the gravity or intervening opportunity type, and incorporate variables that measure attributes of the origin and destination areas plus some measure of intervening distance.

The choice of one place out of all those contained in the search space is the final decision in the migration act. At the broad geographic scale, acquiring a job or having one's job transferred may almost dictate that choice, as it dictated the configurations of the search space. For other migrants, the attraction of employment opportunities and of urban amenities have always been important, but factors that are increasingly important relate to climate, recreational opportunities, and a rural life-style. At the narrower (local) scale, choosing the final location usually involves matching the household needs and desires with a place, subject to job location, and racial or economic constraints. Household needs and desires are clearly related to life and career cycles--hence the decisions to move and the locational component of that move are interrelated.[15]

All migrants must at some point in time make each of the displacement decisions but only total displacement

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[15] C.A. Peterson, An Iowa Commuting Pattern and Labor Market Areas in General, Research Series No. 23, University of Iowa, (1961), pp. 83-91.

migrants change locations as a result of both, they move to a different general area, and then choose a specific dwelling place therein. Partial displacement migrants either desire to live in their own general area, or remain in it for job or social ties. Therefore, long distance migration is somewhat of a step-down process. The choice of a general area is implicit in the initial decision, and actual migration is a result of the latter. These two different types of migration are related to different information gathering processes and play different roles in the assimilation process of the migrants at their ultimate destinations. They are also important as a basis for the identification of relationships between temporal and spatial dimensions of migration.

When the various spatial and temporal aspects of the process of migration are considered relative to each other, two conclusions can be derived. Initially, each aspect of the process is dependent on other aspects: i.e., the assimilation process is conditioned by the motive of previous moves; the establishment of place utilities in choosing a new residential location is dependent upon the information gathering method and its spatial manifestations; and the timing of a given move is conditioned by the spatial and temporal characteristics of previous moves. From this perspective, the

categories of total displacement and partial displacement have more meaning in the context of the migration decision process than do the categories which distinguish between migrations by scale. More importantly, migrations at all scales are interdependent.

Among some methods incorporated, migration surveys may reveal the reasons, including attraction for some types of environment, for interregional movements. Behavioral approaches to environmental preference migration assume the primacy of understanding the locational decisions of individuals. Among the more important methods, migration surveys may reveal the reasons, including environmental ones, for interregional movements. Similar kinds of research may explore the specific natural environments that people prefer. However, the origin of some environmental preferences may be physiological. Images of place may also show the basis for general regional preferences.[16]

In the field of geography, relatively few migration studies have examined expressed motivations for movement, and the few exceptions do not emphasize the importance of the natural environment. In contrast to the attention that

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[16]Peter Gould and Rodney White, Mental Maps, Baltimore, Penguin, 1974, p. 6.

has been given to time preferences of consumers and locational preferences of firms, for example, it is remarkable that so little attention has been given to the residential locational preferences of individuals or to how the geographic organization of economic activities may be brought more into line with the preferences of people.[17] There is reason to believe that there will be a continuation, and perhaps an increase of many of the types of decisions to move that characterized the most recent decade. Major changes in the economy might modify the migration tendencies of persons whose decision making is tied to business and industry--such changes are more likely to affect the decision of where to move. For example, in "The Geographic Mobility of Labor", the authors concluded that economic reasons are overwhelmingly important, but they also stressed that non-economic motivations were probably underreported.[18] Some respondents did cite environmental factors, particularly climate. One may also conclude, that economic incentives broadly defined, play a more substantial role in determining mobility than an analysis of

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[17] Niles M. Hansen, Location Preferences, Migration, and Regional Growth, New York, Praeger, 1973, p. 65.

[18] John B. Lansing and Eva Mueller, "The Geographic Mobility of Labor," Survey Research Center, Institute for Social Research, Ann Arbor, Univ. of Michigan, 1967, pp. 57-69.

income data alone. The effectiveness of economic incentive as a mechanism for allocating the labor supply between labor market areas is seriously impeded by the combined impact of a number of factors:[19]

1) the low mobility potential of workers subject to unemployment;

2) some evidence that the "push" of adverse economic circumstances may have to be strong to lead a family to move;

3) the tenuous relation between hoped-for income increases and the actual income gains realized by moving.

4) The apparent importance of distress moves which may mean economic down-grading rather than up-grading;

5) The occurrence of moves for non-economic reasons, probably somewhat more frequent than people's explanations of their motives would lead one to believe. Family and community ties play a considerable part in geographic mobility, as do mobility and economic ties such as home ownership, pension plans, and unemployment insurance.

B. Environmental Quality and Migration.

More than twenty-five years ago, Edward Ullman suggested that much of the interregional migration in the United States could be explained by individual preferences for a

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[19] Lay James Gibson, "The Amenities as a Factor in Arizona's Population Growth," Regional Science Association, 3, No. 1, (1969), pp. 192-196.

"pleasant" climate and for other aspects of a desirable natural environment.[20] Although this general thesis was not new, this was the first comprehensive discussion of the subject.[21] Ullman's pioneering article was met with reasonable interest, but except for brief references or perfunctory footnotes, the topic has not been pursued or developed in literature. A few notable exceptions are available, but these merely emphasize the lack of research.[22]

A few migration surveys that have addressed the issue of environmental preferences have provided some evidence of its importance. Four questionnaire surveys of Arizona residents found climate to be a strong stimulant in migration.[23] Migration surveys therefore provide sufficient evidence to suggest that any future investigations should be designed to measure the relative significance of the natural environment

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[20] Edward L. Ullman, "Amenities as a Factor in Regional Growth," Geographical Review, 44, (1954), pp. 119-124.

[21] The earliest reference may have been E.G. Ravenstein, "The Laws of Migration: Second Paper," Journal of the Royal Statistical Society, 52, (1889), p. 286.

[22] R.J. Johnston, "The Residential Preferences of New Zealand School Students: Some Tests of the Economic and Ecological Man Concepts," New Zealand Journal of Geography, 50, (1971), pp. 1-9; Peter Gould and D. Ola, "The Perception of Residential Desirability in the Western Region of Nigeria," Environment and Planning, 2, (1970), pp. 73-76.

[23] Gould and Ola, (1970), p. 78

as well as employment opportunities and other amenities in the migration decision process.

Research on specific environmental preferences, as distinct from general preferences, is still in an infantile stage. A multi-regional sample survey yielded some perspective on this topic.[24] The job market was considered the most critical characteristic of regions when respondents made migration decisions (a mean rating of 5.0 on a seven-point scale), followed by population density (4.6), winter climate (4.3), topography (4.3), natural vegetation (4.2), summer climate (4.2), lakes and rivers (4.1), and distance from a seacoast (3.1). The importance granted topography and seacoast location varied greatly.

The same study also established that, in hypothetical choice situations, individuals tend to behave as though regional environments were commodity bundles subject to consumption at a marginal level. The monetary income required to persuade an individual to live in a hypothetical region varied inversely with the desirability of the natural environment. This predisposition to "consume" natural environments was a partial function of the respondent's expected personal income, and provides evidence that the natural

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[24] Larry M. Svart, "Natural Environment Preferences and Interregional Migration," (Unpublished Ph.D. Dissertation, Seattle, Dept. of Geography, Univ. of Washington, 1973).

environment is considered by many to be a commodity to be evaluated in the migration decision process.

Sonnenfeld's research on environmental preferences focused on the development of suitable methodological techniques and on the analysis of individual differences.[25] Although his findings are potentially useful to help unravel the sources of personal preference differentiation, they have provided little evidence for the existence of general environmental preferences.

Available research on specific environmental preferences supports these hypotheses. The natural environment is regarded as important by many individuals making migration decisions. Preferred regional attributes include low population density, winter sunshine, warm and dry summers, infrequent but moderate precipitation, mountainous relief, coastal location, surface water, and diverse vegetation. These preferences vary with past experience, age, and sex.

