TRANSITION AREAS: A STUDY OF LOCATION FACTORS
AFFECTING LOW-INCOME HOUSING

by

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ABSTRACT

Transition areas located at the fringes of Central Business Districts are, in most cities, one of the important residential location options for the lowest income groups. The dynamics of city growth result in a process of abandonment of those areas by the high income groups and occupation by the poor; most neighborhoods in those areas have a low level of housing maintenance and low rental values.

Some housing programs, such as NIP, RRAP, attempt to improve the housing conditions of the poor by upgrading the housing stock in those areas. It is felt that, by subsidizing housing repairs and neighborhood improvement programs, two objectives can be achieved: better housing for the poor and neighborhood stability.

At the same time, there is evidence in some North American cities of a reversal of the suburbanization process: some medium-to-high income groups which traditionally tend to locate in suburban areas, now are locating in old central neighborhoods. The houses are extensively renovated, and some of these areas are gradually becoming new middle-to-high class residential districts.

This trend raises some concern with respect to the effects of this process on low-income residential options. Although there is some evidence that the gentrification process may produce dislocation problems for the poor, there seems to be little agreement as to the significance of this problem and the type of housing policies that would be more appropriate to ensure adequate housing for the poor in areas undergoing gentrification.

This research has four major objectives:

1) To identify the role of transition areas on low-income residential location.

2) To identify those variables that can explain the gentrification process in central neighborhoods.
3) To assess the effects of gentrification, particularly on low-income residential location options.

4) To assess the effects of housing and neighborhood improvement subsidies on low-income location in gentrifying areas.

The method chosen was that of theoretical research. A review of different bodies of location theory was used to derive a conceptual location model which combines economic, socio-ecologic and dynamic components of residential location. The model, in turn, was applied to analyze the four research areas listed in the objectives.

As a general conclusion drawn from the analysis, it is suggested that the gentrification process defines a planning situation characterized by conflicting goals and long-term uncertainty. The analysis provided some insight as to the type of uncertainty involved, the nature of the goals conflict, and some indicators that can be useful for housing policy in gentrifying areas.

Since the gentrification process appears to be very recent in Canada, most of the evidence presented in this research is based on US literature. However, the approach taken has attempted to focus on those variables that would appear to be more applicable to the Canadian scene. The model presented in this research can be used for a number of planning purposes, one of which is measuring and understanding the occurrence and significance of gentrification in Canadian cities.
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CHAPTER 1: BACKGROUND

1.1. MIDDLE-CLASS RESETTLEMENT IN OLDER URBAN NEIGHBORHOODS: An overview.

In the past twenty-five years, few issues have presented as great a challenge to urban policymakers as the decline of central cities. During this period, large numbers of middle and upper-income families chose to live in suburban communities. As families migrate from the city to the suburban ring, they often leave behind a decaying core increasingly populated by low-income and minority families.

Despite evidence that these trends are continuing, there are signs that considerable neighborhood revitalization is occurring in cities across US and Canada. Though a few of these areas were sites of Urban Renewal programs, most have undergone renovation and restoration through private investment activity. The significance of this trend lies in its stark contrast to the urban-to-suburban migration patterns which have traditionally predominated in metropolitan areas.

This movement, which has been termed "gentrification", "Neighborhood resettlement", "market (private) rehabilitation", etc., is not unprecedented. Theorists such as Firey (1947), Hoover and Vernon (1959), and Birch (1971) have identified isolated urban locations where deviations from traditional norms have occurred. But growing evidence suggests that, at least in the US, the incidence of middle-class immigration to older central areas has increased rather substantially. (Dennis Gale, 1979, p. 293)

In a survey of public officials and real estate officials in 143 cities in the US, Black found that 48% of communities over 50,000 population had in 1975 some degree of private market, non-subsidized housing renovation underway in older residential neighborhoods. Another survey, of public officials and local citizen organizations in the thirty largest US cities, discovered that resettlement was occurring in almost all of them. (Gale, 1979, p. 293). In a study of forty-four cities done by the National Urban Coalition
in 1978, substantial market rehabilitation was identified in almost 75% of the cases. The vast majority of those neighborhoods (nearly 90%) reported the onset of rehabilitation activity only within the past eight years. (National Urban Coalition, 1978, p. 4).

One important key to understanding the reasons for this apparent departure from classical precepts of residential location theory is the development of broad-based data from opinion surveys of resettlement households. Unfortunately, such a comprehensive study does not yet exist. Nevertheless, a number of individual, separately conducted surveys have been performed recently in American resettlement neighborhoods and their results provide some indications as to the identity of the resettlers, their geographic origins, the reasons for their choice, and some effects on low-income residential displacement.

The summary of evidence presented in this section has been drawn mainly from three sources: Dennis Gale (Gale, 1979) summarizes data related to demographic characteristics of the new city dwellers, their geographic origins and their reasons for relocation. Howard Sumka (Sumka, 1979) centers on the extent of the revitalization movement and some effects on low-income dislocation. Further evidence on the displacement problem is drawn from the study carried out by the National Urban Coalition (NUC, 1978).

