

THE EFFECTS OF NEWCOMER ENCULTURATION
UPON URBAN SPATIAL BEHAVIOR

by

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CHAPTER I

INTRODUCTION

It is common practice in our highly mobile society for persons to change their place of residence at least once during a lifetime. For some this may entail a move over a relatively short distance, but at the other extreme, the individual might decide to live in a new location far from his original home. In either case, the newcomer will usually find himself in surroundings with which he is unfamiliar. He must 'learn' the opportunities present in this new environment if he is to realize maximum benefit from it. The ease and speed of his adaptation will depend primarily upon the nature of his past experience and on the type, amount, and quality of the information that he obtains while performing day-to-day activities.

As man is the one species of animal which accumulates, stores, and communicates knowledge, the longer the period spent in a given environment, the more familiar with it he should become. Therefore, it is normal for individuals who have resided within a specific urban area for several years to have a greater knowledge than new residents about the spatial organization and the characteristics of the functions performed at locations throughout the city.

Man can operate only within the limitations of his knowledge or past experience, so that the attributes and hence, the form of his spatial behavior are directly controlled by the degree of perceived familiarity with the opportunities afforded him by that environment. Consequently, there should be a significant difference in the characteristics of urban spatial behavior

between newcomers and long-term residents which may be explained by a spatial learning process related to the length of residence in that particular urban environment. The conceptual basis for this argument can best be justified by reviewing the state of our understanding as revealed in the literature on perception, environmental perception and spatial behavior.

Perception and Experience

Information concerning a particular object with which we have contact is obtained by the generation of electrical impulses from that phenomenon which are detected by human sensory organs. Through an elaborate nerve system within the body, the impulses are transmitted to the brain. Here they are translated from electrical vibrations into visual images so that we might comprehend their meaning more readily.¹ By way of an automatic ordering process within the brain, we are able to link together the numerous images which flash through in a micro-second to produce a coherent and composite picture of the observed object. This final stage in the operation cannot be executed until the brain has received sufficient information to enable it to recognize certain distinguishing characteristics of the object so that it may order each component to form the whole. The length of time involved in this process will depend primarily upon the familiarity of the individual with the object and also upon the distinctiveness of the object's form. Once the brain has formulated and understood the composite picture of an object, we are normally willing to state categorically that we know not only of its existence

¹Locke, Don, Perception and Our Knowledge of the External World, (London: George Allen and Unwin, Ltd., 1967), pp. 78-81.

and its location, but also of the characteristics that we have attributed to it through our observation and rational thought processes. This state of existence which is partly defined by location and form characteristics we term 'reality.' This definition can be further refined by suggesting that 'reality' is the ". . . sum of all that is actual, absolute and unchangeable."²

Within the realms of philosophy Plato suggested that we do not have knowledge concerning the objects that stimulate our senses³--we do not know that the pencil before our eyes is yellow though we might be of the opinion that it is. Even if we should use scientific inquiry to reinforce our argument, we are still not in a position to state categorically that the pencil is yellow.⁴ Furthermore, philosophical 'sceptics' suggest that man can never be sure about the characteristics of any object he observes no matter how familiar with it he becomes. Wilfred Sellars illustrates this point by comparing the casual description of a pink glass cube to that based on scientific analysis of the characteristics of the cube.⁵ A scientific account would reveal that the cube does not exhibit the homogeneous color properties observed in the less formal description. Both viewpoints could not be

²Morris, William, ed. The American Heritage Dictionary of the English Language, (New York: American Heritage Publishing Company, 1969), p. 1085.

³Cornford, F. Before and After Socrates, (Cambridge, England: Cambridge University Press, 1932), pp. 476-479.

⁴Cornman, J. W., and Lehrer, K. Philosophical Problems and Arguments: An Introduction, (London: Collier Macmillan Limited, 1968), p. 42.

⁵Sellars, W. F., Science, Perception, and Reality, (London: Routledge and Kegan Paul, 1963), pp. 25-29.

faulted.

Roderick Chisholm supports this argument by saying we take on faith the scientific view over our own feelings:

We are all quite capable of believing falsely at any time that a given proposition is accepted by the scientists of our culture circle.⁶

In other words reality exists for us only in the form of 'objective reality'-- that which is universally accepted to be as close to the real situation as possible. As Lowenthal suggests though, each of us tends to misconceive information which we think is 'objective reality':

We tend to assume things are common knowledge which may not be; but what seems to be the general outlook might be mine alone.⁷

Whether or not our opinions are universally accepted or consistent with reality, individual knowledge must be accumulated primarily by the methods previously described. Accordingly, Don Locke explains the importance of perception in the formation of the origin, extent, and certainty of our knowledge about objective reality:

It seems obvious that it is by perception and by perception alone that we are aware of the world around us, so it seems plausible to say that it is by perception and by perception alone that we come to know of the existence and nature of that world.⁸

In order that phenomena which is perceived can be ordered to formulate knowledge as we know it, we must have accumulated prior knowledge which gives

⁶Chisholm, Roderick M., Perceiving: A Philosophical Study, (Ithaca: Cornell University Press, 1957), p. 36.

⁷Lowenthal, David, "Geography, Experience, and Imagination: Towards a Geographical Epistemology," Annals, Association of American Geographers, Vol. 51, No. 3, (1961), p. 245.

⁸Lock, op. cit., p. 14.

us an indication as to how new percepts should be shaped. As C. S. Lewis comments: "You cannot see things until you know roughly what they are."⁹

Thus the psychologists tell us that what we perceive, we really apperceive--apperception being the formation of knowledge by ordering new perceptual knowledge based on previously obtained and digested information. Apperception, therefore, is a more conscious process and is governed by the extent of previous knowledge. Due to the disparity in the literature on this distinction between perception and apperception, the author will continue to use the word perception as meaning the effects of physical, social, and cultural factors on man's cognitive structure of objective reality. A somewhat contradictory view is expressed by Ryle. He argues that perception is not a process at all, rather it is an achievement; something which takes no time.¹⁰ Armstrong, on the other hand, believes that perception is complex and definable in terms of knowledge, belief, and inclination to believe. Therefore although for the most part unconscious, it is nevertheless, a process.

. . . perception . . . is acquiring knowledge, or inclination to believe in particular facts about the physical world by means of the senses, normally accompanied by knowledge of the means.¹¹

Kenneth Boulding, in a related view, treats perception as a process based on the apperception versus perception principle:

⁹Lewis, C. S. Out of the Silent Planet, (New York: Macmillan, 1952), p. 40.

¹⁰Ryle, G. Dilemmas, (Cambridge, England: Cambridge University Press, 1954), p. 7.

¹¹Armstrong, D. M. Perception and the Physical World, (London: Routledge and Kegan Paul, 1961), p. 19.

The image of the environment is built up as a result of all past experience of the possessor of that image. Part of the image is the history of the image itself.¹²

Kevin Lynch in "A Walk Around the Block" states the images produced by his respondents tended to be dominated by spatial form. Spatially prominent buildings of dominant use or association appear as fundamental impressions. Of importance also was the quality of the city 'flow' or pavement, and the contents of the various storefronts. Most of the respondents felt strongly about their visual world even if they found difficulty in being articulate about it.

Emotions were associated with the spatial character, in particular, and with the apparent coherence or lack of it in the whole scene.¹³

Thus coherence in image formation is usually the criterion for determining whether or not an area is easily and efficiently perceived. Should images be confusing to the individuals, it is possible that the phenomena or area being perceived will be fascinating to the individual. This was the case with C. S. Lewis' hero on the planet Malacandra as he experienced nothing but colors which were to him incomprehensible: "Nothing but colours--colours that refused to form themselves into things."¹⁴ Alternatively, it is more likely that incoherent images produce an unfavorable reaction, such as one observer who participated in Lynch's "A Walk Around the Block":

¹²Boulding, Kenneth E. The Image, (Ann Arbor: University of Michigan Press, 1956), p. 66.

¹³Lynch, Kevin, and Rivkin, Malcolm, "A Walk Around the Block," Landscape (1959), Vol. 8, p. 24.

¹⁴Lewis, loc. cit.

The first thing I notice are the signs along the street,
a confusion of signs. They sort of reach out and grab
you by the throat.¹⁵

Once an image of a phenomena or an area has been formulated, it is difficult to improve that status of that image. Lowenthal discusses this idea by considering stereotypes of foreign countries or of the inhabitants of those countries. His discussion focuses on images which have been formulated, not by personal involvement or experience, but based on second-hand information (i.e. pictures, television, etc.). In order to change these stereotypes into images which are nearer the true characteristics of areas or peoples: "We require fresh first-hand experience."¹⁶ Personal experience, within an area, can usually furnish images nearer to objective 'consensual' reality. Should personal experience within the area not be extensive, then it is likely that the stereotyped image will not be altered by information merely obtained by second-hand sources. In 1818, William Blake wrote:

This Life's dim Windows of the Soul
Distorts the Heavens from Pole to Pole
And leads you to believe a Lie
When you see with, not thro' the Eye.¹⁷

Environmental Learning

Modern geographers have become very wary of the grand but simple explanations of how the physical surroundings affect man. The schools of thought

¹⁵Lynch and Rivkin, op. cit., p. 26.

¹⁶Lowenthal, op. cit., p. 257-258.

¹⁷Blake, William, "The Everlasting Gospel," Selected Poetry and Prose, (New York: Longmans, Green, and Company, 1950), p. 324.

expressing the 'environmentalism' viewpoint can be illustrated by the following:

. . . the theory of evolution through adaptation to the environment appeared to explain why human societies developed individually.¹⁸

This has been considered too one-sided. Instead of reasoning from physical environments to human worth, scholars now ask how a particular society at a given time perceives its physical 'milieu'¹⁹ and exploits the resources. This more sophisticated view has led in recent years to a renewed interest in the investigation of environmental factors.

The environment is an active and continuing process whose participating components define and are defined by the nature of the interrelationships among them at any given moment of time. While the participant remains largely unaware of his surroundings in the environmental process, the surroundings continue to exert considerable influence on his behavior. It is when the participant carries out his plans in real environmental situations that the consequences of form are most directly experienced. The form of the environment provides support for certain activities, and constrains others. The significance of environmental form for human action is as much how people perceive supports and constraints, as it is of the physical form itself. Thus we must, for example, turn to the 'city of the mind.' Lynch qualifies this point:

¹⁸Broek, Jan, O. M., and Webb, John N. A Geography of Mankind, (New York: McGraw-Hill Book Company, 1968), p. 25.

¹⁹The term 'milieu' as expressed by Lowenthal is used to denote the whole spectrum of enviroing factors including human and non-human, tangible and non-tangible, etc. For further discussion, see Lowenthal, op. cit., p. 248-250.

Legibility of cities is the case in which parts can be recognized and organized into a coherent pattern, i.e. the city as perceived by its inhabitants.²⁰

Communication and social interaction shape the individual. Philip Wagner supports this view:

Heredity, social intercourse, and experimentation--all legitimate facets of communications in the widest sense--together with multi-farious accidental influences make men what they are.²¹

He argues from a cultural perspective, suggesting that genetic strains account for deep physiological capabilities and aptitudes. Inheritance of cultural traits, however, determines the type of exposure to learning within the individual, and whims of nature and the chances of life, registered perceptually, play the major role in shaping personal characteristics.

Wagner briefly outlines the process of learning which the author accepts for his adoption of the definition 'enculturation.'

Learning begins when the individual reacts observantly. The exposure leads next to a test where the learner submits his response to empirical validation. Experimenting in natural, social spheres, he may try out his skill in exercising some motion and watch the result, repeating the exercise and readjusting his stance and movements until he masters it.²²

Assuming a need for certain basic activity to ensure survival, human beings in the course of keeping alive, have to learn. Enculturation, therefore, can be defined as establishing a change in some aspects of a culture

²⁰ Lynch, Kevin, The Image of the City, (Cambridge, Massachusetts: M.I.T. Press and Harvard University Press, 1960), p. 3.

²¹ Wagner, Philip L. Environments and Peoples, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972), p. 63.

²² Ibid., p. 64.

by the imposition of elements of another, which does not, however, result in the development of a third culture (acculturation), but in the blending of the characteristics of the two. The difference between acculturation and enculturation is primarily a difference in scale of cultural change.²³

Adaptability to new environments provides a good opportunity to review man's association with both his neighbors and with his environment. Ian McHarg wrote:

No species can exist without an environment, no species can exist in an environment of its exclusive creation, no species can survive, save as a non-descriptive member of an ecological community. Every member must adjust to other members of the community and to the environment in order to survive. Man is not excluded from this test.²⁴

The real focus for learning centers on the home, school, or work place. Learning develops with increasing social interaction especially with the advent of television and progress in other forms of communication media. As far as spatial learning is concerned, Wagner suggests that learning must proceed by trial and error within the environment.²⁵ Only by repetition will environmental characteristics be learned. Repetition may not necessarily require personal experience in the environment--learning about an area can be obtained by way of the various forms of media or by social interaction with other residents. The efficiency of these latter learning methods obviously

²³Broek and Webb, op. cit., p. 27-28.

²⁴McHarg, Ian, "Man and His Environment," The Urban Condition, ed., J. Kuhl, (New York: Basic Books, 1963), p. 6.

²⁵Wagner, op. cit., p. 67-72.

differs with the quality of the information communicated. This is especially important for the creation of initial impressions, i.e., for a newcomer to an environment. Upon these impressions his future relationship with that particular environment will be determined. If an unfavorable impression is created, it is likely that he will not be as motivated to interact with that environment than if a favorable impression is created. On the basis of repetition being a guide to learning, the creation of unfavorable images would probably show the learning process considerably. Unfavorable impressions become more rigidly carved on the mind as time increases, hence, more difficult to erase. The areas perceived as being unfavorable can, if visitation was regular, become learned with each trip, whereupon a more favorable image may result. The time factor is, therefore, very important in the enculturation process. The accumulation of information over a period of time allows the individual to have a wider range of knowledge from which to assess an area's desirability.²⁶ It will be primarily within the awareness space²⁷ that the individual selects locations for visitation. The more complex the environment, the more concentration the individual must have in order to learn all the spatial opportunities available.

²⁶ Throughout this study, the word 'desirability' is used as a means of describing an individual's satisfaction with parts or sub-areas within the city. Individual assessments of desirability are based on an area's attractiveness in terms as a place for residence. The author believes that areas which are considered as being pleasant or attractive are, in the main, areas which would be considered the most desirable for residence.

²⁷ 'Awareness space' is a modification of 'Action Space,' described by Julian Wolpert as being the area with which the individual has contact, and within which all activities take place. For further discussion see Horton, F. E. and Reynolds, D. R., "Effects of Urban Spatial Structure of Individual Behavior," Economic Geography, Vol. 47, No. 1, (Jan. 1971), p. 70.

Thus the urban area probably presents a more difficult problem for the in-migrant than a smaller rural community. This is largely dependent on background characteristics of the individual, but with the size and multiplicity of factors encountered in most cities, full awareness of the environment requires more learning effort. Newcomer enculturation, therefore, is a question of adjustment on the part of the individuals concerned. Since most migrants to urban areas have moved for economic (employment) reasons, the effectiveness²⁸ of individual utilization of the cities' resources will be primary agents in the growth of the urban area as a whole. Consequences of effective learning may have implications for this utilization of resources.²⁹

Urban Spatial Activity Patterns

In this section an overview of literature is presented to link spatial activity patterns to spatial learning which is, in turn, dependent on variable perception. Urban activity patterns are used here in a behavioral sense as Chapin and Hightower suggest:

They are seen to be made up of patterns of human or institutional interaction associated with the functions of the urban center.³⁰

In addition, urban activity can be viewed as the 'episodes' in the life of

²⁸ 'Effectiveness' of individual utilization of a city's resources is based not solely on the cost of goods, or on minimum travel distance, but takes into account all factors--psychological, social, and economic which affects the city resident. Especially important are the quality of service, friendliness, atmosphere, cleanliness, amenities offered, etc.

²⁹ Gulick, John, Bowerman, Charles E., and Back, Kurt W., "Newcomer Enculturation in the City: Attitudes and Participation," Urban Growth Dynamics, eds. F. Stuart Chapin and Shirley F. Weiss, (New York and London: John Wiley and Sons, Inc., 1962), pp. 355-58.

³⁰ Chapin, F. Stuart, and Hightower, Henry C. Household Activity Systems--A Pilot Investigation, (Chapel Hill, North Carolina: Center for Urban and Regional Studies Institute for Research in Social Science, May 1966), p. 4.

an individual, family, or household, and patterns of activities as sets of connected 'episodes' which have a propensity to recur in similar cycles.³¹

The 'episode' is a reasonably homogeneous interval in the lifetime of an individual; an interval of time which is devoted to a single dominant purpose. In addition it is the basic unit underlying a behavioral or activity pattern. Episodes, and therefore, spatial activity patterns have a variety of characteristics, such as a place, a fixed location, or a path in space. Several attributes of the individual such as background, attitudes toward that activity, etc., determine the degree of influence of each of the episodes and spatial activity pattern characteristics.

Human behavior in relation to a physical setting is enduring and consistent over time and situation. Therefore, the characteristic patterns of behavior for that setting can be identified. It is necessary to recognize that different groups--ethnic, racial, or spatial--see and have different behavioral patterns, but their activities follow broadly similar patterns of responses to given stimuli.

Jacob and Flink state that the behavioral 'field' (i.e. the sum of all activity locations for an individual or group of individuals) is a dynamic system of forces differing in magnitude or weight as well as in character.³² Explanation of action requires that one take into account the relative magnitude, as well as the type of specific content of the determinants. They include, for instance, a person's socializing as being a very important determinant for urban spatial behavior.

³¹Ibid., pp. 8-10.

³²Jacob, P. E. and Flink, J. J. "Values and Their Function in Decision Making," The American Behavioral Scientist, Vol. 5, Supplement, (May 1963), pp. 200-223.

Horton and Reynolds, on the other hand, view the determinants for urban spatial behavior by combining structural economic attributes in the formation of cognitive images leading to a preference in travel patterns. They reiterate Julian Wolpert's concept of 'action space': "That area with which he (the individual) has contact, and within which activities take place."³³

The degree to which an individual's behavioral pattern in his awareness space (the activity space, or a subset of action or awareness space) reflects the objective environment in its totality depends upon his effectiveness in collecting and assimilating pertinent information. In addition, once phenomena in a city have been recognized, a decision has to be made as to the composition and quality of the organization of that phenomena. Policy is always the result of a decision based on values,³⁴ and is identified through the manner in which individuals experience, perceive, and interpret concrete situations which they confront in life. If we are to understand man's spatial activities, it is imperative that we recognize the forces behind the decisions in performing those activities. Why does an individual shop at one location in a particular sub-area of the city, whereas another might perform this activity at several locations scattered throughout the same urban area? How do these locations in the latter case relate to one another, and how did the second individual arrive at a decision to shop at more than one store?

Statement of the Problem

The author believes that the major determinant in shaping the spatial

³³Horton and Reynolds, op. cit., p. 70.

³⁴Campbell, Allan K., and Berkland, Jesse, "Public Policy for Urban America," Issues in Urban Economics, ed. Harvey S. Perloff, and Lowdon Wingo, Jr. (Baltimore: The John Hopkins Press, 1968), pp. 577-650.

activity pattern is the degree of familiarity that the individual has obtained during his period of residence in a given environment. As stated previously, individual awareness of an area's resources can be considered a major determinant of enculturation. After learning has been developed over a period of time, the participant will probably have a far wider choice for the performance of activities. It is likely, therefore, that individual episodes will become more complex as enculturation, and hence length of residence, increases. Presumably, more independent and different locations within the environment are utilized during each episode with increasing length of exposure. One can suggest that the degree of complexity within each episode, or more important still, the amount of complexity within each individual activity pattern might be different from person to person dependent on the length of residence.

The objective of this research is to assess the following hypothesis: There will be a significant difference in the characteristics of urban spatial behavior between newcomers and established residents which may be explained by a spatial learning process related to the length of residence in that particular urban environment. And by extension, familiarity and spatial behavior will be a function of the state of enculturation. The strength of this relationship, moreover, is most apparent when one controls for variability in social and demographic attributes of residents. If the hypothesis is substantiated, an argument may be advanced that communities could plan information systems that would accelerate newcomer adaptation and more complete participation in community affairs.

Enculturation in Perspective

Harvey Cox in "The Secular City" suggests that urbanization contributes greatly to the freedom of man, inasmuch as close proximity to the wider range of urban activities permits the individual to maximize his social and economic status:

The contemporary urban region represents an ingenious device for vastly enlarging the range of human communication and widening the scope of individual choice.³⁵

So, it seems that rapid rural depopulation continues as more and more seek the benefits offered by urban areas despite the social ills which may accompany city life. In addition, inter-urban migration is made more possible today due primarily to the state of telecommunication and transportation technology. The population of a nation is usually well informed of the general characteristics of life in the major metropolitan areas, irrespective of whether they have been visited.

A move to an unfamiliar environment, especially to an urban area, does disrupt the smooth rhythmic operation of behavioral activities. The new environment appears strange to the in-migrant, for activities performed normally as a matter of routine must be learned again. On a trial and error basis, the efficient utilization of the area's resources must be organized from the wide range of available opportunities. Thus, this experimentation will be pursued over a period of time. The individual must collect, sift through, and store relevant items of information about his environment that he can utilize to satisfy his own personal and family demands. The speed of

³⁵Cox, Harvey, The Secular City, (New York: Macmillan, 1965), p. 4.

his adaptation will depend primarily upon the contact time with his environment, but other factors such as communication with friends and neighbors and the conduciveness of the city's structure and layout for learning must be considered.

The interplay of these factors might raise the questions: Why does enculturation require specific investigation and what important statements on spatial behavior can be established by performing such research? Answers to these questions and others in a similar vein can be supplied when one considers that newcomer enculturation is largely the result of a series of decisions regarding the movement of individuals from one environment to another. The processes are initiated by a decision on the part of the individual to move away from his home area. Probably the basis for such a decision rests in the advantages (economic and social) to be afforded by opportunities offered elsewhere.³⁶ All the processes involve some measure of movement in space which must be taken into consideration if morphology or spatial structure produced by these processes is to be understood.

Friedrich Ratzel, one of the founders of modern human geography became so impressed with the mobility of organisms that he visualized geography as essentially 'Bewegungslehre'--a science of movement.³⁷ In man's association with the Earth, the time-span is quite long, but the space limited. From this relationship, Ratzel inferred that human groups must have traversed the more accessible parts of the Earth over and over again, mixing biological features and diffusing cultural traits (acculturation).