The decision to migrate is a commonplace event in life. In society, career cycles are related to and often become the impetus to migration. Promotions to a better position in a different location can be directly related to residential movement. Until recently, empirical migration

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[25] Joseph Sonnenfeld, "Community Perceptions and Migration Intentions," Proceedings of the Association of American Geographers, 6, (1974), pp. 13-14.

studies have ignored the hypothesis that environmental preferences may play a parallel role to career cycle factors in explaining migration flows.[26] However, in more recent years, researchers have been less inclined to avoid the preference migration hypothesis and are increasingly finding evidence which supports it.[27] The difficulties which this factor poses for theories of interregional economic relationships has led to explicit use of control variables to allow for its effects.[28]

The increasing interest in environmental preference migration has been given impetus by Schwind's work on the

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[26]Henry S. Shyrock, Jr., Population Mobility Within the United States, Chicago, University of Chicago Press, 1964, pp. 86, 225, 287, 404 and 429; John R. Borchert, "America's Changing Metropolitan Regions," Annals, Association of American Geographers, 62, (1972), pp. 352-360; and B.J.L. Berry, "The Emerging Urban Region in America," South African Geographical Journal, 55, (1973) pp. 3-11.

[27]Larry A. Sjaastad, "The Relationship Between Migration and Income in the United States," Papers, Regional Science Association, 6, (1980), pp. 37-42; Michael Q. Greenwood and Douglas Sweetland, "The Determinants of Migration Between Standard Metropolitan Statistical Areas," Demography, 9, (1972), pp. 665-667; and Richard J. Cebula and Richard K. Vedder, "A Note on Migration, Economic Opportunity, and the Quality of Life," Journal of Regional Science, 13, (1973), pp. 205-208.

[28]Lowell E. Gallaway and Richard J. Cebula, "Differentials and Indeterminacy in Wage Rate Analysis: An Empirical Note," Industrial and Labor Relations Review, 26, (1973), p. 991.

effects of socioeconomic variables on migration.[29] His effort yielded conclusions which were disturbing to scholars involved in conventional migration research. Although gross migration patterns were easily predictable in terms of populations and distance, the net direction of migration was poorly explained. Only a third of the total variation in net migration was accounted for by differences in social and economic conditions. The concluding chapter therefore turned away from the conventional migration variables to call for research into other quality of life factors that may motivate migrants. Schwind stated that inclusion of a sensitive indicator of regional climatic differences might significantly have improved the explanation of net directional migration. This would have a unidirectional causal relationship with any demographic and economic variables in his model.[30]

Despite the somewhat fragmented nature of existing studies on the role of environmental preferences in migration, there is an emerging concensus in the direction of the research. Regional environmental preferences are a significant cause of migration, as established by survey research on

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[29] Paul J. Schwind, Migration and Regional Development in the United States, 1950-1960, Chicago, University of Chicago, Department of Geography, Research Paper no. 133, 1971, pp. 22-25.

[30] Ibid., p. 29.

individual attitudes and by empirical research on aggregate migration patterns.[31] Several hypotheses which were formulated in the 1950's and 1960's have been tested and substantiated.[32]

If regional preference researchers in a broad sense were to identify a single locus for investigative endeavors they would not do any better than the clouded area of "quality of life." It is true that this topic, at present, offers only potential. Most of the social indicators developed during the 1960's and early 1970's reveal a somewhat transcendental avoidance of regional differences in the natural environment. Conversely, physical indicators of environmental quality seem to deal with only a few, generally pathological, characteristics of the environment. Additionally, environmental preference research could logically aid in filling the gap between these two aspects of regional quality of life. The individual search for the

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[31] D.P. Hauser, "Some Problems in the Use of Stepwise Regression Techniques in Geographical Research," Canadian Geographer, 18, (1974), pp. 148-151; Julian Wolpert, "The Basis for Stability of Interregional Transactions," Geographical Analysis, 1, (1969), pp. 162-171.

[32] Bernard M. Bass and Ralph A. Alexander, "Climate Economy and the Differential Migration of White and Non-White Workers," Journal of Applied Psychology, 56, (1972), pp. 518-521; Richard J. Cebula, "The Quality of Life and the Migration of the Elderly," Review of Regional Studies, 4, No. 1, (1974), pp. 62-64.

good life is multifarious, a seeming fact which goes far to explain the current lack of theory at the core of quality of life studies. Regional preference research could help in filling this void if it took on the challenge.

Through various sources of information, including social networks, an individual learns about the social and physical attributes of potential destinations. Wolpert uses the concept "place utility" to describe the basis upon which people make migration locational decisions.[33] Place utility is an individual's subjective measure of the degree to which the opportunities at a particular place permit him to meet his perceived aspiration level. By integrating this individualistic concept with information on life cycles, life styles, and life spaces of specific socioeconomic groups, Wolpert developed an aggregate measure of the utility of specific places relative to the mover-stayer decision. This value is assigned to various places as potential locations for migrants. Place utility theory contends that the individual weighs this value for alternative places about which information is already known. Therefore, utility is inherently individualistic in the decision-making process.

Employment goals have traditionally been viewed as the most important aspect with regard to economic mobility

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[33]Wolpert, (1969), p. 163.

and migration. Physical environments and social amenities have come into their own only more recently. Individuals use numerous criteria to evaluate places, but their evaluation is conditioned by general knowledge of the places, and the ability to gather further information. Two types of information ultimately weigh upon the locational decision:[34] 1) information that people gather throughout their lives to form a general set of long-term assignment preferences--they gather such information and assign place utilities or assignment and location preferences without necessarily thinking of possible migration; and 2) information that people must collect about places, often a limited number of places, when a forthcoming relocation is inevitable. These latter places are called search spaces.[35]

People are continually acquiring and storing information about various places. Some is locational information--where places are with reference to other places or with respect to some other reference (direction, distance, country, region, etc.) Also absorbed is information about the content of these places--major landscape elements, facilities, units, population, characteristics, amenities available,

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[34]Wolpert, (1969), pp. 163-165.

[35]Wolpert, (1969), p. 163.

and other attributes that might have a bearing upon "what it may be like to live there." These are combined with locational attributes to form a total site and situational image of potential destinations.

C. Economic Factors? Environmental Factors? A Hypothesis.

Migration literature suggests generally that economic factors are the primary motivation behind the process, while environmental ones (physical/social) are of secondary importance. Specific motivation studies suggest the same thing, although simultaneous examinations of both have been limited. In situations in which economic factors cannot be readily considered, it may be hypothesized that the other two factors take precedence. Thus, it is hypothesized generally that environmental (physical/social) factors are decidedly secondary to economic opportunities as determining factors in the decision making process of households considering migration. More specifically, it is hypothesized that when subsequent choices for migration are expressed, there is an inverse importance between economic and environmental factors, such that the economic factors are the overriding ones in the first choice, and environmental ones tend to dominate increasingly in the second and subsequent choices.

This hypothesis will be tested with a sample of individuals whose unusual circumstances provide them with employment stability, a situation which makes it possible to examine more directly the other factors in their movement patterns. Military personnel are normally selected on a "best qualified" basis for assignments of the highest importance. It is entirely true that there is competition for the choice positions. However, each officer has the opportunity to express specific choices with respect to future assignments. It is specifically hypothesized therefore, that an officer's motivation to select a specific assignment location is initially based on a perception of what is best for his career. There then may be alternative considerations which motivate the secondary selection if the first choice cannot be readily accommodated.

The United States today has a fine standing Army, and a splendid Corps of Officers. The competition for top assignments has some finer points about it which need clarification and understanding. First, there is no favoritism or influence. A uniformed person may attempt to impose such pressures, but the results may be negative. This comes from the fact that the selection process goes through many hands for evaluation and recommendation, or for concurrence

in a recommended choice. Secondly, the Army is fortunate in having a wealth of talent so that the selection of the "best qualified" is made from a number of officers who are "fully qualified." Thirdly, the Army is large enough and its mission broad enough, that positions requiring the highest talents are abundant and all officers may expect to be placed in assignments which utilize their full talents, always remembering the work of the Army must be accomplished. Finally, each officer has a personal responsibility in the development of his or her career.

