San Fernando Valley State College

A STUDY OF THE LAND USE STRUCTURE OF THE CENTRAL BUSINESS DISTRICT OF LOS ANGELES, CALIFORNIA

A thesis submitted in partial satisfaction of the requirements for the degree of Master in Arts in Geography

by

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San Fernando Valley State College

August, 1965
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ABSTRACT

A STUDY OF THE LAND USE STRUCTURE OF THE
CENTRAL BUSINESS DISTRICT OF
LOS ANGELES, CALIFORNIA

by
Richard Morris Reskoff
Master of Arts in Geography
August, 1965

This thesis is a study of the functional character of the Los Angeles Central Business District based upon an analysis of its land use proportions, patterns, and associations.

Land use proportions are distinctive with financial-office-service activities occupying 70 per cent of all Central Business District space. Non-central business and retail uses occupy 18.5 per cent and 11.4 per cent, respectively.

Land-use patterns are characterized by a core of intensive retailing activities surrounding the Peak Land Value Intersection. Two or three blocks outward from this intersection a zone of lesser land-use intensity exists dominated by financial-office-service functions. A zone of still lower intensity, consisting of wholesale and industrial activities, occurs one block beyond the financial-office-service concentration. Near the District's edge land use intensity is lowest and the area is characterized by open spaces and the presence of some retail, office, service, and non-central business functions.

Vertical gradation of land use is sharp, with ground floor space dominated by office and governmental uses, and second and higher
floors dominated by office and governmental functions.

Land use associations were determined by comparing maps of individual functions; subregions were identified by a detailed study of land use associations.

Recent Central Business District literature was of limited value in offering solutions to many problems which arose. Problems, such as treatment of residential and sublevel space, and Central Business District definition constitute subjects for future investigation.
CHAPTER I

INTRODUCTION

The Central Business District is a prominent feature of the urban landscape of every American city. This area can be recognized by the concentration of tall buildings, numerous parking lots, lack of single family residences, intensive pedestrian and vehicular traffic, and the overwhelming concentration of retail and office activities. Although many people may be able to identify the District by using these characteristics in a general way, such a view would not constitute a detailed or precise understanding of the downtown's complex functional and morphological composition.

Obviously, it would be extremely difficult to consider comprehensively all aspects of a Central Business District in any single study. The Central Business District, however, can be viewed as an assemblage of land uses, some of which are especially distinctive. Thus, it was concluded that a detailed record of this single aspect would serve both as the best single basis for a comparison of the findings of this investigation with those of other Central Business District studies, and as a useful point of departure for a consideration of the forces which have shaped this type of district into a distinctive subregion in all American cities. This thesis, therefore, is devoted to a detailed consideration of one element, land use, in one city, Los Angeles (Figure 1).
FIGURE 1. Oblique aerial photograph of downtown Los Angeles as seen from the east. The Harbor Freeway cuts across the center of the picture from right to left. Open area near the center of picture is Pershing Square. The top of picture is northwest. This picture is used with the permission of the editor of California Highways and Public Works.
If the primary topic to be considered is the land use structure of the Central Business District of Los Angeles, California, then it may be approached by treating three specific and related questions: What are (1) the land use proportions; (2) the land-use patterns; and (3) the land use associations which characterize the Central Business District of Los Angeles? Even a partial solution depends upon the use of a tenable method for delimitation of the District, and upon the careful analysis of its land use content. In this study the reasonably objective and widely tested Central Business District (CBD)\(^1\) delimitation method developed by Raymond E. Murphy and J. E. Vance, Jr., appeared to be satisfactory in most respects and was adopted. This technique is based upon the analysis of land use data; such information was obtained by field mapping conducted in downtown Los Angeles during the spring of 1963. Further information which complemented both the field-work and interpretation stage of this study was procured through interviews with members of the Los Angeles Department of City Planning, and through a review of the available published literature on the subject of Central Business Districts.

\(^1\)Although the term CBD is a widely accepted abbreviation for Central Business District, it will be used in a very specific way throughout this thesis. Unless qualified, this term will refer only to Central Business Districts which have been defined on the basis of the precise method used in this study. If a fuller understanding of the Murphy-Vance CBD Delimitation Method is desired during either the remainder of this chapter or in Chapter II, the reader is referred to Chapter III of this study or to Raymond E. Murphy and J. E. Vance, Jr., "Delimiting the CBD", Economic Geography, Vol. 30 (July, 1954), pp. 189-222. Other terms such as downtown area, downtown business district, commercial core, and Central Business District will be used when referring to studies which did not employ the Murphy-Vance method, or when referring to the District in general.
Organization of the Study

This study is presented in the following order: a review of the literature is undertaken in Chapter II, the principal methods used in the delimitation and analysis are presented, applied, and evaluated in Chapter III. In Chapter IV the land use structure of the Los Angeles Central Business District is analyzed and compared with findings for other cities studied in a comparable manner, while Chapter V summarizes the results, problems, and areas of further research.
CHAPTER II

A REVIEW OF RECENT LITERATURE DEALING WITH THE CENTRAL BUSINESS DISTRICT

An examination of available literature dealing with the Central Business District was an essential part of this study. As the published works were studied and evaluated it became clear that the question of Central Business District definition was a problem that had plagued all the authors. It seems, from the diversity of approaches used, that a definite need exists for the development, and acceptance, of a standardized technique of Central Business District delimitation and analysis based on data which is easily obtained in any city. This problem was largely avoided in this study, however, because of the adoption at the outset of the Murphy-Vance method for Central Business District delimitation. Therefore, the examination of the literature was carried out principally for the purposes of developing possible improvements for the Murphy-Vance technique, and to enrich the author's background, thereby enabling a more sophisticated interpretation of the Los Angeles Central Business District. With these ideas in mind, a re-evaluation was made of the works of nine Central Business District researchers. Attention was focused on what they attempted to do, and on their contributions to the field of Central Business District research.
The research of Marylin Morgan,1 Lane Joseph Johnson,2 D. Hywell Davies,3 Peter Scott,4 John Tate Davis,5 Horwood and Boyce,6 Shirley F. Weiss,7 John Rannells,8 and Eugene J. Kelley,9 are of particular importance, because of their close relationship to the established problem of this thesis.


7Shirley F. Weiss, Central Business District in Transition, Research Paper No. 1 (Chapel Hill, North Carolina: City and Regional Planning Section, Department of City and Regional Planning, 1957).


Marylin C. Morgan

Marylin Morgan tested the coincidence between Central Business District boundaries determined from the analysis of vertical aerial photographs and the Murphy-Vance method.

Using aerial photographs of the central sections of Sacramento, Roanoke, and Worcester, Morgan evaluated the usefulness of five criteria in Central Business District delimitation: (1) traffic evident on streets; (2) building heights; (3) vegetation; (4) roof tones and shapes; and (5) identifiable land use. Traffic, the first criterion, was judged to be unsatisfactory in determining the Central Business District boundary, because the photographs were not taken at the same time, and hence the traffic conditions illustrated were not comparable. Building heights, also, were judged to be unsatisfactory, because of the difficulty of distinguishing differences in heights. Vegetation, on the other hand, proved to be a more useful criterion in Central Business District delimitation. In every city studied the central area was generally devoid of plants. Roof tones and shapes proved to be worthwhile indicators of the district's extent. A scale of intensity, which ranged from 1 (lightest in color) to 10 (darkest in color) was devised to map this quality. A line drawn around blocks with values of 5 or more seemed to correspond closest to the Murphy-Vance boundary.

Identifiable land use, the fifth, and last, criterion to be evaluated, was considerably less useful. Although Miss Morgan was unable to dis-

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Marylin C. Morgan, op. cit., pp. 1-54.
tistinguish enough variety of land uses to outline various functional concentrations, she was able to consistently distinguish parking lots. The resolution of a final boundary, which was a composite of the individual outlines developed using vegetation, roof tones, shapes, and parking lots, outlined a district that included from 24-54 per cent more ground floor area in square feet than the Murphy-Vance CBD.

Despite its lack of close correspondence with the Murphy-Vance boundary, the aerial photography boundary is still useful. One possible use is for the purpose of identifying and narrowing Central Business District areas, thereby saving time and money. This might be useful to military planners and urban scholars in locating the downtown district of areas they are unable to visit. But unless one is faced with this problem, a trip around the downtown area by automobile or on foot is far more accurate, much less time-consuming, and a considerably more economical means of narrowing a study area. In spite of the limited usefulness of aerial photographs in Central Business District study, Morgan's work in testing their potentialities, as a new approach to CBD delimitation, represents a contribution to Central Business District research.

Lane Joseph Johnson

Lane Joseph Johnson studied the problem of Central Business District definition from a different angle. Johnson tested the coincidence of certain types of establishments with the Murphy-Vance boundary by mapping land use in established zones successively outward from the

Ibid., pp. 6-22.
He concluded that furniture stores, household furnishing stores, cleaning and laundry outlets, and lodging houses, which were concentrated at the periphery of the CBD, could be collectively used as indicators in a rapid delimitation. Other functions, such as automobile showrooms and lots, gasoline service stations, and churches, showed a slight, but insignificant, amount of concentration. Even though specific clusters of functions were found at or near the edge of several CBDs, the results are tentative and in need of exhaustive testing. Furthermore, Johnson's technique is qualitative and depends too heavily on subjective judgments. For example, the author gives no objective guidelines for the definition of a rooming house. Therefore, how does one define a rooming house solely on the basis of visual inspection. Unless problems such as this are resolved, the research efforts of scholars using this approach will not be comparable, and hence are of limited value. The main value of Johnson's research, however, is his conclusion that definite types of functional clusters exist at the edge of the CBD.

While Johnson's work generally gives a better picture of clusters of uses (that occur at the outer edge of the CBD), the work of D. Hywell Davies, and Peter Scott, provides a better picture of the entire District. Both authors comment on the usefulness of the Murphy-Vance system—as a technique for outlining the CBDs of cities larger than those already studied by Murphy and Vance.

Sixteen possible methods were considered by Davies for the delimitations of Cape Town's Central Business District, from which seven were chosen for cartographic and field testing. Finally, the Central Business Index (CBI) method developed by Murphy and Vance for American cities was adopted. Based on land use, or the spatial distribution of urban functions, it appeared the most geographical as well as the most precise of the methods possible for Cape Town and enabled a direct comparison to be made of Cape Town's CBD with those of nine American cities considered by Murphy and Vance.

Davies continued his study of Cape Town, defining its "hard-core" the following year (using a modification of the Murphy-Vance technique). According to Davies, the "hard-core," which comprises 16 per cent of the CBD (as defined by the Murphy-Vance Method), is: "That area which displays central business characteristics in their purest form—it is the quintessence of the CBD."

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14 D. Hywell Davies, op. cit., p. 325. The 16 methods were: (1) by the use of existing Central Business District boundaries—mostly official—none of which proved to be systematically derived; (2) the "template" method; (3) by the use of urban profiles; (4) the shop-rent index; (5) the trade index; (6) by the use of block-frontage-volume of sales; (7) by population distribution; (8) by the distribution of dwelling units; (9) by patterns of employment; (10) pedestrian counts; (11) traffic flow study; (12) by delimitation based on the Cape Town Traffic Survey of 1957; (13) by land valuations; (14) the Central Business Index of land use; (15) by types of establishments at the CBD edge; (16) by visual impression in the field.

The seven methods chosen from the above list for field and cartographic testing were: 3, 8, 12, 13, 14, and 15. Visual impression in the field (16) was also used as a final check.

15 Ibid., p. 325. 16 Ibid., pp. 325-28.

Viewed in its entirety, Davies' work represents a complete and outstanding research effort. His evaluation of the applicability of 16 different methods of Central Business District delimitation should be useful to all who deal with the problem of the definition. Furthermore, the information he gathered concerning Cape Town's CBD is valuable because it can be compared with tentative generalizations developed for the CBDs of many American and Australian cities.

Peter Scott

Although the work of Peter Scott completely lacks the treatment of methodology and explanation of reasons for adopting the Murphy-Vance technique (two elements that greatly enhanced the worth of Davies' work), his delimitation and analysis of the CBDs of six of the largest cities in Australia adds valuable information to the growing body of knowledge about Central Business Districts. Scott confines his study to ground floor levels, giving a glimpse of various uses by dividing the CBD into an inner retail zone, outer retail zone, and office zone. This is a slight departure from the Murphy-Vance approach to internal analysis of the CBD which is based upon the analysis of the land use contents of each of four zones which are concentric to the Peak Land Value Inter-


18 Peter Scott, op. cit., pp. 290-334. The six cities, all capitals, delimited ranged in size from 1,863,000 (Sidney) to 95,000 (Hobart).
19 Ibid., pp. 293-294.
20 The reader is referred to p. 60 of this thesis for a complete discussion of walking zones.
Within each zone, each of which was defined by an arbitrary limiting value, certain definite uses were found. The inner zone is characterized by stores selling personal requisites and demanding a central location. The outer zone, in contrast, is characterized by stores retailing household goods and services, and tends to encircle the inner zone. But, because of its component elements, the outer zone is more diverse and individual uses are less interrelated than those of the inner zone. This coincides with the findings of Murphy and Vance, and Davies, and also illustrates the repetitive demand of individual functions for the same relative locations within different CBDs.

John Tate Davis

John Tate Davis, who does not find the Murphy-Vance system as inviting as did Davies and Scott, studies land-use characteristics in and around eight American CBDs. Davis' task was twofold: (1) to develop a method by which intensities of CBD uses could be measured, and (2) to derive a theoretical description of the CBD on the basis of

Peak Land Value Intersection is a point in the Central Business District surrounded by blocks with generally the highest assessed land valuations. Usually this location is in the retail heart of the downtown where the best department and accessory stores are found. For a more complete discussion of Peak Land Value Intersection, the reader is referred to p. 31 of this thesis.

Peter Scott, op. cit., p. 291

Ibid., p. 293.