³⁶ Gulick, Bowerman, and Back, op. cit., p. 321-322.

³⁷ Wanklyn, M. Friedrich Ratzel, A Bibliographical Memoir and Bibliography, (Cambridge and New York: McGraw-Hill Book Company, 1971), p. 1-25.

Migration has a certain composition, volume, speed, and duration. All these components can be expressed in principle at least in quantitative form.³⁸

Movements within one country (internal migration) usually reflect the relatively untrammelled interplay of economic forces. As early as the 1880's, the Bristol scholar E. G. Ravenstein analyzed population movements within England.³⁹ Among the 'laws' he formulated, the one best known states that the number of migrants decreases as distance increases.

During recent years Torsten Hagerstrand and associates at the University of Lund, Sweden, developed quite sophisticated theoretical models to account for population movements.⁴⁰ The use of gravity models has become popular to describe and predict movements between areas in terms of mass (population), distance, and relations between the two. Even these few components are not easy to define nor simple to relate. The word 'Population' hides important qualitative differences and regional variations. Distance can be measured in various ways. The consequences of migration presented in a systematic way would involve a tremendous range of inquiries. Broek and Webb list the most important consequences of migration in terms of:

- (1) Population pressure in congested areas.
- (2) Results of evicting ethnic groups.
- (3) Contribution of migrants to society.

³⁸Broek and Webb, op. cit., p. 459.

³⁹Ravenstein, E. G. "The Laws of Migrations," Journal of the Royal Statistical Society, Vol. 48, (1885), p. 167-235; Vol. 52, (1889), p. 241-305.

⁴⁰Hagerstrand, T., Hannerberg, D., and Odeving, B., (eds.), "Migrations in Sweden: A Symposium," Lund Studies in Geography, Series B, Human Geography, Vol. 13, (1957).

- (4) Who moves and who stays?
- (5) The distances involved.
- (6) Adjustment to new physical and social environment.⁴¹

Thus research into enculturation is not an isolated segment of the behavioral sciences, but only a related subset of other aspects of human spatial behavior, namely residential mobility and migration. These aspects in the field of population movements were one of the earliest sub-fields to be developed in human geography. It is only when enculturation studies are placed in perspective with mobility and migration does an indication of the wide range of possible implications from this research become fully realized. Enculturation, therefore, must be viewed as a link in a system of behavioral decisions and actions which explain not only spatial movements, but the relationship between man and his physical and social environments.

⁴¹Broek and Webb, op. cit., p. 460.

CHAPTER II

METHOD OF APPROACH

It is necessary at this stage to outline the method of approach adopted by the author in collecting and preparing the information needed in order to substantiate the validity of the hypothesis stated in the previous chapter. Any research project must have a sound and well-defined method of approach, both from a conceptual and a textual viewpoint. This is especially important in perceptual and behavioral research, for unlike certain other sub-fields in geography, very few conclusions may be formulated from widely accepted fact. Rather, exploratory hypotheses are based upon the most tentative of conclusions from earlier efforts that also depend on less than hard facts. Furthermore, the expression of a perceptual or behavioral attribute as a numerical value, or in a fashion conducive for cross-group comparison with any degree of satisfaction, occurs only on rare occasions. Thus, it is exceptionally difficult to formulate general theories or laws as far as human perception or behavior is concerned.

In contrast, the route and modus operandi of a certain railroad company may possibly be explained in terms of the supply and demand of goods being transported along the route, physiographic characteristics, financial investments, historical development of an industrial hinterland, labor supply, fuel resources, etc.--all factors which together explicitly describe the state of operations of that railroad company. From this information or description, a series of factual statements can be formulated which one can assume to be either true or untrue, and which may be compared with a high degree of

accuracy, to the characteristics of another railroad company's operations.

This, however, is not the case with perceptual or behavioral research, for although techniques of measurement and description have been refined in recent years, difficulties still arise when assessing individual or group awareness, since an uncontested and consistent numerical scale has yet not been devised. Human perception and behavior vary with each individual so that the researcher can, at best, only draw inferences of a general nature about the perceptual or behavioral characteristics of a particular group under examination.

The author does recognize that these inefficiencies prevail, so it is necessary to keep assessments of perceptual and behavioral characteristics as detailed, but as consistent as possible, in order that the conclusions drawn from the summarization and analysis of this information are seen to be valid.

The proposed methodology will be described in four major stages: (1) determining the general approach; (2) the regions to be sampled; (3) the questionnaire-survey; and (4) conducting the interview survey.

Determining the General Approach

It was decided that an interview survey would serve as the source for gathering data concerning the perceptual and behavioral characteristics of individuals in an urban area. A representative sample of the total urbanized population should be interviewed and their responses recorded from which conclusions could be drawn by means of rigorous statistical analysis. It could be assumed that if this sample was seen to be truly representative of the total urbanized population, one could then apply the stated conclusions to

describe attributes of the population as a whole, i.e., they could be universally applicable within that given region.

The literature outlined in the previous chapter provided a sound base for the formulation of the research hypothesis and aided the author in making the distinction between an individual who could be classed as a 'newcomer' and one who could be said to be an 'established resident.' Due primarily to a high degree of variance being encountered in the literature regarding the minimum number of years required for an individual to become routinized, and hence, an 'established resident,' the author feels that the temporal period chosen as a dividing point between these two groups should be based upon the researcher's own interpretation of the terms 'newcomer' and 'established resident,' and need not require rigorous testing for validity. It is not the purpose of this study to explain the differences in perception and behavior between two groups which have been rigidly defined through previous research, but rather to explain the effects of a spatial learning process based on length of residence within a given area upon individual perceptual and behavioral characteristics. To avoid the arduous task of comparing the attributes of each individual with those of every other individual in the sample, persons were arbitrarily classed as being 'newcomers' if length of residence in the study area did not exceed three years, or as 'established residents' if the time period exceeded four years. Should a person indicate that he has resided in the study area for more than three or less than five years (i.e., for four years) he was eliminated from the study. Although the author feels confident about the justification of his definitions of a 'newcomer' and an 'established resident,' it could be said that the four-year resident is in a zone of transition and might portray the characteristics of either of the defined groups.

Thus, this ensures that the two groups are temporally distinct. Statements of a general nature could then be formulated by comparing the attributes of the two groups in order to show the existence of any significant differences. As long as the two groups are temporally distinct, the inconsistency of the definition with previous research could be considered immaterial.

Individuals of less than 18 years of age were eliminated from the study, as one would expect the behavioral pattern of children, and to a lesser degree, teenagers, to be determined largely by parental or educational dependence on the part of this age group and not necessarily by length of residence. There was, however, no maximum age limit set, for although a large proportion of individuals in this age group are hindered by ill-health, social and financial hardships, etc., they must, to a limited extent, still operate within an essentially spatial framework. Thus, there is a case for assuming that their actions are governed by largely the same enculturation processes witnessed in all other adult age-groups.

The degree of universality or generality obtained through inference from supporting or rejecting the proposed hypothesis will be determined largely by the 'representativeness' of the sampled population to the total population. Should it be found that the sampled population is characteristic of the total population of the study area, then it can be inferred that the hypothesis might be extended to a larger universe possessing similar general attributes as the study area. In order to support this statement, other urban areas should be tested in much the same manner, but it will be sufficient to merely imply that this condition might be universally acceptable. Despite this, it was necessary to control for any peculiar characteristic encountered in the study areas' population distribution which might weaken the validity of this statement.

Before the sampling procedures were undertaken, it was decided that military personnel and college students should be eliminated from the study for the following reasons. Military personnel are likely to have strong social affiliations with the base to which they are attached even though they might reside in the study area. In addition, military personnel are generally assigned to a base for a limited period of time so they might not be as enthusiastic to learn the range of opportunities within the city as more permanent residents. Therefore, it cannot be guaranteed that ties with the city are close enough for it to be established that their behavioral pattern is significantly influenced by their familiarity with the environment in which they live. These bases are usually located on the outskirts of urban areas so that individuals spend an unusually large portion of a typical week outside the home environment.

Students have been excluded primarily because their period of residence is again likely to be purely transitory. Most students expect to leave the university town upon completion of their program, and furthermore, they are fully aware of this intention to move away. It is, therefore, questionable as to whether they will have the desire to learn the range of opportunities offered by their environment if their intention is to move away after a short period of time has elapsed. The student could be considered unrepresentative of the total population for a more 'typical' inhabitant, although never sure of his intentions, is likely to believe that his period of residence is permanent for the time being, and will endeavor to learn his environment in order to maximize his economic and social utility. In contrast, the student is more likely to perform activities at the most convenient location, or at the least expensive, without attempting to seek out the most beneficial. For the same

reasons, any individual indicating that he intended to move away from the area within the near future, or who expressed a deep dissatisfaction for the region (and, hence, is likely to move at the first opportunity), was also excluded from the scope of the study.

The exclusions described in the previous paragraphs were based not on the assumption that their perceptual and behavioral characteristics will be unrepresentative of the total population, but that there is a strong possibility of this condition occurring-a situation which the author wishes to eliminate rather than to jeopardize the validity of the final conclusions. A meaningful assessment of the research hypothesis could not be made by sampling individuals whose perceptual and behavioral characteristics might be determined primarily by factors outside the scope of this research.

In a further attempt to ensure that the sample be confined to those persons performing most of their daily activities within the study area, the author recognized that individuals engaged in certain occupations, or possessing a particular social background, might have a highly mobile status outside the study area. This might apply to a financier, a government official, or even a person who has unusually close ties with a small town nearby. It is necessary to ensure that each individual does spend the greater portion of a typical week in the study area and that visits to external locations be properly controlled in the analysis.

The author was careful to select the sampled populations from individuals who had not previously lived in, close to, or who had visited the study area on a regular basis over a period of years before residing in the locality. It is highly probable that these individuals could have a good knowledge of the study area before their present period of residence began. In this case, it

could be inferred that they might adapt to the environment (and, hence, become routinized) in a shorter period of time than an individual moving to the study area without any prior knowledge.

The hypothesis proposed in the initial chapter was assessed through the information obtained from the results of the interview survey. The author considered statistical analysis of the numerous responses to be the more meaningful way of summarizing this information. The statistical analyses performed are described in detail in Chapter Three but can be classified under two major operations. First an analysis of the behavioral characteristics in the sample population and of the effects of enculturation upon these characteristics will be performed. From the results of this analysis, the research hypothesis will either be supported or rejected. Second, a test for the effects of spatial location of the sample areas and of socio-economic attributes will be conducted in order to control for external variables that might have a significant influence upon any observed perceptual and behavioral characteristics in the sample population. For instance, it might be discovered that there is an observed difference between the behavioral characteristics of newcomers and established residents, but if one sample contained a high proportion of married persons and in the other most were unmarried, unless a test for significance is performed, marital status could be more influential in explaining spatial behavior than length of residence. Although the basis of assessing the validity of the various hypothesis is quantitative in nature, the essence of the study lies in the interpretation and explanation of why certain attributes are found to be significant. Hence, the results obtained by quantitative analysis are used only as a guide for further qualitative inference, and not as an end in themselves.

Deciding upon the Areas to be Sampled

For the sake of convenience the city of Manhattan, Kansas was chosen as the study area. The city has a population of 28,000,⁴² excluding the student and military groups. In terms of geographical arrangement, the city is typical of the Mid-West, displaying a recti-linear (grid-iron) plan for the most part and possessing a downtown central business district which dominates in economic affairs over the other nuclei of service centers. The main street covers about eight blocks and distance decay concerning intensity of land use is evident about the C.B.D. Like most urban areas, the residential suburbs have expanded to the outer fringes of the city with definite land use characteristics being evident in each region of the city. In terms of the residential population, the city has a high annual turnover. This mobility can be attributed to the presence of the university and the Fort Riley military establishment. Several light engineering and assembly industries, an abnormally large number of service industries, the university, and other governmental functions provide the city's economic base.

Using previous land-use studies by Oblinger-Smith⁴³ and Wilson and Company,⁴⁴ the author divided the city into twelve sub-areas, each possessing relatively homogeneous land-use characteristics. (See Appendix A). Each of these sub-areas are designated by a letter of identification from A through L.

⁴²U.S. Bureau of the Census, Department of Commerce, Census of Population, 1970, PC-18 Kansas Block Statistics for Selected Kansas Cities.

⁴³Oblinger and Smith Corporation, A Neighborhood Analysis in Manhattan, Kansas, (Wichita, Kansas, 1969).

⁴⁴Wilson and Co., Manhattan Guide Plan: The Years Ahead, (Manhattan, Kansas, 1964).

The samples were taken from two of the constructed sub-areas, one located near the city center, D; the other lying on the outer fringe, L. This was done in order that tests could be performed to assess whether the perceptual and behavioral characteristics of the sample populations differ due to position within the city. Were the samples to have been selected randomly throughout the city, difficulties would have arisen in establishing a criteria for measuring 'position' within the city--perhaps distance from the C.B.D. to each individual location might have been considered as a viable means of assessment. It was felt, however, that the most suitable and efficient method for testing this variable for importance would be to select all the samples from only two sub-areas, situated in a different location with respect to the C.B.D. Thus, one sub-area's characteristics could be compared to the other. Any variability might then be explained in terms of proximity to the city center.

As a two percent sample from each sub-area was considered as representative, the total population of each sub-area was calculated using the data supplied by the 1970 census which lists block-by-block population figures for the entire city.⁴⁵ From sub-area D, it was calculated that 48 persons should be interviewed, while 51 persons should be sampled from sub-area L. Within each sub-area, the samples were chosen from lists of names issued weekly by a local credit agency. The lists were taken from the files at monthly intervals, whereupon inclusion of an address to be found in either sub-area was considered for sampling. As these lists contained the names and addresses of persons registering with the Kansas Power and Light Company, it was believed

⁴⁵U.S. Bureau of the Census, op. cit.

that every newcomer to Manhattan since 1960 had an equal chance of being sampled. The author was also able to check each name in order to eliminate students, Fort Riley personnel, and those who had lived in Manhattan on a previous occasion. In addition, every tenth name in the telephone directory⁴⁶ was employed in the sample should that address be located in either of the two sub-areas concerned. This procedure was performed in order that any individual moving to Manhattan before 1960 (the earliest file to be located at the credit agency), and any person not listed in the files would have a reasonable chance of being sampled. All precautions, the author believed, were taken to produce a random sample from the total population of each sub-area without encountering any prejudice or bias during the selection process.

Development of the Questionnaire-Survey

In the first chapter, the author demonstrated that past experience and socio-economic attributes have a significant effect on the type, quality and amount of information perceived by an individual, which in turn is seen to determine the form of his spatial activity (behavioral) pattern. In order that the research hypothesis be meaningfully assessed, it is necessary to ensure that all important variables which might significantly influence individual perception and behavior be taken into consideration. With reference to the interview survey to be found under Appendix B, 16 of the 20 questions asked of each respondent dealt with background information which, it was hoped, would give insights into the nature of each respondent's past experience and socio-economic status. The results of each of these 16 questions

⁴⁶Manhattan Telephone Directory, (Southwestern Bell Telephone Company, 1972).

might be tested for significance in explaining behavioral attributes of each individual. Naturally, certain factors were expected to be of more importance than others, but the degree of importance for each variable would not be hypothesized until all the data had been accumulated. Only then could vigorous statistical analyses be performed, first on those variable which were expected to be the most influential, and then on the factors considered of lesser importance.

If all responses could be recorded numerically in addition to the precise response given, the burden of data processing at a later time would be eased considerably. Thus, each possible answer was given a numerical identifier which was circled once the response had been obtained.

When all the information had been gathered, the interviewees' responses were classified as belonging to either the newcomer group, or the established resident group. Frequency tables were constructed from the responses given by individuals in each of the two groups concerning background and socio-economic information.

It was hoped that a representative cross-section of these characteristics had been sampled, for if 40% of the 50 newcomers sampled held the position of college professor, it might be concluded that a biased sample had been obtained. The same conclusion would apply should 40% of the 40 established residents sampled be over 60 years of age. A situation as extreme as these two examples would obviously be recognized during the course of sample selection, but tests for likely or persistent trends occurring in the samples were completed.

Thus, frequency tables were constructed that portrayed background and socio-economic data for all respondents in the two sample groups. These

distributions were examined for statistical significance. If any particular observation occurred frequently, the author could determine with a reasonable degree of confidence whether or not the samples obtained were truly representative of the total population, or if any biases were encountered. This is further exemplified by Table I.

TABLE I

FREQUENCY DISTRIBUTION OF RESPONSES INDICATING
OCCUPATIONAL STATUS OF THE SAMPLED POPULATION

Identifier	Occupational Status	Newcomers	Established Residents	Total
1	Education	11	12	23
2	• Clerical Management	7	8	15
3	Government	9	1	10
4	Private Services	4	2	6
5	Public Services	3	3	6
6	Land Related	0	0	0
7	Unskilled	0	0	0
8	Skilled	2	3	5
9	Professional	1	8	9
10	Housewife	13	12	25
11	Other	0	0	0
Total		50	49	99

Source--Survey by author.

Questions in the survey which dealt with background information cannot, of course, give a complete picture of a person's previous experience. The best that can be hoped for is a general composite impression of the individual's background while emphasizing those characteristics which the literature outlined in Chapter I has shown to be the most influential and basic to the structure of the behavioral characteristics of the individual. Age, sex, marital status, number of children, and relationship to the head of the household were considered to be important in these respects.

These variables would be important in understanding the difference in any behavioral patterns within the study area should such a difference be encountered. It might be expected, for instance, that the behavioral characteristics of the male sex differ from those of the female sex. It is not the purpose of this paper to explain why or even how this condition exists. It is important, however, to recognize that if, after statistical testing, the results shown within the sampled groups indicate that this condition does exist, it must be weighed as to its effect on the behavioral characteristics of the individual. The male/female ratio within each sample group was not predetermined, so it is possible that one group might contain an unusually large proportion of either males or females. Should any difference in group familiarity or behavior be observed, the author must ensure that these differences cannot be explained in terms of the male/female ratio sampled in each group, if the research hypothesis be supported. This situation holds true for the other four variables listed under the general heading of 'individual background.' Educational status and occupational status, for the reasons previously outlined in this chapter, were considered important in explaining individual behavioral characteristics. The major assumption proposed is that

individuals with either similar levels of educational attainment or occupational status might, keeping all other variables constant, behave spatially in much the same manner within the urban region. Alternatively, persons with vastly differing educational or occupational levels might behave in a totally different manner. As an extreme example, the taxi cab driver, by virtue of the fact that he is constantly traveling within the city, might have a much greater perceived familiarity level with the environment than the factory worker who has less contact hours with the area. It is the type of occupation, not the level that is most important. Educational and occupational characteristics (as with other background and socio-economic characteristics) must be recognized as factors allowing for differing levels of opportunity for interaction with the environment. This can then be taken into account should any one sample group contain individuals engaged in a more highly mobile occupation or educational role. Hence, the primary mode of transportation should also be asked of each respondent. Although the vast majority are likely to travel primarily by automobile, it is possible that several individuals, especially in sub-area D which is close to the downtown region, might walk or use a bicycle when performing basic daily activities. The implication, should this situation occur, would be that they perceive the attributes of the environment in a totally different manner than persons operating an automobile.

The number of trips out of the city in a typical week was asked of each respondent on the assumption that an individual who frequently traveled away from his home area might not have the same opportunity to become familiar with the characteristics of that environment as a person who performed all or most of his daily activities in the city itself.

The individual capabilities of perceiving attributes of the urban

environment are determined to a large extent on how accustomed he is to living in an urban area. Hence, someone from a rural background might find it difficult to operate within a large city where he encounters a much more complex route network and a greater choice of amenities, etc. On the other hand, an individual from a major metropolitan area might have difficulty in accepting the limitations of choice imposed by his new environment, but being accustomed to urban life, he might adapt to the city at a faster rate. It was considered important to ask each interviewee his length of residence in Manhattan, his length of residence in Kansas, his previous home before moving to Manhattan, the estimated population of this previous home area, the number of occasions he had visited Manhattan prior to taking up residence, and the reasons for moving to the city.

From this information it would be possible to distinguish between the newcomer from a rural Kansas town ten miles from Manhattan, for instance, who might have a previous knowledge of the city, and the newcomer from a rural environment but in another part of the country who had never visited Manhattan before taking up residence. Thus one distinguishes between degrees of previous knowledge. It might also be assumed that the former individual, due to his previous knowledge, would probably become familiar with the opportunities of the area in a shorter period of time.

Assessment of Familiarity, Frequency of Visits, and Desirability of Each of the Twelve Sub-Regions in Manhattan

Each respondent was asked to assess on a scale from 0 to 5 his degree of familiarity,⁴⁷ frequency of visits to, and desirability of each of the

⁴⁷ Individual assessments of the degree of familiarity will from henceforth be termed the degree of 'perceived' familiarity, as the respondent was asked how aware he thought he was of the sub-areas involved. Thus his reply may not depict his actual familiarity.

12 delineated sub-areas in Manhattan. The scale 0 to 5 represented increasing magnitude of each of the three assessments, the results of which were later used to test the research hypothesis previously stated.

Each of the scales contained guidelines for response in order that some measure of conformity be established from one respondent to another. This would help control for any discrepancies that might arise should one individual's concept of being 'very familiar' differ from another's, but naturally variance of this nature could not be completely eliminated. The guidelines representing the differing magnitudes of response within each of the three assessments were kept as continuous, and as explicit as possible, but individual responses were not restricted by the presence of these guidelines (i.e., they were not rigidly adhered to should the respondent be unable to select a category precisely representing his assessment). The results of these three questions were also tabulated into a series of frequency tables showing assessments: (1) By the total sampled population for the region as a whole; (2) By newcomers and established residents; and (3) By the total sampled population for both individual sub-areas. This information can be found in Appendix C. Finally, each respondent was asked to express the average number of independent and different locations within the city which he would visit in the course of a typical week. This information could help explain any observed correlation between the degree of perceived familiarity and behavioral characteristics within the city for either sample group.

Conducting the Interview Survey

It was decided that the interviews should be performed at various times throughout the day and evening in order that the ratio between the head of the household and their wives, or other relations, be relatively even. Were

the interviews restricted to the daytime only, the author would find that this was the time of day when the head of the household in general was at work, and most of the respondents would be of the female sex.