II. THE STRUCTURE OF THE DATA

This thesis is an exploratory case study of the role of environmental and physical factors as they influence the military officers' migration decision making process. The purpose of this research is to evaluate the locational preferences and motivating factors behind the decisions of these migrants. The study sample, a group of Army officers, is fairly unique in that job security is insured by a system of somewhat defined career goals and opportunities. This situation is in sharp contrast to the uncertainties of mass civilian migration motivation for whom employment opportunities are not as well defined.

For most would be migrants, their "search space" may be either geographically extensive or severely constrained.[36] Military officers, in contrast, may have several job possibilities and even several positions offered them at a variety of specific locations. Their lack of ties to most places coupled with a desire to experience other places, may allow serious simultaneous consideration of the opportunities in

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[36] Lawrence A. Brown and Eric G. Moore, (1970), pp. 2-4.

these locations. Their actual choice could be highly influenced by the idealized preference map which they have fashioned over the years.

A. Factors of Migration.

In order to test the hypothesis formulated in Chapter I, four different sets of data were collected.

The first set was comprised of the preference choices of officers who had made their selection for reassignment subsequent to graduating from a six month military management course. This set was obtained from the Officer Preference Statement (Department of the Army, Form 483). This form enables an officer to state preferences for assignment to enhance his personal career development or special needs or preferences. Approximately three hundred thirty forms were used to tabulate the individual locational choices of one group of military officers, the Engineer Advanced Course Officers for Fiscal Year 1981. Their choices were totaled and ranked by state for both the first and second choice. The actual preferences were on an installation by installation format. However, they have been tabulated by state. In the first choice, the top five states were picked in one hundred seventy-four out of three hundred twenty-three selections. Twenty-five states were not picked at all. There is a high

degree of skewness as only twenty-five percent of the states' assignment preferences are decided upon by nearly eighty percent of the officers. (Table 1) Each officer is required to submit this form periodically, and encouraged to forward one whenever his or her preferences for assignment are changed, or when important events have occurred which should be known by the manager of the officer's primary specialty, OPMD.[37] Specialty management officers do strive to meet the officer's wishes insofar as it is practicable for them to do so, and for this reason, the individual preference file must be kept current. Preference information was obtained from the U.S. Army Military Personnel Center (MILPERCEN) and from the 3[D] Battalion, U.S. Army Engineer Training Brigade at Ft. Belvoir, Virginia.

A second data set, the authorized number of positions available in the contiguous United States for Engineer Company Grade Officers, was released for this study by the assignments branch at MILPERCEN.[38] The actual number of authorized positions available was grouped by state from an original tally

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[37] (OPMD) The Officer Personnel Management Directorate was reorganized in 1975 in recognition of the dual specialty development of members of the Officer Corps and to provide for better control of officer assignments within the various specialty areas.

[38] (MILPERCEN) has the responsibility for successful operation of the entire career planning, or professional development program in the U.S. Army.

Table 1

First and Second Preference Rankings
for the 48 Contiguous States,
by Engineer Officers in 1981.

	1st Choice		2nd Choice	
State	Rank	Number	Rank	Number
Alabama	11	10	12	14
Arkansas	20	1	22	1
Arizona	24	0	19	3
California	3	36	3	27
Colorado	1	43	1	38
Connecticut	20	1	22	1
Delaware	24	0	29	0
Florida	24	0	19	3
Georgia	8	21	7	21
Idaho	24	0	29	0
Illinois	18	2	19	3
Indiana	16	3	18	5
Iowa	24	0	29	0
Kansas	13	6	12	14
Kentucky	14	5	9	19
Louisiana	12	7	14	11
Maine	24	0	22	1
Maryland	10	14	10	18
Massachusetts	5	26	6	22
Michigan	20	1	22	1
Minnesota	24	0	29	0
Mississippi	24	0	29	0
Missouri	9	19	11	15
Montana	24	0	29	0
Nebraska	24	0	29	0
New Hampshire	24	0	29	0
New Jersey	24	0	22	1
New Mexico	24	0	22	1
New York	18	2	15	8
Nevada	24	0	29	0
North Carolina	5	26	8	20
North Dakota	24	0	29	0
Ohio	20	1	22	1
Oklahoma	15	4	15	8

Table 1 (Continued)

State	1st Choice Rank	1st Choice Number	2nd Choice Rank	2nd Choice Number
Oregon	24	0	29	0
Pennsylvania	18	2	19	3
Rhode Island	24	0	29	0
South Carolina	24	0	19	3
South Dakota	24	0	29	0
Texas	4	27	5	24
Utah	24	0	29	0
Vermont	24	0	29	0
Virginia	1	43	4	25
Tennessee	24	0	29	0
Washington	7	23	2	28
West Virginia	24	0	29	0
Wisconsin	24	0	29	0
Wyoming	24	0	29	0

Note: Some individuals did not state individual preferences for other than the first choice.

Source: Author's Research tabulated from data supplied by MILPERCEN.

by military installations, and represents the officers' actual employment possibilities.[39] The resulting tally comprises approximately 98.7% of CONUS assignment possibilities for Engineer Captains.[40] When selecting reassignment, the officers would have to choose from the following categories:

1. (ROTC) Reserve Officer Training Corps - Colleges and Universities
2. (USAREC) U.S. Army Recruiting Command
3. Civil Works - District Engineer
4. (ARMR) Readiness Region - U.S. Army Reserves
5. (FORSCOM) Forces Command - U.S. Army Active Duty Forces in Stateside Combat Units
6. (TRADOC) Training and Doctrine Command - The Army School System in CONUS
7. (USMA) United States Military Academy - Instructor Duty
8. Office of the Chief of Engineers

The individual positions in these eight categories total 1,261 authorized positions. There is a high degree of skewness as the top ten states have over fifty percent of the available authorized positions. (Table 2)

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[39] These data were made available through the assistance of an Engineer Assignments Officer, Captain John Temple.

[40] (CONUS) Continental United States (48 contiguous states).

Table 2

Ranking of Authorized 0-3 Level of Corps of Engineer Positions in the Contiguous United States

Ranking	States	Positions
20	Alabama	23
26	Arkansas	14
31	Arizona	12
3	California	74
12	Colorado	36
35	Connecticut	8
44	Delaware	4
21	Florida	19
6	Georgia	63
47	Idaho	3
16	Illinois	31
26	Indiana	14
31	Iowa	12
7	Kansas	61
8	Kentucky	55
13	Louisiana	32
44	Maine	4
10	Maryland	41
13	Massachusetts	32
19	Michigan	24
23	Minnesota	15
23	Mississippi	15
5	Missouri	66
44	Montana	4
26	Nebraska	14
41	Nevada	6
38	New Hampshire	7
23	New Jersey	18
29	New Mexico	13
9	New York	42
4	North Carolina	67
43	North Dakota	5
18	Ohio	27
17	Oklahoma	29
13	Pennsylvania	32

Table 2 (Continued)

Ranking	States	Positions
41	Rhode Island	6
21	South Carolina	19
47	South Dakota	3
29	Tennessee	13
2	Texas	81
31	Utah	12
41	Vermont	6
1	Virginia	127
11	Washington	37
38	West Virginia	7
23	Wisconsin	15
47	Wyoming	3
34	Oregon	10
	Total Authorized Positions	1,261

Source: Author's Research tabulated from data supplied by MILPERCEN.

Behavioral approaches to environmental preference migration assume the primacy of understanding the locational desires of individuals. Among the more important methods, migration surveys reveal the environmental reasons for interregional movements. The quality of life or social factor, admittedly is a very subjective expression of an individual's sense of well-being. In a very real sense, it expresses that set of "wants" which, when taken jointly, makes the individual happy or satisfied. However, human wants rarely reach a state of complete satisfaction, except possibly for a very short time. As a result, the quality of life varies not only from person to person, but also from place to place and from time to time. Environmental quality is not readily definable in a generic manner which takes in both physical and social aspects of the environment. Thus, it was necessary to utilize two different indices in this study (Physical Factors and Social Factors).