John Tate Davis, op. cit., pp. 15, 137.
analysis of variations in intensity of CBD uses and land-use associations. Land-use intensities were measured by plotting patterns of uses by blocks and finding the number of different uses within each block. Then, a participation ratio was calculated and applied to each block. A standard deviation was also calculated for each block, and a map of resultant values was prepared. A threefold division of the CBD into a "hard-core," secondary nucleus, and fringe area was developed next; using values derived earlier in the study. Although these zones have been derived independently, they closely resemble those conceived by Scott, Burgess, and Hoyt. In reference to the "hard-core," Davis indicates his agreement with Davies: that it presents central business activities in their purest form; and that Davies' method of "hard-core" delimitation is logically sound.

Two noteworthy assertions were made. The first concerns the inadequacy of the Murphy-Vance definition of central business uses. Davies contends that governmental and organizational functions, which are frequently found in the CBD, should be added to the Murphy-Vance list of central business functions. Davies' second assertion is:

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25 Ibid., pp. 2, 6.  
26 Ibid., pp. 72, 74.  
27 Peter Scott, op. cit., pp. 347-63  
30 John Tate Davis, op. cit., pp. 53-57.  
31 Ibid., pp. 15, 137.
"That contrary to public opinion the Peak Land Value Intersection is not the peak point of the Central Business District." Maps prepared by the author, showing the number of uses per block and concentration of central business uses, in terms of utilization of available floor space for central business uses, show that the most uses per block and the highest concentration of CBD uses occur outside the blocks immediately surrounding the Peak Land Value Intersection.

Davis' work has several shortcomings, however. The first concerns his twofold objective of developing a method of analyzing various CBD qualities. This approach suffers from tedious mathematical procedures that must be performed in order to derive the figures that must be presented cartographically before they are of value. The second drawback, which could be a consequence of the first, is the lack of acceptance and use of the approach. Another shortcoming is the finding that the Peak Land Value Intersection is not the peak point of the CBD. Even though this is a valid finding, it has been arrived at in a considerably different manner than the Murphy-Vance method, and should, therefore, be expected to yield different results that may or may not be of value. The final shortcoming is the matter of definition. Although many authors would agree that governmental and organizational activities should be classified as central business uses, just as many would disagree. The problem here is that Davis does not provide any basis for making such assertions. A thorough discussion of the essence of central business activities is needed before any particular definition can be

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\(^{32}\) Ibid., p. 123

\(^{33}\) Ibid.
Although Davis' findings give a different perspective to previously developed generalizations about the CBD, it is his methodology that represents more of a contribution to Central Business District research. His threefold division of the CBD, for example, is not a contribution, because many researchers have expressed the same framework more clearly in earlier published papers. His methodology, on the other hand, is a contribution, because it provides actual guidelines for the identification of each area.

**Horwood and Boyce**

Edgar M. Horwood and Ronald Boyce pursued more broadly, then did Davis, methodological approaches to Central Business District analysis. Even though the main objective of their work was to investigate Central Business District structure and change in relation to urban freeway development, the discussion here will center on their four methodological approaches to Central Business District analysis.

Retail sales attraction, land values, daytime population, and functional classification, which constitute four approaches to Central Business District analysis, were evaluated as a means of delimiting and studying the internal character of the Central Business District.

Retail sales attraction depended principally on gross retail sales data published regularly by the U. S. Department of Commerce. This information, contend Horwood and Boyce, tells nothing of the spatial characteristics of establishments in the Central Business District or their

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34 Horwood and Boyce, *op. cit.*, p. 3.
linkages to other functional areas of the city. This approach is, therefore, of limited value. Land values, also, were of limited value, because they were not readily available for all cities. When values were obtained, it was possible to study their relationships with land uses and to develop a correlation between central land values and uses. The daytime population approach, which depended on data that was difficult to obtain for every city, was evaluated next. Examination was made of the entry of goods and people in relation to a number of specified factors in order to assess the relative importance of a given Central Business District on a historical basis.

Functional classification, the fourth approach, was investigated more thoroughly than the first three. Emphasis was placed on two elements: namely, Central Business District delimitation by analysis of land-use data, and the division of the Central Business District into subregions. When definition of central business districts by land use was assessed, attention was focused on the Murphy-Vance method. The authors indicated their disagreement with Murphy and Vance over the inclusion of certain uses as central business activities and the applicability of critical indices, which Murphy and Vance derived subjectively, in the definition of Central Business Districts of large cities. Division of the Central Business District into subregions, the second

35 Ibid., pp. 3-4.  
36 Ibid., p. 4.  
38 Horwood and Boyce, op. cit., p. 5.
aspect of the functional approach, began with an evaluation of the work of Proudfoot.\(^{39}\) Proudfoot's delimitation of an inner-and outer-core by the use of productivity differences proved useful to Horwood and Boyce. They asserted that the "hard-core" or core can be defined by using a productivity standard for retail sales and, by developing some limiting values, a line can be drawn around the core--encircling intensive retailing and office functions.\(^{40}\) Outside this area is the frame, where unique, ungrouped activities tend to develop (such as telephone exchanges, court houses, and hotels), which are linked by various means to activities within the core.\(^{41}\)

The discussion of methodology and development of an approach to Central Business District division are not without flaws. Although the general discussion of approaches is good, the disagreement with Murphy and Vance over definition and limiting values is in need of clarification. Horwood and Boyce fail to provide a complete and exhaustive discussion over their points of disagreement and, therefore, their criticisms lack their intended weight. A second, more serious, inadequacy occurs in the treatment of the core-frame concept. It is logically sound on the conceptual level, but unsound on the practical level, because no practical guidelines for the definition of each of these areas is advanced. And until an objective approach is developed,


\(^{41}\) Ibid., pp. 15-22.
their method is of limited practical value. On the other hand, even though Horwood and Boyce fail to develop practical guidelines for the identification of the core-frame, their concept and methodological discussions represent a solid contribution to Central Business District research.

Shirley F. Weiss

Shirley Weiss, perhaps more than any other author, except for Murphy and Vance, and Davies, provided the most thorough assessment of various approaches to Central Business District analysis. She provides a wealth of data in her evaluation of the possibilities of retail sales attraction, land values, and land use as techniques for the delimitation of Central Business Districts. The land-use approach is studied intensively and detailed analysis is presented for three types of land-use measurement: (1) directory method; (2) "hard-core" method; and (3) space-use method.

Ratcliff's study of the Central Business District of Madison, Wisconsin, was used by Weiss as an example of the directory method. Using city directories, which were not fully descriptive nor were they entirely consistent from year to year, Ratcliff traced shifts in the pattern of retailing activities. These changes were noted by examination of directories over five year intervals, from 1921 through 1950.

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42 Shirley F. Weiss, op. cit., p. 17.
43 Ibid., pp. 7-22.
Shifts in office uses, increases in business service space, and retail space are among the significant changes that were noted by Ratcliff.

In spite of the limitations, imposed by the use of 154 categories of land-use and the limiting of coverage to ground floor occupancies, Ratcliff established a method that has since been modified and used more successfully.

Weiss devotes a lengthy commentary to the evaluation of what she considers to be the "hard-core" method of Murphy and Vance. Her major criticism: that the authors should not exclude governmental space from central business space. This assertion is supported by figures cited from the Murphy-Vance studies; which indicate that governmental uses occupy a substantial percentage of space within the Central Business District.

45 Ibid., pp. 6-16

46 Two more recent studies that have the same goals as Ratcliff's study, but escape certain criticisms leveled against Ratcliff by modifying his approach, were completed in 1955 at Cornell and GIT: Sanford Getreu, "A study of the Central Business District of Ithaca, New York" (unpublished Master's thesis, Cornell University, 1955); Arnall Turner Connell, "Land Uses that Require a Central Business District Location" (unpublished Master's thesis, Georgia Institute of Technology, 1955).

47 The term "hard core" has several meanings. As used by Weiss and Horwood and Boyce, it refers to the Murphy-Vance CBD. But as used by Davies, "hard core" refers to a smaller area within the Murphy-Vance CBD that is devoted to intensive retailing.

Space-use, the third and last Central Business District analysis method examined, was designed as a tool for forecasting the demand for space at two projected future dates - 1960 and 1980. This method, developed by Alderson and Sessions for the City of Philadelphia study of 1950, enabled the Central Business District to be defined in a broad manner so that nearly all establishments that were oriented toward an area larger than their own could be included. Data for the periods of 1934 and 1949, obtained by counting the number of establishments and measuring occupied space, showed a decline in numbers of retailers and manufacturers, whereas the space per individual concern showed an increase. A modified version of the Alderson-Sessions method used in Cincinnati, Ohio showed a somewhat different trend. Within the core gains registered by business services, wholesaling without stock, and off-street parking were offset by losses in wholesaling with stock. Within the Central Business District frame the trend was reversed.

In spite of the excellence of coverage given the various Central Business District research methods, Weiss does not escape from several traps. The most obvious is definition. How she can objectively evaluate Central Business District research procedures, without first

50 Shirley F. Weiss, op. cit., p. 19.
51 Ibid., p. 20.
clearly defining the Central Business District, is difficult to answer. Even more difficult to answer is: how can she level criticism at the research of others, who also deal with definition, when she does not present any model from which to compare. The lack of comprehensive treatment of definition reduces the impact of her arguments. However, she has made a substantial contribution to Central Business District research. Her comprehensive treatment of methods of Central Business District analysis is outstanding, as is her extensive bibliography.

John Rannells

John Rannells initiates a pilot study of changing land uses in Central Business Districts in a volume entitled The Core of the City. His study is devoted to an examination of functions found in the downtown area, their changing pattern, their locations with respect to one another, and active relationships between them. Unlike many other researchers, Rannells uses activities and establishments as basic units rather than areas.

The changing patterns of urban land use, which Rannells investigated first, are considered to result from the interplay of two elements: (1) activities, and (2) physical accommodations or structures.

An example of a system of activity is: a supermarket chain in which the executive office, the meat-buying office, the dairy warehouse, and each retail branch store are individual establishments. Physical accommodations, on the other hand, are the structures that house the activities; but vacant tracts, streets, and the like, are included also.

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53 John Rennells, op. cit., pp. V-VI.
Physical accommodations are relatively permanent; whereas patterns of activity, with their myriad interrelationships, are ever-changing. One example is the succession of establishments among available locations within the urban area.

Rannells moves from the urban area to focus on the Central Business District, which he believed to be the chief nucleus of activities for the city and the region. Here, asserts Rannells, the web of linkages between establishments and activity systems is strongest. In addition, the competition for physical accommodations is most intense. As the discussion continued, the focus narrowed again, this time to the Central Business District of Philadelphia. A mass of empirical data was collected using a system of blocks that were uniform in size; conforming to a grid superimposed, by the author, on a large scale map of the central area of Philadelphia. Various statistical techniques were employed to analyze the distribution of establishments, the different attributes of single types of establishments, and the patterns of relationships between major groups. Reliance was placed mainly on centrographic techniques and elaborations of the Lorenz Curve Analysis method, together with cartographic representation. A variety of schematic diagrams are also used as devices for summarizing relationships.

The work of Rannells, which presents numerous avenues for further study and suggests a number of ingenious analytical techniques, falls short of its intended goal. Although the objective of the author

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54 Ibid., pp. 87-88.
was to study land uses in Central Business Districts, his study was exhaustive of only the Central Business District of Philadelphia. As a consequence, many of his techniques and generalizations about the Central Business District apply only to Philadelphia and will remain tentative until they are tested on the Central Business Districts of other cities. Even though Rennells does not look beyond Philadelphia, his work, and particularly his methods, represent a new approach to Central Business District analysis and should be viewed as a significant contribution to Central Business District approach.

Eugene J. Kelley

Kelley, in his article "Retail Structure of Urban Economy," presents a new classification of elements of retail structure. He identifies and defines the following as elements of the city's retail structure:

1. Central Business District
   A. Inner core
   B. Inner belt
   C. Outer belt

2. Main business thoroughfares (string streets)

3. Secondary commercial sub-districts (unplanned)
   A. Neighborhood
   B. Community or district
   C. Suburban or outer

3a. Controlled secondary commercial sub-centers
   A. Neighborhood
   B. Community or district
   C. Suburban or outer

4. Neighborhood business streets
5. Small store clusters and scattered individual stores.
6. Controlled regional shopping centers.

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Although Kelley developed this conceptual framework with emphasis on the location of regional shopping centers, the discussion here will be limited to his treatment of the Central Business District and its three subregions. The inner core, inner belt, outer belt framework, three Central business District subregions developed by Kelley, were presented in a Commerce Department study published in 1935. The characteristics which Kelley developed for each area represents a synthesis of the ideas of many urban workers.

Function, morphology, quality, and readily observable conditions are the characteristics that Kelley uses to identify each area. The inner core, for example, is typically the point where all intracity traffic converges, the center of shopping and specialty goods activity and the home of the large department stores. In the inner belt are found communication agencies, banks, law offices, various administrative offices, and other services. The inner core and belt, claims Kelley, comprise the heart of the retail structure. Additional characteristics are also cited as a basis for separation of the inner core and belt. For example, the degree of competition for space, concentration of pedestrian traffic, intensity of retail uses, and land values are highest within the inner core. In the inner belt, in contrast, competition for space is less intense; this is reflected by

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56 Ibid., p. 417.
57 Malcolm J. Proudfoot, loc. cit.
58 Eugene J. Kelley, loc. cit.
59 Ibid.
60 Ibid.
61 Ibid.
less intensity of retail uses, less pedestrian traffic, and lower land values. In addition, the inner belt is the zone where governmental, financial, recreational, and wholesale activities are interspersed with retail uses. But regardless of the differences that exist between the inner belt and core, they comprise the heart of the retail structure. One of their specific functions is to exercise control over the manifold activities of the community. Within the outer belt, the third element of Central Business District Structure, the situation is much different. Land uses are mixed; less desirable commercial and residential structures are common. Some residential areas are run down and on the brink of becoming slums.