During the interview itself, help was given to those respondents expressing difficulty in understanding or interpreting the questions, but in no manner did the subjects feel obligated to answer quickly without thought, or in any other manner which might lead to a response which was only half-hearted. Time was taken to ensure that the nature of the questions did not request answers which might cause embarrassment or false statements to be made. No researcher can guarantee the accuracy or validity of the responses obtained through a questionnaire survey, so it must be assumed that the responses were given in good faith and were as accurate as humanly possible.

From the 99 originally sampled individuals, only four were not interviewed due to a family bereavement, a refusal to cooperate, an extended vacation on the part of one individual meaning that the respondent could not be located, and one illness. In such cases, 'reserve' respondents were sampled. Finally, the interview survey supplied data, which although incomplete, was sufficient for the author to analyze and formulate statements concerning the effects of a spatial learning process over a period of time upon the perceptual and behavioral characteristics of the sampled population.

CHAPTER III

ANALYSIS OF DATA

The main hypothesis to be assessed was that there will be a significant difference in the spatial characteristics of behavior between newcomers and established residents, which may be explained in terms of a learning process governed by the length of the period of residence within a given urban environment.

In order to assess the validity of this statement, it was necessary to examine the information which was collected by way of the interview survey to discover and explain the existence of any trends or group characteristics which may become evident. The vast amount of gathered data in its entirety could not be meaningfully interpreted until it had been summarized so that generalizations about the two groups of residents could be formulated. For this reason, a series of statistical tests were performed so that the research hypothesis could be supported or rejected with the maximum degree of confidence. The data analysis was approached in the following manner.

Stage I. Tests to discover if indeed any significant difference did exist between the spatial behavior characteristics of newcomers and of established residents.

Stage II. Tests to discover if any observed difference in spatial behavior can be explained in terms of environmental learning using the assumption that as the length of the period of residence increases, knowledge about the immediate environment (familiarization with the available range of opportunities) is likely to become more detailed, therefore, permitting a wider choice for specialization.

Stage III. Tests to ensure that any observed differences in spatial behavior and/or familiarization with the environment cannot be explained by the urban spatial location of the sub-areas from which the samples were selected.

Stage IV. Tests to discover if individual perceptions of the city, or sub-areas of the city, in terms of degree of desirability for residence explain to any significant extent any observed differences in the degree of perceived familiarity.

Stage V. Tests to discover if variables relating to previous experience or socio-economic status might be more appropriate in explaining any observed behavioral differences between the two sample groups.

Spatial Behavioral Differences Between Resident Groups

The hypothesis to be tested states that there will be a significant difference between the spatial behavioral pattern of newcomers and established residents. It is not suggested that either of these two groups will necessarily display signs of greater mobility (i.e. travel more frequently) within the urban area; but rather that when activities are performed, the behavioral pattern of established residents will be more complex than the newcomer group. Thus, within one trip, the established residents will visit more points or locations. This will later be explained in terms of the greater length of the period of residence providing opportunities for the established residents to learn the benefits of their environment. Thus, a wider range of locational choice for action will occur and they will utilize this choice to their maximum advantage. It will, therefore, be expected that the established residents as a group might visit more independent and spatially distinct locations within the urban area than the newcomer group, who alternatively, will concentrate

their activities in the few locations known to them.

From the survey data a test can be performed to see if in fact the respondents classed as established residents did indicate that they visit more locations than the newcomers within the period of a typical week. In order to do this a Kolmogorov-Smirnov two sample test for independent samples was used.

↘ The Kolmogorov-Smirnov test is a very simple one, and states that if the null hypothesis that independent samples have been drawn from identical populations is correct, then we would expect that the cumulative frequency distribution for the two samples to be essentially similar. Therefore, the test statistic (D) used in the Kolmogorov-Smirnov test is the maximum difference between the two cumulative frequencies. If the maximum difference is larger than would be expected by chance under the null hypothesis, this means that the gap between the distributions has become so large that we decide to reject the null hypothesis. It is possible to predict that those persons visiting the greater number of independent locations in the city will be established residents, and thus we not only test for a difference between the two groups of residents, but we predict in which direction this difference will be.

Due to the importance of this analysis to the conclusions to be made about behavioral difference, it was decided that the confidence level should be rigidly set. Thus the author chose to assess the D statistic at the 0.01 significance level which would suggest that if the null hypothesis were true, we would obtain as large or larger a computed result by chance alone less than 1% of the time.

Since it was not possible for any individual to indicate that he visits

no locations in the course of a week, (for the home residence was included as a place for visitation) the minimum number of independently visited points in the city was 1. Thus the number of locations were classified as follows: 1 - 2; 3 - 6; 7 - 12; 13 - 20; and above 20. Frequency tables for both newcomers and established residents were made. The test was performed as shown under Table II.

The null hypothesis was that there is no significant difference between the number of independent locations visited by established residents and newcomers in the course of a typical week. Naturally it was hoped that this null hypothesis be rejected so that a significant difference could be seen to exist.

The computed result produced a Chi Square (χ^2) value of 14.2938 which if assessed at the 0.01 significance level would indicate that the null hypothesis must be rejected and, therefore, supporting the research hypothesis that there is a significant difference between the number of independent locations visited by newcomers and established residents. Furthermore, we can predict with a high level of confidence, that residents are likely to visit more independent and different locations in the course of a typical week than newcomers. The computed χ^2 statistic indicates that this same result would be obtained 99 times out of 100 tests of the total population.

It must be mentioned that had the calculated χ^2 statistic been assessed at the 0.001 significance level (i.e. to see if the same result would occur 99.99 times out of 100 tests), the null hypothesis would have been accepted, but the author is satisfied that his level of confidence is most suitable due primarily to the small number of samples obtained.

In order that the results from this analysis be further verified and so

TABLE II

NUMBER OF INDEPENDENT POINTS VISITED IN THE URBAN AREA
IN A TYPICAL WEEK BY TWO GROUPS OF RESIDENTS: A
TEST FOR CORRELATION USING KOLMOGOROV-SMIRNOV

Points Visited	Frequency of Newcomer Responses	Frequency of Established Residents' Responses	Cumulative Frequency of Newcomers' Responses	Cumulative Frequency of Established Residents' Responses	Newcomer Cumulative Frequency As % (F ₁)	Established Resident Cumulative Frequency As % (F ₂)	F ₁ -F ₂
1-2	2	0	2	0	.04 .40	.00	.04 .40
3-6	29	3	31	3	.62	.06 .68	.56 .92
7-12	13	3	44	6	.88	.12	.76
13-20	6	29	50	35	1.00	.71	.29
Above 20	0	14	50	49	1.00	1.00	.00

Source: Survey by author.

TABLE II (Continued)

Test for Significance of the D Statistic

Value of D so large as to
call for rejection of no significant
difference where D = maximum
at 0.01 level

$$1.63 \frac{N_1 + N_2}{N_1 + N_2}$$

$$= 1.63 \frac{99}{2450}$$

$$= 0.327$$

computed D is larger than
critical value so null hypothesis
must be rejected with a D of 0.76.

As a further test:

$$\chi^2 = 4D^2 \frac{N_1 N_2}{N_1 + N_2} = 4(.76)^2 \times \frac{50 (49)}{50 + 49}$$

$$\chi^2 = 14.2938$$

No. of Degrees of Freedom (df) = (R-1) x (C-1) where R = No. of Rows
C = No. of Columns

$$= (5-1) (2-1)$$

$$df = 4$$

At the 0.01 significance level χ^2 must be less than
13.28 for the null hypothesis to be accepted.

that the degree of difference between the two groups be shown, the precise number of different locations visited as indicated by each newcomer and each established resident were totaled and averaged (i.e. finding the mean- \bar{x}) for the total sample population (for both groups), as seen in Table III.

For the total sample population the mean number of locations visited was 12.03, the standard deviation from the mean being 8.15, indicating that if the frequency distribution was normal roughly two-thirds of all persons visited between 3.88 and 20.18 locations per week.⁴⁸ It should be noticed that the degree of deviation from the mean is considerably large, but this is to be expected for the total population due to our initial hypothesis that there is a significant difference in the number of points visited between a newcomer and an established resident.

Within the newcomer group the mean number of visited locations was 5.98, and the standard deviation being 3.67, indicating that two-thirds of the newcomer population visited between 2.29 and 9.67 points in a week--a relatively small degree of variation from the mean. Within the established residents group, the mean was 18.2, three times as large as the newcomer group, while the standard deviation was 6.56. Thus, two-thirds of this sampled population visited between 12.64 and 24.76 points in a typical week--again not a great degree of variation from the mean.

These tests show that established residents do indeed visit a far greater number of independent and different locations within the city than newcomers

⁴⁸On obtaining a standard deviation which was lower than the mean, it can be assumed with a high level of confidence that frequencies were essentially normally distributed.

TABLE III
NUMBER OF INDEPENDENT LOCATIONS VISITED WITHIN THE
URBAN AREA: A DESCRIPTIVE ANALYSIS

	Total Sample Population	Newcomers	Established Residents
Aggregate Points Visited ($\sum X$)	1,191.00	299.00	892.00
Mean (\bar{X})	12.03	5.98	18.20
Sum of $\sum_{i=1}^N X^2$ Squares	20,815.00	2,469.00	18,346.00
Standard Deviation $S = \frac{\sum_{i=1}^N X_i^2 - X^2}{N}$	8.15	3.69	6.56

Source: Computed by author

in the course of a typical week. The conclusion to be drawn is that established residents have a far more complex spatial activity pattern than do newcomers.

It might be hypothesized, however, that the greater number of locations frequented by established residents is due to greater mobility within that group. If it were found that established residents tended to move within the city much more than newcomers, the probability of them having the opportunity to visit more locations would be relatively high. So in order to strengthen the validity of the research hypothesis (that the complex activity pattern of the established resident can be explained by means of a learning process), it is necessary to establish that there is no significant difference between the frequency of trips made to each sub-area within the city by newcomers and by established residents. In the interview survey, each respondent had been asked to assess on a scale from 0 to 5 of increasing magnitude, his frequency of visits to each of the 12 defined sub-areas. The responses for each sub-area were recorded under the following categories: 5, very regular (once every day); 4, regular (twice every week); 3, occasional (once every week); 2, infrequent (once every month); 1, very infrequent (once every couple of months); and 0, never.

For all newcomers and established residents, a frequency table showing aggregate responses was arranged.

A Spearman's rank test of association was used to assess the degree of correlation (r_s) between both sets of responses. This test was chosen over other tests of association due to the fact that each response was not necessarily mutually exclusive. In other words, an individual assessing his frequency of visits to sub-area B might do so on the basis of how he assesses

his frequency of trips to sub-area A. Spearman's rank correlation does not require mutually exclusive data, but other tests such as Chi-Square or Kolmogorov-Smirnov do.

TABLE IV
A FREQUENCY TABLE SHOWING ASSESSMENTS OF
VISITS TO SUB-AREAS WITHIN THE CITY

Degree of Magnitude of Frequency	Number of Newcomer Responses	Number of Established Resident Responses
5	118	114
4	128	146
3	136	145
2	101	96
1	104	76
0	13	6

Source: Survey by author.

The principle behind Spearman's Rank Correlation is again very simple, for it compares the rankings in the two sets of scores by taking the difference in ranks, squaring those differences, then adding, and finally manipulating the measure so that its value will be +1.0 whenever the rankings are in perfect agreement, -1.0 if they are in perfect disagreement, and 0 if there is no relationship whatsoever. If we symbolize the difference between any pairs of ranks as D_{ij} , we then find the value of $\sum_{i=1}^N D_i^2$ and compute r_s by means of the formula:

$$r_s = 1 - \frac{\sum_{i=1}^N D_i^2}{N(N^2 - 1)}$$

This formula for r_s is derived by taking the formula for a product moment correlation and applying it to ranks, rather than raw scores, and thus a Spearman's rank measure can be interpreted as the product moment correlation between the ranks on x and the ranks on y. Hence, any difference in magnitude between the two samples will not affect the correlation, which is most appropriate for this analysis where more newcomers than established residents were sampled. As the Spearman's measure is not a powerful statistical test, it is useful to compute a z score from the correlation factor (r_s) in order to test the statistical significance of the computed r_s .⁴⁹ Were the 0.05 significance level to be chosen, a z score greater than 1.96 would be needed in order that the computed correlation factor be assumed to have statistical significance (i.e. that our computed r_s would occur only 5 times out of 100 tests by chance alone). Should the 0.01 significance level be adopted, the computed z score must exceed 2.54 in order to be statistically significant. However, Spearman's rank is not very powerful, the author chose to use the 0.05 significant level, which he considered would allow for a high degree of confidence considering the scales of frequency assessments on the questionnaire were not rigidly defined.

The null hypothesis was that there would be no significant association between the two rankings of the frequency of visits to sub-areas in the city as assessed by newcomers and by established residents, or technically, r_s is not significantly different from zero. The author naturally hoped to be able to reject the null hypothesis; the detailed analysis is shown under

⁴⁹ Table I in the Appendix D shows critical values against which the computed correlation coefficient can be assessed as an alternate to the z score conversion.

Table V.

The correlation factor (r_s) proved to be +0.886 which tended to indicate a high positive association between the two sets of scores. The computed z score, at the 0.05 significance level showed that this (r_s) was statistically significant in that only 4.7612 times out of 100 would we expect to obtain such a result by chance alone. Thus, a high degree of confidence can be placed on the computed result. However, if the 0.01 significance level had been adopted, the author would not have been satisfied that his computed result was statistically significant.

The null hypothesis of no association can, therefore, be rejected and it can be suggested that mobility (in terms of frequency of trips to all the sub-areas of the city) is as high for both groups of residents, and furthermore, that an explanation for the more detailed activity pattern on the part of the established residents must be found elsewhere.

The Effects of Environmental Learning upon Spatial Activity Patterns

The objective of this thesis is to explain any observed differences in behavioral characteristics between newcomers and established residents in terms of enculturation which is seen as a process of learning providing opportunities for individual action. In order that observed differences in behavioral patterns might be explained in these terms in the following chapter, it is necessary to discover if and how any differences in the degree of enculturation or environmental learning do exist. It is not an easy task to assess an individual's state of enculturation, or in other words, assess how well he has 'learned' his environment. The author feels that the degree of perceived familiarity with that given environment could be used as a reasonable assessment of enculturation, for familiarization with given phenomena is a direct

TABLE V

FREQUENCY OF TRIPS TO SUB-AREAS IN THE CITY AS ASSESSED BY
NEWCOMERS AND BY ESTABLISHED RESIDENTS: A SPEARMAN'S
RANK CORRELATION TEST FOR ASSOCIATION

Degree of Frequency	Frequency of Responses		Ranking		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	118	114	3	3	0	0
4	128	146	2	1	1	1
3	136	145	1	2	-1	1
2	101	96	5	4	1	1
1	104	76	4	5	-1	1
0	13	6	6	6	0	0
Total						4

$$r_s = +0.886$$

Therefore by comparing r_s to the critical value observed in Table I there is a significant positive association between the number of visits made by newcomers throughout the city and by established residents.

Source: computed by author.

result of a learning process. Other factors do become important in this context and, therefore, will enter into the discussion undertaken in Chapter IV, but it is the purpose of this section to examine the possibility that if differences in urban spatial behavior can be explained in terms of the degree of enculturation, then a significant difference between the degree of familiarity as perceived by newcomers and by established residents might be found. Furthermore, in predicting the direction of this difference, the established resident group would be expected to have a higher degree of familiarity than the newcomer group.

From the survey data, each respondent was asked to assess his familiarity with each of the 12 defined sub-areas in the city. The responses for each sub-area were recorded under the following categories: 5, very familiar; 4, familiar; 3, reasonable; 2, unfamiliar; 1, very unfamiliar; and 0, non-existent. For all newcomers and established residents, a frequency table was constructed showing aggregate responses as shown in Table VI.

A Spearman's rank correlation was used to test for the degree of association between the two sets of scores, and the computed r_s was tested to see if it was statistically significant, (i.e. that the correlation coefficient had a low probability of occurring by chance alone and significantly different from zero). With reference to Table E-I in Appendix E, the computed r_s was +0.32 which might indicate a weak positive correlation, but a score of 0.71 showed that any observed association was insignificant at the 0.05 confidence level, nor even at the .10 confidence level. Therefore, the author was very confident that the correlation factor obtained was not significantly different from zero and the conclusion drawn was that there is no association whatsoever between the perceived familiarity as expressed by newcomers and established

TABLE VI

A FREQUENCY TABLE SHOWING ASSESSMENTS OF PERCEIVED
FAMILIARITY WITH SUB-AREAS WITHIN THE CITY

Degree of Perceived Familiarity	Number of Newcomers Responses	Number of Established Residents Responses
5	80	131
4	118	206
3	144	144
2	121	45
1	129	41
0	8	1

Source: Survey by author.

residents. It may also be seen from this test and from the frequency table that established residents have a far higher degree of perceived familiarity than newcomers, concerning the urban area as a whole.

In order that this observation be strengthened, the degree of perceived familiarity of newcomers and of established residents for each sub-area in turn were compared. Thus, 12 independent Spearman's rank correlation tests were performed each analyzing the hypothesis that there was no significant association between the responses given by both groups of residents.

The frequency tables and test results can be found under Appendix F.⁵⁰ The sub-areas were taken in alphabetical order from sub-area A through sub-area L. The results showed in general that there was no significant association between how the newcomers and the established residents assessed their familiarity with each sub-area. Only in areas D, G, and H was there a positive association which was statistically significant at the 0.05 confidence level. The author believes that this high degree of association was found to be present due to the central location within the city of these sub-areas. Therefore it might be expected that residents from both sampled regions, commonly travel within sub-areas D, G, and H. In all the remaining regions, only in sub-area L was an association evident which although not statistically significant at the 0.05 level, was statistically significant at the 0.10 level. Thus it could be said that a weak positive association did exist, but the probability of this result occurring by chance was below the confidence

⁵⁰The mechanics of Spearman's rank correlation tests have been described in detail and so the author felt it unnecessary to include each of the tests in the main body of the thesis.

level adopted by the author. Only in sub-area I was there any indication of a negative association--a very weak association which by the calculation of a z score proved not to be statistically different from zero. Therefore in all sub-areas, with the exception of D, G, and H, it appeared that no significant association existed between the degree of perceived familiarity as assessed by newcomers and by established residents. Furthermore, it could be said that established residents tended to display a higher level of perceived familiarity with the sub-areas than newcomers.

So far in this chapter, it has been shown that not only does the spatial activity pattern of newcomers and of established residents differ, but so too does the degree of perceived familiarity. As the purpose of this thesis is to explain behavioral differences in terms of the degree of enculturation (hereby taken as being equatable with the degree of perceived familiarity), then it should be found that an individual's spatial activity pattern is highly correlated with his degree of enculturation, and would be a strong case for inferring that this relationship was causal if all other exogeneous factors had been taken into account. Thus, if within either of the two temporally distinct groups of residents, this relationship between spatial activity and enculturation was found to exist then the research hypothesis previously stated that urban spatial behavior is controlled primarily by the degree of enculturation would have been supported statistically. This would open the way for qualitative assessment of the hypothesis based on the literature and on deduction from the results of statistical analyses.

A series of tests were performed which examined the relationship between the degree of enculturation and the frequency of visitation within all the sub-areas, for the total sample population, the newcomer population and the

established resident population. The first test utilized the total sample population who assessed their degree of perceived familiarity and their frequency of visits as being 'very familiar' and 'very regular' respectively (category 5 on both scales) with regard to each of the sub-areas in the city. The frequency table was arranged as shown in Table VII.

By means of a Spearman's rank test for association, a high correlation coefficient of +0.92 was obtained, which was found to be very significantly different from zero at both the 0.05 and the 0.01 confidence level. Therefore, a strong positive association existed between a high degree of perceived familiarity and a high frequency of visits and vice versa within each of the 12 sub-areas as assessed by the total sample population (see Appendix G, Table G-1 for details of the analysis).

The same method was adopted for examining the same relationship within the newcomer group and within the established resident group (Appendix G, Tables G-2 and G-3). The degree of association was found to be equally as strong as that obtained with the total population. The correlation coefficient within the newcomer group was +0.998 and within the established resident group it was found to be +0.88. Both coefficients by conversion to a z score were proven to be highly significant, not only at the 0.05 level, but at the 0.01 level also; demonstrating that a high degree of confidence could be placed on the probability that such an association could not have occurred by chance alone.

To support the results of these analyses, the author conducted three more tests which correlated the number of 'very unfamiliar' assessments with the number of 'very infrequent' assessments (using category 1 on both the perceived familiarity and the frequency of visits scales) within all of the

TABLE VII
 DEGREE OF PERCEIVED FAMILIARITY WITH AND FREQUENCY OF VISITS TO THE
 TWELVE SUB-AREAS ASSESSED AS CATEGORY 5 (VERY FAMILIAR
 AND VERY REGULAR RESPECTIVELY) BY
 THE TOTAL SAMPLE POPULATION

Sub-Areas	Frequency of Very Familiar Assessments (Familiarity Scale)	Frequency of Very Regular Assessments (Frequency of Visits Scale)
A	5	0
B	22	13
C	34	28
D	39	47
E	16	18
F	6	1
G	33	34
H	19	19
I	2	0
J	5	4
K	15	20
L	46	52

Source: Survey by author.

sub-areas for the total sample population newcomers and established residents. These tests were performed in precisely the same manner as in the previous tests (see Appendix G, Tables G-4 - G-6), by the computation of a Spearman's rank correlation coefficient and a conversion to a z score.

For the total sample population, newcomers and established residents, the correlation coefficients were +0.88, +0.85, and +0.71 respectively all of which were significant and again indicating a high positive association between the degree of perceived familiarity and frequency of visits as assessed by residents as being on the lowest level of the scales.

The Effect of Urban Location of Sample Areas

Until this point, the author has primarily concentrated on comparing familiarity and behavioral characteristics of newcomers and established residents in an 'aspatial' context. In other words, the relationship of one sub-area to any other has not been taken into consideration and these regions have been used merely as categories for accumulating a frequency of responses. Naturally, the alphabetical identification of each sub-area does define a spatial entity within the given urban environment which could be used to uncover the presence of any spatial characteristics of perceived familiarity or behavior assessments in either of the temporally distinct resident groups. If the degree of perceived familiarity and/or mobility was seen to be more extensive for one of the resident groups within any individual or group of sub-areas, then observed differences in the degree of enculturation and in the characteristics of the spatial activity pattern in general might be explained in terms of spatial preferences or proximity to the home environment.