A Physio-Climatic Index was used as a surrogate for the physical environmental factors in migration. W.H. Terjung's Comfort Index, a classification nomogram, was derived by superimposing categories of human comfort upon a psychrometric chart, containing effective temperature lines, wet-bulb lines, lines of relative humidity, and dry-bulb lines.

The categories of comfort were determined and delineated by Terjung upon perusal of a variety of existing research into the field of human comfort. This index resulted from his attempt at a physio-climatic classification based on human sensations created by climatic influences. The Comfort Index related dry-bulb temperatures to relative humidity.[41] Terjung constructed a map of the United States depicting through symbolization the Annual Physio-Climatic Extremes in the contiguous United States. (Fig. 1) The associated reactions and sensations regarding climatic influences have been labeled in terms generally understood by the public. Approximately twenty assemblies occur in the United States.[42] The official comfort chart of ASHVE,[43] which was employed by the Department of Commerce, shows that ninety-eight percent of the people in the United States are comfortable at 65° Fahrenheit. The major source of data used by Terjung

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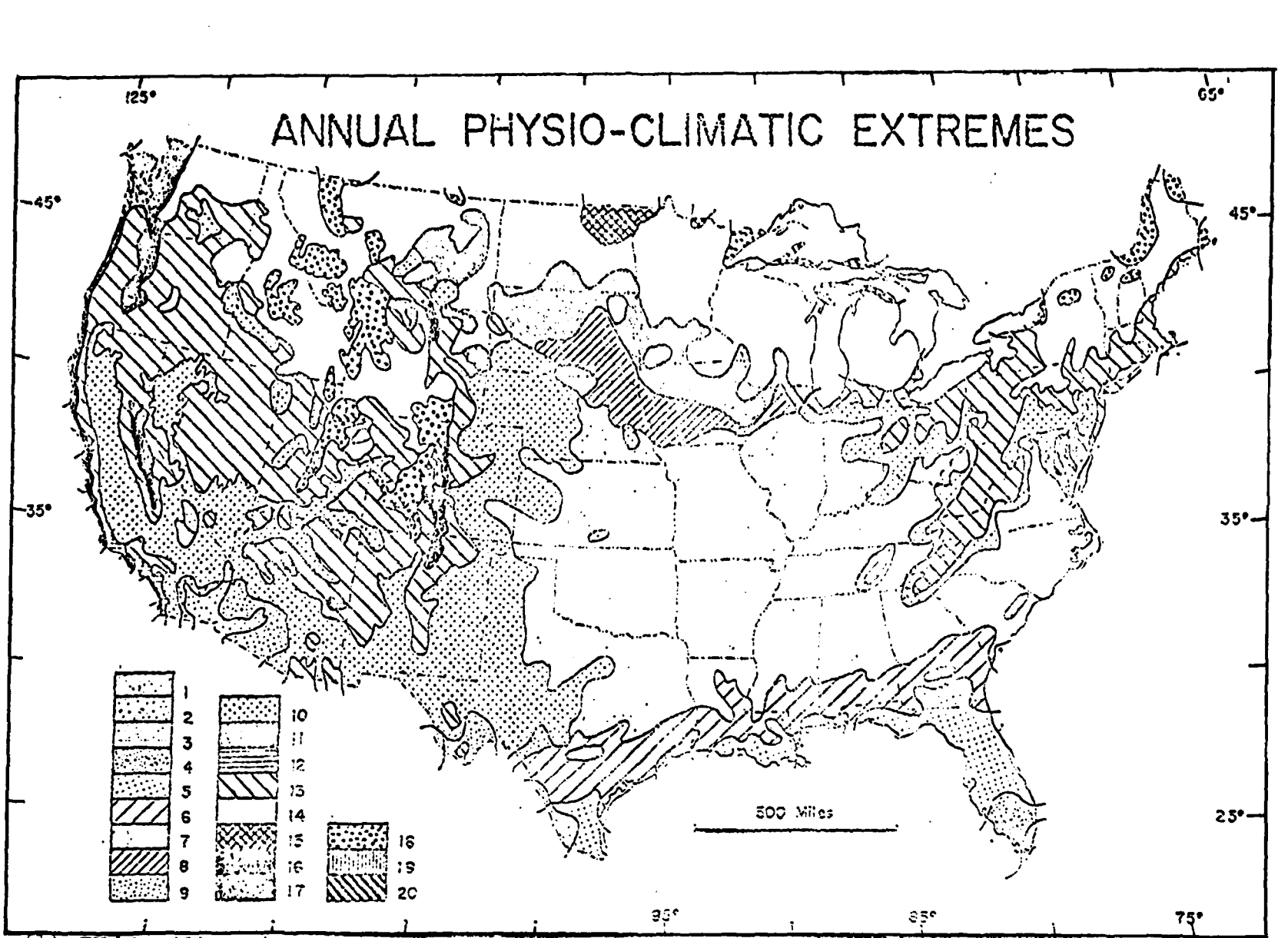
[41] W.H. Terjung, Distribution of Bioclimatic Comfort Regions in the United States, Long Beach State College, unpublished M.A. Thesis, 1962.

[42] One seasonal combination is termed an assembly, several assemblies an association.

[43] American Society of Heating and Air Conditioning Engineers, Heating Ventilating Air Conditioning Guide, Baltimore, Waverly Press, 1959, pp. 152-155.



(1) EH/M, (2) EH/C, (4) S/W, (5) S/M, (6) S/C, (7) S/K, (8) S/CD, (9) H/C, (10) H/K, (11) H/CD, (12) W/C, (13) W/K, (14) W/CD, (15) W/VC, (16) M/C, (17) M/K, (18) M/CD, (19) C/K, (20) C/CD. (See Appendix for symbol identification.)

in his map construction was the U.S. Department of Commerce, Weather Bureau Climatography Series, Climates of the States, issued for each one of the forty-eight contiguous states. An index of Heating and Cooling Degree Days was devised thereby ranking states through a measure of climate mildness or severity. Five factors have a major influence on the climate of a particular area: precipitation, latitude, prevailing winds, mountain ranges, and elevation.

The Physical Quality in this study was determined by the mildness of a climate using data based on Terjung's findings. The mildest climate was defined as that for which the mean temperature remains closest to 65° Fahrenheit for the greatest percentage of time. Terjung's map of Annual Physio-Climatic Extremes in the U.S. was used to determine state rankings of the physical environment based on data noted earlier by the Commerce Department. (Table 3) Each state was given a base number of 1,000 points from which points were subtracted according to the following negative indicators, based on yearly averages:

1. Very hot and very cold months
2. Seasonal temperature variation
3. Heating and cooling degree days
4. Freezing days
5. Zero days
6. 90+ degree days

Figure 1

Map of Annual Physio-Climatic Extremes

Source: Terjung, (1962), p. 176

TABLE 3

Ranking of American States According to Climatic Mildness

STATE	RANKED VARIABLES
Alabama	20
Arizona	24
Arkansas	32
California	1
Colorado	32
Connecticut	12
Delaware	22
Florida	11
Georgia	9
Idaho	44
Illinois	35
Indiana	20
Iowa	37
Kansas	36
Kentucky	18
Louisiana	27
Maine	30
Maryland	24
Massachusetts	4
Michigan	26
Minnesota	40
Mississippi	30
Missouri	27
Montana	45
Nebraska	39
Nevada	8
New Hampshire	27
New Jersey	16
New Mexico	23
New York	15
North Carolina	5
North Dakota	42
Ohio	19
Oklahoma	37
Oregon	3
Pennsylvania	22
Rhode Island	12
South Carolina	14
South Dakota	41

STATE	RANKED VARIABLES
Tennessee	10
Texas	6
Utah	39
Vermont	39
Virginia	7
Washington	2
West Virginia	16
Wisconsin	33
Wyoming	43

Source: U.S. Department of Commerce, Climatology Series, Climates of the States, 1971, pp. 60-1 to 60-48.

