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The concept of neighborhoods and its implication to urban park planning

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槪 要

근린주구개념은 도시사회구조를 이해하는 기본적 틀로서 인식되어왔을 뿐 아니라 도시공원의 계획에 따르는 공원체계의 개발 및 도시민의 여가행동 규명에 중요한 하부체계로 사용되어왔다. 80년대를 전후하여 발표된 다수의 논문에서 보고되고 있는 도시공원의 낮은 이용사례는 공원의 소극적 관리상황 뿐 아니라 계획 그 자체에 문제가 있음을 환기시키고 있다. 본 연구는 미국의 소 도시를 대상으로 지역주민에 의한 근린주구개념을 파악하고 주민의 근린공원 이용실태를 분석하여 전통적인 근린공원계획의 설정목표 및 기준상의 문제를 제조명하고자 한다.

연구결과 주민의 근린주구개념은 '동질성'등의 사회경제적 기능주의 입장보다는 물리지형적 특성으로 기울어 사회학자 및 공원계획가의 근린주구에 대한 기본전제에서 벗어나고 있으며, 계획가에 의해 임의로 설정된 근린공원의 서비스 영역(0.8km 둘레) 내부에 위치한 주민들의 공원비용은 주민자신에 의해 도출된 근린주구영역이 공원의 포함여부에 커다랗게 영향받고 있음이 밝혀졌다. 본 연구는 근린주구의 사회학적 개념과 현상학적 접근방식의 일환으로 Cognitive Mapping기법에 대한 정리도 제시한다.

Introduction

For the last hundred years, the concept of neighborhood has been utilized extensively in various aspects of social and economic planning in the United States(Silver, 1985). Used as a basis to explain the phenomena associated with depersonalization and weakened community bonds, neighborhoods have served as the focus for describing the complex behavior and perceptions associated with urban living and technological change(James, 1980 ; Downs, 1981).

In recreation planning, neighborhoods have served as the basis for developing urban park system and for explaining phenomena relating to leisure behavior in urban settings. Also seen as a source of social interaction, urban beautification, and an opportunity for meaningful leisure experiences(Gold, 1972), neighborhood parks were often portrayed as a counter-balancing influence for many of the negative effects of urbanization.

In the early 1970's, however, several researchers noted that there was relatively little use of neighborhood parks in urban aresa(Bang & Mahler,

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1970 ; Gold, 1972). More recent studies indicate that the problem is more acute and widespread than earlier reported and that the problem of undertilization appears to be closely related to a lack of appropriate planning techniques and maintenance (Simmon, 1976 ; Moore & Johnes, 1981 ; Gold, 1976).

This paper focuses on two major issues relating to neighborhood planning: 1) Whether current planning processes set up proper standards and criteria for planning neighborhood parks in urban areas ; and 2) whether such processes use techniques that lead appropriate allocation of park land in urban areas on a geographic and social basis.

The Problem

The first issue is related to the generic questions of whether urban neighborhood parks are functioning in the way they were intended to function and whether they are serving the residents whom they were supposed to serve. These questions require an investigation of local residents' perceptions of their neighborhoods. Factors affecting the use or nonuse of existing park resources among neighborhood residents must also be investigated to ascertain whether original park devlopment and current park maintenance are continuously ;to meet residents' demands for parks and open space.

The second issue is concerned with the validity/reliability of the conventional standard or catchment area concept of a park. The structure of many urban systems is similar to the conceptual basis of Christaller's Central Place Theory(1933) —i. e., that urban parks can be categorized hierarchically in terms of the level of service provided. Therefore, an area covered by a park of a higher level hierarchy(e. g., community park) contains several lower level entities such as neighborhood parks, that do not overlap with similar level hierarchies due to similar catchment area size. This assumes an isotropic distribution of attributes within a region—e. g., constant population density, equally unrestricted individual movement in all direction(Marshall, 1969), similar physical and social barriers, and equal capacity and willingness of people to travel and participate in park activities. Consequently, it tends to ignore the notion of 'accessibility' of an individual to urban parks and focuses on whether a facility's catchment basin overlaps other catchment basins(Hillman & Whalley, 1977).