If it were found that the sub-areas providing the greatest degree of perceived familiarity and/or of highest mobility differed between newcomers and established residents, it might be inferred that a factor influencing the rate of enculturation was not so much inherent in the characteristics of the individuals, but in the imageability of the environment of those sub-areas concerned. Thus, a high proportion of the established residents might have greater contact with a specific sub-area which is particularly conducive to learning while the majority of newcomers for some reason other than enculturation (perhaps related to the number of children they have) might have a greater contact with a region which is not so conducive to learning. In such a case, a greater degree of perceived familiarity on the part of the established residents might be explained partly in terms of the spatial location of the sub-areas with which most contact is established.

Should the sub-areas be found to be ranked in a similar fashion in terms of degree of perceived familiarity and frequency of visits by both newcomers and established residents, then it could possibly be inferred that the more detailed activity pattern and greater degree of enculturation within the total area on the part of the established residents is a result of constant activity within those specific sub-areas which are also most frequented by and most familiar to newcomers. Hence the spatial element would be held as a constant, while the time factor would remain a variable.

It was hoped, therefore, that no significant difference be encountered between the newcomers' and established residents' rankings of sub-area familiarity and frequency of visits. The frequency of 'very familiar,' and 'very unfamiliar'; 'very regular,' and 'very infrequent' responses were used even though it had already been proven statistically that the magnitude of frequencies had differed using the criteria.

For all four analyses, Kolmogorov-Smirnov tests for significant difference were used, because it is an appropriate statistical measure, as the difference in the magnitude of frequencies between the newcomer group and the established resident group should not enter into the analyses. Frequency tables were constructed, and the test performed as shown in Appendix H. For all four analyses, the computed D statistic was found to be less than the calculated critical value at the 0.05 significance level, indicating that in all cases there was no significant difference between each pair of data scores (i.e., acceptance of the null hypothesis of no significant difference). In fact, all D statistics were also significant at the 0.01 level meaning that a high level of confidence could be placed on the computed result. Each of the other categories of responses might have been tested in a similar manner (i.e. responses of 0, 2, 3, or 4), but the author decided that categories 5 and 1 were the most important and sufficient for the scope of this study.

It was necessary to ensure that the degree of perceived familiarity with the city was not influenced to any significant extent by the spatial location of the sub-areas from which the samples were taken. It might be hypothesized that as sub-area D is closer to the city center and consequently is more centrally located than sub-area L, then residents whether new or established might have a greater opportunity to familiarize themselves with the city. Although it is likely that any lesser degree of perceived familiarity encountered in sub-area L might be compensated by a greater degree found in sub-area D, it could be found that newcomers in sub-area L (which lies on the outskirts of the town) have a very poor knowledge of the urban area which might not be compensated by the degree of familiarity observed by newcomers in sub-area D. In such a case a portion of the difference in perceived familiarity between

all newcomers and established residents might be explainable in terms of locational disadvantages encountered by the one group which may not be correspondingly evident in the other resident group in the same sub-area. It was hoped, therefore, that no significant difference would be found between the degree of perceived familiarity in sub-area D and in sub-area L for each resident group.

The tests which used the characteristics of the total sample population, newcomers and established residents, utilized a Spearman's rank correlation test for association as illustrated in Appendix I. For the total population, a correlation coefficient of +0.88 which was statistically significant at the 0.05 confidence level, was found indicating a high positive association between the frequency of assessments of perceived familiarity in sub-area D, and in sub-area L. Only within the established resident group was a significantly positive association found, with a correlation coefficient of +0.73. Thus it was concluded that when the city was assessed by residents in sub-area D as having a particular degree of perceived familiarity, residents in sub-area L tended to assess in a significantly similar manner.

For the newcomer group, an r_s of +0.59 was not found to be statistically significant from zero, and so no association exists. In this case, it might be expected that residents in sub-area L would have a higher degree of perceived familiarity for being nearer to the city center, they are in a better position to learn. This evidently was not so from the frequency of responses under Appendix I, Table I-2, and the author must conclude that the reverse situation is true. Newcomers in sub-area L learn the characteristics of the region quicker despite their peripheral location.

Finally a test was performed in order to discover if there was any

general differences in the sub-areas visited on a 'very regular' basis (category 5 on the frequency of visits scale), between residents in sub-area D and residents in sub-area L. Due to the difference in spatial location of the two sampled sub-areas, a high (if any) association was not expected. However, excluding the home and adjacent environments, it was possible that all other sub-areas might show evidence of similar rates of mobility by sub-area D residents and sub-area L residents, if some of these other regions have locations within their boundary engaged in specific activities (shopping plaza, university, etc.). From a Spearman's rank correlation test for association, outlines in Appendix J, a correlation coefficient of +0.66 was computed--not a high association but just statistically significant at the 0.05 confidence level with a z score of 2.1. From this result and from the rankings obtained during this analysis, any sub-areas which are ranked equally by the sub-area D and the sub-area L residents can be discovered and explained in the following chapter.

From the latter half of this section, it is evident that the degree of perceived familiarity and the frequency of visits within the urban area were not influenced to any significant extent by the different spatial location of the two sampled areas.

Individual Perceptions of the Respondents

The justification for including this short section in this thesis is based on the hypothesis that an individual who is displeased with his environment is probably likely to be less enthusiastic about becoming familiar with it than a person who holds it in high esteem. If it were discovered that either groups of residents, more specifically the newcomer group, indicated

a low degree of overall desirability with the sub-areas of Manhattan, the differences in the degree of perceived familiarity might be at least partly explainable in these terms.

As outlined in Chapter II, each respondent indicated his reaction on being asked to live in each of the sub-areas on a scale from 0 to 5. The categories available were: (5) very desired; (4) desired; (3) indifferent; (2) undesired; (1) very undesired; (0) don't know. Frequency tables were constructed showing the responses of newcomers and established residents for the city as a whole. A Spearman's rank correlation test was conducted which would indicate the degree of association between the assessments of the two groups.

As shown in Table K-1 in Appendix K, the computed r_s of +0.3 was found to be not statistically significant from zero. Thus, it can be suggested that there is no significant association between the degree of desirability expressed for the city as a region between newcomers and established residents. In addition, from the rankings of degree of desirability responses in the frequency table, it is evident that the established residents assessed the sub-areas collectively as being generally more desirable than did the newcomers.

The author also tested to see if this difference in desirability assessments could be explained in terms of the geographical location of the sub-areas from which the samples were drawn. Thus Spearman's rank correlation test was again utilized in order to examine the possibility of assessments of desirability differing between the sample populations in sub-area D and sub-area L. (See Table K-2 in Appendix K)

The computed r_s showed a very strong positive association of +0.996 which was significant even at the 0.001 level. Thus observed disparities in

desirability assessments between groups of residents can probably be best explained in terms of the differences of resident groups defined by length of resident or spatial behavior, not by groups of residents defined by geographic location alone.

An analysis was performed in order to see if newcomers and established residents tended to assess the same sub-areas as being the most desired places in which to live. Details of the analysis (again by a Spearman's rank correlation) can be found under Appendix K, Table K-3. Complications arose in these calculations, however, for numerous ties existed in the rankings of frequency of responses within each sub-area. Normally, the presence of ties does not significantly affect the computation of the correlation coefficient, but in this case both sets of scores contained too many ties for a correction factor (T) not to be employed.

The observed r_s was +0.66 which at the 0.05 level proved to be significantly different from zero. Therefore, with this indication of a positive association existing between the two sets of score frequencies, one might assume that whenever established residents assess a sub-area as being very desirable, there is a reasonably high probability that newcomers will do likewise.

Finally it was considered that desirability might be explained in terms of frequency of visits to the sub-areas of the city (and hopefully, therefore, in terms of enculturation). Although it might be expected that an undesirable sub-area will not encourage an individual to learn its attributes or opportunities, it is possible that increasing mobility within that sub-area might automatically familiarize that individual with any desirable characteristics which may have gone unnoticed on previous visits. Thus if desirability

could be associated with the frequency of trips within the sub-areas, this hypothesis can be examined in the following chapter.

Four independent Spearman rank correlation tests were conducted, as shown in Appendix L, which obtained the degree of association between these two variables for four sample population groups: (1) all newcomers; (2) all established residents; (3) all residents in sub-area D; and (4) all residents in sub-area L.

The latter two examinations would control for any locational bias which might be encountered between the two sub-areas from which the samples were drawn. In all four tests, a high positive association was found with r_s values of 0.85, +0.95, +0.98, and +0.88 respectively. All four correlation coefficients were highly significant in their difference from zero. It can, therefore, be concluded that a high degree of desirability might be predicted should a high frequency of visits into the sub-areas be observed.

Previous Experience and Socio-Economic Characteristics

A significant positive association between the degree of enculturation and the characteristics of urban spatial activity has already been found and an attempt will be made in Chapter IV to suggest that a high degree of causality exists between them. The validity of this suggestion will be seriously contested, however, if it is discovered that an attribute of past experience or socio-economic status of the sampled population also has a significant association with the characteristics of urban spatial behavior. For instance, if a strong relationship is discovered between an individual's age and the number of activities he performs in a spatial context, it might be inferred that spatial behavior is influenced, not primarily by the length of residence within that given area, but by the age of the individual. Furthermore, it

might be found that individuals in the upper age groups have a more detailed activity pattern than those in the younger age groups. In this case the observed difference in the characteristics of urban spatial behavior between newcomers and established residents would probably be explainable if the average age of the established resident group is significantly higher than the average age of the newcomer group.⁵¹ Thus length of residence within a given area might be influential only to a limited extent in explaining characteristics of urban spatial behavior.

In order to support the research hypothesis, it was necessary to control for all attributes of past experience and socio-economic status. The variables considered most likely to exert a strong influence on urban spatial behavior were: sex, age, marital status, number of children in the family, relationship to the head of the household, educational status, occupational status, primary means of transportation within the city, number of trips made to points outside the city, years lived in Kansas, location of previous place of residence, population of previous place of residence, number of visits made to Manhattan before taking up residence, and reasons for moving to Manhattan.

The examination of the effects of these variables was conducted in two stages. First, tests of correlation between those variables which could be expressed as continuous data; second, tests for the degree of association of variables which could only be assessed on a nominal scale between the

⁵¹There might be a valid case for assuming that the average age of established residents is likely to be higher as individuals tend to be highly mobile until their early thirties. At this point, they tend to establish permanent residence. This opinion is purely suggestive on the part of the author, and is not supported or rejected by any previous research.

newcomers and established residents. Thus, the former series of tests were of a parametric nature, while the latter which used frequencies of the responses rather than the exact scores (the raw data) required the use of non-parametric techniques.

On the interview survey, each respondent was asked to indicate his precise age, number of children, years of residence in both Manhattan and Kansas; then to assess as accurately as possible the number of trips made to points outside the city in the course of a typical week, and the number of visits made to Manhattan before taking up residence.⁵² In addition, the author obtained the size of the previous place of residence in terms of the total population for each individual.⁵³ Thus the variables to be assessed against some measure of urban spatial behavior for the total sample population were: Variable 1, age; Variable 2, number of children; Variable 3, years of residence in Manhattan;⁵⁴ Variable 4, years of residence in Kansas; Variable 5, number of trips made to points outside the city in a typical week; Variable 6, number of times visited Manhattan before taking up residence; and Variable 7, population of previous place of residence.

⁵²The procedure for asking and recording this information has been described in detail in Chapter II.

⁵³City population figures were obtained from the World Almanac and Book of Facts, 1972; edited by Luman H. Long, New York World Telegram and the Sun, Scripps, Harvard, New York, New York.

⁵⁴This variable was not classified earlier as an attribute of past experience or socio-economic status, for it is the factor the author has tested, and hopes to use in order to explain the characteristics of urban social behavior. It was used in this analysis, however, to strengthen previous tests of association between enculturation and spatial behavior, and in order that comparisons could be made between the effects of this variable and the effects of the other six variables.

The attribute of urban spatial behavior chosen for the analysis was the number of independent and different locations visited by each individual within the course of a typical week. This data set was identified as Variable 8, and was considered to be the dependent variable in the multiple regression analysis employed.

The burden of performing this test was eased by using a computer program which had been written specifically for conducting a multiple regression analysis.⁵⁵ By using this procedure a coefficient of correlation could be obtained for all seven independent variables assessed together against the dependent variable. In addition each independent variable was correlated with the dependent variable individually so that eight correlation coefficients were obtained when assessing the attributes of the total population. Finally, the procedure was repeated in order that the seven independent variables could be assessed against the dependent variable within each of the two resident groups (newcomers and established residents). Although no significant correlation may be discovered between age, for instance, and the dependent variable for the total population, it is possible that within one group these two variables have a positive relationship while in the other group a negative relationship exists. When both groups are assessed together as the total population, the significance of both correlations is eliminated. Therefore, this latter analysis will uncover any between-group disparity that may

⁵⁵The routine used was a BMD03R Multivariate Analysis Package to be found in the UCLA Bio-medical Computer Manual. For further details see BMD Bio-medical Computer Programs, W. J. Dixon (ed.) University of California Press, Berkeley, Calif., 1970, pp. 258-269.

exist.⁵⁶

The computed correlation coefficient representing the degree of association between all seven independent variables with the dependent variable was +0.3977 which would indicate a weak positive relationship. However, the F value was also calculated which assessed the statistical significance of this coefficient. The null hypothesis was that a value this large could have been obtained by chance alone where no linear association in the population actually exists.

With reference to a table of F-values,⁵⁷ when all independent variables are assessed collectively at the 0.05 significance level (i.e. with 91 degrees of freedom), in order to reject the null hypothesis, the computed F-value must exceed 2.20. Therefore, the calculated F-value of 8.3294 clearly leads to the rejection of the null hypothesis, and a high level of confidence can be placed on the conclusion that there is a relationship between the variables. However, this relationship for all intents and purposes is not very strong. Although it can be suggested that some degree of urban spatial behavior for the total sample population can be explained in terms of those particular attributes of past experience and socio-economic status tested, the degree

⁵⁶The program used produced much more information than was necessary for this study. Apart from computing the correlation coefficients, the BMD03R routine calculated the estimate of variance, the standard error of estimate, the intercept ('A' value), performed an analysis of variance, (to mention but a few) for each correlation performed. Had this test been of vital importance to the conclusions of this research, this supplementary information could have been effectively utilized, but the author was confident that the computed coefficients of correlation together with the corresponding F values were sufficient for the purpose of this thesis.

⁵⁷Blalock, H. M. Social Statistics (New York: McGraw-Hill, 1960), pp. 453-55.

of association is not strong enough for the author to conclude that this is the most important factor. In fact he would expect that background has a determining effect on spatial behavior to a limited extent.

Table VIII shows the results of correlating each independent variable in turn with the dependent variable. It can be clearly observed that only the length of the residence period in Manhattan is significantly correlated with the dependent variable (+0.9337) although the coefficients of all attributes with exception of Variable 6 (population of previous place of residence) are shown to be statistically significant by the corresponding F-values. One might expect, association between the number of times Manhattan was visited before residence was taken up and the number of locations visited within the city was positive and the most significant correlation observed.⁵⁸ However, a correlation coefficient of 0.1023 which was less than the critical value showed that the degree of association was not statistically different from zero. Therefore this condition did not hold true.

When the procedure was repeated in its entirety in order to examine other sample associations, no major disparity from the analysis of the total population was discovered as shown in Table IX. It is clear that the degree of association between the length of the period of residence in Manhattan and the number of locations visited within the city was insignificantly stronger in the established resident group than it was in the newcomer group (+0.9448 and +0.9226 respectively). This, however, is the only significantly high relationship within either group although associations of certain other

⁵⁸This situation might be expected for if enculturation does determine the degree of detail in urban spatial behavior, then those individuals who have visited Manhattan on previous occasions will have gained knowledge of the city's form before establishing residence.

TABLE VIII

CORRELATION MATRIX SHOWING THE DEGREE OF INDEPENDENT ASSOCIATION
BETWEEN SEVEN VARIABLES REPRESENTING INDIVIDUAL BACKGROUND
AND THE NUMBER OF LOCATIONS VISITED WITHIN THE
CITY IN A TYPICAL WEEK

	Independent Variables							Dependent Variable
	1	2	3	4	5	6	7	8
I N D E P E N D E N T	1	2	3	4	5	6	7	8
V A R I A B L E	1	2	3	4	5	6	7	8
S	1	2	3	4	5	6	7	8
1	1.0000	.4654	-.1440	.2579	.4205	.3944	.2619	<u>.5216</u>
2	.4654	1.0000	.1113	-.1213	.3200	.4756	-.3722	<u>-.3914</u>
3	-.1440	-.1113	1.0000	-.1575	-.1999	-.4843	-.2838	<u>-.1652</u>
4	.2579	-.1213	-.1575	1.0000	.5381	-.9287	-.2081	<u>.9337</u>
5	.4205	.3200	-.1999	.5381	1.0000	-.8132	-.2089	<u>.5875</u>
6	.3944	-.4756	-.4843	-.9287	-.8132	1.0000	-.1627	<u>.1023</u>
7	.2619	-.3722	-.2838	-.2081	-.2089	-.1627	1.0000	<u>.5479</u>
Dependent Variable	8	<u>.5216</u>	<u>-.3914</u>	<u>-.1652</u>	<u>.9337</u>	<u>.5875</u>	<u>.1023</u>	<u>.5479</u>
	8	<u>.5216</u>	<u>-.3914</u>	<u>-.1652</u>	<u>.9337</u>	<u>.5875</u>	<u>.1023</u>	<u>.5479</u>
	8	<u>.5216</u>	<u>-.3914</u>	<u>-.1652</u>	<u>.9337</u>	<u>.5875</u>	<u>.1023</u>	<u>.5479</u>

F-VALUES CORRELATIONS COEFFICIENT FOR EACH INDEPENDENT VARIABLE
ASSESSED AGAINST THE DEPENDENT VARIABLE
(DEGREES OF FREEDOM = 98)

1	2	3	4	5	6	7
36.25	29.00	38.64	655.00	17.10	1.02	41.51

Critical Value at the 0.05 Level in Each Case = 3.96

N. B. correlation coefficients used in this thesis are underlined.

Source: Computed by author.

TABLE IX

COMPARISON OF CORRELATION COEFFICIENTS OBTAINED WITHIN BOTH RESIDENT
GROUP SAMPLES WHEN SEVEN VARIABLES REPRESENTING INDIVIDUAL
BACKGROUND DATA ARE CORRELATED WITH THE NUMBER OF
LOCATIONS VISITED WITHIN THE
CITY IN A TYPICAL WEEK

Variable	Newcomers		Established Residents	
	Coefficient	F Value	Coefficient	F Value
Multiple Correlation	.4166	19.700	.3783	16.199
1	.4320	22.310	.6112	57.832
2	-.4068	19.233	-.3760	15.979
3	-.1664	2.762	-.1640	2.551
4	.9226	554.500	.9448	806.235
5	.2765	8.029	.4985	32.078
6	.1046	1.072	.1000	.979
7	.5560	42.781	.5398	39.888

Degrees of Freedom for Multiple Correlation = 92

Degrees of Freedom for Simple Correlations = 98

Critical Value at 0.05 Level for Multiple Correlation = 2.20

For Simple Correlation = 3.92

Source: Computed by author.

independent variables with the dependent variable tended to fluctuate considerably from the correlations observed previously. The multiple correlation coefficient for the newcomer group was slightly larger than for the established resident group. This indicates urban spatial behavior is no more associated with background attributes within this former group. Neither coefficient represents a strong correlation.

In assessing the effect of other background attributes for which continuous data could not be obtained, a series of Kolmogorov-Smirnov two sample tests were conducted. The D statistic computed could ascertain with the greatest degree of accuracy that was possible for a non-parametric statistical test, the degree of association between the newcomer sample and the established resident sample regarding any remaining attribute of past experience and socio-economic status that might be likely to be influential. The four tests performed use the following variables: Variable 1, educational status; Variable 2, occupational status; Variable 3, location of previous place of residence; and Variable 4, reasons for moving to Manhattan.

As in previous Kolmogorov-Smirnov tests employed in this study, frequency tables were constructed for each test showing the responses of both newcomers and established residents for the variable concerned. In order to control for the large sample size in each analysis, a critical value for significance at the 0.01 confidence level was calculated against which the computed D statistic could be assessed for either support or rejection of the null hypothesis.⁵⁹ The tests are shown in detail in Appendix M. In all

⁵⁹The 0.01 significance level was chosen as many of the categories for each variable contained a score of zero. The author wished, therefore, to place a high level of confidence in his result.

four analyses, the null hypothesis was accepted. The conclusions drawn from the results indicate that the composition of both the newcomer and the established resident samples are similar with regard to educational status, occupational status, location of previous place of residence, and reasons for moving to Manhattan. Within either sample group there is a degree of diversity especially in the Variable 3, but this degree of diversity is consistent for both sample groups.

Upon constructing frequency tables for sex, marital status, and primary means of transportation with Manhattan, it was found that such a significant association existed between the two sample groups that statistical analysis was unnecessary. Within the newcomer sample, 21 males and 29 females were interviewed, whereas 21 males and 28 females were surveyed within the established resident group. Within both sample groups, all individuals were married and indicated their primary means of transportation to be the private automobile.

The structure of each sample concerning these variables were so similar that observed differences in urban spatial behavior between the two resident groups could not be explained in terms of sex, marital status, or primary means of transportation within the city.

The analyses performed in this final section of the chapter have been extensive, primarily because urban spatial behavior might be attributable to any number of unrelated variables. A high degree of association between attributes of enculturation (incorporating mainly measures of perceived familiarity over a period of time) and the degree of detail within spatial activity patterns has been established. Furthermore, any expected influence by a number of external variables has been statistically shown to be minimal. From

these results a series of statements can now be made about the effects of enculturation upon the characteristics of urban spatial behavior.

CHAPTER IV

EVALUATION OF FINDINGS

From the data analysis outlined in Chapter III, a significant correlation exists between attributes of enculturation (i.e., the degree of perceived familiarity) and urban spatial behavior. At this point, however, the author is not in a position to be able to suggest that this association is causal without further investigation. This chapter will endeavor to explore the possibilities of a causal relationship existing between these two variables by examining any underlying implications arising from the data analysis. Where necessary, reference is made to previous literature concerning enculturation and spatial adaptation to new environments. This investigation will be conducted in four major stages.

