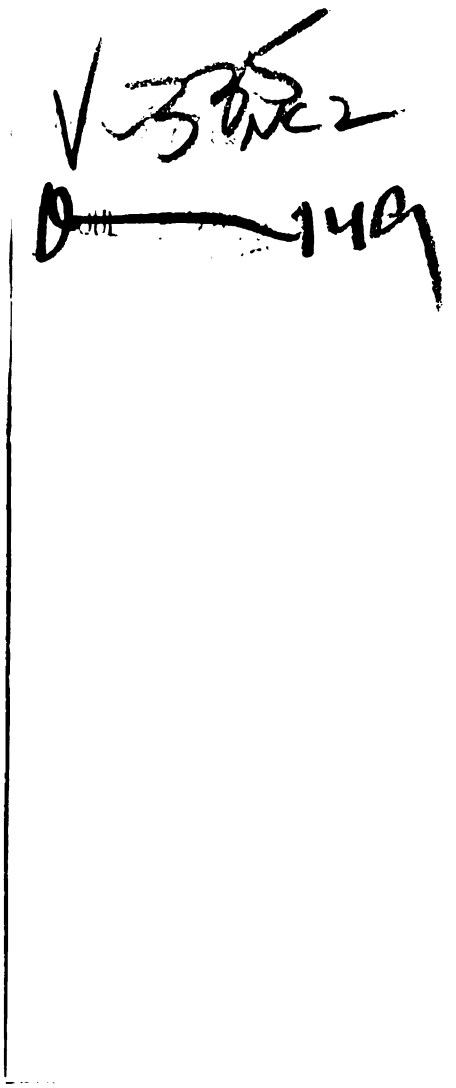

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ABSTRACT

URBAN LIFE STYLES AND ENVIRONMENT: THE EFFECT
OF LOCATION AND RESIDENCE ON BEHAVIOR
IN A TIME-SPACE FRAMEWORK

By

Brian Paul Holly

The spatial distribution of residential subareas in the city is usually explained by one of two models. The economic competition model sorts residences out on the basis of competition for accessible sites. The social choice model argues for residential differentiation as a consequence of values, social distance preferences, sentiment, and other non-economic motives. Both models are complementary, but social choice, through the intervening construct life style, is seen as offering an increasing degree of explanation.

This research tests the hypothesis that there are significant differences in life style between urban residential environments, and that these differences reflect differential preferences on the part of urbanites. Life style is conceptualized as a set of predispositions to act based upon an individual's hierarchy of values. The concept is operationalized as a set of activity sequence patterns. The behavior people exhibit reflect their desired style of living, and this can be related to residential environment.

Data come from a longitudinal survey of residential movers in the Toronto, Ontario metropolitan region. Daily time budgets were recorded for middle income families, both with and without children, living in either single family homes or high rise apartments in downtown Toronto or its suburbs. The sample is relatively homogeneous in terms of income,

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Activities were recorded for every fifteen minute period of a twenty-four hour day and are coded according to a ninety-nine item activity code. The activities are arrayed in transition probability matrices by residential environments and sex to achieve a measure of the probability of linking any activity with any other activity. The matrices were subjected to factor analysis to determine the underlying sequence patterns in the activity data.

Those living in downtown Toronto sequence activities in such a fashion as to reflect a cosmopolitan style of life, whereas suburbanites are more family oriented in their behavior. Differences in life style between housing types are not significant when location is controlled for. Suburban housewives emerge as spatially isolated individuals who emphasize domestic work, private needs, and child care in their daily routines. Husbands, on the other hand, lead more complex daily lives centered on work and leisure behavior.

Single family homeowners close to the city center enjoy the amenities offered by proximity to downtown but maintain a familistic orientation at the same time. Suburbanites in high rise apartments and single family homes pattern their activities in a similar manner.

These findings tend to confirm the existence of life style variation by residential location, and support with behavioral data the empirical findings of Social Area Analysis and Factorial Ecology. As a major axis of urban residential differentiation life style deserves more attention by scholars interested in the complex social geography of the city.

URBAN LIFE STYLES AND ENVIRONMENT: THE EFFECTS OF LOCATION AND RESIDENCE ON BEHAVIOR IN A TIME-SPACE FRAMEWORK

By

Brian Paul Holly

A DISSERTATION

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Geography

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Chapter 1

INTRODUCTION

Urban society has been undergoing profound changes in recent decades, particularly since World War II. In North America changes have been seen in rising incomes, higher productivity, rapid technological change, the almost complete dominance of the automobile as a transportation form, rapid suburbanization, inner city renewal, and the many pathological conditions of urban society of which we are all too painfully aware.

These changes have tended to emphasize the fact that the city is not an internally homogeneous entity which can be contrasted to rural society as a means of understanding social change. Traditionally, the city has been investigated from the vantage point of rural, traditional values and forms. With almost ninety percent of the population of North America either living in urban places, or residing within the effective influence area of an urban place, the traditional distinctions diminish in importance. Society is predominantly urban, and as diverse within urban areas as between urban and rural areas. The city, contrary to earlier conceptions, contains a heterogeneity, both socially and physically, which merits the attention of scholars.

This condition has not gone unrecognized by economists, sociologists, geographers, planners, and others. But only relatively recently have significant strides been made in understanding the interaction between spatial structure and social structure in the contemporary city. This

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dissertation is an attempt to contribute to the dialogue currently prevalent within social geography regarding residential differentiation, geographic mobility processes, and behavior in urban environments.

More specifically this study attempts to add to the already significant findings which have emerged from Social Area Analysis by testing the hypothesis that life style varies systematically with residential environment in metropolitan areas. People select residential environments which are congruent with the image they possess of themselves, and they seek locations which contain families with similar ways of life. This process helps to account for the observable differences in the spatial patterning of social groups throughout the city.

This research has both a conceptual component and an empirical component. In the case of the former, the concept of life style is introduced into urban social geographic research in a more formal manner than previously. The empirical element involves an analysis of the activity sequence patterns (as a surrogate measure of life style) of a sample of Toronto, Ontario residents in an attempt to sort out differences in life styles among urban residents residing in different locations and different housing environments. Within this context the little used time-space budget is employed to secure activity data, and a decision-making framework is presented in order to understand the role of the individual as the fundamental unit of analysis.

Within this larger framework, several specific objectives motivated the conduct and guided the methodology of this research effort. First, an attempt is made to present and elaborate upon the construct life style as an organizing framework for understanding residential differentiation in the city. In the past residential structure has been explained

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by reference to economic competition among social groups and land uses for urban space. In recent years, the notion of social values has emerged as a competing explanation of urban residential structure. The use of life style is consistent with this latter tradition, and is here defined as an individual's predominant role orientation. Information about a person's life style can be recovered from his or her behavior (behavior is defined as the acting out of roles).

Life style acts as a convenient summary construct which incorporates information about a person's social and economic status, stage in the life cycle, behavior, preferences, and personality. As a basis for understanding residential differentiation, life style can be used to explain the locational decisions of individual households. The aggregate of individual decisions results in an urban pattern of residential neighborhoods occupied by groups practicing different styles of living.

A second objective of this study centers on the daily activity patterns of urban residents as a measure of their life styles. As mentioned above, life style is a comprehensive construct. Bridging the gap from construct to measurement is a difficult task in this case. Human behavior seemed to be the best measurement category, with the individual activity episode as the fundamental behavioral unit. But what is important is not so much the activity itself but the manner in which activities connect with other activities over some definable unit of time.

In light of this it became necessary to investigate the decision-making process as it relates specifically to activity sequencing to determine a summary measure of the likelihood of linking specific activities to one another.

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of employing transition probabilities as a measure of activity sequencing behavior on the part of urban residents. Transition probabilities allow the identification of sequences which particular groups tend to emphasize in their daily routines. Groups are identified a priori on the basis of residential location and housing type, and are compared in terms of dominant patterns of behavior.

This study also seeks to determine if life styles, as defined behaviorally, can be used to verify the spatial aspects of life style distribution based on other measures (e.g. census tract data). Such an analysis has not been attempted before in geography.

A final objective, which incorporates all the previous ones, relates to a concern for applying behavioral data and a behavioral conceptual framework to the question of urban spatial structure. Although behavioral analyses have become more common in recent years (e.g., shopping trip studies, crime studies, intra-urban mobility) the study of spatial aspects of urban social structure have relied primarily on the use of aggregated data for census tracts. This study follows the premise that analyses of urban society cannot ignore social behavior patterns, and further, cannot treat behavioral categories in isolation. The time-space budget approach incorporates the totality of behavior over some specified time period, and thus focuses on movement and activity in the most dynamic sense.

In order to enhance our understanding of the dynamics of urban living and its implications for the future of urban society, social science must pursue all possible avenues of investigation, no matter how novel. In addition, disciplinary boundaries must be bridged in order to facilitate this process. In a recent provocative essay David Harvey noted that,

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> There are plenty of those possessed with a powerful sociological imagination who nevertheless seem to live and work in a spaceless world. There are also those, possessed of a powerful geographical imagination or spatial consciousness, who fail to recognize that the way space is fashioned can have a profound effect upon social processes - hence the numerous examples of beautiful but unlivable designs in modern living. (Harvey, 1973: 24)

It is into this interface between the sociological and spatial approaches to problems that this dissertation moves, in the hope of contributing to our knowledge of the relationships between social process and spatial form.

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Chapter 2

URBAN RESIDENTIAL STRUCTURE

Residential Structure of the City

Within the general frame of reference of urban spatial structure and the forces which generate the pattern of growth in cities, two main streams of thought are prevalent. Andrei Rogers (1967) identifies a fundamental distinction in the orientation with which the problem of explaining urban spatial structure is approached:

> The first point of view is macro and system oriented, focusing on the phenomena of urban growth and change and on the relative forces acting to promote orderly development. The second, on the other hand, is micro and process oriented, concerning itself rather with the factors that give rise to the phenomena by their collective influence on the decision making of societal units. (Rogers, 1967: 108)

The distinction reduces to one of which forces are operating to produce the observed spatial patterns, though the distinction is usually not considered so complete that no overlap exists. From the systems oriented standpoint the spatial structure of a city is interpreted in terms of, ". . . the dynamics of natural, social, and economic forces acting within an urban environment" (Rogers, 1967: 109). Usually, structure (i.e., the sorting out of various land uses) has been explained through the operation of the land market, specifically vai the medium of rents. The process oriented approach emphasizes the "events" which produce urban growth and change, these events being the consequences of the activities of interacting decision makers. "The active role of human volition replaces societal adaptation to sapce as the principal

referent" (Rogers, 1967: 109).

Heretofore, the most dominant explanation of urban spatial structure has been a land use theory that specifies a relationship between land use and land value. Land values were responsible for the allocation of land uses to different areas of the city; accessibility of a site to all other locations being a prime determinant of that site's value. Since accessibility has been measured traditionally in terms of transport costs or physical distance, the relationship is postulated as being one of increasing land value with decreasing transport cost to the central business district. Economists still measure accessibility in these terms (Alonso, 1965). However, as Moriarty (1970) points out, while accessibility constitutes an important variable in the selection of land use for a particular site, it is by no means the only consideration employed in the selection of residential locations by urban residents.

Quinn (1950) has observed that the greater the frequency of interaction between any land use activity and complementary activities, the greater will be that activity's tendency to maximize its accessibility to the complementary activities. However, while this postulate may hold true for non-residential land use activities, it cannot be said to describe the locational behavior of residential decision makers. Moriarty (1970) notes that residential decision makers display a geographical bias in both locational and travel behavior which, ". . . conflicts with the prescribed order" (Moriarty, 1970: 19). He further states that even though residentially based actors occupy different household locations from which interaction with different spatially distributed activities is conducted, location theorists still

lump them into the same group with non-residential actors in terms of accessibility preferences. He concludes his criticism of the accessibility model by stating:

> However, the complementary activities that non-residential decision makers seek to be accessible to (that is, their consumers) are not the same complementary activities to which residential decision makers seek to increase their accessibility. Residential decision makers seek to be accessible to those activities deemed necessary by them to satisfy their day to day needs. (Moriarty, 1970: 19)

The contention here is that residential structure cannot be fully explained by models and theories which have been designed to account for the locational patterns of non-residential land uses. The different decision makers do not operate using similar preference structures. In fact, a recent study by Fales and Moses (1972) proposes that current land use theory better describes the structure and growth of nineteenth century cities, and new approaches are needed to explain present day patterns. They suggest that since a different set of processes have been operating in recent decades (particularly dispersal through improved transport technology) new variables must be entered into the postulates which attempt to explain spatial structure.

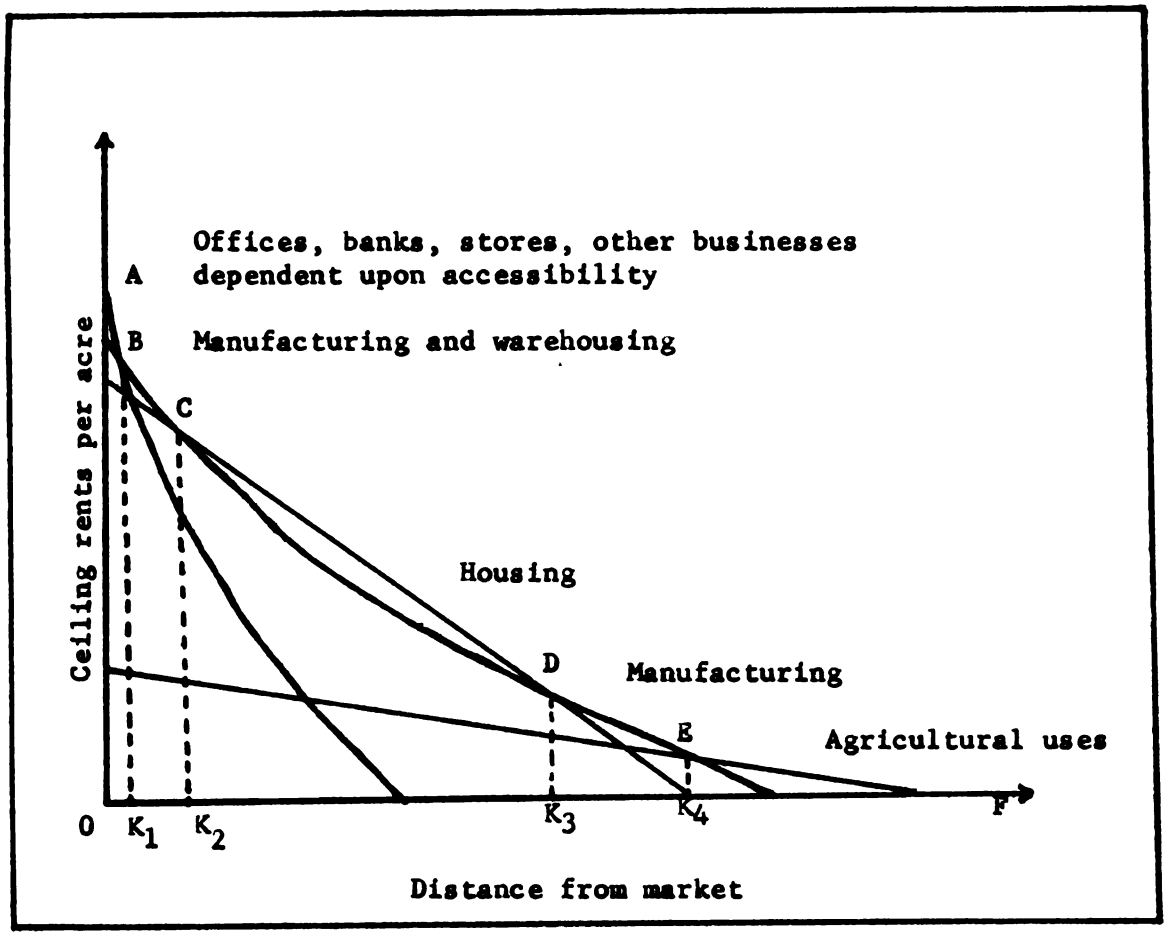
This dissertation will attempt to introduce new concepts to help explain these new phenomena in urban areas. Specifically, it is contended that, since urban residents for the most part can ambulate through the city without severe constraints on their mobility, some old notions about the relationship between residential location and accessibility to central urban functions no longer hold true. Instead, urban dwellers are free to consider locations and housing environments which meet the demands of whatever particular preference structure they embrace. Concepts such as social distance, differential access to

leisure activities, sentimentality and life style enter the picture. People's housing choices reflect aspects of their values, needs, and drives more than their desire solely to minimize travel costs. This study will investigate one aspect of that situation.

Competing Models of Residential Structure

Residential differentiation within urban areas has generally been explained by two competing conceptual devices. These are termed the economic competition hypothesis, a system oriented approach, and the social choice hypothesis, a process oriented approach (Feldman and Tilly, 1960). Presently, land use allocation models incorporate the former postulate to the exclusion of the latter. The economic competition hypothesis views the spatial distribution of all land uses as being governed by the process of competition for locations with fixed values (determined by accessibility to the central business district). All residential land users possess similar preferences but differ in their budget allocation and available resources. Ability to pay explains distance from the central core, ability being associated with quality, size, and location of households. Residential decision makers, according to this model, although they may possess similar housing preferences, compete for locations and are distributed on the basis of financial resources. The difference in ability to pay determines the spatial distribution of socio-economic groups in urban space (Moriarty, 1970). Figure 2-1 displays the juxtaposition of urban land uses as the economic competition model would predict them.

Land uses sort themselves out on the basis of bid rent curves. The activity with the highest and steepest rent curve for any particular location would occupy that site. Figure 2-1 shows the rent curves



Source: Nourse (1968) p. 115.

Figure 2-1

RENTS FOR LAND USE CATEGORIES WITH DISTANCE

FROM THE CENTRAL BUSINESS DISTRICT

for the four major land use types (commercial, manufacturing, residential, and agriculture) and their optimal spatial distribution. Within this larger context a housing subsystem exists based upon processes of economic competition, wherein the spatial distribution of housing types is dictated by rent bids. "The slope of the rent bid curve depends upon the decreased price per unit of housing as distance from the market increases, the amount of house per unit of land, and on the substitution of land for nonland inputs as rent decreases" (Nourse, 1968: 114). As a consequence of this hypothesis high rise apartments would be located exclusively near the center, and with increasing distance away and declining rents housing types would shift to duplexes, thence to single family homes, and finally single family homes on large acreage (Nourse, 1968).

The social choice hypothesis holds that residential locations are chosen on the basis of differential preferences or behavioral considerations. This position views urban space as a reflection or indicator of social values which are governed by sentimental, non-economic, or cultural factors (Feldman and Tilly, 1960). Status significance, ways of life, and personal motives of residential change are the major concerns which determine residential differentiation. Residential decision makers are not so much indifferent to location, but are greatly influenced by the character of established residential areas. The selection of a household involves a conscious residential choice by decision makers who vary in their preferences because of different values, needs, and desires (Moriarty, 1970).

It is believed that the latter explanatory system offers a more fruitful framework for conducting research on urban residential

structure. Previous research has demonstrated the inconsistencies which prevail between residential location behavior and the economic competition hypothesis. Both Duncan and Duncan (1955) and Feldman and Tilly (1960) observed that white collar workers and blue collar workers at the same levels of income display different residential patterns. Other preferences, such as social distance may be responsible for the difference instead of a sub-social force such as competition for accessible sites.

Witness also the existence of a cultural artifact such as Boston's Beacon Hill residential section occupying a central city location which should contain high rise office buildings and other commercial establishments according to the economic competition hypothesis (Firey, 1945). Another contradiction to the notion of economic competition producing an orderly arrangement of residential land uses is the dispersal of such high density activities as high rise apartment buildings, garden apartments, and townhouses (Fales and Moses, 1972). For the past two decades the character of the housing stock in Metropolitan Toronto has been shifting such that the ratio of one and two family buildings has been declining. Kumove (1966) has noted that:

> Apartments comprise over 50 percent of all new buildings built in 1958, and over 60 percent of those built since 1961. By the end of 1965, about 70 percent of all new housing were apartments. The vast majority of these apartments were constructed on vacant land in the suburban municipalities. (Kumove, 1966: 5)

Earlier, Hoyt (1939) proposed that the initial location and growth of the high rent areas of most North American cities directly influenced the location of medium and low rent areas. The wealthy or upper class residents located their homes on radial transportation

routes emanating from the city center or on, ". . . high ground which is free from the risk of floods and to spread along lake, bay, river, and ocean fronts, where such water fronts are not used for industry" (Hoyt, 1939: 117). The middle range rental areas were situated usually on either side of the high rent sector, with lower rent sectors located on either side of those. This would seem to indicate that social distance considerations may predominate over more economic factors in the location decisions of most urbanites.

Obviously, considerations other than accessibility to complementary land use activities (although accessibility remains important) must be weighed when constructing models of urban residential structure. In the tack taken above an attempt has been made to elaborate upon the relative power of two competing hypotheses to account for urban residential differentiation. The conclusion to be drawn is that, at the metropolitan level, the forces of economic competition account for the general spatial arrangement of land uses, but that within the residential or housing subsystem other considerations, namely social ones, account for the spatial variation of residential neighborhoods. This dissertation proceeds from this social values framework, but utilizes it more as a guiding principle than as a working hypothesis. The proposition that differences in behavior correspond to differences in residential environment, as defined by location and housing type, will serve as the general question to be addressed. Different behavior patterns are seen as resulting from variation in life style preferences, which in turn are manifestations of the value orientations of urban residents.

Urban Residential Models

Most students of the urban scene proceed under the assumption that the urban community is neither an undifferentiated mass nor a haphazard collection of buildings and people (Timms, 1971). There seem to be fundamental processes operating which give order and pattern to the physical and social fabric of the city. This is no less true of residential differentiation than it is of the differentiation of other forms of urban land use. In fact, since residential land use occupies the largest percentage of space in metropolitan areas, social scientists have devoted considerable effort to identifying the processes by which urban residential areas become differentiated from each other along income, family status, ethnic, and other lines. Louis Wirth (1938) once said that the residential differentiation of the city resembles a mosaic of social worlds. That is, similar groups of people cluster together and come to characterize their area. But the means by which this mosaic form has been interpreted in different ways by urban scholars.

During the early decades of the twentieth century a group of sociologists at the University of Chicago, under the leadership of Robert E. Park and Ernest W. Burgess, sought to understand the growth and structure of the city from an ecological perspective. They placed emphasis on the subsocial forces which shaped the residential and social structure of urban areas, and they postulated a process of economic competition, or the sorting out of groups on the basis of income. The processes of invasion, succession, and dominance derived their energy from the expansion of the city's population and area through time. The constant turnover of population at the urban

core provided the stimulus for growth at the periphery. Those groups with the longest tenure in the city were also the most upwardly mobile. With an increase in economic status they moved to newer homes in the peripheral zones while groups new to the city (usually European immigrants) and of a lower economic class would replace them. At a very general level Burgess's concentric zone model of urban growth reflected this sorting process on the basis of income and tenure.

Hoyt (1939) rejected the concentric zone model in favor of a sectoral arrangement of land uses. He proposed that high and low rent neighborhoods occupied distinct subareas of the city. The spatial pattern of rental areas was determined by those who could afford the highest rents. Higher status areas spread out along major transportation routes and higher ground, while interstitial areas came to be occupied by lower status residences. The sectoral model was also based on an assumption of economic determinism; it merely postulated a different spatial arrangement of residential land use. Also built into it was a social distance element, whereby each socioeconomic group would locate next to areas of the next highest group. In this fashion the poor would be located as far away from the rich as possible. Finally Harris and Ullman (1945) proposed a picture of the city where land uses concentrated around separate nuclei as opposed to a single core area.

Until the 1950's one line of research that social scientists pursued involved the evaluating of these three competing models of urban residential structure. Research results conflicted with some expectations and it was concluded that they were overly simplistic and suffered from an absence of clearly stated assumptions. It took the advent of Social Area Analysis (Shevky and Bell, 1955) and its subsequent

derivative methodology Factorial Ecology to finally unravel the web of conflicts which had arisen. The Social Area Analysis model includes three basic constructs which describe the way in which urban populations are differentiated. They are economic status (social rank), family status (urbanization), and ethnic status (segregation). An examination of these dimensions would lead to a more complete picture of how residential areas were differentiated. As originally conceived, the Social Area method constituted an indexing system and typology. Only later did the authors attempt to establish a theoretical basis for the differentiation that occurred (Shevky and Bell, 1955).

Although Shevky and Bell demonstrated the use of the Social Area typology they were interested in a structural rather than a spatial representation of social (residential) space. The task of analyzing spatial differentiation was left to others. The methodology most often employed to test the classical spatial models of urban growth and structure has been summarized by Murdie:

> A sample of census tracts was selected from a predefined grid of sectors and zones using slightly different criteria in each study. Social area indexes were calculated for each tract and an analysis of variance design was used to determine the relative significance of the spatial models in describing the location of each index. (Murdie, 1969: 25)

One weakness in the above approaches is their failure to incorporate anything other than aggregate census tract data in the analysis. They have provided us, however, with sound empirical generalizations upon which to base other forms of investigation into the structure and dynamics of urban residential differentiation.

Murdie (1969) categorizes studies employing Social Area Analysis as focusing on formal characteristics of social space. At least two

other characteristics, the functional and the circulatory, are required in any comprehensive social geography of a metropolitan area. Webber (1963) points up the limitations of the purely structural approach in another manner:

> The kinds of information that can be read from maps showing urbanized areas or land use patterns are therefore likely to be misleading . . . maps of this sort miss the essential meaning of urbanization. Whether the maps represent existing patterns or plans for future patterns, they present static snapshots of locational patterns of people or buildings or activity places and say nothing about the human interaction patterns that are the heart of complex social processes. (Webber, 1963: 49)

He further argues that the basis for rational planning should reside in the complex processes of interaction which characterize urban areas over time. Meier (1962) proposes that urbanism and urbanization are both measurable in terms of communication transactions and information flow. In essence, he advocates a theory of the city based upon intensification of interaction and operationally measurable by 'bits' of information passed. By contrast with rural dwellers, who characteristically lead spatially and temporally homogeneous lives, urbanites experience great variability, not only in the selection of activities, but also in the place, time, and duration of their exercise (Meier, 1962). It is the interactional aspects of urban dwellers lives, and not their social, economic, and demographic characteristics, that provide the focus of inquiry in this dissertation.

This study will investigate the behavior patterns of various residentially defined groups. It proceeds from a realization that the ecological approach to residential differentiation has already made its most significant contribution. With the concentric zonal, sectoral, and multiple nuclei conflict having been settled by Social Area Analysis

and Factorial Ecology we now have some valuable empirical generalizations about the aggregate social, economic, and ethnic structure of the modern western city. The time now seems propitious to seize upon the suggestions of Meier (1962), Webber (1964), and others to move to a different level of scale in the search for a better understanding of urban organization. This change entails a shifting from the study of attributes of urban populations to research into their everyday behavior.

Human Activity Systems

In recent years, scholars and planners have moved from purely structural studies of urban growth and form to investigations which contain a behavioral component to them. That is, many researchers have come to realize the value of studying the behavior of urban dwellers as they interact with their environments. Social scientists are interested in the reasons behind human behavior so that such processes as learning and decision making can be better understood. Social and physical planners, on the other hand, study behavior with more pragmatic objectives in mind. They seek to map and understand behavior so that planning projects can be designed which are responsive to the needs of those individuals who live and interact in the city. The study of interaction has superceded the study of structure because purely structural models of the city are of a low level of explanation.

Social scientists and planners in recent years have proposed a human activity systems framework for studying urban spatial structure. This dissertation represents an attempt to fuse the study of human activity systems together with the more traditional inquiry into residential differentiation by investigating the ways in which people

structure their daily activities and by relating those differences to variation in residential location and environment. If different regions of the metropolitan area can be characterized by different economic, social, and ethnic structures, then they may also display differences in the interaction patterns of their residents. It is the purpose of this dissertation to make an exploratory incursion into the relationship between environment and behavior.

Chapin and Hightower view urban activity systems as, ". . . made up of patterns of human or institutional interaction associated with the functions of the urban center" (Chapin and Hightower, 1966: 4). They see the social system as a basis for studying human interaction, with the household, or family, forming the units of observation. In addition to the social system there are at least two other systems arising from and organizing basic urban functions: (1) The economic system where interaction occurs as a result of production and distribution activities, and (2) An institutional system (or series of subsystems) resulting from the activities of governmental, religious, political, labor, and other institutions. Chapin and Hightower see the need for research on household activity systems because:

> This concerns the living patterns of urban residents and the attitudes that influence their use of city space --how they carry on their daily, weekly, and seasonal activities and how well adapted the structure and form of the city is to these living patterns. The urban planner can no longer rely on intuition in these matters. He needs to bring to bear a whole new area of analysis which precedes the use of location and transportation models now being introduced into planning practice. (Chapin and Hightower, 1966: 2)

Along these same lines others have suggested that problems of metropolitan growth require theoretical statements of spatial agglomeration based upon premises which differ from those of traditional

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location theory (Cullen and Nichols, 1971). These researchers offer an approach founded on micro-analysis of the behavior patterns of members of tertiary institutions and the development of models suitable for testing the impact of decentralizing such organizations. In another instance Cullen, Godson, and Major (1971) point to the shortcomings of allocation models as an indication that a more comprehensive view of behavior patterns is needed. Most models (Lowry, 1964; Alonso, 1966; Wingo, 1961) generate residential distributions on the basis of a simple relationship between residence and employment. Services are then distributed relative to the residential pattern.

> In no case is account taken of the fact that homes are usually occupied by families, the members of which may work in as many as three or four different places and go to school in yet another place. Shopping may have to be done near the wife's workplace or the primary school. In short, the action spaces of the household, in the framework of which the residential location decision is made, is not merely a workplace - home dumbell but a complex joint action space structured by the commitments of all the members of the family. (Cullen, Godson, & Major, 1971: 3)

In this same respect, Whitelaw (1972) has attempted to classify the study of residential mobility according to levels of scale. He concludes that at the metropolitan wide level of analysis, consideration of the location of workplace looms large, but at a subarea scale such as the neighborhood the gamut of activities and accessibility to services and amenities become important to the location decision.

In his presidential address to the European Meetings of the Regional Science Association in 1969 Torsten Hägerstrand articulated a model of daily behavior based upon time-space paths. His purpose was to explore new theoretical approaches to the relationship, ". . . between the micro-situation of the individual and the large

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The purpose of the preceeding statements has been to indicate the direction in which some significant research on urban structure is moving. How human activities are organized in time and space has taken on new importance in light of the inadequacies of traditional location theory in accounting for urban residential structure. This dissertation follows in this human activities tradition. There are, however, several ways in which this study differs from much recent work on activity systems. This investigation will not attempt to model the decision making process or the rules governing activity choice and sequencing. Activities will be analyzed from the point of view of linkages among various types of activity categories. It will be assumed that a logical connection exists between empirically identifiable patterns of activity sequences and the conceptual term, life style.

The intent here is to relate the relatively unexplored phenomenon of activity sequencing to the more established concept of life style, and to attempt to relate differences in life style to questions of residential differentiation. Others have suggested this activities-life style link (Chapin and Hammer, 1972) but as yet no empirical research has been attempted along these lines. The unique contribution of this dissertation will be that of relating life style to residential differences via the medium of activity systems.