Kelley's work, as seen here through his conceptualization of three Central Business District zones, is excellent and reflects a commendable research effort. His syntheses of the work of others is superb. One drawback is his failure to develop a more complete set of objective criteria for the identification of each Central Business District subregion. But, since this was not Kelley's intention, this objection cannot detract from the quality of his work, because, on the whole, his division of the Central Business District, and other retail areas of the city, are a distinct contribution to Central Business District research. Furthermore, Kelley's discussion of the division of the Central Business District is one of the clearest thus far presented. It is fitting that his approach be pursued further.
Available published literature pertaining to Central Business Districts is meager when compared to many other areas of geographic research. If the myriad studies of city planners are also included then the scale is more evenly balanced. Selected planning studies were viewed, and a great imbalance in the type or nature of subjects became apparent. Most of the studies are descriptive, reflecting a parochial point of view, and generally do not follow any particular standardized approach.

An examination of the approaches suggested in the nine major works reviewed in this chapter is judged to be somewhat representative of a trend. They reflect an interest in a particular problem; focusing on a particular area. But their usefulness is limited, however, due to the varied methods of data collection and the lack of precise agreement over the meaning of terms. The work of Murphy and Vance is a notable exception to this trend. Their efforts in developing a practical, standardized method of CBD delimitation and analysis, using land-use information, has been a great contribution to the over-all field of urban research. Other researchers, such as Morgan, Johnson, Davies, Scott, and Horwood and Boyce, have successfully used the Murphy-Vance approach; testing its correlation with other approaches, and making careful evaluations. Weiss, who also evaluated many different methods of Central Business District analysis, was the most critical of the Murphy-Vance approach. But even she recognized its value, because of the ease with which it can be applied in any city. In fact, the planning agencies of many American cities such as Seattle, Kansas City, Philadelphia, and Miami, have employed the Murphy-Vance technique.
On the other hand, the fact that Davis and Rannells chose to develop their own approach should not be considered as an act of questioning the validity of the Murphy-Vance method or as a revolt against standardized methods of research. The efforts of these two men reflect an important trend in urban research; namely—the development and testing of new approaches. It is quite possible, if these conditions persist, that there will never be complete agreement on all issues. Maybe this is best, because as long as disagreement exists, the climate is favorable for experimentation, development, and presentation of new ideas.
Delimitation of the Los Angeles Central Business District on the basis of the Murphy-Vance method requires land-use mapping of an area around the Peak Land Value Intersection (FLVI) extensive enough to include everything that by any stretch of the imagination might be considered as belonging in the District. From field sheets three

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1 This section of Chapter III is based upon Raymond E. Murphy and J. E. Vance, Jr., "Delimiting the CBD," Economic Geography, Vol. 30 (July, 1954), pp. 189-222. Because their method is centered around land-use mapping, classification of functions becomes an important matter. The land-use classification used by Murphy and Vance in the field includes three major groups. These in turn are subdivided into use types, most of which are broken down still further into specific land uses. The details of the classification are as follows: 

**RETAIL BUSINESS USES.** Food: restaurants; supermarkets; general food; food specialty; delicatesse and ice cream parlors; package stores; bars and saloons; Clothing: women's clothing; men's clothing; family clothing; fur and clothing specialty; general shoe stores; men's and women's clothing; Household: furniture; hardware and appliances; dry goods, rugs, curtains; coal, oil, ice, and heeting sales; used furniture and antiques; Automotive: automotive sales; service stations and repair garages; automotive accessory, tire, and battery sales; automotive rental agencies; Variety: department stores; "5 and 10" stores; drug stores; cigar and news stores; Miscellaneous: sport, photo, hobby, toy stores; jewelry and gift stores; florist shops; book stores; office machine and office furniture stores; office supply and stationery stores; pawn shops; recreational establishments.

**SERVICE, FINANCIAL, and OFFICE USES.** Financial: banks; finance companies; insurance agencies and real estate offices; brokers, stock and others; Headquarter Offices; General Offices; Service Trades: personal service; clothing service; household service; business service; newspaper publishing; Transportation: railroad uses; bus service; air transport; water transport; trucking; Parking: customer; commercial; Transient Residence: hotels, motels, and other transient lodging.

**NON-CENTRAL BUSINESS USES.** Residential: permanent residences; rooming houses; Governmental and Organizational: governmental or public
Maps were made for Los Angeles; one of ground floor use, one of second floor use, and a third map on which the uses of the third and higher floors are generalized in such a way that the total floor areas in various uses on the third and all higher floors can be measured and recorded. Calculations from these maps form the basis for the CBD delimitation.

A fundamental element of the method is the designation of certain types of land-use occupancy as non-central business in character. These include residential, governmental and organizational, industrial, wholesaling, commercial storage, and vacancy. In contrast, all other urban land uses are considered to be central business uses.

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**offices and spaces; organizational offices and spaces; Industrial: industrial establishments; Wholesaling: wholesale establishments; Vacancy: vacant buildings, stores, and offices; commercial storage; vacant lots.**

2

The term Peak Land Value Intersection or PLVI, its abbreviation, denotes the intersection which is surrounded by blocks that have the highest land values within the downtown area. Most often this intersection is located in the heart of the retail shopping section and can be noted by a high degree of pedestrian traffic, the presence of department stores, and the better accessory shops. Both of these forms are frequently used by urban researchers.

3

The matter of classification of functions into central business and non-central business groupings centered around the criterion of retailing of goods and services for a profit and the performing of various office functions. All uses where retailing of goods and services for a profit was present (retail, financial, office, and service functions) were judged to be central business functions. Whereas, all uses where profit motive was absent and where retailing was unimportant (permanent residences, public and organizational, wholesale, industrial, functions, and vacancy) were judged to be non-central business functions.
The technique involves, also, the application of two indices. To be considered as lying within the CBD a block has to have a **Central Business Height Index (CBHI)** of 1 or more; that is, central business uses (in contrast to non-central business uses) have to average one story or more for the block. Secondly, the block has to have a **Central Business Intensity Index (CBII)** of 50 per cent or more; that is, at least 50 per cent of all floor space at all levels combined has to be in central business uses. In addition to qualifying on the bases of both of these indices, the block has to be one of a contiguous group of such blocks surrounding the PLVI.

Central Business Height and Intensity Indices, computed for blocks within downtown Los Angeles (Figure 2), make it possible to examine individual blocks which are contiguous with the PLVI and

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4 The CBHI = total central business floor space at all levels divided by ground floor area. It is expressed in stories and fractions of stories. Thus a CBHI of 8.5 means that all central business floor space in the block if spread evenly over the block would total 8.5 stories in height.

5 Murphy and Vance, *op. cit.*, p. 219. In addition, the following rules were enumerated for making special decisions:

1. Even though a block touches the others only at one corner it is considered to be contiguous.
2. A block that does not reach the required index values but is surrounded by blocks that do is considered part of the CBD.
3. A block completely occupied by governmental functions is included if it is contiguous to other CBD blocks and is not more than two blocks in depth.
4. If governmental functions occupy only a portion of a contiguous block, the block is considered as in the CBD if inclusion of governmental uses would enable the block to meet established CBHI and CBII.
finalize CBD boundaries. All blocks from the PLVI were mapped, but only those which met one or both criteria were plotted. Referring to Figure 2 one notices that the number of blocks meeting one or both indices is high around the PLVI, falls slowly for four to six blocks outward, then drops sharply. Within the Civic Center, to the north, the condition is vastly different. Only a small number of blocks meets one of the indices, and of these, only two blocks meet both.

Aside from controversies in land-use classification, the great difference in character between the CBD and the Civic Center forces yet another question to be asked concerning validity of the limiting values of the CBHI AND CBII. Perhaps, Murphy and Vance's limits should be relaxed for larger cities. Since Los Angeles is the largest city studied using the Murphy-Vance approach, it was decided that a test should be made. Two graphs (Figures 3 and 4) were constructed for use in this test.

Figure 3 shows CBII values plotted along the ordinate against a number of blocks plotted along the abscissa. Abrupt changes or "breaking points," along the curve at 38%, 53%, 64%, and 81%, might well be places where boundaries could be established. The breaks at 38% and 53% are minor, because they involve only a one block deviation from the trend. The breaks at 64% (4 blocks) and 81% (6 blocks) are more significant. Both of these points seem more objective as boundaries than does 50%, but for comparibility the 64% and 81% points will have to be tested before any alterations in the Murphy-Vance technique can be made. Furthermore, would higher limiting values produce an area compatible with the Murphy-Vance concept of the CBD, or would such values produce a "hard core?"
Figure 4
Central Business Height Indices
Los Angeles
Variation along the CBII curve gives way to uniformity along the CBHI curve (as shown in Figure 4). The most prominent break is at one floor and serves as a reasonable validation of the Murphy-Vance value in Los Angeles. More study and tests are necessary before one can say that this is applicable in all large cities.

As the CBD outline was nearing completion, several problems arose which required further investigation. One problem was Bunker Hill, a blank pocket of land between Second, Hill, and Fourth streets and the Harbor Freeway (Figure 2). During field-mapping this district was found to be dominantly an area of old single- and multiple-level wood frame homes. But prior to the completion of field-mapping the face of this area, which had been earmarked for urban renewal, began to change. Test cases cleared the courts and demolition of buildings started at a moderate rate. Many lots that were leveled remained vacant. It was decided, after discussing this situation with members of the Los Angeles Department of City Planning, not to reflect the future use of land in this area. This decision was based on the complete lack of knowledge of what the future land-use structure would be. Furthermore, there were no definite dates available concerning the completion of the renewal project. Therefore, it was decided to map this area as it exists now.

Pershing Square, surrounded on all sides by CBD blocks, presented the second delimitation problem, which was entirely different in nature than that of the first (Figure 2). The surface-use consists of a public park, which is clearly non-CBD. Beneath the park, however, is a three-level parking garage, which is clearly CBD in character.
FIGURE 5
A COMPARISON BETWEEN
THE MURPHY-VANCE AND
U.S. CENSUS CBD DEFINITIONS

- CBD (MURPHY-VANCE)
- CBD (U.S. CENSUS)
- CIVIC CENTER
The problem that arose was whether to record only the surface-use or both the surface and subsurface. After thorough examination of other studies, where similar problems arose, it was decided not to include sublevel uses. It is realized that this decision does not solve the problem, but until it is possible to measure all sublevel uses as easily as surface uses, one must continue using present methods. The Murphy-Vance CBD boundary, as shown in Figure 2, is the end product of land-use evaluation, application of CBHI and CBII indices, and the resolution of several special problems.

Additional Outlines of the Los Angeles Central Business District

It was decided to investigate further the CBD boundary as established by Murphy and Vance by comparing their boundary with others derived for Los Angeles which were based upon different criteria; such as, census data, land values, and the subjective decisions of city planners.

There are, in addition to the Murphy-Vance boundary, three others: (1) U.S. Bureau of the Census boundary; (2) Land Value boundary; (3) City Planner's boundary. Each approach, and its boundaries, merits special attention, because of the wide variance in methodology used in their derivation.

U. S. Bureau of the Census Boundary.---A new element was injected into the picture of research on the Central Business District when the U. S. Bureau of the Census, as part of its 1954 Census of Business, outlined Central Business Districts for 95 American cities (with populations of 100,000 or more) in order, "to provide a basis for comparing changes in business activity in the Central Business District
with those in the remainder of the metropolitan area of the central city."\(^6\)

The Bureau, probably because of limitations of time and funds, did not enter into a serious program of Central Business District delimitation. Instead, they enlisted the cooperation of local Census Tract Committees which were already in existence in all of the large cities of the country. The delimitation criteria, unlike that of the Murphy-Vance system, did not involve land-use mapping. The bureau contented itself with a general characterization of the Central Business District, describing it as "an area of very high land valuation, an area characterized by a high concentration of retail business, offices, theaters, hotels, and 'service' businesses, and an area of high traffic flow."\(^7\) Beyond this the procedure was in effect to ask each local Census Tract Committee to decide what Census tract or combination of Census tracts seemed to them most nearly to represent the city's Central Business District in the light of characteristics just described.

If one compares the areas outlined by the Bureau with that outlined by the Murphy-Vance method (Figure 5) differences in location of boundary lines appear. The Bureau's Central Business District is approximately 65% larger in ground floor area. Even if the Civic Center is considered as part of the Central Business District, the Census district is still 25% larger.

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\(^7\) Ibid.
Further analysis of both boundary lines helps in locating places of correspondence and deviation. The greatest correspondence occurs along the western periphery. The Bureau's boundary, which follows Figueroa Street, does not deviate from the Murphy-Vance boundary, south of Fourth Street, by more than two blocks. Deviation becomes acute along the southern and eastern perimeters where the Census line extends outward two blocks beyond the Murphy-Vance line. North of Seventh Street, at one point, the Census boundary dips two blocks inside the Murphy-Vance boundary. Another area of divergence is Bunker Hill, which is included by the Bureau and excluded by the Murphy-Vance method.

The great disparity between the two approaches can be attributed to methodology. The Census Bureau's method of outlining Central Business Districts is of little value to anyone interested in the size, shape, and structure of the Central Business District, or in any very exact comparison of Central Business Districts. In this study it was used for comparative purposes only.

Land Value Boundary. —Land values, which have been used by Murphy and Vance as an approach to Central Business District delimitation, present, possibly, a more accurate outlining tool than Census data. Various techniques of Central Business District delimitation using land valuation data were explored thoroughly by Murphy and Vance, and they found that some city planning agencies in the United States had used valuation data in defining the Central Business District of their local area. But due to lack of uniformity of approach the Central Business Districts defined in this manner were not comparable.
After further experimentation they arrived at a method of approach that could be duplicated in any city using land valuation information obtained by civil authorities. Their method involves "the use of a system of index numbers." Thus, a front-foot land value at 100-foot depth for the highest valued lot was represented by the number 100. The value of each lot was shown by the number corresponding to its percentage of value of the peak value lot. A line drawn around lots with indexes of 5 or higher seemed to best represent the edge of the Central Business District. This procedure was modified for Los Angeles in order to make use of the data that was made available by the Los Angeles Department of City Planning. A combination of land valuation and improvement data was substituted for land values. Information was then evaluated on a block basis, and a line was drawn around all blocks that had an index of 5 or higher.