Stage I. A description of the observed characteristics of urban spatial behavior within the study region is presented. Any differences in the spatial activity patterns between newcomers and established residents will be highlighted, and explanations given. General statements may then be formulated concerning expected changes in spatial behavior as the length of the residence increases.

Stage II. A discussion of the importance of background attributes is given to illustrate: (1) their importance in explaining spatial behavioral characteristics; and (2) their effect in explaining observed differences in spatial activity patterns should the selected samples indicate any biases within either the newcomer or the established resident group.

Stage III. An awareness factor is introduced to illustrate how the

degree of perceived familiarity with spatial activities and locations within the city is governed primarily by the length of the residence period (i.e., the process of enculturation). Attention will then be directed to determining how these attributes of enculturation can be used in explaining the characteristics of urban spatial behavior.

Stage IV. A discussion of the importance of individual and group space-preferences is offered which assumes that these are formulated on the basis of knowledge or partial knowledge within a given area. Thus, the observed differences in spatial behavior between the two resident groups might be explained to an extent in terms of the degree of expressed satisfaction (or desirability) with the city or with the sub-areas. Individuals are more likely to travel, by choice, within sub-areas which are perceived as being desirable rather than in sub-areas which are perceived as being undesirable. Thus the validity of the research hypothesis will have been assessed in a completely spatial context with all possible factors being weighed.

Observed Characteristics of Urban Spatial Behavior

In as much as visits to independent and spatially distinct locations within an area is an important element in the definition of spatial behavior, the number of these points visited in a typical week should be a clue to the complexity of an individual's spatial activity pattern. Thus it may be assumed that the greater the number of independent locations visited, the more detailed the activity pattern becomes.

Within the total sampled population, the average number of visited locations in a week's period was found to be slightly over 12, but a great disparity was encountered between the two resident groups. The newcomers, on average,

visited 6 locations while the average established resident visited 18 locations as shown in Table III on page 44. Among the 50 newcomers sampled, only 7 indicated that they frequent more than 12 locations within a week, and no individual visits more than 20. Among the 49 established residents sampled, only 3 indicated that they visit less than 6 points within a typical week, while 43 persons stated that they visit more than 12.

It is clear that the established residents possess a far more detailed activity pattern than the newcomers, but the validity of this statement might have been weakened considerably had not the assumption outlined on page 45 in Chapter III been rigorously tested. It was suggested that if the established resident group tends to have a higher rate of intra-urban mobility, the probability of their visiting more independent and spatially distinct locations than the less mobile newcomers would be greater. However, the empirical findings leading to such an assumption would still not weaken support of the research hypothesis. Instead, it would merely suggest that mobility rates (i.e. number of trips made in a given time period) must be considered as another variable in explaining how enculturation affects urban spatial behavior. It was found that mobility rates within the sub-areas of the city are similar for both resident groups as shown by the analysis under Table IV on page 46. In addition the multiple regression analysis outlined in Table VIII on page 69 indicated that a very strong relationship exists between the number of independent locations visited and the length of the period of residence for the urban population as a whole. The positive correlation coefficient of 0.9337 suggests that as the residence period increases, so too does the number of locations visited within a typical week. By the nature of this analysis we can predict, with a high level of confidence, that

the individual who has resided in Manhattan for 10 years will have a considerably more detailed activity pattern than the 2-year resident. Upon re-examining the information obtained through the interview surveys, the 14 individuals within the established resident group who indicated that they visit more than 20 independent locations within a typical week have, without exception, lived in Manhattan for more than 10 years. From the 26 respondents who have lived in Manhattan for over 10 years, only 6 indicated that they visit less than 13 different points over the same period. It must be mentioned that of these 6 respondents, 4 were over the age of 60 years. Restrictions on mobility due to age would for these persons, possibly explain the absence of a more complex spatial activity pattern.

Thus it may be accepted with a high level of confidence that established residents, by virtue of their longer period of residence, possess a more complex spatial behavioral pattern than newcomers. In comparing the spatial characteristics of the activity patterns of both resident groups, two sub-areas in the city tended to be visited on a far more regular basis by newcomers (sub-areas F and G). Established residents on the other hand tended to visit sub-areas B, K, and L on a more regular basis than newcomers. Detailed explanations for these disparities are unwarranted in this chapter; but as mobility rates have been seen not to differ between the two sampled groups, there appears to be a spatial bias within both resident groups toward sub-areas where trips are more frequently made. The five sub-areas concerned are those within which residents from both sampled regions (D and L) are most likely to travel with the greatest degree of frequency, (due primarily to their geographic and functional locations). It must be concluded, therefore, that this recognizable difference in spatial behavior is probably more significant

than superficial analysis suggests.

A strong relationship (which can be assumed to be causal) exists between the length of the period of residence in a given urban area and the spatial behavioral pattern. In attempting to explain why this relationship does exist, the literature may provide support.

Lee, in his attempt to define 'neighborhoods,' observed that:

Newcomers become mobile quite quickly at a low level, but thereafter they remain more or less static for about five years before their involvement begins to increase steadily.⁶⁰

The involvement he referred to concerned spatial activities. He states that a newcomer establishes his spatial behavioral pattern in certain areas, which changes only after a period of time has elapsed. The individual can later re-orient himself toward another region in which to concentrate the performance of activities. Lee in fact only confirmed the conclusions of Gaston Bardet⁶¹ which were based on the study of some 60 rural and urban places in Europe and Africa. Bardet's study was again basically for the purpose of defining neighborhoods as seen by the inhabitants of an area, but he did recognize that a distinct difference existed in the amount of detail expressed by long-term and new residents when discussing their patterns of behavior.

Georgia Zannaras gathered similar data in a small area in Clintonville, Ohio,⁶² and subjected them to factor and cartographic analysis. She found

⁶⁰Lee, Terence, "Urban Neighborhood as a Socio-Spatial Scheme," Human Relations, (1968), Vol. 21, p. 264.

⁶¹Bardet, Gaston, "Social Topography: An Analytico-Synthetic Understanding of the Urban Texture," Studies in Human Ecology, ed. George A. Theodersen, (Evanston, Illinois: Row, Peterson, and Company, 1961), pp. 370-83.

⁶²Zannaras, George A. An Empirical Analysis of Urban Neighborhood Perception, an unpublished Master's Thesis, Ohio State University, (Geography), 1968 cited in Saarinen, Thomas F. Perception of the Environment, Association of American Geographers, Resource Paper No. 5, 1969, p. 12.

that the summation of the individual activity spaces produced a common spatial area where she observed distinct differences in the complexity of behavior within all neighborhoods by classes of individuals. One of the criteria she used was the length of residence period. Saarinen, in his work Perception of the Environment explains the extent and differentiation of behavior in terms of: ". . . origins and destinations, patterns of locomotion and occupance and usage of various places"⁶³ Although he considers the spatial elements of behavior, he does not include any discussion of the time dimension.

Barker and Barker,⁶⁴ on the other hand, in their study of psychological ecology of old people in Kansas and in Yorkshire suggest that detailed behavioral patterns vary with life stages, which they define not only in terms of age, but with length of residence in a given area. In this study, community activity systems were compared in terms of behavioral settings which for the established residents and/or the elderly in these towns most commonly consist of streets and sidewalks, various stores, shops, offices, farms and pubs. In each of these settings, certain types of behavior occur which result from the total complexity of physical space and conditions, individual background, and also the time period involved in becoming acquainted with the areas. Thus despite Barker and Barker dealing primarily with 'personal space,'⁶⁵ rather

⁶³Saarinen, Thomas F. Perception of the Environment, Association of American Geographers, Resource Paper No. 5, 1969, p. 12.

⁶⁴Barker, Robert G. and Barker, L. S. "The Psychological Ecology of Old People in Midwest Kansas and Yoredale, Yorkshire," Journal of Gerontology, Vol. 16, No. 2, (April 1961), pp. 144-149.

⁶⁵'Personal Space' is a concept developed by Robert Sommer in Personal Space: The Behavioral Basis of Design, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969), where an emotionally charged zone around each person sometimes described as a soap-bubble, helps to regulate the spacing of individuals, p. vii.

than macro-space, the principles behind utilizing space for action, they suggest, are similar for both magnitudes.

In Klein's delimitation of the town center at Karlsruhe,⁶⁶ he used a pack of cards with places and roads marked on them. The subject picked out those he considered to be located in the town center. Although there was a coherent central area consistently perceived, many interesting variations appeared in the extent of the area. More established residents indicated a broader area than newcomers; and male/female and socio-economic differences were also noted. However, Klein states that the areas included by the residents as being in the town center were chosen not so much on the basis of familiarity, but whether or not they were an integral part of the respondents regular spatial activity pattern. If a point were within the behavioral field of an individual, the extraction of its spatial location was fairly accurate. Conversely, if it were not within the scope of spatial behavior, errors were more likely to be encountered, even though the individual concerned stated that he was very familiar with its location and function. Klein noted that the most accurate responses came from long-term residents. The major implication drawn from this study is that newcomers tend not to have such a complex activity pattern as the long-term residents, therefore they are more likely to locate points inaccurately.

It appears that the rather scarce literature on this subject supports the statement made in this section regarding the relationship between the years of residence within a given area and the complexity of the individual's

⁶⁶Klein, Hans-Joachim, "The Delimitation of the Town Centre in the Image of Its Citizens," Urban Core and Inner City, ed. E. S. Brill, (Heiden, Netherlands: 1967), pp. 286-306.

behavioral patterns. The literature which covered empirical analyses of differing types attempted to explain the reasons behind the degrees of association between these two variables encountered within their specific case-study regions.

Importance of Background Characteristics

This section will overview background characteristics of the sampled population in order to support statements made in Chapter III, concerning the representativeness of the individuals sampled. Preliminary analysis showed that no significant biases were encountered in the survey samples regarding previous experience and socio-economic status.

As we might expect, Manhattan's population is characterized by a large proportion of persons in the younger age groups.⁶⁷ Consequently, 61 of the 99 individuals sampled were under 35 years of age. Within the newcomer group, 31 out of the 50 interviewed were under 35, while of the 49 in the established group, the number of under-35 year olds totaled 30.

Since age was related to migration, and also to many behavioral attributes which were compared to the length of residence, it was fortunate that no significant difference between newcomers and established residents was found. A significant correlation between age and spatial behavior was obtained in the analysis which favored the upper age groups. Within each of the two sampled sub-areas, a distinct difference in age structure was found.

⁶⁷This has been implied earlier in the study when it was suggested that many persons attended the university and associated colleges. Also the presence of military personnel, many of them young draftees at the Fort Riley complex ensures that the mean age for the city is kept down.

Residents in sub-area L tended to display a higher mean age than in sub-area D. In addition, the 4 individuals sampled who were over 60 years of age live in sub-area L. One of these individuals, surprisingly enough, was a newcomer, not only to Manhattan, but to Kansas.

With regard to the places from which the recent migrants to the city moved, 68 individuals came from within the Midwest states; 48 of these from other parts of Kansas. The individuals from outside the Midwest generally were in the younger age groups, while the majority of the over 35 residents came from other parts of Kansas. Naturally, some of the established residents (7 in fact) were native of Manhattan so a previous place of residence could not be recorded.

The size of previous places of residence varied widely from the 16 persons who came from small Kansas communities of less than 3,000 inhabitants to 4 who moved directly from New York City. Several other large metropolitan areas were listed--Chicago, Los Angeles, Boston, Philadelphia, but the larger Kansas cities of Salina, Topeka, Wichita, and especially Kansas City were well represented. Six of the interviewees migrated to Manhattan from regions outside the continental United States (Canada, Hawaii, Australia, Ireland, Bolivia, and England). All these individuals were by this time established. Appendix M, Table M-3 shows that no significant difference was discovered between the two resident samples concerning the location of the place of previous residence. Despite the fact that there was a great deal of variation within each sample group, the population of the previous place of residence had only a weak and insignificant effect on characteristics of urban spatial behavior. Thus it was considered irrelevant if one sample group was biased toward an urban or rural background.

No individual contained in the sample indicated that he had failed to graduate from high school. Eleven newcomers had post-graduate degrees, while 12 established residents had also reached this level of educational status. Appendix M, Table M-1 shows that there was no significant difference found between the educational attainments within the resident samples.

As a further comment, in sub-area D, the residents on the average have a higher educational status than individuals in sub-area L. Apart from the individuals with post-graduate degrees (12 in sub-area D and 11 in sub-area L), sub-area D contains more college graduates than sub-area L (30 and 9 respectively). Individuals in the upper-age group tended to possess a slightly higher educational background than persons in the younger age groups.

Regarding marital status, no unmarried person was interviewed. This situation came about, purely by chance--it was not predetermined or anticipated. Although this may prevent the author from examining spatial behavioral patterns of all types and classes of individuals within Manhattan, the samples have been shown to be representative of the total population. This implied contradiction could probably be explained in terms of the very few non-student, non-military unmarried householders living in the two sampled sub-areas.

Most studies on urban growth suggest that the principal reasons for migration are economic, as exemplified by Gulick, Bowerman, and Back.⁶⁸ The data from the interview surveys illustrated in Appendix M, Table M-4, does show that many newcomers migrated to Manhattan for reasons attributed to marriage (16). Most established residents who were non-natives (37) and

⁶⁸ Gulick, Bowerman, and Back, op. cit., p. 321.

newcomers (also 37), however, did move to Manhattan for economic (employment) reasons. Only three individuals from the sampled population stated that their move was for family reasons other than marriage. No one attributed their migration to Manhattan in terms of pleasure, retirement, or choice. Naturally, six established residents did not respond to this question as they were born in Manhattan and have lived there ever since. The reasons for coming to Manhattan can be seen to be broadly similar between the two resident groups, again indicating that observed differences in spatial behavior cannot be explained in terms of migration motivation.

Table M-2 in Appendix M shows that no significant difference between the samples is encountered regarding occupational status. More than half of the interviewees were either employed in education or were non-working housewives. The greatest disparity, however, occurred when 9 government workers were found to be newcomers as opposed to only 1 who was an established resident.

The variable producing the greatest disparity was the number of trips made to points outside Manhattan in a typical week. Only 4 residents from the established resident group visits more than 2 external locations, while 19 newcomers visit more than this number. Of these, 2 frequent more than 13 locations which would indicate perhaps that they have a high degree of contact with an area outside Manhattan. Perhaps their place of employment is outside the city limits, or friends and family live in a nearby town. Whatever the reason may be, a distinct difference is encountered between the two resident sample groups. The regression analysis on page 68 does indicate, however, that the frequency of trips to points outside Manhattan are not significant in explaining characteristics of urban spatial behavior. The negative correlation coefficient obtained does suggest that as the number of trips outside

the city increase, the number of locations frequented within the city decrease.

Due to the fact that the majority of residents came from other parts of Kansas or the Midwest, many had visited Manhattan before migrating. Obviously individuals who had traveled over the furthest distance had less chance of visiting the city on previous occasions. Thus the newcomers group had in general not visited Manhattan previously to the same extent as the established residents. Although the analysis in Table VIII on page 69 does show that a positive association between frequency of visits and characteristics of urban spatial behavior, this factor was found not to be significant for only a handful of individuals had visited Manhattan several times.

The established residents in general tended to have the greater number of children in the family. Only 17 respondents of those sampled had no children. This factor was seen not to be very significant in explaining urban spatial behavior, though a negative coefficient of $-.3914$ shows that the number of visited locations within the city decreases as family size becomes larger.

Years of residence in Kansas varied between the two groups as established residents indicated that they had lived in Kansas for more years than newcomers. This result was anticipated simply because the established residents have lived in Manhattan longer. In addition, many newcomers came from outside the Midwest. The regression analysis in Table VIII showed that this factor was the second most important (after years in Manhattan) in explaining urban spatial behavior. With a coefficient of $+0.5875$, it was felt that the coefficient was not significant enough to indicate that this factor played a major role in determining spatial activity patterns except that in many cases it was linked directly with the length of the residence period within Manhattan.

*Not used
in Table
says*

Thus it does contribute to the degree of enculturation which is discussed in the next section.

Chapter II pointed out that no analysis was performed on the differences in means of transportation and household status (relationship to the head of the household) between samples as clearly no disparity existed. This section has dealt with those attributes of background and past experience which might have some bearing on the relationship between enculturation and urban spatial behavior. There are no significant disparities between the newcomer and established resident groups sampled, so any observed difference in either enculturation or urban spatial behavior cannot be explained in terms of background characteristics. Rather, these attributes can be used to account for general behavioral characteristics observed in the total population.

The one background attribute that has not yet been examined in the section, is that of years of residence in Manhattan. It was felt that since this characteristic represents the basis for the assessment of the research hypothesis, it should be discussed alongside attributes of enculturation where any significant relationships could be detected and explained.

Enculturation and Characteristics of Urban Spatial Behavior

The purpose of this section is to explore the validity of the suggestion that the length of the residence period within an urban environment determines the degree of awareness or familiarity perceived by an individual. Should this statement be justified, then it could be confidently assumed that differences in spatial behavior are primarily explainable in terms of awareness or perceived familiarity over a time period (i.e., enculturation).

From calculations reproduced in Appendix E, a significant difference was found between the responses of perceived familiarity for newcomers and

established residents. The computed r_s was rejected at the 0.05 level on the grounds that it was not significantly different from zero (no association). Thus when newcomers assess a particular sub-area as being very unfamiliar, there is no guarantee that an established resident will respond in a similar manner. In fact, established residents tend to have a higher degree of perceived familiarity than newcomers. Further examination reveals there is no significant association between the degree of perceived familiarity as assessed by newcomers and established residents for each of the 12 sub-areas individually, with the exception of sub-areas D, G, and H. Thus it may be suggested that established residents show a higher degree of perceived familiarity, at least in 9 of the sub-areas, because they have had a longer period of time in which to become familiar with the opportunities available in those environments.

Much of the justification for explaining the degree of perceived familiarity in terms of length of residence can be obtained from previous research findings. Unfortunately, research into this subject is very limited, especially within the discipline of geography. Most of the literature reflects empirical studies in perceptual psychology, sociology or planning.

Clarence Irving Lewis attributes the values present in any population as resulting from discovery and control over a period of time (i.e. learned), ". . . for animal learning is itself something which requires repetition."⁶⁹ In his book, Environment and Peoples, Philip Wagner devotes a chapter to environmental learning.⁷⁰ In the discussion of learning in a spatial context,

⁶⁹Locke, op. cit., p. 66.

⁷⁰Wagner, op. cit., pp. 63-81.

Wagner supports the idea that familiarity is determined by the amount of time involved. His example is the school and home which are considered by most child psychologists to be the institutions best served for enhancing environmental learning. This is because the child spends the most time at these locations, and daily activities are repeated day after day. By repetition, the child becomes capable of eliminating unfavorable modifications to behavior. Thus, only over a period of time can the human mind develop this ability to accept and reject relevant information.

In a study conducted in Durham and Greensboro, North Carolina, of the attributes and participation of newcomers to the areas concerned, Gulick, Bowerman, and Back discovered that most new migrants took quite some time before actively participating in community life.⁷¹ The reason for this, the authors concluded, was the total lack of awareness on the part of the newcomers, of the opportunities for community participation. Once individuals had familiarized themselves with the spatial (as well as the institutional) characteristics of the regions concerned, participation grew stronger.

Thus the literature outlined both in Chapter I and in the previous paragraphs show quite distinctly that the process of familiarization is dependent upon several factors, such as environmental structure or past experience. These literary sources do all agree, however, that the most important variable in explaining enculturation is the time factor involved.

Don Locke explains that knowledge is acquired in a block-building process, with the information contained in each block adding to previously digested

⁷¹Gulick, Bowerman, and Back, op. cit., p. 357.

knowledge.⁷² Once knowledge or familiarity has been gained about a specific area, only then can action be initiated. Thus, one would expect a strong association to be evident between the length of the residence period and the frequency of visits to sub-areas within the city of Manhattan.

Tables in Appendix G illustrate in several ways, the relationship between familiarity and frequency of visits. All the tests showed that within the total sampled population there was a very strong association between these two variables. Whenever the degree of perceived familiarity was assessed as being low, it was found that the frequency of visits to sub-areas would be assessed as low, and vice versa.

This appears to contradict earlier findings which showed a significant difference between familiarity as assessed by newcomers and by established residents. A significant association between the mobility (frequency of visits) of the two resident groups also was present. Within the city as a whole, it would be difficult to establish that enculturation was determined by mobility rates alone. Frequency of visits can only be a part of the enculturation process. An individual can become familiar with a region by way of advertisements, maps, photographs, and personal communication without even visiting the area. This would explain why the perceived familiarity between the two groups is seen to be different whereas the mobility rates appear similar. Thus, if familiarity is to be explained, all important factors must be discussed. Furthermore, frequency of visits is a vital clue to the degree of perceived familiarity and to the spatial behavioral pattern of an individual, but in neither case does it present a complete explanation.

⁷²Locke, op. cit., p. 206.

In Chapter III several tests were made in order to discover if the location of the sampled sub-areas with relation to all other sub-areas could account for the higher degree of perceived familiarity and greater detail in the spatial activity pattern encountered in the established resident group. Tests for differences in the assessments of perceived familiarity between individuals in the sub-areas are reported in Appendix I. The Tables show total responses for the city as a whole by the sampled population, newcomers and established residents respectively. In Appendix J, test results are displayed for differences within each of the sub-areas between respondents in sub-area D and in sub-area L. The results of these four tests indicate there is a significant association between the responses of familiarity by individuals in sub-area D and in sub-area L. One can assume that the observed difference in the degree of familiarity with the city and the sub-areas between the two resident sample groups was not caused by their differing locations within the city.

No test of association was performed for frequency of visits by the sub-area sample groups as it has now been established that this variable is no longer considered important in explaining characteristics of enculturation. However, differences in satisfaction or desirability between sampled sub-areas was examined in a similar manner. A very significant correlation coefficient was obtained indicating that there was a strong association between the degree of perceived familiarity for both residential groups. In conclusion, no evidence was produced that suggested that biases existed within the samples due to the spatial location of the selected sub-areas for the interview survey.