Study Design

It is the contention here that the particular types of residential environments found in the city will have associated with them

certain patterns of behavior. People select residential neighborhoods and individual dwellings in which to live for a variety of reasons, such as social status, life cycle considerations, space considerations, location (accessibility to downtown or to open spaces, etc.), income changes, and others (Rossi, 1955). Running through this list of reasons is the desire on the part of individuals and families to find a residential environment which is congruent with their preferred way of living (Michelson, 1970). This dissertation will attempt to investigate one aspect of this life style-residential environment relationship. Namely, are there patterns of behavior which seem to be characteristic of certain environmental situations, and can these differences in behavior be explained by those environmental situations?

In order to achieve this objective, residential environments will be defined in terms of location within the urban area and in terms of dwelling type lived in. The concept of human behavior will be approached from a relatively new perspective, that of the human time budget. Traditionally, the behavior of variously defined groups living in the urban area has been identified in terms of membership in organizations, political activity, neighboring, employment, recreation, child care, and the like. The time budget, by contrast, with its recording of <u>all</u> the activities undertaken by an individual over some specified period of time, represents a more comprehensive approach to the identification of behavior patterns. It focuses on the micro-behavioral units of individuals and groups rather than on rates of participation and other aggregate forms of behavior.

The time budget allows the researcher to make finer distinctions between and among groups regarding the activities they emphasize in

their daily lives, the allocation of those activities to temporal units, the cyclical nature of activities, and their spatial manifestations. Within groups defined by such characteristics as social class, family status (or life cycle state), education, income, etc., the analysis of time budgets may lead to the discovery of preferences for ways of life on the part of subgroups.

In order to accomplish the objectives of this study the time space budgets of a group of families residing in the Toronto, Ontario Metropolitan area will be studied for regularities in their behavior. In addition to investigation of time budgets while holding the residential environment constant, controls are placed upon the social class and life cycle stage of the subjects.

By limiting the study group to one broad social class as defined by income (middle to upper middle class) and two life cycle categories (married couples in the childbearing years both with and without children) it is hoped that the contaminating influence of such variables can be minimized. In this way, differences in patterns of behavior which may emerge can be attributed to the life style preferences of the individuals involved. A further control will be placed upon sex, since this has been considered to be an influencing factor in the assessment of differences in behavior. Women and men take on different roles quite often, and since the role differences are quite pronounced from city to suburb and from housing environment to housing environment, the ensuing analysis will take sex into consideration. More importantly, in a later chapter, life style will be conceptualized as a dominant role orientation. Therefore, differences in sex (which orient roles based upon social organization) must be accounted for.

Behavior, in this instance the activities people pursue, will be analyzed and described by answering the questions: how do individuals link their activities over the course of a day? Are certain patterns of activity linkages characteristic of groups living in particular housing types and/or locations within the metropolis? Which activity types tend to be more closely linked to each other for which groups of urban dwellers? Can these linkage patterns be connected to particular aspects of the various environmental conditions in the city? For example, it is believed that individuals select downtown high rise apartments over suburban single family homes in order to pursue life styles which emphasize cultural activities, entertainment, and work related leisure. Therefore, the manner in which such individuals link their activities in time and space should differ in a fundamental way from that of their suburban family oriented counterparts.

The means by which activity linkages will be summarized and modeled in this dissertation was first suggested by Hemmens (1966) and later refined by Brail (1969). The transition probabilities matrix of Markov Chain Analysis will be the initial grouping procedure used, whereby the probability of movement from one activity to another will be calculated from matrices of frequencies for various subgroups of the sample.

This dissertation takes a methodological approach which differs from earlier attempts at modeling activity linkages. First, earlier analyses have been confined to trip data gathered in transportation surveys. Such data are highly restrictive in that they consist only of out-of-home trips and are coded by land use at origin and destination and not by activity type. Secondly, with the exception of

Horton and Wagner (1968), no other social scientists known to this author have examined activity linkages for different groups residing in the city. The focus of this dissertation, then, is on the activities which people living in different environments select to follow over the course of a day's time.

It is not the intention of this research to offer activity linkages as an operational definition of life style. It is obvious that so general a concept could not be adequately defined by so specific a measurement as a transition probability. Nevertheless, a knowledge of how people link their daily activities can provide a descriptive measure of one aspect of life style, namely behavior patterns. This dissertation will not only attempt to utilize this approach, but will provide an assessment of the activity linkage methodology as a tool for relating differences in life style to residential differentiation in urban areas.

To this end, this dissertation has been divided into the following seven chapters and several appendices. Chapter Three provides a review of the construct life style. It proceeds from an historical recapitulation of the concept as it has been defined in Sociology to an analysis of life style as it has been incorporated into urban differentiation. Finally, a conceptualization of life style is offered which makes it useful as a framework within which to cast this study.

Chapter Four establishes the behavioral basis of activity systems of human beings. It provides an exploration of the most significant and recent thought on activity research and attempts to define the conditions under which activity decisions are made. Further, the chapter outlines several conceptual schemes for considering decision

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In the fifth chapter the data are described along with the sample and study area. Because of the unique manner in which the sample was selected, a lengthy section is devoted to the applicability of the sample data to this particular study. Information is provided as to the demographic, social, and economic conditions of the respondents. Also included is a brief justification for the selection of Metropolitan Toronto as an appropriate urban area within which to carry out research. Finally, a history and description of time budgets are given. In addition, the instrument by which the activity data were secured is described. The instrument itself is included as an appendix.

Chapter Six presents an analysis of the data and offers several hypotheses which are evaluated in light of the analysis. The chapter includes a description of the methodology by which the data were analyzed and summarized.

An evaluation of the method and a summary of the study are provided in Chapter Seven. The utility of life style as a concept suitable for research on residential differentiation, and the value of activity linkage as an analytical device will both be assessed. As a conclusion, directions for additional research in this area of study, and the prospect of time budget analysis as a viable and useful method of study will be outlined.

Chapter 3

LIFE STYLE AND LOCATION: A CONCEPTUAL MODEL

Social Bases of Life Style

The previous chapter introduced the notion of social choice as possible explanation of the process of residential mobility of urban dwellers. Although this study concerns itself with the general subject of urban residential structure, it is not specifically investigating the residential mobility decision. Rather the objective is to postulate a relationship between residential environment and behavior patterns, to test for the existence of such a relationship using empirical data, and, by inference, to advance statements about the determinants of the observed relationship. In order to accomplish this, the study will be cast in a theoretical framework which will provide direction, both in terms of the specification of definitions and also in the formulation of hypotheses and elaboration of a methodology. It is suggested that the conceptual device which provides both a literature and frame of reference for the study of residential differentiation is that which is referred to both scientifically and popularly as life style.

Embodied in the term life style is the notion of differentiation. A style of life is a way of living, and by implication, ways of living vary across society. Current trends in the structure of urban populations, in particular the growth of the middle class, the rise in real incomes, suburbanization, mass education, and the elimination of illiteracy, indicate that the old criteria of differentiation are losing their

applicability. Groups are becoming more sharply defined according to differences in styles of living (Greer, 1962). Urban populations, then, can be ordered along a style of life dimension. This does not imply that the objective of this study is to present a typology or classification of life styles. The concept will be used instead to present a general frame of reference to which patterns of behavior will be related. The purpose of this chapter will be to review the theoretical status of life style in the literature of social science and to conceptualize life style in such a manner that it will be useful for the examination of urban activity patterns.

Social scientists at least as far back as Weber have incorporated notions of living styles in their theorizing about stratification systems. According to Weber, similarities in both education and occupation among groups of persons provide the antecedents of given common life styles. Classes are stratified according to their relations to material production and acquisition, but status groups are stratified according to consumptive patterns as represented by special styles of life. Social status stratification becomes more pronounced during periods of economic stability, and replaces economic class as the basis of stratification. As a result, class status tends toward homogeneity, resulting in an emphasis on stylization of consumption and social activity. Therefore, life styles proliferate and, ". . . class distinctions are repressed by differentiation by life style rather than by stratification by (class) status" (Gerth and Mills, 1958: 193-94). In other words, Weber elaborated a theory stating that, as a majority of a society's members gain entry into the affluent middle class, status groups emerge which stratify themselves according to consumptive patterns

representing special styles of life.

Certainly, modern society can be said to be moving toward stylization by consumption patterns. While classes are broadly categorized as upper, middle, and lower, most persons in the developed world are favorably situated with respect to the production functions of society. How the rewards of production are distributed and utilized becomes more an important differentiator as the modern affluence society approaches. Two individuals may receive equal rewards for their contribution to the productive sector of the economy, but they may opt to utilize these rewards in divergent ways. It is at this point in societal development that variation in life style becomes more pronounced.

Life style as a theoretical construct has been examined most thoroughly within the confines of sociology and social psychology. The literature, although voluminous, remains somewhat vague in terms of formal theory, propositions, hypotheses, definitions, and typologies. Conceptual designs are diverse, ranging from personality and psychological definitions (Ansbacher, 1967) to global statements about entire societies (Tönnies, 1967).

The conceptual framework which seems to have the most elaborate formulation of a theory of life style is Social Area Analysis (Shevky and Bell, 1955), which rests on a theoretical foundation of increasing societal scale. It will be demonstrated how this theory of societal scale has been employed to elaborate the notion of increasing diversity of life style through the mechanism of social choice.

Godfrey and Monica Wilson (1945) were among the earliest to propose increasing scale as a perspective from which to view social and

economic differentiation in societies. According to the Wilson's, ". . . by the scale of a society (is meant) the number of people in relation and the intensity of these relations" (Wilson and Wilson, 1945: 25). The fundamental distinction between traditional primitive societies and more modern ones is that of scale. As society increases from small to large scale there occurs a series of changes in the patterns of functional differentiation, the complexity of organization, and in the range and intensity of relations (Timms, 1971: 125).

Drawing heavily upon the works of Colin Clark, particularly on the concomitants of economic growth, and on Louis Wirth's concept of urbanism as a way of life, Shevky and Bell established an ex post facto theoretical basis for Social Area Analysis, that of increasing societal scale. In the Shevky-Bell theory increasing scale is synonymous with the emergence of urban-industrial society. Society can be differentiated more easily as a result of ever increasing scale (McElrath, 1968). Three conditions are postulated as a result of increases in scale: (1) changes in the range and intensity of relations, (2) a greater differentiation of function, and (3) a growing complexity of organization (Robson, 1969). Three broad structural trends result from such changes, and account for the distribution of attributes upon which social differentiation is based. These trends are reflected in the changing distribution of skills, changes in the organization of productive activity, and changes in the composition of population with greater movement and increasing diversity (McElrath, 1968).

The manner in which these changes can be observed and measured gives rise to three constructs and their associated indicants (or indexes). Changes in the distribution of skills leads to changes in

the arrangements of occupations. This can be measured through the construct, social rank. The second construct, labeled urbanization, reflects changes in the distribution of function. Such changes occur in the structure of productive activity, the growing importance of cities, and in the diminishing importance of the household as an economic unit. Concurrently, there occurs a movement of women into urban occupations and a proliferation of alternative family patterns. Finally, the growing complexity of organization produces a redistribution of population in space and the isolation and segregation of groups. At the structural level these changes are reflected in the construct termed segregation (Robson, 1969).

In his revision of the social area model, McElrath (1968) added a fourth major trend occurring as a result of increasing societal scale, that of the aggregation of population. Such aggregation, particularly the concentration of population in urban areas, mirrors increasing social differentiation by migrant status. In addition, McElrath posits these four structural changes in society as being derivable from two processes: industrialization and urbanization.

> Urbanization and industrialization, then, yield four basic dimensions of social differentiation along which the rewards and resources of urban communities are distributed. In the (modern) city the range of opportunities available to an individual or family is subject to the multiple constraints of economic status (based on skills); family status (based on life style option); migration status (based on migration experiences); and ethnic status (based on social visibility). (McElrath, 1965: 104).

As indicated by the preceeding quote, a relationship exists between family status (urbanization) and style of life; the fact that an option prevails introduces further the concept of free social choice in large scale urban-industrial societies. In order to understand the

relationship between the family status construct of Social Area Analysis and life style, some elaboration is necessary.

In its most general terms, the relationship can be expressed in a proposition of the form: as a society increases in scale the greater is the social differentiation according to family status, and the greater the variety of life styles. No causal link is suggested; only a strong association. Shevky, Bell, and others, however, assume a causal connection, as elucidated below.

Three aspects of social life are purported to be influenced by the changing nature of production: (1) the relationship between population and economy, (2) the structure and function of kinship units, and (3) the range of social relations concentrated in the city. Each of these in turn reflects the construct Shevky termed urbanization. With the population freed from Malthusian constraints and with the widespread adoption of contraception, family size becomes a matter of individual decision and presents the choice between family and career mobility. People may breed to the limits of the available food supply or invest in property, career, etc. Similarly, the family ceases to act as a production unit, causing a realignment of kinship functions. Differences in family structure, rather than reflections of social status differentials, mirror the choice between alternative forms of life. The individual is faced with the opportunity of selecting from alternative life styles (Timms, 1971: 130). The family status construct, then, represents a continuum along which life styles are arrayed. Increasing scale causes a differentiation of society in the form of alternative styles of life.

The Theory of Social Choice

Wendell Bell (1958, 1968) has provided an articulation of the societal scale theory by proposing that social choice, through the construct life style, explains the social and residential differentiation extant in urban society. This approach is more in line with McElrath's (1968) revision of the social area model, where he asserts that residential differentiation is a function of social differentiation, which in turn is coordinated with certain systematic changes accompanying social development. These changes are assumed under the general process labeled modernization.

Although one of the originators of Social Area Analysis, Bell rejected the theoretical stance maintained by Shevky, and formulated different labels for the operational constructs derivable from the theory. Of the three, urbanization, or family status as Bell suggested, proved to be the center of considerable disagreement. Those measures related to urbanization: age and sex characteristics, type of tenancy, and house structure, and more importantly, the indicants used in the calculation of the index, according to Bell, refer to family related phenomena. Family status does not measure degree of urbanization, but rather the indicants suggest a direct measurement of a set of value orientations of familism, careers, or consumption (Bell, 1958). No assumption should or could be made that populations high in family status are necessarily low in urbanization. Such an hypothesis is inconsistent not only with the theory of which it is a part, but also with reality. Familism and non-familism (or urbanism) are concomitant developments of urbanization through the intervening mechanism of social choice.

In outlining his theory, Bell advanced several propositions relating to the degree of modernization a society achieves and the character of its social system. With modern methods of contraception available in urban-industrial society, family size and birth rate represent manifestations of the sum of many individual decisions by people concerning numbers of children. Such decisions are neither randomly made nor are they a function of individual differences in personality. They represent systematic preference patterns or "social choices" which are fashioned by the character of the social system and shaped by value systems (Bell, 1968). In effect, the greater the degree of modernization a society achieves, the greater the freedom from the constraints of food supply, disease, and overpopulation, the greater the range of available social choices. As a direct result of this social choice hypothesis he postulated a range of preference patterns which includes familism, upward vertical mobility (careerism), and consumership.

Bell (1968) observes that greater per capita wealth, leisure, and energy in advanced societies is being spent on children and other aspects of family living, as well as other alternatives. Family living as a distinct and desired activity is a contemporary phenomenon, and places a high valuation on family living, marriage at young ages, a short childless time span after marriage, child-centeredness, and related characteristics. The familistic preference pattern can also be equated with certain norms of consumption, an interwoven set of activities and possessions.

The upward mobility pattern is characterized by spending time, money, and energy on one's career. The upwardly mobile person engages

in career relevent activities at the expense of alternative activities. As a result, sociologists posit an inverse relationship between familism and upward mobility, and spending time and money on career may limit family life by delaying marriage and postponing children (Bell, 1968). Research indicates that the upwardly mobile make little distinction between work related and leisure activities. These career oriented people increasingly view their leisure activities as instrumental to advancement. Social life is used to promote contacts with colleagues and professional clients. Family oriented persons tend to separate these two lives; social contacts and leisure have no connection with employment (Willmott, 1969).

The consumership life style eschews both familism and careerism for as high a level of living as possible in the present. Money, time, and energy are expended on "having a good time," "living it up," or "enjoying life as much as possible" (Bell, 1968). These individuals develop "consumption as a way of life" (Greer, 1962). This is experienced in a manner unconnected with family or career goals.

These life styles are by no means class bound, nor does one lock himself into a way of life throughout his life time. Although some do this, others are able to combine in their life style elements of each preference pattern at various periods during their lives. For the majority some choice is possible, and most place differential emphasis on the different choice patterns as various stages in their life cycle.

Although the foregoing possesses some of the elements of a logical coherent system at the higher levels, it begins to break down at the level of the postulated preference patterns. It does not necessarily follow that the life styles associated with familism, careerism, and

consumerism are logical derivatives of social choice. These constructs do not possess the independence necessary to relate them to a higher order statement such as social choice. In addition, they are defined in the vaguest of terms, and in fact, tend to be defined in terms of attributes rather than as a set of dispositions to act. The preferences inherent in their definitions are inferred rather than logically deduced. In addition, the three dimensions are too highly intercorrelated to be of much value as differentiators of life styles.

At a gross, metropolitan wide level of analysis employing census data, the familism construct reveals basic differences in family status and therefore describes a generalized social structure. However, no comparable data exist for examination of other preference patterns. Therefore, no uniformity could be achieved in empirical analysis at aggregate levels, and no comparable data collected from survey instruments are available for review.

Greer (1962) and McElrath (1968) also subscribe to the social choice approach to social differentiation. Greer offers some particularly interesting propositions relating to life style as an axis of social differentiation. He sees the entire social system of the metropolitan complex travelling along three separate dimensions of change. By examining these dimensions the researcher can order and compare different neighborhoods, different cities, or the same city at different points in time. These dimensions are: social rank, life style, and ethnicity. The formerly high correlation among familism, ethnicity and social rank is breaking down. Declining segregation by social rank and ethnic identity accompanies increasing concentration by life style. "As life style becomes freer from the limits of occupation and ethnic

origin, it becomes a more significant differentiator of the population" (Greer, 1962: 76).

As a result of these processes says Greer, urban populations can be located along a style of life continuum which represents a commitment to familism. At one extreme lies the urban style of life, where families are small, and husband and wife generally both work (many are also unmarried). At the other extreme we find the devotees of familism. These people live in the vast middle range of social rank, raise larger families, and the wife usually remains at home neighboring and providing intensive child care (McElrath, 1968).

Spatial Aspects of Life Style

A common thread running through most research into styles of living at the macro level, especially among urban sociologists, has been the postulation of a relationship between preferred life style and residential location. As a consquence, research questions are being asked, such as: Do individuals decide where to move on the basis of life style aspirations? Do changes in ways of life (perhaps precipitated by life cycle changes) induce residential mobility, and vice-versa? What relationships exist between housing environment and life style, neighborhood environment and life style?

According to the social choice hypothesis the manner in which groups sort themselves out in urban regions results from the individual decisions of residential location seekers. This sorting out process, formerly on the basis of class, social status, or ethnic differentials, now occurs as a result of more subtle differences in preferred life styles. Although the range of life styles is great, variation in life

style is not correlated strongly with variation in social rank. At each level of economic class the range in life style varies considerably (Greer, 1962). Therefore, status differentiation and status enhancement, as manifested through life style, are likely to lead to emphasis in small differences between one residential area and another (Pahl, 1970).

The recent work of urban sociologists and urban geographers represents an attempt to link life style with residential location. Bell (1958, 1968) postulated the existence of a direct relationship between an emphasis on familism and the growth of suburbs.

> The move to the suburbs expresses an attempt on the part of the movers to find a location in which to conduct family life that is more suitable than that offered by central cities, i.e. that persons moving to the suburbs are principally those who have chosen familism as an important element of their life styles as over against career or consumership (Bell, 1968: 151).

Bell (1968) tested this hypothesis for a sample of recent movers in the Chicago area and found that upward vertical mobility is not associated with choosing to live in the suburbs, whereas familism is.

According to Greer, "The utility of different parts of the metropolis for different styles of life results in a concentration of similar persons with similar needs in given neighborhoods" (Greer, 1962: 95). The career oriented style of living is more pronounced in the apartment areas of central cities, whereas the familistic style is better suited to the suburbs and outer city (McElrath, 1968). The growth rate of a population will be affected by the proportion of persons selecting these styles of life. Where familism dominates birth rates will generally be higher and in an urban society this will place pressure on peripheral areas of metropolitan regions. The recent growth of the United States population, and the growth of suburbs, derives from an increase in the

emphasis on familism.

A recent research report on moving behavior and residential choice included in the conceptualization of the residential mobility process such variables as familism, consumerism, and urban-suburban orientation (Butler, et al., 1969). Moore (1972), in a recent monograph, incorporates an examination of life style aspiration as a motivational element in movement decisions. To the three types originally proposed by Bell he adds a fourth, community oriented aspirations. Practitioners of this life style stress interaction with others possessing similar group oriented values.

Michelson (1970) suggests that life style is an important differentiator of urban populations and is intimately related to residential locations. Pahl (1970a, 1970b) feels that the spatial structure of the city cannot be fully understood without some knowledge of the social structure. He views life style as an influencing factor in the locational structure of residential patterns.

The primary concern of sociologists has been the existence of a social structure based on life style preferences along with other economic and social conditions. Their interest in the spatial manifestation of these conditions has been confined largely to the work of Bell and Greer. Even Social Area Analysis was limited to the aspatial study of census tract data. Location was not considered important.

In recent years urban social geography has come to the fore in the study of urban social patterns. Working from the Social Area model geographers have extended the analysis to the mapping of various indices of social organization. With this development it became feasible to

test the validity of the competing models of urban structure regarding the spatial distribution of social phenomena.

The application of factor analysis to social, economic, demographic, and housing variables enhanced the geographer's ability to make statements about the spatial structure of the city. This multivariate technique allowed a greater range of variables to be analyzed, and it generalized about social structure by allowing variables that are very highly correlated to cluster together. Each census tract (or other enumeration area) can be located on all factors via its factor scores. The mapping of factor scores permits the generalized social structure to be viewed spatially.

The primary theoretical benefit derived from the multivariate analysis of census tract data has been resolution of the debate surrounding the social patterning of urban residential areas. The concentric zone model (Burgess, 1925) viewed growth as central, wherein economic status of families increased outward from the urban core. Expansion resulted from invasion and succession by lower status groups living closer to the city center. Hoyt's sector model (Hoyt, 1939) supported axial growth and argued that social rank varied sectorally about the city center. Higher status groups followed scenic and higher ground along radial transportation lines while lower and middle status groups proceeded along other wedge-like vectors. A third area of inquiry concerns the segregation of ethnic groups in particular neighborhoods without conforming either to the concentric or axial explanations.

The introduction of Social Area Analysis and its theoretical foundation viewed urban social structure from the three axes of social rank, family status, and ethnic status. A major research question

generated from these three axes of urban residential organization centered on which model of urban structure best incorporated the three dimensions. From separate analyses of residential distributions by social rank, familism, and ethnicity, it is thought that the zonal, sectoral, and nucleated models of urban structure may actually reflect different sets of properties. Brian Berry has suggested that the zonal and sectoral models may be considered "independent, additive contributors to the total socio-economic structuring of city neighborhoods" (Berry, 1965: 115). According to Berry, the city's basic residential organization may be seen in terms of the sectoral variation of neighborhoods by socio-economic rank and the concentric zonal variation of neighborhoods according to family structure. Berry concludes:

> Thus, at the edge of the city are newer, owned, single-family homes, in which reside larger families with younger children than nearer the city center, and where the wife stays at home. Conversely, the apartment complexes nearer the city center have smaller, older families, fewer children, and are more likely to be rentals; in addition, larger proportions of the women will be found to work. (Berry, 1965: 115-16)

and suggests that:

> If the concentric and axial schemes are overlaid on any city, the resulting cells will contain neighborhoods remarkably uniform in their social and economic characteristics. Around any concentric band communities will vary in their income and other characteristics, but will have much the same density, ownership, and family patterns. Along each axis communities will have relatively uniform economic characteristics, and each axis will vary outwards in the same way according to family structure. Thus, a system of polar coordinates originating at the central business district is adequate to describe most of the socio-economic characteristics of city neighborhoods. (Berry, 1965: 116)

Some empirical tests exist which have attempted to support the contribution made by Berry. Analysis of variance techniques have proven to be the most popular. Timms notes that:

> The major source of relevant material consists of a series of studies which have used analysis of variance techniques in an attempt to unravel the separate effects of zones and sectors in the distribution of social rank and family status scores. Less attention has been paid to the distribution of ethnicity and virtually none to that of mobility or migration status. (Timms, 1971: 230-31)

Among the early attempts to sort out the spatial patterning of residential differentiation was Anderson and Egeland's study of four U.S. cities (Anderson & Egeland, 1961). They determined that family status is distributed primarily by zones while social rank (prestige value) followed a sectoral pattern. From his study of the factorial ecology of metropolitan Toronto Murdie concluded that, ". . . economic status and family status tend to be distributed in sectoral and concentric patterns respectively" (Murdie, 1969).

In a study of the social areas of Rome, Italy, McElrath (1962) tested the sectoral and zonal hypotheses in a cross-cultural situation. His analysis revealed that social rank and family status vary both by zones and sectors. Social rank varies inversely with distance from the center of the city, and family status varies directly with distance. In Rees' study of Chicago's ecological structure the joint influence of zonal and sectoral effects on the distribution of social rank and family status also prevails (Rees, 1968). In Chicago, the relative strength of the two effects varied with the boundaries of the study area. When the entire Chicago metropolitan area was considered both indices varied predominantly be concentric zones. When the industrial satellites and rural periphery were excluded from the analysis the zonal effect became secondary to the sectoral in the distribution of family status. (Rees, 1968)

From the results of a Factorial Ecology of Brisbane Timms (1971) tested the spatial patterning of both social rank and family status by analysis of variance. His results reveal significant zonal and sectoral effects for both indices and an additional interaction effect for familism. The sectoral effect predominated for social rank while the familism profile exhibited a stronger zonal distribution.

A summary of the information presented above appears in Table 3-1. Table 3-2 reveals the existence of a pattern formerly noted by Rees (1968), that of a relationship between the relative strengths of the zonal and sectoral effects and city size.

> For the larger the city the greater the importance of zonal variation of socio-economic status as compared with sectoral variation, although sectoral variation remains the more important in all the cities. Similarly, the larger the city the greater the importance of sectoral variation of family status, as compared with zonal variation, though zonal variation remains, by far the more important in all the cities (Rees in Berry & Horton, 1970: 373).

The major exception to this pattern is the high sector to zone ratio for social rank in Toronto. Rees cites the particular combination of variables which load on the Household and Employment Characteristics factor, a factor which exhibits, ". . . an extremely strong zonal pattern of spatial variation" (Rees in Berry & Horton, 1970: 373). Timms subsequently reduced this situation to the generalization that, "The larger the city the more complicated its spatial structure" (Timms, 1971: 234). He credits this to the greater heterogeneity of the large city population, whereby low status minority populations confined to certain inner city locations distort the simple nature of zonal and sectoral effects.

> The axial movement of minorities may be expected to increase the sectoral component in distribution of family

Table 3-1

PRIMARY AND SECONDARY SPATIAL ARRANGEMENTS

OF SOCIAL AREA INDICES

City	Index	Effect	
		Primary	Secondary
Chicago*	Socio-Economic Status	Zonal	Sectoral
	Family Status	Zonal	Sectoral
Chicago**	Socio-Economic Status	Sectoral	Zonal
	Family Status	Zonal	Sectoral
Toronto	Economic Status	Sectoral	-
	Family Status	Zonal	-
Rome	Social Rank	Sectoral	Zonal
	Family Status	Zonal	Sectoral
Brisbane	Social Rank	Sectoral	Zonal
	Familism	Zonal	Sectoral
Akron***	Prestige Value	Sectoral	-
	Urbanization	Zonal	-
Dayton	Prestige Value	Sectoral	-
	Urbanization	Zonal	-
Indianapolis	Prestige Value	Sectoral	Zonal
	Urbanization	Zonal	-
Syracuse	Prestige Value	Sectoral	-
	Urbanization	Zonal	-

* Includes the inner city, outer city, inner suburbs, outer suburbs, industrial satellites, and rural periphery.

** Includes all of the above sections except industrial satellites and rural periphery.

*** Although the four cities were tested together the results are presented separately.

Source: Compiled by author.

Table 3-2

CITY SIZE AND 'F' RATIOS FOR SOCIAL RANK

AND FAMILY STATUS

City	Population	Social Rank Sectors/Zone Ratio	Family Status Zone/Sectors Ratio
Chicago	5,959,000	1.15	2.60
Toronto	1,824,000	30.00	10.70
Rome	1,530,000	1.00	1.56
Indianapolis*	639,000	1.44	-
Brisbane	594,000	1.30	4.17
Dayton	502,000	5.89	
Akron	458,000	6.03	29.90
Syracuse	333,000	19.89	

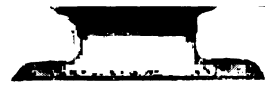
* Indianapolis included in Dayton, Akron, Syracuse set.

Source: Timms, 1971, p. 234.

> status. The infilling of inner-city areas may be expected to increase the zonal component in the distribution of social rank. It may be that the more homogeneous a population in terms of its degree of modernity and differentiation the more its spatial patterning will approximate to the simple, additive model suggested by Berry. (Timms, 1971: 234)

Such findings set the stage for the testing of several hypotheses relating the social and spatial structure of urban areas and the patterns of behavior exhibited by urbanites. The index of social differentiation of primary concern here is the family status dimension, which has often been referred to as style of life. Most often, however, ways of living have been extrapolated from a knowledge of attributes of families at certain stages in the life cycle. A lack of followup investigations into urban life styles has led to inferences about the behavior of certain groups based upon a knowledge of certain social attributes. This dissertation seeks to shed some light on the relationship between behavior and location, and therefore provide an empirical test of the life style-location hypothesis of urban ecological theory.

Janet Abu Lughod (1969) has specified the necessary conditions for the emergence of the two leading dimensions of social status and family status in Factorial Ecology. They include: (1) a ranking system by socio-economic status, (2) a clear linking of family types to specific stages in the life cycle, (3) a housing market structured to cater for each possible combination of these characteristics in distinctive sub-areas, and (4) a population consisting of independent households mobile enough to use the possibilities. These conditions have been met in the case of Toronto. Murdie's (1969) study confirms the existence of both social rank and family status dimensions in the study area. Such findings set the stage for a test of the hypothesis which states that



within a particular socio-economic stratum style of life will vary by location in the metropolitan region.

More specifically, this thesis will test for the existence of behavior patterns which support the generally accepted proposition that urban society, at least in North America, can be differentiated along a style of life continuum referred to as familism. Polar positions on this continuum can be described by the following conditions:

(1) A family oriented style of life with the wife home caring for children and engaged in neighboring and domestic activities. In this situation the husband leaves home daily for work, and engages in family oriented leisure activities when home.

(2) A cosmopolitan way of life which is confined largely to the apartment building areas of the central city. The family is most likely childless or with older children, and both husband and wife work.

It is expected that fundamental differences prevail between these two general life style categories in terms of daily activity systems. Within each group individual activity patterns quite likely vary considerably. No two individuals are exactly alike in their styles of living, but when many individuals are aggregated on the basis of shared values, stage in the life cycle, residential location, and housing environment, there tends to be a convergence of life styles into a limited number of broad categories. Therefore, in addition to the spatial clustering of households on the basis of family status, a similar tendency exists wherein urban areas can be characterized as consisting of subareas with particular living patterns.

