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RETAIL TRADE AREA ANALYSIS AND SITE SELECTION:
A SURVEY OF PRACTITIONERS IN GREATER VANCOUVER

by

SCOTT GRAHAM

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Department of

Geography

The University of British Columbia
2075 Wesbrook Place
Vancouver, Canada
V6T 1W5

Date

April 23, 1981

ABSTRACT

Within the academic literature pertaining to retail location analysis, the prominent focus over the last years has been on mathematical models capable of directly delineating the trade area of a retail facility and estimating the outlet's potential sales volume. This concentration on modeling represents an attempt to add some structure to the site selection process and to eliminate some of the problems associated with the highly subjective and intuitive alternative methods (such as Applebaum's analog approach), which tend to rely extremely heavily on past learning experiences and the analyst's decision making ability. However, even though these modeling approaches add some needed structure and objectiveness to the process, they have failed to reach any level of acceptance in the business world. One of the major purposes of this study is to determine the underlying reasons for this lack of adoption.

To gain an understanding of the problem a number of planners, developers, consultants and store merchants were interviewed in order to ascertain the methods and processes involved. Aside from basic methodologies, the questionnaire also concentrated on a wide variety of locational considerations not normally dealt with in the academic literature, such as corporate strategies.

This survey revealed a number of problems inherent in the application of these highly structured mathematical

models. Most of the problems stemmed from the limited perspective taken. For example, only the demand for retail facilities are considered in the models, all supply considerations are neglected. Corporate strategies, past learning experiences and most financial implications are ignored. Furthermore, these approaches tend to exclude a number of important factors that are suspected to have a significant impact on determining consumer patronage patterns. Some of the more important variables identified were: tenant mix, the location of the tenants within the shopping center, accessibility, an array of site quality factors, and population characteristics.

Although there is a need for some structure to be added to those methods used in practice, it is apparent the models are too inflexible and limited for the type of situation for which they are intended. The dynamic nature of the developmental process requires more fluidity in the analytical approaches used, since each situation presents such a unique set of circumstances.

Unless the entire design of the models are changed in a dramatic way, they are never likely to be used in the business world. This, however, is not liable to happen in the immediate future since the direction that most of the academic research seems to be taking is towards making minor adaptations to model forms that are impractical by their general design and nature. Therefore, until research takes on a new direction, it is not likely that any practical

advances will be made.

In essence, the need for some new directions in academic research, the urgency for a closer association between the theorists and those in business, and the necessity for more holistic approaches are among the more important inferences made within this thesis.

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CHAPTER ONE

INTRODUCTION

(A) Statement of the problem.

The field of retail location and site selection is an area of interest that has been inadequately dealt with by most geographers, economists and others interested in the location of retail activities within urban areas. A great percentage of the relevant studies have concentrated exclusively on attempting to create mathematical models for delineating and in turn, analyzing the trade area of the activity concerned. The focus of these models has been strictly on demand with no consideration given to supply.

This concentration on modeling represents an attempt to add some structure to the process and to eliminate some of the problems associated with the highly subjective and intuitive alternative methods, which tend to rely extremely heavily on past learning experiences and on the analyst's decision making ability. Even though the modeling approaches add some needed structure and objectiveness to the process, they have failed to reach any level of acceptance in the business world. Although it can be said that the models have a degree of theoretical value, they simply do not satisfy the needs of the retail industry. Those theorists who advocate the use of retail location models clearly display a lack of knowledge of the structure of the industry, the constraints that the practitioners must work within, and the complexities of the developmental process.

Despite the fact that there are a number of immediately apparent difficulties involved with the use of retail location models, it is felt that without an understanding of the methods used in practice for analyzing potential retail sites, the value and applicability of the retail models in real world situations cannot truly be determined. Due to a void in the literature relating to this aspect, the best means of gaining such an understanding is to talk to the people presently involved in the planning and development of such facilities. Thus a number of planners, developers, consultants and store merchants were interviewed in order to identify the methods and processes involved. The results of this task clearly demonstrated a number of serious deficiencies that would be associated with the practical application of these models.

One of the more critical flaws with the models developed to date is that they fail to consider a number of variables that are suspected of having a significant influence on consumer patronage patterns. One possible explanation for the limited range of factors represented is that many of the salient variables cannot be directly quantified and thus cannot be validly incorporated in the model. For example, how does one affix a quantitative measure that would adequately represent a persons perception of a store's atmosphere? Although a number of attempts have been made, the results have been less than satisfactory. This forces the researcher to make certain assumptions to control the influence of these

variables. However, even though the omission of these factors is understandable, it does not excuse their neglect.

Although there is a need for some structure to be added to those methods used in practice, it is apparent that the models are simply too structured for the type of situation for which they are intended. The dynamic nature of the developmental process requires more fluidity in the analytical approaches used, since each situation presents such a unique set of circumstances.

Another major problem that the interviews identified was that the models were incapable of accounting for corporate strategies and past learning experiences. The importance of this shortcoming cannot be overemphasized, as will become increasingly evident as this thesis progresses.

Unless the entire design of the models are changed in a dramatic way, they are never likely to be used in the business world. This, however, is not liable to happen in the immediate future since the direction that most of the academic research seems to be taking is towards making minor adaptations to model forms that are impractical by their general design and nature. Therefore, until research takes on a new direction, it is not likely any practical advances will be made.

The primary purpose of this work is to determine the value (or rather, lack of it) of the modeling approaches as a practical alternative to the methods presently employed in business for analyzing the utility of a retail site, in light

of: the approaches used in the business world; the constraints placed upon the practitioners; the structure of the industry; and, in general, the developmental process. A related objective is to determine whether or not the variables incorporated in the models, in themselves, are sufficient determinants of consumer patronage patterns.

The need for some new directions in academic research, the urgency for a closer association between the theorists and those in business, and the necessity for more wholistic approaches are among the more important inferences made within this thesis.

(B) Features of a retail trading area.

Before the various methods used for analyzing retail trading areas can be properly assessed, it is essential to understand some of the general features of a trade area. Therefore an overview of some of the empirical studies that have been conducted concerning the shape and the areal extent of trade areas would serve as a valuable foundation. Thus this section deals with these two considerations.

(i) The shape of a trade area.

One of the earliest concepts developed to explain the shape of trade areas was central place theory. Within the limits of its basic assumptions, this theory recognizes that the boundary of a single establishment's trade area will be circular, but that these circles must overlap in order to ensure that all potential consumers are served by a center within the maximum distance that consumers are willing to

travel to purchase the given good (usually referred to as the range of a good). Assuming that these consumers are economically rational men who want to consume as much as they can for their money, they will invariably patronize the most accessible establishment in order to minimize transport costs. As a result the areas of overlap will be bisected and the trade areas will take the shape of hexagons.¹ The resulting hexagonal lattice will allow for the highest level of trade area packing. Furthermore, since one of the underlying assumptions of central place theory is that the consumer is a rational economic man, with distance minimization as a primary goal, all rational consumers within the center's hexagonal trade area will patronize the center for all of the desired goods that it offers.²

These rather simplistic concepts have been refuted in later works (ie Bucklin 1971, Applebaum 1961) partially because of the theories assumptions that consumers have the power of realizing distance in absolute terms and that there is an absence of product differentiation. Differentiation occurs whenever there is a basis for distinguishing the goods or services of one seller from those of others. Differentiation relates not only to the good itself but also to the conditions surrounding the sell, such as the general tone of the establishment, the sellers way of doing business, his reputation, courtesy, efficiency, and personal links with customers and employees.³ In essence, recent theory discards the notion that all consumers will patronize the nearest store selling

the desired good in favor of a more probabilistic assertion. As Bucklin notes, "Although the boundaries of competing retail trade areas are drawn by classical central place theorists to represent sharp divisions of consumer patronage, such demarcations are arbitrary, a trading area seldom, if ever, comes to a precipitous halt at contact with competing centers influence. Instead, there is a sharing of patronage which creates an area of overlap between zones." ⁴

As Pred might also indicate, Bucklin notes that this overlap is partially the result of the aggregation of a number of consumers behavioral patterns for heterogeneous decision making processes, likely due to different levels of information and differing abilities to act upon this information. Cultural backgrounds, the mode of transport employed, and the income level of the consumer are important causal factors for this overlap. As a result, empirical observation of trade area overlap will be affected by the spatial distribution of the groups within the area concerned. It has also been noted by Bucklin that,

In general, the extent of overlap may be regarded as a function of consumer sensitivity to product and travel. The former is the importance attached to finding the right price, quality and service when buying, and to the perception that these vary among the retail outlets from which the consumer might buy. Consumers search more for higher or fluctuating price items. Similarly, those to whom style, color and material are more important than brand names, will go out of their way to be satisfied. This propensity to search, varying by product categories, should create greater overlap for some products than others.

It is obvious that the further the centers are apart, the less the overlap because the cost of travel becomes more significant a variable in the consumer's decision making process.

It can be seen that the main difference in the treatment of demand between the two viewpoints is that in central place theory, transport costs eat at demand, whereas competition eats at demand under the probabilistic argument.

The traditional notion of circular trade areas has also come under a good deal of attack. Parr and Denike for example, noted that trade areas would only be circular in complete absence of competition (which in turn would require restriction of entry).⁷ The absence of any natural barriers (rivers, variations in land forms etc.) or psychological barriers (political or cultural breaks) would also be a necessity for circular trade areas. Clearly, such ideal situations are not generally present within an urban landscape.

Nelson, in an attempt to determine some of the underlying reasons for the observed variation in trading area shape outlined some of the behavioral related factors which he considered to have a strong influence on consumer patronage patterns, and thus, trade area shape. These were:

- 1) Shoppers will move towards dominant trading areas (ie C.B.D.).
- 2) Shoppers will not go through one center to get to another center with equal facilities.
- 3) Shoppers will patronize the closest center with

equal facilities.

- 4) Shoppers will tend to follow traditional circulation patterns. ⁸

The resulting trade area should be somewhat elliptical in shape with the larger axis away from the C.B.D. Simons arrived at similar conclusions but added that this distorted center is the result of decreasing population with distance from the dominant center because of the radial pattern of transport routes, and the need to service all areas, which in turn causes the width of the market area to increase with increasing distance from the dominant center. ⁹ Similarly, Applebaum and Cohen concluded that "...street patterns play the most significant role in moulding such shapes (elliptical or irregular) and they frequently run counter to what would theoretically be desired." ¹⁰

Despite the body of work that has been done dealing with the shape of trading areas, there is still a great deal more refinement required. It appears that neither the traditional hexagonal or circular trade areas offer sufficient explanation. The criteria used in these earlier studies are both incomplete and oversimplified. Nor does the elliptical shaped trading area offer much of an improvement. The major flaw in a great deal of the studies is the inherent desire to arrive at a single geometric shape which all trade areas fit. Contrary to this notion, it is evident that there is no single shape that can satisfactorily describe the shape of all trading areas. Each center, store, or good for that matter, has

a unique shaped trade area which ultimately depends upon the makeup of the urban landscape and the people operating within that landscape.

(ii) Trade area size.

Closely aligned to those studies dealing with the general shape of a trade area are those concerned with its size, and in turn, those factors influencing its areal extent. Knowledge of a trade area's size not only provides a basis for estimating future sales, but also aids in determining investment requirements for land, buildings and fixtures, as well as the kind and extent of merchandise offerings, promotional activities, etc.

It should be noted at the outset that the trade area has come to be viewed by most, not as a geographical fact per se, but as an area created entirely by the response and behavior of each individual to a wide variety of factors. A trade area is a dynamic phenomenon; it is conceivable that the boundaries could be slightly different in size during different days of the week, or even different hours of the day (primarily depending upon the frequency of purchase at a given time). Nevertheless, the significance of these slight fluctuations are minimal since the true importance of delineating the trade area boundaries is that it defines the area of study. As Nelson states "...the trade area limits have no important significance themselves. There is absolutely nothing that happens on one side of the line that does not happen on the other side. The line is merely an arbitrary

boundary to exclude from the area of research those places where the amount of business that might come to the center fades out to the line of immeasurability, not any assumption that people are going to act differently." ¹²

Applebaum, in conjunction with the Real Estate Corporation identified a number of factors which they suggested influenced the size of the trade area. ¹³ They are:

1) Existing competitive alignment. (takes into account the types of goods offered as well as the distance to competitors) - It is generally believed that closely spaced competition affects the intensity of purchase within the market areas more than the boundaries of the areas. ¹⁴ Nevertheless, it is becoming more difficult for most stores to identify their competition because there is increasingly becoming an overlapping of merchandise lines among previously distinct stores. For instance, the evolution of the "super drug" store, which in addition to its typical merchandise is now carrying a fairly wide range of goods; cameras, hardware, stereo equipment and supplies, to name just a few examples. This, of course, greatly effects the competitive alignment as it is perceived by the consumer, hence his patronage patterns.

2) Population density (city size) - Most store's trading areas tend to be smaller in size in larger, densely populated cities than in the smaller city. This is primarily due to two factors: 1) A denser population allows for the closer spacing of outlets, and; 2) The friction of distance

is greater.

3) Accessibility. (includes travel time, travel mode etc.) - As Huff notes, "The anticipated costs of transportation, the time and effort involved in preparing for, as well as making the trip, and other opportunities that must be forgone, tend to bring about a contraction in travel distances."¹⁵ Clearly, the mode of transportation available to the consumer has a great impact on the costs of transportation and hence, his willingness to travel. The impact of the automobile being the obvious example.

4) Income - On the whole it is felt that higher income consumers will travel further, more often, and visit more centers.¹⁶

5) Image of the facility. (type of goods, merchandise mix, price, quality, selection, atmosphere, reputation, etc.) - A lowering of prices for example, generally means an expanded trade area since people are willing to travel further for goods when they believe they can get the same good cheaper than they could at a closer outlet. Although this is a commonly held belief, Robert Etenberg's observations exhibit its diminishing importance, largely due to increasing discretionary incomes. He notes "...convenience costs in terms of time and ease of shopping have become relatively more important to the consumer, while price differentiations have had a comparatively high indifference effect on the consumer except for commodities in the shopping goods category."¹⁷ In terms of the type of good, it is generally the case that

the market areas for both specialty and shopping goods are wider than for convenience goods.¹⁸ Consumers are also generally willing to travel further for higher quality goods, or where the store is endowed with a relatively superior selection, atmosphere, reputation etc.¹⁹

6) Location of the facility - A store's trading area can be affected by such things as its visibility, the physical condition of the surrounding areas, its compatibility with nearby stores etc., in fairly obvious ways.

7) Attraction/resistance factors - Attraction: availability of merchandise, price advertising, physical comforts, parking, accessibility, etc. Resistance: traffic friction.

Although other authors (ie Vaille et al 1952) have also produced empirically derived lists of factors that they have found to have an effect upon the size of a trade area, Applebaum's criteria seems to be fairly representative, and for the purpose of this study no others shall be considered. The presentation and cursory overview of these factors is simply intended to be a tool through which to evaluate some of the methods and models that have been developed in an attempt to delineate trade area boundaries. It will become clear in the following chapters that neither the trade area models nor the methods used in the business world covers a wide enough range of these key variables. Thus many of the flaws in the approaches will become apparent.

(C) Outline of chapters.

Chapter 2 - is basically a review of the relevant

academic literature. After establishing the prominence of the gravity model in theoretical work, a critique of a representative sample of gravity models is given. This serves both to identify major trends in the literature and to identify a number of problems associated with the modeling approach to trade area analysis. For example, one of the major problems identified with the application of these models, was determining the salient variables to incorporate. A second major problem was associated with estimating the lambda (friction of distance exponent) value for the model under different situations. In turn, these problems were discussed and analyzed both from a practical and theoretical perspective.

Chapter 3 - consists of a review of some of the approaches for selecting and analyzing retail locations used by the practitioners. Of the various methods that were identified in the interviews, three representative case studies are examined. Aside from the obvious purpose of gaining an understanding of the methods employed in practice and how they differ from those advocated in theory, this chapter also assists in identifying some of the inherent problems associated with the theoretical approaches.

Chapter 4 - discusses some of the problems identified in the preceding chapters in greater depth. For example, considerable attention is given to a variety of important considerations that are often ignored in the academic literature. The majority of these considerations concern

determinants of consumer patronage choice and include such factors as: accessibility, site quality factors, tenant mix of the shopping center, the location of the tenants within the center, etc. As well, a number of other factors that tend to constrain the location of a shopping center such as corporate strategies (particularly on the part of the anchor tenants) is also discussed. Generally, this chapter serves to display a number of problems associated with the theoretical methods and in turn gives some insight into a number of possible reasons why they have failed to diffuse into the business world.

Chapter 5 - summarizes and concludes the study. A number of possible directions for further research are also proposed.

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CHAPTER 2.

TRADE AREA ANALYSIS MODELS.

(A) Introduction.

Within the vast body of academic literature pertaining to retail location analysis, the prominent trend over the past twenty years or so has been towards modeling and thus the quantification of those variables critical to analyzing consumer patronage patterns. In many ways this trend represents a reaction against the highly subjective alternate methods such as Applebaum's analog approach. It is believed that these models will supply the analyst with a tool that will allow him to make reliable predictions in situations where data from existing stores is not available or does not seem applicable. It is felt also that more reliable predictions are possible with an objective approach than with a subjective one (particularly for shopping goods since so many variables play a role in the consumers decision making process) as there is not as much room for human error and they do not depend as heavily on the analyst's ability to interpret situations or to make judgments about these situations. In essence, the modeling approaches minimize the years of experience required by the analyst.

In theory, other advantages associated with the use of models are: 1) The evaluation of a great number of possibilities at a low cost; 2) They delineate precisely the effects of weak estimates or poor judgements, and: 3) The models can keep a large number of factors in focus while the calculations are being made. ¹

The most prominent of the numerous model types developed

is undoubtedly the gravity model. As Simon states, "This model underlies the work of Reilly, Fetter and the Hyson's, among others, while Huff incorporated probabilistics notions, the gravity model is also implicit in Golledge's zones of advantage and disadvantage, in Stouffers' concept of intervening opportunity, in Nelson's idea of suburban shopping centers as interceptors, in Rushton's work on indifference curves and consumer space preference, and in almost the universal subdivision of retail market areas into primary, secondary, and fringe areas. In fact, it is fair to claim that despite its problems, the gravity concept is the most pervasive theory currently used in economic geography." ²

Gravity models are essentially based on the Laws of Planetary Gravity. In simple terms this implies that as the mass (square feet of shopping area in this context) grows in size, it creates a greater attractive force. On the other hand, as the distance between the masses increases, the attractive pull that they exert on each other decreases. ³

Although there are a number of advantages in using such models, there are also a number of weaknesses that are inherent in the general makeup of almost all forms of gravity model. The models are limited in the sense that they are designed to account for the behavior of large groups of people, and rest on the assumption that group behavior is predictable on the basis of mathematical probability because the idiosyncracies of any one individual or small group tend to be cancelled out. ⁴
In essence, the model is not designed to reflect individual or

individual group peculiarities, but instead is concerned with far more general factors. Thus the model is only applicable at a relatively large scale and has not been able to reliably account for differences in behavior among subsets of the general population. ⁵

Bloomenstien et al, summarize many of the flaws that are general to the gravity type model when the comment that some of the weaker points of the model are that "The models are aggregate and do not describe or explain individual behavior; space perception is left out of consideration; the attractiveness measures do not necessarily correspond to the shopper's perception and image of the center; multipurpose trips are neglected; the entrepreneurial side is not integrated; and the models do not explain the dynamics of the retail sector." ⁶ Scott expands on this by noting that there are problems with: the definition of the study area and its constituent zones; the availability of data; the need for analysis by type of trade, social structure and travel mode; the choice of measures for attraction and friction; the calibration of the model given only current data; the implicit assumption concerning consumer and entrepreneurial behavior; the conversion of sales into floor space; and the range of technical change and institutional decision making for which reliable forecasts cannot be made. ⁷ "In short the model is undoubtedly a valuable tool for preliminary macro-analysis but it remains essentially static, descriptive and superficial." ⁸

The following section will critically review some of the prominent gravity models that have been developed, beginning with a sample of deterministic models, then working through the probabilistic models to the behavioral models. It should be noted that despite the fact that only the gravity model will be dealt with, at the expense of other forms of models (ie regression, entropy-maximizing), this is not believed to be a shortcoming in light of the purposes of this work. The flaws in these other types of models ultimately are similar to those of the gravity model, and since the gravity model is by far the eminent one, concentration on this form seem justified. More specifically, this section will deal primarily with the advantages and disadvantages associated with each of the individual models introduced. The purpose of the section is to gain an understanding of the basic principle of the gravity model and to determine the directions that the research is taking. A broader critique concerning the underlying reasons why the gravity model is of little use in practice will be reserved until a later point.