To operationalize the problems, three major objectives guided the study : first, to look at the broad question of "spatial fit" between cognitive neighborhood boundaries of respondents and NRPA (National Recreation and Park Association) service areas for neighborhood parks ; second, to determine whether cognitive image of neighborhood area can be used to explain neighborhood park use behavior ; and third, to model park use behavior based on variables commonly thought to influence use or nonuse of park resources.

The concept of neighborhood

With residential neighborhoods, one immediately encounters the problem of imprecise definitions attached to the term 'neighborhood' Historically, neighborhoods were taken to be social units that were identified by the sociability and neighborliness of their residents. Operationally, however, neighborhoods often have been defined in terms of specific programs and the explicit policy objectives that are a part of these programs ; for example, some concepts of neighborhood emphasize physical characteristics, others focus on social relationshilps, and even others are designated by politically defined districts(Clay & Hollister, 1983).

This ambiguity is prebalent in the social science and planning literature where neighborhoods are defined in different ways. Glass(1948), for instance, identified 'homogeneous neighborhood' as a "distinct territorial group unique by virtue of the specific physical characteristics of the area and the specific social characteristics of its whole." Likewise, Dennis (1970) used the same definition to describe 'community neighborhood'. More functional definitions of neighborhoods are presented by urban planners who describe them in terms of catchment areas for organizing social activities and for providing housing facilities or neighborhood centers. In this latter case,

'neighborhood units' or 'physical neighborhoods' are regarded as distinct environments with precisely de fined political or other arbitrary boundaries. Examples of these types of 'neighborhood units' would be census tracks(Timms, 1971), physio graphic space(Moore & Young, 1978 ; Urban Land Institute, 1978), or standard approaches to land measurement(ie. distance factors, etc.). All of these techniques have been extensively employed to physi cally define a neighborhood, especially for neighborhood park planning units(Mutter & Westphal, 1986).

Although these differing neighborhood definitions are quite distinct, they have become inextricably in tertwined by the belief that it is possible to create the necessary preconditions for social neighborhoods by sensitive physical design of neighborhood units (Gold, 1980). This deterministic thinking has been a part of the neighborhood park planning effort that has set arbitrary boundaries for neighborhood parks based on the belief that a park will function to en hance a sense of community among relatively homo geneous groups of residents in a geographic area. Therefore, the use of "service areas" has become a convenient way to analyze park systems in terms of spatial equity of recreational facilities among resi dential populations in an urban area.

While use of this arbitray neighborhood concpt as a physical planning unit is convenient from the planners point of view, such rigid approaches of neighborhood have been found inappropriate in many instances. Keller(1968) points out various examples where social interaction and geography do not correspond well. Recently Ottensmann(1982) has revealed that in modern society, a neighborhood may not be an entity of homogeneity based on its socio-economic characteristics of its residents. Possible reasons are the rapid urbanization and in crease in household mobility. Spencer(1973) pointed to the factors that had led to inconclusiveness of residents'concept of neighborhoods in several resi dential neighborhood studies as including the diver sity of researcdh aims, lack of standardization of sampling procedures and interviewing techniques, and confliction terminology. Spencer particularly re alized interviewees' problem of understanding the neighborhood concept.

Lee(1968) was equally aware of this dilemma and adopted a phenomenological approach to re solve this physical social duality of neighborhood concept. Lee noted that because of the dual mean ing of neighborhood as both a physical and social term, a phenomenological approach, whereby the co ncept viewed by the eyes the subject in the study, was used to reduce the confusionl. Even though the result was that neighborhoods were not an accurate guide to true social involvements, Lee found positive relationships between neighborhood areas which de rived from the residents and active social par ticipation within the locality.

In this study, the phenomenological approach was adopted to delineate a neighborhood area. Respon dents were asked to provide their own in terpretation of the neighborhood concept and to de piet their own image of neighborhood area.

Cognitive mapping technique

To obtain and investigate respondents under standing of neighborhood concepts and their per ception neighborhood boundary areas, a cognitive mapping technique is employed.