At this point certain qualifying statements must be made regarding the appropriateness of the data for carrying out such a test and the

measurement of the variables involved. Location, a critical variable, of necessity has been defined nominally. This circumstance results from the lack of families interviewed at intermediate locations from the Toronto CBD. Further limitations resulted from the contractual agreements made when the data were secured. Thus, the most desirable conditions for testing hypotheses relating residential location to life styles must be lodged in further efforts. Nevertheless, the behavioral information provided in the time budgets allow for adequate empirical inquiry into the geography of urban life styles.

The sampling design provided for the exclusion of a large proportion of the Metropolitan Toronto area at an intermediate distance from the CBD. This condition precluded the testing of any hypotheses incorporating gradients (e.g., life style could not be related to any set of concentric circles). Hence the necessity of treating location as a dichotomous variable. If Gans (1962) insistence that the outer city and suburbs are essentially the same in terms of life style, then the nominal categories of location presented here are adequate. In fact, the differences between inner city and suburban life styles have long held the attention of urban scholars. The following section explores this subject further.

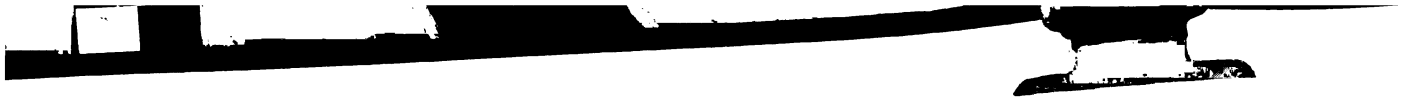
Urban and Suburban Ways of Life

One of the most obvious results of urban growth, particularly in advanced economies with a sophisticated division of labor, has been the growth and spread of suburban areas. In the post World War II era this growth has been of such significant proportions that the suburbs have generated considerable research activity on the part of social scientists, planners, and politicians. So significant an impact has suburban growth

had on current social thinking that controversy inevitably ensued. The controversy centered around the seemingly different ways of life practiced in the suburbs and central cities. While some saw the suburbs as ideal areas to raise children, recreate in open spaces, and conserve privacy, others condemned the demoralizing and conforming effect they exerted on their residents.

This dialogue reached its emotional climax with David Reisman's "The Suburban Sadness," (Reisman, 1958), but the debate has subsided in recent years. This may be the result of the growing feeling among social scientists that suburban growth constitutes merely the latest phase of an ongoing urban growth process (Berger, 1966; Gans, 1968). Contrary to the notion of a melting pot, the American culture is characterized by some as being more pluralistic than not (Glazer and Moynihan, 1963). The suburbs, then, do not differ radically from the cities in terms of the social makeup of their residents. Great cultural variation can exist across suburbs and can be accounted for by the variety of personal and collective motivations on the part of urbanites for moving into suburban areas. The conclusion most often drawn is that physical and cultural differences between cities and suburbs do not contribute significantly to the living patterns of their inhabitants. Berger contends that although statistically significant differences do exist they are 'sociologically spurious,' since the most meaningful comparisons should be made not between the suburban areas and cities as entities, but between particular suburbs and urban residential neighborhoods (Berger, 1966).

Both Gans (1968) and Berger (1966) argue that suburbs were seen as highly ordered and homogeneous because only highly ordered suburbs



came under the scrutiny of social scientists. Their main contention is that changes in ways of life cannot be attributed to the move to the suburbs from the city since the life styles constituted the impetus for relocating in the first place. Not only did the knowledge of suburban areas precipitate a shift in preferred life style, but the suburbs allowed for the realization of that preference, and therefore are responsible for causing changes in living styles for significant numbers of people.

In 1938 Louis Wirth's famous article, "Urbanism As A Way Of Life," was published. In it Wirth argued that the city was ". . . a relatively large, dense, and permanent settlement of socially heterogeneous individuals". He saw the factors of number, density, and heterogeneity creating a social structure dominated by secondary contacts in place of primary group relationships. These contacts were both fleeting and superficial in addition to being segmented and impersonal. Such conditions transformed the city dweller into an anonymous, isolated, secular, and sophisticated person who, in order to function properly in society, organized corporations and unions, participated in voluntary organizations, established representative forms of government, and communicated through mass media.

Wirth deduced two social consequences from number, density, and heterogeneity which he said explained the major features of urban life. These consequences were: (1) the segregation of homogeneous populations into well defined neighborhoods, and (2) increased social contact between groups due to close physical proximity, which encouraged acculturation and assimilation - the melting pot effect. He argued that, the latter being a more powerful tendency, primary group relationships

characteristic of segregated neighborhoods would disappear under pressures generated by dominant social, economic, and political institutions. A situation characteristic of Tönnies' "Gessellschaft" would emerge.

Gans (1962) challenges Wirth's postulates on the grounds that urban society, as we perceive it today, does not conform to the urban-rural dichotomy as Wirth saw it. Instead of a situation where urban living is characterized solely by secondary group relationships and reliance on formal organizations, Gans sees a distinct difference between conditions in the inner city and those in the outer city and suburbs.

> A reanalysis of Wirth's conclusions from this perspective suggests that his characterization of the urban way of life applies only - and not too accurately - to the residents of the inner city. The remaining city dwellers, as well as most suburbanites, pursue a different way of life, which I shall call 'quasi-primary.' (Gans, 1970: 71)

During the nineteen twenties and thirties urban sociologists at the University of Chicago (Wirth included) organized their research efforts around the problems of the inner city (Park, Burgess, and McKenzie, 1925), and were concerned about the consequences wrought by social disorganization caused by urban living (Burgess and Bogue, 1964). The human ecologists defined urbanism in terms of the differences between city life and rural life. According to Gans, Wirth ". . . examined the city from the distant vantage point of the folk society - from the wrong end of the telescope, so to speak" (Gans, 1970: 72). Therefore, the social consequences of number, density, and heterogeneity, if there are any, will most likely be found in the inner city. Even here, most groups are relatively homogeneous and are protected fairly effectively from the consequences of number, density, and heterogeneity by certain

social and cultural institutions. Persons residing in the outer city and suburbs, who constitute the majority of the urban population, enjoy relative immunity from the consequences suggested by Wirth.

Thus, Gans is saying that the pattern of living in the suburban and 'outer city' zones, although they may vary somewhat, are not so much different from each other as they are from those of the inner city residents, a group comprised of: cosmopolites, unmarried or childless, ethnic villagers, the deprived, and the trapped. Gans' thesis seems to be that with a few inner city exceptions a strong degree of homogeneity permeates metropolitan living. Life styles do not seem to vary to any great extent, except when one gets into the inner city area. He is, of course, talking about all the residents of the city, in all income categories and all racial groups. When examining ways of living from this perspective it becomes quite clear that there are fundamental differences between the inner city life styles and the life styles of the majority of the urban population living in the outer city and suburbs. But what differences might be present between groups of urban dwellers who seemingly practice the middle class style of life. Do owners of single family homes in residential neighborhoods in the city lead the same style of life as their counterparts in the suburbs, and is the same true for city and suburban apartment dwellers? Finally, might there be life style differences between apartment dwellers and people who reside in single detached homes? These are some of the questions being explored here.

Life Style: A Conceptualization

Up to this point the focus of attention has been directed at an ecological view of life styles in urban settings. That is, the discussion

has centered on an extremely generalized continuum ranging from extreme familism at one end to extreme urbanism at the other. Within this framework large aggregates of urban dwellers can be classified, and inferences can be drawn concerning their socio-economic attributes, generalized preferences, and possible behavior. However, this conceptualization, although valuable from the standpoint of a low level theory, is limited by its very broad distinctions concerning life styles, and in its failure to differentiate the urban milieu into anything finer than central city and suburb.

In view of these limitations it is the purpose of this section to articulate a conceptualization of the construct life style which will facilitate the study of spatial behavior and relative location. The approach, then, will focus on human behavior, with the concept of life style acting as a tool for organizing individual behavior into recognizable and empirically valid patterns. This conceptualization of life style will necessitate the examination of certain aspects of social roles, attitudes, and decision making. It is to be the literature on these topics that this chapter will now direct its focus.

No comprehensive typology of life styles exists which can be employed in urban social research. As a result the concept has been subject to varying interpretations by social scientists. The position taken by previous researchers has been that of empirical generalization. Typologies, such as they have been, emerged largely from examinations of empirical data gathered from census records or social surveys. While it is recognized that empirical generalization presents certain limitations as a means of theory formulation, empirical research can lead to the formulation of propositions and testable hypotheses. These in turn can

be incorporated into deductive theoretical systems. This research will constitute an empirical, and therefore inductive, study of urban behavior, and most certainly is exploratory in nature. Along with others, the author is searching for a methodology which will be most appropriate for the study of human time budget behavior. The methodology outlined in this dissertation is considered a first tentative step in that direction.

Practically speaking, life style is useful as a research concept in the examination of the social and spatial characteristics of urban populations; social because life style reflects the social values and social interaction patterns of individuals and groups, and spatial insofar as similar individuals seek to position themselves in spatial proximity, and display spatial regularity in their day to day behavior. Increasingly, neighborhoods are coming to be identified by the styles of living of their inhabitants.

> The social area map which people of any sizeable town carry in their heads is more clearly defined and socially specific . . . each (area) representing important expressive aspects not only of the income but of the occupations, social proclivities, emotional background, and social pretentions of the people who live in them - or rather, of the kind of people who are supposed to live in them. (Burns, 1968: 56)

Life style, as an empirical construct, finds utility in the study of spatial behavior; particular forms of spatial behavior may be characteristic of certain life style groups. How people move about in the city and avail themselves of the facilities of the metropolitan area is postulated as being a direct reflection of their preferred style of living. Spatial interaction can also be used as an operational method of identifying living styles.

If the needs of social planning require a more micro analytical frame of reference (Chapin, 1968), then a conceptual framework which incorporates behavioral propositions in the study of urban structure is more desirable. The level of aspiration involved in this approach, as Olsson (1969) would see it, aims at higher order statements about life style than that of Bell (1968) or Greer (1962). Emphasis should be placed more on the behavioral processes shaping interaction rather than on the structure of social areas.

To this end, life style is being conceptualized as role emphasis and value orientation, which can be translated into motivations to act and thence to behavior. Others, notably Michelson (1970), Michelson and Reed (1970), Boskoff (1970), Tallman and Morgner (1970), and Havighurst and Fiegenbaum (1959), have incorporated the notion of social roles in their efforts toward the understanding of life style. Role emphasis here refers to the predominant set of social roles an individual selects to play at various stages in his life cycle. These roles, both ascribed and achieved, are manifestations of the self image and ideals individuals possess. The objects, affiliations, and activities associated with given roles are, in the words of Michelson and Reed, ". . . directed and given consistency by the preferences and orientations of the individual - in short, by his hierarchy of values" (Michelson and Reed, 1970: 17).

The formulation and shaping of values are, of course, life long processes. Some values in the hierarchy, the most fundamental, remain ingrained and rarely change. The Protestant work ethic and certain moral values will serve as examples of these. Many values are constantly undergoing change, however, with new ones being formed and old ones being discarded as the individual encounters new experiences and environments.

The notion of feedback in the form of reinforcement or change assists in the evolution of value orientation. Such characteristics as age, sex, education, occupation, and ethnic and religious affiliation are the primary interacting variables which determine the hierarchy of values held by individuals (Michelson and Reed, 1970). These, in turn, influence the selection of roles to be emphasized.

Ogburn and Nimkoff defined a role as, ". . . a set of socially expected and approved behavioral patterns, consisting of both duties and privileges, associated with a particular position in a group" (Ogburn and Nimkoff, 1958: 153). To a significant extent roles are voluntarily assumed by most individuals (achieved roles) but many are not (ascribed roles). Parsons and Shills (1951) view the role as the most significant unit of social structure:

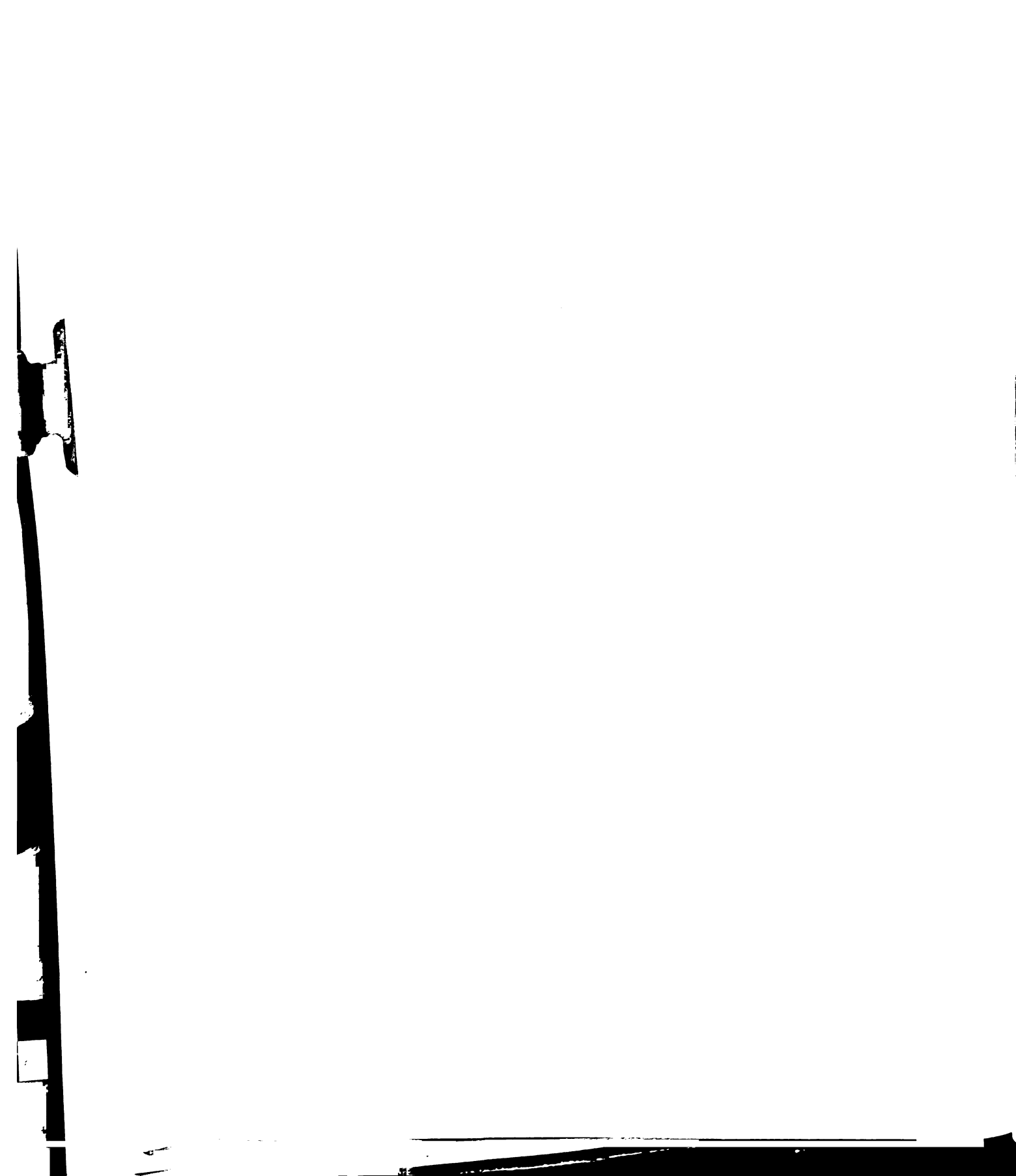
> The role is that organized sector of an actor's orientation which constitutes and defines his participation in an interactive process. It involves a set of complementary expectations concerning his own actions and those of others with whom he interacts. Both the actor and those with whom he interacts possess these expectations. Roles are institutionalized when they are organized around expectations of conformity with morally sanctioned patterns of value-orientation shared by members of the collectivity in which the role functions." (Parsons and Shills, 1951: 23)

Individuals take on social roles which fit into their predominant value orientation. Roles are selected on the basis of how the individual perceives the set of social expectations which is attached to each role. To Boskoff, style of life reduces to a selective ranking of available roles. "Each life style signifies to the typical adherent some range of role choices and a distinctive hierarchy of such roles" (Boskoff, 1970: 199). Michelson postulates the minimum elements included in life style. One consists of a behavioral set necessary to satisfy a role. Behavior, then, in the form of an activity or set of activities which are related,

can be said to constitute the fulfillment of a role. The typical behavior of a middle class family man should differ markedly from that of a childless, career conscious executive. Their respective consumption of time, space, and activities, as well as material goods, should vary according to their predominant value orientation. The second element concerns which sphere of life is emphasized. Generally, five spheres are cited as central elements of any society: political control, economic supply, propagation, socialization of the young, and explanation of the supernatural. Depending upon the roles people select to play in life, certain of these spheres would be emphasized at the expense of others.

The direct result of the determination to select specific roles to play is the set of behaviors necessary to fulfill each role. It must be noted that the individual does not consciously decide which activities are congruent with a particular role. The conventions and norms society attaches to specific roles usually define the context of each role. In this sense most behavior is habitual or conforms to patterns of regularity. The individual is constrained, to a degree, in which activities he may employ to fulfill the content of a role. The patterns of behavior which typify the role choices of urban residents can be thought of as defining their style of living. A central assumption of this conceptual schema holds that the patterns of activities which characterize each individual are a direct reflection of that person's hierarchy of values.

Boskoff (1970) has outlined a schema such that if a class or stratum can be identified by opportunity variables (education, income), then a related style of life can be identified by the manner in which opportunities are used, evaluated, and rewarded by a relevant reference group. Boskoff interprets style of life as a product of experience in



trying to provide adequate means of adjusting to available facilities, resources, limitations, and frustrations. Adjusting would entail some forms of behavior. In addition to the methods outlined above, he suggests three indicators by which styles of life in urban regions may be distinguished. They include: (1) training, which refers to acquired skills that concern ability to perceive opportunities and those that enable use of opportunities; (2) patterns of associational affiliation; and (3) dominant role conception (Boskoff, 1970). From these indicators, style of life categories can be derived which correspond to those in Figure 3-1.

Consumatory Style	The Social Elite
Striving Style	Nouveaux Riches Exurbanites Organization Men
Derivative-Vicarious Style	Old Middle Class New Middle Class Stable Poor
Persistent-Rebellious Style	Bohemian Fugitives
Resignation-Alienation Style	Unstable Poor Social Outcasts Indolent-Apathetic

Source: Boskoff (1970) p. 202.

Figure 3-1

MAJOR URBAN LIFE STYLES AND RELATED STRATA

What remains unclear with respect to Boskoff's typology is the relative degree of influence each of his three indicators contributes to each life style category. The exact position of training, associational affiliation, and role conception in this arrangement remains unclear. Unfortunately, he fails to satisfactorily relate the indicators to such terms as Old Middle Class and Unstable Poor.

The value of role emphasis in the investigation and subsequent delineation of life styles is manifest in two aspects. First, since the tendency exists in almost all human beings to conform to some outside set of influences and pressures (mediated by a system of punishments and rewards) there is likely to be a significant convergence of life styles into a finite number of general categories. Those categories will be based on common patterns of role emphasis shared by individuals. Second, at an operational level, dominant role patterns can be inferred from an examination of human behavior. This can be accomplished through a whole range of pattern recognition devices.

There is a paucity of research treating the concept of life style as a role oriented set of behaviors. None proceed from even a skeletal conceptual framework. However, several deserve mention. Havighurst and Feigenbaum (1959) defined life style as a description of a person's characteristic way of filling and combining the various social roles he is called on to play. Operationally, a life style was defined as a pattern of role performance scores for leisure activities shared by a group of people. Using data gathered from a sample of adults living in Kansas City they arrived at four general styles of life: (1) community centered, emphasizing outside the home activities, (2) home

centered high, (3) home centered medium, and (4) low level. Based upon much of the same data is a life style categorization devised by Williams and Wirths (1965). They defined six styles of life among adults, and attempted to relate the process of aging to each style. Their categories were: (1) world of work, (2) familism, (3) living alone, (4) couple-hood, (5) easing through life with minimal involvement, and (6) living fully.

Tallman and Morgner (1970), in an attempt to assess differences in life style between urban and suburban blue collar families, assumed a definition of life style which included a number of behavioral activities and orientations. Each behavioral activity required a distinct investment of resources of time, energy, affect, or money. A series of questions was designed, the answers to which indicated degree of local intimacy, social participation in voluntary associations, church participation, family organization, subjective class identification, mobility orientation, and political orientation. Although the data provided a role profile for each respondent, no attempt was made to classify individuals according to dominant life style. One of the more significant conclusions concerned the fact that residence is associated with fundamental differences in life styles for working class families. Class and class related cultural factors interact with residence to influence some of the life style patterns (Tallman and Morgner, 1970).

Within the confines of this conceptual framework the relationship between life style and location will be investigated. The location variable will be defined as being either suburban or central city,

while life style will be operationalized in a more complex form. The following chapter explores the behavioral basis of life style together with the literature on time-space budgets and activity systems. The second part of the chapter outlines the methodology employed in this study.

Chapter 4

LIFE STYLE MEASUREMENT: HUMAN ACTIVITY SYSTEMS

Systems of Human Activity

In order to more fully understand the analytical aspects of this dissertation it is deemed important to investigate the general concept of activity systems and the process of activity choice. Recent research on time budgeting has been devoted to the specification of the rules under which particular activity decisions are made. Thought has progressed to the point where an activity decision is no longer considered to be made independently of other activities, but rather the decision is viewed as being interdependent with other activity choices which may precede or follow it. An additional development concerns the movement from the assumption of a rationally economic man to that of a more realistic position of intended rationality in decision making. This chapter explores these concepts and relates them to the methodology which is applied to the analysis of activity patterns.

Although time budget research has been carried out for quite some time, it was Chapin (1968) who attempted to give some conceptual and even theoretical structure to this type of research. He and several of his colleagues have built a conceptual framework around household activity systems. They argue that, ". . . as an area of theoretical investigation it offers promise of supplying some conceptual guidelines for relating resident behavior patterns to the spatial organization of the city" (Chapin and Logan, 1969: 306-7).

Activity systems, as conceptualized by Chapin (1965,1968) concerns the nature of human satisfactions and dissatisfactions and how activity choices are affected by them. All activities are carried out within the confines of a social system, here defined, ". . . as a milieu made up of a universe of behaviors and environments (physical, economic, social)" (Chapin, 1968: 12). Consequently, the manner in which the environment influences daily activity routines, and is in return shaped by them, is a function of personal values of individuals and their motivations for satisfying their value prescribed needs. This is in keeping with the value orientation definition of life style elaborated on earlier, wherein the hierarchy of values held by an individual or group of individuals can be deduced from their daily activity patterns. According to Chapin and Hightower (1966), the activity choices of individuals can be interpreted as an independent indication of life style. The extent to which activities can be considered as a measurement of life style is open to question, but certainly activities must be considered in any definition of the concept.

It seems appropriate to state here that the choice of any activity is the outcome of many factors which are operating on the individual decision maker. These factors include the goals the individual seeks to fulfill, the actual and perceived constraints which channel activities in space and time, the individual's values, his personal characteristics, and other activities already completed or being contemplated. Of course, these general factors can be further subdivided into more specific components such as the actor's location, the time of day, activity just completed, the degree to which any activity must be completed, age, sex, and so on. It is the purpose of the next section to explore the

relative importance of these factors, and to demonstrate how they result in patterns of activity sequences.

The Motivational Basis of Behavior

To some extent, all behavior can be said to be motivated or directed toward some goal. The purposefulness of behavior is quite variable, however, both between individuals and among activities. It is quite clear that individuals do not operate as rational economic men, and that even intended rationality in decision making may be an unrealistic assumption (Wolpert, 1964; Pred, 1967). Some see rationality as an unsolvable issue in that all behavior has some purposefulness to it, and that any assessment of rationality on the part of the observer is a dubious process at best, which is subject to a variety of cultural, ideological, and personal biases. To construe a pattern of behavior as being rational or not depends upon an understanding of the values, goals, and purposes toward which the behavior is directed (Cullen, Godson & Major, 1971).

Individuals make activity decisions based upon some motivational component and the amount of information that they possess regarding distance to the site, anticipated duration, time of day, and other factors. In most situations this information is incomplete, creating conditions of uncertainty. Golledge (1969) carries the rationality argument to the point of distinguishing among problem solving behavior (involving rational decision making), weakly motivated behavior (random behavior), and habitual response making behavior. He mentions that routine or habitual response making behavior may predominate more frequently than the other two forms.

> Routine behavior generally follows problem solving-behavior and is of greater duration through time . . . Routine behavior . . . often follows a path of minimum effort, it serves to reduce uncertainty in the decision process, and reduces consideration of alternative sources of action. In other words it is the behavior most used to cope with contingencies of everyday living. (Golledge, 1969: 103-4)

One might surmise at this point that the distinction between problem solving behavior and habitual response behavior is synonymous with that between discretionary behavior and obligatory behavior. To a certain extent this may be the case, since obligatory behavior (working, eating, sleeping, etc.) usually forms an habitual pattern. But to classify activities as either discretionary or obligatory entails a failure to account for individual differences in the way people perceive their acts. What is discretionary for one person (the decision by a businessman to attend a concert) may be considered obligatory by another (a music professor considering it part of his professional duty or committment). We may be dealing with a continuous variable here (degree of obligation or discretion) which itself may be the result of a series of factors. It is important to remember, then, that the decision to engage in a particular activity at a particular location and time may not really be a decision at all, but a patterned response to some set of stimuli which recurs each time the stimuli are present. Rather than saying work is obligatory, it might be more precise to classify it as habitual.

In summary, it can be said that some behavior appears to be almost instinctive while other behavior is obviously highly calculated. To classify behavior as consistently rational seems unjustified. On the other hand, it is neither completely habitual. A more realistic

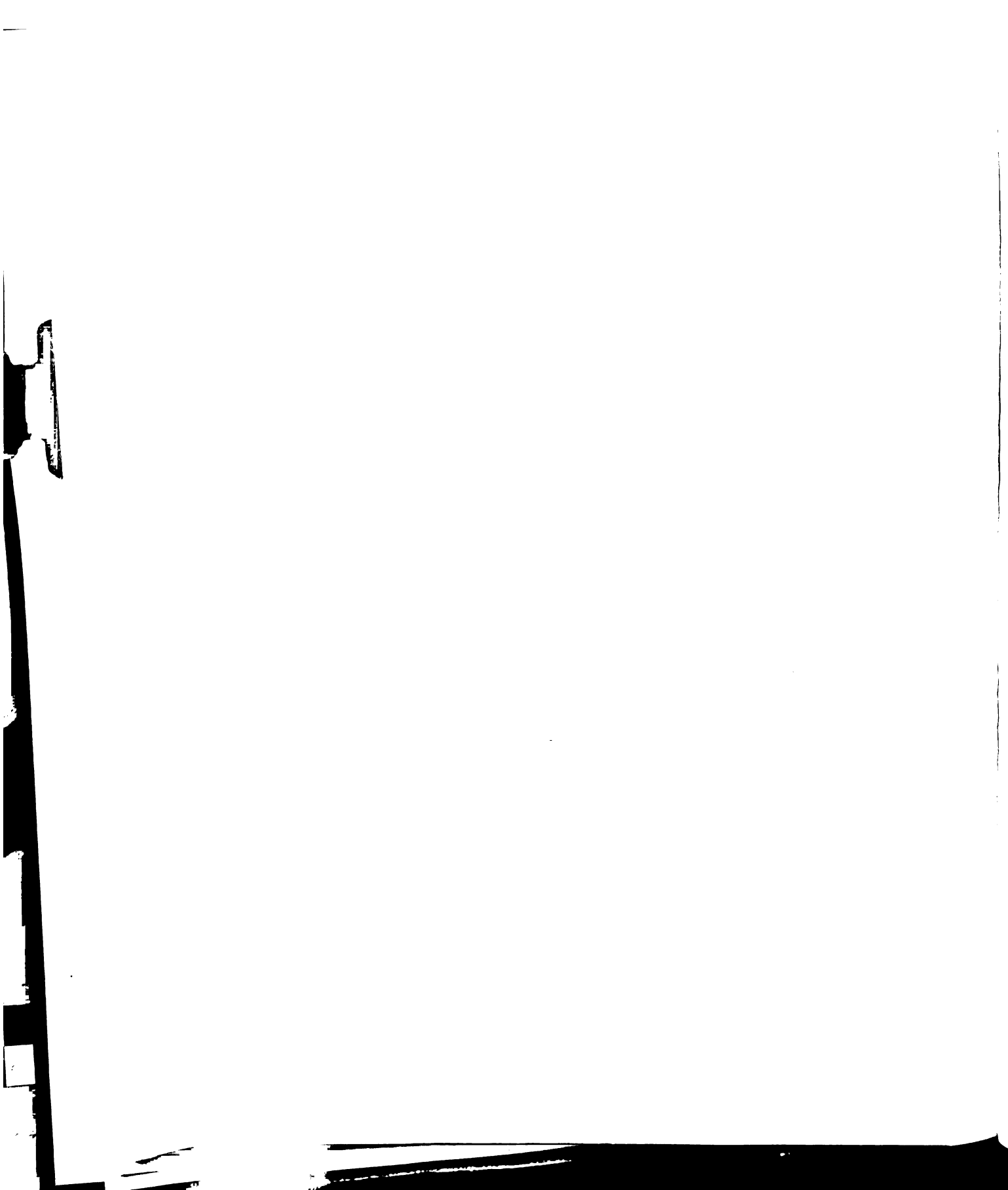
approach is to view behavior as highly organized activity episodes which impart structure and pattern to blocks or sequences of activities. Thus, it is advanced here that most activity sequences are not random but are the result of a certain amount of organization on the part of individual actors.

The Interdependence of Activities

Most research in human behavior fails to take into account the fact that any activity in a person's day constitutes part of a sequence of interdependent events. It follows, then, ". . . that the decisions governing these events must therefore also be interdependent owing to the necessity of continuity of action in both time and space" (Cullen, Godson & Major, 1971: 2). Although some rather general suggestions have been made by Meier (1962) and Weber (1968) concerning the interdependencies of flows and networks in urban areas,

> . . . there has been very little development of either ideas or data relating explicity to the question of the interdependence between activity choice decisions over time. The task of pattern recognition has not yet taken the form of identifying sequences of activities which can be viewed as activity modules or of trying to understand the processes which govern the integration of the individual's time-space behavior. (Cullen, Godson & Major, 1971: 3)

Capin and Hightower (1966) have proposed that the activity decision is in reality a two stage one. First, the individual selects the activity he wishes to pursue from among the alternatives he has available to him, and then he settles on where he will do it (presumably the time component is lodged in the activity choice decision). This framework seems unrealistic since a knowledge of alternative possibilities includes knowing some aspect of the location of those opportunities. A more acceptable conceptualization would be that the choice of activity



and location entail a single linked decision. An individual is typically confronted with a set of choices between different activities at different locations (Walldén, 1968). An elaboration of this concept is necessary in light of its importance to the subject of activity linkages.

The activity choice process involves a linked or interdependent decision in two different but related ways. First, the choice of any particular activity involves consideration of the range of activities available, time and space. When, where, and how long an activity will take place will exert an influence on its selection. Second, activity choices are linked to previous and subsequent decisions because the choice of a particular activity at one point in time and at a certain location will influence the likelihood of other activities being undertaken.

Hemmens (1970) sees the individual as acting out two distinct sequences of activities over the course of a day. One is the set of out-of-home activities comprising the full daily cycle, and the other includes the activities which occur on each foray outside the home, those activities linked together on each individual journey. In the latter category can be considered single activity and multiple activity movement (a sequence of activities performed at different locations outside the home). This framework fails to consider in-home activities which must be taken into account in any analysis of activity patterns. In-home activities contain a spatial component in that the decision not to leave home places the actor in a unique location. For instance, given a certain amount of leisure time, one may opt for bowling at a local establishment or for playing cards at home. Once that decision has been made, different sets of activity sequences become more likely

because of one's location.