(B) A review of the retail related gravity models.

Most models of retail location are capable of both delineating the trade area boundaries and estimating the potential sales volume of the facility in question. Since in most cases the design of the model changes very little for each purpose, it is often difficult to distinguish between the two intentions. In an attempt to avoid some of this confusion,

the forthcoming models will be presented in the form that would be used for delineating trade area boundaries. An explanation of how these models could then be applied for the purpose of estimating potential sales volumes will be reserved until a later point.

(i) Deterministic models.

One of the earliest models developed for delineating trade area boundaries is known as Reilly's Law Of Retail Gravitation. Despite the fact that this model is quite unrealistic in nature, it merits attention since many of the more recent models have been derived from its underlying principles. The original model's primary focus was on determining the relative pulling power of two competing cities on an intervening area, rather than on delineating intra-urban trade areas. In its original form the model is expressed as follows:

$$\frac{B_a}{B_b} = \left(\frac{P_a}{P_b} \right) \left(\frac{D_b}{D_a} \right)^2$$

where:

B_a = The proportion of trade from the intermediate city attracted by city A;

B_b = The proportion of trade from the intermediate city attracted by city B;

P_a = The population of city A;

P_b = The population of city B;

D_a = The distance from the intermediate town to city A; and

D_b = The distance from the intermediate town to city B. ⁹

Qualitatively this model asserts that "two cities attract retail trade from an intermediate city or town in the vicinity of the breaking point approximately in direct proportion to the population of the two cities and in inverse proportion to the square of the distances from the two cities to the intermediate town." ¹⁰

In 1947 the Curtis Publishing Company made a significant adaptation to Reilly's model so that it produced an equi-probability line (breaking point) which represented the point where the dominant trading influence of one city was replaced by that of another.

The model is symbolically expressed as:

$$B_b = \frac{D_{ab}}{1 + \sqrt{\frac{P_a}{P_b}}}$$

where:

B_b = The breaking point between city A and city B
in miles from B.

D_{ab} = The distance separating city A from city B.

P_b = The population of city B.

P_a = The population of city A. ¹¹

The model states that consumers will normally travel to the largest place with the most convenient access. It assumes that consumers will invariably patronize the center closest to their place of residence that offers the goods they desire. The model measures travel solely in terms of objective distance and ignores all time and perception of travel variables. It

assumes that a center twice as far away will be exactly half as attractive which is clearly an inaccurate conception.¹² As Wagner notes, on the whole "...the larger the difference in city size, the greater the inaccuracy of Reilly's law (a name often incorrectly given to the breaking point model). The law's effectiveness is also hampered by increases in the distance figure employed in the formula."¹³ The model also fails to give consideration to automobile traffic patterns and the nature of the traffic mode from which potential consumers are drawn.¹⁴

Huff notes five major limitations of the adapted Reilly model (break point), which are as follows:

- 1) The break point model is incapable of providing graduated estimates above or below the break even position between two competing centers. Thus it is impossible to calculate objectively the total demand for the product of a particular shopping center.

- 2) When used to delineate the trade areas of several shopping centers, the overlapping boundaries that result are inconsistent with the basic objective of the formula's use; to calculate the boundaries between competing shopping centers where the competitive position of each is equal.

- 3) In the case of multi-trading area delineations, there may be areas that are not even within the confines of any shopping center's trade area.

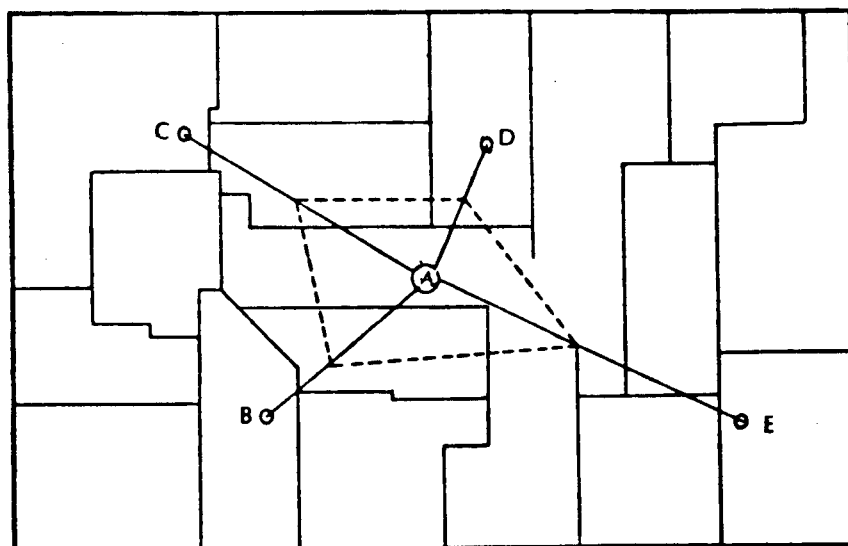
- 4) The parameter originally estimated by Reilly (2) should not be interpreted as a constant for all types of shopping trips.

5) The model was empirically derived and possesses very little theoretical content. That is, it does not reveal why observed regularities occur as they do. ¹⁵

Figure 2.1

HYPOTHETICAL TRADE AREA AS PRODUCED
BY THE BREAKING POINT MODEL.

Shopping center	Squ. footage of selling space.	Travel time from A	Breaking point from shopping center A.
A.....	200,000	0	0
B.....	100,000	15	6.2
C.....	150,000	20	9.3
D.....	50,000	10	3.3
E.....	300,000	25	13.8



(Source: Huff 1964, p 36)

More recent studies have resulted in a number of suggestions that could possibly improve the model. For example, Reynold suggested that travel time should be substituted for the distance variable.¹⁶ The underlying premise being that travel time is a better measure of the friction of distance. This should be an improvement since one mile of travel may take a great deal longer on a congested road than it might on a freeway.

Nelson indicates that in the case of a shopping center, only department stores, clothing stores, furniture stores and appliance stores should be used in the formula, as the other stores are not considered generators of adequate importance.¹⁷

Nonetheless, these sorts of improvements do not satisfy most of the other criticisms that have been directed at the model.

(ii) Probabilistic models.

There were not really any further developments of any consequence until the early 1960's and Huff's adaption of Reilly's Law to include the notion of consumer spatial behavior. Huff's retail attraction model can be expressed as follows:

$$P_{ij} = S_j^{\lambda_s} T_{ij}^{\lambda_t} / \sum_{j=1}^n S_j^{\lambda_s} T_{ij}^{\lambda_t}$$

where:

P_{ij} = The probability of a consumer in area i shopping at retail location j .

S_j = The square feet of retail selling area at retail location j .

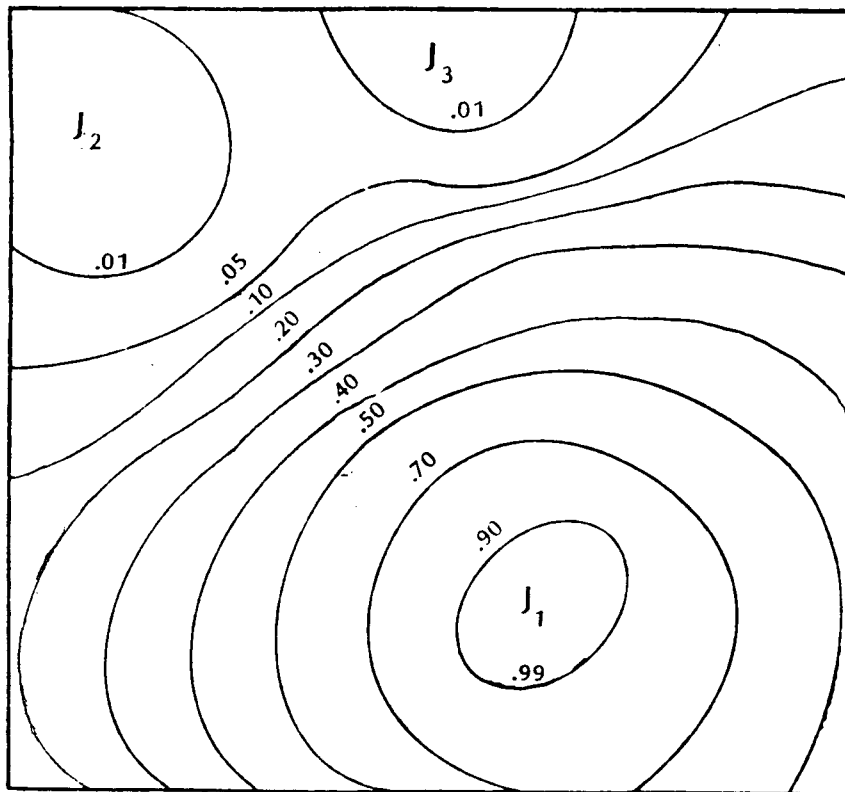
λ_s = The sensitivity of changes in shopping probability to changes in selling area.

T_{ij} = The driving time between area i and retail location j .

λ_t = The sensitivity of changes in shopping probability to changes in driving time. ¹⁸

Although in many ways Huff's model is not greatly different from Reilly's Law, its major achievement is in the designation of the market area as a series of probability isopleths, and in its ability to distribute potential expenditures among more than two centers. ¹⁹ Huff recognized that a trade area was simply not a fixed line circumscribing a shopping center. The probabilistic contours that the model produces reflect that consumers are not able to discriminate among choices perfectly. The reason for this is that when differences among alternatives is small, the consumer finds it difficult to discriminate between them and therefore will choose somewhat randomly. Also, since consumers are uncertain as to the potential of the shopping center fulfilling their shopping desires, they tend to rely on intuitive beliefs, and check these by also visiting other alternative shopping centers. "...if a consumer is confronted with the same choice situation a number of times, he will tend to choose among such alternatives in some constant proportion; therefore a relative utility can be assigned to each (contour)." ²⁰

Figure 2.2
PROBABILITY CONTOURS AS PRODUCED BY THE HUFF MODEL



(Source: Huff 1962)

Viewing retail trading areas as a series of probability contours is quite different from its treatment in central place theory, early gravity models (ie Reilly's Law of Retail Gravitation), and most traditional economic theory, which implicitly or explicitly assumes exclusive (deterministic) trade areas. In reference to the probability contours that the model produces, Berry notes that "such a surface renders operational the central place theorists notion of a set of demand cones while broadening the theory's simple notions of non-overlapping market areas to more complex, continuous, probabilistic bases...this set of surfaces together with the center on which

each of the market penetration cones are focused, summarizes the spatial patterns that are the heart of the geographers concerns with marketing systems." ²¹

Although Huff admits that there are a great number of variables that affect consumer behavior, he feels that evidence suggests that two variables exert such an influence on consumer choice that all other variables can be ignored without too great a loss in the model's predictive ability. These two variables are: 1) The number of goods that a shopping center offers (generally this can be simplified by using the square feet of selling area as a surrogate measure) and; 2) The travel time from the consumer's residence to the shopping center. ²²

In essence, Huff assumes that retail shopping facilities are pretty much alike except for size and distance, therefore, "The Huff model can be expected to yield accurate predictions only when its underlying assumption that retail stores or centers are reasonably similar except for size and distance, accurately portrays the competitive situation under investigation. In situations where consumers perceive substantial competitive differences between retail stores or centers, the use of retail store or center size will not be a good measure of attractiveness and hence, will most likely provide inaccurate estimates of retail trade areas and patronage." ²³

Nevertheless, despite Huff's contentions, it is believed that the predictive ability of the model can be questioned since it does not sufficiently account for a number of important variables such as; price, quality of merchandise, accessi-

bility (although some may assume that this is implicitly accounted for within the driving time variable) and a host of other salient factors. Huff defended his models against such criticisms by suggesting that "Mathematical models are not infallable. They are by necessity simplified constructs of some aspects of reality. It is impossible for such constructs to include all possible factors that have a bearing on a particular problem. Therefore, decision makers should be aware that there are variables other than those specified in the model that affects the sales of a retail firm. The reputation of a firm, the newness of a store, the merchandise it carries, the services it offers, etc., are but a few examples of additional variables." ²⁴

Empirical support for Huff's gravity model has been mixed. It seems to provide a fairly reliable estimate for shopping areas or centers but is somewhat weaker when individual stores are the main concern. This is likely due to the fact that consumers perceive greater differences between different stores than between different shopping centers. ²⁵ As Kotler comments, "Short of including additional variables, it is felt by many analysts that Huff's equation is of limited value in estimating sales potential for single stores. Individual store size per se has not been found to have the great influence claimed on drawing power. Size appears to be more of a factor in explaining drawing power differences of shopping centers and here is where the Huff model may be most effective." ²⁶ Scott, on the other hand, disagrees to some extent with Kotler.

He feels that "A mere increase in outlet size unaccompanied by a change in product mix is unlikely to modify a market area, though it may increase substantially a stores penetration of the market." ²⁷ In other words, although Scott agrees that store size has very little influence per se on the areal extent of a market area, the theorists diverge over the question of sales penetration. While Kotler continues to maintain that the effect of store size on market area penetration is negligible, Scott contends that it is in this capacity that the size of the store has the greatest influence. A great deal more empirical research is required before this discrepancy can be cleared up.

(iii) Behavioral models.

The current trends in retail modeling have predominantly been attempts to overcome some of the limitations of models such as Huff's by introducing psychological variables into the model design. Proponents of these models feel that consumers have different perceptions of retail centers, and that these images result in variations in trade area size and the share of the market that the center will ultimately receive. However, it is questionable as to how many models have successfully tested the relationship between consumers perception and their overt patronage behavior. One of the more established of these models was developed by Stanley and Sewell. Although supermarkets are the focus of interest in the following example, the model could as easily be applied to other types of stores or to shopping centers as a whole.

The model is expressed as:

$$P_{ij} = S_j^{\lambda_s} T_{ij}^{\lambda_t} D_{ij}^{\lambda_d} / \sum_{j=1}^n S_j^{\lambda_s} T_{ij}^{\lambda_t} D_{ij}^{\lambda_d}$$

where:

P_{ij} = The probability of a consumer in area i shopping supermarket j .

S_j = The square feet of retail selling area of supermarket j .

λ_s = The sensitivity of changes in shopping probabilities to changes in selling area.

T_{ij} = The driving time between area i and supermarket j .

λ_t = The sensitivity of changes in shopping probability to changes in driving time.

D_{ij} = The measure of image distance between an "ideal" supermarket chain for consumers in area i and the chain represented in the market area by supermarket j .

λ_d = The sensitivity of changes in shopping probability to changes in store image. ²⁸

Although it is likely that this model, through the introduction of the image variable has a greater predictive capacity than many of the earlier models, it certainly is not without its faults. For example, the model assumes that consumer behavior, in the aggregate, can be predicted on the basis of mathematical probability even though the behavior of the individual consumer is not normally predictable. ²⁹ One is also led to question the validity of quantifying psychological variables in the first place. A broader critique of

this problem shall be reserved until a later point. Furthermore, since Stanley and Sewell have simply added an image variable to the Huff model, they fail to overcome a number of the previously mentioned flaws.

In a similar vein, Nevin and Houston felt that although most studies imply that mass is a useful proxy for attraction, it has not as yet been adequately determined whether it, coupled with the distance measure, is sufficient for the prediction of consumer shopping patterns. They, like Stanley and Sewell, attempt to add an image measure to the Huff model. The following model adds two new components to the original Huff model; image of intra-urban shopping areas, and a specific store attraction variable.

$$P_{ij} = f \left(\frac{S_j T_{ij}^2}{\sum_{j=1}^n S_j T_{ij}^2} \right) \cdot I_{ij1}, I_{ij2}, \dots, I_{ijk}, SPS_{ij}$$

where:

P_{ij} = The probability of consumer i shopping a particular shopping area j .

S_j = Size of retail shopping area at location j .

T_{ij} = Time involved in getting from consumer i 's travel base to shopping area j .

n = The number of competitive retail shopping areas.

I_{ijk} = The image consumer i has of shopping area j on image dimension k .

SPS_{ij} = The attraction of consumer i to a special store in shopping area j .³⁰

The SPS_{ij} variable recognizes the dual choice of shopping

area as well as specific store faced by the consumer on any given shopping trip. Some consumers may choose a shopping area that they do not particularly care for just because it may contain one specific store which they may like. The variable is measured by simply asking the respondents whether or not there is a specific store that attracts them to each shopping area, and is introduced into the model as a dummy variable.

To develop the image measure (I_{ijk}) they chose sixteen store attributes (based on studies by Bearden and Lindquist) as being the salient factors that comprise the consumer's overall image of a particular facility. The attributes were: quality of stores, variety of stores, merchandise quality, product selection, general price level, special sales/promotions, layout of area, parking facilities, availability of lunch/refreshments, comfort areas, special events/exhibits, atmosphere, store personnel, easy to take children, great place to spend a few hours, a conservative center.³¹ These 16 items were incorporated on a questionnaire and each item was measured on a 5-point modified semantic differential rating scale. They chose the semantic differential format over other alternatives (ie multidimensional scaling) because, it was easy to administer, assumed minimum verbal skills on the part of the respondents, and is relatively reliable. The responses were then factor analysed using principle component analysis and varimax rotation in order to: 1) identify the underlying dimensions of the image; 2) check for congruency across areas; and 3) purify the

measure of the resulting image dimensions by eliminating attribute items with low correlations with the independent factors. 32

Testing of the model showed that its predictive or explanatory capacity was not that much better than the traditional Huff model. The utility of its application over the Huff model therefore, is questionable considering the additional data collection requirements. Of course, any additional time cost considerations imposed on the user of the model is very significant and must be justified in terms of improved predictability. As Nevin and Houston note, "The result of the study generally do not support the hypothesis that adding a retail image component to the Huff model will improve predictions of consumer choices of intra-urban shopping areas."33

(C) Predicting potential sales volume.

Although the form of the models presented to this point have had the delineation of trade area boundaries as their output (in either a deterministic or probabilistic form depending upon the model in question) predictions of expected sales volumes are also possible through these models.

The procedure for estimating potential sales volumes with those models that produce probabilistic trade areas (ie Huff's, Nevin and Houston's, Stanley and Sewell's and a host of others not directly discussed here) is virtually the same.

Once the analyst has used the model to calculate the probability of consumers in each area shopping at a particular

center, he maps out the trade area by connecting all statistical units having like probabilities. He must then determine the number of consumers in each zone that are expected to shop at the center in question. This can be determined by simply multiplying the calculated probability for the zone by the total number of consumers residing in the area. He must then determine the average per capita and total income for the area. Once this has been calculated the next step involves determining how much money is available for the various product classes that the subject center is expected to offer. The census also has quite accurate information regarding the percentage of total income that the average family spends on various types of goods (available for different income groups). If the analyst then multiplies this budget figure by the expected number of consumers per unit area and sums these estimates, he arrives at the total sales potential per product class.

These calculations can be done by the trade area delineation model by simply multiplying the original formulation by C_i (number of consumers in area i) and in turn by B_{ik} (budget for consumers in area i for product k).³⁴

The method used for determining the sales potential for deterministic trade area models such as Reilly's law of retail gravitation is much the same except for everyone within the trade area of the facility concerned is expected to shop at the center (or store) for all of the desired goods that it offers. Thus everyone is included in the calculation.

(D) The appropriateness of the variables.

As should be clear, there has been a strong trend in recent years to attempt to improve the basic gravity model (ie Huff) through the introduction of behavioral variables. The premise is that the traditional variables - mass and distance - are not alone, sufficient determinants for explaining consumer patronage patterns in urban areas, especially when the distance between alternatives is not that great.

The empirical results of the testing of a number of these "improved" models has been mixed. Bucklin, for example, comments that his studies suggest that the role of mass dominates that of image and supports the validity of employing the traditional gravity model, although he also notes that the image factors were not without significance and that including image variables in gravity models could ultimately improve their predictive capacity. Mass provided utility by reducing the time and effort required for individual transactions and made multipurpose trips more economical and facilitated inter-store comparisons.³⁵ He also commented though, that not everyone would value mass in the same way, and that its utility would vary depending upon the nature of the shopping trip.³⁶ In essence, he concluded that overall, "It is seen that the consumer's social position, image, and the shopping problem affects the perceived reward from careful product selection and inter-store comparison as a basis for search. Mass retains its overall significance as a factor

for determining the attraction of a center, but it appears that adjustments of gravity models to fit differential consumer perceptions of mass would improve predictability." ³⁷

Braumal and Ide's conclusions are not far removed from those of Bucklin. Their argument is basically that "The larger a center, the greater will be the chance of a person satisfying his needs, but the chances of a person travelling to a center will diminish with distance." ³⁸ The underlying premise of the argument is that consumers shop in such ways as to maximize utility, which they feel is governed directly by the inter-relationship of size and distance.