Spatial Preferences

Much consideration has been given to the development of a process of

enculturation and its major component factor--perceived familiarity. The initial link between enculturation and spatial behavioral characteristics has still not been fully realized. This section will endeavor to explore the notion that familiarization leads to an orderly spatial behavior based on the degree of satisfaction or desirability perceived by the individual. Naturally, some regular activities have to be performed at set locations regardless of whether the individual is completely satisfied with his environmental setting. Employment, education, long distance transportation, for instance, may require the individual to visit the one and only location available for each of these respective functions. On the other hand, most common activities which require movement into a region outside the home environment can be performed at alternative locations in an urban area such as Manhattan. Although time and cost factors must be taken into account, an individual is more likely to choose location in an area which he sees as desirable or pleasant rather than in an area he perceives as being undesirable or unpleasant. In examining the degrees of satisfaction with the sub-areas of Manhattan as expressed by the sampled population in both resident groups, another important factor explaining spatial behavioral characteristics may be discovered. If a newcomer perceived Manhattan's sub-areas as being very undesirable places (excluding possibly the home environment), it may be proposed that the lack of detail in his spatial activity pattern is because this resident is not motivated to learn the available opportunities. If he has not learned the available opportunities, then from previous analysis, his range of activity choice is lessened and his behavioral pattern will probably be concentrated within a very few locational points in the city. On the other hand, residents from either sampled group may perceive sub-areas in differing degrees of desirability. If this were so,

the spatial activity patterns, which have been shown to differ aspatially within the city, may be seen to differ in terms of the sub-areas in which activity points were located (see Appendix H).

Finally, if an association exists between desirability and frequency of visits, this would indicate where learning could become most important and where behavior will be concentrated. This suggestion is made despite the fact that the frequency of visits does not bear a significant relationship to the degree of familiarity. Satisfaction or desirability does not depend solely on the extent of information obtained. Attitudes of desirability or undesirability can be formulated from a mere glance at an area, or even from the opinions of a neighbor. Through time, an undesirable region may become more pleasantly perceived, or it may remain undesirable dependent on the values of the individual. The sampled populations' assessments of satisfaction with the city and with its sub-areas were inspected. Tests were performed for the total population, newcomers and established residents, sub-area D residents and sub-area L residents, in order to obtain a composite picture of how various sampled groups perceived the city environment (see Appendices K and L). All respondents had previously indicated that their primary means of transportation in Manhattan was by private automobile, so the capabilities of perception while performing a trip remained a constant for each individual.⁷³

Established residents tended to perceive Manhattan in a better light than the newcomers (see Appendix K). It is possible, based on Chapin and

⁷³It is assumed that car travelers are more isolated from their environment than a bicyclist or pedestrian. Lynch has explored this idea in "The Image of a City," and in "A Walk Around the Block."

Weiss's research,⁷⁴ that the established resident has become accustomed to both the pleasant and unpleasant aspects of Manhattan. The newcomers who have been uprooted probably from a comfortable and contented existence elsewhere, usually notice the unpleasant aspects before they recognize the pleasant ones. It will take time, as this study has shown for the newcomer to become familiar with this strange environment, whereupon his satisfaction might increase once he is able to place important characteristics of Manhattan's spatial structure into perspective.

A very high association was found between the two sub-areas sampled regarding the degree of satisfaction with the city. This indicates residential location plays a very minor role in determining whether an individual will be more likely to be satisfied or unsatisfied with his urban environment. Very strong correlations were obtained between the assessments of satisfaction with, and the frequency of trips to, the sub-areas for all sampled groups. This might indicate that in sub-areas perceived as being undesirable, visitations were minimal, but sub-areas perceived as being desirable tended to be those where the frequency of trips was greatest (see Appendix L).

Many respondents informally admitted that they had assessed one or two sub-areas as being undesirable because they were unfamiliar with them. Probably there was no direct need for them to perform activities in these particular sub-areas, so no visits were made. Should a need arise to visit a sub-area assessed as being undesirable through lack of familiarity with its spatial and functional characteristics, the individual might discover that

⁷⁴Chapin and Weiss, op. cit., p. 324.

the region was not so undesirable as he imagined.

Attitudes expressing the degree of satisfaction within an environment, if analyzed in more detail, could elicit extensive information on the backgrounds, prejudices, and ideals of each respondent. However, further analysis of this sort would be peripheral to the nature of this thesis.

The research hypothesis has been examined from a variety of perspectives, which have required the inspection of major contributing factors. This hypothesis, that urban spatial behavior is largely determined by the degree of enculturation has been shown to be supported with a high degree of confidence.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The main hypothesis proposed was that there will be a significant difference in the spatial characteristics of behavior between newcomers and established residents, which may be explained in terms of a learning process governed by the length of residence within a given urban environment. The research methodology included an extensive questionnaire-survey which elicited responses from a sampled population regarding their degree of perceived familiarity, frequency of visits, and satisfaction with the pre-defined sub-areas in the city of Manhattan. In addition, many aspects of their previous experience and socio-economic status were obtained so that the representativeness of the sampled population could be assessed. Any bias within either the newcomer or established resident group were properly weighted.

Rigorous statistical analysis was used in order to manipulate the data, and to discover trends and observed differences between the two resident samples. Qualitative assessment of the results became the primary means of supporting or rejecting the stated hypothesis. This was achieved in a step-like process which involved supporting several implied sub-hypotheses.

It was proposed for instance that the length of period of residence became important for enculturation, due to the degree of perceived awareness or familiarity each individual gained over the time involved. The assessment of such an hypothesis involved obtaining a significant association between attributes of enculturation and urban spatial behavior, while controlling for the multitude of other factors considered likely to exert an influence.

From the literature outlined in Chapter I, the author expected the individual's age and number of previous visits to Manhattan to have the most influence on their capabilities of learning the opportunities available for action within the urban area. In such a case, it was hoped that no significant difference was present between the two resident groups. Thus any observed difference in spatial behavior might be explained, solely in terms of the length of the period of residence.

Conclusions

This research has attempted to cover many facets connected with adaptation to new environments. The major factors considered as being basic to observed individual responses to enculturation are suggested by various literature as being: previous experience, socio-economic status, and the degree of satisfaction with the new environment. The term enculturation incorporates many aspects of man's contact with his environment. It assumes as a basic notion that he is able to logically (in some cases illogically) perceive the attributes of that environment, structure these perceptions as images within his mind, and classify them in order that he can select them for the purpose of initiating action. This research has emphasized that both the space and time dimensions are critical factors, for man cannot conduct his life pattern without regard to them. By the very nature of the three dimensional world in which he lives, his images of the city or sub-areas of the city, must be viewed as spatial constructs. It is impossible for him to think of a particular building without that image having some spatial characteristics (usually dimensions). One could even go so far as to suggest that abstract terms are also spatially personified--such as beauty or color, which in the mind are

perceived as being related to a particular object or organism possessing these qualities. The formation of images, taking either a thousandth of a second if the images have clarity, or several seconds, minutes, days, or more if they do not link together sequentially, involves some aspect of time. Thus the author was aware from the outset that enculturation in some respect would have to be associated with length of residence. The purpose behind the research, however, was to assess precisely the importance of the time factor in the enculturation process in relation to the other factors. The results showed after both quantitative and qualitative analyses that the length of the residence period within a given urban environment is the major factor. Other personal characteristics do not so much affect the time involved in enculturation, but they do affect the spatial characteristics of behavior which are developed due to enculturation.

This research introduced a very extensive set of variables and associated assumptions, from which arose a great many other problems. It appears that the more questions that are answered, the greater the probability of new problems being encountered. Due to the nature of this thesis, many loose ends must be left dangling in mid-air, but some of these may be tied together, and other questions answered, if enculturation studies can be made meaningful and relevant to related research areas. Thus, a brief summary of the major implications arising from the results will follow.

Implications Arising from the Study

It must be recognized that enculturation is a two-way process between an individual and his environment. We do not merely learn from our environment, but we alter the environment to enable us to operate more efficiently within its confines. Stephen Carr and Kevin Lynch state:

When a 'new' scene is related to our interests, we may learn something. When it is compelling we may enter it to change it by our actions or to join with others. At such times we teach ourselves.⁷⁵

This suggests that the willingness on the part of the individual to learn the characteristics of his environment depends largely upon how he perceives those characteristics. Should they appear particularly appealing, the probability of him developing an efficient activity pattern would be high.

Thus an environment which creates a favorable image is more likely to be conducive to learning than one that creates an unfavorable image, irrespective of whether the existing opportunities are as efficient. This argument incorporates the highly debatable point of whether the planner is in a position to 'fashion' human behavior.

Lee, in his study of the existence of neighborhoods as perceived by urban residents, feels that planning should be directed toward heterogeneous physical and social layouts which deliberately emphasize the local (and most effortless) satisfaction of needs. This conclusion Lee summarized in the following statement:

The role of the planner in modern society is equivocal. ⁷⁶
He is employed to fashion the environment of the future.

Earlier critics of this view, such as H. S. Churchill felt that the planner cannot and should not attempt to determine human behavior:

Provide plenty of housing so that there is choice, and plenty of work so that choice may be exercised, put the housing and the work in a physical environment that is open, pleasant, healthful, and safe, and I don't give a

⁷⁵Carr, Stephen, and Lynch, Kevin, "Where Learning Happens," Daedalus, Journal of the American Academy of Arts and Sciences, The Conscience of the City, Vol. 97, No. 4, (June 1968), p. 1277.

⁷⁶Lee, op. cit., pp. 368-369.

damn about the specific pattern, because people can work out their own groupings. Planning is not a cure-all, nor are the planners omniscient.⁷⁷

The author's view is that social planning, like anticipation in the individual is inevitable in a complex society that values order. As previously expressed, behavior and the environment are inter-dependent, which implies that the planner's manipulations can influence behavior.

As Lee further suggests:

Much of the emotiveness of the free-will determinism issue can surely be dispelled if it is acknowledged that the planner is acting, not to express his own whims, but to realize the value of society of which he is a duly accredited agent. He is an innovator if means are not an end. If his means are unsuccessful or his objectives unacceptable, his actions will be negatively reinforced by ordinary people. What he lacks at present is the ability to predict the consequences of his decisions for human behavior.⁷⁸

From the author's research in Manhattan, questions concerning these points may be asked. They may be particularly helpful in providing a basis for future research in enculturation or urban spatial behavior. For instance, why were certain sub-areas within the city assessed as being undesirable places in which to live or even frequent? Why were these sub-areas which were not well perceived places in which spatial activity was relatively low?

It is not the purpose of this concluding chapter to provide answers to these questions, but explanations of why these questions should be asked might be relevant to the topic of this thesis.

From the data collected through the interview surveys, only two respondents from the total of 99 regarded sub-area A (the south side of Manhattan)

⁷⁷Churchill, H. S., "An Open Letter to Mr. Isaacs," Journal of the American Institute of Planners, Vol. 14, (1948), p. 40.

⁷⁸Lee, op. cit., p. 369.

as being a desirable place. In fact, the overwhelming majority stated that this region was definitely undesirable. In addition, an expected correlation was found between desirability/perceived familiarity/ frequency of visits to this sub-area. Where desirability was low, so too were assessments of perceived familiarity and frequency of visits.

Fifty-three individuals, more than half those sampled, had a knowledge of only two or three points within this sub-area, mostly due to lack of visitation. One might ask why this sub-area was considered undesirable. Was it due purely to the receiving of unfavorable images, or is the region truly not a pleasant locality? Maybe a mixture of two explanations can be assumed from various remarks made by several respondents who said that they had heard about this region from neighbors. Others had seen the periphery of the sub-area from the road and had assumed that this was characteristic of the sub-area in general. The author pointed out to several individuals that some supermarkets were located in this sub-area and were considered as being reasonably cheap and clean stores. It appeared, however, that as the region was generally undesirable so the store with being in the locality, was also thought of as undesirable.

Although not assessed to the same extreme, sub-areas E, F, and I were considered relatively undesirable, unfamiliar, and infrequently visited. Explanation here may be centered either on the lack of a favorable perception, or the lack of services or facilities which encourage regular visitation (hence, familiarity and maybe desirability decreases also). However, Kevin Lynch adds another dimension to the explanation of such a situation in the form of an hypothesis:

The individual must perceive his environment as an ordered pattern, and is constantly trying to inject order into his surroundings, so that all the relevant perceptions are jointed one to another. Certain physical complexes facilitate this process through their own form, and one seen as ordered wholes by native and newcomer alike. Subsequent use and association simply strengthen this structure. Other complexes, however, do not encourage this fitting together, and they are seen as fundamentally disordered by the newcomer. For the native, this 'disordered' complex may also seem to be an organized one since habitual use and perception have allowed him to put the collection together by means of associated meanings, or by selection, simplification, distortion, or even suppression of his perceptions.⁷⁹

Thus perhaps sub-areas E, F, I, and especially A may be considered incompatible for effective learning. This might be due to unstructured housing types, lack of facilities, or maybe a road pattern that acts as a barrier rather than a communications media.

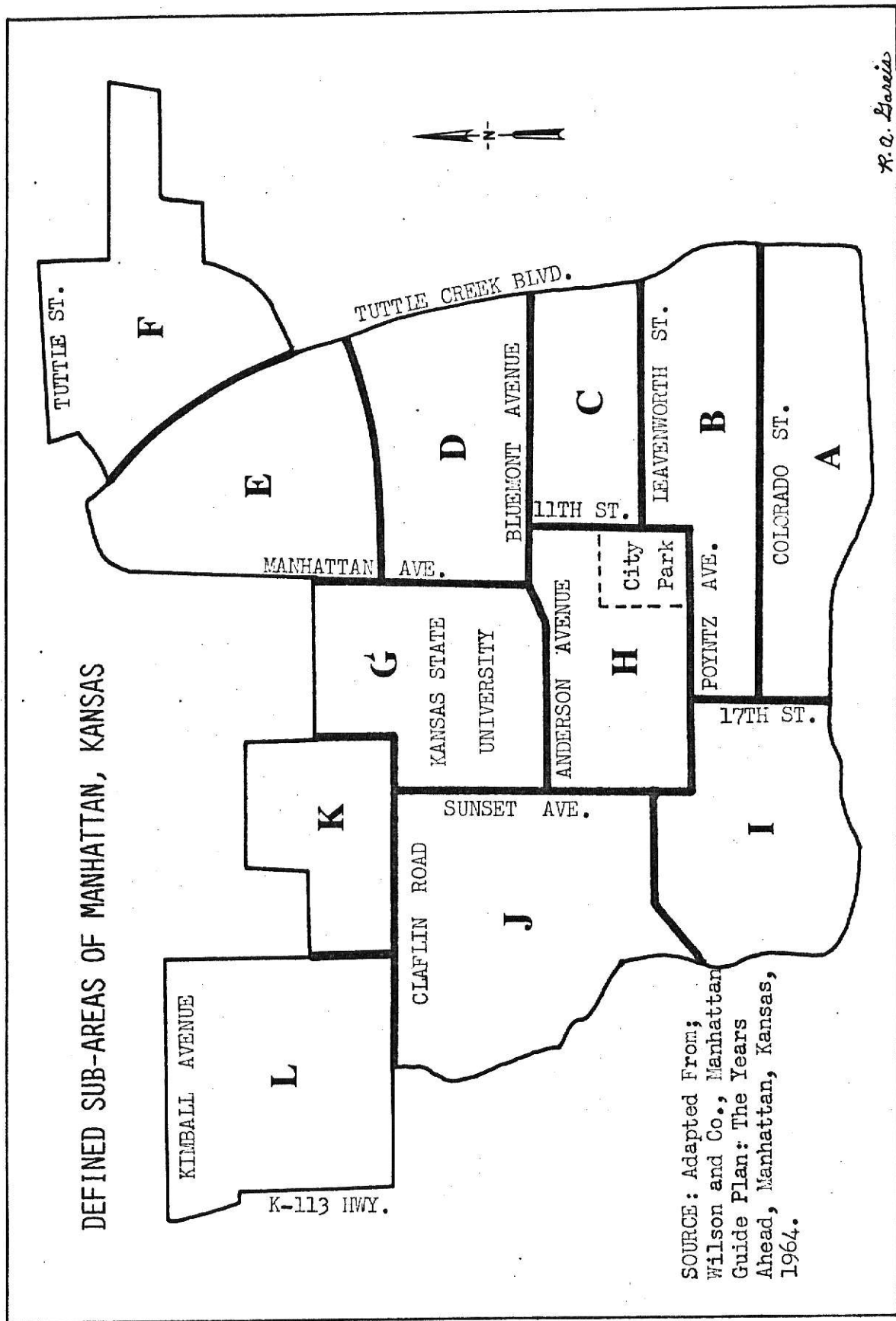
The implications suggested here are oriented toward both the social scientist and the urban planner, for if a more diverse set of choices for activities, both spatially and functionally, is to be offered to a newcomer, the quality of the images developed must be improved. Only when quality is improved will the time period for enculturation to be effective be lessened.

⁷⁹Lynch and Rivkin, op. cit., p. 33.

APPENDIX A
MAP OF THE STUDY AREA

**THIS BOOK
CONTAINS
NUMEROUS PAGES
WITH DIAGRAMS
THAT ARE CROOKED
COMPARED TO THE
REST OF THE
INFORMATION ON
THE PAGE.**

**THIS IS AS
RECEIVED FROM
CUSTOMER.**



SOURCE: Adapted From;
Wilson and Co., Manhattan
Guide Plan: The Years
Ahead, Manhattan, Kansas,
1964.

R. A. Loria

APPENDIX B
THE QUESTIONNAIRE SURVEY

NAME

ADDRESS.

TELEPHONE NO

SUB-AREA

SAMPLE NO.

NEWCOMER/ESTAB. RES.

COPY

BACKGROUND

1. Name _____
2. Sex _____
 - 1 Male
 - 2 Female
3. Age Group _____
 - 1 18-25
 - 2 26-35
 - 3 36-50
 - 4 51-65
 - 5 Above 65
4. Marital Status _____
 - 1 Single
 - 2 Married
 - 3 Divorced
 - 4 Separated
5. Number of Children _____
 - 1 One
 - 2 Two
 - 3 Three
 - 4 Four
 - 5 More than four
 - 6 None
6. Relationship to Head of Household _____
 - 1 Head
 - 2 Wife
 - 3 Child
 - 4 Other relation
 - 5 Other, specify _____

7. Educational Status _____

- 1 Left high school before graduating
- 2 High school graduate
- 3 College graduate
- 4 College post-graduate
- 5 Other, specify _____

8. Occupational Status _____

- 1 Education
- 2 Clerical or Management
- 3 Government
- 4 Private Services (Shopkeeper, etc.)
- 5 Public Services (Police)
- 6 Land Related (Farmer)
- 7 Unskilled
- 8 Skilled
- 9 Professional
- 10 Other, specify _____

9. Primary Means of Transportation within Manhattan _____

- 1 Walk
- 2 Bicycle
- 3 Private Automobile
- 4 Public Automobile (Taxi, Bus)
- 5 Passenger
- 6 Other, specify _____

10. How Many Times in an Average Week Do You Go Out of Manhattan for a Specific Purpose _____

- 1 More than 20
- 2 20-13
- 3 12-7
- 4 6-3
- 5 1-2
- 6 Never

11. How Long Have You Lived in Manhattan at This Place of Residence _____

- 1 Over 10 years
- 2 10-7 years
- 3 6-4 years
- 4 3-1 years
- 5 Under 1 year

12. How Long Have You Lived in Kansas _____

- 1 Over 10 years
- 2 10-7 years
- 3 6-4 years
- 4 3-1 years
- 5 Under 1 year

13. Where Did You Live Before Manhattan _____

- 1 Another town in Kansas
- 2 Another Midwest state
- 3 East Coast
- 4 West Coast
- 5 The South
- 6 The North
- 7 Mountain States
- 8 Other, specify _____

14. How Large Was This Place of Residence _____

- 1 0-2,999
- 2 3,000-29,999
- 3 30,000-99,999
- 4 100,000-499,999
- 5 500,000 and above

15. How Many Times Have You Visited Manhattan Before Living Here _____

- 1 Never
- 2 1-5
- 3 6-10
- 4 11-20
- 5 Above 20

16. Main Reasons for Moving to Manhattan _____

- 1 Place of birth
- 2 Marriage
- 3 Family
- 4 Work-related
- 5 Pleasure
- 6 Retirement
- 7 Choice
- 8 Other, specify _____

17. On the Map of Manhattan Provided, How Would You Assess Your Familiarity with Each of the 12 Regions Using the Following Scale

5 Very good	<u>Region</u>
4 Good	A. _____
	B. _____
3 Fair	C. _____
	D. _____
2 Poor	E. _____
	F. _____
1 Very poor	G. _____
	H. _____
0 Non-existent	I. _____
	J. _____
	K. _____
	L. _____

18. Using the Same Map of Manhattan, How Would You Assess Your Frequency of Visits to Each of the 12 Regions

5 Very regular	<u>Region</u>
4 Regular	A. _____
	B. _____
3 Occasional	C. _____
	D. _____
2 Infrequent	E. _____
	F. _____
1 Very infrequent	G. _____
	H. _____
0 Never	I. _____
	J. _____
	K. _____
	L. _____

19. How Would You Assess the 12 Regions If You Were Asked to Live There

5 Very desirable	<u>Region</u>
4 Desirable	A. _____
	B. _____
3 Indifferent	C. _____
	D. _____
2 Undesirable	E. _____
	F. _____
1 Very undesirable	G. _____
	H. _____
0 Don't know	I. _____
	J. _____
	K. _____
	L. _____

20. How Many Independent and Different Points Within the City Do You Visit in a Typical Week _____

- 0 None
- 1 1-2
- 2 3-6
- 3 7-12
- 4 13-20
- 5 More than 20

APPENDIX C
SELECTED TABULATED RESPONSES FROM
QUESTIONNAIRE SURVEY

TABLE C-1
FAMILIARITY

Sample	Response					
	5	4	3	2	1	0
Total Population	211	324	288	166	170	9
Newcomers	80	118	144	121	129	8
Established Res.	131	206	144	45	41	1
Sub-Area D	106	128	131	96	95	0
Sub-Area L	105	196	157	70	75	1

Each respondent had the opportunity to assess their familiarity with all 12 sub-areas of Manhattan on a scale from 0-5. This table shows the frequencies of responses for the sampled population and various sampled sub-groups.