Employing a two dimensional time-space framework, Hägerstrand (1970) has suggested a model of behavior, whereby a person's daily time-space path is structured by different sets of constraints. These he breaks down into: (1) capability constraints, primarily biological and technological, (2) coupling constraints, or the necessity for interaction with objects and other human beings, and (3) authority constraints, or those imposed by outside agencies or other individuals. Simply stated, the individual, at certain times, must be at particular locations. In order to meet these committments, the individual's area of movement during intervening periods is constrained by time and the availability of transport. The activities which are fixed in time and space limit the individual's choice of other activities to those which fit into a time-space prism which defines a potential space of activity.

Since certain activities are fixed in both time and space, the day can be divided into allocated and unallocated, or fixed and unfixed periods. The allocated periods dictate the potential (time-space budgets), not only for the entire day, but particularly for the unallocated activities. Hägerstrand's model thus demonstrates the interdependent nature of activity decisions. It appears fruitless, then, to consider the decision to do something at a particular place and time as being related solely to the individual's place of residence. The decision is related to a very specific time and space position which connects the individual's present location and that of his next committed activity (Cullen, Godson & Major, 1971). Within this framework behavior may be highly purposeful, random, or habitual.

As an extension of Hägerstrand's model, Cullen and others (1971)

have elaborated on the questions of priorities and constraints and their influence on the flexibility and scheduling of activities. By priorities they mean the order of importance individual's assign to activities according to considerations of finances, presence of other persons, order of planning, personal likes and dislikes, and so on. In conjunction with priorities, activity choices are constrained to the extent that physical, economic, institutional and accessibility deterrents are operating at any time in any place. One may be limited by the amount of money he has, business hours of certain institutions, and availability of transport, in addition to a whole range of perceived constraints which may influence an activity decision at any particular time (Cullen, Godson & Major, 1971).

The flexibility with which activities can be scheduled in sequences depends upon the degree of committment the person affixes to them, and on the real or perceived deterrents to their being carried out. The degree of committment controls the flexibility of the types of activities which are selected, while the constraints operate on the location of activities in time and space. In this manner, activities can be related to both the individual decision maker and to the organization of his environment.

By contrast, Hemmens (1970) mentions the three activity choice dimensions of (1) the activities themselves, (2) time, and (3) space, but fails to organize them into a coherent framework and relate them to the organization of the city. Kofoed (1970), on the other hand, has organized activities in such a manner that they can be related to the social, temporal and spatial organization of an urban area, thus making it possible to locate any activity in a three dimensional activity space.

Due to urban social organization the activities imposed upon people can be related to:

(1) Physiological needs (eating, sleeping, inactivity caused by illness)

(2) Social duties (school attendence, jury service)

(3) Agreements (working, attendence at certain meetings)

(4) Sudden urgent needs (repairs, visiting the dentist)

(5) Services (shopping, using banks)

(6) Leisure (social visits, recreation, walking)

Temporally, societal organization imposes schedules which restrict (or enhance) the opportunity for engaging in different activities at various hours of the day. As a result, activities may take place:

(1) Over a number of consecutive and predetermined hours (walking, attending school)

(2) At any time between two hours (shopping)

(3) At a fixed hour (an appointment)

(4) At any time but related to other persons (visiting)

(5) At any time but unrelated to other persons (walking)

Finally, in the spatial dimension, activities tend to be more or less fixed at single points in space. These may be:

(1) At fixed locations (most work, family visits)

(2) Within administrative borders (social services, visits to or by the doctor)

(3) In a purpose related facility (shopping, visits to the cinema)

(4) At any place (walking, enjoying the company of other people)

According to Kofoed (1970), by means of these three dimensions, activities can be related to the prime factors influencing the activity sequence. Thus, activities are predetermined to the extent of their

location in the activity space. For example, groceries can be purchased at a self-service store without prior arrangement at any time at almost any store, while an office visit to a doctor requires an appointment, and may follow consultation with a referral agent. Different activities relate in different ways to other activities, and will occur therefore as a result of and precipitate different activity sequences.

The individual's day becomes organized around certain key activities which rank high on some scale of committment. Such activities might include work, shopping, business or physician's appointments, care to children, housework, school, or meetings of voluntary organizations. Degree of committment can be related to a whole series of characteristics such as age, sex, occupation, family status, income, education, etc. That is, certain key activities may be characteristic of particular groups of people living in the city. Their life styles may revolve around the most highly committed activities of their daily routines.

Built around and between the more stable activities are various combinations of other activities which may be highly purposeful, only weakly motivated, or even close to habitual. The choice of some of these more flexible activities may be facilitated by being in a particular place at a particular time. Travelling to the local shopping center for the weekly groceries may cause one to remember to pick up some previously left clothes at a nearby dry cleaning establishment. Immediately following the trip home might be a period of unorganized relaxation in anticipation of another key activity later on in the day, preparing dinner for example.

The manner in which various activities are related to each other by linkages results in the individual daily routines which, when

aggregated, form the interaction patterns of an urban area. Groups of people have significantly different patterns of behavior, and one way of defining these patterns is by the sequences in which activities occur. The following section outlines means by which patterns can be extracted from time budget data, and presents some past attempts to do so.

Activity Linkage Analysis

The fundamental question being asked in this dissertation concerns the differences which exist among individuals who inhabit different residential environments. Differentials in location and housing type act as either attractions or deterrents to persons with different life style preferences. Once settled in a particular housing environment the individual begins to act out his preferences for living. It is assumed here that information about life style can be recovered by an analysis of the behavior exhibited by urban dwellers.

One aspect of behavior through which differences in life style can be studied is that of activity linkages. As individuals and groups ambulate throughout the city over the span of a twenty-four hour day they engage in a variety of different activities. As a result, different individuals perform different activities which they link sequentially into patterns of association (Hemmens, 1966). If we are to assume that persons travel about the urban area with a set of goals they expect to accomplish, then the manner in which they link activities together, both temporally and spatially, can be considered a kind of strategy for realizing those goals. It has been suggested further that the dimensions of household activities and the linkages between them could be isolated and the range of patterns organized into a typology of life styles

(Horton and Hultquist, 1972).

The study of activity linkages can provide a clearer understanding of the manner in which groups of people associate different types of activities in temporal sequences. Secondarily, it provides insight into the complexity of urban travel patterns. In a more general sense:

> Knowledge of the extent to which different activities and different land users are knit together in the daily travel of persons in an urban area is crucial to our ability to plan for the future. (Hemmens, 1966: 1)

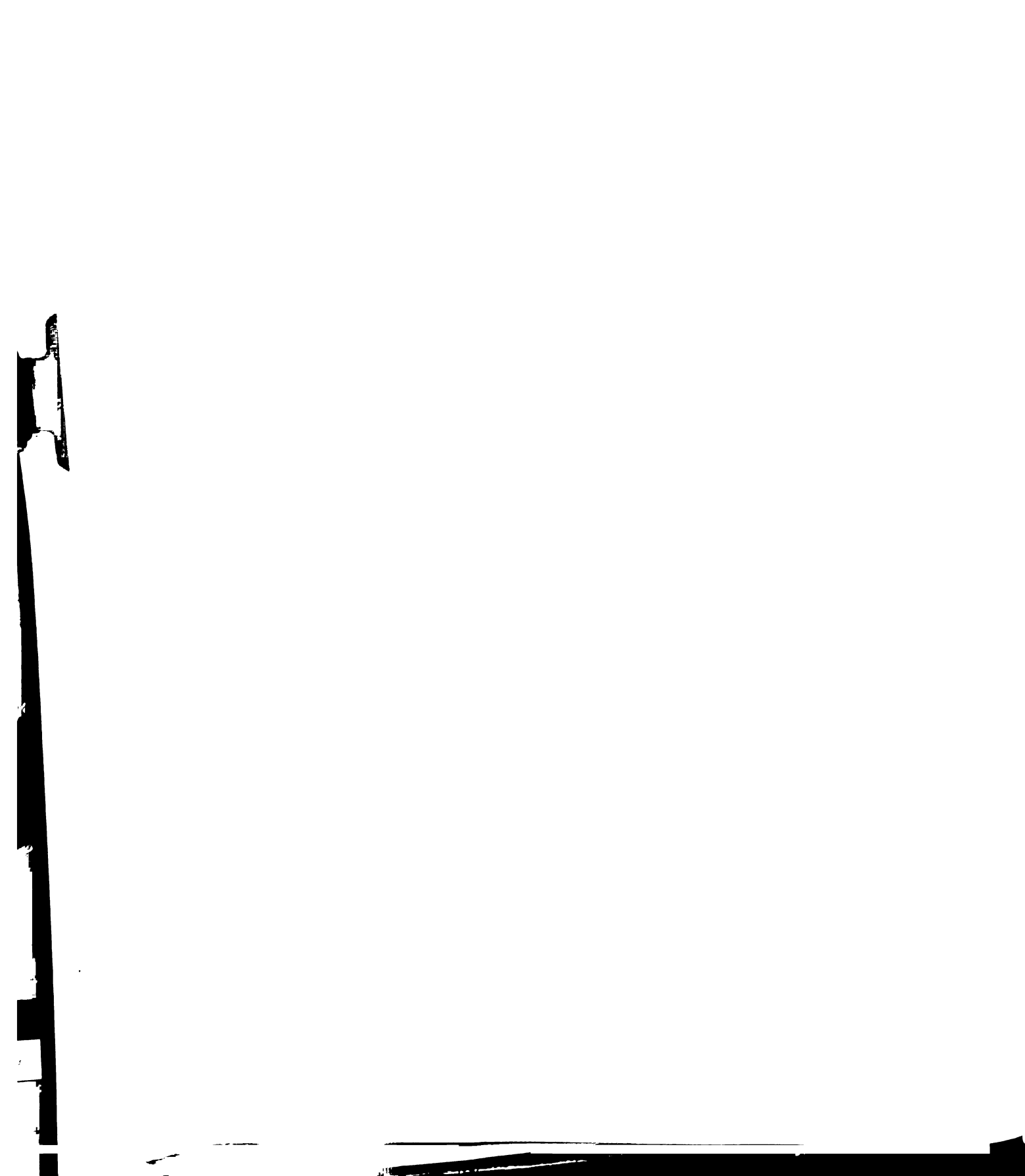
From the standpoint of spatial planning and social engineering a comprehension of the complexity of processes operating in the city, such as activity linkages, can provide a better understanding of the spatial structure of urban areas. The process which is under consideration here concerns the interaction between households and other households and between households and the various spatially separated economic and social functions in the city. Thus activity linkages possess a spatial as well as temporal dimension. One direct result of an activity linkage analysis will be a determination of how various facilities in the city are linked functionally and spatially. The intensity of multi-purpose shopping trips and the clustering of related shopping facilities is one example of the relationship between travel linkages and the spatial juxtaposition of certain urban functions (Nystuen, 1967).

The primary concern here is the differences in linkage patterns for the activities of various residentially defined populations. As stated before, the selection of a residential environment in which to live is based upon, among other things, life style aspirations. One measure of life style can be achieved through identification of dominant behavior sets or activity patterns. The aspect of behavior under scrutiny here is the linkage between activities.

Most studies which have treated the subject of activity linkages have directed their attention to out-of-home activities, which in turn means the study of travel patterns or spatial behavior. Much research dwells on the relationship between residential site selection and desired movement patterns. The two are intertwined since the choice of a residential site is influenced in part by the set of intricate travel patterns required to satisfy day to day demands for goods, services, and leisure (Marble, 1959, 1967). As a result, much effort has been expended on the manner in which individuals array functions, or activities, on trips through the city. People do, however, spend a considerable amount of their time at home, and aspects of the immediate home and neighborhood loom large in the selection decision, especially for women (Michelson, Belgue & Stewart, 1972).

To the extent that most activity linkage research has been conducted by planners and geographers, the emphasis has naturally been placed on spatial or movement aspects of activities. Therefore, research methodologies, including definitions, measurements, statistical tests and mathematical models have been employed with a definite spatial bias to them. As an example, consider the fact that most activity data have come from traditional transportation surveys where activities are defined by land use or trip purpose at origin and destination. Also, travel time to an activity site has been considered to be an important cost an individual weighs when he decides upon an activity. Duration of an activity has also been another important factor in the activity decision.

Closely related to duration are the time of day and sequence of activities. The duration of an activity may be directly related to the



time of day when it occurs. The sequencing of activities may influence their duration, and time of day may influence both sequence and selection. Using data gathered in a transportation study in Buffalo, Hemmens (1970) found that the total number of activities undertaken in the morning, afternoon and evening were evenly distributed. However, through Chi-square tests and Analysis of Variance, he demonstrated that the probabilities of certain types of activities occurring were significantly different by time of day. For example, more social recreation activities were undertaken in the evening than in the morning, and personal business activity prevailed in the afternoon hours.

Activity Linkage Modelling

One method of describing the activity linkage patterns of any population, or sample thereof, is to aggregate their daily activities into a matrix of associations or linkages. Such matrices can be constructed for various subgroups of people for purposes of comparison. The frequency of movement from one activity to another can be calculated and compared with the frequency links for another group of individuals. The main weakness of this type of approach lies in the fact that frequency counts are totally dependent on sample size, and therefore offer no basis for analysis. What is required is a means for assessing the relative strength of any frequency across a row of linkages. In other words, a measure of the probability of moving from one activity to another in a sequence is needed. Since these probabilities will vary for each activity sequence, the linking of activities can be considered a stochastic process. Therefore, a commonly used model for describing the activity choice process for aggregated data has been the Finite Markov Chain.

The Finite Markov Chain belongs to a class of probability models called Markov Process Models. The central element in these models ia a probability p_{ij} which refers to the likelihood of transition or movement from one state (i) to another state (j) within a given interval of time. The p_{ij} is a transition probability which, together with all other possible outcomes, sums to one. Given data (a_{ij}) reflecting movement between pairs of locations or change for pairs of classification over some time interval, the transition probabilities (p_{ij}) can be readily estimated as:

$$p_{ij} = a_{ij} / \sum a_{ij}$$

Each a_{ij} can be considered the number of times a particular activity was selected following any other activity. The p_{ij} would be this number expressed as a probability. Hemmens (1966) refers to these as linkage coefficients. A matrix of linkage coefficients is a stochastic matrix containing the probabilities (p_{ij}) that a particular activity would follow any other activity. As a result, the typical matrix of activity linkages may take the forms of Figure 4-1.

As a simple example of a transition probabilities matrix, consider the following. Let us assume that the probability of following an in-home activity with another in-home activity is .80; the probability of selecting an out-of-home activity becomes only .20. Once out of the home, however, the probability of returning home reduces to .60, and of remaining outside, .40. With this information we can construct a transition matrix (Figure 4-2).

	A_1 ,	A_2 ,	A_3 , ... ,	A_n*
A_1	P_{11}	P_{12}	P_{13}	P_{1n}
A_2	P_{21}	P_{22}	P_{23}	P_{2n}
A_3	P_{31}	P_{32}	P_{33}	P_{3n}
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
A_n	P_{n1}	P_{n2}	P_{n3}	P_{nn}

*(A_1, A_2, A_3 ....., A_n) is the set of all activities and the p_{ij} are the probabilities of linking any activity with any other activity.

Figure 4-1

A TRANSITION PROBABILITY MATRIX MODEL

	In Home	Out-of Home	
In Home	.80	.20	= 1.0
Out-of Home	.60	.40	= 1.0

Figure 4-2

SAMPLE TRANSITION PROBABILITY MATRIX

We now have the estimates of the likelihood of moving from one state (the vertical axis) to another (the horizontal axis). The probability of being in state j at time t+1 is conditional only upon being in state i at time t and nothing more. In the transition matrix, which serves as input to the Finite Markov Chain, the p_{ij} remain stationary. That is, they do not change through the steps of the chain.

With the preceeding information it becomes a simple matter to construct a matrix of transition probabilities from time budget data to estimate the manner in which people sequence activities. Activities, or groups of activities, can be considered the states. The raw data matrix can be constructed by counting and summing the number of times each activity is followed by another activity sequence. The transition matrix, P, is then easily derived.

As previously noted, much activity data in the past has been derived from traditional transportation surveys. One of the first to employ the transition probabilities matrix in a study of activities with the use of such data was Hemmens (1966). His activities were defined by the trip purposes, to and from home, work, shopping, school, social-recreation, and personal business. He compared the trip data from

transportation surveys conducted in Buffalo, Chicago and Pittsburgh, and concluded that the linkage structures for both Chicago and Pittsburgh were very similar but different from that for Buffalo. However, Hemmens cautioned that, "It is quite likely that there are substantial variations in the data from the three cities due to field, coding and processing procedures. Since the amount of variation in the data is not known the results observed here can only be considered a suggestion for further research" (Hemmens, 1966: 20).

Hemmens realized the inadequacies of the data he was working with, but was interested in presenting a method whereby activity data could be analyzed in a productive way. One difference between the research reported on in this dissertation and Hemmens' activity linkage study is the use here of time budget data from a sample of urban dwellers. Another difference is that comparisons will be made between groups in the same sample, and not between independently collected samples from different cities. Sampling, coding, and interviewing errors have been minimized in this study.

Other studies utilizing trip data have employed the Markov Chain Model as a means of summarizing and predicting activity choice. Marble (1964), for example, was among the first. Employing data from the Chicago Area Transportation Study he constructed a transition probabilities matrix for the same trip purpose categories listed by Hemmens. His results reveal little that is of analytical value in the study of activity linkages because he makes no comparisons with other similar data. His categories are too gross and deal with only vehicular trips. Like Hemmens (1966) Marble was demonstrating a method and advancing suggestions for its future application to movement data.

Horton and Shuldiner (1967) employed an analysis similar to that of Marble and Hemmens. They subjected both links between land uses and trip purposes to Markov Chain Analysis, but did not make any comparisons with other times or places. Conducted by transportation geographers or planners, all these studies have demonstrated a concern for the prediction of the average number of stops on any trip and the percentage of persons found in any particular state (trip purposes at any random time during the day).

In a later article, Horton and Wagner (1968) attempted to analyze trip linkage structures for different groups in the city of Waco, Texas. First, they performed a modified Social Area Analysis of the city, finding four different types of residential neighborhoods based upon household, ethnic, occupational and economic characteristics. A principal components analysis identified neighborhoods displaying: (1) upper socioeconomic, (2) lower socioeconomic, (3) middle class, and (4) ethnic characteristics. By categorizing each sample respondent according to one of ten socioeconomic occupational groups and one of the four neighborhood types, 40 combinations of socioeconomic class groups based upon upon neighborhood and occupation were identified. Next, in order to define groups with similar travel patterns, a matrix of trip linkages based on trip purposes for each of the groups was subjected to a grouping routine and yielded the three classes of high occupational status, low occupational status, and housewives and students. A trip purpose matrix of transition probabilities was derived for each group, and differences in specific linkages were compared.

The most significant findings were that non-workers such as women and students substituted strong linkages between home, school, and

social-recreation for the traditional home-work linkage, a not too surprising fact. Clearly, for the other groups, home-work linkages predominated. When the transition matrices were subjected to multiplication in a Markov Model it was discerned that the middle to high socioeconomic groups had a more diverse trip pattern than the lower group, and showed more multi-purpose trips.

This study, although of more analytical value than previous works, suffered from several weaknesses. First, the use of trip purpose categories (almost always including the "home" category) proved too cumbersome to adequately assess trip linkages because of the dominance of home and work. Second, the multitude of grouping procedures performed upon the data causes this writer to wonder at least if any meaning can be imparted to the end result. Grouping has a function, but it can be carried too far. Finally, and this criticism can be directed at the previously mentioned works, it appears that the activity data (by trip purpose) analyzed in these research papers do not meet one of the fundamental assumptions of Markov Chain Analysis, that of independence of activity choices proposed here, it seems unrealistic to employ a model whose central assumption is that location in one state is only dependent on location in the immediately preceeding state and nothing more.

As a final example of modelling activity linkages, consider the work by Hanson and Marble (1971). To a matrix of trip linkages consisting of twenty-six different land use categories they applied the Savage-Deutsch-Goodman transaction flow model. This model presents a systematic method of determining the important linkages once the effect of different absolute levels between categories have been eliminated. This technique revealed significant linkages between shopping goods locations and

another set between work and certain service uses. Once again, no comparisons were made between groups; the description of travel linkages in the data was the objective.

A Methodology For Analyzing Activity Linkages

When this work was in its formative stages Markov Chain Analysis was considered as a possible modeling device for summarizing activity linkage data. However, the assumption of independence in the Markov Model and the conceptualization of interdependence of activity choices presented earlier proved to be antithetical to each other. As a result, the Markov Model was dropped from consideration. For purposes of modeling, Markovian models are of great value but since the objective of this dissertation is not so much to model as it is to compare and describe, other more simplified techniques became more desirable. Specifically, this research attempts to analyze the differences in activity linkages or sequences between groups defined by residence, location and sex. To this end, linkage matrices have been constructed from the time budget data described in Chapter 5. The matrices take the form of both frequencies and transition probabilities and reflect all combinations of sex, location, and residence. The objective will be to assess the variation between linkage matrices while controlling for the factors just mentioned. In this way extraneous variance will be minimized so that differences in life style can be considered.

The analysis will be constructed on three levels. At the first level, transition probabilities matrices reflecting only differences in location and then housing type will be compared for variation in activity sequences. At the second level a similar operation will be performed on matrices which reflect differences in residence type while controlling

for location, and for differences in location while controlling for residence type. Finally, at the third level of analysis, comparisons will be made between residence types while controlling for sex and location, between locations while controlling for residence types and sexual differences, and between locations by sex with residence controlled. At each level of analysis the observed differences will be evaluated in light of certain hypotheses which will be advanced.

Of course, it is expected that significantly large variations will manifest themselves only for certain linkages and not for others. For different groups different activity sequences should predominate. Those which differ by some significant amount should give an indication of the activity links around which certain groups anchor their day. For most activities the variously defined groups should display quite similar linkage patterns, and these will consequently be of little concern, even though they may be of a high magnitude. The anchor points, or pegs, may then be considered indicative of life style differences, such differences then being related to variation in residential environment.

The reader may be prompted to question why any differences should be considered significant on the basis of visual comparison of transition probabilities. He or she would be expressing a legitimate concern, one which is not easily countered. To put the question another way, why could not the differences be attributable to chance alone? Such a question cannot be answered definitely because no technique exists for statistically testing the difference between any two cells of two matrices. Chi-square tests exist for comparing any observed matrix with a theoretically expected one. Such a test cannot be employed in the comparison of two different observed matrices.

Although the transition probabilities matrices provide a summarization of activity linkage data for purposes of analysis, they remain rather large and cumbersome (100 cells to each matrix) for purposes of comparing different populations on the underlying dimensions of activity sequences. Whereas the individual linkage coefficients in each transition matrix can be compared with linkages in other tables, it is difficult to comprehend any patterns of activity flow in any of the matrices. They are simply too large.

As a means of reducing the transition matrices of activity linkages to a more manageable state for analytical purposes each matrix was subjected to a principal axis factor analysis whereby the 100 linkages in each table were reduced to their most fundamental dimensions. As a result, the basic activity patterns for each level of analysis have been identified and can be compared and contrasted across the variously defined groups in the sample.

Among geographers, factor analysis has enjoyed immense popularity in recent years, particularly in the study of urban ecology (Berry, 1971). However, by comparison, factor analysis has found fewer applications to the analysis of flow data. Nevertheless, the technique has proven to be beneficial in the analysis of flows between spatial units (census tracts, cities, counties, states, countries, etc.) and a methodology of flow analysis has been proposed (Britton, 1971). Studies treating the aspatial case of linkages between activities as opposed to spatial units are rare.

The factor analysis of an activity matrix, such as those under consideration in this study, results in a series of factors which identify clusters of activities that are alike in terms of the activities

which precede them in sequence. When considered in a flow matrix, the activities arrayed along the vertical axis are regarded as origins and those along the horizontal axis act as destinations. In an R-mode factor analysis, correlation coefficients are computed among the columns, or destinations. The factors which emerge isolate groups of destination activities which are similar in terms of their origin activities. In the Q-mode analysis correlation coefficients are computed among the rows and factor analyzed to reveal groups of origin activities which are alike in terms of the activities that follow them.

Factors can be identified by the strength or magnitude of the factor loadings for each activity type on each factor. Loadings of .50, or greater, are generally considered to be large enough for purposes of factor identification. For each observation (origin activity) a factor score is generated which can be interpreted much like a standard deviation. In both Q-mode and R-mode analysis the strength of the factor scores indicates which activities are strongly associated with each factor. Usually, factor scores of greater than 1.0 are considered significant. In the R-mode, the factor scores identify those activities which usually precede the clusters of activities loading highly on each factor. In the Q-mode, the pattern is reversed.

Wheeler (1972) performed both a Q-mode and an R-mode factor analysis on a ten by ten activity matrix of trip purposes. His results revealed a factor structure which was remarkably similar for both modes. Three factors in each analysis were identified and labeled as: (1) a social trip component, (2) a business trip dimension, and (3) a personal business and shopping trip component. Both sets of factors were rotated to achieve "simple structure," wherein each variable loads highly

on, and therefore is identified with,only one factor. Those factors to be rotated were determined by the standard criterion of possession of an eigenvalue of at least 1.0. The R-mode resulted in five factors, the Q-mode in three. Although both forms revealed similar activity linkage structures, the R-mode accounted for a higher degree of variation in the data and resulted in more factors.

In another study, Hanson and Marble (1971) subjected a 26 by 26 matrix of travel linkages to a Q-mode factor analysis which yielded three identifiable components. Factor One identified a series of functions which were linked strongly with the home place, while a second factor linked the place of work with such functions as restaurants, banks, parking, and taverns. The third factor emerged as a shopping goods component which demonstrated functional linkages among retail activities.

Both of the preceeding studies dealt with linkages among out-of-home activities which were defined by trip purposes, and therefore they differ from the activity types under investigation in this dissertation. Nevertheless, they do point up the utility of factor analysis as a means of identifying the underlying structure of activity linkages.

A series of R-Mode factor analyses were performed on each of the ten matrices of transition probabilities for the Toronto sample in an attempt to isolate significant activity sequence patterns for the variously defined subgroups. This was done for economy of analysis and also in the hope that the factors would allow easy identification of the anchor points, or pegs, around which people build their daily routines.

The factors which emerged from the analysis were not subjected to

rotation. This decision was made for two reasons. First, the forcing of each activity to load on only one factor was not thought to be realistic in view of the belief that the activity categories were themselves broad summarizations of different but related activities. Different types of activities may form links in more than one sequence pattern. For example, going to sleep at night (private needs) may be closely related to evening activities such as entertainment, civic participation, and passive leisure. But other private needs, such as meals and personal hygene may form part of another unrelated sequence. Therefore, rotation was ruled out in order to allow each activity type to load on as many factors as necessary. A second reason for not rotating factors lies in the difficulty of interpretation which results when one is dealing with rotated factors.

By the use of transition matrices and their subsequent factor analysis it is hoped that a pattern of activity sequences will arise for each subgroup in the sample. Major differences in activity sequencing which arise from the analysis will be compared across groups with the purpose of identifying significant variations in life style. These variations will be related to differences in location and residential environment in particular and to urban spatial structure in general.

Chapter 5

DESCRIPTION OF THE DATA AND STUDY AREA

Data Source

The data which serve the empirical objectives of this study constitute the output of a longitudinal survey currently underway in Toronto, Ontario. The research project for which the data are being collected involves an examination of the relationships between physical environment (here defined by housing type and location within the metropolitan area) and social attitudes and behavior. At a very general level two questions are being asked: (1) What kinds of individuals come to occupy a given type of housing or location, and (2) How can their subsequent behavior be related to their surroundings? This dissertation will concern itself more with the latter question.

Entitled, "The Physical Environment as Attraction and Determinant: Social Effects in Housing," the study is attempting to assess the impact of a change in residential environment on the pattern of life of the new resident. How does he adapt to his new surroundings? Do aspects of the environment influence behavior, associations, attitudes, and preferences, and to what degree (Michelson, 1969)? A central objective of the study revolves around the specification of broad life style groups from an examination of:

(1) Interaction pattern within and without the local neighborhood
(2) Descriptions of self and neighbors
(3) Voluntary association participation
(4) Patterns of commercial behavior

(5) Time budget patterns
(6) Participation in hobbies and pasttimes
(7) Intentions of life in new residence
(8) Perceived differences in personal life style vis-a-vis other residential settings
(9) Why other housing was rejected
(10) Influence of housing environment on expected life

The scope of the housing study ranges far and beyond the research outlined in this report. Although the present research is designed to be integrated into the housing environment project no further mention will be made of those study objectives except as they relate to specific aspects of this research.

Variation In Physical Environment

Since the overall objective of the parent study on the physical environment as attraction and determinant is to assess the impact of the physical environment on ways of living, the environment was systematically varied for different groups in the sample. Specifically, the groups were defined by the particular environment they were moving into, while as many other variables as possible were held constant. The major variables which defined the physical environment are: (1) housing type lived in, and (2) access to the city center (Toronto). These combine into the four major environmental categories as described in Figure 5-1.

In order to investigate the influence of both housing type and location, the study was designed such that both varied independently of each other and were clearly differentiated. Attention focused, therefore, on single family homes and high rise apartments as extremes in housing types, and on central locations and far suburban locations, thereby eliminating an intermediate zone (the outer city). In terms of Figure 5-1, cell I describes single family homes both a short distance

from and easily accessible by public transit to the city center, while cell II contains single family homes distant from the center (on the fringes of Metropolitan Toronto). Cell III is indicative of high rise apartments centrally located, and cell IV describes high rise apartment situations in the far suburbs.