The states were then ranked in a descending order according to their "mildness."[44] The resultant rankings, however, do not rule out a variety of preferences, for instance, based on different parts of the country and for different seasons. For certain states, such as Colorado which had multiple physiological climates within its borders, the climate of the area with the largest concentration of assigned Army personnel was used for the state as a whole.

An individual's preference of reassignment locations can be logically and informatively determined by using quality of life critera to actively or passively obtain information about the characteristics of his future place of duty. The index of the quality of the social environment used in this study was borrowed from Liu's 1974 study of the general social indicators for the United States.[45] (Table 4) This index represents an attempt to disentangle the apparently conflicting dimensions of social well-being as a spatially variable condition.

In arriving at his index of the quality of life, Liu calculated a coefficient of rank correlation between his

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[44]"Mildness" as the term is used, does not necessarily mean warm, but simply refers to an absence of great variation.

[45]Ben-chieh Liu, "Variations in the Quality of Life in the United States by State, 1970", Review of Social Economy (1974), 22, pp. 131-147.

Table 4

Ranking of American States According to Criteria of Social Well-Being or the Quality of Life

State	Ranked Variables
Alabama	47
Arizona	11
Arkansas	41
California	1
Colorado	2
Connecticut	3
Delaware	16
Florida	35
Georgia	38
Idaho	24
Illinois	28
Indiana	33
Iowa	20
Kansas	21
Kentucky	45
Louisiana	43
Maine	36
Maryland	27
Massachusetts	7
Michigan	23
Minnesota	13
Mississippi	46
Missouri	37
Montana	9
Nebraska	14
Nevada	17
New Hampshire	31
New Jersey	18
New Mexico	22
New York	12
North Carolina	44
North Dakota	26
Ohio	32
Oklahoma	30
Oregon	5

Table 4 (Continued)

State	Ranked Variables
Pennsylvania	15
Rhode Island	10
South Carolina	48
South Dakota	29
Tennessee	39
Texas	34
Utah	8
Vermont	25
Virginia	40
Washington	4
West Virginia	42
Wisconsin	19
Wyoming	6

Source: Liu, (1974), p. 136.

scores and two others: it is 0.84 with the Smith Rankings and 0.78 with Wilson. Where there are major differences in the rankings of individual states, this can largely be accounted for by the greater emphasis on the social-problem conditions that appear in the Smith study. Whatever the differences between the three sets of ranks, there was close agreement on which are the best and worst states. This is shown in Figure 2.

In symbolic form, Liu's quality of life model was expressed as follows:

$$QOL = F(PS, PH); \quad PH = F(S, E, P);$$

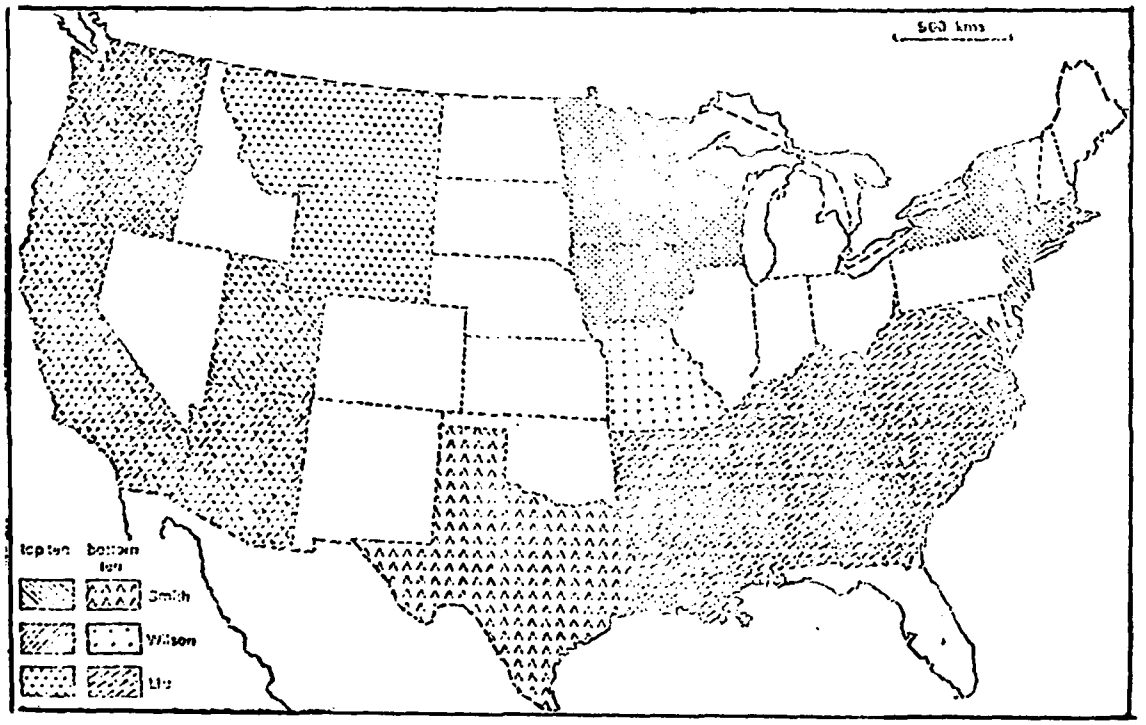
$$S = F(IS, IE, LC); \quad E = F(ES, TD, AP);$$

$$P = F(HW, ED, SG).$$

PS and PH are psychological and physical inputs respectively. S, E, and P are socio-environmental, economic, and political components. The nine component indicators are individual status (IS), individual equality (IE), living conditions (LC), economic status (ES), technological development (TD), agriculture production (AP), health and welfare provision (HW), educational development (ED), and state and local governments (SG). Data on over a hundred conditions were compiled to measure these criteria, and a composite score was derived from the summation of standard scores. Eight

Figure 2

The top and bottom ten states according to three studies of social well-being or qualify of life in the U.S.A.



Source: Liu, (1974), p. 138.

states in the South fall into the bottom ten in Liu's ranking. The worst states are highly concentrated geographically. The best ten show more of a scatter, though they appear regularly in the West, Upper Midwest, and Northeast. The broad pattern of geographical variation in living standards was also confirmed to exist by Liu at the city level.

B. Methodology.

In order to test the hypotheses, it was decided to use a formal test of correlation. The Spearman's rank correlation coefficient is probably the best known and most used of all the non-parametric correlation techniques. Spearman's technique of rank correlation has the advantage that no assumptions are made about the distributions of the variables. The coefficient is given in the following form: $R_s = 1 - \frac{6(d_i^2)}{N(N^2-1)}$, where in this study N = the 48 contiguous states (and the District of Columbia where applicable). The relative position of each of the observations for each variable was ranked, and the technique determines the correlation between the ranks. Like other correlation techniques, a value of +1 indicates perfect agreement, while a value of -1 indicates an inverse relationship. Also, like other correlation coefficients,

Spearman's rank correlation coefficient can be squared to provide an estimate of the degree of statistical explanation of the relationship between the variables. The results of the individual correlations computed to test aspects of the hypothesis are offered below:

1. Relationship between places ranked first in order of preference and the corresponding number of authorized positions:

The result of this rank correlation yielded an $R_s = .6964$ which is significant at both the .95 and .99 percent levels. The critical values are .285 and .359 respectively.

2. Relationship between places ranked second in order of preference and the corresponding number of authorized positions:

This rank correlation yielded a value of $R_s = .6117$, significant once again at both the .95 and .99 percent significance levels.

3. Relationship between places ranked first in order of preference and the corresponding Physio-Climatic Index:

Rank correlation analysis between these two variables yielded an R_s value of .5674, significant at both .95 and .99 percent significance levels.

4. Relationship between places ranked second in order of preference and the corresponding Physio-Climatic Index:

A correlation coefficient of .6045, significant at both levels, was computed between these two variables.

5. Relationship between first and second rankings of places in order of preference and the corresponding Social Quality Index:

The correlations between the first and second rankings and the social quality indices yielded values of .2091 and .1703 respectively, neither one of which is statistically significant.