The resultant boundary is compared with the Murphy-Vance boundary in Figure 6. There is little correspondence between the two except along a portion of the western and northern edges. This high degree of divergence was not expected, because in each city mapped by Murphy and Vance a high degree of similarity was found between land value and land-use boundaries. The striking contrasts found in Los Angeles may be due to the use of land and building values combined, rather than land values alone. The inclusion of building values might extend the Central Business District because of the many new and expensive office buildings that are springing up along the District's

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8 Murphy and Vance, op. cit., p. 198.
FIGURE 6
A COMPARISON BETWEEN THE MURPHY-VANCE AND 5% LAND VALUE DEFINITIONS

- CBD (MURPHY-VANCE)
- CBD (LAND VALUE)
- CIVIC CENTER
City Planner's Boundary. --The Central Business District boundary established by the Los Angeles Department of City Planning coincides more closely with the Murphy-Vance boundary than do the others (Figure 7). Close correspondence reflects, perhaps, more similarity in methodology.

In summary, the delimitation of the Central Business District is not without its problems. This fact is clear from the numerous ways in which delimitation has been attempted. However, because of greater objectivity in its application and the comparability of its findings with those of the many other studies conducted on the same basis, the Murphy-Vance method best met the needs of this study. Its value as a tool in geographic research is illustrated by the findings and comparisons presented in the next chapter.

Ruben Lovret and Carleton Block, two city planners employed by the City of Los Angeles, stated that the City Planner's boundary was derived over two decades ago as an analysis unit for future growth and land-use studies. A line was drawn around an area within the downtown where most present and future retail, office, and service functions occur. Residential, governmental, wholesale, and industrial areas were not included.
FIGURE 7
A COMPARISON BETWEEN
THE MURPHY-VANCE AND
L.A. CITY PLANNERS DEFINITIONS

- CBD (MURPHY-VANCE)
- CBD (CITY PLANNER)
- CIVIC CENTER
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CHAPTER IV

LAND USE: PROPORTIONS, PATTERNS, AND ASSOCIATIONS

The face of Los Angeles' CBD is constantly changing. With new buildings being constructed along the periphery, parking lots replacing demolished buildings, and businesses dying or shifting location, it is impossible to finalize a CBD boundary for more than an instant. It is, however, possible to achieve a meaningful view of the outstanding characteristics of the CBD's land use structure by analyzing three elements of land use: (1) land use proportions, (2) land use patterns, and (3) land use associations.

LAND USE PROPORTIONS

Los Angeles\(^1\) varies enormously from other cities whose CBDs have been studied. Population is an outstanding example. Los Angeles' population (2,479,015 in 1960)\(^2\) is nearly twenty times larger than the average city already studied on the basis of the Murphy and Vance technique (a list of these cities is presented in Tables 1 and 2).

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\(^1\) Maps and tables, which are found in this section, include data and outlines of the Civic Center. The main reason for their inclusion is academic. Several authors, whose works were reviewed in Chapter II of this thesis, feel that governmental and organizational activities, which Murphy and Vance judged to be non-CBD in character, occur with such frequency within the CBD that maybe they should be included as central business activities. The second set of figures for the CBD and Civic Center (Tables 1 and 2) are a result of thinking along these lines.

<table>
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<th>Land Uses</th>
<th>Los Angeles (1)</th>
<th>Orange (2)</th>
<th>Citrus (3)</th>
<th>Strike (4)</th>
<th>Stockton (5)</th>
<th>Berkeley (6)</th>
<th>Portland (7)</th>
<th>Seattle (8)</th>
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<tr>
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<td>1.6</td>
<td>1.9</td>
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<td>1.9</td>
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<td>Transportation</td>
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<td>0.2</td>
<td>0.2</td>
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<td>1.4</td>
<td>1.6</td>
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</tr>
</tbody>
</table>

1 - Los Angeles (1) 2 - Los Angeles (2) 3 - Citrus (3) 4 - Strike (4) 5 - Stockton (5) 6 - Berkeley (6) 7 - Portland (7) 8 - Seattle (8) 9 - Average (9)
### TABLE 2

**COMPARISON OF CBD LAND USES OF SELECTED U. S. CITIES**

<table>
<thead>
<tr>
<th>LAND USES</th>
<th>Chicago-Philadelphia</th>
<th>Kansas City</th>
<th>St. Louis</th>
<th>Cleveland</th>
<th>Cincinatti</th>
<th>Detroit</th>
<th>Atlanta</th>
<th>Charlotte</th>
<th>Miami</th>
<th>Houston</th>
<th>San Antonio</th>
<th>Los Angeles</th>
<th>Phoenix</th>
<th>Tucson</th>
<th>Denver</th>
<th>Salt Lake City</th>
<th>Seattle</th>
<th>Portland</th>
<th>Los Angeles-Long Beach</th>
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<tbody>
<tr>
<td><strong>SERVICE, FINANCIAL, AND OFFICE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Financial</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank</td>
<td>1.6</td>
<td>1.4</td>
<td>3.6</td>
<td>1.1</td>
<td>1.1</td>
<td>2.5</td>
<td>0.8</td>
<td>1.7</td>
<td>1.0</td>
<td>1.8</td>
<td>1.4</td>
<td>2.1</td>
<td>1.1</td>
<td>1.9</td>
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<td>0.7</td>
<td>0.5</td>
<td>0.1</td>
<td>0.7</td>
<td>0.2</td>
<td>0.6</td>
<td>0.6</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance, real estate, &amp; finance</td>
<td>0.1</td>
<td>0.1</td>
<td>0.9</td>
<td>1.2</td>
<td>0.8</td>
<td>1.6</td>
<td>0.6</td>
<td>0.8</td>
<td>0.4</td>
<td>1.0</td>
<td>0.3</td>
<td>0.8</td>
<td>0.5</td>
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</tr>
<tr>
<td>Brokerage &amp; stock exchange</td>
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<td></td>
<td></td>
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<td>1.9</td>
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<td>1.1</td>
<td>1.5</td>
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<td></td>
<td></td>
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<td>38.4</td>
<td>70.1</td>
<td>52.4</td>
<td>49.4</td>
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</tbody>
</table>

**1 - Los Angeles CBD 2 - Los Angeles CBD + Civic Center 3 - All figures are expressed in percent * - less than 0.1 \( \text{**} - \text{not present}**
Also, the city of Los Angeles, with an area of 458 square miles,\(^3\) is fifteen times larger than the average area of 30.5 square miles of the cities delimited by Murphy and Vance.\(^4\) The scale factor holds even when sizes of CBDs are compared. Los Angeles, with a 1000.86 acre CBD, far exceeds the Murphy-Vance average of 115.9 acres.\(^5\) CBD areas of other large cities, such as Cleveland, Ohio (180 acres);\(^6\) Kansas City, Missouri (114.2 acres);\(^7\) Sidney, Australia (175 acres), and Melbourne, Australia (182 acres),\(^8\) also are low when compared to Los Angeles.

Non-Central Business Activities

The first step in this analysis of land-use proportions is a consideration of the space occupied by each of the major land-use divisions, the Central Business and Non-Central Business groups, respectively. Non-Central Business functions, which account for nearly twenty per cent of all space within the Los Angeles CBD, fall below the average computed for 16 American cities (Tables 1 and 2). In fact,

---


\(^5\) Ibid.


\(^7\) Kansas City, Missouri City Planning Commission, *Fifteen Years of the Central Business District* (Kansas City, Mo.: City Planning Commission, June 1960), p. 16.

Los Angeles appears in a group of eight cities all with CBDs which have below average percentages of space devoted to non-CBD uses. One explanation of why the proportion of non-Central Business space is low in Los Angeles is revealed by examining the amount of space devoted to each of the types of land-use presented in Tables 1 and 2. Of importance is the observation that when the amount of non-CBD space of a city is below average, the amount of space in governmental and organizational uses also tends to be low. In Los Angeles, this relationship supplies a significant explanation because the public and organizational uses are concentrated in the Civic Center and are not scattered throughout the CBD. As was pointed out in the preceding chapter, the Civic Center is excluded from the CBD by the Murphy and Vance delimitation method. The consequence of this finding is magnified by the fact that Los Angeles does not deviate markedly from the average in the proportion of total space devoted to the other non-Central Business land uses; namely, permanent residences, industry, wholesaling, and vacancy.

(October, 1959), pp. 290-334.

9 The following cities comprise the below average group: Los Angeles, Cleveland, Kansas City, Oakland, Phoenix, Tacoma, and Tulsa. For a more detailed presentation of data on these, and other cities, see Tables 1 and 2. Cities with above average non-CBD space are: Worcester, Mobile, Grand Rapids, Salt Lake City, Sacramento, Long Beach, Richmond, and Seattle.

10 If an understanding of decisions involving inclusion or exclusion of certain uses as CBD functions is desired, then the reader should refer to discussions presented on p. 31 in this thesis.
Searching for additional facts, in explaining below average non-CBD space within the Los Angeles CBD, led to the examination of relevant variables such as the city's age, population, and regional location. The city's age, the first variable investigated, appeared not to be an important factor in accounting for both above and below average CBD space. When all the cities (listed in Tables 1 and 2) were separated into two groups — young and old — the following relationship was discovered. All "young" cities with one exception (Long Beach) had below average non-CBD space. All "old" cities with three exceptions (Los Angeles, Kansas City, and Oakland) had above average non-CBD space.

The role of population, the second factor examined as an indicator of non-CBD space, is difficult to assess as the majority of the cities examined were middle-sized to small. But, on the basis of this incomplete group, an inverse relationship between population and non-CBD space was found. Specifically, cities such as Los Angeles and Cleveland, with large populations, had below average non-CBD space. Cities with small populations, such as Mobile and Grand Rapids, had above average non-CBD space (Tables 1 and 2).

Separation of cities listed in Tables 1 and 2 into two groupings (young and old) on the basis of age was accomplished by ranking the cities on the basis of age and by distinguishing "breaks;" only the results are presented here. The year 1852 appeared to be the most prominent break and, therefore, was used as the dividing point in the classification. The following constitute the young city category: (1) Long Beach (1890), (2) Cleveland (1814), (3) Phoenix (1871), (4) Roanoke (1884), (5) Tacoma (1883), and Tulsa (1902). The remainder of cities listed in Tables 1 and 2 are classified as old cities: (1) Mobile (1702), (2) Worcester (1722), (3) Los Angeles (1781), (4) Kansas City (1838), (5) Grand Rapids (1850), (6) Richmond (1742), (7) Sacramento (1850), (8) Salt Lake City (1852), (9) Oakland (1852).
location, unlike the other factors, was found not to be a factor in explaining above and below average non-CBD space.

Central Business Activities

Los Angeles, with 85 per cent of its CBD devoted to central business activities, has one of the highest central business intensities of any American city studied using the Murphy-Vance approach.

In the financial-office-service segment, Los Angeles outranks all other cities, 70.1 per cent of the total floor space of its CBD carrying on such tasks (Tables 1 and 2). Office uses, which account for nearly three-quarters of this space, are the most significant single gauge of the importance of the financial-office-service activities. Office uses are also important gauges of the importance of financial-office-service activities in Cleveland, Oakland, and Tulsa (Tables 1 and 2).

Within the office space category there seems to be great variation among space devoted to headquarters offices and general offices. Although three cities, previously mentioned, all have high percentages of office space, there is an uneven division between headquarters and general offices. Space is unequally divided in Los Angeles, also. Headquarters offices account for 21.7 per cent of all space; general offices, for 18.8 per cent (Tables 1 and 2). Though these figures are above the mean for both general and headquarters offices (Table 1), they are somewhat in reverse of what was expected. For example, general offices are shown to occupy twice as much space as headquarters offices. This trend is reversed in Los Angeles and Richmond, because their CBDs are the homes of many branch offices of major American firms. Seattle
and Cleveland might have a similar condition, but headquarters offices have been located in other large cities within each region.

Financial space, contrary to expectations, was slightly below average in Los Angeles (Table 1). This is rather interesting, because one scholar has classified Los Angeles as a financial city. Perhaps a clearer picture can be established if both relative (percentage) and absolute (acres and square feet) figures of financial space within the Los Angeles CBD are investigated further. In the first instance, relative figures are somewhat deceiving, because they are expressed in percentage values. Although 2.7 per cent of the CBD is devoted to financial functions, which is below the mean of 3.2 per cent (Table 1), one must continue a step further in order to grasp the full significance of these numerical statements. If absolute figures are examined (Table 3), Los Angeles' CBD financial space is shown to be 27 acres or 1,177,000 square feet. This is considerably larger than the absolute figure of 4.5 acres or 196,000 square feet calculated for the average city in Table 1. If the two sets of absolute figures are compared

12
Howard J. Nelson, "A Service Classification of American Cities," Economic Geography, Vol. 31 (July, 1955), pp. 189-210. Nelson's classification is based on the entire city and not on any part. In addition, his classification is based on employment figures. Los Angeles was classified as a financial city because the percentage of persons employed in financial occupations was above an average calculated by averaging the mean values for many American cities.