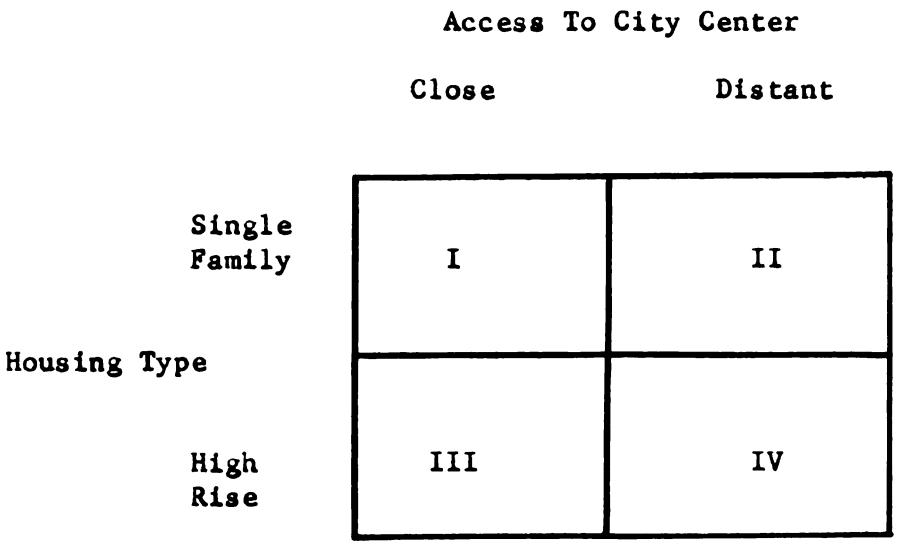


Figure 5-1

CATEGORIES OF THE PHYSICAL ENVIRONMENT

Through the cooperation of various segments of the housing industry in the Toronto area an inventory of new and used, but appropriate, housing units was compiled. Single family homes were considered appropriate if they were fully detatched and carried a selling prive of between $35,000 and $100,000. Appropriate apartments were those located in modern high rise buildings of at least five stories and with elevators. Minimum acceptable rent was set at about $200 for two bedroom apartments, although location influenced this factor to a degree. At the time these decisions were made these figures were thought to

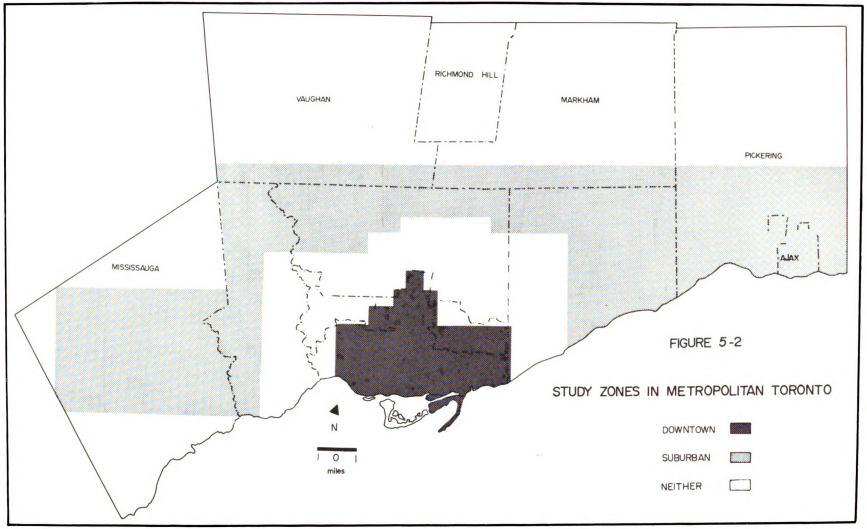
represent the 'upper middle' portion of the housing market.

Location found its definition partly through access to the city center and partly through distance. A downtown location was operationally defined as being within a ten minute walk of a subway station within the city limits (The city of Toronto is relatively compact, occupying only a small percentage of the total area of Metropolitan Toronto), or on a bus or trolley line leading directly to the CBD without transfer, or directly within walking distance to the CBD. Minimum travel time to the city center served to define a suburban location. The size of the suburban zone includes the major commuting areas serving downtown Toronto. A broad band of space between the downtown area and far suburbs lacked eligibility for inclusion in the study. Figure 5-2 displays the relevant zones of analysis in the metropolitan region.

Figure 5-3 represents the distribution of locations of the sample prior to their move. Approximately one out of every six families had their initial location outside the Metropolitan Toronto area and are not displayed on this map. The locations of respondents following their move are shown on Figure 5-4. Any families that relocated subsequent to the first move were retained in the sample only if their new destination lay within the study area.

Sample Selection

A quite elaborate and exhaustive procedure was implemented which resulted in the sample of families participating in the above mentioned study. Although the sampling procedure was designed to meet the specific requirements of that study, the selection process and the characteristics of the sample will be reported here as aids to understanding the empirical content of this research.


VAUGHAN
RICHMOND HILL
MARKHAM
PICKERING
AJAX
MISSISSAUGA
N
0
miles
FIGURE 5-2
STUDY ZONES IN METROPOLITAN TORONTO
DOWNTOWN
SUBURBAN
NEITHER

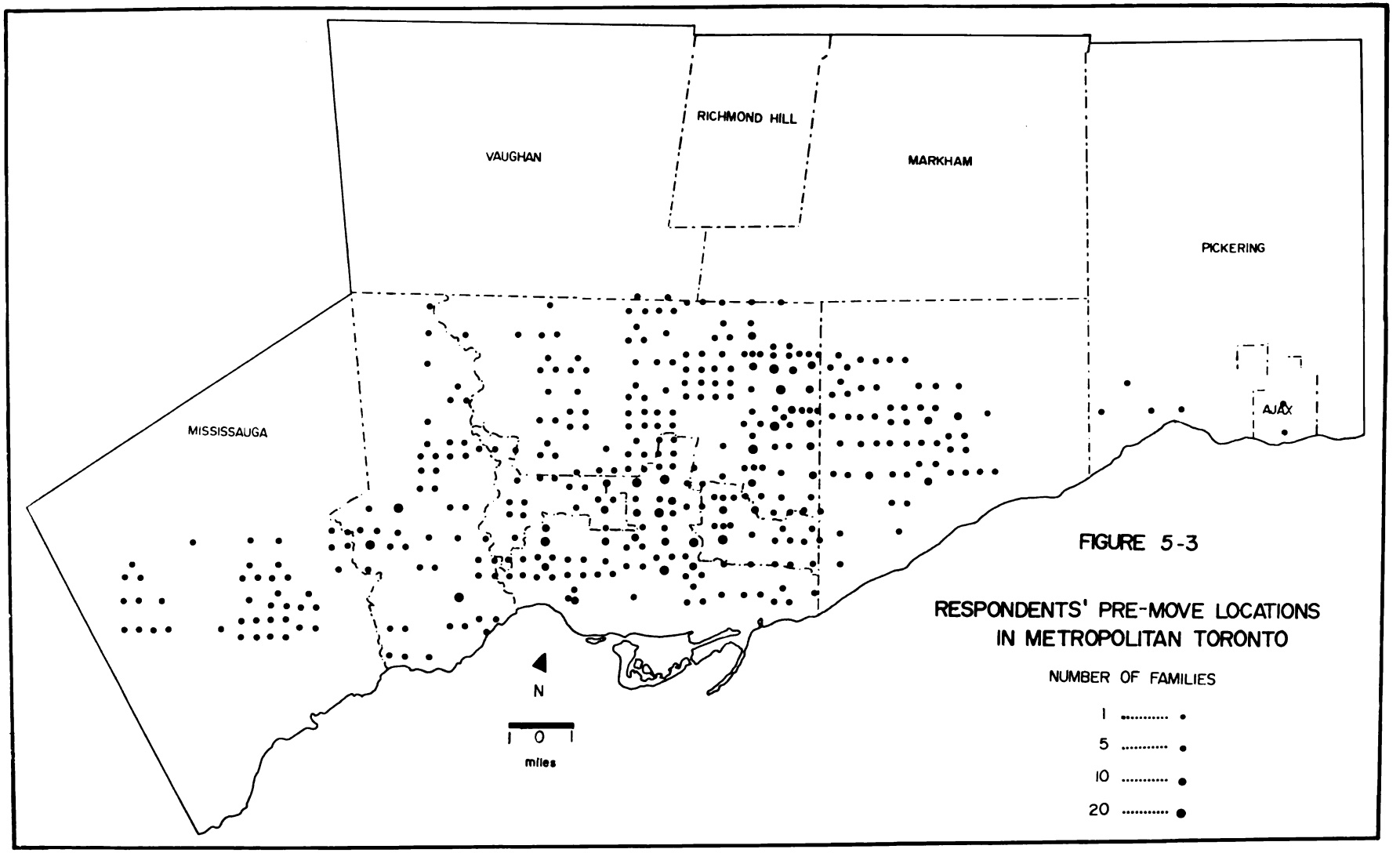

VAUGHAN
RICHMOND HILL
MARKHAM
PICKERING
MISSISSAUGA
AJAX
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FIGURE 5-3
RESPONDENTS' PRE-MOVE LOCATIONS
IN METROPOLITAN TORONTO
NUMBER OF FAMILIES
1
5
10
20

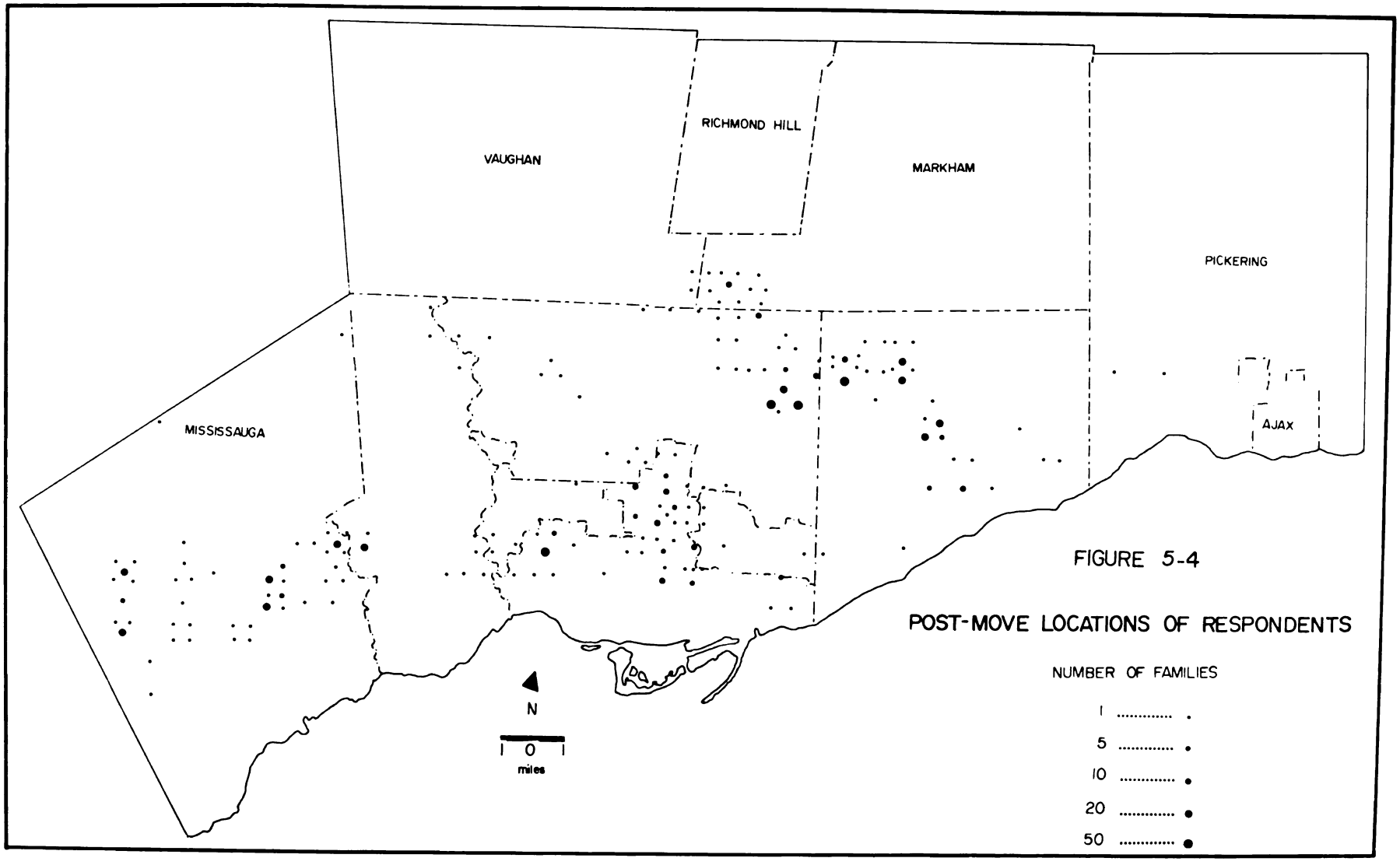


FIGURE 5-4

POST-MOVE LOCATIONS OF RESPONDENTS

The needs of the physical environment study required as close to a one hundred percent sample of persons who were naturally moving through the relevant housing environments and who met certain criteria of family structure and age. The study is being conducted as a natural experiment, in which certain parameters are being measured before and after the natural application of an experimental stimulus, i.e., a change of residence (Michelson, 1970).

The first consideration involved finding people who were moving to the environments of interest prior to their making the move. The objective was to interview the subjects while they presently resided in their pre-move environments. In order to isolate potential respondents, arrangements were made with real estate agents, builders, high rise rental agents, etc., to inform the investigators when appropriate families signed purchase agreements or rental leases. These families were then approached, and if agreeable, were interviewed for their inclusion in the study (Phase I). Each family was programmed to be interviewed two months following their change in residence (Phase II), one year after (Phase III), and four years after the move (Phase IV). The later three phases were to be conducted during the same time of year to control for any seasonal variation in activity patterns. At the time of this writing, data from the first three phases have been collected, coded, and made suitable for machine storage and processing.

No restriction was placed on the residential location of the respondents prior to their move into the metropolitan area. However, in the interest of controlling certain key variables several restrictive criteria were established which governed the selection of subjects to be included in the study. Respondents were selected on the basis of

their relative affluence vis-a-vis other segments of the population. This insured that housing choice clearly represented choice since, on the basis of income alone, they would have been able to choose any of the environmental situations under consideration.

Given the systematic control over environment and a relatively homogeneous group of respondents in terms of degree of affluence, the decision followed to maintain as much homogeneity as possible by focusing on a single large cohort of people. They are married couples still in their child-bearing years with children (usually under 18). For comparative purposes couples in the same age brackets, but without children, were included. However, newlyweds settling in their first home were not sampled. As a final restricting criterion, areas of the city region with pronounced ethnic characteristics were excluded to control for any variation which may be attributable to that non-environmental condition.

The inventory of potential respondents was compiled from diverse sources, both from the apartment rental market and the home buying market. A list of families moving into resale homes (all homes in the downtown area were resales) was generated, as well as an inventory of persons moving into new homes (The majority of moves into suburban homes were into new structures). Some suburban resales were included in order to assess differences between newly settled and established areas in the suburbs. A subsample of rented homes (originally desired) failed to materialize due to the absence of an available source of information and the fact that in the Toronto area rental homes are not too numerous.

Awareness of the possible incompleteness of the inventory of

respondents exists, but it is believed that as close to one hundred percent sample of all relevant movers was identified. Because of the tailing off of a housing boom as the inventory was commencing in June, 1969, the span of time required to fulfill the sampling quota extended to Christmas of 1970. During this period the number of rentals was low as families renewed leases rather than changed buildings. In addition, too few families with children sought downtown apartments during this period, thus delaying filling of the cells in the sampling design.

As a result of this sampling procedure 989 families meeting the criteria for inclusion in the study were approached and of these, an acceptable rate of 77 percent consented to interviews. The final sample size for Phase I totaled 761 families. Phases II and III numbered respectively 687 and 593 completed family interviews. This completion rate is deemed acceptable and rests well within the maximum acceptable loss.

The set of interviews conducted with each family consisted of the basic interview with the wife and supplementary ones with the husband and one child aged 10 to 17 years (if applicable). For any uncooperative husband the wife completed basic financial information from his protocol. As a result, Phase I consisted of 527 interviews and 218 partial protocols for husbands. Of 202 eligible children, 166, or 82 percent, completed their interviews. The breakdown of the sample according to housing type and location is presented in Table 5-1.

Tables 5-2 through 5-7 present data relating to the family structure, income, occupational, and educational characteristics of the 761 families interviewed in Phase I. The distribution of families within the categories of housing type and location according to their

Table 5-1

NUMBER AND PERCENT OF RESPONDENTS BY LOCATION AND HOUSING TYPE, PHASE I

Housing Type	Location: Downtown	Location: Suburbs	Total
Single Family	94 (12.4%)	272* (35.7%)	366 (48.1%)
High Rise	109 (14.3%)	286 (37.6%)	395 (51.9%)
Total	203 (26.7%)	558 (73.3%)	761 (100.0%)

*Of this total, 209 were new homes and 63 were resales.

stage in the life cycle is an uneven one (Table 5-2). Nevertheless, the frequencies within each major category are considered high enough for purposes of comparison. Information relating to age of children (Table 5-3), income levels (Tables 5-4 and 5-5), and occupational distribution (Table 5-6) indicates that the sampling procedure produced a group which met the criteria of family structure and affluence. Given the general level of affluence of the sample as a whole, the variation in the educational attainments of the respondents (Table 5-7) proved to be a mild surprise. In summary, in spite of the constraints which frustrated the realization of the original sampling plan, an acceptable sample emerged which met the intended social criteria.

TABLE 5-2

AGE OF WIFE AND YOUNGEST CHILD BY DESTINATION ENVIRONMENT

DESTINATION ENVIRONMENT	AGE OF WIFE AND YOUNGEST CHILD % of total for each environment: under 35, no children	under 35, child under 5	under 35, child 5-12	under 35, child 13 or over	over 35, no children	total sample
apartment downtown	77.1	5.5	5.5	5.5	6.4	109
house downtown	19.1	31.9	38.3	5.3	5.3	94
apartment in suburbs	22.4	35.0	32.2	8.7	8.7	286
house in suburbs	9.6	33.5	45.9	10.0	1.0	209
resale house in suburbs	7.9	44.4	38.1	9.5	0	63
TOTAL						761

TABLE 5-3

AGES OF CHILDREN BY DESTINATION ENVIRONMENT

DESTINATION ENVIRONMENT	AGES OF CHILDREN % of total for each environment 0-4	5-9	10-14	15-29	TOTAL
apartment downtown	26.1	30.4	21.7	21.7	23
house downtown	29.3	29.9	22.8	18.0	167
apartment in suburbs	38.1	31.6	15.1	15.1	370
house in suburbs	24.0	35.2	25.8	14.9	457
resale house in suburbs	32.8	35.1	21.4	10.7	131
TOTAL					1148

(MULTIPLE CHILDREN PER FAMILY)

TABLE 5-4

DISTRIBUTION OF INCOME FOR HUSBANDS AND WIVES

	INCOME % of total for each sex						
	under $6000	$6000 -8999	$9000 -11,999	$12,000 -14,999	$15,000 -$20,000	over $20,000	TOTAL
HUSBANDS	6.3	25.0	26.6	19.2	12.4	10.4	699
WIVES	60.7	28.6	7.5	1.6	1.0	0.6	308

TABLE 5-5

INCOME DISTRIBUTION BY FAMILY

INCOME PER FAMILY	DISTRIBUTION IN %
not answered	7.0
under $6,000	2.2
$6,000 - 8,999	9.5
$9,000 - 11,999	17.0
$12,000 - 14,999	25.1
$15,000 - 20,000	23.4
over $20,000	15.9
TOTAL	761

TABLE 5-6

OCCUPATIONAL DISTRIBUTION FOR HUSBANDS AND WIVES

OCCUPATION	DISTRIBUTION IN %	
	husbands	wives
manager	27.1	2.2
professional & technical	32.5	15.5
clerical	6.0	18.5
sales	9.6	1.8
service recreation	3.8	1.8
transportation & communication	2.4	0.4
craftsmen	13.5	2.0
other labourers	0.5	0.3
other	0.5	0.5
not in labour force	4.1	56.9
TOTAL	761	761

TABLE 5-7

EDUCATION LEVELS FOR HUSBANDS AND WIVES

EDUCATION LEVEL	DISTRIBUTION IN %	
	wives	husbands
elementary or less	5.7	4.6
some high school	22.2	18.3
grade 12	23.0	13.9
grade 13	12.0	12.1
vocational	4.9	5.9
some university or teachers college	17.2	12.9
undergraduate degree	9.5	14.8
post graduate training	5.4	15.8
other	0.3	1.6
TOTAL	761	761

Toronto: The Environmental Context

The selection of the metropolitan region of Toronto, Ontario as the geographical unit within which to conduct the sampling program is intimately tied to the design and objectives of the physical environment study from which the data come. This fact in no way hinders or reduces the viability of the research reported on in this dissertation. To the contrary, the parallel objectives of both studies can only result in positive fallout for this study as a result of the sampling being conducted in Toronto. In other words, this researcher has not had to settle for a study area which is less than desirable in terms of the objectives of the design. The reasons which made Toronto an ideal location for the purposes of the physical environment study are the very same which make its selection preferable for this one.

This section, then, will outline the rationale for the selection of Metropolitan Toronto as the context of the study. In addition, certain aspects of the growth and structure of the Toronto region will be outlined particularly those which bear relevance to the research objectives of this study. The existence of an ongoing study, such as that of the physical environment as attraction and determinant, provided an available data file. Comparable data could not possible have been collected in such detail and for so large a metropolitan region by the author alone. However, other considerations were present which made the data particularly appropriate, besides their availability.

Canadian cities have experienced processes of growth and change in a parallel fashion to urban areas in the United States. On the other hand, the Canadian situation exposes certain contrasting trends which present the social scientist with a unique laboratory situation for the

observation and study of alternative living patterns. While Toronto displays much of the promise and many of the problems of most metropolitan areas its size, the social and spatial structure of the city result from a continuous process of expansion which differs slightly from large cities in the United States in terms of the nature of inputs, outputs, and pace.

In recent years several valuable works have appeared documenting the growth and structure of Toronto which make an extensive recapitulation of the city's geography and history both redundant and unnecessary. Of particular importance are Goheen's (1970) analysis of the social geography of the city during the latter half of the nineteenth century; Murdie's (1969) comparable social ecology of more recent decades, the investigation of Toronto's suburbanization (Clark, 1961, 1966; Seeley, Sim, and Loosley, 1956), the study of structure and change in Toronto's retail sector (Simmons, 1966), the process of redevelopment and structural change in the central city (Bourne, 1967), and a comprehensive urban geography which emphasizes site, situation, and historical development in understanding the Toronto of today (Kerr and Spelt, 1965). In addition to these works, the University of Toronto's Centre for Urban and Community Studies maintains an ongoing program of publications relating to the current spatial and social conditions in Toronto and its environs.

In terms of age and size of the central city, Metropolitan Toronto more closely resembles the city regions of the northeastern United States than other parts of the country. In some ways, similar forces were operating in Toronto as in many U.S. cities, which account for the pattern of land uses and social structure which typify the modern

commercial-industrial city. Growth proceeded largely unencumbered by municipal planning authorities, resulting in a distribution of land uses which can be attributed to competition for accessible sites. Residential development seemed to have followed along the same lines as cities in the United States.

> Functional specialization was accelerated in the latter half of the nineteenth century when the introduction of streetcars allowed the wealthy to live in newly opened suburban areas adjacent to the transit lines and commute to work in the central city. Differentiation of residential areas became particularly apparent as the older housing stock close to the center of the city was inherited by newly arriving immigrants and the less well-to-do. (Murdie, 1969: 44)

Innovations in intra-city transportation greatly accelerated the movement of higher status groups to suburban residential locations. Residential expansion proceeded unchecked (Murdie, 1969). Significantly, residential growth seemed to conform to Hoyt's sectoral model insofar as the high income sector expanded to the northwest, pulling total residential development in that direction.

Despite these similarities in residential development between Toronto and most urban areas of the northeastern United States, certain recent events provide some interesting contrasts between the two situations.

> It should also be noted that urban and industrial growth in Canada is more recent than in the United States. Canadian cities such as Toronto, did not experience to the same extent . . . a paleo-technic period of industrialization. As a result they usually do not contain extensive areas of tenements and standardized industrial housing. (Bourne, 1967: 60).

Despite the fact that in-migrants accounted for a large portion of the city's population increase between 1911 and 1941, by the latter year persons of British background still accounted for 78 percent of the total

population (Murdie, 1969). Toronto has experienced an influx of large numbers of European immigrants only in the past two decades. This contrasts markedly with the experience of the United States in the late nineteenth and early twentieth centuries. Additionally, Toronto lacks a sizeable non-white minority and its attendant influence on residential change (Bourne, 1967).

In terms of population densities, which are a reflection, in part, of differences in residential patterns, Toronto displays a slightly singular situation. For example, in 1941 the city of Toronto held 73 percent of the inhabitants of the metropolitan area. For 1951 and 1961 the figures were 61 percent and 42 percent respectively, indicating a marked growth of suburban regions not unlike that in the United States. However, in contrast to cities in the U.S., where emptying out of the core areas is common, the absolute population of Toronto city varied by less than two percent during this period (Hill, 1970). These figures indicate that the central city retains its power to hold residents within its boundaries. As will be demonstrated, this condition is partly attributable to redevelopment in the central city.

As a final contrasting condition in the Toronto experience it must be mentioned that a metropolitan form of government was introduced in 1953 which integrated the city itself with the twelve outlying municipalities. One obvious positive effect of this occurance has been the facilitation of orderly growth and a reduction in the cost of essential public services (Bourne, 1967). By assuring better control over sprawl, by assuming responsibility for regional services, by equalizing assessment and taxation, and by providing for an integrated subway and expressway system, Metropolitan Toronto government has instigated rapid growth

of the outer suburbs (Murdie, 1969), while at the same time has halted the deterioration of the central city, and in fact assisted in its redevelopment (Bourne, 1967).

As a general conclusion, despite these recent developments in Toronto's changing structure, the urban area suffers from many of the same pressures of growth which typify cities in the United States. However, the particular combination of conditions which differentiate this city from others reveal a spatial distribution of housing types which allows for the systematic study of variation in behavior and its effect on choice of residential environment. A discussion of this situation follows.

Residential Structure

In Metropolitan Toronto no pure relationship exists between housing type and location. That is, the stereotypical situation where the suburbs are dominated by families in detached single unit dwellings and where the central city remains the domain of multi-family buildings and high rise apartments does not characterize the Toronto region. While it is true that the largest proportion of single family detached dwellings existed in the suburban fringes in both 1951 and 1961 (Murdie, 1969), this percentage has been steadily declining in recent years, particularly during the decade of the sixties. A concentrated surge of apartment development, particularly high rise apartments, has significantly contributed to this decline. Information relating to the percentage of dwelling units which were either single detached or apartments in both 1951 and 1961 for different sections of the metropolitan area serves to highlight the changing conditions in housing type. Table 5-8 presents the appropriate figures.

TABLE 5-8

PERCENT OF DWELLING UNITS WHICH WERE EITHER SINGLE DETACHED OR APARTMENTS FOR BOTH 1951 AND 1961 IN METROPOLITAN TORONTO REGION

	Metro Toronto		City of Toronto		Inner Suburbs		Outer Suburbs	
	1951	1961	1951	1961	1951	1961	1951	1961
Single Detached	52.1	52.1	31.8	28.5	71.7	54.1	89.5	75.4
Apartments	22.0	28.9	29.7	36.5	14.9	23.1	7.8	24.4

Source: Adapted from Murdie (1969), pp. 56-57.

The number of single detached dwellings as a percent of the total number of dwelling units declined in the city, inner suburbs, and outer suburbs. No change was recorded for Metropolitan Toronto as a unit. The greatest percentage loss occurred in the inner suburbs. Apartments, on the other hand, as a percent of the total dwelling units, increased in all areas, with a dramatic increase occurring in the outer suburbs.

This movement to a less lopsided distribution of dwelling units from one dominated by single family houses commenced in the late 1950's. Prior to this, in the late 1940's and into the 1950's, when rates of family formation were rising, couples were marrying at younger ages, and birth rates were increasing, single family housing spread over a wide area.

> There were miles of one-story bungalow-type buildings closely hugging the ground. Changes occurred in the late 1950's. Lot sizes decreased, more semi-detached houses and row houses appeared and there was an increase in apartment building. (Kumove, 1966: 1)

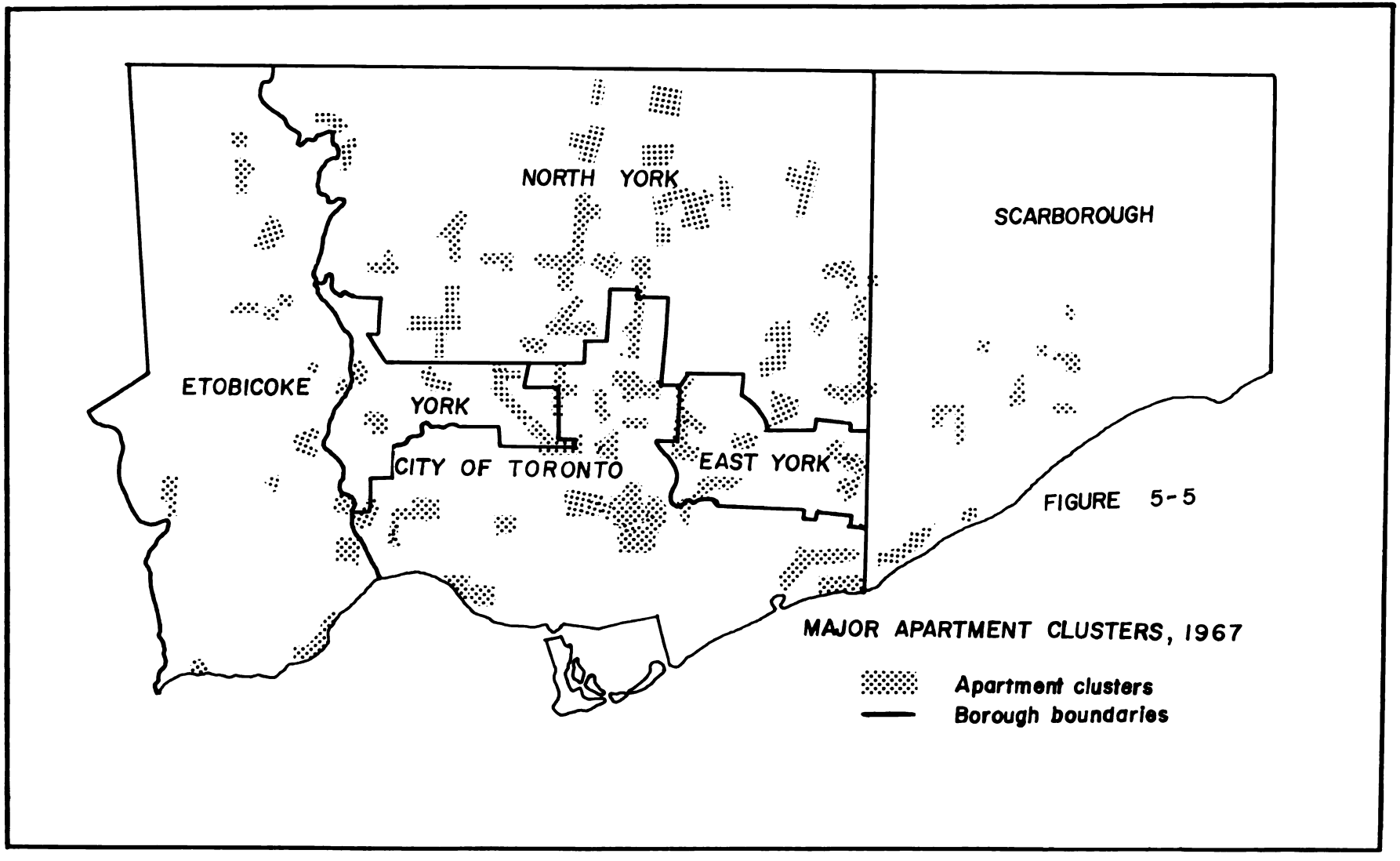
The increases in apartment construction have been so marked that today this type of structure constitutes the dominant form of new dwelling unit construction. In 1958, apartments comprised over 50 percent of all new units built. By 1961, the figure exceeded 60 percent, and by the end of 1965, 70 percent. The majority of new apartments have been built on vacant land in suburban Toronto (Kumove, 1966). Lest the reader be mislead, in the central city area of Toronto apartment construction has also been on the increase (See Table 5-8). The metropolitan wide development of high rise apartment construction is graphically displayed in Figure 5-5. Apartment clusters appear to be uniformly distributed throughout both the city of Toronto and its suburbs.

This trend in new dwelling unit construction away from single detached units to multi-story apartment buildings cannot be attributed solely to the rising cost of land and increased building costs. Changes in locational preferences and in living conditions have played a significant role in altering the demand for different housing designs.