III. ANALYSIS OF THE DATA

A. Introduction.

In this chapter, the research findings are discussed and some conclusions with regard to the hypotheses are presented. Data on assignment preferences for two classes from Corps of Engineer Officer Preference Statements tabulated for 1981 were compiled. This was followed by a rank-ordering of the number of Engineer authorized positions available in the contiguous United States. Surrogate indices of both the physical and social environments were then obtained for use in evaluating the significance of the associations between first and second choice assignments with the environment. Correlation coefficients between preference ranks 1 and 2, and authorized positions; preference ranks 1 and 2, and environmental physical quality factors; and preference ranks 1 and 2, and quality of life social factors, were then computed.

B. Migration Preferences, Economic Factors and Environmental Quality.

1. Relationship Between Locational Preference Rank One and Two, and the Number of Authorized Positions Available (By State).

The first test of the hypothesis of this study suggests that assignment preferences are associated with the number of authorized positions available in a specific state. It is of interest to note the skewed distribution of choices in which approximately two-thirds of the Engineer Officers chose reassignment in only ten states. In contrast, the states with the fewest authorized positions were not highly differentiated in the selection process. The distribution of the locational preferences given by the officers may have been governed by the attitudes of MILPERCEN which has two missions: to serve the Army in selecting and distributing Army personnel in order to meet requirements in a situation which changes continually; to serve the individual officer in his professional development program, involving attendance at service school and colleges in the Continental United States and abroad.

It is interesting to note also that although the numerical change is small, the value of the correlation coefficients actually declined between the first and the second choices. Although the drop is nominal, it is in accordance with what was expected from the general hypothesis:

with subsequent choices, the importance of the economic factor in migration motivation declines, while other factors become more important. The rankings of preferences and of the number of positions corresponded strongly enough to yield significant correlation coefficients. (Tables 5, 6)

2. Relationship Between Preference Ranks One and Two, and Physical Quality Factors (By State).

Significant correlation coefficients were computed between the rankings of assignment preferences and the rankings of physical quality factors for both the first and second choices. (Tables 7, 8) Again, a skewed distribution of assignment preferences with regard to physical quality factors appeared, such that the majority of officers selected the same ten states. The values of the correlation coefficients, although not significantly different from those for the first set of correlations, did increase somewhat from the first preference to the second. Again, although nominal, the direction of the change does not suggest the validity of the hypothesis: the quality of the physical environment does play a more significant role in a second choice than in the first.

3. Relationship Between Preference Ranks One and Two, and Social Quality Factors (By State).

Table 5

Rank Ordering of First Choice Assignment Preference and Authorized Positions, by State.

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	AUTHORIZED POSITIONS
Colorado	1	12
Virginia	1	1
California	3	3
Texas	4	2
Massachusetts	5	13
North Carolina	5	4
Washington	7	11
Georgia	8	6
Missouri	9	5
Maryland	10	10
Alabama	11	20
Louisiana	12	13
Kansas	13	7
Kentucky	14	8
Oklahoma	15	17
Indiana	16	27
D.C.	16	35
Pennsylvania	18	13
New York	18	9
Illinois	18	16
Ohio	20	18
Arkansas	20	26
Connecticut	20	35
Michigan	20	19
Arizona	24	31
Delaware	24	44
Florida	24	21
Idaho	24	47
Iowa	24	31
Maine	24	44
Minnesota	24	23
Mississippi	24	23
Montana	24	44
Nebraska	24	27
New Hampshire	24	38

Table 5 (Continued)

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	AUTHORIZED POSITIONS
New Jersey	24	23
New Mexico	24	29
Nevada	24	41
North Dakota	24	43
Oregon	24	34
Rhode Island	24	41
South Carolina	24	21
South Dakota	24	47
Utah	24	31
Vermont	24	41
Tennessee	24	29
West Virginia	24	38
Wisconsin	24	23
Wyoming	24	47

Table 6

Rank Ordering of Second Choice Assignment Preference and Authorized Positions, by State.

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	AUTHORIZED POSITIONS
Colorado	1	12
Virginia	2	1
California	3	3
Washington	4	11
Kentucky	5	8
Maryland	6	10
Massachusetts	6	13
Georgia	8	6
Texas	8	2
North Carolina	10	4
Kansas	10	7
Missouri	12	5
Alabama	13	20
New York	14	9
Arizona	15	31
D.C.	15	35
Louisiana	17	13
Maine	17	44
New Mexico	17	29
Oklahoma	17	17
South Carolina	17	21
Arkansas	22	26
Connecticut	22	35
Delaware	22	44
Florida	22	21
Idaho	22	47
Illinois	22	16
Indiana	22	27
Iowa	22	31
Michigan	22	19
Minnesota	22	23
Mississippi	22	23
Montana	22	44
Nebraska	22	27
New Hampshire	22	38
New Jersey	22	23

Table 6 (Continued)

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	AUTHORIZED POSITIONS
Nevada	22	41
North Dakota	22	43
Ohio	22	18
Oregon	22	34
Pennsylvania	22	13
Rhode Island	22	41
South Dakota	22	47
Utah	22	31
Vermont	22	41
Tennessee	22	29
West Virginia	22	38
Wisconsin	22	23
Wyoming	22	47

Table 7

Rank Ordering of First Choice Assignment Preference and Physical Environmental Quality, by State.

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	PHYSICAL ENVIRONMENTAL QUALITY FACTOR
Colorado	1	32
Virginia	1	7
California	3	1
Texas	4	6
Massachusetts	5	4
North Carolina	5	5
Washington	7	2
Georgia	8	9
Missouri	9	27
Maryland	10	24
Alabama	11	20
Louisiana	12	27
Kansas	13	36
Kentucky	14	18
Oklahoma	15	37
Indiana	17	20
Illinois	17	35
New York	17	15
Pennsylvania	17	22
Ohio	20	19
Missouri	20	26
Connecticut	20	12
Arkansas	20	32
Delaware	24	22
Florida	24	11
Idaho	24	44
Iowa	24	37
Maine	24	30
Minnesota	24	40
Mississippi	24	30
Montana	24	45
Nebraska	24	39
New Hampshire	24	27
New Jersey	24	16

Table 7 (Continued)

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	PHYSICAL ENVIRONMENTAL QUALITY FACTOR
New Mexico	24	23
Nevada	24	8
North Dakota	24	42
Oregon	24	3
Rhode Island	24	12
South Carolina	24	14
Arizona	24	24
South Dakota	24	41
Utah	24	38
Vermont	24	39
Tennessee	24	10
West Virginia	24	16
Wisconsin	24	32
Wyoming	24	43

Table 8

Rank Ordering of Second Choice Assignment Preference and Physical Environmental Quality, by State.

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	PHYSICAL ENVIRONMENTAL QUALITY FACTOR
Colorado	1	32
Washington	2	2
California	3	1
Virginia	4	7
Texas	5	6
Massachusetts	6	4
Georgia	7	9
North Carolina	8	5
Kentucky	9	18
Maryland	10	24
Missouri	11	27
Alabama	12	20
Kansas	12	36
Louisiana	14	27
New York	15	15
Oklahoma	15	37
Indiana	17	20
Illinois	18	35
Arizona	18	24
South Carolina	18	14
Pennsylvania	18	22
Arkansas	22	32
Connecticut	22	12
Maine	22	30
Michigan	22	26
New Jersey	22	16
New Mexico	22	23
Ohio	22	19
Delaware	29	22
Florida	29	11
Idaho	29	44
Iowa	29	37
Minnesota	29	40

Table 8 (Continued)

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	PHYSICAL ENVIRONMENTAL QUALITY FACTOR
Mississippi	29	30
Montana	29	45
Nebraska	29	39
New Hampshire	29	27
Nevada	29	8
North Dakota	29	42
Oregon	29	3
Rhode Island	29	12
South Dakota	29	41
Utah	29	38
Vermont	29	39
Tennessee	29	10
West Virginia	29	16
Wisconsin	29	32
Wyoming	29	43

The low correlations coefficients, actually statistically insignificant, between preference rankings and social quality factors are easily explained in retrospect. (Tables 9, 10) Reassignment preferences are not influenced significantly by social factors because Army social life is perceived to be more or less comparable from location to location as activities are generally available at all military installations. Where there are quarters for families, the activities will be substantially the same as in civilian communities. The garrison of an Army station, including off-post members as well as those who have quarters on post, resembles any other American community, with the added factor of the military mission which binds all together in common purpose. Exceptions occur when individuals had specific personal goals, such as attendance at graduate school or consideration of a spouse's employment opportunities which, in turn, played a significant role in determining the reassignment choices.