Central to the field of environmental psychology is the notion that mental representations of certain real world characteristics exist. Environments are "perceived" as repeated spatial interaction occurs, enabling an individual's "image" of space to be gradually built up. This image may take various for ms ; it may be no more than an unordered list of place names, or more complex combinations of spatial elements into "cognitive maps", "mental maps", or "schemata" All terms has been used to describe the same mental phenomenon.

The study of cognitive maps is, however, ham pered by the fact that such maps cannot be directly observed. Research has therefore progressed under the assumption that because a subject behaves as if a cognitive map exists, the concept is worthy of in vestigation.

Three approaches have been used to investigate the notion of cognitive maps. One approach involves developing a cognitive map of an area based on

selection, ranking or evaluation of a geographic place. The best known of this group is the series of preference studies by Gould(1966, 1976). A second approach to characterizing cognitive maps is to ask respondents to construct a map based on a series of estimated distances and direction measurements(Canter, 1975 ; Lee, 1970). Since these types of studies tend to focus on a particular property such as distance, orientation, or shape, they often fail to provide a whole picture of the mental representation perse.

A third group of cognitive map studies involves actual respondent cartography of an area — a popular technique which may be either structured by guidelines(e. g., outline or particular cues), or totally unstructured allowing free recall of an area. Lynch(1961, 1967) pioneered this technique in his study of the center of three American cities, as well as the categorization of information into five landscape elements. Appleyard(1963) used this technique to characterize the factors contributing to environmental knowing and to explain the structure of mental maps.

Since this latter approach focuses on image maps that has been drawn, the term "cognitive map" has become more closely associated with graphic outputs rather than with pure mental representation. While there have been arguments about whether the graphic and as well as verbal output can reflect an individual's inner mental representation of an area to a reasonabel degree(Spencer, 1973 ; Murray & Spencer, 1979), many studies have attempted to use the technique with the belief that these outputs relating to cognitive maps are the basis for explaining certain types of spatial behavior occurring in the environment.

Method

Data for this study were obtained from a 1985 study investigating use behavior relating to Burton Creek neighborhood park in Bryan, Texas, U.S.A. The study area consisted of all of the households(n =260) located within 0.8kilometer(0.5mile) service area radius of the park. This distance was selected based on NRPA(Lancaster, 1983) classification criteria for neighborhood parks. The park is 28, 300square meters(7 acres) in size and includes such facilities as a basketball court, a drinking fountain, a flowering bed, 5 picnic units, and 12 play equipments.

Two hundred and sixty(260) surveys were personally distributed to all households within the study area and asked to be filled out by any household member who is 18years or older. One hundred and sixty−eight(168) returned surveys were used for the analysis in the study.

The questionnaire consisted of thirty−two questions, including length of residency, verbal and graphic descriptions of household's "defined neighborhood", neighborhood park use frequencies for the household based on selected activities, as well as several socioeconomic variables. Eighteen outdoor recreation activities were listed in the questionnaire. Respondents were asked how often their households, or members of households, participated in those activities during the month of July of August, 1985. To secure the information on year round use patterns, respondents were asked whether the monthly visitation pattern represented normal use pattern during the rest of the year.

The survey instrument also asked for verbal and graphic information on the household's definition of "neighborhood". To accomplish this task, interviewers were asked to pay special attention to respondents' questions and to avoid responses that could create biases for the following two reasons.

First, the overall correspondence between possessed information and the elicited gralphic output is a funcdtion of general spatial ability to perceive and retain structure and proportion of forms as a whole with cartographic skill to express possessed mental representation(McFarlane−Smith, 1964). It also has been reported that use of several symbols in a base map may confuse respondents interpretation and that the size or shape of paper can induce bias to the results(Pocock, 1972). The authors asked respondents to draw a neighborhood boundary on a 20.3 × 27.9cm(8 × 11inch) base map covering the study area. The map provided every road name, but only a symbolic representation of the park location. Interviewers were instructed to

encourage household participation in the study, but to provide only a minimum of orientation information to respondents.