13
Murphy and Vance, "A Comparative Study of Nine Central Business Districts," loc. cit. The average gross area of the nine CBDs is listed as 115 acres. This value was used as the average CBD area for cities appearing in Table 1. Although this figure does not reflect the areas of Cleveland's and Los Angeles' CBD, it is judged to be reasonable for the purposes intended here: to compute the area in acres and square feet for the average financial space within the average-size CBD as shown in Table 1. The product of these numbers is shown above.
TABLE 3

LAND USE INVENTORY

CENTRAL BUSINESS DISTRICT - CIVIC CENTER

LOS ANGELES, CALIFORNIA

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Central Business District</th>
<th>Civic Center and Central Business District</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square Feet</td>
<td>Acres</td>
</tr>
<tr>
<td>A - Automotive</td>
<td>92,700</td>
<td>2.13</td>
</tr>
<tr>
<td>CA - Clothing</td>
<td>1,132,000</td>
<td>26.00</td>
</tr>
<tr>
<td>FA - Food</td>
<td>674,000</td>
<td>15.40</td>
</tr>
<tr>
<td>H - Household</td>
<td>315,000</td>
<td>7.23</td>
</tr>
<tr>
<td>V - Variety</td>
<td>1,519,000</td>
<td>34.90</td>
</tr>
<tr>
<td>M - Miscellaneous</td>
<td>1,230,000</td>
<td>28.20</td>
</tr>
<tr>
<td>Σ RETAIL</td>
<td>4,962,700</td>
<td>112.56</td>
</tr>
<tr>
<td>B - Financial</td>
<td>1,177,000</td>
<td>27.00</td>
</tr>
<tr>
<td>EA - General Office</td>
<td>8,200,000</td>
<td>188.20</td>
</tr>
<tr>
<td>O - Headquarters Office</td>
<td>9,450,000</td>
<td>216.80</td>
</tr>
<tr>
<td>T - Business Service</td>
<td>1,752,000</td>
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<tr>
<td>R - Transportation</td>
<td>677,600</td>
<td>15.50</td>
</tr>
<tr>
<td>LA - Transient Residence</td>
<td>3,690,000</td>
<td>84.70</td>
</tr>
<tr>
<td>P - Parking</td>
<td>5,610,000</td>
<td>128.60</td>
</tr>
<tr>
<td>Σ FINANCIAL OFFICE SERVICE</td>
<td>30,556,800</td>
<td>701.20</td>
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<td>G - Public and Organizational</td>
<td>2,152,000</td>
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<tr>
<td>D - Permanent Residence</td>
<td>1,225,000</td>
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</tr>
<tr>
<td>W - Wholesale</td>
<td>1,022,000</td>
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<tr>
<td>I - Industrial</td>
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<td>X - Vacant</td>
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<td>75.00</td>
</tr>
<tr>
<td>Σ NON-CBD</td>
<td>8,093,000</td>
<td>185.60</td>
</tr>
<tr>
<td>Σ CBD</td>
<td>35,519,500</td>
<td>813.05</td>
</tr>
</tbody>
</table>
again, financial space, as measured in the Los Angeles CBD, can be reviewed clearly. One sees that although Los Angeles has a smaller percentage of CBD space devoted to financial functions than all the other cities, it has considerably more financial space in terms of acres and square feet.

Another explanation for Los Angeles' CBD having slightly below average financial space can be found by examining the individual uses, which account for the greatest space within this category. It can be seen from Table 2 that a close relationship exists between banking, the largest space user in the group, and above and below average financial space. For example, in Long Beach, Oakland, Phoenix, Richmond, Sacramento, and Worcester, all cities with above average banking space, space within the financial category is also above average; but in Los Angeles and other cities that are below average in banking space, financial space is also below average (Table 2).

The amount of space devoted to service activity, unlike financial space, is slightly above average in Los Angeles' CBD (Table 3). Two uses that occupy the most space within the service classification are personal service and newspaper publishing. These uses, which are important in Los Angeles, and in all other CBDs, appear to be germane to all CBDs. The entire compliment of service uses are outstanding in most CBDs by virtue of the tremendous concentration of persons involved in working or shopping in the downtown during the day. Barber shops, beauty salons, gymnasiums, and shoe shine parlors are nearly ubiquitous in downtown Los Angeles. Newspaper publishing plants, somewhat unlike other service uses, may be operating in CBD locations that have been rendered obsolete by modern advances in technology.
With high land values, high taxes, keen competition for land, traffic congestion and the rise of suburban newspapers, perhaps the CBD is not the best site for a major newspaper, but because of the accessibility of certain types of face to face relationships, which are very important in this business, metropolitan newspaper publishing remains in the CBD.

Parking, which is above average in downtown Los Angeles, is one use which seems to have little relationship with size of the CBD or population of the city (Table 1). Cleveland, for example, is a city with nearly one million inhabitants; yet it has the lowest percentage (5.2 per cent of the CBD) of parking space (Table 1). One would expect that Cleveland, with above average office space, would be outstanding in parking space, also. Possibly there are many sublevel parking garages in the CBD which were not recorded in the Murphy-Vance land-use mapping procedure. Maybe other factors, such as location, city's age, transportation facilities, and number of workers per ground floor area, should be investigated. Location could be important; all cities with above average parking space are western cities, where population densities are lower than those in the East. Furthermore, lower population densities, particularly in the West, generally reflect a poor public transportation system and greater dependence upon the

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13 The following cities, western in location, had above average parking space: Los Angeles, Oakland, Salt Lake City, Long Beach, and Kansas City. Parking space in each of these cities seems to have little relationship with any particular type of land use.
automobile. A city's age is another consideration. Most "young" western cities have been born during the automobile era and are geared to the car; whereas many "older" eastern cities were built prior to the automobile and, until recently, were geared more towards mass public transportation.

Transient residence, another of the service uses, falls slightly below the average in Los Angeles' CBD (Table 1). The same is true in Cleveland, which would seem to indicate a close, inverse relationship between size of population and transient residence. Size of population does not seem to be a decisive factor. Salt Lake City and Mobile are both small in population and transient residence space.

As one scans over all the uses in the financial-office-service grouping (Table 1) it becomes apparent that Los Angeles has the greatest percentage of space (70.1 per cent) occupied by such uses. Cleveland, which is next with 60.1 per cent, is similar to Los Angeles in some respects and unlike it in others. Both have high percentages of office space, but differ in parking space. The trend seems to be that abundant office space is indicative of abundant space in the financial-office-service group.

Retail space, within downtown Los Angeles, is less abundant than either financial-office-service or non-CBD spaces (Tables 1 and 2); Los Angeles has the lowest percentage of retail space of any city presented. Cleveland, with 21.2 per cent of its CBD devoted to retail

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14 Some western cities are exceptions to this generalization and have public transportation systems comparable with those found in "older" eastern cities. Seattle and San Francisco are two.
businesses, is the second lowest. With both cities being above average in office space, it would appear that a close tie exists between office and retail space—when one is high the other is low. This relationship can be partially explained by the fact that as cities experience suburban development virtually all retail functions tend to become highly decentralized, while office functions, especially the headquarters operations, are only now beginning to decentralize on a scale approaching that exhibited by retail trade over the past twenty years.15

Examination of individual retail uses and comparison to mean values show that Los Angeles is below average in all retail uses by almost 100 per cent (Table 1). In some categories the differences are even greater. Such subordinance of retail space in Los Angeles' CBD might be indicative of a number of conditions. One condition, as indicated by land-use percentages (Tables 1 and 2), is the dominance of the financial-office-service segment. Population might be a second factor. In cities with large populations retail space takes the same amount or proportion of space as in a small city because large department stores, which are major retail space users, are highly flexible and can accommodate the needs generated by increased population without requiring additional space. For example, all of the major department stores in downtown Los Angeles have been in the same location, within the same buildings, since the 1920s. Furthermore, as suburbs develop farther and farther from the CBD, it is less convenient to shop downtown when a major shopping center—miniature CBD—is within

minutes of one's home. 16

Even though Los Angeles does not have nearly the percentage of CBD retail space of many small cities, it is interesting to compare absolute values (Table 3). Los Angeles has 113.86 acres of retail space within the CBD. This is almost twice as much floor space as is found in the entire CBD of Tacoma, Washington, which had the highest percentage (39.5 per cent of 67.8 acres) of retail space of any city listed in Tables 1 and 2. This is the most notable limitation of percentage figures, which are outstanding in indicating the relative importances of one function as compared with another.

GENERAL LAND-USE PATTERNS

"It is a matter of common observation that the Central Business District (CBD) of the American city is not a uniform area." A view of downtown Los Angeles confirms this (Figures 1 and 8). Tall buildings and pedestrian and vehicular traffic appear near the center, with building heights and congestion diminishing toward the outer margins. This picture is further complicated by skyscrapers which are beginning

17 Murphy and Vance, op. cit., pp. 313, 333. One can, using the total CBD gross floor space given for nine cities (page 303), and the percentage breakdown of CBD uses (page 333), compute the absolute space for each use within the CBDs of each city cited. Most of the cities examined in this study were studied by Murphy and Vance and, hence, the statistics are applicable in this thesis.
18 Ibid., p. 303.
19 Murphy and Vance, "Internal Structure of the CBD," op. cit., p. 21.
FIGURE 8. Oblique aerial view of downtown Los Angeles as viewed from west of the Harbor Freeway. East-west streets passing over or under the freeway are (from right to left): 8th, 7th, Wilshire, 6th, 5th, 4th.
to grow along the south and west borders of the CBD. In all likelihood, many workers in downtown Los Angeles are also aware of the clustering of certain types of activities into districts. Perhaps the department store area comes to mind first. Also present are the financial, governmental, and garment districts. These elements, and others, such as building heights, CBHIs, CBIIs, land values and land uses, which constitute what Murphy and Vance and others term "the structure of the CBD," will be considered below.

There are a number of areal frameworks that can be utilized in the analysis of elements of Central Business District structure. Murphy and Vance, Scott, and Rannells, for example, have each advanced different frameworks. Murphy and Vance established four distance zones, each 100 yards wide. The zones are concentric, begin at the PLVI, and extend outward in all directions. Scott distinguished and investigated land use within an inner retail node, outer retail node, and office zone, but failed to include criteria by which comparable zones could be developed by other workers in other cities. Rannells, however, used a different approach and established a rectangular grid pattern, which he superimposed over the central area of Philadelphia. Although he achieved uniformity of analysis, he faced

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21 Murphy and Vance, op. cit., pp. 21-46.
22 Peter Scott, op. cit., p. 292.
difficulties brought about by irregular street patterns. Of the three approaches, the method developed by Murphy and Vance was adopted because it appeared to best meet the purposes of the thesis, was the most practical in terms of time available, and was logical in application.

ANALYSIS OF CBD STRUCTURE BY DISTANCE ZONES

Central Business Height and Intensity Indices

Central Business Height and Intensity Indices, which were developed in the delimitation of the Los Angeles CBD, were re-examined in the context of distance zones (Figure 9). Height Indices within the first distance zone ranged from 5.0 to 12.1 floors of central business uses, and were greater than anywhere else in the CBD. Moving outward to the second zone, CBHIs dropped to between 5.0 and 0.0 floors. Only one block in the second distance zone had a CBHI which compared with those in the first zone. Intensity Indices followed the same trend, dropping from a range of 67 per cent to 100 per cent in Zone I to a range of 0 per cent to 100 per cent in Zone II (Figure 9). The decline was equally distinct in the third distance zone, where CBHIs fell as low as 1.0 per cent. This drop was partially explained by lower building heights, and the decreasing competition for space. 24

INTENSITY INDICES

FIGURE 9

ZONE | CBHI RANGES | CBHII RANGES
--- | --- | ---
1 | 12.1 - 5.0 | 100 - 67 %
2 | 12.1 - 0.0 | 100 - 0 %
3 | 12.1 - 1.0 | 100 - 27 %
4 | 12.1 - 0.1 | 100 - 1 %
Business Intensity Indices, on the other hand, decreased moderately in the second and third zones. This indicated that building heights were shrinking, and not the central business land uses were rapidly being replaced by non-central business activities. In the fourth 100 yard zone CBHIs continued to drop drastically, to as low as 0.1. Central Business Intensity Indices, by contrast, maintained a conservative average of 67 per cent which was still slightly above the CBD qualification level. Viewing the CBHI as the vertical dimension, and the CBII as the horizontal dimension, it was apparent that acute changes had taken place only in the vertical dimension within the CBD.

Land Values

Land values declined outward from the 100 per cent district encircling the PLVI (Figure 10). Values remained above 62 per cent of the peak block in Zone I (Figure 10). In Zone II, 100-200 yards from the PLVI, land values of from 30 per cent to 61 per cent attested to the diminishing intensity of competition for space. In Zone III competition for space continued to decline and was reflected in lower land values which dropped to as low as 8 per cent of the peak block (Figure 10). The trend continued into Zone IV, where land values reached a low of 1 per cent.

25 The following information relating to the PLVI was obtained from members of the Los Angeles Department of City Planning as a result of an oral interview. The PLVI is located at the intersection of Seventh Street and Broadway which is two blocks west and one block north of the geographic center of the CBD.
Land Use

Using once more the distance zone framework developed by Murphy and Vance, the analysis concentrated first on horizontal variations in land use, then on vertical variations, and lastly on the CBD as an evolving three dimensional region. The analysis of each distance zone was built around a consideration of the three broad land use categories: namely, Retail trade, Financial-Office-Service activities, and Non-Central Business uses.

Zone I: The First 100 Yards

Land utilization was very intense in the first zone. Competition was keen, and not all types of functions were strong competitors for ground floor locations. This was clear to shoppers who found the street level monopolized by retail uses. Financial-office-service and non-CBD uses, on the other hand, had to struggle in order to keep a meager share of surface-space.