S.M. Taylor likewise obtained similar results in his study of consumer spatial behavior. He concludes his study by suggesting that "In general, the results provide strong confirmation of the importance placed upon locational variables in existing models of shopping behavior. More specifically, they confirmed the validity regarding size of center as a surrogate measure of attractiveness, while demonstrating the willingness of consumers to travel farther to patronize larger centers." ³⁹

Gentry and Burns, in their study of consumer patronage motives, set out to determine what factors the consumers weighed most heavily in determining shopping center choice. The results of the survey showed that consumers found distance to be a relatively unimportant factor in their decision making process. However, when these same consumers actual shopping

patterns were observed and tested, it was found "...that perceived proximity was the best single discriminant for all three of the shopping areas, despite its relative unimportance in the minds of the respondents."⁴⁰ Aside from reinforcing the importance of distance in shopping center choice, this study also leads one to question the validity of asking consumers to tell an interviewer how important selective evaluative criteria are to their patronage decisions.

Stanley and Sewell claim a little more success in their attempt to add the image variable to the Huff model, by concluding that "The addition of the image measure significantly increases the model's ability to explain variations in retail food store patronage."⁴¹ However, they added that the power of distance remained the major factor in predicting consumer patronage patterns. The importance of distance was clearly evident since they found that the supermarket with the lowest image had the highest patronage level. In this case driving time appears to outway the image factor.⁴² It should be noted though, that Stanley and Sewell's study has been criticized in that it did not adequately sample the domain of image related attributes. They also chose to test the impact of image where the importance of utility to the consumer is at its minimum (ie convenience food shopping).⁴³ Possibly the application of the model on a wider range of variables and trip purposes, might have produced more fruitful results. Nevertheless, Nevin and Houstin corrected some of these flaws, but

still concluded that "overall, this study seems to lend empirical support for using the Huff type gravity model to predict intraurban trade areas and potentials." ⁴⁴

The results of these studies necessarily leads one to question the value of image as a determinant of store choice. Despite this fact a significant number of theorists continue to advocate strongly that more attention must be paid to the image measure and its role in shopping center choice, although few have attempted to substantiate their claims through modeling or empirical testing. A great deal of the resultant studies have not directly been attempts to derive an image measure solely for the purpose of incorporating it in a model, but rather have been attempts to simply understand the decision making processes that antecede a consumers patronage decision. These studies add a great deal of insight into the potential for using such a measure in model form.

Clearly, to operationalize the concept of image as a determinant of shopping center or store choice, one must begin by isolating, in an unambiguous fashion, the dimensions actually used by consumers in evaluating retail facilities. Although this problem has been the focus of a great deal of attention, to date it has yet to be solved, as is witnessed by the discrepancies in the range of store attributes used in the various studies.

Roger Downs for example, in his classical study of the Broadmead Shopping Center in Bristol, employed the "cognitive

behavioral approach" in a rather unsuccessful attempt to understand the reasons underlying the consumer's shopping center choice. He believes that a consumer will evaluate a situation by the cognitive structure of an image, which in turn is the process of collecting, coding and evaluating all of the information he has of the spatial environment. In an attempt to prove his theory he devised a test containing nine attributes along which a consumer is expected to evaluate a shopping center. The nine factors used were: price, structure and design, ease of internal movement and parking, visual appearance, reputation, range of goods, service, shopping hours and atmosphere.⁴⁵

However Cadwaller, with similar intentions, only used the following four attributes to measure image: speed of check-out service, range of goods sold, quality, and price.⁴⁶ This inconsistency in the attributes the various theorists hold to be salient becomes increasingly evident as one scans the literature (see Schiffman et al 1978, Lessig 1973, Engel et al 1978, Walters 1978, and Lloyd and Jennings 1978 for alternate lists of attributes). This is a clear indication that the components used by the consumers in forming an image of a store or center has not as yet been realized by the researchers.

Another problem with most of the studies dealing with the image of a store or shopping center is that the components denoted as being salient in comprising an image, fail to explain a very significant amount of the variation in shopping

patterns. It seems that most store image studies give insufficient consideration to content validity. To be more explicit, most have assumed that those variables salient to store choice coincide with the objective attributes of the retail environment such as price level, quality of goods, personnel, interior design, and so on. While it is obvious that such attributes are of fundamental importance, evidence suggests that more specific aspects of these generalized notions constitute the critical variables.⁴⁷ This point is reinforced by the relatively poor results of most of the studies. For example, Schiffman attempted to test the relative strength of the image characteristics that he used in his study (convenience of location, best price and/or deals, guarantee/warranty policies, salesperson's expertise, and variety of merchandise to choose from) through the employment of multiple linear regression. The coefficient of determination revealed that only 19.2% of the variability in store choice was explained through the five image characteristics. He notes that it is quite common for the coefficient of determination to be this low.⁴⁸ The poor results are likely due to the fact that store choice behavior is such a complex phenomenon that it would be completely unrealistic to assume that these five factors could account for a substantial portion of the variability in shopping patterns.

Lessig's study is another example of the poor predictive capacity of the image variables. His study was an attempt to

predict store loyal consumers through the image they held of the various alternatives. The results were that the model successfully predicted store loyalty for 17 out of 29 households. From this he concluded that the images consumers had of the stores were useful in predicting store loyalty.⁴⁹ Although he seems to feel that the model was successful, it appears that his conclusions indeed must be questioned since his model was only successful in 59 percent of its predictions. This is not much greater than we would expect through chance, given the equal probability of making a successful or unsuccessful prediction.

In reference to the components used in most studies, Samson and Harris concluded that they "...lack predictive value in the type of situation we face, where groups of consumers differ markedly in their perceptions, and where the lowest common denominator among variables tends to be very large indeed."⁵⁰ In other words, there has not been enough attempts made to find the underlying attributes that comprise the decision making process of the consumer. As a matter of fact, a good deal of the studies derived their attributes from the existing literature. In many ways this is surprising, given that many of the empirical studies have already displayed their inadequacy. It is felt that before the predictive capacity of these studies can be improved, a better theoretical grounding is needed. Clearly, until such an improvement is made, using such measures as image variables in the

gravity or other types of models will continue to produce inconclusive results.

Another problem with deriving an image measure for gravity type models is that the analyst must deal almost exclusively with the individual and thus the models seem to lack any predictive capacity beyond the individual himself, and as has been pointed out, even this can be questioned. This makes the potential for aggregate models of consumer spatial behavior seem very small indeed.

Still a further problem seems to be the question as to the validity of applying these behavioral models at the level of the shopping center, or even the store for that matter. One of the major criticisms that has arisen stems from the fact that it does not appear that consumers have an "image" of the shopping center as a whole, but rather only the stores in which they shop.⁵¹ This is found to be especially true of neighbourhood centers, where the consumer generally only shops for one convenience type purchase at a time. Thus he may have a different image each trip depending upon the purpose of the particular shopping trip. It is suspected that the image dimensions will vary depending upon the type of store under consideration, thus suggesting the necessity to define the salient image determinants independently for different purchase situations.⁵² Studies by Engel, Kollat and Blackwell carry this argument one step further by noting that due to the fact that the determinants of store choice vary by

type of product, store, and customer, it is usually impossible to talk about general determinants of store choice.⁵³ Richard Cordoza's study of department stores further highlights these viewpoints. His data indicated that the image of a store varied among the different product classes, thus the consumer did not have an image of the department store as a whole.⁵⁴

Although by no means has the value of incorporating an image measure in the gravity model been satisfactorily resolved, at this point in time it appears to be equally sufficient to include only the traditional size and distance factors at the expense of the behavioral variables. In most cases the addition of an image variable did not improve the predictive ability of the models much beyond simple linear relationships containing only distance and square feet of shopping area measurement. In short, the improvement is very modest relative to the additional costs of collecting the demographic and socioeconomic information.⁵⁵

Possibly one of the reasons that the image variables have not improved the predictive ability of the models as much as one might expect is that size, in some aspects, is a surrogate measure of many of the components that comprise a consumer's image of a particular center. "In his classic study, Holdren found that most of the variables that one might consider important in examining the merchandise mix in supermarkets (in this example although it is expected that the conclusions are

applicable on a more general scale) were related to the size of the store. Prices varied inversely with the size of the store while various types of conveniences such as air conditioning, parking, money order, completeness of product line, and so on, all varied directly with the size of a store." ⁵⁶

Furthermore, gravity models are concerned with the interaction between households and retail facilities and have only limited value as behavioral models. They are essentially designed to account for the behavior of large groups of people, and rest on the assumption that group behavior is predictable on the basis of mathematical probability because the idiosyncracies of any one individual or small group tend to be cancelled out. ⁵⁷ The interaction they simulate is a crude average state of mainly domestic shopping measured solely in terms of the proportional use made of a large number of centers by a large number of households. Hence, the net effect of using detailed behavioral data inputs will be to generate a mass of information which will tend to blur rather than clarify the overall pattern of movement. In essence, the data is too good for the type of model for which it is intended. ⁵⁸

Although it is clear that consumer spatial behavior is quite a poorly grounded concept, it should be stressed that this is likely a reflection of its infancy, not an indication of its potential use value. The recent shift in emphasis from the aggregate to the individual, and from the deterministic to

the probabilistic has been an important step toward furthering our understanding of how consumers behave in a spatial context. Despite this move in the right direction, Bunting notes that, "As yet...research has not produced a coherent body of knowledge that significantly augments our understanding of man-environment inter-relationships.⁵⁹ She further adds that "...the large volume of research on environmental perceptions, images, and preferences of individuals has furnished no real understanding of actual behavior patterns."⁶⁰

In essence, it is believed that until the field of consumer spatial behavior matures somewhat, and becomes a little more firmly established, adding the image measure to models such as the gravity model will not prove fruitful enough to merit the additional research required.

(E) Problems associated with estimating the friction of Distance Parameter.

Although there is no question that the size of the shopping center, and the distance from the consumer's residence has a direct bearing on where consumers will shop, "Consumers also display differences in terms of their willingness to travel various distances for different types of products. This accounts for the distance exponent λ . These variations can be attributed chiefly to the value difference that various goods and services possess to consumers.⁶¹ Such value differences are largely based on:

- 1) The degree of substitutibility of various products;
- 2) The expected absolute price differential between different products;
- 3) The absolute price of a product in relation to a consumer's income; and,
- 4) The degree of psychic income anticipated from different products (essentially the social prestige value of certain goods). ⁶²

When using most retail gravity models such as Huff's, it is believed that if the calculated expected sales does not approximate the actual sales, it is assumed that the difference is accounted for by the friction of distance and adjustments can be made by varying the value of λ . The greater the value of the λ exponent, the greater the friction of distance, and hence, the shorter the distance the consumer is willing to travel, and the lower the probability of a purchase.

To estimate the value of λ , Huff made use of a successive approximation solution. The sequence of steps involved are as follows:

- 1) Assume a particular value for λ which is greater than unity. Correspondingly, substitute the values for each of the appropriate characteristics in the model and calculate the expected probabilities.
- 2) Compare the expected probabilities with the actual relative frequencies obtained from the survey data and calculate a correlation coefficient.

- 3) Continue to substitute incremental values for λ until the highest correlation coefficient is obtained which will represent the optimum value of the parameter. ⁶³

In essence, this procedure consists of a search over a defined interval to find a value of λ which gives a lower sum of squared differences between the expected number of people shopping and the observed number of people shopping over the store location set them some predetermined allowable error. ⁶⁴ Basically, this is a non-linear least squares approach.

Another common means of estimating the parameter is known as the maximum-likelihood method. This method is based on finding the maximum of a likelihood function which expresses the probability of different parameter values producing an observed result. This method has a strong intuitive appeal and according to it, one estimates the true parameter by any set of parameters which belong to the most plausible set. Often there is a unique maximizing parameter set which is the most plausible and thus the maximum likelihood estimate. ⁶⁵

Although both sales and shopping trip data can be used to calibrate the parameter, shopping trip data is more valid statistically since a trivial solution generally results when sales is used. As Openshaw comments, "In this case (the Lakshmanan-Hansen model which uses cash flows as the input) the data is totally inadequate for the model and because of this

the trivial solution is inevitable...these models cannot be expected to provide any satisfactory basis for describing retail systems and have little statistical validity. The fact these models continue to be given practical application reflects both the absence of any alternative, the lack of suitable data, and misuse of the model itself." ⁶⁶

Nonetheless, the use of trip data, although possibly more valid statistically, depends on the validity of the assumption that mean trip length can be estimated when trip pattern itself is not known. The only foreseeable way to solve this problem is to actually collect shopping trip data either through household shopping trip questionnaires, or even better, shopping diaries. ⁶⁷ Due to the impracticality of this task, sales data is generally preferred in spite of its noted deficiencies.

When using the models, Rhodes suggests that a different exponent might need to be applied to each center, store, or even each of the individual goods offered within the centers. Rhode's study also hinted that the expenditure gradients over distance may vary with the socioeconomic structure of the residents of each zone due to differences in mobility and car ownership. ⁶⁸ It appears that the association between distance and the exponent would be a logistic curve. This means that for short distances small exponents nearing zero will be appropriate, as distances increase, the exponent will rise rapidly but at some point

this rise will be less and almost level off.⁶⁹ Bucklin's studies show that "The greater the distance, the larger will be the exponent that minimizes the error of the model. The implied gravity model theory that there is some universal friction of distance for a given type of shopping trip, ie., an invariant exponent, is, as a consequence incorrect."⁷⁰ This implies difficulty in using the gravity model for a number of centers because if the distances between the centers vary significantly, the exponent used must represent a compromise. While this compromise may be representative of the entire group of facilities, this exponent may make some very bad predictions for individual centers.

Also reinforcing this variable exponent is the fact that the lambda value will be different for different sized centers due to the varying utility associated with these centers. As Huff notes, "The results of the empirical study tends to indicate that the marginal utility associated with the size of a shopping center increases rather slowly for small shopping centers, rises rather markedly at some larger level, and then the marginal utility begins to decline with successively larger sized centers. Such a phenomenon suggests that this relationship between marginal utility and shopping center size may take the form of a logistic curve."⁷¹ This notion is further substantiated by Young's study in Philadelphia, where he concluded that the distance decay value for community centers should be near 2.0, whereas for regional centers

the exponent should be near unity.⁷²

Map pattern has also been shown to have an effect on the exponent and makes it very difficult to estimate the distance exponent in empirically fitted gravity models. It is believed that because of the map pattern effect, the distance exponent has nothing to do with friction and everything to do with map pattern (primarily due to autocorrelation among the population values). Different degrees of clustering will exhibit different frictional terms even if friction is known to be constant.⁷³ Thus, estimates of the parameters can only be obtained if other elements of the spatial system are modeled too. To date, such a solution has not been obtained.

Deriving a value for the lambda exponent presents one of the greatest problems in attempting to operationalize the various models. The value has to be empirically derived and therefore you can only validly use the models for analyzing existing shopping centers. There is a degree of danger in using analogous situations to derive a value to be used for analysing a proposed shopping center, due to the sensitivity of the parameter. Even very small changes in the value can have a drastic impact on the end results. Thus, the models are really only useful as explanatory tools and have little value in terms of prediction. Furthermore, most of the methods advocated by the theorists for deriving a lambda measure are essentially curve-fitting exercises.

Basically, what they are doing is fitting the model to suit the situation. It is no wonder that the models predict fairly accurately under these conditions since the value of the lambda chosen minimizes the difference between observed and predicted sales volume (or whatever).

It is evident that a great deal more research is required in order to better understand friction of distance and its effect on shopping center choice. The models predictions depend heavily on the value of the exponent used, and there appears to be no satisfactory means of determining the value of the measure short of empirically fitting the model to an existing outlet. This, however, does not solve the problem facing the analyst trying to predict the sales volume of a proposed center. Clearly there is danger in using an analogous center to derive the measure. Until this problem is solved, the practical value of the model will remain extremely low, no matter what adaptations are made to the general design of the models. Although no detailed discussion will be given here, estimating the attractiveness exponent for the size variable (where applicable) presents a similar set of problems.

(F) Summary.

This review of the literature began with a critique of a representative sample of gravity models, paying particular attention to the assumptions involved with their use (ie. that all centers are the same except in terms of size and distance),

the validity and range of variables used, and to some extent the problems involved with their practical application. The addition of image related variables was identified as a strong trend in much of the recent work. In many ways this trend is a spin-off from the work that is being conducted in the related field of consumer spatial behavior. A brief over-view of the relevant work that is being done in this area was given, and some of the major problems that were being encountered were identified. Finally, one of the major problems associated with the models operationalization - the estimation of the lambda exponent-- was discussed.

Although reviewing the literature from this perspective gives some indication as to why such approaches have failed to diffuse into the business world, it is believed that a better understanding of why the practical value of these models is extremely low can be obtained through an analysis of the methods actually used in practice, as this will give some insight into the complexities of the developmental process. Thus, the following chapter is a review of some of these approaches.

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CHAPTER 3

TRADE AREA ANALYSIS IN PRACTICE

(A) Introduction.

Reviewing the literature displays rather clearly that many of the academics involved in retail location analysis have little or no knowledge of retailing and the constraints placed upon the practitioners. It is felt that the best way to gain an understanding of the potential practical value of the various theoretical approaches favored by the academics, is to achieve a greater appreciation of the developmental process by talking to people presently involved in the planning and development of retail facilities. Thus, a number of consultants, planners, developers, and store merchants were interviewed in an attempt to determine the methods and processes involved (see appendices A through D for questionnaires). The bulk of the information presented within this chapter is a result of this interviewing, although a number of other sources of information such as feasibility studies were also utilized. Of course, for reasons of confidentiality, the names of the firms involved cannot be used.

Although not all of the criteria thought to be critical factors influencing the areal extent of a trade area were mentioned in the interviews, it was clear that on the whole, consideration was given to a good portion of them. For example, one consultant firm stated that the size of a trade area is a function of the center's size, local and regional

access characteristics and driving times, the strength and location of competitive retail facilities, and natural or man-made barriers. They felt that these were the only significant criteria that could be used at such an early stage in the process (ie. before the inception of the shopping center) since other relevant factors such as the character, design qualities, planning, and to some extent the tenancy of the shopping center, could not be firmly established until a later point in time. Even after the shopping center is established, the spatial extent of the trade area is dynamic. As Kane points out, "...the general shape and intensity of a supermarket's (in this specific case) trade area are subject to change. A new manager, a new competitor, a new merchandising policy, a new highway, a new and large housing development, a considerable expansion of sales area - are all events that can effect a major change in a supermarket's trading area." ¹

In a small town the boundaries of a trade area are fairly obvious, comprising most or all of the town proper, as well as the outlying rural areas. In an urban environment, the boundaries of the trading areas of competing facilities overlap, making the delineation of these boundaries quite a bit more difficult. For the purposes of the forthcoming discussion, therefore, it shall be assumed that we are dealing exclusively with the urban case.

One of the main purposes of delineating a trade area is

that it defines the area of study and thus aids in estimating the potential volume of sales that the subject center might capture. Without an idea as to where you expect your trade to come from, a reliable market analysis would be quite a bit more difficult.

Basically, a market analysis indicates whether sufficient consumer buying power exists, whether retail merchandise needs are satisfied, whether changes in circumstances - including buying habits and travel patterns - within the trade area are changing, and whether growth potentials justify the type and size of center proposed to be built. The analysis also evaluates the competition and existing retail condition, tempered by prospects for the immediate future.² Almost without exception, all sales volume estimations involve two steps: 1) a determination of how much business is available within the boundaries of the trade area, and; 2) an estimation of how much of that business the proposed shopping center can expect to capture.³

To conduct a market analysis, the literature identifies the following factors as being important considerations:

1) population density, distribution, characteristics, and trends; 2) existing retail sales in competitive centers; 3) family income; 4) average monthly rent, values, ownership, and condition of dwellings, as they reflect the retail potential of an area; 5) accessibility of the trade area to the proposed shopping center, and; 6) certain other factors such

as present buying habits.⁴ Although the literature identifies these factors as being salient, the following discussion should clearly display that in practice, not all of these factors are always taken into consideration, and the degree of their use varies considerably depending upon the particular firms methodology.

This chapter will consist of a review of the methodologies espoused by the businessmen for delineating the boundaries of the trade areas and in turn estimating the facility's market potential. Although not all of the approaches specified in the interviewing will be dealt with here directly, it is believed that an adequate presentation of the most representative ones is given.

Rather than dealing with trade area delineation and market analysis in separate sections, it is felt that it would be more informative to deal with each firm's approach in entirety. Thus the following section is broken down into three case studies.

(B) Methods of trade area analysis.