Second, the verbal description is open to unintentional promptings and bias by the researcher, and to some degree, obtaining appropriate information depends upon respondent's articulation. For the study, respondents were asked about perceptions of their neighborhood in two different ways : 1) how they describe their neighborhood in terms of its characteristics ; and 2) what are the most distinctive features of their neighborhood(e. g., buildings, roads, natural areas, etc.) This part of the survey was intended to elicit information on whether or not residents perceive neighborhoods as social entities and what information they use to define their neighborhood spatially/physically. Again, interviewers were instructed to repeat the questions only as they appeared in the survey and to preface the questions with the statement "If you had to describe your neighborhood to a complete stranger...."

The graphic outputs of neighborhood areas and residence locations were digitized to obtain size of the boundary area, the straight line distance between respondents' homes and the park, and whether or not cognitive neighborhood boundaries include the park. This procedure was done utilizing an IBM AT and Hitachi 30.5 × 30.5cm(12 × 12inch) digitizer with compiled BASIC program (Kim, et. al., 1988). This data were then merged to questionnaire survey data for the subsequent analysis. Figure 1illustrates a sample cognitive boundary and NRPA service area for the park.

Results

The first objective was carried out by tabulating the frequencies for the verbal descriptions of neighborhood. Table 1 shows that the majority(56 %) of respondents perceive their neighborhoods as a physical entity and only twenty two(22%) per cent of the respondents described them as social units in one way or another(e. g., elderly, friendly, class, family).

Frequencies of response pertaining to the distinctive features of neighborhood(Table 2) revealed that most of the respondents(40%) think their neighborhood can be distinguished form other neighborhoods by surrounding roads and physiographical features(e. g., Burton Creek running across the study area). Only seventeen percent (17%) of the respondents picked functional nodes (e. g., commercial areas, elementary school, park), which supports the notion of 'functional neighborhood' as discussed earlier. Other categories include utility corridors, types of architecture, and natural aesthetics.

Table 1. Description of Neighborhood(n = 153)

Descriptions	Frequency	Percent
Peaceful, beautiful	72	42
Young or old	22	14
Friendly	16	10
Similar class	8	5
Similar income level	5	3
Family oriented	4	3
Retired, elderly	2	2
Other	24	16

Table 2. Distinctive Features of Neighborhood(n = 126)

Features	Frequency	Percent
Physiographical Features	27	22
Roads	23	18
Aesthetics	13	10
Commercial Area	11	9
Utility Corridor	8	6
Buildings	5	4
Park	3	2
Elementary School	3	3
Other	33	26

The above findings may not underpin the current neighborhood park planning efforts which assume residential neighborhoods have common characteristics of homogeneity and functionality. It may become problematic when such efforts further assume that with those characteristics, planners can delineate neighborhood units utilizing conventional catchment or standards approaches to locate a neighborhood park to serve the neighborhood.

The respondents' neighborhood boundary areas range from as large as 7.9 to merely 0.01square kilometers. The boundary area was correlated with

other relevant variables in the study. Interestingly, no statistically significant relationshilp was found between size of boundary area and the length of residency ; however, statistically significant, yet rather weak, positive relationships were found among the number of children in a household(r=.19 p=.02), and park use intensity(r=.18 p=.02) with size of boundary area. These findings support Spencer(1973)'s study results that : "research findings are therefore inconclusive in terms of the range of neighborhood sizes, the average sizes of perceived areas, and the extent to which group differences in neighborhood perception exist." Therefore any further statistical analysis using size of neighb－orhood was avoided.

Test for the mean difference of park use intensity between those who included the park in their cognitive neighborhood area and those who did not was used to address the second research question. For those two groups, statistically significant mean difference was found(p=.007 n=167). The results can be interpreted that people who have developed a sense of identity with the area and have become familiar with their locality are likely to use local amenities such as parks more frequently. Similar findings have been reported in the previous studies on local area perceptions(Lee, 1963 ; Anderson & Tindall, 1972 ; Everitt & Cadwellader, 1972).