Retail Uses. --Retail uses attained their acme in Zone I, and controlled 22.4 per cent of all space (See Figure 11 and Table 4). Food stores, which accounted for 2.5 per cent of the space within Zone I, commanded their most important relative position. Restaurants, small "short order" stands, bars, and specialty food stores were ubiquitous. Delicatessens, "corner groceries," and supermarkets were not found within this zone. Clothing stores, which displayed their greatest

26 See Figure 11 to establish the percentage of total floor space within a particular distance zone occupied by a specific land use category, and see Table 4 to determine the relative rank order occupied by various types of land uses by distance zones. This form of analysis will be used between pp. 66 and 77.
LAND USE ANALYSIS
LOS ANGELES CENTRAL BUSINESS DISTRICT

FIGURE 11

ZONE I
ZONE II
ZONE III
ZONE IV

LAND USE IN PERCENT (ALL FLOORS)

100
90
80
70
60
50
40
30
20
10
0

LAND USE IN PERCENT

M- Miscellaneous
C- Clothing
F- Food
V- Variety
H- Household
A- Automotive
P- Parking
B- Financial
T- Business Service
O- Headquarters
Office
R- Transportation
LA- Transient Residence
E- General Office
G- Public and Organizational
X- Vacancy
W- Wholesale
D- Permanent Residence
I- Industrial

1- RETAIL USES
2- FINANCIAL, OFFICE, SERVICE USES
3- NON-CBD USES
## Table 4

**Relative Rank-Order of Space Occupied by Various Types of Establishments by Distance Zones**

<table>
<thead>
<tr>
<th>Use Categories</th>
<th>Distance Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Retail Business Uses</strong></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>1</td>
</tr>
<tr>
<td>Clothing</td>
<td>1</td>
</tr>
<tr>
<td>Household</td>
<td>3</td>
</tr>
<tr>
<td>Automotive</td>
<td>n.r.</td>
</tr>
<tr>
<td>Variety</td>
<td>1</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>4</td>
</tr>
<tr>
<td><strong>Service, Financial, Office Uses</strong></td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td>1</td>
</tr>
<tr>
<td>Service Trades</td>
<td>3</td>
</tr>
<tr>
<td>Headquarters Office</td>
<td>4</td>
</tr>
<tr>
<td>General Office</td>
<td>1</td>
</tr>
<tr>
<td>Transportation</td>
<td>n.r.</td>
</tr>
<tr>
<td>Parking</td>
<td>4</td>
</tr>
<tr>
<td>Hotel (transient Residence)</td>
<td>n.r.</td>
</tr>
<tr>
<td><strong>Non-CBD Uses</strong></td>
<td></td>
</tr>
<tr>
<td>Permanent Residence</td>
<td>n.r.</td>
</tr>
<tr>
<td>Public and Organizational</td>
<td>4</td>
</tr>
<tr>
<td>Industrial</td>
<td>3</td>
</tr>
<tr>
<td>Wholesale</td>
<td>2</td>
</tr>
<tr>
<td>Vacancy</td>
<td>1</td>
</tr>
</tbody>
</table>

n.r. - Not Represented

a - Approximately equal
relative strength, occupy 7.3 per cent of the space. High priced exclusive men's and women's shops, with attractively decorated display windows, were found nearest the PLVI commanding many corner locations adjacent to large department stores. Specialty clothing shops were more numerous in this zone than general outlets, such as "Army-Navy" surplus stores.

Some retail uses were of minor significance, while others were of major importance. Household stores, for example, dealing in furniture, hardware, appliances, dry goods, heating and cooling sales, displayed next to their lowest importance (Table 4). Automotive uses on the other hand, were not even recorded. Variety stores, in contrast, attained their highest relative importance by occupying 12.1 per cent of all space, and led all other retail uses in space occupied. Department stores, which dominated corner locations, were the most important among variety sales uses. Drug stores which were second in importance also gravitated toward corners; whereas, "5 and 10" stores occupied mid-block locations and were subordinate in importance. In general, "5 and 10s" have taken merchandizing positions intermediate between department stores and specialty or appliance stores. Price was still a major point of separation among "5 and 10s," variety, and appliance stores. Generally prices were more reasonable in the "5 and 10s" (where it was commonplace to find furniture, clothing, appliances, and an assortment of other items). Cigar and news stands, included within the variety store classification were ubiquitous and appeared in lobbies of multi-stored buildings. But because of the small size of these shops the total space which they occupy is not indicative of their frequency.
Miscellaneous uses were relatively least important in Zone I; however, specific activities such as jewelry and gift shops were almost as widespread as cigar and newsstands.

Financial-Office-Service and Related Uses. 27 This group made their poorest showing within the first distance zone (Figure 11 and Table 4). Many individual uses occupied comparatively little space, indicating an inability to compete for high-priced land and locations where maximum shopper accessibility occurred. Transportation and hotel businesses were absent. Parking and headquarters offices made their poorest relative showing. Service trades also exhibited an inability to compete for close-in locations, and found Zone I the next to least zone in relative importance. Financial uses, an anomaly in the financial-office-service group, displayed their greatest strength in this zone. The presence of banks and brokerage firms gave clear evidence of the importance of financial uses. General offices shared the gravitation for close-in locations, and appeared strongest within this zone.

Non-Central Business Uses.—Non-central business uses, which showed their next to lowest relative importance within this zone were poor competitors for space (Figure 11, and Table 4). Permanent residences were lacking completely, and public and organizational uses were only

27 The following activities were included by Murphy and Vance in their financial-office-service category (for a more detailed enumeration of uses within this segment see the land use classification presented on p. 30 of this thesis): financial, headquarters offices, general offices, service trades, transportation, parking, and transient residence. Each of these functions will be treated under the financial-office-service heading in the following discussions.
barely represented. Industrial uses were slightly more competitive, preferring Zone I ahead of only one other zone. Small to medium garment manufacturers, occupying upper floors of buildings were the most representative industrial establishments. Wholesale concerns, accounting for 3.4 per cent of all Zone I space, preferred the location above all other zones except the second. Garment distributors, directly associated with the nearby garment manufacturers were the most specific wholesale use. Vacancies, occupying 10.4 per cent of all Zone I space, found no other zone as attractive.

Zone II: The Second 100 Yards

All three broad land use categories preferred Zone II second to any other zone (Figure II, and table 4). Retail uses, accounting for 17 per cent of this zone's space, found it slightly less attractive than Zone I. Establishments preparing and serving food accounted for 1.4 per cent of the space, and preferred this zone least of all. The lack of both shoppers and office workers could be an important factor in explaining the rapid drop-off in food establishments between Zones I and II. Clothing, in direct contrast to food stores, found Zone II second in importance only to Zone I. Such stores accounted for 4.6 per cent of the space, and found the area of secondary importance. Automotive uses, as in Zone I, could not be found in Zone II. Variety stores accounting for 7.6 per cent of all space dropped in importance. This demonstrated how the most competitive retail uses diminish in frequency as distance from the PLVI increased. Miscellaneous uses showed a reversal by advancing from its worst position in Zone I, to its second position in Zone II.
Financial-Office-Service and Related Uses.--While the position of retail uses became weaker, the position of most land uses within the financial-office-service group increased (Figure 11 and Table 4). Service trades showed a remarkable advance; moving from third, its next to the weakest position, to first, its strongest position. This drastic change might well reflect locational preferences for sites a short distance from the PLVI that are most accessible for offices and other businesses. Headquarters offices showed a gain in importance; moving from its weakest to next to weakest position (Figure 11 and Table 4). Although this is not a spectacular gain, it does represent an inability to compete for close-in sites.

The strength of the remaining uses, among the financial-office-service category, was varied. Parking lots gained in importance, moving from fourth to third. While transient residences, occupying 6.4 per cent of all space, nearly found their acme (Figure 11 and Table 4). Transportation firms occurred for the first time, capturing 0.4 per cent of all space. The responses of general offices and financial businesses, unlike the previous uses, declined, moving from their strongest positions to next to strongest positions (Figure 11 and Table 4).

Non-Central Business Uses.--Non-central business uses did not decline in importance, as did many individual uses within the retail and financial-office-service segments, but increased in importance, finding Zone II second-most attractive. Wholesale uses, concentrated to the east and south of the PLVI, showed their greatest relative importance. A gain in relative importance was noted in public and organize-
tional space, which moved from fourth to third place (Figure 11 and Table 4). Vacant space, which lacked the vigor of governmental uses, fell from primary to secondary importance, imitating the trend of retail uses. Industrial activities declined, moving from next to lowest to lowest in relative importance, while permanent residence did not occur.

Zone III: The Third 100 Yards

Retail Uses.--Retail functions continued their slow decline, moving from secondary to tertiary importance (Figure 11 and Table 4). Several uses; namely, miscellaneous, automotive, and clothing sales showed slight gains. The gain in importance in miscellaneous uses, which moved from secondary to primary was noteworthy, so too is the gain in importance of automotive uses, which rose from unrecorded to secondary importance. All other retail activities continued to decline (Figure 11 and Table 4).

Financial-Office-Service and Related Uses.--This group of uses attained its acme within Zone III (Figure 11, and Table 4). Component uses such as transportation, transient residences, and headquarters office functions reached their highest relative importance. Service trades, and financial and general office activities, by contrast, declined to their lowest and next to lowest importance.

Non-Central Business Uses.--Non-central business uses, in direct opposition to financial-office-service uses, showed their lowest relative importance in Zone III (Figure 11 and Table 4). This condition
may be associated with the inability of non-CBD uses to compete with financial-office-service uses, which are dominant in this zone. Industrial, permanent residence, and public and organizational activities, however, were the only non-CBD activities that were able to compete successfully for space. Industrial uses, for example, changed markedly by moving from their lowest to strongest position. Permanent residence, which could not be found within Zones I and II, showed an upswing to secondary importance. Furthermore, permanent residences were in older well-maintained buildings (where often only a stairway or small lobby was visible to pedestrians from the street). Perhaps one of the most difficult qualities to measure was the amount of space devoted to transient uses as opposed to permanent uses. An occasional question often proved embarrassing. For example, two old prosperous hotels were investigated more fully and it was found that over 60 per cent of all space was occupied by permanent occupants. This query was not allowed to alter the method of land-use measurement, however. One thing interviews indicated was: space devoted to transient residences may actually be much higher than recorded values. Public and organizational space did not offer such problems in measurement; they attained a secondary position in importance. Vacancy and wholesale changed, falling from stronger to weakest and next to weakest positions, respectively.

28 A technique that was developed to test the accuracy of permanent residence space involved the use of U. S. Census of Population data. The population for an area roughly coterminate with the CBD was divided into the total permanent residential space. The result was 74 square feet per individual, a figure that seems far too low; which could indicate a discrepancy in the Murphy-Vance mapping procedure.
Zone IV: The Fourth 100 Yards

Retail Uses.--Retail Activities, which were relatively most important in the first distance zone and declined in subsequent zones, found their lowest relative importance in Zone IV. Existing conditions, such as lack of pedestrian traffic and lack of focal position, made it difficult for intensive retail activities to operate successfully and establish a solid foundation. Variety and miscellaneous functions, which attained their lowest and next to lowest relative positions, respectively, in this zone, are good examples of this trend. Automotive, household, and clothing sales did not follow this trend. Both automotive and household sales activities were most important in this zone, because of their need for sizeable quantities of display space and inability to afford the high rents in zones closer to the PLVI. Clothing sales, which also was important in the fourth distance zone, is more difficult to explain. Although it is an intensive retail use, and most important in Zone I, it is second-most important here, because of its close association with manufacturing. Generally the clothing shops were small ready-to-wear establishments (which are outlets for the products of the neighboring garment manufacturing industry). Food stores, which moved from tertiary to secondary importance, reflect a different trend. With most of the permanent residents in the CBD concentrated near its edge, and rental prices low, food stores find it difficult to locate elsewhere. Furthermore, the increase, in importance, of headquarters offices enhances the position of customer-oriented food stores.
Financial-Office-Service and Related Uses.--Positions of dwindling importance are also noted in many financial-office-service functions (Figure 11 and Table 4). Although headquarters offices and parking lots attained their most important positions, most other uses were less successful. Service trades, which exhibited secondary strength, were much like parking and headquarters offices, and reflected an affinity for lower land values and more peripheral locations.

Financial, general offices, transportation, and transient residence did not share the same locational preferences. Financial and general office functions, for example, showed their weakest positions. Transportation activities, which declined from first to second in relative importance, did not find conditions so unappealing.

Non-Central Business Uses.--Non-central business uses, in general, displayed their greatest affinity for space within the fourth distance zone (Figure 11 and Table 4). Governmental and organizational and permanent residences made their strongest appearances. Permanent residences were ubiquitous appearing on the upper floors of many older buildings. Industrial uses, which were only of secondary importance, also appeared on upper floors of older buildings. Small clothing and garment manufacturers, which dominated industrial space, were much more concentrated. Vacancies, by changing from their poorest to next to poorest relative positions, were more related to retail uses and close-in locations than were non-Central Business District or office uses. Wholesale uses, exhibiting their weakest position, were somewhat out of line with what was expected. In downtown Los Angeles wholesale businesses were more important in the intermediate rather
than the peripheral distance zones.

Vertical Variations by Floor

Definite proportional trends and areal gradations in land use were observable in the horizontal dimension; likewise, definite patterns of usage were observable in the study of the vertical dimension (Figure 5). The analysis of land use in both the horizontal and vertical dimensions revealed location patterns which correspond closely with the findings of Murphy and Vance.

First Floor.—Retail uses, for example, achieved their greatest importance on the ground floor level in the Los Angeles CBD as evidenced by the habits of many individual types of stores (Table 5). The financial-office-service land use group was unable to effectively compete for first floor space, and was least important on the ground floor. Within the group, however, financial, service trade, transportation, and parking establishments were noteworthy exceptions in that they were most important on the street level (Table 5). Non-CBD uses were like most financial-office-service uses in that they could not compete favorably with retail uses for ground floor space and, therefore, were least important. Public and organizational space, which attained its greatest significance on the first floor, was an exception. This anomaly was brought about by the existence of a large park in the center of the CBD (Figure 10). If this park, Pershing Square, did not exist, public and organizational space would be more significant on the second floor. Wholesale uses, which were the second exception in the non-CBD category, were of secondary importance on the ground floor. When these findings were compared with findings
### Table 5

**RELATIVE RANK-ORDER IN ALL ZONES COMBINED BY FLOORS IN PROPORTION OF SPACE OCCUPIED BY VARIOUS TYPES OF ESTABLISHMENTS**

<table>
<thead>
<tr>
<th>USE CATEGORIES</th>
<th>FLOORS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>First</td>
</tr>
<tr>
<td>RETAIL BUSINESS USES</td>
<td>1</td>
</tr>
<tr>
<td>Food</td>
<td>1</td>
</tr>
<tr>
<td>Clothing</td>
<td>1</td>
</tr>
<tr>
<td>Household</td>
<td>1</td>
</tr>
<tr>
<td>Automotive</td>
<td>1</td>
</tr>
<tr>
<td>Variety</td>
<td>1</td>
</tr>
<tr>
<td>Miscellaneous</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SERVICE, FINANCIAL, OFFICE USES</th>
<th>First</th>
<th>Second</th>
<th>Upper</th>
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<tbody>
<tr>
<td>Financial</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Service Trades</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Headquarters Office</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>General Office</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Parking</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Transient Residence</td>
<td>3</td>
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<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>NON-CBD USES</th>
<th>First</th>
<th>Second</th>
<th>Upper</th>
</tr>
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<tbody>
<tr>
<td>Permanent Residence</td>
<td>3</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Public and Organizational</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Industrial</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Wholesale</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Vacancy</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

n.r. Not Represented

<sup>a</sup> Approximately equal
of Murphy and Vance a high degree of coincidence is noted. In all cities
the ground floor was dominated by retail functions with some outstanding
exceptions; namely, financial, service trades, parking, public and
organizational, and wholesale functions.