TABLE C-2
FREQUENCY OF VISITS

Sample	Response					
	5	4	3	2	1	0
Total Population	237	274	281	200	176	24
Newcomers	118	128	136	100	103	15
Established Res.	119	146	145	96	73	9
Sub-Area D	134	112	133	96	91	10
Sub-Area L	103	162	148	100	85	14

Each respondent had the opportunity to assess their frequency of visits with all 12 sub-areas of Manhattan on a scale from 0-5. This table shows the frequencies of responses for the sampled population and various sampled sub-groups. C.T. II (46).

TABLE C-3
DESIRABILITY

Sample	Response					
	5	4	3	2	1	0
Total Population	143	408	301	177	140	19
Newcomers	38	199	170	110	72	11
Established Res.	105	209	131	67	68	8
Sub-Area D	78	228	144	67	50	9
Sub-Area L	65	180	157	110	90	10

Each respondent had the opportunity to assess his desirability with all 12 sub-areas of Manhattan on a scale from 0-5. This table shows the frequencies of responses for the sampled population and various sampled sub-groups.

APPENDIX D
TABLE OF CRITICAL VALUES

TABLE OF CRITICAL VALUES OF r_s , THE SPEARMAN RANK
CORRELATION COEFFICIENT*

N	Significance level (one-tailed test)	
	.05	.01
4	1.000	
5	.900	1.000
6	.829	.943
7	.714	.893
8	.643	.833
9	.600	.783
10	.564	.746
12	.506	.712

*Adapted from Olds, E. G. 1938. Distributions of sums of squares of rank differences for small numbers of individuals. *Ann. Math. Statist.*, 9, 133-148, and from Olds, E. G. 1949. The 5% significance levels for sums of squares of rank differences and a correction. *Ann. Math. Statist.*, 20, 117-118, with the kind permission of the author and the publisher.

Source: Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences, (New York: McGraw-Hill Book Company, Inc., 1956), p. 284.

APPENDIX E

PERCEIVED FAMILIARITY WITH SUB-AREAS

IN THE CITY AS ASSESSED BY

NEWCOMERS AND BY ESTABLISHED RESIDENTS

PERCEIVED FAMILIARITY WITH SUB-AREAS IN THE CITY AS ASSESSED BY
NEWCOMERS AND BY ESTABLISHED RESIDENTS: A SPEARMAN'S
RANK CORRELATION TEST FOR ASSOCIATION

Degree of Perceived Familiarity	Frequency of Responses		Ranking		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	80	131	5	3	2	4
4	118	206	4	1	+3	9
3	144	144	1	2	-1	1
2	121	45	3	4	-1	1
1	129	41	2	5	-3	9
0	8	1	6	6	0	0
Total						24

$$r_s = +0.32$$

$$z = 0.71$$

Both by using r_s Table and the z score tables, there is no significant association between the degree of familiarity as perceived by newcomers and by established residents.

APPENDIX F

PERCEIVED FAMILIARITY WITH SUB-AREAS IN THE CITY AS ASSESSED
BY NEWCOMERS AND ESTABLISHED RESIDENTS:
A SERIES OF SPEARMAN'S RANK CORRELATION
TESTS FOR ASSOCIATION

TABLE F-1

SUB-AREA A

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomer	Established Residents.		
5	0	5	4	5	-1	1
4	0	15	4	1	3	9
3	0	6	4	4	0	0
2	7	13	2	2	0	0
1	43	10	1	3	2	4
Total						14

$$r_s = +0.3$$

Therefore, correlation coefficient not statistically significant nor different from zero.

No Association

TABLE F-2

SUB-AREA B

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomer	Established Residents	Newcomers	Established Residents		
5	5	16	4	2.0	2.0	4.00
4	16	26	1	1.0	0.0	0.00
3	12	6	3	3.0	0.0	0.00
2	14	0	2	4.5	-2.5	6.25
1	3	0	5	4.5	0.5	0.25
Total						10.50

$$r_s = +0.48$$

$$z = 0.9$$

Therefore, correlation coefficient not statistically significant nor different from zero.

No Association

TABLE F-3

SUB-AREA C

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	8	16	4	1	3	9
4	13	12	2	3	-1	1
3	16	14	1	2	-1	1
2	9	7	3	4	-1	1
1	4	0	5	5	0	0
Total						12

$$r_s = +0.4$$

$$z = 0.9$$

Therefore, correlation coefficient not statistically significant nor different from zero.

No Association

TABLE F-4

SUB-AREA D

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	17	22	1	1	0	0
4	9	12	2	2	0	0
3	8	10	4	3	1	1
2	8	5	4	4	0	0
1	8	0	4	5	1	1
Total						2

$$r_s = +0.900$$

$$z = 2.10$$

Therefore, correlation coefficient is statistically significant and different from zero.

A positive association
only at the 0.05 significance level.

TABLE F-5

SUB-AREA E

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomer	Established Residents		
5	3	13	5	3	+2	4
4	6	16	4	2	+2	4
3	8	17	3	1	+2	4
2	20	3	1	4	-3	9
1	13	0	2	5	-3	9
Total						30

$$r_s = +0.50$$

$$z = 1.05$$

Therefore, correlation coefficient not statistically significant nor different from zero.

No Association

TABLE F-6

SUB-AREA F

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	0	6	5	5	0	0
4	8	11	4	2	+2	4
3	10	17	3	1	+2	4
2	12	8	2	3	-1	1
1	20	7	1	4	+3	9
Total						18

$$r_s = +0.1$$

$$z = 0.2$$

Therefore, correlation coefficient is not statistically significant nor different from zero.

No Association

TABLE F-7
SUB-AREA G

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	15	18	2	2	0	0
4	20	22	1	1	0	0
3	12	6	3	3	0	0
2	2	1	4	5	1	1
1	1	2	5	4	1	1
Total						2

$$r_s = +0.90$$

$$z = 2.10$$

Therefore, correlation coefficient is statistically significant and different from zero.

A positive association
only at the 0.05 significance level.

TABLE F-8

SUB-AREA H

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	7	12	3-5	3	0.5	0.25
4	16	14	2	2	0.0	0.00
3	17	17	1	1	0.0	0.00
2	7	3	3-5	4-5	-1.0	1.00
1	3	3	5	4-5	0.5	0.25
Total						1.50

$$r_s = +0.93$$

$$z = 2.36$$

Therefore, correlation coefficient is statistically significant and different from zero.

A positive association
only at the 0.05 significance level.

TABLE F-9

SUB-AREA I

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	0	2	5	4	+1.0	1.00
4	10	17	2-5	2	+0.5	0.25
3	10	18	2-5	1	+1.5	2.25
2	25	1	1	5	-4.0	16.00
1	5	11	4	3	+1.0	1.00
Total						20.00

$$r_s = -0.07$$

$$z = 0.09$$

Therefore, correlation coefficient is not statistically significant different from zero.

No Association.

TABLE F-10

SUB-AREA J

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	3	2	5	4	1	1
4	6	22	4	1	3	9
3	22	21	1	2	-1	1
2	8	1	3	5	-2	4
1	10	3	2	3	-1	1
Total						16

$$r_s = +0.6$$

$$z = 1.4$$

Therefore, correlation coefficient is not stastically significant nor different from zero.

No Association

TABLE F-11

SUB-AREA K

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	6	9	4-5	2	2.5	6.25
4	7	33	3	1	2.0	4.00
3	19	2	1	4	-3.0	9.00
2	6	1	4-5	5	-0.5	0.25
1	12	4	2	3	-1.0	1.00
Total						22.50

$$r_s = -0.1$$

$$z = 0.2$$

Therefore, correlation coefficient is not statistically significant nor different from zero.

No Association

TABLE F-12

SUB-AREA L

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	16	30	1	1	0.0	0.00
4	11	6	2	3	-1.0	1.00
3	10	11	3-5	2	+1.5	2.25
2	3	1	5	4-5	+0.5	0.50
1	10	1	3-5	4-5	-1.0	1.00
Total						4.75

$$r_s = +0.78$$

$$z = 1.7$$

Therefore, correlation coefficient is not statistically significant nor different from zero.

No Association

APPENDIX G

A SERIES OF SPEARMAN'S RANK TESTS FOR ASSOCIATION
IN ORDER TO SHOW THE RELATIONSHIP BETWEEN
THE DEGREE OF PERCEIVED FAMILIARITY AND
FREQUENCY OF VISITS WITHIN EACH OF THE
TWELVE SUB-AREAS

TABLE G-1

USING TOTAL SAMPLED POPULATION WHO ASSESSED BOTH FAMILIARITY
 FREQUENCY OF VISITS AS BEING VERY FAMILIAR AND
 VERY REGULAR ('5' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	5	0	10.5	11.5	-1.0	1.00
B	22	13	5.0	8.0	-3.0	9.00
C	34	28	3.0	4.0	-1.0	1.00
D	39	47	2.0	2.0	0.0	0.00
E	16	18	7.0	7.0	0.0	0.00
F	6	1	9.0	10.0	-1.0	1.00
G	33	34	4.0	3.0	+1.0	1.00
H	19	19	6.0	6.0	0.0	0.00
I	2	0	12.0	11.5	+0.5	0.25
J	5	4	10.5	9.0	+1.5	2.25
K	15	20	8.0	5.0	+3.0	9.00
L	46	52	1.0	1.0	0.0	0.00
Total						24.50

$$r_s = +0.92$$

$$z = 3.00$$

Both by r_s table and the z score table at the 0.05 level, there is significant positive association between the two sets of responses for the total population.

TABLE G-2

USING NEWCOMERS WHO ASSESSED BOTH FAMILIARITY AND
 FREQUENCY OF VISITS AS BEING 'VERY FAMILIAR'
 AND 'VERY REGULAR' ('5' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	0	0	11.0	12.0	-1.0	1.25
B	5	4	7.0	8.0	-1.0	1.00
C	8	16	4.0	4.0	0.0	0.00
D	17	23	1.0	2.0	-1.0	1.00
E	3	7	8.5	7.0	+1.5	2.25
F	0	1	11.0	10.5	+0.5	0.25
G	15	18	3.0	3.0	0.0	0.00
H	7	9	5.0	5.0	0.0	0.00
I	0	1	11.0	10.5	+0.5	0.25
J	3	3	8.5	9.0	-0.5	0.25
K	6	8	6.0	6.0	0.0	0.00
L	16	28	2.0	1.0	+1.0	1.00
Total						7.00

$$r_s = +0.998$$

$$z = 3.32$$

Both by r_s table and the z score tables, at the 0.05 level, there is a significant positive association between the two sets of responses for newcomers.

TABLE G-3

USING ESTABLISHED RESIDENTS WHO ASSESSED BOTH FAMILIARITY AND FREQUENCY
OF VISITS AS BEING 'VERY FAMILIAR' AND 'VERY REGULAR'
('5' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	5	0	10.0	11.0	-1.0	1.00
B	16	9	4.5	8.0	-3.5	12.25
C	16	12	4.5	4.5	0.0	0.00
D	22	24	2.0	2.0	0.0	0.00
E	13	11	6.0	6.0	0.0	0.00
F	6	0	9.0	11.0	-2.0	4.00
G	18	16	3.0	3.0	0.0	0.00
H	12	10	7.0	7.0	0.0	0.00
I	2	0	11.5	11.0	+0.5	0.25
J	2	1	11.5	9.0	+2.5	6.25
K	9	12	8.0	4.5	+3.5	12.25
L	30	25	1.0	1.0	0.0	0.00
Total						36.00

$$r_s = +0.88$$

$$z = 2.6$$

Both by r_s table and the z score tables, at the 0.05 level, there is a significant positive association between the two sets of responses for established residents.

TABLE G-4

USING TOTAL POPULATION WHO ASSESSED BOTH FAMILIARITY AND FREQUENCY
OF VISITS AS BEING 'VERY UNFAMILIAR' AND 'VERY
INFREQUENT' ('1' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	53	47	1.0	1.0	0.0	0.00
B	3	9	11.5	9.0	+2.5	6.25
C	4	5	10.0	10.0	0.0	0.00
D	8	11	8.0	8.0	0.0	0.00
E	10	19	7.0	3.0	+4.0	16.00
F	27	32	2.0	2.0	0.0	0.00
G	3	3	11.5	11.0	+0.5	0.25
H	6	1	9.0	12.0	-3.0	9.00
I	16	18	3.5	4.0	-0.5	0.25
J	13	12	5.0	6.5	-1.5	2.25
K	16	17	3.5	5.0	-1.5	2.25
L	11	12	6.0	6.5	-0.5	0.25
Total						36.50

$$r_s = +0.88$$

$$z = 2.6$$

Both by r_s table and the z score tables at the 0.05 level, there is a significant positive association between the two sets of responses for the total population.

TABLE G-5

USING NEWCOMERS WHO ASSESSED BOTH FAMILIARITY AND FREQUENCY OF VISITS
AS BEING 'VERY UNFAMILIAR' AND 'VERY INFREQUENT'
('1' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	43	25	1.0	1.0	0.0	0.00
B	3	8	10.5	6.5	+4.0	16.00
C	4	3	9.0	10.0	-1.0	1.00
D	8	8	7.0	6.5	+0.5	0.25
E	10	14	5.0	3.0	+2.0	4.00
F	20	24	2.0	2.0	0.0	0.00
G	1	1	12.0	11.5	+0.5	0.25
H	3	1	10.5	11.5	-1.0	1.00
I	5	7	8.0	8.0	0.0	0.00
J	10	5	5.0	9.0	-4.0	16.00
K	12	10	3.0	5.0	-2.0	4.00
L	10	12	5.0	4.0	+1.0	1.00
Total						43.50

$$r_s = +0.85$$

$$z = 2.63$$

Both by r_s table and the z score tables at the 0.05 level, there is a significant positive association between the two sets of responses for newcomers.

TABLE G-6

USING ESTABLISHED RESIDENTS WHO ASSESSED BOTH FAMILIARITY AND FREQUENCY OF VISITS AS BEING 'VERY UNFAMILIAR' AND 'VERY INFREQUENT' ('1' RATINGS) RESPECTIVELY

Sub-Areas	Frequency of Very Familiar (Familiarity)	Frequency of Very Regular Assessments (Visits)	Rankings of Familiarity	Rankings of Visits	D	D ²
A	10	22	2.0	1.0	+1.0	1.00
B	0	1	10.5	10.0	+0.5	0.25
C	0	2	10.5	8.5	+2.0	4.00
D	0	4	10.5	7.0	+2.5	6.25
E	0	5	10.5	6.0	+6.5	20.25
F	7	16	3.0	2.0	+1.0	1.00
G	2	2	7.0	8.5	-1.5	2.25
H	3	0	5.5	11.5	-6.0	36.00
I	11	11	1.0	3.0	-2.0	4.00
J	3	6	5.5	4.5	+1.0	1.00
K	4	6	4.0	4.5	-0.5	0.25
L	1	0	8.0	11.5	-2.5	6.25
Total						84.50

$$r_s = +0.71$$

$$z = 2.36$$

Both by r_s table and the z score tables, at the 0.05 level, there is a significant association between the two sets of responses for established residents.

APPENDIX H

A SERIES OF KOLMOGOROV-SMIRNOV TESTS FOR SIGNIFICANT
DIFFERENCE BETWEEN NEWCOMERS AND ESTABLISHED
RESIDENTS USING ONLY THE 5 AND 1 RESPONSES
FOR PERCEIVED FAMILIARITY AND FREQUENCY OF VISITS

TABLE H-1

FAMILIARITY AS ASSESSED IN SUB-AREAS AS BEING 'VERY FAMILIAR' BY NEWCOMERS AND ESTABLISHED RESIDENTS

Sub-Areas	Freq. of Newcomers Responses	Freq. of Established Residents Responses	Cum. Freq. (Newcomers) Residents)	Cum. Freq. (Established Residents)	Cum. Freq. % Newcomers	Cum. Freq. % Established Residents	Difference
A	0	5	0	5	.000	.033	-.033
B	5	16	5	21	.062	.139	-.077
C	8	16	13	37	.162	.245	-.077
D	17	22	30	59	.375	.390	-.015
E	3	13	33	72	.412	.476	-.053
F	0	6	33	78	.412	.516	-.104
G	15	18	48	96	.600	.635	-.035
H	7	12	55	108	.687	.715	-.022
I	0	2	55	110	.687	.728	-.040
J	3	2	58	112	.725	.742	-.017
K	6	9	64	121	.800	.801	-.001
L	16	30	80	151	1.000	1.000	.000

D = -0.104
At 0.05 level critical value = -0.188

Therefore as D is smaller than the critical value null hypothesis is accepted. There is no significant difference between familiarity with the sub-areas which were assessed as being very familiar between newcomers and established residents.

TABLE H-2

FAMILIARITY AS ASSESSED IN SUB-AREAS AS BEING 'VERY UNFAMILIAR' BY NEWCOMERS
AND ESTABLISHED RESIDENTS

Sub-Area	Freq. of Newcomers Responses	Freq. of Established Residents Responses	Cum. Freq. (Newcomer)	Cum. Freq. (Established Residents)	Cum. Freq. % Newcomers	Cum. Freq. % Established Residents	Difference
A	43	10	43	10	.330	.243	+.087
B	3	0	46	10	.356	.243	+.113
C	4	0	50	10	.387	.243	+.144
D	8	0	58	10	.440	.243	+.206
E	10	0	68	10	.521	.243	+.278
F	20	7	88	17	.682	.414	+.268
G	1	2	89	19	.689	.463	+.226
H	3	3	92	22	.713	.536	+.177
I	5	11	97	33	.751	.804	-.053
J	10	3	107	36	.829	.878	-.049
K	12	4	119	40	.922	.975	-.053
L	10	1	129	41	1.000	1.000	.000

D = +0.278

At 0.05 level critical value = 0.292

Therefore as D is smaller than the critical value, the null hypothesis is accepted. There is no significant difference between familiarity with the sub-areas which are assessed as being unfamiliar between newcomers and established residents.

TABLE H-3

FREQUENCY OF VISITS AS ASSESSED IN THE SUB-AREAS AS BEING 'VERY REGULAR' BY NEWCOMERS
AND ESTABLISHED RESIDENTS

Sub-Area	Freq. of Newcomers Responses	Freq. of Established Residents Responses	Cum. Freq. (Newcomers)	Cum. Freq. (Established Residents)	Cum. Freq. % Newcomers	Cum. Freq. % Established Residents	Difference
A	0	0	0	0	.000	.000	.000
B	4	9	4	9	.030	.175	-.045
C	16	12	20	21	.169	.175	-.060
D	23	24	43	45	.364	.375	-.090
E	7	11	50	56	.423	.466	-.043
F	1	0	51	56	.432	.466	-.034
G	18	16	69	72	.584	.600	-.016
H	9	10	78	82	.660	.683	-.023
I	1	0	79	82	.669	.683	-.014
J	3	1	82	83	.694	.691	-.003
K	8	12	90	95	.762	.791	-.029
L	28	25	118	120	1.000	1.000	.000

D = .090

At 0.05 level critical value = 0.668

Therefore as D is smaller than the critical value, the null hypothesis is accepted. There is no significant difference between frequency of visits within the sub-areas which are assessed as being 'very regular' between newcomers and established residents.

TABLE H-4

FREQUENCY OF VISITS AS ASSESSED AS BEING 'VERY INFREQUENT' BY NEWCOMERS AND ESTABLISHED RESIDENTS

Sub-Area	Freq. of Newcomers Responses	Freq. of Established Residents Responses	Cum. Freq. (Newcomers)	Cum. Freq. (Established Residents)	Cum. Freq. % Newcomers	Cum. Freq. % Established Residents	Differences
A	25	22	25	22	.255	.293	-.038
B	8	1	33	23	.336	.306	+.030
C	3	2	36	25	.367	.333	+.034
D	8	4	44	29	.448	.386	+.042
E	14	5	58	34	.599	.453	+.146
F	24	16	72	50	.734	.666	+.068
G	1	2	73	52	.744	.693	+.051
H	1	0	74	52	.755	.693	.062
I	7	11	81	63	.826	.840	-.014
J	5	6	86	69	.877	.920	-.043
K	10	6	90	75	.979	1.000	-.021
L	2	0	98	75	1.000	1.000	.000

$$D = +0.146$$

At 0.05 level critical value = 0.25

Therefore as D is smaller than the critical value, the null hypothesis is accepted. There is no significant difference between frequency of visits within the sub-areas which are assessed as being very infrequently visited between newcomers and established residents.

APPENDIX I
SERIES OF SPEARMAN'S RANK TESTS FOR ASSOCIATION
BETWEEN THE TWO SAMPLED SUB-AREAS REGARDING
THE DEGREE OF PERCEIVED FAMILIARITY

TABLE I-1

PERCEIVED FAMILIARITY WITH ALL SUB-AREA IN THE
CITY AS ASSESSED BY THE TOTAL POPULATION
IN SUB-AREA D, AND SUB-AREA L

Degree of Perceived Familiarity	Frequency of Response		Rankings		D	D ²
	Sub-Area D	Sub-Area L	Sub-Area D	Sub-Area L		
5	106	105	3	3	0	1
4	128	196	2	1	-1	1
3	131	157	1	2	+1	1
2	96	70	4	5	-1	1
1	95	75	5	4	+1	1
0	0	1	6	6	0	0
Total						4

$$r_s = +0.88$$

Therefore correlation coefficient is statistically significant and a positive association between the two sets of scores exists.

TABLE I-2

PERCEIVED FAMILIARITY WITH ALL SUB-AREAS IN THE
CITY AS ASSESSED BY THE NEWCOMERS IN
SUB-AREA D AND SUB-AREA L

Degree of Perceived Familiarity	Frequency of Responses		Rankings		D	D ²
	Sub-Area D	Sub-Area L	Sub-Area D	Sub-Area L		
5	22	38	5	5	0	0
4	60	58	2	3	-1	1
3	59	85	3-5	1	+2.5	6.25
2	70	51	1	4	-3	9
1	59	60	3-5	2	+0.5	2.25
0	0	1	6	6	0	0
Total						17.50

$$r_s = +0.59$$

Therefore correlation coefficient is not statistically significant and correlation can be said to exist which is significant at the 0.05 level but not at the 0.01 level.

TABLE I-3

PERCEIVED FAMILIARITY WITH ALL SUB-AREAS IN THE CITY AS
 ASSESSED BY ESTABLISHED RESIDENTS IN SUB-AREA D
 AND IN SUB-AREA L

Degree of Perceived Familiarity	Frequency of Responses		Ranking		D	D ²
	Sub-Area D	Sub-Area L	Sub-Area D	Sub-Area L		
5	84	67	1.0	3	-2.0	4.00
4	68	138	3.0	1	+2.0	4.00
3	72	72	1.0	2	-1.0	1.00
2	26	19	4.5	4	+0.5	0.25
1	26	15	4.5	5	-0.5	0.25
0	0	1	6.0	6	0.0	0.00
Total						9.50

$$r_s = +0.73$$

Therefore correlation coefficient is statistically significant and a positive association between the two sets of scores exists.