Table 3 shows correlation coefficients between use intensity and distance, the number of children, length of residency, and income level. Distance turned out to be the factor with least exlplanatory power to understand use behavior within the service area of the park. Several studies including Darragh, et. al.(1981) successfully utilized distance to explain urban park use behavior ; however, the result of this study indicates that distance may not be the case for a neighborhood scale.

Finally a linear regression model was constructed with use intensity as a dependent variable and several independent variables such as income, the number of children, length of residency, and distance. The model is shown in Table 4. With five variables the equation accounts for about 40% of the variance in neighborhood park use intensity. Variance Inflation Factor(VIF) shows no serious multicolli

Table 3. Correlation Coefficients with Park Use Intensity

Variables	r value	p value	n
Income	−0.16	0.054	140
# of Children	0.58	0.001	159
Length of Residency	−0.33	0.001	163
Distance	−0.01	0.905	163

nearity problem between independent variables (Freund & Littell, 1986) and, therefore, the interpretation on the effects of each variable to the model predictability using partial Rsquare is meaningful.

Table 4. Regression Analysis
Dependent Variable=Use intensity, n=138
Model R Square=.411 F=18.56 P=.0001

Variables	F ratio	P value	VIF	Par. R sq.	Coeff.
# of Children	51.77	.001	1.22	.339	4.97
Cognitive Boundary	4.84	.029	1.16	.037	3.29
Income	2.77	.098	1.11	.021	−1.86
Length of Residency	1.48	.228	1.16	.008	−0.99
Distance	1.08	.301	1.27	.006	−0.21

As expected, the number of children is the most dominant factor explaining more than 80% of the model R square. Cognition of neighborhood area and income share most of the other portion of model R square while length of residency and distance contribute almost nothing.

Discussions

The study of neighborhoods by social scientists usually draws upon the structural－functional perspective of morphologically identifying different types of neighborhoods, stressing neighborhood as units of social organization, both for their residents and hierarchies of broader planning processes(Clay & Hollister, 1983).

Apparently, urban park planners consider neighborhood on functional characteristics. For example, most of the neighborhood parks in U.S.A. have been planned and located to serve residents

within an arbitrary catchment or service area(i. e. 0.8km radius) (Lancaster, 1983)

Unfortunately, there seem to be discrepancies between urban residents and planners in defining and perceiving neighborhood. The findings of this study show that there is no consensus on size or characteristics of neighborhood among residents and, moreover, a simple geographical determinism (service area) may not be the best approach on a neighborhood scale.

While distance did not explain park use behavior, cognition on neighborhood boundary did, to some extent, explain the park visitation behavior. More cautious interpretation of the result for the 'distance' variable would be required, however. Since the respondents are all located within the 0.8km service area, little behavioral differences due to distance could mean that the 0.8km zone does not work badly in terms of characterizing the service area of the park. To finish up the study, the author realizes that the findings of the study would be much interpretable when information on respondents outside the half mile service area were included. In this way, the respondents' behavioral differences between in and outside of the half mile service area as well as cognitive boundary could be examined effctively. With limited knowledge supported by the study findings it can, nevertheless, be pointed out that a park service area delineated based upon these cognitive information should work much better with the standard approach than the standard approach alone.

The results of the regression analysis indicates that almost 35% of the variability in use intensity could be explained with a single variable, the number of children. This could mean that while a neighborhood park is generally considered to meet basic outdoor recreation needs and provide social contacts for the residents, Burton Creek Park in this study could be regarded as just a playground for the children in the neighborhood.

If these findings can explain a portion of the problems neighborhood parks face nowadays, it is then necessary to reassess the directions of current and future planning efforts : i. e., resetting the goals and objectives as well as allocation techniques. Or as Clay and Hollister(1983) argue, possible answers for whether neighborhood must be understood based upon residents' perception or functional characteristics should rest upon utilitarian questions, e. g., which approach is more practical or plausible in terms of planning and implementation process?