(i) Case study one.

Although primarily a method used only by supermarkets, the analogue approach is a potentially valuable tool for both the delineation of trade area boundaries and the estimation of total sales for most types of stores, and for that matter, shopping centers as a whole. Although the analogue approach has received a significant amount of attention by various

academics (Applebaum, 1966, Kane, 1966) these works are fairly dated, and the obvious trend in the literature is away from such approaches. For these reasons, it is justifiable to regard this method solely as a business type approach. It should also be pointed out that this approach was being practiced prior to any discussion of it by the academics.

In short, the analogue approach entails studying all of the relevant criteria of a firm's existing stores' trade areas and then applying this knowledge to a proposed store (assuming here we are dealing with a chain of stores, but this situation is not believed to be a necessity). The underlying principle being that if the trade area is given size and shape for an existing store, the same situation should result in an analogous circumstance. As Kane points out "...two supermarkets in the same type location are likely to have largely similar trading areas, even though the stores are in different cities. The application of these facts, which are supported by years of customer distribution and trading area analysis, is both obvious and highly significant ...the application becomes especially sharpened when a statement can be made about the market of a single company." ⁵

Nevertheless, as Horton points out, one must be careful when using the analogue approach because it is hard to use the shopping patterns of one particular situation to predict them for another since two areas seldom have identical shopping opportunities. "Hence, it is necessary to isolate and

utilize factors which underlie the variation in the attraction capabilities of specific retail establishments. In effect, research should focus on the establishments selected rather than the individual consumer." ⁶ Horton further adds that the main problem with the analogue approach is that it makes no attempt to seek the causative factors underlying the observed behavior. ⁷

The first step is to determine the trade area boundaries of the firm's existing stores. There are a number of methods through which this task can be completed. For example, one firm continually conducts in-store surveys (emphasizing place of residence and household size) and have found this to be an excellent means of determining trade area boundaries. They have also found that license plate surveys of the cars in their parking lots is a highly successful means of determining the areal extent of their patronage.

From this research they have been able to establish a number of rules-of-thumb, that when empirically tested are consistently accurate. For example, they have found that given a normal competitive network and a typical residential area, people will only travel one and one-half miles to purchase groceries from one of their stores. If the situation is not typical, adjustments can be made according to the quality of the proposed and existing competitive facilities, as well as road patterns and natural or man-made barriers. The degree of such adjustments is most often determined by analogous situations.

Once they have determined the trade area boundaries, the next step in the process is to conduct a population count. To do this they generally grid the trade area into one-half mile cells (sometimes one-quarter mile cells) and in turn count the population within each one of these segments. Although population counts are based primarily on census material, they spend a considerable amount of time keeping these figures up to date. They are continually in touch with the various city authorities in order to keep abreast of a relevant occurrence. They also receive valuable information from hydro and telephone companies regarding any new connections. As well, they keep in touch with post offices as they update their postal walk information at least once or twice a year. This is a nation wide chore, not just one conducted in the area they are proposing to open a new store. For example, for every western city (their outlets are only in the west) they will have the entire area gridded off, with up to date population counts for each cell. In essence, they feel that population is the key variable when considering market potential.

Aside from the population counts, they also devote a great deal of effort to studying the demographic characteristics of the population since empirical studies have displayed that it is an important determinant in regards to how much business is ultimately received. For example, it has been found that different ethnic groups display different lifestyles and travel patterns. They have also found that a

high proportion of older people has a negative influence on the levels of expenditure, whereas younger groups represent high spenders. They feel that by the time they complete this preliminary research they know all they need to know about the population of their trade area.

The next step in the process is to analyze the competition. Again this stage relies heavily on field work. This firm contends that they have visited every supermarket in western Canada. They have devised a checklist (dealing with access, size, appearance, parking, number of checkouts etc.) that they use to analyze their own, and the competitive outlets. They also try and determine the origin of their competitor's customers; primarily through license plate surveys. This gives them a fairly accurate idea as to how many customers they will likely be able to capture with their new store. Furthermore, such surveys, in conjunction with the surveys of their own stores, allows for ready identification of voids in market coverage, thus indicating potential locations for new stores.

Quite regularly, in order to test their image relative to their competitors, they will initiate panel discussions. This involves observing discussions between panel leaders and food shoppers from behind a two-way mirror. The purpose of this is to find out why people shop where they do. This in turn helps them to find ways to improve their image, and hence their drawing power. Once they "know more about the people within the trade area than the people know about them-

selves" they rely mainly on subjective judgement based on past experience to estimate the sales potential of the new store. From studying analogous situations they have a fairly good idea as to the size of market area and the penetration they will receive when locating within a regional center, a community center, and a neighbourhood center or freestanding structure (the latter two are regarded as the same), given various conditions. They have also found that this knowledge, when applied to demographic, site and location specific variables, allows them to make consistently accurate predictions concerning the amount of trade that they can expect to capture. In short, they feel that the most valuable source of information available to them is their existing stores.

In summary, the analogue approach involves a great deal of research in order to understand most everything about the existing store's trade areas - from the characteristics of its population, to the stores accessibility to that population - so that this knowledge can be used for determining the feasibility of a proposed store. Clearly, the firm would have to be opening quite a few new stores each year if it is to justify the continuing research costs.

Intuitive judgment plays a large role in determining which situation can be viewed as analogous and what adaptations must be made, since no two situations are ever identical. Since each circumstance is different in one way or another, it is very difficult to determine what forms these adjustments must take. Further, this method cannot really pick up on the

various behavioral characteristics of the residents in two different areas so it is not always safe to simply assume that the residents in the two areas will respond identically in similar situations. To minimize this sort of risk the firm would have to have studied a great number of stores. Still, there is no theoretical justification for explaining why observed regularities occur as they do, since no attempt is made to understand the underlying processes involved in the consumer's decision making, and in general, what factors he holds salient. Nevertheless, empirical evidence has proven this method to be quite accurate, at least in the case of supermarkets.

This approach is probably especially conducive to supermarkets. Store loyalty is quite common in this type of shopping, and the decision making process that antecedes the purchase of convenience goods is not as complex as it is believed to be for shopping goods. It is also felt that this method is principally suited for chain store operations. As was mentioned, the company involved would have to be opening quite a few new stores a year to justify the necessary research costs, and chain stores seem to be the only ones to meet this requirement. It is questionable as to whether a single store merchant could simply study the situation of another merchant selling similar merchandise because there would be too many factors that could not adequately be considered in the analysis. For example, whereas national chain stores tend to hold similar images in the patron's minds from one area to another, different

images would be hard to account for in the case of local store firms.

In essence, it is felt that a great deal more research and empirical testing on other types of stores and shopping centers as a whole must be conducted before the general applicability of this approach can truly be determined.

(ii) Case study two.

The second method to be discussed, although possibly a conceptually weaker approach than the analogue, is far more common. The principle is that in order to delineate the boundaries of the trade area, the analyst must analyze the strength and weaknesses of the competing facility's tenant mix in relation to the outlet in question. Clearly, such a method is somewhat arbitrary, particularly if a shopping center is the focus of interest since the conceived tenant mix of the proposed center is seldom identical to what actually results, and as will become increasingly evident, this could have a profound effect. Although occasionally the trade area is drawn for each individual store, the most common practice is simply to draw a boundary for the convenience goods (which is essentially the primary boundary) and one for the specialty and/or shopping goods (for all intents and purposes, the secondary boundary).

As a general rule, if the competition's convenience good mix is similar to the subject center's, the boundary of the primary trade area should lie about halfway between the two centers, all other things being equal. On the other hand, if

one of the centers offers a great deal more (likely a larger sized center) or if access to one of the centers is considerably better, the boundary must be shifted in favor of the superior center. This shift is generally not too great though due to the inherent desire of consumers to minimize the distance travelled to purchase convenience goods. This procedure will be repeated for each of the competitive outlets encircling the proposed center. A line is then drawn connecting the points; thus the primary boundary. When drawing the line consideration is also given to access characteristics as well as any natural or man-made barriers that might physically or psychologically impede consumer travel patterns.

Although the secondary boundary of the trade area is a little more difficult to establish than the primary boundary, the basic method is the same. The first step is to compare the strength and weaknesses of the shopping goods and specialty goods stores of the competition and proposed store. The boundary is then drawn in the same fashion as it was for the primary goods. In most cases the secondary boundary will fall inside of the primary boundary of the surrounding shopping centers, since people are willing to travel greater distances to purchase these goods than convenience goods. This overlap is also a result of the fact that the specialty goods and shopping goods tenant mix of the various competing centers is seldom identical. If one center has a music store and another does not, people from within the trade area of the store that does not have the

music store will have to travel to the one that does, hence, the overlapping boundaries. In essence, using this approach, the boundaries of the trade area are arbitrarily drawn through a study of the strength and weakness of the competition relative to the proposed center, and modified in relation to access characteristics and road patterns.

Although this approach has proven itself to be fairly reliable, there are a number of inherent problems associated with its use. As was mentioned, the principle problem, when shopping centers are the focus of interest, is that it is highly arbitrary since the actual tenant mix of the proposed center is never known at the time of the market analysis. Thus fairly significant assumptions are required; the most serious one being that the assumed tenant mix is similar to the actual tenant mix. Clearly, if this assumption does not hold true, the overall picture can change quite dramatically. Fortunately however, evidence suggests that the internal structure of similar type shopping centers (ie regional, community or neighbourhood shopping centers) varies little. The only significant difference might be in the actual anchor tenant (s) represented (ie Sears vs Woodward's). This tenant however, is generally secured before the final market analysis is completed.

The reason for the similarity in the tenant mixes of similar sized shopping centers is the high degree of representation of national type tenants. Shopping center developers are forced to accept a high percentage of these types of tenants since financial institutions are wary of granting loans to

developers whose shopping centers do not have a high proportion of established "triple A" stores, due to their excellent credit ratings. "This insistence that a large proportion of the space be rented to companies of high credit ratings may appear to have a tendency to straight jacket the developer; it necessitates his renting to companies of high credit rating regardless of whether local tenants or tenants of lower credit would provide a better shopping atmosphere and a better complement of shopping amenities for the customer." ⁸ The end result, at least in terms of the tenant mix, is a high degree of sameness.

The difficulty in applying this approach comes when attempting to delineate the boundary between different sized centers. For example, very little is known as to what effect size has on convenience good patronage; will the boundaries be different for certain goods in a regional center than in a neighbourhood center? One must also question whether the degree of penetration will be similar. These are questions which merit further research before any reliable conclusions can be made.

This firm noted that once the trade area of the proposed store has been determined, the next step, in order to calculate the amount of trade that you could expect to receive, would be to determine the total population within the trade area. Reasonably accurate population figures can generally be received from census material or through the

municipality. If the only data available from these sources is out of date, household counts are generally available from local information sources. A rough estimate of the total population can then be derived by multiplying the total number of households by 2.75 (average family size). Although admittedly this is only a crude estimate, it is often the only practical means available for between census years.

Once a reasonable population figure has been derived, the next step is to estimate the total purchasing power of the trade area. This figure is easily obtained by multiplying the total population by the per capita income. The per capita income for an area is also generally available in the census, but if it is out of date, the figure has to be adjusted. One of the easiest ways of doing this is to compare the cost of living index at the present time with what it was during the year of the last census. This comparison will give the analyst a reasonable idea as to how much incomes have risen over the last years. When using such an approach one must be very careful since incomes seldom rise at exactly the same rate as the cost of living, thus subjective judgment comes into play. It is generally advisable to keep the estimates on the conservative side because it is better to underpredict sales potential than to overpredict.

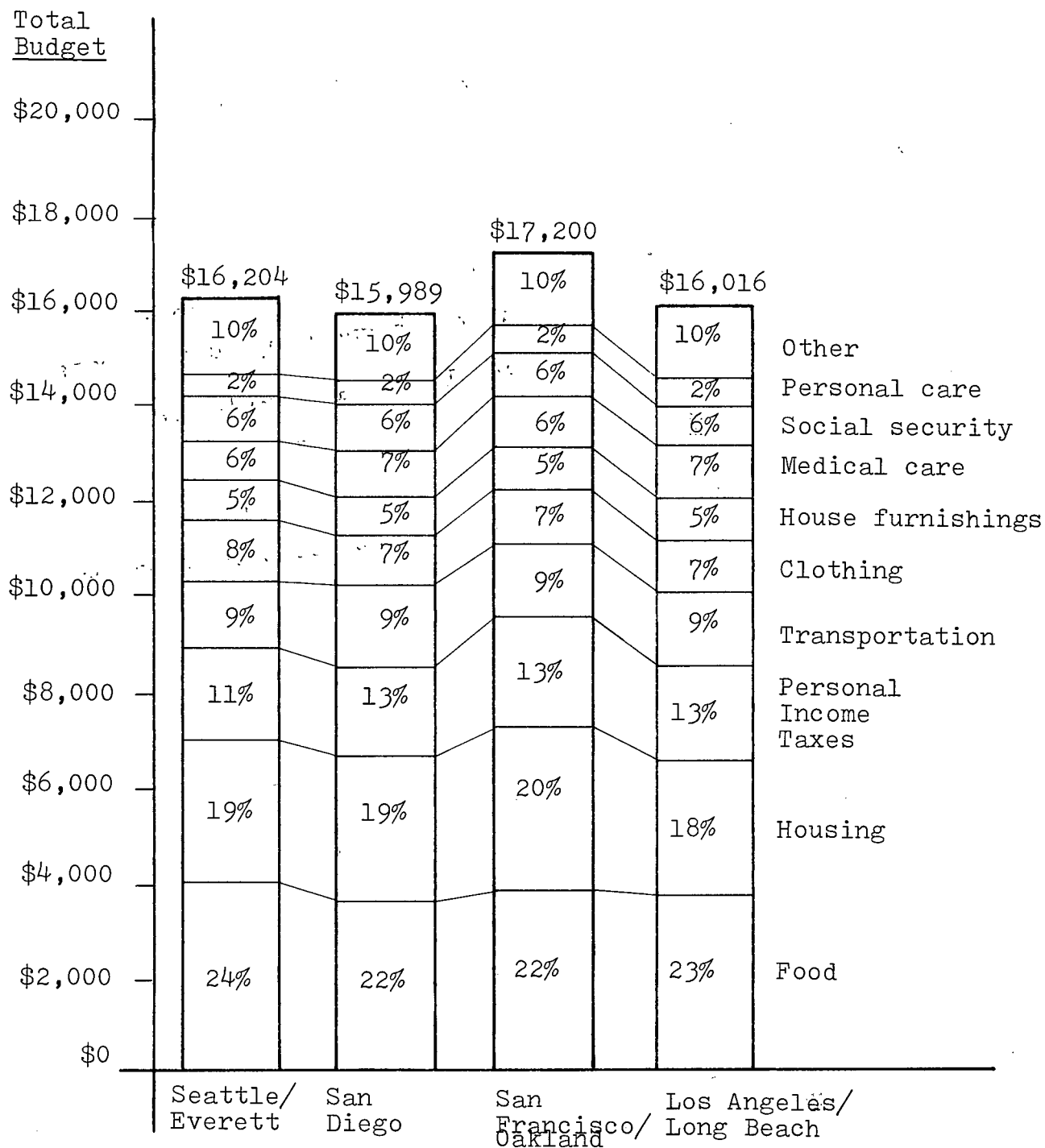
Once the per capita income and total income for the area has been calculated, the next step is to determine how much money is available for the various product classes that the

subject center is expected to offer. The census has quite accurate information on the percentage of total income that the average family spends on various types of goods (available for different income groups) so by relating this budget figure to the total population, the total potential dollars for each store can be determined. (see tables 3.1 and 3.2).

Although this procedure determines the total available dollars for the types of goods offered by a center, it does not indicate how much of this money the center is going to attract, since a shopping center rarely receives all of the trade available within its trade area. The amount of trade from within the trade area lost to other centers is known as leakage or outflow. The level of outflow can only be subjectively determined and is the result of a variety of factors; with the primary ones being the amount and quality of the competitive facilities within the trade area, and the degree of accessibility to these other outlets. Partially offsetting this outflow of sales is inflow sales, which come from tourists and other incidental customers.

Once the total available sales per product class has been adjusted (known as your fair share dollar figure) this figure can then be divided by the amount of sales per square foot required to support a store of this given type. The amount of sales needed per square foot is a figure based on industrial averages, rents, and past experience. It should now be clear as to whether the store can be supported by the

Table 3.1
COMPARISON OF FAMILY BUDGETS IN
FOUR MAJOR WEST COAST
STANDARD METROPOLITAN STATISTICAL AREAS



(Source: Interviews)

TABLE 3.2

RETAIL EXPENDITURE RELATIONSHIPS - 1971
 PROVINCE OF BRITISH COLUMBIA
 (\$000's)

<u>Category</u>	<u>\$000's</u>	<u>\$ Per Capita</u>	<u>Percentage 1971</u>
<u>CONVENIENCE</u>			
Food	\$ 974,758	\$ 446	26.6%
Drug	95,203	44	2.6%
Personal Service	67,897	31	1.9%
Other	<u>268,696</u>	<u>123</u>	<u>7.3%</u>
TOTAL CONVENIENCE	\$1,406,554	\$ 644	38.4%
<u>DSTM</u>			
General merchandise	\$ 629,835	\$ 288	17.2%
Apparel & accessories	188,655	85	5.1%
Hardware & home furnishings	193,042	88	5.3%
Auto	1,147	1	0.0%
Other	<u>244,943</u>	<u>103</u>	<u>6.1%</u>
TOTAL DSTM	\$1,234,622	\$ 565	33.7%
AUTOMOTIVE	\$ 985,362	\$ 541	26.9%
OTHER	<u>\$ 38,266</u>	<u>\$ 18</u>	<u>1.0%</u>
TOTAL RETAIL	<u>\$3,664,803</u>	<u>\$1,768</u>	100.0%

NOTE: DSTM (Department Store Type Merchandise) includes the following categories: general merchandise, apparel hardware, and home furnishings, auto, other retail.

(Source: Statistics Canada, 1971 Census.)

market area, and how big the store can, or should be. The size of the actual shopping center that can be supported is primarily a function of what type, and how many individual stores the market area can maintain. Of course, the amount of land that can be obtained is also a factor controlling the size of the center.

The main difficulty with the use of this approach arises when determining the levels of outflow and inflow. This is the key to the whole approach since all other steps simply determine the total potential sales available within a defined geographic region. Although the calculation of the total potential sales within an area rests on the assumption that the percentage of total income spent on various product classes can be determined fairly accurately, it is believed that the figures available from the census are accurate enough to not pose any major problems. Thus the level of outflow and inflow used ultimately determines the sales level of the store or center in question. Clearly, the figures arrived at are highly subjective but their accuracy is very important because a one or two percent error can greatly change the final picture. Experience and entrepreneurial skill are essential in such situations.

(iii) Case study three.

Yet another approach for delineating the boundaries of a trade area centers on three main considerations: 1) the relative location of the competition; 2) the type of competition (regional, community or neighbourhood shopping centers)

and; 3) the driving time and distances separating the proposed shopping center from its competition. A general rule pertaining to the driving time/distance factor, and the type of competition consideration (with relative location in this case being the limiting factor) has been developed through years of study, and is as follows: consumers will travel;

- 1) Up to 10 minutes or two miles to shop at a neighbourhood center,
- 2) Up to 15-20 minutes or 5-10 miles to shop at a community center.
- 3) Up to 30 minutes or 15 miles to shop at a regional center.

It should be noted that the preceeding rules are applicable only in built up urban areas. Caution should be taken when using these kinds of rules since very little work has been done concerning the effect of driving times on consumer patronage patterns. In essence, there is very little theoretical content in such rules, and there is no explanation as to why observed regularities occur as they do, so deviations from this rule can happen without the slightest expectation. This, of course, could have disastrous implications. Furthermore, these general rules assume that all centers of a similar type (ie regional centers) have no significant differences in terms of such things as design, internal structure, image, access, tenant mix, consumer characteristics, etc.

The following table should serve to illustrate roughly what these general rules consist of. Although supermarkets

are the focus of interest in this example, and the results will vary depending upon the particular competitive alignment, the general idea should be evident.