APPENDIX J
A SPEARMAN'S RANK TEST FOR ASSOCIATION
BETWEEN FAMILIARITY ASSESSMENTS BY
SUB-AREA FOR RESIDENTS IN BOTH SAMPLED GROUPS

FREQUENCY OF VERY FAMILIAR RESPONSES WITH
EACH SUB-AREA AS ASSESSED BY RESIDENTS
IN SUB-AREA D AND SUB-AREA L

Sub-Area	Frequency of Responses		Ranking		D	D ²
	Sub-Area D	Sub-Area L	Sub-Area D	Sub-Area L		
A	3	2	10.0	11	-1.0	1.00
B	9	12	6.5	3	3.5	11.50
C	18	6	3.0	6	-3.0	9.00
D	34	5	1.0	8	-7.0	49.00
E	9	7	6.5	5	1.5	2.25
F	4	2	9.0	11	-2.0	4.00
G	20	13	2.0	2	0.0	0.00
H	14	5	4.0	8	-4.0	16.00
I	0	2	11.5	11	0.5	0.25
J	0	5	11.5	8	3.5	11.50
K	5	10	8.0	4	4.0	16.00
L	10	36	5.0	1	4.0	16.00
Total						131.50

$$r_s = +0.66$$

$$z = 2.1$$

Therefore correlation coefficient is statistically significant and a positive association between the sets of scores exists.

APPENDIX K

SERIES OF SPEARMAN'S RANK TESTS FOR ASSOCIATION BETWEEN

VARIOUS SAMPLED GROUPS REGARDING

DESIRABILITY ASSESSMENTS

TABLE K-1

DESIRABILITY WITH ALL SUB-AREAS IN THE CITY AS ASSESSED BY
NEWCOMERS AND ESTABLISHED RESIDENTS

Degree of Desirability	Frequency of Responses		Rankings		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
5	38	105	5	2	+3	9
4	199	209	1	1	0	0
3	170	131	2	3	-1	1
2	110	67	3	5	-2	4
1	72	68	4	4	0	0
0	11	8	6	6	0	0
Total						14

$$r_s = +0.3$$

Therefore correlation coefficient not statistically significant nor
different from zero.

No Association

TABLE K-2

DESIRABILITY WITH ALL SUB-AREAS IN THE CITY AS ASSESSED BY
RESPONDENTS IN SUB-AREA D AND SUB-AREA L

Degree of Desirability	Frequency of Responses		Rankings		D	D ²
	Sub-Area D	Sub-Area L	Sub-Area D	Sub-Area L		
5	78	65	3	5	-2	4
4	228	180	1	1	0	0
3	144	157	2	2	0	0
2	67	110	4	3	+1	1
1	50	90	5	4	+1	1
0	9	10	6	6	0	0
Total						6

$$r_s = +0.85$$

Therefore by comparing r_s to the critical value observed in Appendix C correlation coefficient is significantly different from the 0.05 level. Therefore, a positive correlation exists, but is not significant at the 0.01 level.

TABLE K-3

DESIRABILITY OF THE CITY AS ASSESSED BY NEWCOMERS AND ESTABLISHED
RESIDENTS ON A SUB-AREA BASIS USING ONLY THE RESPONSES
INDICATING A VERY DESIRED SUB-AREA

Sub-Area	Frequency of Responses		Ranking		D	D ²
	Newcomers	Established Residents	Newcomers	Established Residents		
A	0	0	8.5	10	-1.5	2.25
B	0	0	8.5	10	-1.5	2.25
C	0	2	8.5	10	-1.5	2.25
D	14	11	2.0	3	-1.0	1.00
E	0	15	8.5	2	+6.5	42.25
F	2	8	4.0	4	0.0	0.00
G	0	0	8.5	10	-1.5	2.25
H	0	0	8.5	10	-1.5	2.25
I	0	3	8.5	6.5	+2.0	4.00
J	3	3	3.0	6.5	-3.5	12.25
K	0	5	8.5	5	+3.5	12.25
L	19	35	1.0	1	0.0	0.00
Total						83.50

When a considerable number of ties are present, the formula in computing r_s is

$$r_s = \frac{\sum x^2 + \sum y^2 - \sum d^2}{\sqrt{2 \sum x^2 \sum y^2}}$$

$$\text{where } \sum x^2 = \frac{N^3 - N}{12} - \sum T_x \quad \sum y^2 = \frac{N^3 - N}{12} - \sum T_y$$

$$\text{where } T = \frac{t^3 - t}{12} \quad \text{where } t = \text{number of observations tied at a given rank.}$$

$$\text{So: } \sum x^2 = \frac{(12)^3 - 12}{12} - \left(\frac{8^3 - 8}{12} \right)$$

$$= 143 - 42$$

$$= 101.0$$

$$\sum y^2 = \frac{(12)^3 - 12}{12} - \left(\frac{(2)^3 - 2}{12} + \frac{(4)^3 - 4}{12} \right)$$

$$= 143 - (2.50 + 5)$$

$$= 143 - 7.50$$

$$= 140.50$$

$$\text{So correcting for ties } \sum x^2 = 101.0;$$

$$\text{and } \sum y^2 = 140.50 \quad \text{From the table,}$$

$$\sum d_i^2 = 83.50 \text{ so using the formula:}$$

$$r_s = \frac{\sum x^2 + \sum y^2 - \sum d^2}{\sqrt{2 \sum x^2 \sum y^2}} \quad \text{we get}$$

$$r_s = \frac{101 + 140.50 - 83.50}{\sqrt{2 (101) (140.50)}}$$

$$r_s = \frac{241.50 - 83.50}{\sqrt{238.0}}$$

$$r_s = +0.66 \text{ after correction for ties.}$$

At the 0.05 level there is a significant difference from zero; therefore, a positive association exists between the way in which newcomers and established residents see sub-areas as being desirable environments in which to reside.

APPENDIX L

SERIES OF SPEARMAN'S RANK TESTS FOR ASSOCIATION BETWEEN
DESIRABILITY AND FREQUENCY OF VISITS WITHIN THE
SUB-AREAS AS EXPRESSED BY VARIOUS SAMPLED GROUPS

TABLE L-1
ALL NEWCOMERS

Magnitude of Assessment	Frequency of Responses		Ranking		D	D ²
	Desir- ability	Frequency of Visits	Newcomers	Established Residents		
5	118	38	3	5	-2	4
4	128	199	2	1	+1	1
3	136	170	1	2	-1	1
2	100	110	5	3	+2	4
1	103	72	4	4	0	0
0	15	11	6	6	0	0
Total						10

$$r_s = +0.85$$

Therefore by comparing r_s to the critical value observed in correlation coefficient is significantly different from zero at the 0.05 level.

A high positive association exists.

TABLE L-2
ALL ESTABLISHED RESIDENTS

Magnitude of Assessment	Frequency of Responses		Ranking		D	D ²
	Desir- ability	Frequency of Visits	Newcomers	Established Residents		
5	119	105	3	3	0	0
4	146	209	1	1	0	0
3	145	131	2	2	0	0
2	96	67	4	5	-1	1
1	73	68	5	4	+1	1
0	9	8	6	6	0	0
Total						2

$$r_s = +0.95$$

Therefore by comparing r_s to the critical value observed in correlation coefficient is significantly different from zero at both the 0.05 and 0.01 level.

A very high positive association exists.

TABLE L-3
ALL RESIDENTS IN SUB-AREA D

Magnitude of Assessment	Frequency of Responses		Ranking		D	D ²
	Desir- ability	Frequency of Visits	Newcomers	Established Residents		
5	134	78	1	3	2	4
4	112	228	3	1	2	4
3	133	144	2	2	0	0
2	96	67	4	4	0	0
1	91	50	5	5	0	0
0	10	9	6	6	0	0
Total					8	

$$r_s = +0.88$$

Therefore by comparing r_s to the critical value observed in correlation coefficient is significantly different from zero at the 0.05 level.

A high positive association exists.

TABLE L-4
ALL RESIDENTS IN SUB-AREA L

Magnitude of Assessment	Frequency of Responses		Ranking		D	D ²
	Desir- ability	Frequency of Visits	Newcomers	Established Residents		
5	103	68	3	5	-2	4
4	162	190	1	1	0	0
3	148	157	2	2	0	0
2	100	110	4	3	+1	1
1	85	90	5	4	+1	1
0	14	10	6	6	0	0
Total						6

$$r_s = +0.88$$

Therefore by comparing r_s to the critical value observed in correlation coefficient is significantly different from zero at the 0.05 level.

A high positive association exists.

APPENDIX M
ANALYSIS OF BACKGROUND
INFORMATION

TABLE M-1

DIFFERENCES IN EDUCATIONAL STATUS BETWEEN SAMPLED NEWCOMERS
AND ESTABLISHED RESIDENTS USING A KOLMOGOROV-SMIRNOV
TWO SAMPLE TEST

Category	Freq. of Newcomers Responses	Freq. of Estab. Res. Responses	Cumulative Freq. Newcomers	Cumulative Freq. Estab. Res.	Cumulative Freq. % Newcomers	Cumulative Freq. % Estab. Res.	Difference
1	0	0	0	0	.00	.00	.00
2	26	21	26	21	.52	.42	+.10
3	13	16	39	37	.78	.75	+.03
4	11	12	56	49	1.00	1.00	+.00
5	0	0	50	49	1.00	1.00	+.00
Total	50	49					

$$D = +0.10$$

$$\begin{aligned} \text{Critical value at } 0.01 \text{ level} &= 1.63 \frac{N_1 + N_2}{N_1 N_2} \\ &= 1.63 \frac{50 + 49}{50 \cdot 49} \\ &= 0.3276 \end{aligned}$$

Therefore null hypothesis is accepted and no significant difference between the two samples exists.

TABLE M-2

DIFFERENCES IN OCCUPATIONAL STATUS BETWEEN SAMPLED NEWCOMERS
AND ESTABLISHED RESIDENTS USING A KOLMOGOROV-SMIRNOV
TWO SAMPLE TEST

Category	Freq. of Newcomers Responses	Freq. of Estab. Res. Responses	Cumulative Freq. Newcomers	Cumulative Freq. Estab. Res.	Cumulative Freq. % Newcomers	Cumulative Freq. % Estab. Res.	Difference
1	11	12	11	12	.22	.24	-0.20
2	7	8	18	20	.36	.40	-0.40
3	9	1	27	21	.54	.43	+0.11
4	4	2	31	23	.62	.46	+0.14
5	3	3	34	26	.68	.53	+0.15
6	0	0	34	26	.68	.53	+0.15
7	0	0	34	26	.68	.53	+0.15
8	2	3	36	29	.72	.59	+0.15
9	1	8	37	37	.74	.75	-0.13
10	0	0	37	37	.74	.75	-0.01
11	13	11	50	49	1.00	1.00	0.00
Total	50	49					

$$D = +0.15$$

Critical value at 0.01 level = 0.3276

Therefore null hypothesis is accepted and no significant difference between the samples exists.

TABLE M-3

DIFFERENCES IN THE AREA OF PREVIOUS PLACE OF RESIDENCE
BETWEEN SAMPLED NEWCOMERS AND ESTABLISHED RESIDENTS
USING A KOLMOGOROV-SMIRNOV TWO SAMPLE TEST

Category	Freq. of Newcomers Responses	Freq. of Estab. Res. Responses	Cumulative Freq. Newcomers	Cumulative Freq. Estab. Res.	Cumulative Freq. % Newcomers	Cumulative Freq. % Estab. Res.	Difference
1	27	30	27	30	.54	.61	-0.70
2	10	10	37	40	.74	.81	-0.70
3	5	1	42	41	.84	.83	+0.01
4	0	0	42	41	.84	.83	+0.01
5	1	0	43	41	.86	.83	+0.03
6	3	0	46	41	.86	.83	+0.03
7	0	0	46	41	.86	.83	+0.03
8	4	2	50	43	1.00	.87	+0.13
9	0	6	50	49	1.00	1.00	0.00
Total	50	49					

$$D = +0.13$$

Critical value at 0.01 level = 0.3276

Therefore null hypothesis is accepted and no significant difference between the two samples exists.

TABLE M-4

DIFFERENCES IN THE REASONS FOR MOVING TO MANHATTAN BETWEEN SAMPLED
NEWCOMERS AND ESTABLISHED RESIDENTS USING
A KOLMOGOROV-SMIRNOV TWO SAMPLE TEST

Category	Freq. of Newcomers Responses	Freq. of Estab. Res. Responses	Cumulative Freq. Newcomers	Cumulative Freq. Estab. Res.	Cumulative Freq. % Newcomers	Cumulative Freq. % Estab. Res.	Difference
1	0	5	0	5	.00	.10	-.10
2	9	4	9	9	.18	.18	.00
3	3	3	12	12	.24	.24	.00
4	38	37	50	49	1.00	1.00	.00
5	0	0	50	49	1.00	1.00	.00
6	0	0	50	49	1.00	1.00	.00
7	0	0	50	49	1.00	1.00	.00
8	0	0	50	49	1.00	1.00	.00
Total	50	49					

$$D = -0.10$$

Critical value at 0.01 level = 0.3276

Therefore null hypothesis is accepted and no significant difference between
the two samples exists.

BIBLIOGRAPHY

A. BOOKS

- Armstrong, D. M. Perception and the Physical World, Routledge and Kegan Paul, London, 1961.
- Blalock, H. M. Social Statistics, McGraw-Hill, New York, 1960.
- Boulding, K. E. The Image, University of Michigan Press, Ann Arbor, 1956.
- Broek, Jan, O. M., and Webb, John N. A Geography of Mankind, McGraw-Hill Book Company, New York, 1968.
- Cahill, Susan, and Cooper, Michele, F., (eds.) The Urban Reader, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1971.
- Carr, Harvey A. An Introduction to Space Perception, Longmans, Green and Co., New York, 1935.
- Chapin, F. Stuart, and Hightower, Henry C. Household Activity Systems--A Pilot Investigation, Center for Urban and Regional Studies Institute for Research in Social Science, Chapel Hill, North Carolina, 1966.
- Chisholm, Roderick M. Perceiving: A Philosophical Study, Cornell University Press, Ithaca, 1957.
- Cornford, F. Before and After Socrates, Cambridge University Press, Cambridge, England, 1932.
- Cornman, J. W., and Lehrer, K. Philosophical Problems and Arguments: An Introduction, Collier MacMillan Limited, London, 1968.
- Cox, Harvey. The Secular City, Macmillan, New York, 1965.
- Gurvitch, Georges. The Spectrum of Social Time, D. Reidel Publishing Company, Dordrecht, Holland, 1964.
- Hall, Edward T. The Hidden Dimension, Doubleday and Company, Inc., Garden City, 1969.
- Holleb, Doris B. Social and Economic Information for Urban Planning, Center for Urban Studies of the University of Chicago, Chicago, 1969.
- Lee, Harold N. Percepts, Concepts, and Theoretic Knowledge: A Study in Epistemology, Memphis State University Press, 1973.

- Lewis, Clarence Irving. An Analysis of Knowledge and Valuation, The Open Court Publishing Company, La Salle, 1946.
- Lewis, C. S. Out of the Silent Planet, Macmillan, New York, 1952.
- Locke, Don. Perception and Our Knowledge of the External World, George Allen and Unwin, Ltd., London, 1967.
- Lynch, Kevin. The Image of the City, M.I.T. Press and Harvard University Press, Cambridge, 1960.
- Price, H. H. Perception, Methuen and Company, Ltd., London, 1950.
- Ryle, G. Dilemmas, Cambridge University Press, Cambridge, England, 1954.
- Sellars, W. F. Science, Perception, and Reality, Routledge and Kegan Paul, 1963.
- Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences, McGraw-Hill Book Company, Inc., New York, 1956.
- Sommer, Robert. Personal Space: The Behavioral Basis of Design, Prentice-Hall, Inc., Englewood Cliffs, 1969.
- Wagner, Philip L. Environments and Peoples, Prentice-Hall, Inc., Englewood Cliffs, 1972.
- Wanklyn, M. Friedrich Ratzel, A Bibliographical Memoir and Bibliography, McGraw-Hill Book Company, Cambridge and New York, 1971.
- Webber, Melvin. "The Urban Place and the Non-Urban Realm," Explorations into Urban Structure, Melvin Webber (ed.), University of Pennsylvania Press, Philadelphia, 1963.

B. ARTICLES

- Bardet, Gaston. "Social Topography: An Analytico-Synthetic Understanding of the Urban Texture," Studies in Human Ecology, ed. George A. Theodersen, Row, Peterson, and Company, Evanston, 1961.
- Barker, Robert G., and Barker, L. S. "The Psychological Ecology of Old People in Midwest Kansas and Yoredale, Yorkshire," Journal of Gerontology, 16:144-149, 1961.
- Campbell, Allan K., and Berkland, Jesse. "Public Policy for Urban America," Issues in Urban Economics, ed. Harvey S. Perloff and Lowdon Wingo, Jr. The John Hopkins Press, Baltimore, 1968.

- Carr, Stephen, and Lynch, Kevin. "Where Learning Happens," Daedalus, Journal of the American Academy of Arts and Sciences, The Conscience of the City, 97:1377, 1968.
- Craik, K. H. "The Comprehension of the Everyday Physical Environment," The Journal of the American Institute of Planners, 34:646-658, 1968.
- Gulick, John, Bowerman, Charles E., and Back, Kurt W. "Newcomer Enculturation in the City: Attitudes and Participation," Urban Growth Dynamics, eds. F. Stuart Chapin and Shirley F. Weiss, John Wiley and Sons, Inc., New York and London, 1962.
- Hagerstrand, T., Hannerberg, D., and Odeving, B., (eds.). "Migrations in Sweden: A Symposium," Lund Studies in Geography, Series B, Human Geography, Vol. 13, 1957.
- Horton, F. E., and Reynolds, D. R. "Effects of Urban Spatial Structure on Individual Behavior," Economic Geography, 47:70, 1971.
- Klein, Hans-Joachim. "The Delimitation of the Town Centre in the Image of Its Citizens," Urban Core and Inner City, ed. E. S. Brill, Heiden, 1967.
- Lee, Terence. "Urban Neighborhood as a Socio-Spatial Scheme," Human Relations, 21:264, 1968.
- Lowenthal, David. "Geography, Experience, and Imagination: Towards a Geographical Epistemology," Annals, Association of American Geographers, 51:245, 1961.
- Lynch, Kevin, and Rivkin, Malcolm. "A Walk Around the Block," Landscape, 8:24, 1959.
- Mason, H. L., and Langenhelm, J. M. "Language Analysis and the Concept Environment," Ecology, 38:325-340, 1957.
- McHarg, Ian. "Man and His Environment," The Urban Condition, ed., J. Kuhl, Basic Books, New York, 1963.
- Saarinen, Thomas F. "Perception of the Environment," Association of American Geographers, Resource Paper No. 5, 1969.
- Sonnenfeld, Joseph. "Geography, Perception, and the Behavioral Environment," Man, Space, and Environment, eds. Paul Ward English, and Robert C. Mayfield, Oxford University Press, New York, 1972.
- Zannaras, ^{George} George A. ^{Wrong!} "Perception of the Environment," Association of American Geographers, Resource Paper No. 5, 1969.

C. OTHER

Blake, William. "The Everlasting Gospel," Selected Poetry and Prose, Longmans, Green, and Company, New York, 1950.

Churchill, H. S. "An Open Letter to Mr. Isaacs," Journal of the American Institute of Planners, 14:40, 1948.

Dixon, W. J., (ed.) BMD Biomedical Computer Programs, University of California Press, Berkeley, California, 1970.

Manhattan Telephone Directory, Southwestern Bell Telephone Company, 1972.

Morris, William, ed. The American Heritage Dictionary of the English Language, American Heritage Publishing Company, 1969.

Oblinger and Smith Corporation. A Neighborhood Analysis in Manhattan, Kansas, Wichita, Kansas, 1969.

U. S. Bureau of the Census, Department of Commerce, Census of Population, 1970, PC-18 Kansas, Block Statistics for Selected Kansas Cities.

Wilson and Co. Manhattan Guide Plan: The Years Ahead, Manhattan, 1964.

World Almanac and Book of Facts, ed. Luman H. Long, New York World Telegram and the Sun, Scripps, Harvard, New York, 1972.

THE EFFECTS OF NEWCOMER ENCULTURATION
UPON URBAN SPATIAL BEHAVIOR

by

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AN ABSTRACT OF A MASTER'S THESIS

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Geographers have, traditionally, treated the city as an artifact, a physical fact, with arrangement and locations at discrete places, but they have failed to recognize the city as a social system in action. Urban problems should be approached and resolved not in an isolated or segmented manner, but within a framework inclusive of behavioral and environmental perspectives.

This paper is centered around the effects of enculturation upon the characteristics of urban spatial behavior. Its relevance, therefore, can be expressed in terms of enculturation being the result of a series of decisions regarding the movement of individuals from one environment to another. Thus it is properly labelled as a study of spatial learning behavior.

Information was obtained through questionnaire surveys which inquired into a range of perceptual and behavioral assessments of the city of Manhattan, Kansas. The gathered data was then analyzed for differences in responses between the newcomer and established resident groups. It was found that established residents, despite similar background characteristics, tended to display far more complex spatial activity patterns than newcomers. Subsequent examination revealed that this condition could be meaningfully explained in terms of their greater degree of perceived familiarity with the opportunities for spatial activity within the city. The greater degree of perceived familiarity was in turn found to be determined largely by the longer period of residence in that particular environment when other relevant socio-economic variables were controlled.

With support from the rather limited literary sources available, this thesis concluded that research into enculturation, and its effects on behavior, provides a means of assessing the efficiency of the spatial organization of the city as perceived by its residents. Only if the city is readily conducive to environmental learning will an efficient and desirable pattern of individual spatial activities be developed over a relatively short period of time.

It was hoped that the implications suggested in the concluding chapter, many of which lie in the field of urban planning, can provide a basis for future research into urban spatial behavior, not only by planners, sociologists and psychologists, but by urban and cultural geographers alike.