> Demand elasticities for new housing have changed, but to what extent is uncertain. Nonetheless, the greater mobility provided by rental accomodation, as well as, generally lower costs, built-in conveniences, and higher accessibility either because of central location or proximity to mass transit, have accelerated the shift to apartments. (Bourne, 1971: 325)

Increases in apartment construction in the suburbs cannot be explained by accessibility to the central city. Other preferences must be finding fulfillment in suburban high rise structures which are unrelated to the location of amenities in the urban core. An analysis of activity patterns of the families who chose to reside in these dwellings should assist in isolating these preferences.

In conclusion, it can be said that Metropolitan Toronto, with its mixture of single family houses and high rise apartments at all distances



SOURCE: Bourne, 1971: 324

from the CBD, offers the residential decision maker a variety of housing choices at different locations. Thus, he is not constrained by the lack of any one housing type at any location. He can more freely fulfill his life style aspirations and can act out his preferences at will. These conditions should produce different patterns of activities for each residential environment under study. As a result, activity patterns can be more easily analyzed as an aspect of preferred life style.

Time Budgets Of Human Behavior

The particular focus of this dissertation requires the collection of data in a rather unusual form, that of the time budget. Although, hardly a unique research design, the time budget remains a little known and even less used mode of data collection. It is by no means a mysterious research instrument, and in fact is a straight forward means of collecting some of the most intimate information a respondent can relay. Simply, the time budget is a survey instrument on which respondents can provide information on how they spend their time over some specified period. This can be accomplished by means of either a diary format or an interview where recall is required. Typically, individuals are queried on what they did, how long each activity took, with whom it was performed, and where it transpired. With such data for a sample of people a variety of research questions can be pursued which are of a behavioral nature. Several such questions will be addressed in subsequent sections of this chapter and succeeding chapters.

In a recent monograph on human time allocation, the authors lamented the fact that, "For a nation nearly three quarters committed to an urban way of life (by defacto place of residence), we know surprisingly little about how American live this way of life . . ." (Hammer

and Chapin, 1972: v). Indeed, despite considerable knowledge of differences among various status groups, aggregate movement dynamics (e.g. social and spatial mobility), and local and national indicators, we maintain no accounting system of the patterns of life being acted out in our cities, nor are we as scientists able to, ". . . probe the transition of social phenomena from one state to another, to trace their meaning, and to gain insights into the dynamics of evolutionary shifts in life style systems as they become reconstituted into new systems under different environmental influences" (Hammer and Chapin, 1972: v). Surprisingly, in spite of much research into behavioral processes, we suffer from an ignorance of human time allocation and the systems of life ways present in modern societies.

Richard Meier first called for the maintenance of ". . . an index representing the variety of life, particularly the ways people choose to spend their time . . ." (Meier, 1959: 27). He saw the need for a set of social accounts which would reflect process and change in society in a measurable way. In this way the social efficiency of various urban and regional structures could be assessed. Such a set of accounts would parallel the existing national income accounting system. However, a social accounting scheme would consist of indices of human values and be supplementary to economic accounts as the basis for policy making and planning. Measures of the expenditure of time would assist planners in assessment of potential costs and benefits associated with particular schemes, the projection of social trends, and measurement of goal achievement (Meier, 1959).

As the philosophy of environmental planning has shifted from a more architecturally dominated one, where emphasis was placed on deterministic postulates relating form to social behavior, to a value oriented

approach where planning action responds to values and desires of urban residents (Gans, 1968) research has been conducted into dynamics of time allocation and spatial behavior. Most notable among those involved in such efforts have been a group of planners at the University of North Carolina. Perhaps taking their cues from Meier's work (Meier, 1959, 1962) they have been conceptualizing human behavior as systems of activity which suggest profound implications for the present and future form of urban complexes.

Lest it be construed that the time budget methodology has been an innovation of recent years mention must be made of the fact that time and motion studies have been a concern of industrial management for a half century. Indeed, living conditions and expenditure patterns were the subject of social investigation as far back as eighteenth century England. The reader is referred to Hammer and Chapin (1972) for an extensive discussion of the evolution of time budget studies, and to Brail (1969). The objective here is to avoid redundancy and instead to concentrate on the methodology of time budget analysis. Since this study is not primarily concerned with time allocation but with the sequential and spatial nature of activities, a review of the literature on time allocation reduces in importance.

As with all useful innovations in scientific research, time budget methodology has been gaining in popularity with scientists who embrace the social values or behavioral mode of explanation. In spite of some early works on time allocation (Lundberg, et al., 1934; Sorokin and Berger, 1939) only in recent years has a noticeable increase in time budget studies taken place (Hammer and Chapin, 1972). Certainly the most ambitious project attempted to date must be the International Time

Budget Research Project (Szalai, 1966) in which cross-national time budget surveys were simultaneously conducted in a dozen countries. Publication of the summaries of this work are still pending. Recent research employing time budget methodology include studies by the North Carolina group (Chapin and Hightower, 1966; Chapin and Logan, 1969; Chapin and Brail, 1969; Brail, 1969; Hitchcock, 1970), Michelson (1972), Pappas (1968), and Hungarian Statistical Office (1964). As a consequence of the increasing use of time budget methodology, a permanent secretariat has been established and charged with the duty of disseminating current research information pertaining to time budgets.

The primary device employed in the reporting and collection of data relevant to the objectives of this study is the human time budget. While the term time budget can be thought of as a description of individual or group behavior (i.e. how persons allocate their time) it is also a survey instrument which can be used to plot human activities through time and space. Most researchers employ a form of the latter to generalize from the data collected about the former.

Data gleaned from such survey instruments provide information, not only about what activities individuals engage in, but also about who else is involved, when and for how long the activities take place, the typicality of the activities, and where the activities were acted out. In this manner a time budget describes the flow of activities through the course of a day (or longer) and over space. It provides a picture of the contact patterns of the individual as well as information about how activities are linked sequentially. In addition, information is provided with respect to the spatial distribution of individual behavior patterns. A further advantage of the time budget over, say, the

traditional transportation survey lies in the range of behavior which can be recorded. Whereas the latter records only out of home trips, and usually only vehicular trips to particular land uses, the former also provides data on in-home activities and all out-of-home activities, including walking trips. Time budget data, then, allow concentration on the set of activities which characterize a person, as well as on the temporal and spatial dimensions of that person's behavior.

Time budget instruments can be of two general types. The first is organized as an open ended question on an interview schedule, where the respondent is asked when he or she awoke on a particular day (usually the day immediately prior to the interview), what activity commenced his or her day, and the nature of each subsequent activity. Length of time is introduced by asking the respondent the approximate duration of each activity. Both Hammer and Chapin (1972) and Butler et al. (1969) employed a form of this approach. An alternative form of time budget asks each respondent to recall the time of day that the initial activity and each succeeding activity began. The rationale for using this approach derives from the notion that individuals can be more accurate about starting times than they can be when giving estimates of elapsed times. The question is one of reliability in answers. Both this form of the time budget and the preceeding one may require that the respondent relate only those daily activities which consumed a minimum amount of time (15 minutes, 30 minutes, etc.). A third form of time budget which has been little used in North America is the diary, where the respondent keeps a diary of his activities for some specified period, say, a week. Cooperation of subjects seems to be the major deterrent to the widespread use of the diary form.

Some research has been undertaken to assess the reliability and validity of various methods of collecting activity data. Wallden (1968) employed home interviews, self-administered diaries, and telephone interviews to compare the relative ability of each form to secure reliable results. The quality of information gathered did not differ significantly for the three methods when the time lapse between the performance of the activities and their recording was not great. When information was requested for extended periods of time, however, the diary method emerged as the most fruitful technique. In another experimental situation the validity of survey methods for gathering activity data was assessed when compared with actual unobtrusive observation of the respondents' movements and contacts. With the discrepency between observed time and stated time averaging only three minutes, the reliability of the time budget survey requiring recall on the part of the respondents was strengthened (Carlstein, Lenntorp, and Martensson, 1968).

When recall of immediate past activities is desired (one or two days prior to the interview), interview techniques provide reliable information on the nature and times of daily activities. The longer the interval between the recording of activities and their actual occurrence the less accurate the responses. This situation, of course, increases the desirability of the diary method when information of several days duration is required or when the interview takes place much beyond the day(s) in question.

The time budget format which has been used to collect the appropriate data for this study was subdivided into segments of fifteen minutes in length. The respondents were asked by an interviewer to

relay all the activities they engaged in on the last weekday and previous Sunday that required a minimum of fifteen minutes. Questions included in the time budget elicited information about what activities were completed during the day, when they began and terminated, who else was involved, where the activity took place, and whether the activity was considered typical by the respondent. For analytical purposes, trips to and from activity sites were coded independently of each activity. That is, they constitute a separate activity, and can be analyzed as such. As a result the relationships between travel time, trip length, and time spent in an activity can be explored. A specimen of the time budget schedule is included as Appendix A.

As a means of categorizing activities for purposes of analysis a slightly modified version of the 99 item code of the International Time Budget Research Project was employed. The code is appended for reference purposes.

Chapter 6

ACTIVITY SYSTEMS AND RESIDENTIAL ENVIRONMENTS

Methodology

Chapter Six is devoted to an analysis of the activity linkages of the sample population. The methodology employed in this analysis embodies a multi-level approach. At the first level, interaction matrices will be described and compared on the basis of location and housing type. That is, all downtown residents, both male and female, in high rise and single family homes, will be compared with those living in the suburbs for differences in life style. First, transition matrices, and then interaction factors will be scrutinized in order to identify the major sequence patterns of each group. At subsequent levels of analysis sex, location, or housing type will be allowed to vary systematically while variation across groups in linkage and factor structure will be analyzed. In this manner differences in styles of living can be related to variation in physical environment.

In dealing with such a massive amount of data, and with numerous comparisons to be made between and among linkage coefficients and factor loadings, only apparent differences can be noted and analyzed. One of the difficult aspects of engaging in time budget analysis is manipulation of the volume of data. Figures 6-1 and 6-2 represent the daily time budgets of two sample families, both living in high rise apartments in downtown Toronto. These graphics display individual activity paths throughout the day, where activities have been collapsed down into one

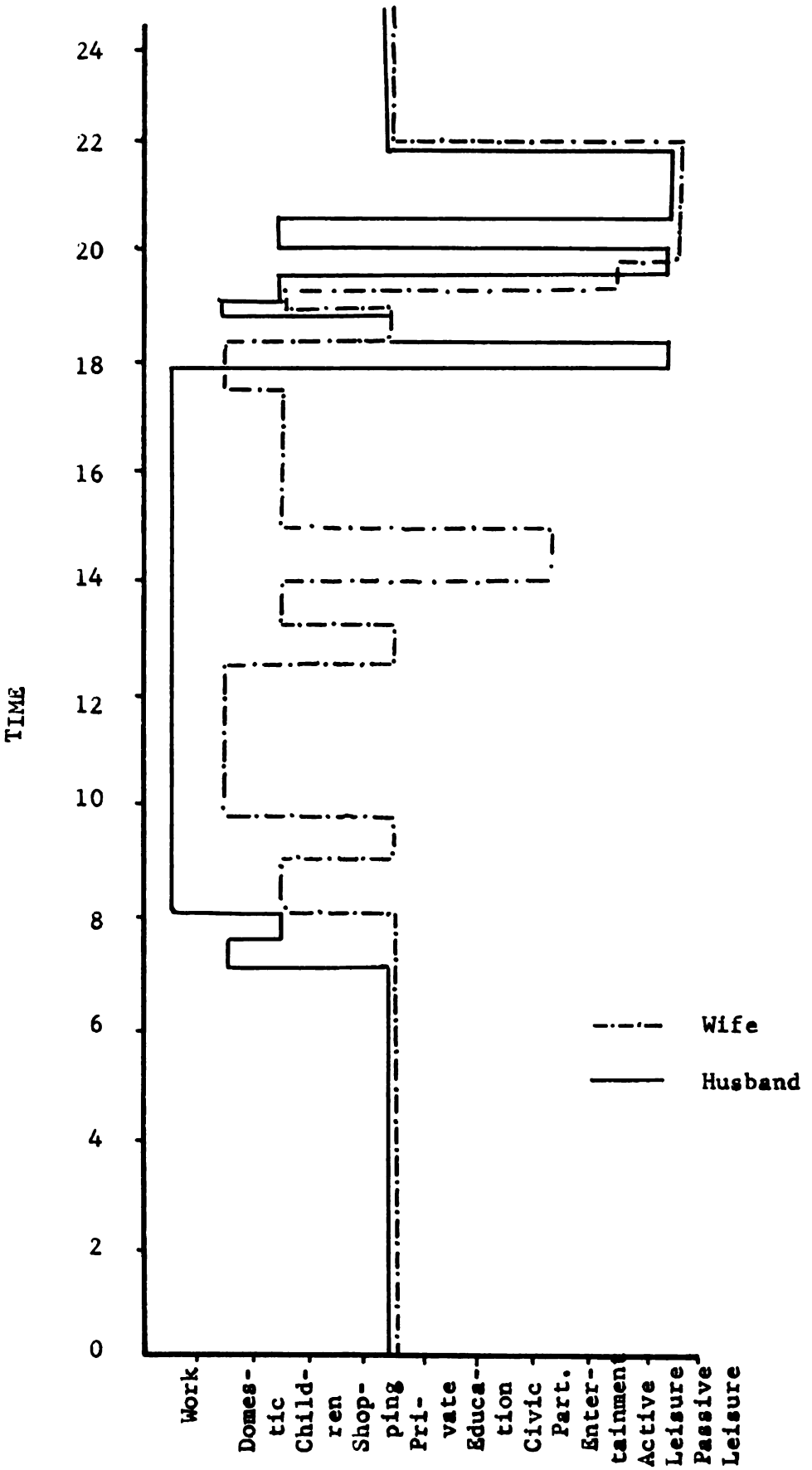


Figure 6-1

ACTIVITY PATHS OF SELECTED COUPLE

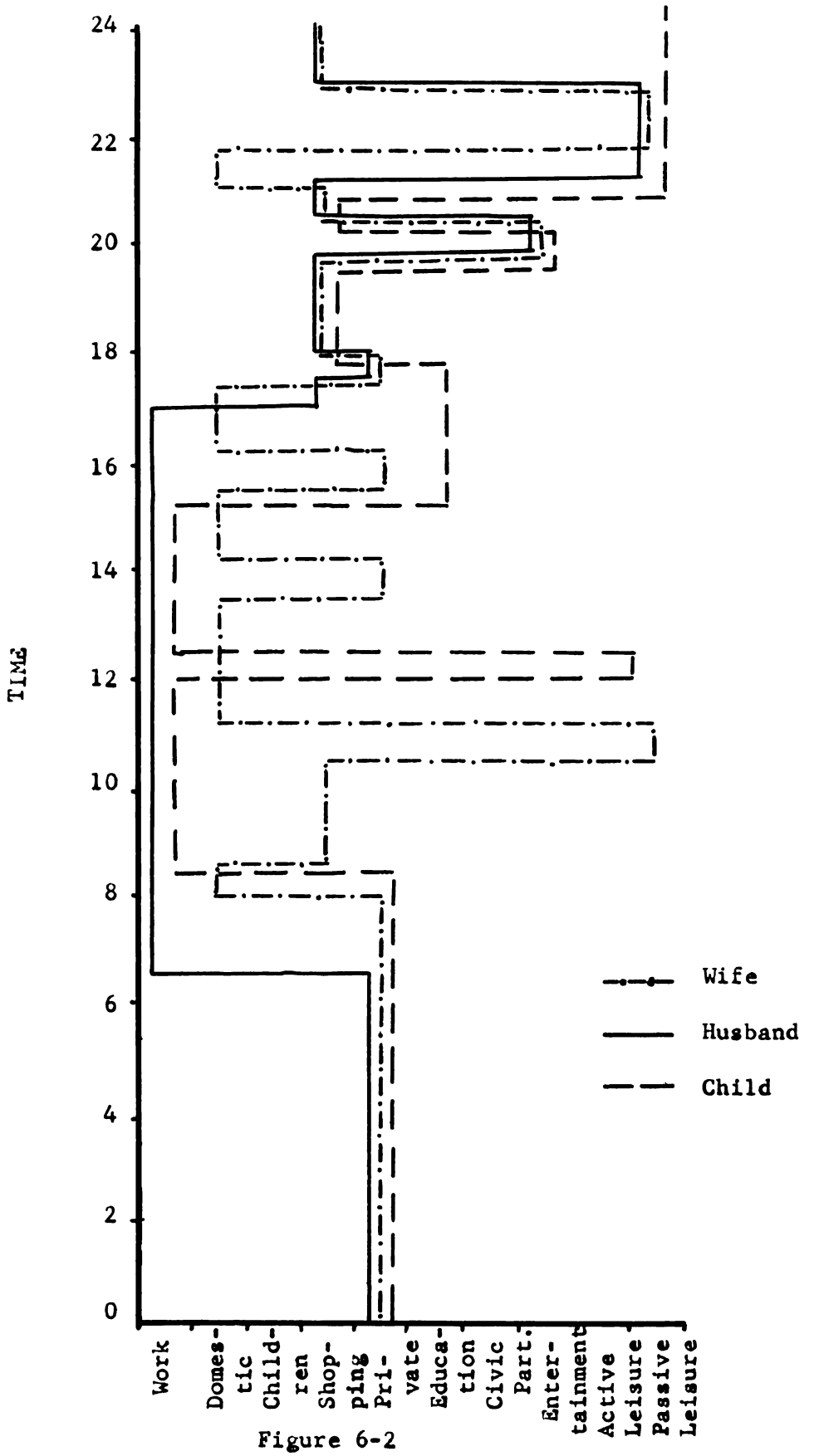


Figure 6-2

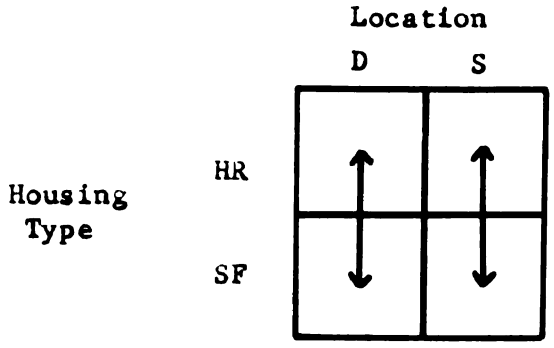
ACTIVITIES OF SELECTED FAMILY WITH CHILD

of the ten major categories. Although such displays possess no analytical values, they demonstrate the complicated nature of behaviors patterns of individuals in an urban environment. For any average individual a typical vector of activities may consist of twenty-five or thirty episodes. When these vectors are combined for several hundred individuals in a sample the data matrix becomes quite large, hence the need for reduction to more manageable proportions. When aggregating time budget data for various subgroups within a given culture the analytical problem becomes one of assessing significant differences in time usage and activity linkages.

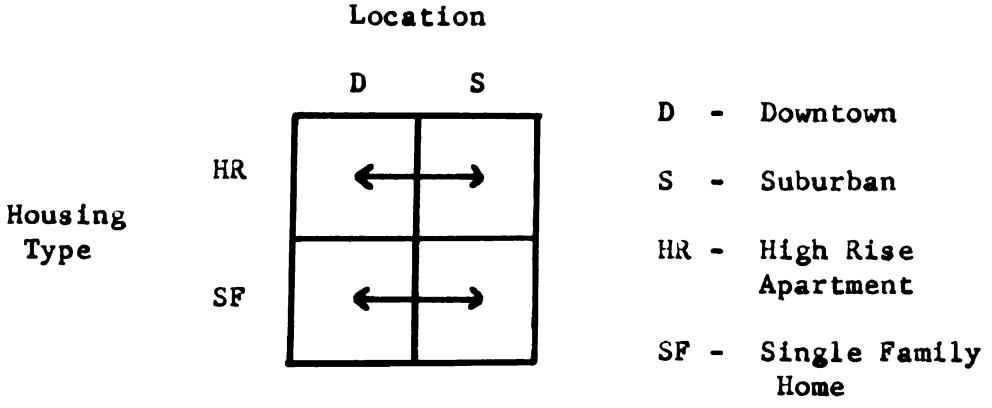
As Michelson (1972) has noted, the differences which emerge are not so much of kind as of degree. That is, for a homogeneous group, such as the one under study here, patterns of activity linkage may be similar for all subgroups, that is, their life styles may be quite similar. The main differences may lie in the extent to which certain subgroups emphasize particular sequence patterns over others. Such differences in emphasis, it is thought, emanate from the particular locational, housing, and life style characteristics of each group. Therefore, variations in life style by environment should be revealed by subtle but regular differences in linkage coefficients, factor loadings, and combinations of the two. The differences should be more pronounced at the lower levels of aggregation due to the control exercised over variations in location housing type, and sex.

At the first level of analysis dichotomies in location and housing type constitute the categories of comparison. At this level the types of analyses which can be performed correspond to the first two stages in the analytical design outlined in Figure 6-3. In the first stage

TYPE I



TYPE II



TYPE III

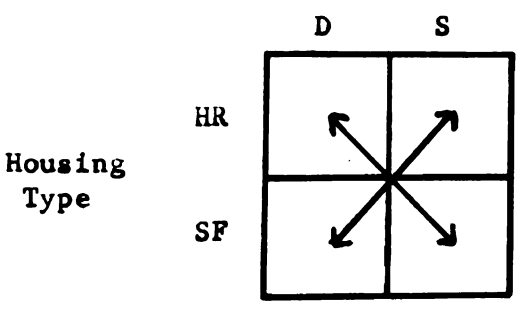


Figure 6-3

TYPES OF COMPARISONS POSSIBLE BETWEEN LOCATION AND HOUSING

(Type I) activity matrices can be compared for different housing situations while controlling for location. In a Type II analysis locational differences come under scrutiny while housing type acts as the controlled variable.

The Type III mode of analysis becomes feasible only in the second and third levels of comparison. Here the variables of housing type and location can be varied or systematically controlled. Comparisons then become possible between polar situations in environment. Differences and similarities between high rise apartments downtown and single family homes in the suburbs can then be interpreted in terms of life styles of the residents.

Major Life Style Differences

The literature in both urban sociology and urban geography is replete with references to the differences in life style between those who live in the downtown sections of metropolitan areas and persons residing in the suburbs. As noted in a previous chapter, suburban living is thought to be built around a set of fundamentally different activities and attitudes from that of the city. As a result, with social class and economic status controlled, any significant differences in activity linkages between downtown and suburban households should reflect differences in the influence of the physical environment.

In light of current knowledge of suburban living and the role of distance in travel activity it is expected that, for the suburbanite, out of home activities such as shopping, education and training, civic participation, and active leisure would display strong interconnections. On trips outside the home, with distances being greater in the suburbs, families tend to link activities together on one trip more often than

do downtowners. Persons residing close to the city center rely upon proximity to facilities (educational, cultural, etc.) to allow the freedom to move back and forth quite easily between in-home and out-of-home activities (Gans, 1968).

Since differences between matrices cannot be determined to be significant in a statistical sense, some arbitrary level of difference is required such that some confidence can be achieved in interpretation. The figure deemed appropriate to consider as a significant difference between a single linkage category for any two matrices is .10. Any linkage that differed by at least that amount contributed to variation in life style. Any difference which ranged between .05 and .10 was noted and considered a moderate difference.

For families living downtown, regardless of housing type, passive leisure seems to be a significant activity in terms of following other activities. (Table 6-1) Transition probabilities range from .08 for the link with working time to .20 for the link with active leisure. Working time, domestic work, care to children, and private needs connect strongly with other activities, primarily following other activities. Care to children and private needs show strong linkages with domestic work and passive leisure. Domestic work, care to children, entertainment, and active and passive leisure are all strongly linked to private needs, a common pattern throughout most of the transition matrices. The connection can be explained by the fact that these activity types are primarily home-based, while work, shopping, civic participation and education usually occur outside the home. Therefore, given the assumption of orderliness in human behavior, it seems logical that people would move back and forth between and among such home based activities.

TABLE 6-1

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities - Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	71	03	01	04	06	01	00	04	02	08
2.	Domestic Work	03	02	13	02	35	01	00	04	04	16
3.	Care to Children	03	23	24	03	19	02	01	05	05	14
4.	Shopping	08	13	03	45	09	01	00	08	02	12
5.	Private Needs	17	18	10	03	28	03	00	03	01	16
6.	Education and Training	02	04	03	03	16	49	00	03	01	18
7.	Civic Participation	13	00	13	00	00	00	38	25	00	13
8.	Entertainment	12	07	07	06	18	03	00	38	03	12
9.	Active Leisure	10	08	08	02	27	00	00	03	21	20
10.	Passive Leisure	05	14	04	02	44	02	00	03	04	21

00 ≡ ≤ 004

The linkage pattern for families living the suburbs shows some of the same strong connections between activities that characterize the city dwellers. (Table 6-2) To repeat the similarities seems unnecessary; therefore, only the differences will be highlighted. Surprisingly, differences in sequencing between work, domestic work, care to children, and shopping do not appear to be significant; nor are those associated with private needs and active and passive leisure. Significant differences do emerge for activities related to education and training and civic participation, the latter including meetings of voluntary associations. Suburbanites display stronger links between education and private needs and civic participation and private needs (.29 to .16 and .11 to .00). This gives rise to speculation that educational activities and those connected with organizations occur mainly in the evening; with the return home, suburbanites retire for the evening. For downtowners, civic participation is strongly linked with work, care to children, and entertainment. The differences between suburbanites and downtowners suggests that the former are more restricted in the time that they can devote to organizations and civic activities. The latter, on the other hand, can mix up these activities with others, indicating fewer restrictions as to the time of day or sequence of such activities.

On the whole, the differences in activity linkages between those living in the suburbs and those residing in central locations are not too pronounced. Their activity patterns display a remarkable degree of similarity. The few notable exceptions include educational and participatory activities, both considered discretionary forms of behavior.

An analysis of linkage differences by housing type yields little

TABLE 6-2

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities - Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	71	03	02	02	09	00	00	06	01	06
2.	Domestic Work	02	26	15	04	32	00	00	02	02	15
3.	Care to Children	04	29	22	04	15	01	00	03	03	19
4.	Shopping	04	14	08	42	08	00	01	11	02	10
5.	Private Needs	14	25	13	03	23	00	01	03	02	14
6.	Education and Training	02	07	05	00	29	34	00	00	02	20
7.	Civic Participation	02	08	00	05	11	00	44	11	00	18
8.	Entertainment	18	11	05	07	14	00	00	33	02	09
9.	Active Leisure	06	15	08	06	26	00	00	04	12	24
10.	Passive Leisure	03	18	11	02	43	01	00	03	03	17

00 = ≤ 004

information at the metropolitan scale. (Tables 6-3 and 6-4) The only significant difference (i.e., $\geq .10$) involves the linkage between civic participation and itself. For high rise inhabitants the link is much stronger than for people in single family homes (.57 to .38), suggesting that although both groups may participate in these activities for extended periods or several related ones in succession, high rise people do more of it.

At this level of aggregation it becomes impossible to partial out the effects of such variables as sex, location, and life cycle, and therefore any suggestions as to differences remains highly speculative. Consequently, it seems appropriate to comment on the similarities between these groups in terms of the most dominant activity linkages. Along the main diagonal linkage coefficients are of the highest magnitude. Similarly, for both groups private needs constitutes a strong receiving or following activity for all activities except shopping and civic participation. Domestic work and passive leisure display like patterns, thereby establishing themselves as anchor points in the individual's day.

In general, the differences in linkage coefficients concentrate themselves in the lower half of the transition matrices. This means that the two groups behave similarly in the home or when engaged in what are normally considered obligatory activities, but that they behave somewhat differently in the realm of discretionary activities. The difficulty in interpretation of the differences lies in the fact that neither are they significantly large nor do they conform to a systematic pattern. This condition may be explained by the lack of control over sex and location. The fact that the families in the sample fall into

TABLE 6-3

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
Single Family Homes

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	68	02	02	03	11	00	00	07	01	07
2.	Domestic Work	02	26	15	04	33	00	00	03	02	15
3.	Care to Children	04	29	22	04	14	01	00	04	04	18
4.	Shopping	04	16	07	43	07	00	01	10	02	09
5.	Private Needs	13	25	16	04	23	00	01	03	01	14
6.	Education and Training	00	04	08	02	21	40	00	06	02	17
7.	Civic Participation	04	10	02	06	08	00	38	13	00	19
8.	Entertainment	15	11	05	08	12	01	00	35	03	10
9.	Active Leisure	05	12	11	03	26	00	00	05	18	21
10.	Passive Leisure	03	18	10	03	42	00	00	03	03	18

00 = ≤ 004

TABLE 6-4

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
High Rise Apartments

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	74	03	01	03	07	00	00	04	02	06
2.	Domestic Work	04	25	12	03	32	01	01	03	03	17
3.	Care to Children	04	25	24	03	20	00	00	02	03	18
4.	Shopping	06	10	07	42	11	00	00	11	02	12
5.	Private Needs	18	22	08	02	26	02	00	03	02	17
6.	Education and Training	03	06	01	02	20	48	00	00	01	19
7.	Civic Participation	00	00	00	00	14	00	57	14	00	14
8.	Entertainment	18	08	06	06	17	01	00	33	02	10
9.	Active Leisure	11	14	04	07	26	00	00	02	11	25
10.	Passive Leisure	04	15	07	02	45	02	00	03	04	19

00 = $\leq$ 004

one broad socio-economic class may be significant. For these reasons, differences in life style by housing type, for the Toronto metropolitan area, do not appear to be significant.

Life Style By Location

At the second level of analysis control of one variable is introduced, and at the outset, this variable is location. A comparison of transition matrices for single family homes and high rise apartments located in central Toronto reveals a number of significant differences in linkages. The high rise group (Table 6-6) show stronger linkages between both private needs and work and active leisure and work, whereas for single family homes (Table 6-5) the link between civic participation and work is quite pronounced. This latter group shows much stronger linkages to care to children for private needs, education and training, and civic participation. They also link education and training, civic participation, and entertainment strongly with entertainment. The strength of these links suggests that care to children and entertainment form important points of activity during the day. They may define the rhythm of the day for single family homeowners.

Among single family homeowners domestic work, entertainment, and active leisure are more strongly linked with themselves than for persons in high rise situations. One explanation for this situation might be that high rise residents spend smaller amounts of time in these activities and move on to activities of a different nature. Inhabitants of single family homes, perhaps more tied down by small children, must find large blocks of time for entertainment and leisure activities. Instead of linking domestic work strongly with itself and with care to

TABLE 6-5

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
Single Family Homes - Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	68	02	03	02	07	00	01	05	03	09
2.	Domestic Work	01	27	18	03	34	00	00	03	03	10
3.	Care to Children	02	25	22	04	18	02	01	05	05	15
4.	Shopping	06	18	06	46	04	01	00	07	01	09
5.	Private Needs	10	20	20	03	26	01	01	04	00	15
6.	Education and Training	00	00	16	04	12	46	00	16	00	15
7.	Civic Participation	13	00	13	00	00	00	38	25	00	13
8.	Entertainment	10	07	07	06	07	04	00	44	03	12
9.	Active Leisure	04	09	13	00	22	00	00	07	33	11
10.	Passive Leisure	06	18	07	03	41	02	00	03	03	19

00 = ≤ 004

TABLE 6-6

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
High Rise Apartments - Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	72	03	00	05	06	01	00	03	02	07
2.	Domestic Work	04	17	09	01	35	01	00	04	04	23
3.	Care to Children	05	19	29	01	22	01	00	06	05	12
4.	Shopping	09	11	01	44	13	00	00	08	02	13
5.	Private Needs	21	16	04	03	30	05	00	03	01	17
6.	Education and Training	03	06	00	03	18	51	00	00	01	18
7.	Civic Participation	00	00	00	00	00	00	00	00	00	00
8.	Entertainment	15	07	07	07	17	01	00	33	02	12
9.	Active Leisure	15	08	04	04	30	00	00	00	11	28
10.	Passive Leisure	05	13	02	02	47	02	00	03	05	22

00 = $\leq$ 004

children those in downtown high rise apartments link domestic activities strongly with passive leisure. Since passive leisure activities lead to night-time retirement almost fifty percent of the time for this group, it can be deduced that housework and other domestic chores are left until evening before retiring to bed. Such a situation can be attributed to a high percentage of working wives with no children.