TABLE 3.3

LOCATION TYPE AND SUPERMARKET SALES DISTRIBUTION

<u>Type of location</u>	<u>Primary trade area size (Radial dimensions)</u>	<u>% of total sales 0-$\frac{1}{2}$ mile area</u>
Neighbourhood freestanding	1/2 - 3/4 mile	65-70%
C.B.D.	1/2 - 3/4 "	70-75%
Neighbourhood business district	3/4 - 1 "	60-65%
Neighbourhood shopping center	3/4 - 1 "	60-65%
Secondary business district	1 - 1 1/4"	60-65%
Highway business string	1 - 1 1/4"	55-60%
Highway freestanding	1 - 2 "	40-45%
Edge of town	1 1/2- 2 "	50-55%
Community shopping center	1 1/2- 2 "	50-55%
Discount department store	1 1/2- 2 "	45-50%
Supermarket center.	1 1/2- 2 "	40-45%
Regional shopping center	1 1/2- 2 1/2"	35-40%

(Source: Kane (1966) p 92)

It is felt that these rules are especially applicable in the case of regional centers. It is generally believed that a regional center has no substantial competition other than another regional center and the business district, and these shopping areas are usually spaced far enough apart to negate most of the competitive impact. Thus, the willingness of the consumers to travel plays a particularly important role. For the smaller centers, on the other hand, with their highly overlapping boundaries, the proximate

location of the competition in most cases places limitations on the willingness to travel criteria since there is often an alternative center within a closer distance than the consumer's distance threshold. In essence, other factors assume a stronger role in the consumer's decision concerning which center to patronize. In general, it can be said that the closer the spacing of the network of centers, the more flawed the rules become since very little is known about consumer preference patterns, and distance is not as major a factor as it would be if the spacing was greater.

It is also felt that when delineating the boundaries of the trade area, it is essential to take into consideration physical and man-made barriers (ie borders, mountains, bridges, etc.) since they can severely curtail or extend the boundaries in a given direction.

The next step involves mapping out the competitive facilities surrounding the proposed site, and then drawing the boundaries of the trade area in terms of the previously mentioned criteria. Experience plays a big role in the final procedure since it involves a fairly high degree of intuitive judgment. When drawing the boundaries the analyst can either leave the system open (overlapping boundaries) or close it (deterministic boundaries). To close the system the competition is simply given a portion (usually half) of the overlap zone.

This firm's method of estimating the potential sales

volume for the proposed center was by far the prominent method espoused in the numerous interviews. Although there are a number of similarities with some of the preceeding procedures, there are also some distinct differences. The method is based on residual analysis combined with the market share approach. Under the residual method of calculating market potential, only that portion of the total sales potential that is not being adequately served by the existing stores is analyzed. Thus, the full and continuing effectiveness of existing stores is recognized. Basically, the residual approach gives a fairly good indication as to whether the market area can support a new store, and thus whether there is a chance of a new outlet obtaining normal sales volumes. For example, if the analysis shows that the market area can only support another 20,000 square feet of floor space for a given store type, it would make no sense whatsoever to build a 120,000 square foot store. Chances are that it would never obtain the required sales level, and if it did, it would do so only by destroying the profitability of some existing facilities. Businessmen will rarely build when doing so might be financially ruinous to another business. It must always be kept in mind that "...a shopping center cannot generate or create new buying power; it can only attract cutomers from existing businesses, which may be absolute, or capture the increase in purchasing power that accrues with population growth. It can cause a redistribution of business, but it cannot create new customers." ⁹ Thus,

the developer must play close attention to the impact that a new center will have on the existing retail facilities in order to ensure that they can continue to operate with reasonable profitability.

Using the residual approach the analyst simply determines the total purchasing power of the trade area for each given store type (using the approach discussed in the preceding section), and then divides this figure by the required sales per square foot. The result will be the total floor space that the market area can support at profitable levels. By then subtracting the existing floor space in the market area devoted to the particular product type, the residual allows him to determine the size of the store that can be supported by the present business potential.

Although basing the analysis around the total square feet of selling area (GLA) is the most common approach, it is believed that this disguises too many relevant factors. For example, it tells nothing about the profitability of each individual competitive unit because the approach assumes equal sales per square foot in each of the stores. It would be much better if instead of using total floor space data, reasonably accurate sales figures for each of the existing competitive outlets were available. Although getting exact sales figures for each of the competitive stores or centers in the market area would be next to impossible, there are a number of ways through which estimations can be made, some of which are:

1) The number of persons per retail establishment compared with national averages.

2) Available retail expenditures per retail establishment is calculated and compared with national or regional averages. The main problem with this approach is that no allowances are made for differences in store size, and average purchasing power disguises too many relevant factors.

3) The number of persons per store front footage compared with national or regional averages. The main problem with this method is that it does not account for multi-storied buildings and store frontage without depth is not a true area index.

4) The ratio of store vacancies to total stores.

5) Sales per square foot of selling area (GLA) compared with national or regional averages. This is probably the best approach since it measures productivity and efficiency of use of space. There are also a number of problems associated with the use of this approach. For example, different companies, even though they sell the same merchandise will devote different percentages of the total area to selling area. Another problem is that differences and changes in the merchandise mix require a weighting of measurement standards. Quality differences between stores presents a similar problem. Furthermore, this method fails to account for differences in merchandising methods. Nevertheless, despite these problems, as well as a number of others not directly referred to, use of this method has had satisfactory results. To opera-

tionalize this approach, simply sum the sales of each of the existing stores and in turn subtract this total from the total sales potential of an area, the residual shows how much is not being served by the existing stores, thus enabling the merchant to determine the profitability of his venture. ¹⁰

Projections of sales for future years are also made in order to determine the potential supportable floor space for given years. In order to better serve the market, and because of the chances of yet another store entering the area, the wise merchant will generally build a slightly larger store than is required during the base year.

In essence, the residual approach considers only the portion of total sales potential not adequately served by existing stores. However, the residual approach does not necessarily minimize the opportunity for a specific retailer because factors other than those included in the approach must be considered in the overall strategy of the retailer (ie image and reputation of the store etc.).

It should also be pointed out that the residual market approach can be somewhat conservative as it assumes that the productivity of existing, competitive facilities will remain constant even after the new facilities enter the market. Therefore, it is not at all uncommon to add to the residual a certain percentage, say 10%, of the total business potential since it is unrealistic to assume that a new store or center will not capture any of the existing facility's business. The

amount added is generally subjectively determined and depends on the store's overall strength in relation to its competition. On the other hand, this approach can also be quite dangerous since there is no guarantee that the center will take all of the untapped business. This is primarily the reason why this approach is generally conducted in conjunction with the market share approach. The market share approach is largely based on the share of the market that a store generally gets in other analogous situations.

Once again, the first procedure is to conduct a population count. This particular firm feels that one of the best means of conducting such a count is to draw concentric rings around the center at one-half or one-quarter mile intervals. They noted there are a number of computer companies with up-to-date statistics that will perform this task at a reasonable cost.

Once this count has been conducted, there are a number of rules of thumb that can be used as a preliminary analysis that can help to determine whether further research is merited. For example, a regional center generally needs a trade area population of around 50,000 people. Thus if the area has a population well below this figure, there is likely no justification for further, more in-depth research. It must be stressed though, that this is only a crude rule of thumb and should never be relied upon without further research. The economic conditions (ie per capita income, store rents

etc.) are so different between areas that use of such rules, in themselves, could be very dangerous. Nevertheless, if further research is deemed worthwhile, the total expenditures required to support each store at a given size (based on the sales per square foot required) is calculated. The following example should serve as an illustration of this process.

For one department store of say, 100,000 square feet, at a required 110 dollars per square foot, the outlet must capture 11 million dollars in trade ($100,000 \times 110 = 11,000,000$) to justify its existence. To arrive at the population required to provide 11 million dollars in sales, the following procedure is used: if the retail expenditure per capita at department stores is 17% of the total disposable income, and the total per capita income is 8,000 dollars, then the amount per capita available for department stores is 1,360 dollars (17% of 8,000). The analyst must then determine the expected market share since it has such a profound effect on the number of people required. For example:

8,038 people	spending \$1,360	(100% market share)	= \$11,000,000
16,076 people	spending \$680	(50% market share)	= \$11,000,000
32,152 people	spending \$340	(25% market share)	= \$11,000,000

To determine the market share of the store in question, you generally rely on industry standards. For example, one particular department store generally commands a 30% market share in all of its stores. Using this figure, it is possible

to determine how much of the total sales volume that the store can expect to receive by simply relating this figure to the total available expenditure within the trade area, thus determining the profitability of the venture. The size of store that can be supported by the market area can then be calculated by dividing the expected sales volume by the required sales per square foot figure. (see table 3.4)

The use of the two methods - residual analysis and the market share approach - allows the developer or store merchant to double check his estimations. If the two approaches produce similar conclusions, he can be a little more confident in his decision making. If, on the other hand, a discrepancy results, the necessary further research that must be conducted before proceeding with the developmental process could save him from making a disastrous decision. Over the years, the application of these two approaches has had consistently successful results.

(C) Conclusion.

On the whole, the main problem with all of the approaches dealt with here is that the key to each method is almost always completely reliant on a subjective judgment of one sort or another (ie expected market share, level of outflow, etc.). Thus the final decision rests heavily on the decision maker's ability to interpret the situation correctly. Any error in his judgment could have disastrous implications.

Nor do any of the approaches consider all of the variables

Table 3.4
FOODSTORE POTENTIAL
MARKET SHARE APPROACH
 (\$000's)

<u>TRADE AREA</u>	<u>1981</u>	<u>1986</u>	<u>1991</u>	<u>1996</u>
Primary	4,873	5,797	6,885	8,158
Market Share	50%	47%	44%	41%
Potential	2,436	2,724	3,029	3,345
Secondary	3,630	4,114	4,653	5,251
Market Share	30%	28%	26%	24%
Potential	1,089	1,151	1,209	1,260
Total Potential	3,525	3,875	4,238	4,605
Sales Per Sq. Ft.	240	245	250	255
Floor Space Required (sq. ft.)	14,688	15,816	16,952	18,058

(Source: interviews.)

known to be salient; they tend to view shopping centers or stores solely in objective terms, failing to consider subjective measures such as image etc. They simply make certain assumptions to control the effect of the various non-quantifiable factors. In many ways though, this viewpoint is justifiable since they are limited by the fact that the shopping center has not yet been built. For example, since the proposed tenant mix used during the feasibility study will not necessarily be identical to the actual tenant mix, use of other than objective measures would be quite invalid. How could one predetermine the image that a particular store might have, especially if it is not a chain store or if that chain was not already represented in the region? Furthermore, the center is usually not completed for 2 - 8 years after the time of the feasibility study (depending upon the size of the center in question) and not to its full potential for another three to five years. Conditions can be quite a bit different from what they were at the time of the study. It is primarily for reasons such as these that most of those interviewed felt that the estimations presented in the feasibility study were highly theoretical and were meant to be more of an aid in decision making, rather than an actual prediction. There are simply too many factors that cannot be accounted for that can have a great impact (ie future conditions, managerial skills etc.). In many ways this reality forces one to relax many of the criticisms that could be launched

against the methods practiced. The importance of this viewpoint simply cannot be stressed enough. Clearly, this perspective is the opposite to what is found in the academic literature whereby they generally study an existing shopping center, aim for exactness in the predictions and then assume that this approach is directly applicable for a proposed shopping center without empirically testing the validity of this assumption. In many ways this seems unrealistic given the dynamic nature of the industry.

Although in some ways the practitioners have already proven the validity of their approaches through the satisfactory success rates of their shopping centers, it is felt that the real test is yet to come. In the past you saw almost any shopping center with adequate size and parking succeeding, but the increasingly saturated markets are going to call for much more accuracy in the methods employed if this success rate is to be maintained. It is felt that such improvements can only be made through more empirical testing and in general, through improvements upon the methods used.

FOOTNOTES.

1. Bernard J. Kane Jr. A Systematic Guide To Supermarket Location Analysis. New York: Fairchild Publications, Inc., 1966. p 164.

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3. Richard C. Nelson. The Selection Of Retail Locations. New York: F.W. Dodge Corporation, 1958. p 148.

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6. Frank E. Horton. "Locational factors as determinants of consumer attractions to retail firms." Annals Of The American Association Of Geographers. Vol. 58, 1958. p 787.

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CHAPTER 4

LOCATIONAL CONSIDERATIONS NOT ACCOUNTED FOR IN MOST THEORETICAL APPROACHES

(A) Introduction.

The interviews, in conjunction with the information contained within the preceding chapters, aided greatly in identifying some of the problems that would be associated with the practical application of the theoretical modeling approaches in real world situations. As well, they pointed to a number of broader problems, resulting mainly from the narrow perspective on the subject taken by the academics.

The modeling approaches for analysing the trade areas of retail activities tend to consider only a small portion of the variables critical in determining consumer patronage patterns. Although the recent trend has been to add image variables to the traditional size and distance variables, attempts in this direction have produced less than satisfactory results. Even though the models that do incorporate image related variables succeed in covering a wider domain of factors, there are still a multitude of other considerations that are neglected. One possible explanation for the lack of attention that these factors have received is that their very nature denies them of quantification. As a result, consideration of these variables would force the analyst into the same position he is trying to avoid; specifically, making subjective judgments. If the analyst subjectively adjusts his models predictions in order to account for

these other factors, it forces one to question the utility of using the model in the first place, particularly considering its fairly demanding data requirements.

Aside from neglecting a number of the variables that are suspected of influencing consumers purchasing decisions, the theorists seem to have also failed to consider the structure of the retail industry and the constraints that the practitioners must work within. These are factors that although they do not necessarily have a direct influence on the level of patronage that a center might receive, certainly play a strong role in determining the actual location chosen. In essence, the spatial distribution of shopping centers is not solely a function of the spatial distribution of demand. In many ways this disregard is a reflection of the academics ignorance of the developmental process.

This chapter reviews some of the salient factors that are often ignored by the academics in greater depth, which in turn will indicate the need for a more wholistic approach to retail location analysis.

(B) Accessibility.

In a retailing framework, accessibility is one of the most important locational requirements, despite the fact that the bulk of the academic literature fails to give it much direct attention; often dealing with it simply in terms of travel times. It seems that the few studies that do consider this criterion are generally of a fairly pragmatic nature.

Nelson states that for a store or shopping center, the

factor of accessibility may be of prime importance, possibly being more important than all of the income, family composition, or shopping habit characteristics of the people involved.¹

Garner also realized the importance of accessibility, as is clear from the following statement:

The utility that is added to a site over and above the capital and labor applied to it is essentially that added by its location. In a retailing framework location is viewed as the accessibility or centrality afforded by a particular site to a portion of the urban market. Centrality can be viewed at two levels: A) the macro-level, or differences in accessibility between alternate business centers, and B) the micro-level, or differences in the advantage of site to local concentrations of consumers within different levels of retail nucleations.²

Essentially, the relative accessibility of a retail center is reflected in its spatial disposition and in the road usage by private cars and public transport vehicles. Accessibility itself is dependent upon journey times, road capacity and usage, car ownership and public transport services, road surface conditions, traffic flows, visibility, peaks and valleys of traffic flow (hopefully peak traffic flow hours are not the same as the center's peak hours), satisfactory location for signs, highway capacity (which in turn is a function of the number and width of lanes, the number of heavy trucks, the length and steepness of grades, sight distance for overtaking, traffic signals, and parked cars) the importance of each of these factors being dependent upon the type of center. It is essential for each of these to be considered when analysing the

accessibility of a site since distance alone is not a satisfactory measure of where consumers will shop. This is because auto travel in particular, is relatively inexpensive in terms of time or money, so a consumer will be willing to travel further to a center where the traffic conditions are more favorable. The effect of increasing fuel prices is as yet very difficult to determine.

In short, when analyzing the accessibility of the site, the developer should consider:

- a) The points of origin of the shopping center traffic.
- b) The routes customers are most likely to take.
- c) Information concerning existing traffic loads.
- d) Critical traffic conditions for peak hours.
- e) Means through which to solve any of the problems that may have been identified.

Of course, these factors must be analyzed in light of the specific requirements for the particular center type since experience has shown that different types of centers have different requirements in terms of accessibility. To be specific, neighbourhood centers are located for access from collector streets, whereas community centers are located for access from major thoroughfares. Regional centers, on the other hand are generally located where a site is easily accessible from interchange points between express ways and freeways. "The ideal site for a regional center is ringed by major traffic routes which have access points and traffic control

devises carefully designed to dispense traffic over a major street system and to handle the peak loads generated by such centers." ³ The literature in general, and the mathematical models in particular fail to realize that each center has different requirements in terms of access, by considering only travel times.

Aside from the fact that a center must be easy to reach, it must also be easy to enter and leave. Consumers more often than not will opt for the easiest alternative, so a site that does not fulfil this requirement will loose a lot of potential business to competitive centers. The consumer's cognitive perception of distance will likely be maximized for the site with the poorer level of access, all other things being equal.

Another important factor that must be considered in any study pertaining to accessibility, is visibility. A site that is not visible from surrounding arteries, not only loses its best form of advertising, but also loses a significant amount of impulse trade. It is generally felt that a center has poor visibility when it is not seen until local traffic speeds carry the driver past the parking area entrance. Even though traffic flow attracts retail business, a site that fronts on a highway heavily built up with strings of competing distractions, including signs, has a decreased level of accessibility.⁴

The failure of the literature to adequately consider most of the pertinent locational requirements of a store or shopping

center such as accessibility, is clearly a serious flaw. Retail potential models, for example, do not account for such factors and thus do not necessarily portray a true representation of reality. Any differences in the level of accessibility between sites would not be realized in the model's calculations (unless these differences were significantly reflected in travel times) but could greatly effect the sales levels that could be obtained on these sites. Until such variables are incorporated, the predictive capacity of the models must remain suspect.

(C) Site specific factors.

To this point, the use of the term "site" has primarily had a locational connotation, but there are a number of factors that are site specific that must be given consideration in the locational decision making process. The literature is extremely weak when it comes to site quality aspects. In most of the models presented earlier, it appears that site quality is assumed to be equal. This, of course, is not a valid assumption. The international Council of Shopping Centers (I.C.S.C.) presents some key considerations for assessing the quality of a site, which are as follows: ⁵

1) The shape of a site - The site should normally be of a regular shape, all in one piece, and undivided by highways or streets;

2) Size - Of course the size of the site should be large enough to adequately house the building and parking. In many cases, where there is a good possibility for growth in an area

the size of the site should also allow for expansion. This reserve of land allows for additional protection from competition since the possibility for expansion to meet the growing needs of the surrounding population might negate the potential for a competitive outlet considering entering the market. However, interest rates, taxes, and other carrying costs are progressively making this practice uneconomical. Thus the developer must ensure that the site is not uneconomically large. Clearly the rising cost of land is reflected in the increasing use of two and three storied facilities as well as parkades.

As general rule-of-thumb, you usually need 40,000 square feet of site area (about 1 acre) for each 10,000 square feet of building (the remaining 30,000 square feet being devoted to parking, roadways etc. This parking to building ratio is often set as high as six to one). When determining the parking ratio, you must consider the following corrective factors:

- A) The amount of foot traffic generated from the immediately surrounding areas;
- B) The amount of shoppers traffic from public transportation;
- C) The size of the center, since the larger the number of stores and the larger the stores, the less parking space needed in relation to the total rentable area;
- D) The character of the stores;

- E) The projected overall sales volume per square foot;
- F) Peak periods and peak hours. ⁶

Once the size of the center has been established, and the best possible parking ratio determined, the size of the site required can easily be calculated;

3) Topography - Gentle sloping land is generally preferred although greater slopes can be used to the center's advantage with a suitable architectural style. For example, a two story center should have a fairly steep slope so that on the one side the customers must enter on the second floor, thus aiding in making each floor equally attractive;

4) Drainage - The site should have sufficient drainage capacity so as not to necessitate any unwarranted expenses;

5) Utilities - The water mains should be of sufficient size to provide adequate pressure and flow, sanitary sewers must have the capacity to accept the projected effluent, and storm drainage sewers must be of sufficient size. The site should also be close to such facilities in order to cut down on the connection costs;

6) Surroundings - The center should be compatible with surrounding areas;

7) Zoning - Favorable zoning is a necessity for any site. No projections of future business potential can be made without taking into consideration the community's policy governing population density etc.

These factors are of prime importance not only in that they can add to the attractiveness and functionability of the

shopping center, but also ensure the longevity of the project and cut down on unnecessary costs. Like the locational factors discussed earlier, the site quality factors are often overlooked in the literature and in the models. It is obvious that the above considerations cannot be ignored since they play a significant role in determining the ultimate success of the venture as a whole. It has been stated that "...from a retailer's point of view, the availability of land at a reasonable price, proximity to lines of communication to motorway access points in the case of a large retail operation, availability of parking spaces, etc., all may be more important than physical proximity to a retail population." ⁷

(D) Tenant mix.