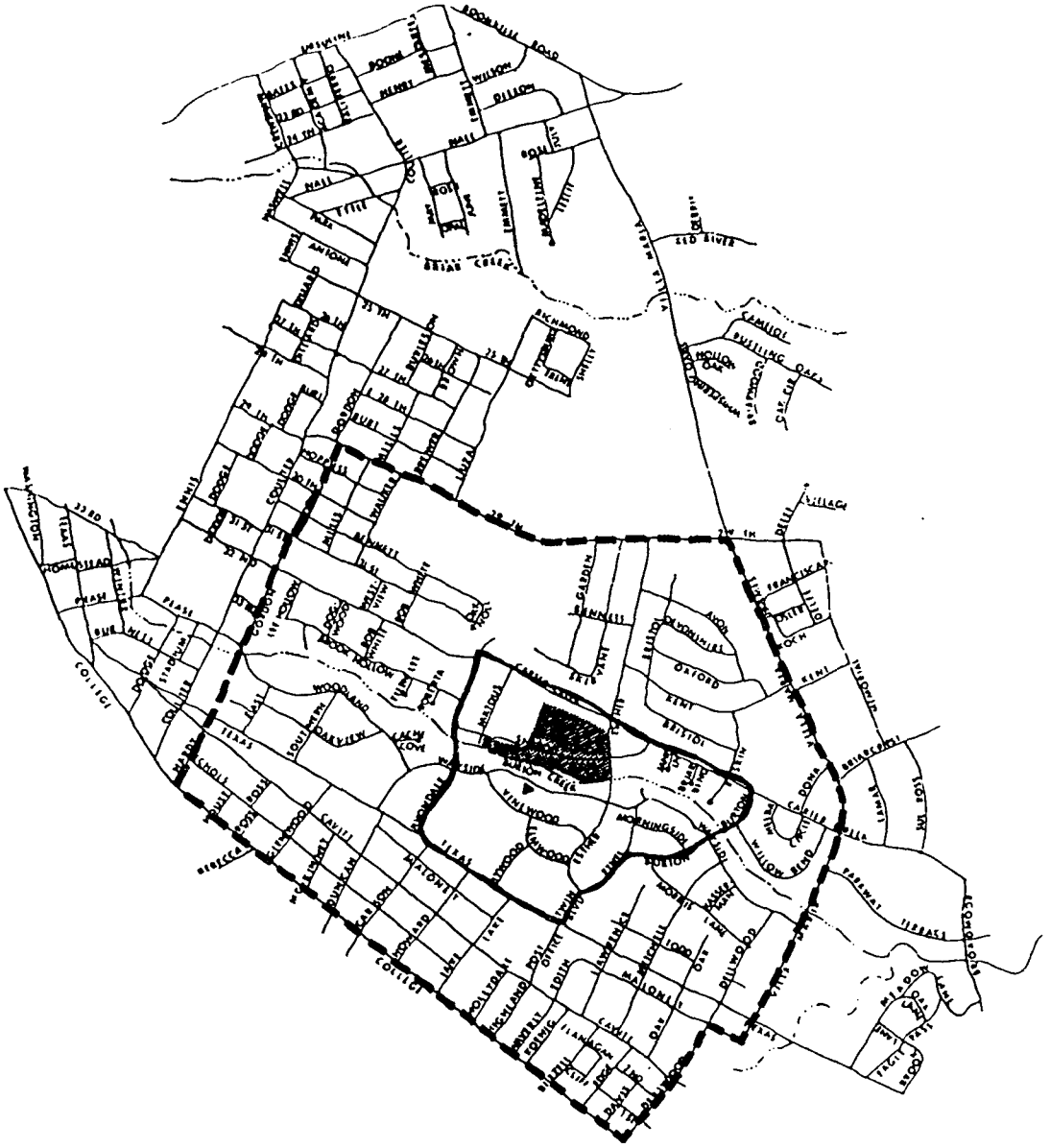

Figure 1. Location of the Park(shaded area) and comparison of a sample household's cognitive neighborhood boundary(solid line) and NRPA 0.8km neighborhood park service area boundary(dotted line)

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