On the suburban side of the coin it was expected that activity sequencing would not vary so much between housing types. This hypothesis was advanced because it is thought that suburbanites, regardless of housing type, are more like each other than they are like city dwellers of a similar housing environment. A comparison of the linkage matrices bears this hypothesis out. (Tables 6-7 and 6-8) Only two sets of linkages appear to be significantly different, civic participation to domestic work and to itself. High rise dwellers link civic participation more strongly to itself (.57) than do single family home inhabitants (.38), although the reverse is true of the link to domestic work (.00 to .12).

The relative similarities of these two linkages structures suggests that in the suburbs family life styles do not differ very much, even when housing type is considered. In the downtown situation the differences are much more pronounced. Stage in the family life cycle and the presence of a working wife would seem to explain this fact.

Of further note is the fact that the suburban single family home linkage matrix closely approximates that for all single family homes. The same is true of the high rise apartment situation. This would result from the greater percentage of the sample residing in the suburbs.

TABLE 6-7

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
Single Family Homes - Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	68	02	02	03	11	00	00	07	01	06
2.	Domestic Work	02	26	15	04	32	00	00	03	02	16
3.	Care to Children	04	30	22	04	13	01	00	04	04	18
4.	Shopping	04	16	07	42	07	00	01	10	02	10
5.	Private Needs	14	26	15	04	22	00	01	03	02	13
6.	Education and Training	00	08	04	00	31	35	00	00	04	19
7.	Civic Participation	03	12	00	08	10	00	38	10	00	20
8.	Entertainment	17	12	05	08	13	00	00	33	03	09
9.	Active Leisure	05	13	10	05	27	00	00	05	12	24
10.	Passive Leisure	02	18	11	03	43	00	01	03	03	17

00 = ≤ 004

TABLE 6-8

LINKAGE COEFFICIENTS

Husbands and Wives Weekday Activities
High Rise Apartments - Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	75	04	01	02	07	00	00	04	02	06
2.	Domestic Work	04	28	14	03	31	00	01	02	03	14
3.	Care to Children	04	26	23	04	19	00	00	01	03	20
4.	Shopping	04	10	11	40	09	00	00	13	02	11
5.	Private Needs	15	25	10	02	24	00	00	03	02	17
6.	Education and Training	07	07	07	00	27	33	00	00	00	20
7.	Civic Participation	00	00	00	00	14	00	57	14	00	14
8.	Entertainment	20	08	05	05	16	01	01	34	01	09
9.	Active Leisure	09	19	04	09	23	00	00	03	12	22
10.	Passive Leisure	03	17	10	02	44	01	00	03	03	16

00 = ≤ 004

In the third type of analytical comparison extreme combinations in the housing and location scheme are compared. (Tables 6-6 and 6-7) Since social conditions, housing type and location interact to influence behavior to a certain extent, expectations exist that the most extreme differences in behavior patterns should manifest themselves in an analysis of linkage characteristics of the most unlike environments. Since most comparisons between urban and suburban living are characterized by persons who live in high rise apartments and single family homes respectively, life styles should crystalize around these two situations.

An examination of differences in linkage coefficients reveals that this is not the case. Differences in linkage coefficients occur in only four instances; the two matrices are remarkably alike otherwise. Families living in suburban single family homes have significantly greater linkages between care to children and domestic work and between private needs and domestic work than do downtown residents in high rise apartment buildings. They likewise link private needs more strongly to care to children. On the other hand, those in apartments link active leisure more strongly to work related activities than their suburban counterparts. This work linkage emphasis on the part of apartment dwellers strengthens the notion that many activities occur close to the workplace, in this case the central business district.

Life Style By Housing Environment

Another mode of analysis calls for control of housing type while differences in life style by location can be assessed. At first, single family homes in both the suburbs and central city provide the focus.

(Tables 6-5 and 6-7) By investigating the effects of location on life style it is hoped that some inferences can be drawn concerning the effects of distance on activity linkages. Accessibility to the city center is hypothesized as having an inverse relationship to the strength of linkages for out-of-home activities. In the case of residents of single family homes this hypothesis is not supported. Of the eight linkage coefficients which are significantly different between the two matrices the downtown inhabitants show a pattern of stronger linkages for discretionary, out-of-home activities.

An examination of the individual linkages reveals that downtowners link education more strongly to care to children and to itself, while the suburbanites link education and training more strongly to private needs. For the downtowners, strong linkages exist between civic participation and work, civic participation and entertainment, entertainment and itself, and active leisure and itself. For the suburbanites, a strong link shows itself between active leisure and passive leisure. All this suggests that suburbanites in single family homes are more homebound than downtowners and tend to link fewer activities on trips outside the home. They may substitute spending larger amounts of time on fewer activities because of the travel investment involved in getting to an activity sight, a finding documented by Hammer and Chapin (1973).

Elsewhere, Michelson (1973) has found that homeowners living in the central city do so to avail themselves of the cultural amenities downtown, and to be near the husband's place of employment. Residents of downtown single family homes patronize places of public entertainment more often than other groups in the sample. In addition, these people feel that access to facilities is more difficult in suburbia and

disagree with most in that they feel that suburban space is not superior for the purpose of raising children.

A final observation concerns the difference between suburban and downtown residents in discretionary out-of-home activities. In most of the comparisons by location noted so far, both in home activities and activities considered to be obligatory show linkages of a smaller magnitude across groups. This finding substantiates the claim that life style differences are reflected in patterns of behavior over which the individual possesses the greatest degree of control in terms of time spent, time of day, and sequencing.

Residents of high rise apartments display greater similarities in life style between the suburbs and the central city (Tables 6-6 and 6-8). Here, housing type may be the greater influencing factor. This suggests that families who chose to live in high rise apartments probably select their location in response to location of the workplace and not on the basis of accessibility to cultural and shopping amenities. For both downtowners and suburbanites in high rise apartments, working time is linked with itself 70 to 75 percent of the time, whereas for single family residents the occurrence is usually 65 to 70 percent. Michelson (1972) found that for this sample in general persons moving to suburban locations, to both high rise apartments and single family homes, increased their travel time for the journey to work, although for husbands, moves to high rise apartments in both the suburbs and downtown resulted in a net decrease in travel time. Therefore, although residential location is influenced by workplace location, housing type is most likely influenced by life style preferences, which seem to be realized in high rise situations.

In terms of differences in activity linkages, suburbanites link domestic work more strongly to itself, shopping more strongly to care to children, and active leisure more strongly to domestic work, while downtowners link education and training much more strongly with itself (.51 to .33). Otherwise, the sequencing of activities for the two groups remains quite similar. The few differences reflect the slightly more family oriented life style of the suburban dweller, where the wife is less likely to be employed, and therefore more involved with children and housework. This accounts for the strong movements between care to children, shopping and housework.

Life Style Differences By Sex

To this point the analytical procedure has ignored differences in life style that may result from variation in sex roles. Previously, men and women were grouped together as though there were no differences in the roles they play within the family and in the urban community. By separating out the influence of sex differences a more accurate picture of the life styles of urban residents may be constructed. Life style, as conceptualized previously, reflected a dominant role orientation for each individual. Perhaps the most fundamental division that society makes in terms of role differentiation is that of sex. The manner in which roles are played out by individuals in various locations within the urban area should provide information on the spatial distribution of life style.

Differences in activity patterns between suburban and central city wives can be determined along two primary axes (Tables 6-9 and 6-10). They relate to domestic activities in the home and activities involving

TABLE 6-9

LINKAGE COEFFICIENTS

Wives Weekday Activities - Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	72	05	01	05	05	00	00	03	02	07
2.	Domestic Work	02	24	14	02	34	01	00	04	04	15
3.	Care to Children	02	26	25	03	18	02	01	05	05	13
4.	Shopping	06	16	03	46	07	01	00	08	02	11
5.	Private Needs	12	25	14	05	25	02	00	03	01	13
6.	Education and Training	00	06	06	04	19	48	00	06	00	25
7.	Civic Participation	00	00	25	00	00	00	25	25	00	25
8.	Entertainment	08	09	10	05	15	03	00	38	03	10
9.	Active Leisure	07	08	10	02	28	00	00	03	17	25
10.	Passive Leisure	02	21	06	03	39	02	00	03	04	19

00 = ≤ 004

TABLE 6-10

LINKAGE COEFFICIENTS

Wives Weekday Activities - Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	75	06	02	03	07	00	00	03	01	04
2.	Domestic Work	02	28	15	04	32	00	00	02	02	14
3.	Care to Children	03	33	22	04	15	00	00	03	03	16
4.	Shopping	02	17	10	43	06	00	01	11	02	09
5.	Private Needs	05	36	17	04	19	00	01	03	02	12
6.	Education and Training	05	16	05	00	05	37	00	00	00	32
7.	Civic Participation	00	11	00	08	16	00	38	11	00	16
8.	Entertainment	03	18	08	11	16	01	01	32	02	09
9.	Active Leisure	01	20	01	08	25	00	00	03	13	21
10.	Passive Leisure	01	26	13	03	37	00	01	03	03	14

00 = ≤ 004

education and training. In the instance of the former the activity linkage coefficients reveal that suburban wives firmly anchor much of their daily routine around housework and related domestic activities. All other activities, with the exception of work, link strongly with domestic work. Domestic work, care to children, private needs, and leisure behavior form the strongest sequences. This indicates that most suburban wives are bound closely to the home. With respect to these women Michelson has concluded that suburban women, especially those in single family homes, spend significant proportions of the average weekday alone, watching television, engaged in casual conversation, visiting, and at the homes of neighbors. This pattern results from conditions of isolation which plague suburban housewives.

Downtown wives do not peg many of their activities around domestic work, in contrast to the suburbanites. Although downtowners and suburbanites do share some similar linkages with domestic activities, the downtown wives demonstrate lower linkages in general and significantly lower linkages for private needs, education and training, and active leisure. This situation is a reflection of the emphasis on out-of-home social behavior by downtowners.

Along the second axis, differences emerge with respect to the emphasis on activities which follow education and training in a sequence. Downtown wives tend to follow with private needs and education and training more often, whereas the suburbanites emphasize domestic work and passive leisure, both predominantly in home activities. Once again we see suburban wives influenced in their sequencing patterns by home based activities, while the downtowners have a more variable pattern.

With respect to housing type, the differences between wives in high rise apartments and single family homes, with location allowed to vary, are negligible (Tables 6-11 and 6-12). This indicates that differences in life style are more subject to the influence of location than to housing environment. Wives in high rise apartments link civic participation more strongly with itself. In general, women in single family homes show stronger links between most activities and care to children, and a significantly stronger link for education and training. The pattern suggests the importance of child raising in the single family home, and substantiates the notion of the family oriented life style of single family home owners, whether in the suburbs or central city.

Husbands appear to display a more pronounced variation in life style than wives, both locationally and by housing environment. In terms of differences by location, the most immediately apparent are the linkages for care to children, education and training, and entertainment with passive leisure (Tables 6-13 and 6-14). Suburban men link care to children and active leisure with passive leisure more often than husbands living downtown. The latter, on the other hand, follow education and training more often with passive leisure. This group also combines care to children more often with private needs, education and training more strongly with itself and active leisure more often with itself. Suburban husbands show stronger connections between entertainment and working time, education and private needs, and active leisure with passive leisure.

Patterns which emerge from these differences in activity sequencing are difficult to interpret. Almost all husbands in the sample work, and

TABLE 6-11

LINKAGE COEFFICIENTS

Wives Weekday Activities - High Rise Apartments

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	75	06	01	04	05	00	00	03	01	05
2.	Domestic Work	04	27	13	03	32	00	01	03	03	16
3.	Care to Children	04	29	25	04	20	00	00	03	03	13
4.	Shopping	05	14	08	39	09	00	00	11	01	13
5.	Private Needs	11	32	11	03	23	01	00	03	02	13
6.	Education and Training	03	11	00	03	19	49	00	00	00	16
7.	Civic Participation	00	00	00	00	15	00	46	15	00	23
8.	Entertainment	77	19	09	07	20	01	01	32	01	08
9.	Active Leisure	08	21	04	08	27	00	00	00	08	24
10.	Passive Leisure	02	24	08	02	40	01	00	04	03	15

00 = ≤ 004

TABLE 6-12

LINKAGE COEFFICIENTS

Wives Weekday Activities - Single Family Homes

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	71	06	02	03	10	00	00	04	01	05
2.	Domestic Work	12	27	16	04	33	00	00	02	02	14
3.	Care to Children	02	33	22	04	14	01	00	04	04	16
4.	Shopping	02	18	08	45	06	00	01	10	03	08
5.	Private Needs	04	34	20	05	19	00	01	03	02	12
6.	Education and Training	00	06	11	03	11	42	00	09	00	19
7.	Civic Participation	00	14	04	11	14	00	32	11	00	14
8.	Entertainment	03	17	08	10	13	02	00	35	03	10
9.	Active Leisure	00	14	12	05	25	00	00	05	18	21
10.	Passive Leisure	01	25	13	03	36	00	01	03	03	15

00 = ≤ 004

TABLE 6-13

LINKAGE COEFFICIENTS

Husbands Weekday Activities - Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	70	01	01	03	07	01	00	04	02	09
2.	Domestic Work	04	10	08	02	42	00	00	04	04	25
3.	Care to Children	11	03	20	03	26	00	00	06	09	23
4.	Shopping	11	07	02	43	15	00	00	07	02	13
5.	Private Needs	24	06	05	01	33	05	00	03	01	22
6.	Education and Training	05	02	00	02	14	51	00	00	02	23
7.	Civic Participation	25	00	00	00	00	00	50	25	00	00
8.	Entertainment	21	03	02	08	06	02	00	38	03	17
9.	Active Leisure	16	08	05	03	24	00	00	03	29	13
10.	Passive Leisure	09	05	01	01	52	02	00	02	03	24

00 = ≤ 004

TABLE 6-14

LINKAGE COEFFICIENTS

Husbands Weekday Activities - Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	69	01	01	02	11	00	00	07	01	07
2.	Domestic Work	07	03	10	04	35	01	01	07	01	30
3.	Care to Children	15	03	24	03	14	01	01	03	03	33
4.	Shopping	12	06	04	38	12	00	02	12	02	13
5.	Private Needs	31	06	06	03	30	01	01	03	01	19
6.	Education and Training	00	00	05	00	50	32	00	00	05	09
7.	Civic Participation	04	04	00	00	04	00	54	13	00	21
8.	Entertainment	36	01	01	03	11	00	00	36	03	08
9.	Active Leisure	18	02	05	02	27	00	00	05	09	31
10.	Passive Leisure	05	04	07	02	53	01	00	02	03	23

00 = ≤ 004

so their weekdays are occupied by considerable amounts of obligatory time. Therefore, it seems logical to assume that differences in activity would be most pronounced in the categories of leisure behavior. Passive leisure forms an important juncture in the suburban husband's day, with strong connections to child related and active leisure behavior. After a full day of work the suburban husband retreats to his domicile to enjoy the fruits of suburban living, namely family related leisure activities. The primary beneficiary of suburban living (especially for single family dwellings) is the husband, not the wife. Wives moving to suburban homes express the least amount of satisfaction with their daily schedules, with husbands registering an opposite view (Michelson, 1973).

That suburban husbands link education and training less strongly with itself and passive leisure but more strongly to private needs than do downtown husbands suggests that, for the latter group, this activity may be less time and space fixed. It is more normally part of their day, whereas the suburbanites link these activities with private needs fifty percent of the time. For suburbanites, educational activities constitute a significant set of behaviors, one which is usually the last important activity of the day prior to retiring.

Ignoring location and concentrating on activity sequencing for residents of high rise apartments and single family homes, two differences become apparent (Tables 6-15 and 6-16). Husbands in single family homes are more prone to link care to children with work while the high rise dwellers very strongly link child care to passive leisure. The former also follow shopping more often with care to children and education more often with private needs. Husbands in high rise apartments

TABLE 6-15

LINKAGE COEFFICIENTS

Husbands Weekday Activities - High Rise Apartments

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	72	01	01	03	08	06	00	05	02	07
2.	Domestic Work	05	05	11	04	38	02	00	04	04	29
3.	Care to Children	07	00	20	**02**	**19**	00	00	00	06	46
4.	Shopping	08	03	04	47	14	00	00	09	03	19
5.	Private Needs	28	05	03	02	32	03	01	03	01	23
6.	Education and Training	04	02	02	02	20	45	00	00	02	20
7.	Civic Participation	00	00	00	00	13	00	75	13	00	00
8.	Entertainment	33	01	00	03	11	01	00	35	02	13
9.	Active Leisure	17	02	04	04	**26**	**00**	00	04	17	26
10.	Passive Leisure	06	05	05	02	51	02	00	02	04	23

00 = ≤ 004

TABLE 6-16

LINKAGE COEFFICIENTS

Husbands Weekday Activities - Single Family Homes

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	67	01	02	02	11	00	01	08	01	07
2.	Domestic Work	06	06	09	04	37	00	01	07	01	28
3.	Care to Children	17	04	25	03	16	01	01	05	04	25
4.	Shopping	14	10	24	33	12	00	02	11	01	14
5.	Private Needs	30	06	08	03	30	01	01	03	01	17
6.	Education and Training	00	00	00	00	44	38	00	00	06	13
7.	Civic Participation	10	05	00	00	00	00	45	15	00	25
8.	Entertainment	32	02	02	04	10	00	00	36	03	09
9.	Active Leisure	17	07	07	00	26	00	00	04	17	22
10.	Passive Leisure	06	04	06	02	54	01	00	02	02	23

00 = $\leq$ 004

tend to link shopping more often with itself.

Conclusions which can be drawn from these differences remain elusive. On the surface at least it seems that differences in husband's life styles are more pronounced between locations as opposed to between housing types. For single family husbands, however, care to children is linked strongly with shopping and work, both heavily time and space fixed. High rise husbands have weak links to these sequences and prefer to combine child care with leisure activities. The patterns are in reverse of those which would normally be expected.

The downtown wives in single family homes tend to link all activities with themselves more often than suburban wives, particularly educational activities, entertainment and active leisure (Table 6-19). This suggests that they devote larger blocks of time to these activities, perhaps as a result of their proximity to downtown Toronto. For the suburbanites there is a tendency to link entertainment more often with child care and private needs, evidence that these women are more tied to the home and must satisfy more of their leisure pastimes there (Table 6-17). Suburban women generally link all activities more strongly with care to children, an indication of the importance of children in the daily round of life.

Wives living in high rise apartments, both downtown and suburban, show strong linkages for domestic work, care to children, and private needs with domestic work, but the links are significantly stronger for the suburban group (Tables 6-18 and 6-20). These women also show a stronger link between shopping and care to children. The downtown wives, however, demonstrate a greater propensity to combine child care with itself, an indication that they lack sufficient time to look after

TABLE 6-17

LINKAGE COEFFICIENTS

Wives Weekday Activities - Single Family Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	70	06	02	03	10	00	00	05	00	03
2.	Domestic Work	01	27	15	04	32	00	00	02	02	15
3.	Care to Children	02	34	22	04	13	01	00	04	04	17
4.	Shopping	01	18	08	45	06	00	01	10	03	08
5.	Private Needs	04	36	19	05	18	00	01	03	02	12
6.	Education and Training	00	18	09	00	09	27	00	00	00	36
7.	Civic Participation	00	17	00	13	17	00	33	08	00	13
8.	Entertainment	03	20	08	12	15	00	01	32	03	10
9.	Active Leisure	00	16	12	06	25	00	00	05	14	22
10.	Passive Leisure	01	26	13	03	36	00	01	03	03	14

00 = ≤ 004

TABLE 6-18

LINKAGE COEFFICIENT

Wives Weekday Activities - High Rise Suburban

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	73	05	00	05	05	00	00	04	02	06
2.	Domestic Work	05	19	09	01	35	02	00	05	04	21
3.	Care to Children	03	22	33	01	21	01	00	07	04	08
4.	Shopping	08	16	00	42	11	00	00	08	02	14
5.	Private Needs	17	24	06	04	27	03	00	03	02	13
6.	Education and Training	00	10	00	03	24	48	00	00	00	14
7.	Civic Participation	00	00	00	00	00	00	00	00	00	00
8.	Entertainment	12	08	10	05	22	00	00	32	02	08
9.	Active Leisure	13	10	07	03	30	00	00	00	03	33
10.	Passive Leisure	02	20	03	04	42	02	00	04	05	18

00 = ≤ 004

TABLE 6-19

LINKAGE COEFFICIENTS

Wives Weekday Activities - Single Family Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	70	03	03	03	08	00	00	02	02	11
2.	Domestic Work	01	29	19	04	33	01	00	03	03	09
3.	Care to Children	01	29	21	04	17	02	01	04	05	15
4.	Shopping	05	16	07	49	03	02	00	08	02	08
5.	Private Needs	05	26	23	05	23	01	01	04	00	13
6.	Education and Training	00	00	12	04	12	48	00	12	00	12
7.	Civic Participation	00	00	25	00	00	00	25	25	00	25
8.	Entertainment	04	09	09	05	07	07	00	45	04	11
9.	Active Leisure	00	07	13	00	27	00	00	07	30	17
10.	Passive Leisure	03	23	10	03	35	02	00	02	04	19

00 = ≤ 004

TABLE 6-20

LINKAGE COEFFICIENTS

Wives Weekday Activities - High Rise Downtown

		1	2	3	4	5	6	7	8	9	10
1.	Working Time	72	05	00	05	05	00	00	04	02	06
2.	Domestic Work	05	19	09	01	35	02	01	05	04	21
3.	Care to Children	03	22	32	01	20	01	01	07	04	08
4.	Shopping	07	15	01	40	10	01	01	07	01	13
5.	Private Needs	17	24	06	04	27	03	00	03	02	13
6.	Education and Training	03	09	03	03	21	41	03	03	03	12
7.	Civic Participation	10	10	10	10	10	10	10	10	10	10
8.	Entertainment	11	08	10	05	21	02	02	31	02	08
9.	Active Leisure	12	09	06	03	27	03	03	03	03	30
10.	Passive Leisure	02	20	03	04	41	02	01	04	05	18

00 = ≤ 004

children during various periods of the normal day. These women also link private needs strongly to work time, indicating a preponderance of working mothers. It may be that when this linkage is strong, so also will be that of child care to itself. There were no other significant differences between the two groups regarding other activity linkages. Any other differences that emerged were too minor to be considered meaningful.

Wives living in single family suburban environments have a significantly higher probability of switching back and forth between and among care to children, private needs, and domestic work (Table 6-17). High rise housewives, however, demonstrate a much stronger linkage between private needs and work related activities, indicating the influence of work in organizing the daily schedule (Table 6-20). They also show a strong linkage between care to children and itself. These women dispense with responsibilities to their children at one time. This occurs perhaps as a function of pressures of work away from home and the limited amount of time spent in the home.

In general, high rise wives who live downtown have stronger linkages between all activity categories and work, but they tend to be particularly strong for private needs, civic and collective participation activities, active leisure (which is usually performed away from home), and moderately strong for spectacles, entertainment, and social life. The pattern indicates that the working wives downtown are very active individuals who intermingle active leisure, social life, and voluntary participation with work.

Wives who reside in single family suburban homes display significantly stronger linkages between care to children, private needs,

entertainment, and domestic work. Although the downtown wives in high rise apartments display strong linkages also, they are significantly lower than those for the suburbanites. These women also have strong linkages between both education and training and domestic work, and domestic work and itself, although less than the .10 difference. Another significant difference can be seen in the stronger link between private needs of the wife in the suburbs and care to children. This link is relatively weak for high rise women downtown. Such a pattern indicates that wives in the suburban single family home are closely tied to housework and caring for children, and must organize their discretionary activities, such as educational pursuits, voluntary associations, entertainment, and leisure, around these two more obligatory activities.

For both groups of women all activities are strongly linked with themselves (main diagonals). This is to be expected since the activities are repeated for every fifteen minute period when coded. However, some significant differences appear even in this case. For example, the single family suburban wives link civic participation activities together more strongly than the high rise women. They do likewise with active leisure. The latter group, on the other hand, have stronger internal linkages for education and training. When given large blocks of discretionary time the suburban women seem to concentrate heavily on one form of activity. Finally, suburban wives show significantly higher linkages between care to children and passive leisure and education and passive leisure.

The major differences in activity sequencing between single family downtown and high rise suburban wives parallel those for the single

family wives for both locations, with a few notable exceptions (Tables 6-18 and 6-19). Suburban wives in high rise apartment buildings exhibit a slightly greater work orientation than both single family groups in the suburban areas and downtown, although they tend to be slightly less work oriented than their downtown high rise counterparts. The high rise suburban group demonstrate higher linkage coefficients between most activities and domestic work, while the single family downtown group show a stronger linkage pattern with care to children.

The limited number of husbands who responded to the time budget portion of the interview schedule precluded the breakdown of their linkage patterns beyond this stage. The number of husbands in downtown apartments and single family homes was too small to draw any meaningful comparisons. The linkage matrices at this level contained too many zero entry cells and displayed a highly irregular pattern, the result of a large sampling error. Clearly a larger sample of husbands was required.

Linkage Dimensions

In order to reduce the linkage matrices to a form whereby major patterns of activity sequencing could be identified, each matrix of linkage coefficients was subjected to factor analysis without rotation. This was done as a secondary form of analysis to the comparison of linkage matrices. Tables of factor loadings for each matrix are included as Appendix C.

At the highest level of aggregation, where only the major categories of location and housing type were compared, several major activity sequences could be identified for each group. The structures were quite similar for all four categories. In each case the first factor had high

positive loadings for domestic work, care to children, private needs, and passive leisure. High negative loadings were recorded for working time and entertainment, with the latter missing in the downtown category. This dimension describes a pattern of in home routine activities which follow themselves repeatedly. Factor scores indicate that these activities are highly linked among themselves. Interestingly, work and entertainment are most negatively associated with this factor. In fact, working time seems to form its own unique pattern of sequencing unconnected to most other activities.

Shopping and entertainment form individual factors in all cases, and are preceeded by themselves most often. The factor structure for both downtowners and those in high rise apartments display certain similarities. The same is true for suburban and single family home groups. For those downtown and in apartments care to children links up with itself quite often, while for the latter two groups the activity is more closely associated with the first factor.

In all four categories civic participation forms the nucleus of another factor and is associated negatively with work (indicating an evening activity) and positively with itself and shopping (except for downtowners). For all groups except downtown inhabitants the fourth factor identifies a leisure activities component. In this dimension active leisure is associated with itself and work for both those downtown and in high rise apartments.

In summary, at the highest level of aggregation, the major dimensions of activity sequencing are quite similar across groups, except for those people living in central Toronto. The high rise apartment category (perhaps because of the number of inhabitants downtown) resembles the

downtown group along work and leisure lines. For each group, in home routine activities form a strong part of the daily pattern. This pattern dominates in both the single family homes and in the suburbs, most likely resulting from the influence of the wives' daily routine.

At the second level of analysis tables of factor loadings have been constructed for the four possible combinations of housing type and location. Similar to the first level of analysis, all four combinations generated a first factor with positive loadings for domestic work, care to children, private needs, and passive leisure, and negative loadings for work and entertainment. The sole exception to this pattern was the group living in downtown high rise apartments. Both care to children and entertainment failed to load highly, and this factor accounted for a significantly lower percent of explained variance for this group than for any of the others. For people in downtown high rise apartments care to children does not form a part of the routine in-home sequence. Instead, child related activities are related to civic participation and active leisure. This suggests that time devoted to children is reserved mainly for evening hours when both parents return from work or other outside the home activities. The priority of work in the lives of working couples dictates a pattern of activity sequences different from that where only one member of the family is employed.

A factor common to all groups is associated positively with shopping and negatively with work. In all cases factor scores for work were highly negative and for shopping highly positive. Those in single family homes, both downtown and suburban, linked civic participation with this factor. For the members of this sample, then, shopping activities were undertaken independently of the work trip (probably by wives) but

in conjunction with civic participation by single family home dwellers. Single family residents connect education and training differently than the high rise apartment residents, who linked educational activities with civic participation and active leisure. Factor scores indicate that these activities were strongly linked to themselves.

The factor analysis of linkage matrices for both sexes revealed results which tended to support the previously determined activity sequences for men and women. For all husbands a strong work related factor was evident. Active leisure and work were related to this factor for suburban and high rise husbands in particular. In all cases for husbands the care to children, domestic work, private needs, passive leisure component was evident. This leaves no doubt as to the dominance of this pattern in everyday life. Cullen (1972) has concluded that routine personal and domestic chores held no structuring significance for the individual. Since people spent a considerable portion of their daily time at home, especially non-working wives in the suburbs, these activities are tied to a particular location. Evidence presented here from both the transition matrices and factor analysis tend to deny the conclusion reached by Cullen. Indeed, routine chores form a dominant part of the individual's life style, whether he or she realizes it or not.

The wives' factor structure tended to substantiate this place fixed notion of activity sequencing. Both downtown and suburban wives placed in home routine activities on one factor and out-of- home, more discretionary activities on another.

In summary, the factor analytic results do support the results gleaned from the tables of transition probabilities, but in some cases

are too gross to be interpretable. The level of aggregation of activities may be too high to render factor analysis meaningful. The following chapter attempts to sort out the meaning from the results of this analysis, and place the results in their proper theoretical context.

Chapter 7

SUMMARY, CONCLUSIONS, AND PROSPECT

Factorial Ecology and Social Area Analysis represent multi-dimensional descriptions of urban structure. Although Factorial Ecology constitutes an inductive approach to the fundamental structure of urban areas, three primary factors continue to emerge in the application of factor analytic techniques to urban data. They are: (1) economic status, (2) family status or urbanization, and (3) ethnic status. Social Area Analysis, on the other hand, postulates the existence of three similar constructs a priori, and states that urban regions can be differentiated by social rank, family status, and ethnic status. These structural approaches have had wide empirical testing and theoretical and conceptual articulation (Berry, 1971; Timms, 1971).

Life style, as it has been conceptualized and operationalized in this research, relates theoretically only to the family status dimension of Factorial Ecology and Social Area Analysis. In this sense, life style is a behavioral surrogate for family status or life cycle variables (Bell, 1968). The application of time budgets within the spatial framework of central city-suburban differentiation served to test the social area hypothesis regarding variation in life style between city and suburb. An attempt has been made to operationalize the behaviors Bell (1968) claimed to be the determining factors in the selection of a residential location.

This dissertation has proceeded under the assumption that the residential structure of the city is incompletely understood in terms of the mechanisms which give it its present form. No one theory or hypothesis offers an adequate explanation or prediction of residential differentiation. The two major competing models which claim to explain the present situation in urban areas each offer partial explanatory power at different levels of scale. At the metropolitan wide level, the economic competition model sorts land uses into locations based on their ability to sustain costs at any location, with a fair amount of accuracy. The resulting land use profile is one of decreasing intensity with increasing distance from the urban core. The social choice model places increased emphasis on non-economic aspects of locational decision making, but focuses primarily on residential land uses. It posits a similar relationship between distance from the CBD and intensity of residential land use, but allows for deviation from this pattern on the basis of sentiment, status, life style preferences, and other conditions.