Although choosing a satisfactory location for the center is extremely important, another key consideration in the development of a shopping center is the selection of the tenants. "Selection by the developer of tenants is a prime factor in the ultimate degree of success in a shopping center operation. The financial success of a center is tied directly to the management's ability to select and balance the mix of its tenants expertly...with the proper tenant selection and balance, each tenant lends strength and market appeal to the others..." ⁸ The developer must ensure that the mix of tenants will provide: competitive shopping for a broad selection of merchandise, both in terms of quality and price; sufficient competition so that the quality of service will be at least par

with that available at any competitive facility; and a complete merchandise coverage. The mix of tenants should also create a pleasant shopping atmosphere, the leases should be of a quality that will permit the financing required, and rents under such leases should provide a satisfactory return on the investment.

The tenant mix is a factor that almost without exception is completely ignored in retail models. Although these models accommodate an attractiveness variable, it is generally related only to the size of the facility. Even the attractiveness exponent is solely a measure of the utility associated with size of the center. Clearly, this is a gross oversimplification since factors such as tenant mix can have a great impact on the ultimate sales level of the shopping center. A center with a good tenant mix will out perform a similar sized center with a poor tenant mix, all other things being equal. The models avoid such considerations by assuming that there is a high degree of sameness in terms of the tenant mix of like-sized centers, and that each store of a given chain or type is valued the same by the consumers in various regions. These assumptions are often incorrect.

Without exception, the first step when establishing the tenant mix is the selection of the key tenants. As a matter of fact, until some form of commitment from the key tenant has been received, much of the final planning of the shopping center (ie its size) cannot be completed. The type of key tenant sought (ie full line department store vs junior depart-

ment store or supermarket) is primarily based on the size of the proposed center. For example, in a regional mall full-line department stores are the primary key tenants. A center of this magnitude is also likely to have secondary key tenants in order to enhance the drawing power of the shopping center; a junior department store and a supermarket in all likelihood.

When determining the most suitable company (ie Sears, Woodwards) for the center, there are two primary considerations which are: 1) the characteristics of the population, and; 2) what is already represented in the competitive centers.

It is very important to know such characteristics of the population of the trade area as age, income, sex, etc., when choosing the tenants since it gives some idea as to what type of merchandise will be best accepted. As well as the merchandise carried by the stores, one must also consider the merchandising practices, and in general, the image of the various potential key tenants in order to determine which one best suits the resident population. Clearly, different stores cater to, or at least attract specific segments of the population to a much greater degree than other segments. For example, a disproportionate degree of Zeller's business comes from the lower income, younger married type groups who tend to be more price conscious than fashion conscious. Sears also caters to the blue collar worker, although their merchandise is often a little more fashionable. Woodward's customers are usually older and more established in their occupation (generally white collar) and are often in the middle to high income bracket, and

are more than likely married. Eaton's customers are very much like Woodward's in terms of occupation and income, but are generally younger and more fashion conscious. In turn, the Bay's customers are also quite fashion conscious, of middle income, quite young and often single. From the few examples presented above, the importance of understanding both the preferences of your trade area residents and the offerings of the various tenants should be evident. Clearly, these stores target certain segments of the population, and hence the population characteristics of the consumers in an area is a key locational consideration. Obviously, locating a Zellers in an upper class residential area would not add much to the drawing power of your shopping center.

The problem of selecting the key tenants becomes even more difficult when there is more than one of them, particularly when there is more than one of the same type, as in the case of a regional center which may have two or three department stores. Not only do the anchor tenants have to be compatible with the trade area population, they also must be compatible with themselves. All of the department stores interviewed stated that when locating in a shopping center with another department store, they generally wanted to locate with the best merchandiser so that the strongest possible attraction to the center could be obtained. They also felt that it was important for the other store's merchandise mix and image to be compatible with the trade area residents but different enough from their own in order to avoid unnecessary competition.

The following groupings are a few examples of partnerships that have been highly compatible in the past: Sears and Zellers; Sears and The Bay, and; Woodward's and Eatons. Of course, the most suitable combination will depend on the circumstances involved in each individual situation. In essence, each situation must be analyzed separately, rules-of-thumb simply cannot be taken as given.

Once the major tenants have been selected, and some form of commitment received from them, the developer may then select the satellite tenants that will create the best possible balance. One of the first steps that the developer takes to aid him in his selection is to conduct an inventory of the stores represented in the competitive centers. When conducting such an inventory, the developer should pay particular attention to what stores are missing from the various outlets and what types of stores are under represented. Under representation is clear when a store's estimated sales volume per square foot is considerably above industry standards. It is also important that when conducting this inventory that it is remembered to include the merchandise carried by the proposed department stores because if they have a strong fashion orientation, for example, the center might need to cut back slightly on the fashion oriented satellite tenants, although the developer would have to be very careful in how much he cut back because the combined attraction of the fashion satellite tenants can often serve as an additional attraction to the center. Nonetheless, there is only so much potential

business within a market available for fashion merchandise and there simply should not be too much of one thing.

Once it has been determined which stores are under represented in the market area and these voids filled, the remainder of the vacant stores must be filled in such a manner that the center's mix is properly balanced. One must always keep in mind that one of the main reasons that shopping centers came about in the first place was to satisfy the inherent desire of consumers to conduct one-stop shopping, so there must be a wide enough range of goods offered to satisfy this desire.

One firm noted that as a general rule the following breakdown (in % G.L.A.) provided a fairly rounded satellite tenant mix for a regional center:

- 25% ladies' fashion.
- 10% men's wear.
- 7% jewellery.
- 30% general merchandise.
- the remainder should be services and common area.

Although the above breakdown was given specifically with a regional center in mind, and is not directly applicable to other types of centers, the general idea is clear; a well rounded and balanced tenant mix is the key to success.

Again, the importance of a good tenant mix to the ultimate sales level of a shopping center must be stressed. It can make or break the endeavor in certain situations. When estimating the potential sales level, one simply cannot

assume that all similar sized center's tenant mixes are the same, as is the case with most retail models. Even in the rare instance that the merchandise mix is the same for two competing centers, the actual companies represented in these malls is likely to be different. As was discussed in an earlier section, this alone can have a dramatic impact since particular stores tend to be preferred over others in certain areas, so even though there often is a high degree of sameness in terms of tenant mix between similar sized shopping centers, there are enough subtle differences that can have an impact on the performance of the center.

This presents one of the major problems facing the analyst since at the time he conducts his study, the actual tenant mix of the shopping center is not likely to be known. This puts him in the position of making certain compromising assumptions as to what the actual tenant mix will be. Nonetheless, if he conducts a survey of what type of stores are needed (using the previously discussed method) and in turn recommends this to the developer, hopefully the resultant tenant mix should not be too different. It is for reasons such as this that the analyst's predictions are meant to be more of an aid in the decision making process than an accurate prediction. There are simply too many variable factors that he cannot account for at such an early stage in the process.

(E) Locating the tenant within the shopping center.

Although likely not as important as the tenant mix

itself, the actual positioning of the stores within the mall can have a significant impact on the sales level of the shopping center as a whole. Again, this factor is assumed away in models of retail location.

There are a number of things that must be considered when locating the tenants within the mall, some of which are:

- 1) The suitability of the tenant for the location.
- 2) The pulling power or customer acceptance by reasons of local preference for the merchant.
- 3) Compatability and complimentary status with adjoining stores.
- 4) Tenant's merchandising policies.
- 5) Parking needs generated by the tenant.

The principle objective when locating the tenants is to create the greatest degree of traffic through the mall. To do this it is best to position the anchor tenants in such a manner that the traffic between them necessarily has to pass by the other stores.

By placing the primary and secondary attractors in locations where they function as magnets; customers are pulled through the center from one magnet to the other, past the doors of the tenants who fall into the category of traffic users. These latter cannot in themselves attract a sufficient number of customers to survive, and are therefore dependent upon foot traffic generated by the primary and secondary traffic attractors and in certain cases are prepared to pay premium rents for locations in which they can enjoy such benefits. 9

After the primary and secondary attractors have been located, the locations of the other stores are controlled to some degree by the principle of compartmentalization - the

grouping of stores selling related or similar merchandise, particularly with respect to type, quality, and price. Furthermore, the locations of the individual stores depends upon their relative need for exposure to pedestrian traffic and their ability to pay rent. A card and gift shop, for example, which relies almost exclusively on impulse purchases will need one of the most central locations in the mall in order to reach it's optimal sales potential; people simply do not search for this type of store on most shopping trips.

Most of those interviewed noted that there was no set position for each type of store within the mall and that they relied mainly on experience when locating the stores. One of the most important things is that the store must be easy to find. The developer should also be aware of pedestrian travel flow trends. Thus, before considering the actual positioning of the stores within the center, they must consider the design of the mall. For example, if there are two, two storey department stores and a two storey mall, one department store should have fashion on the lower level and the other should have fashion on the upper level (hopefully the entrance from the parking lot will also be on this level). At the same time, the fashion-oriented satellite tenants should be equally distributed between the levels. This policy will ensure that each floor is equally attractive (therefore similar rents for the developer) and gets similar volumes of pedestrian flow.

Another general rule is that the fashion or jewelery stores will usually get the corner locations (greatest exposure and window space) since they can pay higher rents. This also fosters greater traffic flow since there are attractors at each end of the mall. Dead wings can have a disastrous effect on the entire shopping center.

Although the previously mentioned theory of compartmentalization is, as a general rule satisfactory, one must consider the compatability of neighbouring stores in greater depth. Paul Guthrie, employed by a development company in the United States, conducted a statistical examination of specific relationships, which led to the following conclusions: ¹⁰

1) General statements that similar uses benefit from being clustered together are unreliable;

2) Women's wear and men's shoes are mutually beneficial but other women's oriented products do not benefit from close association;

3) Men's wear benefit from being adjacent to similar uses;

4) Men's wear and women's wear mix well;

5) Quality jewelery and women's oriented retailers depress each others sales, while men's wear and jewelery mix well;

6) Card and gift shops benefit from close proximity to similar uses, but suffer when placed next to men's wear or women's shoes. Conversely, women's products tend to benefit when next to card and gift shops;

7) Department stores depress adjacent business except women's wear and fabric - quality jewelery, and drug/variety, while statistically questionable, may benefit from abutting a department store;

8) Restaurants hurt the sale of ego items, such as apparel accessories and shoes;

9) Fabric, piano and organ, audio, services (except hair stylists) and banks generally depressed the sales volumes of their neighbours.

Although certain store groupings are more compatible than others, more often the question of where to locate the store within the mall is more important than who locates adjacent to it. This is primarily because certain areas within the mall benefit from more pedestrian traffic and visibility. For example, in a two level mall the first floor generally has a higher degree of pedestrian traffic than the second floor, therefore apparel, accessories, shoes and jewelery merchants, as well as specialty food retailers and other impulse merchants excel on the first floor. Drug, variety, restaurant, hairstylists, and audio shops on the other hand, all perform well on the second floor. This is because they generate most of their own business. In other words, the consumer goes to the shopping center with the specific intention of purchasing their goods or services, and will therefore search for the store. Hence, these types of stores do not require as visible a location as other stores might. ¹¹

Corner locations, due to their high visibility and

accessibility to pedestrian flows generally are conducive to higher sales for certain stores. Studies have shown that women's accessories particularly enjoyed more than marginal benefits from corner locations, as did card and gift shops, men's shoes, and quality jewelry. The stores that suffered from corner locations were women's wear, unisex, restaurants, and specialty foods.¹² Since people are willing to search for this latter group of stores, the increased business accrued in a highly accessible location simply would not justify the increased rent incurred by a prime location. It must be stressed that when locating a store, the merchant must always weigh the possible increased business potential at a certain location against the increased rents charged for such positions. It is simply a matter of economics.

Because of the nature of the shopping trip, and the heavy demand for parking spaces, care must always be taken when locating a supermarket. If there is not convenient parking for the supermarket (or theater for that matter) it will lose a good number of customers. Supermarkets therefore, are generally placed at the end of one wing. This enables the supermarket to have its own parking area and its own entrance from the parking lot. Supermarkets are such a ubiquitous entity on the urban landscape that the slightest inconvenience imposed upon the consumer might be just enough to make him opt for an alternative store. Service shops also need a location that provides direct access to customer parking due to the run-in, run-out kind of trade that they tend to capture.¹³

Even from this brief overview, it should be quite clear that there are a great many factors that must be taken into consideration when locating a store within a mall. The developer or leasing agent must be fully aware of the nature of each store's business and the decision making process of the consumer that precedes his purchase. In the end it really comes down to whether prominent positions, and therefore higher rents, result in greater marginal profits for the store. Stores whose business volume does not vary much with changes in location are simply better off locating in an area in the mall where the rents are the cheapest. It is also clear that although inroads have been made in this area of interest, there is need for a great deal more work on understanding the requirements of the various stores and the consumers who patronize them.

Although the few studies that have been conducted in this area have indicated its importance to the sales level of the individual stores and thus the shopping center as a whole, most of the academic literature pays no heed to it. This is particularly true of the quantitative techniques espoused. As in the case of so many other factors, these techniques simply assume that there are no differences between similar sized shopping centers in terms of this criteria. This is a highly unrealistic viewpoint since all indications to date (although there have simply not been enough studies to prove it) point to the great impact that internal store location has on the sales level of a store. Empirical observation also

shows a marked inconsistency between centers in terms of what kind of stores get what location.¹⁴ In essence, approaches that do not take into account the influence of this criteria are in danger of producing weak results.

(F) Predicting population growth.

In many cases the developer's ultimate decision as to whether to build or not, and what the optimum size of the center is, is dependent upon what the potential for the center will be in the forthcoming years. In order to satisfactorily serve the market, and to minimize the risk of yet another competitor entering the area, the wise developer will generally build a slightly larger store than is required during the base year. Clearly, without a reliable prediction as to what the near future holds for the area, it would be very difficult to determine what the demand for the venture will be, since obviously a growth in the total population is synonymous with an increase in demand, and in turn, an increase in the potential sales level of the shopping center. A market area where the potential for future population growth is limited is often a less desirable location than a site that is in an area that expects fairly high levels of population growth in the years to come. Consequently some reliable method for predicting future population trends is essential.

Aside from a few slight variations, the same method was used by almost all of those interviewed. When attempting to predict the levels of population growth, and the direction of this expansion, they invariably begin by looking at historical

trends. In other words, what has been the level of population growth in the past? Has the percentage increase been rising or lowering? Empirical evidence has suggested that rates of growth tend to be fairly highly correlated with the level of growth in the recent past.

One cannot safely assume though, that past trends will remain constant so the analyst must also check into other conditions that could alter the rates of expansion. One of the best sources of the necessary supplementary information is local planning authorities. They will be able to provide valuable information pertaining to their planning policies, zoning bylaws, and any major events that they might be part of. The planners will also be able to indicate where and what type of housing is slated to be built over the next few years. It is essential to have access to such information because it can have a drastic impact upon the future market potential of the shopping center. For example, if the area that the shopping center is to be built is zoned in such a way that it restricts the density of residential development, the growth potential of the trade area could be severely curtailed.

Geographical barriers are also a very important consideration, since they can control the direction of expansion as well as place a limit on the amount of room left to develop. For example, Penticton, due to geographical barriers cannot expand much more in an outward direction, whereas Calgary has unlimited possibilities for expansion. The implications of

this are evident.

Major industrial projects in the area, if any are planned, must be considered, along with any projects in the past that might have inflated the in-migration of people above reasonable levels, since inflated growth rates cannot, and will not, continue indefinitely. This type of information is critical because in many ways it is the level of new job creation within an area that determines its level of population growth. When estimating population growth in terms of jobs created, a simple equation of: jobs created x 2.75 (average family size) = population growth, is generally sufficiently accurate. The nature of the employment is also very important. One must consider what the opportunities for each sex will be, the general level of pay available, and the longevity of the project etc., in order to truly assess its impact on the level of demand for the shopping center.

The researcher must also look and see what is happening in the province as a whole in order to determine whether there is anything significant taking place that could possibly have an impact on the market area of the prospective shopping center. The oil boom in Alberta and the tremendous rate of growth that it is fostering in almost all regions of the province is one good example. Whatever is sparking the growth, as well as the economic base of the province in general, and more specifically, the market area in question, also gives a great deal of insight into the likely population characteristics of the future residents.

In essence, to predict the future population growth and the directions of this expansion, historic trends coupled with discussions with all those who might have some insight into the problem will generally give the analyst enough information that sufficiently accurate predictions are possible. Of course, the term of the projection is primarily a function of the size and type of center proposed. For a regional center, the length of the projection is necessarily greater than it would be for a neighbourhood center. Furthermore, the shorter the projection, the greater the likelihood of it being accurate, thus lengthy projections must be kept somewhat conservative (see appendix E for examples of population projections)

(G) Population characteristics.

As was mentioned earlier, certain stores tend to be favored over others by particular segments of the population. For instance, Zeller's obtains a disproportionate share of their customers from the lower class segment.

Martineau's studies point out that although the upper class consumers may have the income to visit almost any store to purchase a particular product, certain stores will not be patronized due to their association with lower status consumers. Aside from merchandise differences, such associations may be the result of garish advertisements, uneducated store personnel, or some other factor that the potential consumer may find somewhat offensive. Similarly, lower class consumers may avoid certain stores which exhibit higher status connotations, e.g. the products do not display the price, or sales personnel create the atmosphere that the consumer does not

really fit in. It is important to note though, that such qualitative differences between stores do not necessarily apply to all types of purchases made. Martineau studies also indicate that middle class consumers in general did not hesitate purchasing appliances from discount or bargain stores, particularly if these stores dealt in a few well known brands where it would be hard to make a mistake. In the case of furniture, on the other hand, they were more likely to go to a status conscious store because tastes in furniture were more subtle, brand names were less well known, and the support of the store's own tastes would prevent a social mistake being made.¹⁵ In short, for one reason or another, stores project a certain image and consumers prefer to shop in stores that reflect an image congruent with their own self image.

Shopping patterns in downtown Vancouver display this quite clearly. The central business district consists of two sub-areas, one centering on Hastings Street and the Woodward's department store. This area exhibits the type of goods and store personalities which tend to appeal to the lower class consumers. The second area focuses on Granville Street and the Hudson's Bay store. In turn, this area is characteristic of a higher status shopping district, with higher priced goods and stores with more exclusive personalities. Gaylor's study found that the Granville Street area draws more heavily on the west side of Vancouver and the north shore of Burrard Inlet (two of the higher class areas in the region) than on the

east side of the city (a lower status area). The Hastings Street area, on the other hand, draws customers more evenly across the city, although it has more representation in the east side of the city than is true for Granville Street.¹⁶ The study indicates that this is a reflection of store choice, not simply one of locational influence, despite the fact that Granville Street is more proximate to the west side.

The results of Gaylor's study are not nearly as conclusive in the surrounding metropolitan region however this is not really surprising. In this area, the locational factors seem to take over. For instance, although a certain consumer may prefer Woodward's, he may patronize Eatons more regularly if the nearest Woodward's is considerably further away from his place of residence than is the nearest Eatons. It is simply a matter of the consumer weighing the costs and benefits of each alternative. Due to the fact that not all department stores are represented in each area (as is true of the CBD) testing of store preference through observed patronage is not entirely satisfactory since the consumer is not totally free to exercise his choice because of certain constraints, distance being the obvious one.

Nevertheless, it is clear that consumers do have particular store preferences, and these must be considered when locating new stores. Despite the fact that it has been shown that in the metropolitan region, department stores are capable of attracting social class segments that one would not expect to be attracted by this store, it is likely that the store

would perform better if located in the vicinity of consumers whose self image is more compatible with the store's own image.

It appears that the stores are increasingly becoming aware of the importance of this factor and are therefore paying a great deal more attention to population characteristics when making their locational decision, since the compatibility of the trade area population with the store has a considerable impact on the level of sales that the store will ultimately receive. This factor alone can stop a store from entering a market even though there is enough general demand in the area to support the particular store type. This is especially true of junior department stores. For instance, one of the junior department stores interviewed chose not to enter a mall in White Rock because they did not feel that the population of the trade area was congruent with their image and merchandise mix.

Since the population characteristics of the area can influence the locational decision of stores such as department stores, it in turn has an effect on the shopping center as a whole. It can even determine whether the center itself can be built or not, because acquiring a key tenant can be very difficult if the only compatible department store already has an outlet in the area. If one cannot be obtained, the shopping center itself cannot be built (although admittedly this would be more of an exception than a rule). It can also influence the size of the center because if only a junior department store can be secured as a key tenant, a community

center is really the only option. Of course, one would have to be sure that a community center would be satisfactory for the area in question. The actual anchor tenant obtained can also have a direct effect on the satellite tenants required.

As can be seen the population characteristics of an area can have both a direct and an indirect influence on the sales level that can be achieved by a shopping center. Again, this is a factor that is generally ignored by the bulk of the literature, and clearly, this is a flaw that must be corrected in order to improve the predictive ability of their techniques.