Second Floor.--Decline was evident in activities which are
mainly pedestrian-orientated; whereas an increase in importance was
evident in non-pedestrian-orientated activities. Retail uses, moving
from primary to secondary in importance, are a good example (Table 5).
Household and automotive were two retail uses that could not be found
on the second floor. Financial-office-service activities, in contrast,
became more dominant, moving from their lowest to a secondary position.
General offices and transient residences, however, showed their greatest
strength, while transportation showed its poorest. Parking, which
declined, but not as acutely, was another exception to the general
trend. Most non-CBD activities followed the trend set by most financial-
office-service uses and increased in relative importance in response to
lower rents and less need for maximum accessibility (Table 5). Permanent
residence and vacancy, which were of primary importance, exceeded
public and organizational and industrial activities, which were of
secondary importance. Wholesale uses, which are much more pedestrian-
orientated, found the second floor to be their poorest location.

Similar patterns were found by Murphy and Vance. In all the
cities it was found that retail uses were less significant on this
level. Furthermore, non-CBD uses, which were poorest on the first
floor, were strongest on the second.
Third and Higher Floors.—While most pedestrian-oriented uses continued to decline in the Los Angeles CBD, certain non-pedestrian-oriented uses continued to increase in relative significance. Retail uses, which are the most pedestrian-oriented, fell to their lowest position (with clothing, household, and automotive activities completely absent (Table 5). Financial-office-service functions, in contrast, showed their greatest relative strength. Headquarters offices, which achieved primary importance, occupied most upper floor space (Table 5). General offices, parking facilities, and transient residences showed less vitality and assume intermediate importance. Transportation activities, which did not occur on upper floors, remained the only exception to the preference for upper floors within the group. Non-CBD activities, which were more variable than financial-office-service activities, found the upper floors suitable to their locational needs. Industrial and wholesale enterprises, which were the most important competitors for upper floors, achieved the greatest relative importance. Vacancy and permanent residence, which were not as competitive, found the upper floors of intermediate importance. Public and organizational functions, which were the least competitive non-CBD activity, were weakest on the upper floors.

Overall similarity to the land-use structure on upper floors in Los Angeles was found in the Murphy-Vance study. Retail uses, in all cities, were poorest and least competitive on upper floors. The financial-office-service segments in contrast, were most important and highly successful competitors for upper floor space. Non-CBD uses, which were slightly less competitive, were of secondary significance on upper floors. This overall similarity, found in both the
horizontal and vertical dimensions, helps reinforce the generalization—that forces active in shaping the locational patterns of land uses are operative to some degree in the CBDs of all cities.

**DETAILED LAND-USE PATTERNS AND ASSOCIATIONS**

Does sub-regionalization, or a clustering of like uses, exist within the CBD of Los Angeles? This is a question that grows logically from the previous analysis conducted by distance zones (Figure 11, and Tables 4, and 5). Several uses, such as governmental offices, department stores, and financial establishments, which cluster can be distinguished easily without any special tools. Governmental offices in tall, modern buildings can be seen dominating the Civic Center. Department stores and financial businesses are equally distinguishable by their large display windows, the presence of much pedestrian traffic, and formal facades. Whether other particular functional nodes can be found, and the associations of activities within them elucidated, is something that requires more than a mere visual examination.

**Nature of Land-Use Associations and Clusters**

Further study was impossible without an adequate conceptual background. This background is provided in the following discussion of some of the most incisive interpretations of the nature of land-use associations and clusters.

It seems likely that associations and clusters of uses result from similar locational requirements of specific uses (as interpreted
by management). Managerial decisions, which Colby called "the human equation," are extremely important. In many cases the observations and decisions of management have resulted in the establishment of successful businesses. In some cases decisions have not reflected an adequate understanding of the situation; resulting, at times, in business failures. With proper training, however, the accuracy of human judgment can be increased through the use of economic location theory.

Ratcliff has expressed this theory in terms of accessibility, which involves the cost of transportation and site rental.

Harris and Ullman stress site rental as an important element in assessing land-use associations and clusters. For instance, many retail activities locate near the PLVI in order to take advantage of maximum pedestrian accessibility. They can afford to pay high rents, because of the anticipation of intensive business that is generated by maximum pedestrian traffic. Furthermore, according to Ratcliff, many like and unlike activities, such as department stores, "5 and 10s," clothing shops, and specialty food stores, will compete favorably in the same vicinity. Each competes with the other, to be sure, and


profits by a proximity to a competitor, because of increased attraction for customers. This is viewed by Ratcliff as one factor of customer convenience.  

Hurd asserts that a concentration of many different types of retail activities, within walking distance of one another, gives the shopper increased selectivity, and is also a way that businessmen can insure customers against failure. Another economic advantage accrues to individual businesses within clusters. Generally, symbiotic relationships are formed where there is a mutual need generated by the functions involved for the services or customers of the other. Office buildings and adjacent parking lots is a good example.

Among the forces, which attract similar and dissimilar activities to one area, is the peculiarities of the site. Transportation, wholesale, and industrial activities, for example, often select similar sites, because of their mutual need for adequate transportation facilities, and level land in a traffic-free environment. Functional magnetism and prestige, on the other hand, exert a strong centripetal force that attracts various activities to particular sites within the CBD. In the Los Angeles CBD, garment manufacturers, for instance, have attracted many wholesalers, jobbers, and ready-to-wear shops to the garment district. Each use benefits, in some way, from the close contact

32 Richard U. Ratcliff, loc. cit.


34 Charles C. Colby, op. cit., pp. 13-16.

35 Ibid., pp. 7-17.
with other uses within the cluster. And if, as Rannells has done in
Philadelphia,\(^{36}\) the associations or linkages between these activities
were investigated further, a recurrent functional interaction involving
the exchange of information, goods, employees, and customers might be
found.

**Land-Use Associations and Clusters Within the Los Angeles Central
Business District**

Several possible approaches to the study of these phenomena
presented themselves. A statistical approach was evaluated first.
This technique was judged to be accurate and free from tedious
mechanical calculations. Time limitations, however, made this approach
impossible to use. At this point, a second, and somewhat similar,
method began to crystallize, which involved the use of land-use maps.
Maps of individual functions, that had been prepared on transparent
paper, were separated into three groups: (1) Retail; (2) Financial-
office-service and related uses; (3) Non-CBD.\(^ {37}\) Working with one
group at a time, beginning with retail, each individual map was secured
to a light table and other maps were superimposed. Examination began by
noting similarity of site location among uses. Analysis continued by
comparing locations of individual retail uses with those in the

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\(^{36}\)John Rannells, *op. cit.* , p. 32.

\(^{37}\)These three land-use divisions were used by Murphy and Vance
and are employed in the land-use classification scheme that appears on
p. 30 of this thesis. A complete listing of individual functions with-
in each of land-use categories is also presented on p. 30.
financial-office-service and related uses, and non-CBD categories. Individual land-use maps of the financial-office-service and related uses group were also compared with maps of the non-CBD group. As a final check, and for the purpose of giving a general picture of the internal arrangement of functions in the CBD the results of this investigation were compared whenever possible with the results of related research undertaken by Murphy and Vance, 38 Davies, 39 and Scott. 40

Retail Uses. -- An examination of Figures 11 through 17, clearly indicates that all retail uses are widespread within the Los Angeles CBD. Several noteworthy associations are observed. Patterns of food stores (Figure 12), for instance, are associated with all retail uses (Figures 11-17), and miscellaneous uses (Figure 17) in particular. Generally food specialty shops, small restaurants, and hamburger stands could be found in multiples on every block close to the ELVI (catering to the appetites and thirsts of many workers and shoppers). An even closer tie can be seen existing between clothing (Figure 13) and variety (Figure 16) stores (as Murphy and Vance indicated). 42 Household stores (Figure 14), unlike clothing and

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38 Murphy and Vance, "The Internal Structure of the CBD," op. cit., pp. 21-46
40 Peter Scott, op. cit., pp. 290-334.
41 Locations of all retail and other uses were plotted by individual occurrence including all floors.
42 Murphy and Vance, op. cit., pp. 40-41
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF FOOD STORES

FIGURE 12
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF CLOTHING STORES

FIGURE 13
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF HOUSEHOLD STORES

FIGURE 14
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF AUTOMOTIVE USES

FIGURE 15
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF VARIETY STORES

FIGURE 16
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF MISCELLANEOUS USES

FIGURE 17
Variety stores that were clustered around the PLVI, withdrew to more peripheral sites, where miscellaneous uses were found as frequent neighbors.

A delineation of retail clusters was a natural outgrowth from the study of associations. If one re-examines each of the above mentioned figures, and Figure 18 in particular, concentrating on blocks where clusters of large space uses are found, an elongated band that fronts on Broadway between Fourth and Ninth Streets becomes apparent. One outstanding outlier, which can be distinguished, exists four blocks west of the PLVI along the southern edge of Seventh Street between Flower and Grand Streets (Figure 18). Outside of these two zones, retail uses, such as automotive (Figure 15) and household (Figure 14), along the south, west, and east edges of the CBD, and miscellaneous (Figure 17) and food (Figure 12), scattered without any concentration, lack any discernible clustering. Within the two clusters outlined previously, the majority of retail space is dominated by food (Figure 12), clothing (Figure 13), variety (Figure 16), and miscellaneous (Figure 17). This corresponds closely with the findings of Murphy and Vance—where retailing was found in Zone I (nowhere more than 100 yards from the PLVI). Furthermore, this also tends to coincide with the research of D. Hywell Davies; who found intensive retailing in the core of Cape Town's CBD. The findings of Peter Scott, who divided the

[^43]: Ibid. Tables 3 and 4, pp. 32 and 39.
[^44]: D. Hywell Davies, op. cit., pp. 53-69.
FIGURE 18
RETAIL CLUSTERS
WITHIN THE LOS ANGELES CBD

- CBD
- CLUSTERS
- PLVI
CBD into inner and outer retail and office zones, also are pertinent. In the area immediately surrounding the PLVI, the inner retail core, Scott found the same intensive retailing mentioned by the others. 45

Financial-Office-Service and Related Uses. --Shifting from retail uses, which appear to be located nearest the PLVI, attention was focused on the financial-office-service and related use segment (Figures 19-25). A re-examination of these figures was made and a tendency toward both scattering and clustering was evident among business service (Figure 20), transportation (Figure 23), parking (Figure 24), and transient residence (Figure 25) functions. While business service activities occupy sites two blocks outward from the PLVI with some concentration at Eighth and Hill and Eleventh and Broadway streets, transportation activities occupy more peripheral sites with some concentration occurring along Sixth Street near the western and eastern edges of the CBD. Parking areas and transient residences tend to concentrate nearer to the District's edge with parking areas dominating open spaces along the CBD border and transient residences filling some of the remaining space. Concentration into definite cores was evident among financial establishments (Figure 19), general offices (Figure 22), and headquarters offices (Figure 21). Scott, in contrast, found financial functions more dispersed in the Australian CBD. 46

45 Peter Scott, op. cit., pp. 53-69
46 Ibid.
INTENSITY OF FINANCIAL BUSINESSES

FIGURE 19
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF BUSINESS SERVICE ESTABLISHMENTS

FIGURE 20
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF HEADQUARTER OFFICES

FIGURE 21
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF TRANSPORTATION USES
FIGURE 23
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF PARKING AREAS

FIGURE 24
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF TRANSIENT RESIDENCES

FIGURE 25
Three definite clusters were found when each of these figures was examined further. Each cluster has nearly the same limits as the other; which is an indication of common locational requirements (Figure 26). One of the largest, most conspicuous nodes is a two-block wide band composed of seven blocks that front on Spring Street between Fourth and Seventh streets (Figure 26). A triangular-shaped block that extends south of Seventh Street to Eighth Street completes the subregion, where the first floor is dominated by banking and brokerage firms (Figure 26). The second and above floors are dominated by general offices with a scattering of headquarters offices. Murphy and Vance's findings indicate a similar tendency in the cities they examined. Thus, viewed in three dimensions, the region is both a financial and office node (Figures 19, 21, 22, 26). Financial establishments, occupying ground floor space, provide a foundation for general offices (that occupy intermediate floors), and headquarters offices (that occupy upper floors).

General offices, generally on second and above floors, clustered in a slightly larger area than financial functions (Figures 19, 22, and 26). Taking the shape of the letter "T," the base of the general office subregion began at Figueroa Street and extended eastward between Sixth and Seventh streets to Los Angeles Street. The crossbar extended in a north-south direction between Third and Eighth streets.

Headquarters offices (Figure 21) are more widespread, taking the form of one main core, which roughly coincides with the general office.

47 Murphy and Vance, op. cit., pp. 21-46.
FIGURE 26

FINANCIAL, OFFICE, SERVICE, CLUSTERS WITHIN THE L.A. CBD

CBD
- - - CLUSTERS
○ PLVI
subregion and two outlying nodes. The main concentration extends from Figueroa to Main Street between Sixth and Seventh streets; with two arms between Hill and Main streets. One arm reaches northward to Fifth Street, while the other reaches southward to Ninth Street. Two outlying clusters, one facing First Street, between Broadway and Hill Street on the south; the other facing the Harbor Freeway, between Wilshire and Sixth Street on the west, could be sites of future office districts (Figures 21, 22, and 26).