Both hypotheses offer partial explanations of residential structure and therefore are inadequate in certain respects. Ultimately, a fussion of the two approaches into a unified theoretical system is desirable. Until such time as that evolves, research must continue into various aspects of the relationship between social structure and spatial structure. The isolation and study of particular variables is one means of accomplishing this.

Both Social Area Analysis and urban Factorial Ecology result in an index of social organization relating to family status or stage in the life cycle, and by inference postulate a range of behavior. The behavioral categories can then be fit into different family status situations.

What has never been fully operationalized or tested is the existence of this range of behavior, commonly refered to as style of life.

The methodologies of Social Area Analysis and Factorial Ecology represent structural approaches to an understanding of urban residential differentiation, whereas the research undertaken in this dissertation falls under the rubric of behaviorism. An investigation into human behavior has been used to test the validity of the life style dimension of the commonly accepted structural models of the ecological tradition. A discussion of the results is set forth below. But first, it seems useful to review the role that life style is thought to play in the process of residential selection.

From the time that the University of Chicago ecologists first treated residential choice as a direct result of people's socioeconomic and ethnic identification to the determinants of residential selection treated in this dissertation the subject of where various groups live, and why, has undergone several major theoretical and empirical shifts of emphasis. According to the economic determinism model, groups of like income would reside in physical proximity (Park, Burgess, and McKenzie, 1925). The concentric zone, sector, and multiple nuclei models all incorporated this assumption to varying degrees.

Later, housing came to be seen as a symbol of status. It was thought that housing was selected, not on the basis of space requirements, but as a means of improving status (Warner et al., 1957). Life cycle was introduced into the literature on residential selection by Rossi (1955), while Feldman and Tilly (1960) incorporated the educational component of status in the determination of what persons would live together in the same neighborhoods. Thus, the notion of ability to pay

became replaced by the broader notion of life style in research on neighborhood selection.

This transformation led to the work of Wendell Bell (1958, 1968), who hypothesized that people select a location and housing type with some consideration of the patterns of behavior they desire to follow. The improvement of status became secondary to the desire that one be near like neighbors and live in a neighborhood which facilitated the practice of one's life style. Thus he postulated three broad categories of life style: familism, careerism, and consumerism, and linked them to specific locational and housing needs. Bell derived these life style preferences from the construct termed family status in Social Area Analysis.

Bell failed to make clear the specific behaviors which would be found under each life style category, and directed his empirical tests to eliciting the preferences people had for moving to specific locations, not their actual behavior. Nevertheless, he has outlined a conceptual schema suitable for the study of residential selection and urban spatial structure.

The focus of this dissertation has proceeded from the work of Bell, Michelson, and others by specifying that behavioral data can be employed in an alternative but supplementary analysis of urban residential structure. The purpose of this study has been to examine the relationship between the life styles people practice and their locational and housing characteristics. Both Social Area Analysis and Factorial Ecology infer such a relationship, Bell hypothesized it, and this research attempted to test for it. The author sought to find support for or denial of the hypothesis that life style varied in metropolitan areas, for

both location and housing environment. The nature of the analysis assumed that persons living in similar locations followed similar life styles. The research question asked was whether differences were evident for major locational and housing categories.

This study sought to relate life style patterns to the findings of Social Area Analysis regarding the spatial distribution of the family status index. Do families close to the center of the city behave differently from those located in suburban areas? What effect does housing type have on this location-life style relationship? Time budget data in the form of activity linkages were used as an operational measure of life style. The location variable was dichotomized into central city (downtown) and suburban, and housing type was limited to single family homes and high rise apartments. Differences by sexual gender were also assessed. The major conclusions drawn from this analysis now follow.

Conclusions

The conclusions drawn from the research conducted in this study can be divided into several categories. They deal with life style variation by location, by housing type, and by sex. A final set of conclusions relates to life style variation and urban residential structure and confirmation of the hypothesis connecting family status with location.

When housing type and location are considered jointly the conclusion can be made that residents of single family homes in the suburbs and those in high rise apartments downtown exhibit the most extreme differences in life style. The former group most definitely practice the family oriented life style postulated in ecological theory, while

the latter tend toward a more cosmopolitan, diverse set of behaviors. Work and discretionary activities form distinctive sequence patterns for both husband and wife in downtown apartments. Routine domestic activities are linked closely together because of the press of time. Families in single family suburban homes typically include a non-working wife who remains at home with one or more children. This situation accounts for an activity sequence pattern that sees the husband linking many activities with work that the wife normally links with domestic and child care activities. The pattern for the wife is most dramatic in terms of lack of spatial mobility. Other data support these findings (Michelson, 1973).

The pattern of activity sequencing exhibited by single family homeowners residing in Toronto proper can best be described as mixed. While both husbands and wives organize their homebound domestic behavior in a fashion similar to their suburban counterparts, their linkage patterns for such activities as civic participation, entertainment, and active leisure resemble that of the high rise apartment dwellers downtown. In some instances, then, their behavior represents a response to the central city location, and in others it reflects their fundamentally family oriented style of life.

As far as high rise apartment residents in the suburbs are concerned, their patterns of behavior are more difficult to pinpoint. Since the differences in activity sequences for this group and single family suburban homeowners are minimal, it follows that their styles of living are somewhat similar. However, these people resemble their downtown counterparts to a degree, particularly with respect to work links. Factor analysis of activity linkages resulted in a simple

pattern of only three significant factors, a home based routine dimension, an active leisure dimension, and a shopping dimension. The conclusion must be made that the style of living of these people is more familistic than career oriented. Thus they give support to the thesis that location is the influencing factor.

In terms of the fruitfulness of the various categories of location and housing type for pinpointing differences in life style, location seems to be a more sensitive differentiator. Variation in styles of living, as manifest in activity sequencing, is more readily seen when examining differences by location for both husbands and wives. The key variable operating to produce this pattern is family status, or life style as Wendell Bell termed it (Bell, 1968). Social Area Analysis and Factorial Ecology have demonstrated that family status varies concentrically about the city center, with a trend toward larger families, smaller children, and a wife at home with increased distance from the city center.

Although some differences in family status are evident by housing type as revealed by tables 5-2 and 5-3, differences in life style do not emerge as very pronounced between housing environments when location is controlled. This suggests that, at this level of aggregation, the home is not as important as the location in the realization of patterns of living.

With regard to suburban homeowners, husbands enjoy a greater variety of different activity sequences between major categories, whereas wives display greater linkages between activities within categories. Thus, these husbands practice a more diverse life style, mixing up their activities more and enjoying greater spatial mobility as a result of

their place of employment being away from home. No wonder then that husbands express greater satisfaction than wives with suburban living. They travel outside the home more often, spend considerably less time alone, and tend to believe more strongly in the virtues of suburban residence as desirable for family life. Husbands suffer few of the negative aspects of location, while leaving the wife to cope with problems of isolation, large amounts of empty time, and boring activity patterns to fill the day.

In support of this conclusion, Michelson (1973) has demonstrated that husbands make far more trips, travel further, and are more likely to visit the city center than wives. What makes these results more significant is that fewer husbands responded to the interview than wives.

In general, husbands have stronger linkages between all activities and work than do wives. These differences are more pronounced for location than for housing type. The work linkage patterns of husbands and wives in high rise apartments tend toward more similarity, this due to the fact that the wife most likely works in addition to the husband. For wives, domestic work and care to children line up as important activities in the daily routine; the opposite is true for husbands. Since most husbands work during the day, they tend to link domestic work and child rearing activities more often to passive leisure, which is usually reserved for evening hours. The linkages between most activities and passive leisure are considerably lower for women than for men. Women are able to spread passive leisure more uniformly throughout the day.

Wives, as a rule, anchor their day's activities around care to children, domestic work, private needs, and passive leisure. Some do this more often than others, especially wives in single family suburban

homes. Wives in downtown high rise apartments seem to be less constrained by this pattern. The major difference is the low proportion of working women in the former category, and the high proportion in the latter. Husbands, on the other hand, order their day around two major forms of activity, work and passive leisure. Most activities lead into these two and to a lesser extent to private needs.

Wives differ by location on which activities they link most strongly with domestic work, suburban wives being higher for private needs, education, and active leisure, and most other discretionary behavior. These women attempt to adapt their lifestyle more to locational isolation and rely more heavily on each other for entertainment and stimulation. Downtown wives who most likely work and are less isolated trade off high linkages with domestic work for other linkages associated with outside the home activities.

Husbands tend to differ with respect to the organization of their leisure time, especially in the areas of care to children, education and training, entertainment, and active leisure pursuits. Downtowners tend to have stronger outside the home links while suburbanites link up activities more often inside the home. The stratification seems to be along the lines of family orientation, with the more family oriented husbands residing in the suburbs.

Life Style and Residential Structure

The main theoretical question which has been addressed in this research report concerns the relationship between life style and the residential structure of the metropolis. Can the notion of residential differentiation be supported by time budgets of human behavior? As a

result of this research the answer is a qualified yes. An affirmative response is deemed appropriate in that family oriented life styles, as indicated by the high activity linkages among family oriented activities, tend to predominate in the suburbs. Within this locational category residents of both high rise apartments and single family homes demonstrate a family oriented pattern. In the central city where, according to ecological theory, more cosmopolitan life styles should prevail, residents of high rise apartments in Toronto subscribe to this pattern of living. Residents of single family homes who reside further out from the core, but still in the city, tend to divide their style of living between a familistic orientation and an urban-cosmopolitan orientation.

The reasons for this variation are several. The most important determinant of life style variation is the employment status of the wife. Behavior patterns differ significantly between families that contain a working wife and those that do not. Since the suburbs contain significantly fewer working wives the pattern of activity sequencing in that location tends toward a familistic orientation. In the central city, where the presence of working wives is high, behavior of both men and women demonstrates a more career oriented non-family life style.

A second reason which is related to the employment status of the wife concerns the size of the family. Table 5-3 indicates that the number of children in each category of environment increases as one moves from apartment to house and from downtown to suburb. Suburbanites tend to have a higher percentage of younger children, while older children predominate in the central city. The number of families with no children exceeds 75 percent in downtown apartments but reaches only 22 percent

in the suburbs. The percentage of families with no children is low for all single family homes. Families with children, particularly small children, tend to live in the suburbs and in a single family home, and peg their life style around home, child care, and leisure. Families residing downtown, particularly in apartments, tend to be childless or have older children, and emphasize work, entertainment, and active leisure in their life style.

Both single family homes downtown and high rise apartments in suburban areas house families that display a more familistic life style. The downtown homeowners enjoy the fruits of both single family living and a central city location. Those in suburban apartments have children in the younger years and a wife at home caring for them. A familistic behavior pattern follows from these conditions.

Evaluation

A qualified yes has been given to the confirmation of the major research hypothesis on the basis of the findings. The qualification enters the picture when the utility of the methodology employed comes under scrutiny. Certain aspects of the categorization of residential environments, activity sequencing, and the use of transition probabilities and factor analysis served to place limitations on the generalizability of the findings.

First, the use of behavioral data within a behavioral conceptual schema to test the validity of certain findings of Social Area Analysis proved fruitful. Too often researchers have made statements about human behavior on the basis of the characteristics of aggregates of people. By taking a strictly behavioral approach to the study of life style and

residential structure this research has strengthened the previously held views regarding the relationship between social and physical space.

The use of time budget data in an analysis of this sort has not been reported in the literature, and so this dissertation represents a significant departure from traditional research in urban ecology. As a result, certain weaknesses in the methodology are now apparent. One of these concerns the aggregation of activity data into major behavior categories. As with all aggregate schemes much variation within groups of activities was lost with this procedure. On the other hand, this facilitated the handling of the activity sequencing matrices.

Time budget data are very powerful in the analysis of behavioral patterns because they provide a complete picture of an individual's daily (or longer) activities. The problems generated by this type of data include the sheer number of data elements to be manipulated, the difficulty of applying traditional modes of analysis to the data, and the tremendous variety of possible behaviors which can be recorded. As a result, some form of data reduction is required.

In this study, since the author was restricted to only certain analytical procedures, the problem of activity sequencing seemed to be handled best by the transition probability matrix of Markov Chains. The modeling of activity sequences by means of Markov Chains was deemed inappropriate because of the necessity of assuming independence in decision making, an impossibility in this case. In so far as the analytical procedure required a summary measure of activity sequencing, transition probabilities proved quite functional. However, the function was one of aggregation and description but the analytical approach was comparative. The power of statistical test was absent because of its

incompatibility with the matrix approach. Future research must resolve this dilemna.

Factor analysis was employed as a means of reducing the data still further and of finding the underlying dimensions of activity sequencing for the several groups in the sample. The results were inconclusive, calling into question this approach. Factor analysis indicated very little in the way of differences in activity sequencing between various groups of Toronto residents. This may have resulted from the already highly aggregated nature of the input data. Since differences in life style may be more of degree than of kind, factor analysis may have been inappropriate as a differentiator.

In summary it can be said that a behavioral approach to the understanding of urban structure can be beneficial when coupled with existing generalizations about spatial form.

> It is only the possibility of combining these studies of spatial form with statements about behavior over space that gives promise of a distinctive and potentially relevant body of geographic theory. (King, 1969: 593)

Speculations about the relationship between urban form and spatial process fill the literature in geography and related disciplines, but only in recent years has research in this vein been conducted on any scale. The testing of hypotheses of spatial form through the use of behavioral data is one means of verifying and clarifying this relationship. It is believed that the analysis of activity linkages conducted in this dissertation has provided some verification on the relationship between residential location and life style.

That does not mean to say that this research has settled the issue once and for all. Indeed, much additional research is required, and

time-space budgets provide an appropriate data form upon which further research may be based. Although time budget research is at an early stage of development significant findings are emerging as a result of the application of a variety of methodological approaches.

Additional methodologies which could be and have been applied to time-space budgets include the mapping of human spatial movements by time of day. This would provide information on how people sequence their activities in both time and space. Bullock, Dickens, and Steadman (1971) have attempted to locate individuals with both time and space coordinates for a sample of students at Reading University, with a view toward planning for more efficient use of space.

Hägerstrand's notion of time-space prisms constitutes a model of society with the purpose of guiding urban and regional planning and locational policies in general. He advocates simulation as a means of better understanding time-space relationships and their effect on human decision making. Currently, Cullen and Nichols (1970), Bullock, Dickens, and Steadman (1971), and Stephens (1973) are directing themselves toward this effort.

Within the context of urban residential structure a more precise breakdown of the location of individuals in the metropolitan area is desirable when searching for variation in life style. The categories of downtown and suburban are extremely general and therefore offer a lower level of generalization about the relationship between life style and location. Cell counting comes to mind as one means of determining additional discrete locational classes when dealing with sample survey data.

As far as life style is concerned, the results of this research

indicate that a more comprehensive definition is required. Activity sequences should be complemented by other operationalizations of time and space use, such as the amount of time devoted to various activities, what the individual would rather be doing at any time, spatial movements and others. Michelson's (1973) approach incorporating expectations regarding time usage and environmental preferences as well as actual behavior present a better picture of an individual's value structure and hence life style.

In any case, a first step has been made here to relate behavior patterns to urban residential structure. Life style forms a key axis of social differentiation, and therefore exerts a profound influence on spatial behavior and ultimately spatial form. The investigation conducted here reaffirms some notions about spatial form but suggests that further research is in order.

APPENDIX A

TIME BUDGET INSTRUMENT

APPENDIX A

TIME BUDGET INSTRUMENT

Now I'd like to get some idea of what an average day for you might include. Let's take yesterday. (Last weekday) USE RESPONDEN'S OWN WORDS AS MUCH AS POSSIBLE.

a. At what time did you get up? (CIRCLE TIME)

b. Then what did you do? How long did it take you?

c. Was anyone else with you?

d. Where did you do it?

e. Were you doing anything else at the same time?

BEGIN BY ASKING THE RESPONDENT THE TIME HE GOT UP THAT MORNING AND WHAT HE DID FIRST. ASK HOW LONG THIS ACTIVITY TOOK AND THEN RECORD IT ON THE SHEET AT THE APPROPRIATE TIMES. ASK WHETHER OR NOT ANYONE WAS WITH THE PERSON WHEN HE DID IT: DETERMINE WHETHER THE PRESENCE OF THE OTHER INDIVIDUAL(S) WAS INCIDENTAL OR WHETHER HE WAS ASKED TO ACCOMPANY THE RESPONDENT SUCH THAT IT WAS REALLY AN INTERACTION PROCESS. ASK WHERE THE ACTIVITY TOOK PLACE AND WHETHER OR NOT THE RESPONDENT WAS DOING ANYTHING ELSE AT THE TIME. IF A PERSON GOES TO A STORE OR SOMEWHERE, BE SURE TO CHECK THE TIME TO THE STORE, SHOPPING AND HOME AGAIN. FINALLY, ASK THE RESPONDENT WHAT HE DID NEXT AND THEN REPEAT THE ABOVE LINE OF QUESTIONING. DO NOT ATTEMPT TO RECORD WHAT WAS BEING DONE AT EACH TIME GIVEN ON THE SHEET; RATHER USE THE SHEET SIMPLY AS A METHOD OF CALENDARING THE DAY'S ACTIVITIES.

APPENDIX A

THE MINIMUM TIME SPAN TO BE CONSIDERED FOR AN ACTIVITY IS 15 MINUTES. RECORD THE START AND STOP TIMES TO THE NEAREST QUARTER HOUR.

TIME SPENT TRAVELLING TO OR FROM AN ACTIVITY IS A SEPARATE ACTIVITY AND SHOULD NOT BE INCLUDED WITH THAT ACTIVITY.

APPENDIX A

TIME BUDGET INSTRUMENT

WEEKDAY_____

TIME	What do?	Who else?	Where?	Doing anything else?	Typical?
6:00 am					
6:15 am					
6:30 am					
6:45 am					
7:00 am					
2:15 am					
2:30 am					
2:45 am					
3:00 am					

APPENDIX B

TIME BUDGET CODE

APPENDIX B

TIME BUDGET CODE

Working Time and Time Connected To It (00 - 09)

00 Normal professional work (outside home)

01 Normal professional work at home or brought home

02 Overtime if it can be specifically isolated from 00

03 Displacements during work if they can be specifically isolated from 00

04 Any waiting or interruption during working time if it can be specifically isolated from work (e.g. due to supply shortage, breakdown of machines, etc.)

05 Undeclared, auxiliary, etc. work, wives-children unpaid members to assist family

06 Meal at the workplace

07 Time spent at the workplace before starting or after ending work

08 Regular breaks and prescribed non-working periods etc. during worktime

09 Travel to (return from) workplace, including waiting for means of transport

Domestic Work (10 - 19)

10 Preparation and cooking of food, putting away groceries

11 Washing up and putting away the dishes

12 Indoor cleaning (sweeping, washing, bed-making), general non-specific housework

13 Outdoor cleaning (sidewalk, disposal of garbage)

14 Laundry, ironing

15 Repair or upkeep of clothes, shoes, underwear, etc.

16 Other repairs and home operations, packing & unpacking, washing or repairing car

APPENDIX B

17 Gardening, animal care, walking dog

18 Heat and water supplies - upkeep

19 Others (e.g. dealing with bills and various other papers usual care to household members, etc.)

Care to Children (20 - 29)

20 Care to babies, feeding baby

21 Care to older children

22 Supervision of school work (exercises and lessons)

23 Reading of tales or other non-school books to children conversations with children

24 Indoor games and manual instruction

25 Outdoor games and walks

26 Medical care (visiting the childrens' doctor or dentist, or other activities related to the health of children)

27 Others

28 Not to be used

29 Travel to accompany children including waiting for means of transport

Purchasing of Goods and Services (30 - 39)

30 Purchasing of everyday consumer goods and products, shopping

31 Purchasing of durable consumer goods

32 Personal care outside home (e.g. hairdresser)

33 Medical care outside home

34 Administrative services, offices, bank, employment agency, customs, etc.

35 Repair and other services (e.g. laundry, electricity, mechanics), car wash

APPENDIX B

36 Waiting, queuing for the purchase of goods and services, house or apartment hunting

37 Others, signing lease or contract to buy

38 Selling house or house contents; showing own house

39 Travelling connected to the above mentioned activities, including waiting for means of transport

Private Needs: Meals and Sleep etc.

Private and Non-described Activities (40 - 49)

40 Personal hygiene, dressing (getting up, going to bed, etc.)

41 Personal medical care at home

42 Care given to adults, if not included in household work

43 Meals and snacks at home

44 Meals outside home or the canteen, essential other than 70-79

45 Night Sleep (essential)

46 Daytime sleep (incidental), long time, e.g. 1 hr. +

47 Nap or rest, 1 hr. or less

48 Private activities, non-described, others. (using sauna alone)

49 Travelling connected to the above mentioned activities, including waiting for means of transport

Adult Education and Professional Training (50 - 59)

50 Full time attendance to classes (undergraduates or post-graduate student), studies being the principle activity

51 Reduced programs of professional or special training courses, driving lessons (including after work classes organized by the plant or enterprise in question)

52 Attendance to lectures (occasionally)

53 Programs of political or union training courses

APPENDIX B

54 Home work prepared for different courses and lectures (including related research work and self-instruction)

55 Reading of scientific reviews of books for personal instruction, specific to own profession

56 Others

57 No response, no further activity

58 No secondary activity

59 Travelling connected to the above mentioned activities, including waiting for means of transport

Civic and Collective Participation Activities (60 - 69)

60 Participation as member of a party, of a union, etc.

61 Voluntary activity as an elected official of a social or political organization

62 Participation in meetings other than those covered by 60 & 61

63 Non paid collective civic activity (e.g. volunteers)

64 Participation in religious organizations

65 Religious practice and attending religious ceremonies

66 Participation in various factory councils (committees, commissions)

67 Participation in other associations (family, parent, military, etc.)

68 Others

69 Travelling connected to the above mentioned activities, including waiting for means of transport

Spectacles, Entertainment, Social Life (70 - 79)

70 Attending a sport event

71 Circus, music-hall, dancing, show, night-club (including a meal in entertainment local), parade

72 Movies

APPENDIX B

73 Theater, concert, opera

74 Museum, exhibition, library (ed. purposes)

75 Receiving visit of friends or visiting friends, relatives at airport

76 Party or reception with meal or snack offered to or offered by friends, relatives

77 Cafe, bar, tearoom

78 Attending receptions (other than those mentioned above)

79 Travelling connected to the above mentioned activities, including waiting for means of transport

Sports and Active Leisure (80 - 89)

80 Practice a sport and physical exercise

81 Excursions or drive, hunting, fishing (if husband teaching wife to drive)

82 Walks, browsing, window shopping

83 Technical hobbies, photography and developing, collections

84 Ladies' work (confection, needlework, dress-making, knitting, etc.)

85 Artistic creations (sculpture, painting, pottery, literature, writing poetry, etc.)

86 Playing a musical instrument, singing

87 Society games (cards, etc.), crosswords, board games, chess

88 Others

89 Travelling connected to the above mentioned activities, including waiting for means of transportation

Passive Leisure (90 - 99)

90 Listening to the radio, piped music

91 Watching television

APPENDIX B

92 Listening to records, tape recording

93 Reading books

94 Reading reviews, periodicals, magazines, pamphlets, etc. including proof reading done at home

95 Reading newspapers

96 Conversations, including telephone conversations

97 Writing private correspondence, reading mail, writing in diary

98 Relaxing, reflecting, thinking, planning, doing nothing, no visible activity (arrive home, use on Sunday if long interval between activities)

99 Travelling connected to the above mentioned activities, including waiting for means of transport

APPENDIX C

TABLES OF FACTOR LOADINGS

APPENDIX C

TABLE C-1

FACTOR STRUCTURE

Suburban

Factor	I	II	III	IV	V	VI
Working Time	-.6432		-.6124			
Domestic Work	.7684	-.5750				
Care To Children	.7563	-.5724				
Shopping			.5349		.5579	
Private Needs	7062					
Education & Training		.6817			.6133	
Civic Participation			.5438			
Entertainment	-.6007					.6760
Active Leisure				.7994		
Passive Leisure	.8146					
Explained Variance	34.4	18.9	14.0	10.6	9.9	7.1

APPENDIX C

TABLE C-2

FACTOR STRUCTURE

Downtown

Factor	I	II	III	IV	V	VI
Working Time	-.5559			-.6453		
Domestic Work	.7460	.5651				
Care To Children	.5708	.6382				
Shopping					.6699	
Private Needs	.8845					
Education & Training		.6376		.5945		
Civic Participation			.6622			
Entertainment						.7596
Active Leisure			.6065	-.5315		
Passive Leisure	.8347					
Explained Variance	32.4	17.3	14.0	12.7	9.8	8.3

APPENDIX C

TABLE C-3

FACTOR STRUCTURE

High Rise Apartments

Factor	I	II	III	IV	V	VI
Working Time	-.5690		-.6074	.5322		
Domestic Work	.8483					
Care To Children	.5881	.6282				
Shopping					.7913	
Private Needs	.8007					
Education & Training		-.7340		-.5858		
Civic Participation			.6756			
Entertainment	-.5191					.6443
Active Leisure				.6768		
Passive Leisure	.8836					
Explained Variance	34.9	16.8	12.9	11.9	10.3	7.8

APPENDIX C

TABLE C-4

FACTOR STRUCTURE

Single Family Homes

Factor	I	II	III	IV	V	VI
Working Time	-.6346		-.5969			
Domestic Work	.7205	-.5893				
Care To Children	.8389					
Shopping			.5414			
Private Needs	.7241					
Education & Training		.6021		-.5898		
Civic Participation		.5159	.5842		-.5650	
Entertainment	-.5994					.6970
Active Leisure				.7728		
Passive Leisure	.7644	.5774				
Explained Variance	33.9	18.1	14.4	11.1	9.9	7.3

APPENDIX C

TABLE C-5

FACTOR STRUCTURE

Single Family Suburban

Factor	I	II	III	IV	V	VI
Working Time	-.6744		-.5680			
Domestic Work	.7073	-.6381				
Care To Children	.7704	-.5874				
Shopping			.5745			
Private Needs	.6621					
Education & Training		.6768				
Civic Participation			.5773	-.5695		
Entertainment	-.5993					
Active Leisure				.7063		
Passive Leisure	.8169					
Explained Variance	33.58	19.70	14.85	10.51		

[redacted]

APPENDIX C

TABLE C-6

FACTOR STRUCTURE

Single Family Downtown

Factor	I	II	III	IV	V	VI
Working Time			-.7403			
Domestic Work	.8532					
Care To Children	.7760					
Shopping		-.6885				
Private Needs	.8571					
Education & Training		.6258				
Civic Participation						
Entertainment	-.5165					
Active Leisure				-.7609		
Passive Leisure	.6390					
Explained Variance	32.97	14.99	14.43	12.84		

APPENDIX C

TABLE C-7

FACTOR STRUCTURE

High Rise Suburban

Factor	I	II	III	IV	V	VI
Working Time	-.6030		-.6707			
Domestic Work	.8859					
Care To Children	.7015					
Shopping			.7768			
Private Needs	.7373					
Education & Training		.6922				
Civic Participation						
Entertainment	-.5835					
Active Leisure		.7409				
Passive Leisure	.8995					
Explained Variance	35.98	18.79	13.98			

APPENDIX C

TABLE C-8

FACTOR STRUCTURE

High Rise Downtown

Factor	I	II	III	IV	V	VI
Working Time	-.6425			-.5422		
Domestic Work	.7145					
Care To Children		.7040				
Shopping				.8010		
Private Needs	.8854					
Education & Training			.5789		-.7567	
Civic Participation		.7444	.5837			
Entertainment						
Active Leisure		.5312	.5658			
Passive Leisure	.7828					
Explained Variance	29.28	19.85	15.87	11.31	11.48	

APPENDIX C

TABLE C-9

FACTOR STRUCTURE

Wives Weekday Activities - Downtown

Factor	I	II	III	IV	V	VI
Working Time		-.5516		.5460		
Domestic Work		.5797	.6333			
Care To Children						
Shopping						
Private Needs		.8224				
Education & Training				.8393		
Civic Participation	.9286					
Entertainment	.5971					
Active Leisure		.6362				
Passive Leisure	.6465	.5767				
Explained Variance	28.056	25.5069	13.2259	12.990		

APPENDIX C

TABLE C-10

FACTOR STRUCTURE

Wives Weekday Activities - Suburban

Factor	I	II	III	IV	V	VI
Working Time	-.5554		-.8082			
Domestic Work	.9214					
Care To Children	.8861					
Shopping				.6043		
Private Needs	.6867			-.5604		
Education & Training		.9101				
Civic Participation			.5702	-.5704		
Entertainment		-.5175				
Active Leisure					.8507	
Passive Leisure		.9012				
Explained Variance	30.43	22.29	14.66	12.35	10.12	

APPENDIX C

TABLE C-11

FACTOR STRUCTURE

Wives Weekday Activities - High Rise

Factor	I	II	III	IV	V	VI
Working Time		-.5899				
Domestic Work	.9266					
Care To Children	.6375					
Shopping					.7577	
Private Needs	.7786					
Education & Training			-.6385	-.5097		
Civic Participation		.7045				
Entertainment			.7320			
Active Leisure	.7278			.5907		
Passive Leisure		.8851				
Explained Variance	31.43	21.67	15.28	11.35	10.85	

APPENDIX C

TABLE C-12

FACTOR STRUCTURE

Wives Weekday Activities - Single Family Homes

Factor	I	II	III	IV	V	VI
Working Time	-.5899		-.7419			
Domestic Work	.6887	-.5937				
Care To Children	.8670					
Shopping			.6332			
Private Needs	.7347					
Education & Training		.8391		-.5114		
Civic Participation					-.7283	
Entertainment			.5067			
Active Leisure				.5967	.6162	
Passive Leisure	.7087	.6640				
Explained Variance	32.57	17.36	14.66	11.99	11.22	

APPENDIX C

TABLE C-13

FACTOR STRUCTURE

Husbands - High Rise

Factor	I	II	III	IV	V	VI
Working Time			.5366			
Domestic Work	.5343	.7306				
Care To Children	.7125					
Shopping				.7047	.6364	
Private Needs	.7519					
Education & Training			.5359	-.5462	.5940	
Civic Participation	-.5468					
Entertainment	-.6683					
Active Leisure						
Passive Leisure	.8802					
Explained Variance	32.42	15.12	14.87	11.60	10.81	

APPENDIX C

TABLE C-14

FACTOR STRUCTURE

Husbands - Suburban

Factor	I	II	III	IV	V	VI
Working Time			.5991			
Domestic Work		.7640				
Care To Children	.5137	.5331				
Shopping				.7700		
Private Needs	.7951					
Education & Training	.5711	-.5355				
Civic Participation			-.6569	-.5506		
Entertainment	-.6650					
Active Leisure	.6049					
Passive Leisure		.7562				
Explained Variance	29.33	22.23	14.58	13.36		

APPENDIX C

TABLE C-15

FACTOR STRUCTURE

Husbands - Downtown

Factor	I	II	III	IV	V	VI
Working Time	-.5717			-.6478		
Domestic Work	.7827					
Care To Children						
Shopping			.9274			
Private Needs	.8541					
Education & Training		-.9152				
Civic Participation	-.7289					
Entertainment	-.6406			.5045		
Active Leisure		.5044				
Passive Leisure	.8667					
Explained Variance	37.26	15.51	12.47	10.47		

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