(H) Locating stores as part of a network.

Despite the importance of the satellite tenants, the anchor tenants are the key consideration when locating the shopping center. If the developer cannot obtain the right key tenant for the location, he may as well forget about building the center. In many ways the location of the shopping center must fit in with the tenant's corporate strategies and master plan. In most cases each of the company's stores are planned as a part of a network. In other words, new locations are planned relative to existing locations.

In the case of supermarkets, due to the massive amount of research that they conduct, they have accurate estimates of the trade area boundaries of each of their existing stores. When these trade areas are placed on a map, the areas where they are not satisfactorily represented become obvious. These voids are then analysed in order to determine their potential.

The research that they do also puts them in the position of being able to approximate how much trade a new store will steal from their existing outlets. They emphasized that although their stores were planned as part of a network, they shoot for individual unit profitability. That is, they will not build a store simply because it fits nicely into the network. The demand must be adequate to justify the existence of the outlet. The purpose of this network perspective is more to cover the entire market than to diminish competition. The nature of their enterprise does not require locating away from their competitors. As long as the market potential exists, they can locate across the street from other outlets.

Department stores also take a network perspective when they are locating their new stores. They gave two reasons for adopting this strategy: 1) to keep out the competition, especially in the case of junior department stores, and; 2) to ensure that they are represented in all possible areas.

Their strategy was very much the same as the supermarkets except for one important difference; they were willing to enter the market prematurely in order to establish themselves. They said that they would go into a mall even if it meant losing money for the first five years if they felt that it was possible that if they did not enter the market, another department store would. They felt that they were forced to do so because if they did not, they might have trouble getting into the mall at a later date and might be forced to accept an inferior location and a weaker partner (other anchor tenant)

in order to cover the market. Nevertheless, they said that it was rare for them to be forced into such situations.

The concept of a network is a strategy that is generally ignored in the literature. On the whole, the academics assume that the spatial distribution of retail facilities is solely a function of the spatial distribution of demand. Although technically this is correct, it tells only part of the story. Rather than looking at the location of retail facilities simply at the micro level, it appears necessary to also look at store location from the macro level. The existing alignment of most of the major chain stores over an entire region strongly influences their decision in regards to the location of each new unit. It is essential for the well being of the entire chain to be represented in all areas of the region, as long as the demand exists of course. This can also serve to minimize the risk of a competitor monopolizing a certain area.

Although it is important for the company to consider individual unit profitability, they must also consider the chain as a whole when making their locational decisions. In essence, it must be remembered that these tenants are not necessarily trying for optimum profit in each unit, they may choose a location even though another site might provide a slightly higher sales level. Of course, the difference between the two could not be too radically different. Thus it can be seen that a shopping center's location can be strongly influenced by the master plan of the various key tenants.

As a final point, it was noted that due to zoning restrictions and the fact that not all sites are vacant, the network seldom looks as it was originally envisaged.

(I) Zoning.

Zoning has a particularly strong influence on the distribution of retail facilities in most urban areas. Getting an area rezoned can be a difficult and lengthy process. The developer must know how to deal with the political aspects of shopping center development, and will often have to compromise on his original plans. He has to be completely organized and his timing has to be right, so only the most experienced developers stand much of a chance.

Any difficulties or delays that the developer incurs in getting an area rezoned adds to the overall cost of the project. Depending upon the situation, size of center, and city concerned, it may take anywhere from 2 - 12 years from the time the center was first planned until the time it finally opens it's doors to the public. All of the overhead costs (ie legal fees) that such delays involve must be recovered by charging the tenants higher rents. These tenants in turn must charge the customer higher prices for it's goods. "There is no question that bureaucracy, participatory democracy and politics can add a great deal to the cost of the rent you must pay and pass along to your customers." ¹⁷

For these reasons, among other, developers usually try to avoid confronting such a situation, particularly in the case of a regional center, due to the amount of land involved.

Some of the developers mentioned that since most of the so-called growth areas are pre-planned to include sites for shopping center development, it is simply a matter of waiting until the area is mature enough to support the shopping center. Building a shopping center in an already established area can be a real political issue.

Nevertheless, if a rezoning application is made, the planners must be aware, and in many ways sympathetic of the situation that the developer is in, but at the same time be concerned with what is best for the resident population. Ideally these two concerns will be mutual since what is best for the developer should be best for his customers if there is a true need for such a facility.

However, the recent trend has been towards a tightening of controls and this could have some unintended consequences. "There is a distinct danger that through future utility networks, zoning powers and other regulatory and direct government controls, land use planning will become much less flexible so that planners rather than the market place will decide the specific location of future retail centers, undoubtedly to the detriment of the developer, retailer and the shopping public. Government agencies have never proved to be better allocators of resources than a free market." ¹⁸

Again, it is clear that it is not solely the spatial distribution of demand that dictates the distribution of shopping centers in a region. Planners, among other government officials are increasingly predetermining what the spatial alignment

of centers will be for many years to come. As was mentioned, this could have some unintended implications unless they consider both the requirements of the developer and the needs of the resident population. For example, planners who are overly protective of the existing retail core might not see the demand for a new facility. If an area is truly understored, and the existing outlets are in satisfactory condition, etc., all can prosper. Shopping centers are also often wrongly viewed as evil and are forced into unsuitable, out of the way areas. Oftentimes this is neither good for the business community or good for the shopping needs of the population in the area. Nevertheless, it must be realized that a multitude of factors outside of the business world can influence the actual distribution of retail facilities over an urban landscape, so when looking at the present distribution, one must be aware that it has been a wide variety of factors that have determined this visible pattern.

(J) Freestanding structure.

The anchor tenants play a major role in attracting the consumer to the shopping center and in turn boost the potential sales of the satellite tenants. Due to their attractive powers, as tenants they receive preferential rents and/or receive part of the gross profits (often 10%). In essence, the satellite tenants subsidize the department stores. Although it is undeniably true that the anchor tenants are beneficial to the satellite tenants, in all likelihood, the reverse is also true. In other words, the satellite tenants also boost

the sales of the anchors. In other words, it is possible that this relationship is not as parasitic as might be expected. To gain some insight into this question the anchor merchants were asked to state their position on freestanding structures as opposed to shopping centers. It was interesting to note that with the exception of the supermarkets, none of the major retailers would consider locating in a freestanding structure.

There were a number of reasons given as an explanation of why these stores would no longer locate in a freestanding structure. They said that the freestanding structures were more expensive than the shopping centers, mainly because they had to provide everything themselves (ie land, buildings, parking, maintenance etc.). Preferential rents, among other things, also made shopping centers quite a bit cheaper.

Although cost is most definitely a factor, the main reason that they did not want to locate in a freestanding structure is the principle of cumulative attraction. To use a textbook definition, the principle states that: "A given number of stores dealing in the same merchandise will do more business if they are located adjacent or in proximity to each other than if they are widely scattered...where items sold involved a good deal of shopping for style, design, colour, fit, and the like, the cluster position is preferable, especially if brand names are not a critical element in the typical consumer's decision."¹⁹ In other words, the presence of satellite tenants selling department store type merchandise (DSTM) adds to the drawing power of the department store. The presence of another department

store also strengthens this cumulative attraction. This attraction outweighs the competitive impact of the second department store because consumers would rather shop at a place that had two or three department stores than a center that had only one such store.

Although all of the department stores stated that under no condition would they locate in a freestanding structure, the supermarkets indicated that they would locate in either a freestanding structure or a mall. They said that they would sometimes avoid shopping centers because they felt that the rents and common area maintenance charges were unjustifiably high. They feel that they are a major drawing force for a shopping center and therefore should get the same preferential treatment that the department stores do, and if they do not, will often go freestanding. They do not believe that locating within a shopping center is as beneficial to them as it might be to other types of stores due to the nature of the type of shopping trip involved. They also said that they will go freestanding when there is not an available shopping center in the location they want.

This question as to freestanding structures vs shopping centers forces one to question some of the techniques advocated by the theorists for estimating the sales potential of stores and shopping centers. First, if the calculations include only the size of the individual store in question, it does not take into account the influence that the rest of the stores have on the drawing power of the store. On the other

hand, if the square footage from the entire shopping center is included, it is necessary to assume that each store type benefits equally from the presence of other stores. Also, in most cases, by considering the square feet of retail space in the entire mall, this is treating all of the stores equally. However, it is evident that the stores that are generators of business should be treated differently than those stores that have a relatively low level of drawing power. As well, it has been witnessed that stores such as supermarkets benefit to a lesser degree by the presence of other stores than department stores do. Although the more recent models have introduced an attractiveness exponent in an attempt to accommodate such problems, it is questionable to what degree that this attempt has been successful, since very little empirical research has been conducted in this regard.

Furthermore, the academics generally assume they can empirically fit the model to an existing store and then directly transfer these results to the proposed center in question. The validity of this practice however, is questionable since this approach infers a high degree of sameness between like-sized shopping centers in terms of such things as tenant mix and its acceptance by the resident population, access, etc. Clearly a great deal more research in this area is required before the exact influence that the shopping center itself has on the sales volumes of individual stores can be determined.

Moreover, the literature often looks only at the benefits of certain locations without paying any attention to the cost factors or the real estate benefits that might be accrued by a particular location. For example, although a site might provide a slightly lower sales level than another alternative could, it still may be the superior site overall. It must not be forgotten that rents and other such costs must be deducted from the overall sales level of the store. In short, unless the marginal benefits in terms of sales that can be obtained by locating in a shopping center outstrip the additional costs, it is often better to locate in a freestanding structure. Nevertheless, it is evident that this situation is fairly rare, as is witnessed by the very few freestanding structures that are being built today.

(K) Future trends.

A number of possible trends in the retail industry were also indicated in the interviews. Any changes in the traditional forms of retailing or development are of great interest to the analyst since they can have a profound effect on the validity of the analytical approaches used. The following section consists of an analysis of the significance of a few of the directions that those interviewed believed that the future of retailing was more than likely to head.

One of the department stores interviewed stated that one of the major problems with most retailers, including themselves, was that they insisted on placing a prototype store in all new locations. He said that although the architectural style of

their own buildings may vary, it was the same 160,000 square foot store found anywhere. He felt that it was a mistake to be so standardized since each area presents a different set of circumstances. He felt that in some of the areas in which they have built new stores, only smaller stores with more limited merchandise offerings were merited.

This trend towards smaller department stores was echoed in almost all of the interviews. They felt that in the future you could expect to see all of the major department stores experimenting with smaller stores, possibly in the 60,000 to 80,000 square foot range. Although they expected that the department stores would be building smaller units, care would be taken so that they did not lose their image and be looked at in the same light as a junior department store.

Further, due to the increasing growth in outlying areas, you could also expect to see more smaller centers being built at the expense of the regionals. There are three principle reasons for the expected down-sizing of shopping centers, which are: ²⁰

1) The availability of appropriate land is diminishing. It is often easier to locate on two or more parcels, each of less total area than to find a larger single site;

2) As traffic gets busier, people cannot travel the same amount of miles in the same amount of time. People willing to travel 30 minutes before, still may be willing to, but now can only cover half the distance. Thus the geographic proximity of two centers may be less competitive than they

would have been a few years ago. People may not be willing to increase travelling time particularly considering fuel costs;

3) Rental costs, energy costs, utility costs and everything else that has to do with space is escalating.

A notable exception to this scaling down of size was the supermarkets. They said that due to the increasing cost of opening a new store, the trend would be to larger units. It is simply more economical for them to build larger stores that would do greater volumes. They have built some extremely large stores (50,000 square feet) in middle markets and are planning some in the cities. These units have been very successful to date, although they are still too recent a phenomenon as yet to determine whether they expand the areal extent of the trade area, its penetration, both or neither.

The effect of the energy crunch on shopping centers is very difficult to determine; people will make less trips, but does this mean going to close stores, or going further to larger malls for one stop shopping? The answers to this question are mixed. For example, Fredrick T. Eaton of T. Eaton Co., Ltd. states that

In an era that I believe will be characterized by increasingly expensive fuel, and therefore travel, fewer trips will be made by individuals and families. The coming era will see the return to one stop shopping. There will be no casual driving down to the shopping plaza for one item. Carefully planned shopping excursions will be the rule, and I believe that for

this very reason, the large regional malls and the downtowns will flourish at the expense of stripmalls and other weaker shopping areas. 21

This opinion however, is not held by all those in the field. As Joe Meyer of Grandma Lee's International comments, "It is our belief that the small strip center could be the thing of the 80's. The regional center will be used less frequently, but for larger purchases. The strip center, however, will be used as a filler due to the energy crunch. These small centers will be more sophisticated than they were in the past to appeal to the more discriminating shopper." 22 As is demonstrated by these two contradictory viewpoints, as of yet it is still a little early to determine the effect that rising fuel costs will have on consumer patronage patterns, although it is equally evident that some changes are imminent.

It was also felt that due to the "Save the Downtown" movement, as well as the increasing adoption of rapid transit, you could expect to see more suburban type shopping centers locating in the downtown. The major structural trend would be to a more compact multi-storied center. Since foodstores are rare in downtown shopping centers, they also expect to see more of them going up as freestanding structures. As yet though, relatively few downtown shopping centers have been built, so very little is known of the requirements for the success of such endeavours, although it is obvious that the traditional techniques used for locating their suburban

counterparts are insufficient. "...Completing a downtown project is completely different from developing a suburban regional mall, and those who assume they simply can transfer their suburban experience to the inner city are probably destined to fail." ²³ For example, if you run demographics on the area, it doesn't really mean anything because most of the people who shop there don't live there. "Unlike their suburban counterparts, the primary trade area of an urban center usually does not contain the people living near the center. However, the proximity of office buildings and hotels with the retail facilities of in-city developments offers a new kind of primary trade area with a substantial number of customers who are downtown for reasons other than shopping." ²⁴ The three main sources of customers appear to be:

- 1) The office worker;
- 2) The out-of-town tourists and business visitor;
- 3) The suburbanites and inner city residents.

The degree of residential settlement in inner city neighborhoods is simply too small to provide a viable market for the scale of commercial activities represented in the C.B.D. A study in Seattle found that shoppers from outlying areas in the city and surrounding counties accounted for more than 65 percent of all sales to downtown stores. The study further suggests that less than 50 percent of all shoppers enter the downtown for the primary purpose of shopping. ²⁵ It is signi-

ficant that fewer trips are being made for the sole purpose of shopping, eating or recreation, because this means that in all likelihood the amount of purchases made by the worker enroute to and from his job will increase in proportion. Thus it is felt that the expansion of office employment represents the largest single growth market for retail items. Surveys conducted in downtown Denver show that 85 percent of all employees make more than one-quarter of their expenditures for clothing and apparel in the downtown, while 30 percent make virtually all such purchases in the C.B.D. ²⁶

A strong office core in the C.B.D. is generally allied with a strong commercial core. A regression analysis of the relationship of C.B.D. retail sales and C.B.D. office space in 37 United States metropolitan areas indicates a positive association of retail sales with the quantity of office space in the urban core.

It was found that 60 percent of the variations in C.B.D. sales is related to the amount of C.B.D. office space in this analysis. In attempting to explain variations in the amount of retail activity in the metropolitan C.B.D.'s, it was found that the most important variable relating to the amount of C.B.D. sales ($R=0.86$) was the population sizes of the metropolitan area, but that the next most important variable was the amount of C.B.D. office space ($R=0.75$). ²⁷

Nevertheless, although some insight has been made in terms of where the customers are coming from, methods for predicting how much of this potential business can be tapped are as yet very few and relatively untested. This is an area that

requires a great deal more investigation before any reliable conclusions can be made. It has also been found to be beneficial to mix the retail activities in with a number of other activities such as small parks, plazas, restaurants, and things of this nature in order to make shopping part of the urban experience.²⁸ Further, since the downtown is also a place of business, government, entertainment, and much more, it is essential for retail facilities to work with these other activities in a mutually supportive fashion.²⁹ In essence, you want to merchandise the the downtown as a whole.

In terms of such developments,

The main risks include the likelihood of long delays in the pre-development phase, hard to predict construction costs, political uncertainties, potential heavy tax burden and the problems of maintenance and security. From the customer's point of view, the likely more restricted opening hours compared to regional centers, and the resistance to paid parking are other potential problem areas. Difficulty with interim or permanent financing from traditional sources must also be expected. The lack of control of nearby public areas must be recognized as well as access problems generally associated with downtown locations. The main positive factors include the existence of a large market, extensive infrastructure in place, including public transportation and the fact that there is little effective competition for experienced downtown redevelopers.

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Although a relatively recent phenomenon, the development of shopping centers in the central business district appears to be a trend that will continue for some time. In fact, it could be one of the more significant events that marks this period of transition. As the suburban markets (the traditional

mainstay of the shopping center industry) become increasingly saturated, shopping center developers are forced to search out new markets. As was mentioned, one of the most promising of these is the downtown. The retail component of the downtowns of most major cities have been neglected ever since the exodus of its population to the suburbs. In many ways this trend is reversing and hence supplying new opportunities. Indeed, these opportunities are new, and are largely the result of the fact that people's lifestyles are changing and the urban center is increasingly becoming the focus of a significant proportion of the people's activity.

Developing a downtown shopping center provides a unique set of circumstances and has necessitated a change in the traditional developmental processes. The techniques used for analysing the market potential for a suburban shopping center are not transferable to its urban counterpart. The methods used in the suburban case are simply not sensitive enough. It is clear that considering purely objective measures such as size of center, and travel time from the consumer's residence to the shopping center, as the only two determinants of shopping center choice is not adequate. There are too many non-quantifiable factors that must also be considered. For example the resurgence of downtown shopping has demonstrated that the proximity to the customer's residence is not always the most important criterion. It has also indicated that when determining the attractiveness of a specific shopping center, the surrounding land uses can

play a particularly strong role, as is witnessed by the fact that only a relatively small proportion of the consumers enter the downtown for the sole purpose of shopping.

(L) Conclusion.

One of the things that has become increasingly evident is the need for a more wholistic approach to the study of retail location. The present approaches are too fragmented and thus tell only part of the story. Although not all the factors expected to influence where shopping centers are located, and the sales level that the shopping center might ultimately receive were discussed in this section, it is believed that a fairly representative sample of the critical ones were examined. Considering only the size of a center and its proximity to its trade area residents, as is the case in much of the academic literature, is not satisfactory due to the myriad of other potentially important factors.

Although these other considerations are thought to be salient, very little is known about exactly how significant each of them are. This is primarily a result of the general lack of empirical investigation that has been conducted in this regard. This is an area of research that could prove to be quite fruitful in furthering our understanding of this problem. Likely one of the reasons for the lack of attention in this direction by most of the academics is their concentration on developing models whereby the analyst need only to plug in the relevant statistics, leaving the computer to do all of the predictions. The problem with using variables

other than size and distance is that they deny themselves of quantification and thus cannot be incorporated in the model. For example how does one validly quantify managerial skill? Thus the analyst finds it easier to simply ignore these other variables by assuming that all shopping centers are the same, other than in terms of measures incorporated in the models. This is a highly unrealistic assumption and must force one to question the validity of the model's output.

A problem that faces both the academics and the businessmen when conducting a broader analysis, is that there are a number of important considerations that cannot be measured until well into the developmental process (long after the market analysis must be completed); one example being the tenant mix of the shopping center. It appears that there is no real solution to such problems, so it makes it next to impossible for the analyst to make exact predictions. This is one of the reasons that most in the business world view sales projections as being highly theoretical and more an aid in decision making than an accurate prediction. In essence, the analyst is trying to determine whether the project is feasible, not predict profits. There are too many factors that cannot be accounted for in the feasibility study that can have a great impact on the sales level of the shopping center. Although this viewpoint may seem to be a bit of a cop-out on the part of the businessmen, it must be realized

that this area of interest is not a science, despite the fact that many of the academics prefer to treat it as such.

It is also evident that when choosing a site for a retail facility, that the sales levels that are expected to be achieved at each alternative are not the only consideration to be made. The developer must always weigh the costs of a particular locational decision against the benefits. He must consider the rents and the value of the parcel of land as a piece of real estate. He must also account for the potential longevity of the site by considering what the future may hold for each alternative and its respective hinterland. It is the various uncertainties that often induce developers to play the role of satisfiers. In other words, it is not always the soundest decision in the long run to aim for optimum profits since it is sometimes better to choose a safer alternative that secures a satisfactory return, particularly considering the dynamic nature of the industry.

As a final point, it is essential to gain a better understanding of the nature of the consumer's decision making process that precedes his purchase. This could aid greatly in determining where consumers will shop, which in turn will establish the sales level of the shopping center as a whole. Clearly, it is the prediction of consumer travel patterns that the whole analysis is about, so anything we learn about his behavior will do nothing but help.