Profile of the new inner-city dwellers

Data sources permit observations on six demographic characteristics of resettler households: household size, racial composition, annual income, age, education and occupation. There is also evidence of the geographic origins of the resettlers. Collectively, these data lend considerable weight to popular characterizations of the resettlers.

"The most typical such household is childless and composed of one or two white adults in their late twenties or thirties. College educated, often possessing graduate education, the household head is most likely a professional
or (less likely) a manager. The annual household income varies among metropolitan areas but is likely to range between $15,000 and $30,000 with several resettlers earning more than $40,000. Doubtless, many of those earning higher incomes are composed of two workers. For the most part, the above evidence seems to be supported by more descriptive accounts of resettlement in several American cities." (Gale, p. 295).

Evidence in terms of geographic origins of the resettlers, on the other hand, does not support the "Back-to-the-City-Movement" idea. Though many observers have assumed, with little or no evidence, that resettlers are mostly dissatisfied, former suburbanites, more recent research shows that "... a relatively small minority of households moved... from the city's encircling suburbs... Less than 20% of resettlers surveyed in Atlanta, Boston, Cambridge, and Washington said that they had done so."

"In fact, more appear to have located in some cities from outside the metropolitan area altogether... More than one-half (and in some cases as many as 90%)... moved to the renovating area from somewhere within the municipal boundaries... About one-half of the resettlers had moved from an apartment and two-thirds had been renters in their previous location."

"If these figures are even roughly representative of resettlers in other cities, they suggest that most are first-home buyers. It is likely that they migrated to the city to attend college or graduate school or to take employment there. After working a few years, they accumulated enough capital to make a down-payment on a house and were encouraged to do so by their rising incomes and favorable federal tax policies." (Gale, 1979, p. 296).

**Causes of the gentrification process**

As already discussed, the existing evidence supports the notion that the new inner-city settlers are not the typical suburban family trying to move back to the city; rather, the resettlers are mostly new households who prefer
the innercity to the suburbs. The question arises, then, as to why these new urban households prefer the inner city. Several reasons have been suggested by different researchers:

A) Rising suburban prices for new homes due to inflation in labor, materials, financing costs, and to restrictive growth controls, have "forced buyers with limited income to stay in cities". (Gale p. 301). The evidence shows, though, that the resettlers have relatively high incomes, so suburban locations are in fact quite affordable for them.

B) Household transportation costs are considerably higher when two household members are employed, so it becomes economically rational to minimize these costs. The counter-argument is that, with two bread-winners, income is also higher, and this increased income would overcome the higher commuting costs.

C) Household size and absence of children. Since the resettlers are mostly childless couples, they do not need spacious yards, schools and other facilities associated with suburban areas. From this point of view, the location choice appears to be economically rational.

D) Different values (lifestyle changes), associated with the baby-boom generation. The new settlers would place a high value on the cultural, historical, or architectural character of an area.

E) Investment potential perceived by the new settlers. Increases in property values are indeed significant in the newly rehabilitated areas. Some neighborhoods (Chicago's Wicker Park, Houston's Heights Area, San Francisco's Fillmore, Capitol Hill in Washington) have experienced home value increases of 500% to 1,000% in the last five to eight years ("Housing", June 1980, p. 16).

The evidence shown by surveys in the US supports some of these explanations more than others. For instance, a survey carried out in the Mount Pleasant and Capital Hill sections of Washington (Gale 1976, 1977), showed that
the most highly-rated reasons for choosing to locate in those areas were:

- Investment potential of the house purchased
- Relatively affordable price
- Accessibility to place of employment
- Architectural/historical value of the house/neighborhood.

Of lesser importance were the social and cultural attractions of city living.

The stage theory

Most researchers seem to support the notion that the resettlement process tends to have a similar pattern in different areas. This pattern is basically a process of change in family composition and preferences as the 'resettlement' area consolidates over time. Gale's study of the Mount Pleasant and Capital Hill areas, for instance, showed that the more recently renovated neighborhood (Mount Pleasant) had a higher proportion of young, male adults, while the older area (Capitol Hill) had higher proportion of women and families. The respondents of the two areas also showed different degree of commitment to their house/neighborhood (as shown in 'intentions to move' and 'reactions to the dwelling' type of questions); those in the newer area showed a slightly less favorable attitude and higher predisposition to move.