In summary, it may be inferred that economic factors, such as career employment, appear to provide the greatest motivation in the relocation decision making process of the officers sampled. Environmental factors, especially physical ones, appear to be nearly equally

Table 9

Rank Ordering of First Choice Assignment Preference and Social Quality, by State.

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	SOCIAL QUALITY FACTOR
Colorado	1	2
Virginia	1	40
California	3	1
Texas	4	34
Massachusetts	5	7
North Carolina	5	44
Washington	7	4
Georgia	8	38
Missouri	9	37
Maryland	10	27
Alabama	11	47
Louisiana	12	43
Kansas	13	21
Kentucky	14	45
Oklahoma	15	30
Indiana	16	33
Illinois	17	28
New York	17	12
Pennsylvania	17	15
Ohio	20	32
Michigan	20	23
Arkansas	20	41
Arizona	24	11
Delaware	24	16
Florida	24	35
Idaho	24	24
Iowa	24	20
Maine	24	36
Minnesota	24	13
Mississippi	24	46
Montana	24	9
Nebraska	24	14
New Hampshire	24	31
New Jersey	24	18

Table 9 (Continued)

STATE OF FIRST CHOICE	ASSIGNMENT PREFERENCE	SOCIAL QUALITY FACTOR
New Mexico	24	22
Nevada	24	16
North Dakota	24	26
Oregon	24	5
Rhode Island	24	10
South Carolina	24	48
South Dakota	24	29
Utah	24	8
Vermont	24	25
Tennessee	24	39
West Virginia	24	42
Wisconsin	24	19
Wyoming	24	6

Table 10

Rank Ordering of Second Choice Agreement Preference and Social Quality, by State.

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	SOCIAL QUALITY FACTOR
Colorado	1	2
Washington	2	4
California	3	1
Virginia	5	40
Texas	5	34
Massachusetts	6	7
Georgia	7	38
North Carolina	8	44
Kentucky	9	45
Maryland	10	27
Missouri	11	37
Alabama	12	47
Kansas	12	21
Louisiana	14	43
New York	15	12
Oklahoma	15	30
Indiana	17	33
Illinois	18	28
Arizona	18	11
South Carolina	18	48
Pennsylvania	18	15
Arkansas	22	41
Connecticut	22	3
Maine	22	36
Michigan	22	23
New Jersey	22	18
New Mexico	22	22
Ohio	22	32
Delaware	29	16
Florida	29	35
Idaho	29	24
Iowa	29	20
Minnesota	29	13

Table 10 (Continued)

STATE OF SECOND CHOICE	ASSIGNMENT PREFERENCE	SOCIAL QUALITY FACTOR
Mississippi	29	46
Montana	29	9
Nebraska	29	14
New Hampshire	29	31
Nevada	29	17
North Dakota	29	26
Oregon	29	5
Rhode Island	29	10
South Dakota	29	29
Utah	29	8
Vermont	29	25
Tennessee	29	39
West Virginia	29	42
Wisconsin	29	19
Wyoming	29	6

important in terms of providing possible motivation, while social factors are insignificant. The subtle reversal of these values of the correlation coefficients for first and second preferences for economic and physical factors, provides modest substantiation for the general hypothesis so far. Economic motivation may be inferred to decline in importance with subsequent migration choices while environmental quality may increasingly provide motivation. However, the analysis so far has only dealt with choices, not motivations, and motivations can only be inferred.

4. Preferences and motivation in migration.

In order to investigate specifically the motivations of officers in their locational preference selections, survey results were needed. Such a survey was conducted at Ft. Belvoir, Virginia with Engineer Officer Advanced Course classes in session during the summer of 1982. One hundred forty-seven individuals were questioned about their upcoming reassignment preference selections which are officially tabulated at the conclusion of each six month course of instruction. The purpose of the interviews was to elicit from each officer the underlying motivation for each reassignment choice. In the course of the interviews, some of the officers were extremely cooperative while others, for a variety

of possible reasons, were reluctant to reveal basic information about their preferences. Because of these difficulties, an informal interview technique was adopted to obtain aggregate data, leaving the individual interviewee anonymous. The informal technique, essentially amounting to a "social interaction" has been used successfully by several anthropologists.[46] The procedure was adopted to encourage frankness and to assugage the reservations of the respondents.

In spite of a number of ambiguous answers to questions, the results were tabulated as best as possible into three categories: economic, physical environment, social environment. These categories were then grouped by state and their relative importance was assigned from a predetermined base weighted average. (Tables 11, 12) For the most part, this interview supported the earlier findings, contributing to an ability to substantiate the hypothesis that an officer's motivation to select a specific assignment location is initially based on a perception of what is best for his career as he sees it. A significant drop occured from choice 1 and choice 2 in the relative importance of economic motivation, while concurrently the physical environment substantially increased in importance. The social environment remained

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[46] Jeremy Boissevain. "An Exploration of the Two First Order Zones," Network Analysis: Studies in Human Interaction, eds. Jeremy Boissevain and J. Clyde Mitchell, The Hague Mouton, (1973), p. 130.

Table 11

Variations in Motivation for First Choice

STATE	ECONOMIC FACTOR		PHYSICAL FACTOR		SOCIAL FACTOR	
	No.	%	No.	%	No.	%
Alabama	2	.50	1	.25	1	.25
Arkansas	0	0	0	0	0	0
Arizona	1	1.0	0	0	0	0
California	7	.462	6	.396	2	.132
Colorado	2	.11	8	.47	7	.42
Connecticut	0	0	0	0	0	0
Delaware	0	0	0	0	0	0
D.C.	1	.33	0	0	2	.66
Florida	2	.50	1	.25	1	.25
Georgia	2	.33	2	.33	2	.33
Idaho	0	0	0	0	0	0
Illinois	1	1.0	0	0	0	0
Indiana	0	0	0	0	0	0
Iowa	0	0	0	0	0	0
Kansas	2	.66	0	0	1	.33
Kentucky	0	0	0	0	1	1.0
Louisiana	0	0	0	0	0	0
Maine	1	.50	1	.50	0	0
Maryland	5	.625	1	.125	2	.25
Massachusetts	2	.20	3	.30	5	.50
Michigan	0	0	0	0	0	0
Minnesota	0	0	0	0	0	0
Mississippi	0	0	0	0	0	0
Missouri	0	0	0	0	3	1.0
Montana	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0
New Jersey	0	0	0	0	3	1.0
New Mexico	0	0	0	0	0	0
New York	4	.80	0	0	1	.20
Nevada	0	0	0	0	0	0
North Carolina	11	.92	0	0	1	.08
North Dakota	0	0	0	0	0	0
Ohio	0	0	1	1.0	0	0
Oklahoma	1	1.0	0	0	0	0
Oregon	1	0	0	0	0	0

Table 11 (Continued)

STATE	ECONOMIC FACTOR		PHYSICAL FACTOR		SOCIAL FACTOR	
	No.	%	No.	%	No.	%
Pennsylvania	2	1.0	0	0	0	0
Rhode Island	0	0	0	0	0	0
South Carolina	0	0	0	0	0	0
South Dakota	0	0	0	0	0	0
Texas	6	.85	1	.15	0	0
Utah	1	1.0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	9	.52	3	.19	5	.29
Tennessee	0	0	0	0	0	0
Washington	4	.21	11	.58	4	.21
West Virginia	0	0	0	0	0	0
Wisconsin	0	0	0	0	0	0
Wyoming	0	0	0	0	0	0
TOTALS	67	.46	39	.26	41	.28

Source: Author's interviews.