It is impossible to associate these findings, in both the general and headquarters office categories, with the work of Murphy and Vance. In their work, office uses were combined with financial functions and, therefore, were not comparable with the work produced here.

Non-Central Business Uses. --Land-use relationships become more difficult to observe among the non-CBD uses (Figures 27-31). Dispersal of functions and the lack of definite land-use associations is characteristic. Close examination of land-use maps of industrial and wholesale activities indicated gross similarities in plant locations (Figures 29 and 30). The majority of businesses operated east of Broadway between Third Street and Olympic Boulevard in an older marginal area of the CBD, or more generally, between the first and the fourth distance zones, concentrating mainly in the second zone.

In spite of the lack of definite land-use associations among the non-CBD activities, definite clusters were found among public and organizational functions north of the CBD (Figure 28). Some clustering, but not as intensive, also is evident among permanent residences.
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF PERMANENT RESIDENCES

FIGURE 26
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF GOVERNMENTAL AND ORGANIZATIONAL USES
FIGURE 28
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF GOVERNMENTAL AND ORGANIZATIONAL USES
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF WHOLESALE USES
30
(Figure 27) near the District's western margin enclosed by Seventh and Olympic on the north and south, and Figueroa and Grand on the west and east. No clustering is evident among industrial activities, however, which are generally located in the eastern half of the CBD between Broadway and Los Angeles Street (Figure 29). Wholesaling activities, located in the same general area, in contrast, show a tendency to concentrate as evidenced by the clustering along Broadway, Seventh and and Ninth streets; this is the garment district where jobbers and manufacturers are very active (Figure 30). Further examination of non-CBD uses indicates that vacancy (Figure 31) possesses a high degree of concentration near the center of the CBD where the greatest competition for space occurs. These findings correspond closely with the findings of Murphy and Vance. 48

Public and organizational uses do not cluster in the CBD, but cluster in the Civic Center to the north, where they occupy 95 per cent of all space (Figure 28). Closer examination of Figure 28 indicated a strong tendency for these uses to occupy blocks near the outer edge of the CBD. This was found to be the case in the cities studied by Murphy and Vance. Wholesale establishments, in contrast, avoided the peripheral areas of the Los Angeles CBD, concentrating in two nodes within the second and third distance zones. Within these nodes, which occur between Fifth and Sixth streets, and between Seventh and Ninth streets,

48 Murphy and Vance, op. cit., Tables 3 and 4, pp. 32 and 39.
wholesaling is most dominant on the second and above floors (Figure 30, and Table 5). Vacancy, which is the last non-CBD use that exhibits any distinct clustering within the CBD, occurs even closer to the PLVI than wholesaling (Figure 31). Two bands, where concentration is most noticeable, are found. One occurs along Broadway, between Second and Eighth streets; the other occurs along Seventh Street, between Figueroa and Main. East of Broadway, between Fourth and Sixth streets, is a third zone. Except in the latter zone, where vacancy is restricted to the street level, vacancy occurred mainly on upper floors in buildings within the retail subregion. Vacant space within this zone was evenly divided among commercial storage and unoccupied offices.

Cross Associations. -- Comparison of individual land-use maps from different categories, for example governmental and parking, enabled further study of land-use associations. Vacant space, for example, was found to occupy nearly the same blocks as those devoted to intensive retailing composed of variety, clothing, and miscellaneous stores (Figures 31, 16, 13, 17). The degree of correspondence, which is not perfect, is gradational, from highest near the PLVI to lowest near the CBD edge.

Cross associations also were found among several retail and service activities. Clothing, household, and miscellaneous retail uses were found to correspond with parking lots near the outer margins of the CBD (Figures 13, 14, 17, and 24). General offices, on the other hand, corresponded closely with intensive retailing such as variety and clothing sales in the center of the CBD closest to the PLVI (Figures 22, 16, 13). This association, however, was vertical as well as
CENTRAL BUSINESS DISTRICT
LOS ANGELES, CALIFORNIA

INTENSITY OF VACANT SPACE

FIGURE 31
horizontal; with retailing providing a foundation for offices. Business services and transient residence also found a three-dimensional association by sharing many blocks with food and miscellaneous businesses slightly outside the former zone (Figures 20, 25, 12, and 17).

Repeating procedures used in studying cross associations, close associations were found among several related and unrelated uses. Transient and permanent residences, probably more related than head-quarter and general offices, were found to share the same buildings along the edge of the CBD (Figures 25, 27, and 21, 22). In many cases, during field-mapping, it was impossible to tell when transient residences stopped and permanent residences began. Parking is another CBD use that has a symbiotic relationship with non-CBD uses along the CBD border (as exemplified by the findings in Los Angeles, and in the cities studied by Murphy and Vance) (Figures 24, 27-31).

49 A survey of hotel managers, taken during the field-mapping phase, indicated that many older hotels were occupied more by permanent residents than by transient residents.

50 Murphy and Vance, op. cit., pp. 21-46.
It would have been impossible to develop an over-all picture of the Los Angeles Central Business District without the detailed land-use information that was gathered on field trips in downtown Los Angeles, and which is presented, in this thesis, on numerous maps (Figures 12 thru 31). Careful examination of these maps led to the discovery of a horizontal gradation of functions within the CBD. Near the center of the CBD, a core of intensive retailing is found surrounding the PLVI at Seventh Street and Broadway (Figure 18). Department and accessory stores are dominant here. Surrounding this retail core, at a distance of from two to three blocks from the PLVI, is a zone of lower land use intensity, with service, financial, and some office functions prevailing. One block beyond the service, financial, and office belt a zone of still lower intensity occurs, with wholesale and industrial activities predominating. Outside of this zone of wholesaling and industry, the intensity of land use is lower than anywhere else in the District. Here, automotive sales, parking lots, and office functions carry on business at a slow pace. Governmental and headquarters offices, hotels, and rooming houses are also present.

After the study of the horizontal character of land-use was completed, attention was shifted to its vertical character. The findings were compared with the results of the Murphy-Vance investigation (of nine American cities) in order to ascertain if there was any
similarity in the locational requirements of retail, financial-office service, and non-CBD functions from city to city. A high degree of general similarity was found. This helps affirm the generalizations advanced by Murphy and Vance concerning the location requirements of activities in the Central Business Districts of American cities.

The first or ground floor, for example, in all cities investigated, was dominated by retail uses. The second floor, in contrast, was not the site of intensive retail activity. Non-central business activities, represented by vacancies and permanent residences, were dominant, however. Most of the uses within the financial-office-service segment were most important on the ground floor, with the exception of offices, which increased in importance upward from the ground floor. On the third and higher floors, office uses become the most important space users. Non-central business uses, represented by wholesale and industrial establishments also become important. Retail and financial-service functions continued to decline and were least important.

Further study enabled identification of land-use associations and clusters or subregions. Comparison was made of the distribution patterns of individual uses with the patterns of other uses. Several large clusters, involving concentrations of department stores, financial establishments, garment factories and distributors, and governmental offices, appeared. Within each cluster, which follow closely the locational patterns mentioned previously, there are associations of particular functions. Department stores, for example, maintained a symbiotic relationship with clothing and accessory shops,
"5 and 10s," and restaurants. Viewed together, these functions constitute a distinct subregion—a core of intensive retailing.

Land-use information is invaluable in depicting the character of the CBD perimeter. No where else in the District is land-use lower in intensity; open space is abundant, building heights are low, and pedestrian and vehicular traffic are minimal. Furthermore, the border is marked by a concentration of particular functions, of which automobile sales, parking lots, rooming houses, and scattered headquarters office buildings are most representative.

In addition to identifying and studying general locational patterns which appeared within the Los Angeles CBD, a number of related factors were examined. Several factors; namely, CBD area, city population and age, were significant, because they both aided the analysis of Los Angeles' CBD and appeared to account for variability in CBD character from city to city. Central Business District areas were found to be associated in some way with city population; when one value increased the other increased, or when one decreased the other decreased. This is illustrated by comparing Los Angeles (2.5 million in 1960), with a CBD area of 1000 acres, and Mobile, the least populated city studied (0.20 million in 1960), with a CBD area of 53 acres. Subsequent study of other cities (mentioned in Tables 1 and 2), which were intermediate in city population and CBD area, also illustrated this relationship. Whether population and CBD area are directly related is something that remains to be tested more thoroughly. On the other hand, a city's age, the remaining factor, did not seem to be related to retail space. It might be asked, at this point, if regional location is a pertinent determining element. Al-
though no relationship between CBD function and regional location was
found, more exhaustive study is needed before anything conclusive can
be stated.

The findings presented in this study give an accurate picture
of the CBD's land-use structure. When viewed in the overall context of
the downtown, they also reveal some significant aspects of the CBD of
the future. For example, in Los Angeles two trends were found which
may alter the present land-use structure of the CBD.

The first, is an increase in office space and a decrease in
importance of retail space. Possibly, if this trend continues, the Los
Angeles CBD may become increasingly more important as a local and
regional office center, and less important as a retail business center.

The second, concerns the outer edge of the CBD and places
where CBD advance and retreat are taking place. Central Business
District growth in Los Angeles, as evidenced by new office buildings,
is taking place along the western and southern margins of the down-
town area (Figure 2). This is becoming a zone of CBD expansion, as
residential and other non-CBD uses are being replaced by central
business uses. While the CBD front is advancing towards the west
and south, its eastern flank appears to be retreating (Figure 27 thru
31). Once prosperous hotels, theaters, and accessory functions in this
area, which have become run-down, are being transformed into whole-
sale and manufacturing sites. Hence this area may be called a
zone of CBD discard.

The direction of CBD expansion and retreat has been affected
by two sets of factors: those which aid expansion, and those which
restrict it.
Factors that have aided CBD expansion can best be assessed by viewing the initial site of Los Angeles (north of the downtown area around Olvera Street and the Plaza (Figures 1, 7, and 8). Open space to the south, southeast, and southwest, enabled expansion of the original CBD to proceed rapidly southward from hilly to level terrain. Commercial building, following residential building, moved southward along newly extended roads. Movement to the east increased as the Los Angeles River was bridged. The focal position of the CBD was further enhanced by the extension of tunnels westward from the downtown area through Bunker Hill at First and Second Streets. A third factor, which aided the expansion of the CBD, was the establishment of area-wide streetcar service (such service was begun in the 1880s). More recently the focal position of the CBD was enhanced by a belt of freeways, which funnel thousands of persons from outlying regions into the CBD.

Freeways, however, in some ways restrict the growth of the CBD. In one respect, they act as a break in the solidly built-up downtown section. In another way, freeways physically separate one block from another, making pedestrian travel more time-consuming. At the present time headquarters office building construction is taking place slightly beyond the CBD borders, to the north and west of the Hollywood and Harbor Freeways, in spite of the barriers freeways present to continuous CBD growth (Figure 1). In these rapidly changing residential areas the cost of land and ease of accessibility have been prime movers and attractors. Although many of these peripheral blocks are not presently included in the CBD, it is most likely that they will
meet the necessary qualifications, possibly within the next decade.

Another barrier to CBD expansion has been the Bunker Hill area (near NW edge of CBD). Steep slopes, which extend outward, formerly impeded easy movement enabling residential functions to develop with little interference from other functions. Tunnels cut through Bunker Hill (at First and Second Streets), and avoidance of the area by rapid transit have added somewhat to the insularity of the area. With urban renewal, earthmoving equipment will alter the configuration of land in this area and thereafter the barrier will no longer exist.

Railroad tracks, along the entire length of the CBD's eastern edge, have also restricted free movement and extension of CBD uses. Wholesale and large industries have reinforced this barrier by establishing operations along both sides of the tracks. If it were not for the railroad system, the wide concrete channel of the Los Angeles River to the east would impose a limitation to contiguous eastern spread of the downtown area.

If the CBD is viewed as an intensively developed area, where the profit motive is paramount, the Civic Center would be viewed as a great wall, completely restricting CBD expansion to the north above First Street (Figure 10). If, on the other hand, governmental functions are viewed as germane to the CBD, the Civic Center is not an impassable barrier, but another subregion of the District. And within the CBD and Civic Center a heterogeneity of functions have evolved in a complex environment in spite of the existence of barriers.

While the major part of this thesis is devoted to the investigation of findings and interpretations, some attention will now be devoted to problems which arose that are in need of further clarification.
uses common to the CBD, treatment of residential space, and treatment of sublevel space. Although there is some agreement as to what uses should be considered central business, there is also some disagreement. Governmental uses probably are the most troublesome in this respect, because arguments for their inclusion and exclusion are extremely logical and defensible. Whatever the answer, governmental uses exist with some frequency in every CBD. Distinction between transient and permanent residence constitutes a different type of problem. On the basis of several queries of hotel managers in the Los Angeles CBD, it was found that more than 50 percent of all space was occupied by permanent residents. And because it is impossible to ask questions of every hotel manager, it might be best to evenly divide hotel space.

How to treat sublevel uses, poses a problem that is more difficult to solve. Pershing Square, where a three-level parking garage exists below a public park, brings this matter sharply into view. Sublevel land use was not recorded here or anywhere, and, therefore, the present view of land use in the Los Angeles CBD is incomplete. In spite of this inadequacy in recording, CBD investigations completely neglect assessment of sublevel uses, because of the impossibility of detecting them in a reasonable amount of time.

The many problems that developed during the detailed study of the Los Angeles CBD provide worthwhile subjects for future research. How to identify sublevel uses, is a question that should be pursued further. Derivation of a practical technique to map basement uses would constitute a considerable contribution. A comprehensive definition and thorough discussion of CBD and non-CBD uses represent another worthwhile avenue of future investigation. The results of this work
might be useful in the study of the core-frame approach developed by Horwood and Boyce. Possibly with a better understanding of CBD and non-CBD uses, a practical method can be worked out for outlining each of these regions.
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