In conclusion, it is essential that the academics begin

to take a broader outlook at the complexities of retail location analysis both in terms of the various determinants of store choice, and in light of its role in the developmental process. As well, greater consideration must be given to the constraints imposed on the industry before any practical advances can be expected to be made by the theorists.

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CHAPTER 5

SUMMARY AND CONCLUSIONS

(A) Introduction.

Since it is clear that almost none of the methods advocated by the theorists for locating, and in turn estimating the potential volume of sales of a retail facility has gained any level of acceptance in the business world, a major objective of this study was to determine the value of the theory of retail location (specifically the modeling approaches) as a practical alternative to the methods presently employed. A related objective was to determine whether or not the variables incorporated in the models, alone were sufficient determinants of consumer patronage patterns.

(B) The variable problem.

One of the major problems with operationalizing retail location models is determining the salient variables to incorporate and in estimating the weight that each of them should be given. Although the use of only size and distance variables has been the traditionally accepted practice, more recently many academics have begun to feel that alone these two variables cannot adequately explain the complex decision making process of the consumer, and therefore, in themselves are not sufficient for the prediction of consumer patronage patterns. This group of theorists advocates the addition of image related variables to the model. Essentially this variable would be designed to take into account the consumer's

perception of the shopping center and/or individual stores. These perceptions are suspected to be based on such store attributes as sales personnel, visual appearance, atmosphere, price of goods, etc. Although there seems to be no question that these variables can have an impact on the consumer's patronage choice, their value as a variable in a model can be questioned due to their relatively weak predictive capacity. One of the possible reasons that these variables have performed poorly is that they do not seem to cover the domain of variables that consumers hold salient. A second reason is that consumer spatial behavior, on the whole, is quite a poorly grounded theoretical concept. However, this is likely a reflection of the field's infancy, not an indication of its potential use value. In general though, the recent shift in emphasis from the aggregate to the individual, and from the deterministic to the probabilistic has been an important step in furthering our understanding of how consumers behave in a spatial context. Despite this move in the right direction, "As yet...research has not produced a coherent body of knowledge that significantly augments our understanding of man-environment inter-relationships." ¹

The poor predictive capacity of the image variables also stems from the fact that the validity of quantifying such factors is questionable. It is extremely difficult to derive a valid measure that will realistically represent a consumer's perception of a given store since many of the

factors that would comprise this variable cannot be directly quantified. For example, how does one affix a quantitative measure that would adequately represent a persons perception of a store's atmosphere? Although a number of attempts have been made, the results have consistantly been less than satisfactory.

When dealing with the image related variables at an aggregate level, the theorists have also encountered a great deal of difficulty in determining the relevant consumer characteristics that could be used to classify the consumer. To date the classifications have been half-hearted attempts at aggregating the consumer into homogenous groups whereby behavior could be predicted through group membership. The researchers have focused on relating images and preferences to such simple subject attributes as age, sex, socioeconomic status, etc. On the whole these relationships have told very little. Individuals differ in so many ways that it is unrealistic to expect that such broad generalizations could explain much of the differences in behavior between individuals. Thus, short of individual observation, it is uncertain as to how suitable these variables are as part of retail models, which by their very nature and purpose, work at an aggregate level.

In essence, at this time the incorporation of image related variables in models does not really seem justifiable given that there are still a number of theoretical problems associated with their inclusion, and that these variables do

not seem to add much to the predictive capacity of the model.

Nevertheless, it must be stressed that this does not mean that such factors can be ignored when attempting to determine the potential of a site. The same holds true for the other variables discussed in this work, such as tenant mix, the location of the tenants within the mall, access, etc., since variables of this nature are also suspected to have a significant impact on the ultimate sales level of the retail facility. However, although these considerations have been mentioned and are believed to be important, the degree of their significance has not adequately been determined since there has been next to no statistical testing of their impact. It is felt that it is such aspects of retail location analysis that deserve the attention of the academics, for it is they who are in the position of solving a number of the inherent problems. It is clear that since these factors simply cannot be ignored, but at the same time are not readily or reliably quantifiable, their influence must be accounted for subjectively. Thus if an analyst uses a model at the outset, his predictions will have to be adjusted in order to accommodate the non-quantifiable factors. Indeed this forces one to question the use of the model in the first place, particularly considering its fairly stringent data requirements.

In essence, a more wholistic viewpoint is required if the academics wish to improve the predictive capacity of their methods.

(C) Modeling...A practical alternative?

As a general rule the models have been used by the theorists in an explanatory or descriptive capacity as opposed to a predictive one. In most instances they have simply fitted the models to an existing facility in order to explain the outlet's performance. However, it is the model's predictive ability that is of interest to the practitioners. Probably the best means of empirically testing the predictive capacity of the models would be to apply them to a proposed shopping center or store, and then check the validity of the predictions after the facility has become an established alternative to the consumers in the area. The difficulties with this type of approach are formidable. The time span between the two stages (predictions and testing of those predictions) could be anywhere between two to eight years, therefore, a number of unforeseen changes could have taken place in the interim. Such changes might include: a new competitive center being built, a new highway, zoning changes, economic recession/boom, an unexpected population growth or decline, etc. Nonetheless, some work in this direction is essential if any objective conclusions as to the applicability of the models is to be drawn.

There is also a problem with the data requirements for such models. It is unlikely that the average firm would be willing to spend the time and the money required for this

level of research, especially in the case of the more sophisticated models. Of course, this is particularly true of the smaller operations. Ironically, due to the lack of empirical information available from their other facilities (a result of the small number of them), this is the group for which such models would prove to be the most beneficial. Clearly, before these models will receive any reasonable level of application, improved sources for obtaining the required data must be developed.

Likely the most serious shortcoming to the modeling approach to retail location analysis is that it necessarily ignores past learning experiences. Many believe this to be the most valuable source of information that the analyst has at his disposal. The emphasis it was given by the practitioners was clearly displayed in the third chapter. Past learning experiences supply the analyst with a wealth of information that no amount of statistical research could replace.

It is also felt that the models, in their present form, are only applicable in suburban situations. Although it is possible that the models are capable of producing satisfactory results in small town situations where there is no direct competition other than the commercial district of the downtown, very little empirical testing has been conducted in this area (at least with the more recent models). However, it is equally likely that a fair amount of adaptation to the form of the model would be required to make it suitable

under such conditions.

As well, it is evident that the models are not very useful for determining the potential of a retail facility in the central business district of larger cities. This situation presents such a different set of circumstances than the suburbs that the analyst simply cannot treat the two the same. For instance, one cannot use the surrounding resident population as a basis for estimating the demand for the facility. One of the main sources of business is the downtown office worker and very little is known about the patronage patterns of this consumer. Clearly though, friction of distance and size of center are not nearly as important determinants to the downtown consumer. The surrounding amenities, the downtown itself, and the trip purpose are more prominent considerations. In essence, you simply cannot analyze a downtown store or shopping center along the same dimensions as you would for its suburban counterpart.

Partially due to the increasingly saturated suburban markets, smaller communities and the downtown of most major cities are increasingly becoming a major focus of interest for many developers. As was mentioned, it is in these two situations that most models perform the weakest.

It is also apparent that the businessmen view the purpose of the trade area analysis differently than the academics. Whereas the academics strive for exactness in the pred-

ictive capacity of such analysis, the businessmen view it simply as an aid in the decision making process. In essence, they want to know the feasibility of a site, not the exact level of sales that can be obtained. In many ways this is a more realistic viewpoint since it realizes that there are a number of important considerations that cannot be measured until well into the developmental process (ie tenant mix) and that there are likely to be a number of unforeseen changes in the market conditions between the time of the analysis and the opening of the outlet. The developers feel that because of the dynamic nature of the industry, exact predictions are impossible, and are therefore not worth trying to achieve. They feel it is safer to make conservative estimations. The importance of these opposing viewpoints is paramount, for unless the objectives of the decision-maker are clearly understood, determining the applicability of the various alternative methods is impossible.

The significance of exact sales volume predictions to the developer becomes even less important when one realizes that there are a number of economic considerations that are external to the analysis itself that must be made. For example, the developer must consider the price of rents charged for a piece of land as well as its real estate value. He must also consider the potential longevity of the site. In essence, the academics must view retail

development from a much broader perspective than they presently do. They must realize that there are a vast number of uncertainties involved which generally induce the developer to play the role of satisficer. In other words, obtaining optimum sales may not always be the soundest criterion for selecting a site.

In conclusion, it can be said that the location models advocated by the academics have next to no value in the situation facing developers. The academics appear to have designed these methods with very little consideration of the realities of retailing and the constraints placed upon the business world. They appear to be trying to locate retail facilities without taking into consideration the developmental process. In other words, they have studied one aspect of the process without considering how it fits into the broader framework, and as a result have produced impractical approaches. Clearly, it is time for the academics to re-evaluate the direction that their research is taking.

(D) Recommendations for further research.

Although to date the field of consumer spatial behavior has added relatively little to the analysts ability to predict the sales potential of a retail facility, with some refinement it could become a valuable tool. Until the underlying reasons for the observed shopping patterns of consumers can be identified, predicting the aggregate

shopping patterns of these consumers will involve a high degree of subjective judgement. It is essential to understand the nature of the consumer's decision making process that precedes his purchase. This, in turn, will lend a significant degree of insight in determining where consumers will shop. Much more empirical analysis is required in this direction.

This work clearly identified the inadequacies of using distance and size of shopping centers as the sole determinants of predicting consumer patronage patterns. Some of the more salient factors identified that rarely receive their just attention were: tenant mix, the location of the tenants within the shopping center, accessibility, an array of site quality factors, population characteristics, etc. Although these factors were identified as being very important, it is difficult to determine the degree of their significance. The primary reason for this difficulty stems from the lack of empirical investigation conducted in this regard. This is a void in retail location research that must be filled. Until some sort of statistical research is conducted in this direction, the analyst's predictions will remain highly subjective and theoretical.

It is also clear that it is essential that the academics begin to work in closer association with the business world. To do this they must become more sympathetic of the constraints of the industry and more aware of the objectives of

those involved. Possibly, instead of concentrating almost exclusively on producing sophisticated computer models that are of little or no use to the business world, it might prove fruitful to make some attempt at improving the methods presently employed by the businessmen. Clearly the faults with their approaches are many. Their methods rely overly heavy on intuition and on the analyst's decision making ability. In essence, a closer association between the academics and the businessmen would be mutually beneficial.

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APPENDIX A :
DEVELOPER'S QUESTIONNAIRE

APPENDIX A:DEVELOPER'S QUESTIONNAIRE

1. How is the site selection process initiated? ie How does the site come to your attention?
2. What individuals or groups contribute in the site selection process?
3. What methods do you use to determine the boundaries of the trade area? For example, rule-of-thumb methods such as ten minute driving time or three mile radius, or; interview/survey, or; some form of trade area computer model, or; the analogue method.
4. How do you calculate the amount of trade that you expect to receive from within the market area?
5. What methods do you use for collecting your data? For example, census, interview/survey, local information sources, analogous situations.
6. How great of an effect does the level of income have on the number of people that you expect will be needed to support a center?
7. What methods do you use for predicting future trends such as level of population growth and direction of expansion?
8. In terms of exposure and accessibility, do you have any base requirements when evaluating the access routes?
9. In terms of the site itself, what type of factors do you generally consider as important in the locational decision? For example, slope, shape, etc.

Appendix A - (continued)

10. Although I realize that there is a high degree of differentiation in the regulations imposed on developers by the various municipalities, as a rule how difficult is it to get an area re-zoned?
11. How do you establish your tenant mix?
12. Do you study the population characteristics when establishing your tenant mix?
13. Are there any general rules regarding the actual positioning of the tenants within the shopping center itself? In other words, what type of stores generally receive the most central positions, and what type of stores do you generally place together?
14. Do you go back after the center has become established and check as to how accurate your predictions or estimations were?
15. Do you follow any of the literature relating to shopping center development?
16. Do you see any changes in the future that will affect the way in which you locate?
17. Can you think of anything that you think is important that we have not talked about?

APPENDIX B:

DEPARTMENT STORE'S QUESTIONNAIRE

APPENDIX B:DEPARTMENT STORE'S QUESTIONNAIRE

1. How is the process initiated? In other words, do you have people out looking for sites or are you usually approached by the developer or land owner?
2. What individuals or groups contribute in the site selection process?
3. What methods do you use to determine the boundaries of the trade area? ie Rule-of-thumb methods such as 10 minute driving time or 3 mile radius; or a portion of the distance to the nearest center; or interview/survey; or some form of trade area model; or use of information received from other centers.
4. How do you calculate the amount of trade that you can expect to receive from within the market area?
5. How great of an effect does the level of income have on the number of people that you expect will be needed to support a store?
6. What methods do you use in collecting your data? ie census, interview or some form of local information source.
7. What method do you use for predicting future trends such as level of population growth and direction of expansion?
8. In terms of such factors as exposure and accessibility, do you have any base requirements when evaluating the access routes leading to the sites?

Appendix B. (continued)

9. In terms of the site itself, what type of factors do you generally consider as important in the locational decision (ie slope, shape etc.)?
10. What basic position within the mall do you generally prefer, both in terms of actual position and in terms of relative position? By this I mean what type of stores do you prefer in your immediate proximity?
11. Due to the potential for comparison shopping, do you feel that another department store, or a satellite tenant selling similar goods increases your sales level above what it might be in a freestanding structure?
12. Do you study the population characteristics (age, income, lifestyles etc.) to any degree prior to making your locational considerations?
13. Are your store locations planned as sort of a network or system? In other words, will you purposely locate due to the relative location of one of your other stores in order to create an alignment that will diminish as much as possible the entry of a competitive outlet?
14. Is there any other locational strategy you use to combat competition? For example, if a mall goes up somewhat prematurely, will you go in even at the risk of loosing money for a few years in order to establish yourself?
15. Under what circumstances would you prefer a freestanding structure to a mall?

Appendix B. (continued)

16. Do you go back after your store has become established and check as to how accurate your predictions and/or estimations were?
17. Do you see any changes in the future that will affect the way you locate your stores?
18. Do you follow any of the literature relating to the methods of retail location?
19. Can you think of anything of importance that we have not talked about?

APPENDIX C :
CONSULTANT'S QUESTIONNAIRE

APPENDIX C:CONSULTANT'S QUESTIONNAIRE

1. What methods do you use to determine the boundaries of the trade area (primary, secondary and tertiary)?
2. How do you calculate the amount of trade that you can expect to receive from within the market area?
3. How great of an effect does the level of income have on the number of people that you expect will be needed to support a center?
4. What are the sources of your data, ie census, interview, or some form of local information source?
5. What methods do you use for predicting future trends such as level of population growth and direction of expansion?
6. In terms of such factors as exposure and accessibility, do you have any base requirements when evaluating the access routes leading to the sites?
7. In terms of the site itself, what types of factors do you generally consider as being the most important in the locational decision (ie slope, shape etc.)?
8. Do you assume anything about the tenant mix when determining the feasibility of the center, ie the theme?
9. Do you generally make any recommendations as to the desired tenant mix?
10. Do you go back after the center has become established and check as to how accurate your predictions or estimations were?

Appendix C. (continued)

11. Do you follow any of the literature relating to shopping center development?
12. Do you see any changes in the future that will effect the way that you locate?
13. Can you think of anything important that we have not talked about?

APPENDIX D:
SUPERMARKET'S QUESTIONNAIRE

APPENDIX D:SUPERMARKET'S QUESTIONNAIRE

1. How is the process initiated? In other words, do you have people out looking for sites or are you generally approached by the developer/landowner?
2. What individuals or groups contribute in the site selection process?
3. What methods do you use to determine the boundaries of the trade area? ie Rule-of-thumb methods such as 10 minute driving time or 3 mile radius; or a portion of the distance to the nearest competition; or interview/survey; or some form of trade area model; or use of information received from other centers.
4. How do you calculate the amount of trade that you can expect to receive from within the market area?
5. Do you study the population characteristics (age, income, lifestyles etc.) to any degree prior to making your locational decision?
6. How great of an effect does the level of income have on the number of people that you expect will be needed to support a store?
7. What methods do you use in collecting your data? ie census, interview, or some form of local information source.
8. What methods do you use for predicting future trends such as level of population growth and direction of expansion?

Appendix D (continued)

9. In terms of exposure and accessibility, do you have any base requirements when evaluating the access route leading to the sites?
10. In terms of the site itself, what type of factors do you generally consider as important in the locational decision, ie slope, shape etc.?
11. Are your store locations planned as sort of a network or system? In other words, will you purposely locate one store due to the relative position of one of your other stores so as to create an alignment that will diminish as much as possible the entry of a competitive outlet?
12. Will you locate in an area prematurely in order to establish yourself?
13. Under what circumstances do you prefer a freestanding structure to a mall?
14. Do you go back after your store has become established and check as to how accurate your predictions and/or estimations were?
15. Do you see any changes in the future that will affect the way you locate your stores?
16. Do you follow any of the literature relating to the methods of locating supermarkets?
17. Can you think of anything of importance that we have not talked about?

APPENDIX E :

RETAIL TRADE AREA POPULATION PROJECTIONS

TABLE E-1

PROJECTED POPULATION GROWTH IN A TRADE AREA

<u>Primary Zone</u>			<u>Secondary Zone</u>		<u>Total Trade Area</u>	
<u>Year</u>	<u>Population</u>	<u>Average annual % change</u>	<u>Population</u>	<u>Average annual % change</u>	<u>Population</u>	<u>Average annual % change</u>
1971	79,334		3,428		82,762	
1976	120,323	+ 8.7	4,496	+ 5.6	124,819	+ 8.6
1977	128,440	+ 6.7	4,920	+ 9.4	133,360	+ 6.8
1980	180,785	+ 12.1	10,505	+ 28.8	191,290	+ 12.8
1983	196,734	+ 2.9	16,800	+ 16.9	213,534	+ 3.7
1986	198,384	+ .3	23,486	+ 11.8	221,870	+ 1.3
1991	200,574	+ .2	35,500	+ 8.6	236,074	+ 1.2

(Source: Interviews)

In terms of the average % change in the population of each of the zones, some clear trends can be seen in Table E-1. Firstoff, there is a dramatic projected increase between the base year of 1977 and 1980. The reason for this increase in population being of a fairly significant magnitude is explained through the fact that a number of new housing starts are slated for the years between these two dates. This increase is particularly marked in the secondary zone of this center's trade area due to the attempt by the authorities of this city to decentralize population growth. After the year 1980 the rate of growth drops considerably, although still remaining positive. The two reasons given for this leveling of population growth are: 1) The areas within the influence of the shopping center are beginning to become developed to its full potential (unless the zoning restrictions are changed to allow for more high density residential development), and; 2) A desire to keep the estimates on the conservative side since the longer the term of projection, the more uncertain the estimates are.

Often times though, a company will want such projections broken down into a little more detail. This breakdown will often be based on age since it has such a strong impact on the demand for retail facilities. Table E-2 is an example of such a breakdown.

TABLE E-2

BRITISH COLUMBIA POPULATION PROJECTIONSCHOOL DISTRICT #26 NORTH THOMPSON

	<u>HISTORICAL YEARS</u>									
	<u>1966</u>	<u>1971</u>	<u>1976</u>	<u>1979</u>	<u>1981</u>	<u>1983</u>	<u>1985</u>	<u>1991</u>	<u>1996</u>	<u>2001</u>
BIRTHS	47	95	117	139	156	175	195	232	225	247
AGE										
0-4	371	385	475	619	732	845	952	1159	1130	1240
5-9	394	425	490	495	522	617	735	1076	1231	1202
10-14	301	420	550	556	549	540	549	847	1127	1289
15-19	227	320	510	569	589	591	587	597	886	1180
20-24	188	305	455	571	636	666	679	645	643	952
25-29	200	283	470	550	603	678	747	785	724	719
30-34	215	252	365	467	537	593	648	854	854	788
35-39	184	207	300	338	374	446	526	715	897	900
40-44	165	178	275	318	343	359	383	586	729	912
45-49	142	163	195	236	268	302	335	413	604	755
50-54	122	143	185	180	196	223	258	362	424	623
55-59	106	130	135	154	168	174	183	272	357	421
60-64	80	95	135	123	116	130	150	185	266	351
65-69	46	45	90	96	96	96	99	150	177	257
70+	68	75	90	127	154	176	195	232	346	412
TOTAL	2,809	3,426	4,720	5,406	5,881	6,435	7,023	8,877	10,395	12,002

(Source: Based on B.C. Research Population Model,
Statistics Canada June 1 Census Data, B.C. Division
Of Vital Statistics Calendar Year Data.)