Table 12

Variations in Motivation for Second Choice

STATE	ECONOMIC FACTOR		PHYSICAL FACTOR		SOCIAL FACTOR	
	No.	%	No.	%	No.	%
Alabama	0	0	1	.50	1	.50
Arkansas	0	0	0	0	1	1.0
Arizona	1	.20	3	.60	1	.20
California	3	.23	7	.54	1	.23
Colorado	5	.21	16	.667	3	.12
Connecticut	0	0	0	0	3	0
Delaware	0	0	0	0	0	0
D.C.	0	0	0	0	0	1.0
Florida	0	0	3	1.0	1	0
Georgia	3	.43	2	.285	0	.285
Idaho	0	0	0	0	2	0
Illinois	1	1.0	0	0	0	0
Indiana	0	0	0	0	0	0
Iowa	0	0	0	0	0	0
Kansas	2	.66	1	.33	0	0
Kentucky	5	.625	3	.375	0	0
Louisiana	0	0	0	0	0	0
Maine	0	0	1	1.0	0	0
Maryland	1	.50	0	0	1	.50
Massachusetts	4	.57	2	.285	1	.145
Michigan	0	0	0	0	0	0
Minnesota	1	1.0	0	0	0	0
Mississippi	0	0	0	0	0	0
Missouri	1	1.0	0	0	0	0
Montana	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0
New Hampshire	0	0	1	1.0	0	0
New Jersey	1	.50	0	0	1	.50
New Mexico	0	0	2	1.0	0	0
New York	1	1.0	0	0	0	0
Nevada	0	0	0	0	0	0
North Carolina	4	.80	0	0	1	.20
North Dakota	0	0	0	0	0	0
Ohio	0	0	1	.50	1	.50
Oklahoma	0	0	0	0	0	0
Oregon	0	0	0	0	0	0
Pennsylvania	3	1.0	0	0	0	0

Table 12 (Continued)

STATE	ECONOMIC FACTOR		PHYSICAL FACTOR		SOCIAL FACTOR	
	No.	%	No.	%	No.	%
Rhode Island	0	0	0	0	0	0
South Carolina	0	0	1	.50	1	.50
South Dakota	0	0	0	0	0	0
Texas	4	.50	3	.375	1	.125
Utah	0	0	0	0	0	0
Vermont	0	0	1	1.0	0	0
Virginia	5	.416	2	.166	5	.416
Tennessee	0	0	0	0	1	1.0
Washington	6	.25	15	.60	4	.15
West Virginia	0	0	0	0	0	0
Wisconsin	0	0	0	0	0	0
Wyoming	0	0	0	0	0	0
TOTALS	53	.36	65	.44	29	.20

Source: Author's interviews.

Some individuals did not have a second choice for any assignments. Others are tied with two choices of equal weight.

relatively insignificant for both choices. These results suggest that there are numerous alternative motivations contributing towards secondary selections if the primary choice is not readily available.

If preferences and positions are correlated, and positions and physical quality are correlated, then transitivity suggests that positions and physical quality may be correlated also. A test for auto-correlation was performed between authorized positions available and physical environmental factors to determine if there is a significant association between the two. (Table 13) A correlation coefficient of .506 proved to be statistically significant in this test. This result may suggest that the Army's assignment practices are intuitively or possibly consciously oriented toward the more desirable physical environments.

Therefore, it may be inferred that preferences are not limited necessarily to the availability of positions, since the positions and the physical environmental quality are strongly intertwined. Instead, preference may be with regard to a "bundle" of attraction.

C. Conclusions.

The conclusions of this study are neither divergent from past conclusions nor astonishing. The purpose has been

Table 13

Rank Ordering Between Authorized Positions Available and Physical Environmental Factors, by State

STATE	RANK OF AUTHORIZED POSITIONS AVAILABLE	RANK OF PHYSICAL ENVIRONMENTAL FACTORS
Virginia	1	7
Texas	2	6
California	3	1
North Carolina	4	5
Missouri	5	27
Georgia	6	9
Kansas	7	36
Kentucky	8	18
New York	9	15
Maryland	10	24
Washington	11	2
Colorado	12	32
Massachusetts	13	4
Pennsylvania	13	22
Louisiana	13	27
Illinois	16	35
Oklahoma	17	37
Ohio	18	19
Michigan	19	26
Alabama	20	20
Florida	21	11
South Carolina	21	14
Wisconsin	23	32
New Jersey	23	16
Minnesota	23	40
Mississippi	23	30
Nebraska	27	39
Indiana	27	20
New Mexico	29	23
Tennessee	29	10
Utah	31	39
Iowa	31	37
Arizona	31	24
Oregon	34	3
D.C.	35	-- insufficient data --

Table 13 (Continued)

STATE	RANK OF AUTHORIZED POSITIONS AVAILABLE	RANK OF PHYSICAL ENVIRONMENTAL FACTORS
Connecticut	35	12
New Hampshire	37	27
West Virginia	37	16
Nevada	39	8
Rhode Island	39	12
Vermont	39	39
North Dakota	42	42
Montana	43	45
Delaware	43	22
Maine	43	30
Idaho	46	44
South Dakota	46	41
Wyoming	46	43

to explore empirically the significance of various factors upon the Army officer's decision making process with regard to reassignments. For the most part, the individuals used in this study were young and active--a good representation of the up and coming generation of Army officers. It was accepted at the beginning that the decision making process in migration was complex and possibly unpredictable. The research affirms that premise, although the insights gained are valuable. Equality in attraction (Economic Factors vs. Environmental Quality) plus the notion of trade-off and the notion of an "attraction bundle" is analogous to the notion of the "housing bundle." "Housing bundles" do consist of a mix of attributes, some of which are external to the physical structure itself, but each of which delivers its own output.

Though this sort of investigation probably has never been attempted to date for military personnel, the results could unquestionably prove invaluable in improving the selection process employed by MILPERCEN or in its assignment of officers to specific locations through the investigation of background motivations behind the locational preferences desired by the officers due for reassignment. The human interaction and behavioral approach comes into focus here, as opposed to a system of only numerically selecting individuals without particular regard to an officer's personal

preferences. As noted in Chapter 2, it is incumbent upon the soon-to-be-reassigned officer to effectively utilize the Officer Preference Statement to his advantage. The worldwide missions and duties assigned to the Army must be performed, and this requires the assignment of qualified individuals in sufficient numbers to do the job. In these troubled years, one must face the inescapable fact of occasional conflicts in Army requirements, career management planning, and officer desires.

This study was only a rudimentary investigation into two factors of assignment preferences of Army officers. Despite some of the difficulties experienced in carrying out the study, the positive aspects were that environmental preference migration has a behavioral approach assuming the primacy of understanding the location decisions of individuals that can employ survey research to elucidate the reasons behind individual migration decisions over a lengthy study period. Perhaps, however, most significantly, we have a surfeit of studies that unfortunately ask the wrong questions or fail to ask the right ones; those that find economic reasons overwhelmingly dominant because only economic questions come immediately to mind. Hopefully this study has alleviated the strictly economic question and emphasized the environmental aspect in reference to preference migrations.

Appendix

Key to Annual Physio-Climatic Extremes

(Sensation felt by the majority of people)

1.	EH?M	extremely hot/mild
2.	EH/C	extremely hot/cool
4.	S/W	sultry/warm
5.	S/M	sultry/mild
6.	S/C	sultry/cool
7.	S/K	sultry/keen
8.	S/CD	sultry/cold
9.	H/C	hot/cool
10.	H/K	hot/keen
11.	H/CD	hot/cold
12.	W/C	warm/cool
13.	W/K	warm/keen
14.	W/CD	warm/cold
15.	W/VC	warm/very cold
16.	M/C	mild/cool
17.	M/K	mild/keen
18.	M/CD	mild/cold
19.	C/K	cool/keen
20.	C/CD	cool/cold

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