This and other similar evidence suggest that the resettlers can be classified according to the stage of the revitalization at which they entered the neighborhood. "Early entrants tend to be 'risk-oblivious': they are followed by the 'risk-takers' and, finally, by the 'risk-averse' (Pattison 1977, as quoted by Sumka, p. 482). The following quote summarizes how the stage process is perceived:

"Early in the revitalization of a neighborhood, come the pioneers. Advance characterizes them as 'middle-class people with lower-than middle-class incomes: artists, writers, musicians, etc.' Others may be 'households unsure of their welcome' in a typical middle-class neighborhood, such as gays and interracial couples. Also, 'persons with a special feel for the potential of a neglected grand home' - such as architects and decorators - will move during the early stage of revitalization."
Neighborhood displacement

The effects of private investment in rehab on displacing low-income residents have attracted the attention of a number of researchers; there is also a growing movement (i.e. in cities with significant rehab activity, such as San Francisco) of community groups protesting against the displacement problem occurring in rehab neighborhoods. Yet there seems to be little agreement as to the extent of the displacement problem, its nature, and its implications in terms of government policy.

Those who argue that displacement in an increasingly serious problem compare the effects of rehab with those of Urban Renewal:

"...There is a great deal of information about the fate of displacees from urban renewal, highway, and other public works displacement experience, and there is no reason to assume that the fate of present day displacees is any different... These earlier studies found that a large proportion of the families displaced in the 1950's and 60's - in some cases as many as 86% of the study population - relocated to substandard housing... Those who claim that this gloomy picture of the past does not have relevance for today's displacement must be charged with the obligation of proving otherwise. Until that time, it is important to act under the assumption that these displacement effects are just as true today as they were in the 1930's, the 940's, the 1950's and 1960's." (Hartman, 1979, p. 488)

Displacement is often associated to the role of real estate speculators who begin acquiring properties in areas they expect will be attractive to middle to upper-income households. As speculators move into an area, the first to be affected are resident centers. Owner-occupants appear to be affected at a later stage, and their loss is considered to be mostly the loss of a potentially higher selling price, since they move out with the idea that the neighborhood is still in decline.

The view that displacement is not a serious problem is based mostly on the following arguments:

A) The resettlers are a small group, and occupy relatively small areas; though
some neighborhoods may be seriously affected, the nation-wide incidence of
the problem is not significant.

B) The phenomenon is mostly of a temporary nature, produced by the preferences
of a very special segment of the population (The baby-boom generation). As
this group becomes older and their values change, the gentrification trend
will tend to disappear.

C) Empirical research to date has focussed primarily on the revitalization
process itself, rather than its secondary effects; the analysis of dis­
placement raises difficult conceptual and measurement problems which no.
one has addressed systematically. Therefore, the existing evidence is not
sufficiently reliable to assess the effects of private rehab on displacement.

Empirical research, so far, does not provide a clear answer to the
two debating positions. On one hand, the main findings of the study done by
the National Urban Coalition suggest that:

- The incomes of households moving into rehab neighborhoods are higher than
  those of the previous residents - but not significantly higher.
- Professional and white-collar workers tend to displace blue-collar workers
  and the unemployed.
- The elderly are most often displaced. The study done by the National Urban
  Coalition centers on the characteristics of residents who move out, but say
  little about the new location of those groups. On the other hand,
Pattison's study of the Bay Village in Boston suggests that many homeowners
realized sufficient capital gains from the sale of their properties to
fulfill a long-standing goal of moving to the suburbs. Others were able to
retain their properties and convert them to rentals that generated income
sufficient to allow them to move to the suburbs. (Sumka, 1979, p. 485-486)

The conclusions from these findings are often contradictory and
most of them contain important sources of bias, either underestimating or
overestimating the incidence of displacement. There seems to be still a lack
of a clear theoretical framework and a carefully designed operational counter-part (Typical problems: how to define displacees; how to isolate rehab from other reasons for non-voluntary moves). Furthermore, the existing research seems to center on the actual displacee; there is little (if any) evidence on the effect of gentrification in terms of depriving new low-income households from a potential housing option.

1.2 RESEARCH OUTLINE

The purpose of this research is to provide some theoretical background that can be helpful for the understanding of the nature of the gentrification process, its causes and its effects on low-income residents. The research centers on the following issues:
1) Identification of the role of transition areas in low-income residential location.
2) Identification of those variables that can explain the gentrification process in central areas.
3) Identification of some eventual effects of the gentrification process, particularly on low-income location options.
4) Assessment on the effects of housing and neighborhood improvement subsidies on low-income location options in gentrifying areas. These four major research objectives, in turn, are used to derive some policy implications on low-income housing programs in gentrifying neighborhoods.

The research consists in a review of different approaches to residential location theory. The selected literature has been classified into two major categories:
A) Equilibrium variables of location, and
B) Dynamic factors of location. Both categories include literature drawn from the fields of economics and human ecology.
These two categories are somewhat artificial, since a) the equilibrium models contain some dynamic elements and b) there is some overlap between economic and ecological approaches; rather than restrictive categories, they are used as a general reference to order the discussion.

Because of the broadness of the topic, the literature review is necessarily very general; rather than a deep and precise analysis of each location factor, the intention has been that of presenting a broad spectrum of variables and their interrelationships. Within the time and resource limitations, the research attempts to capture some of the multiple dimensions in which the location game takes place and how these multiple dimensions interact and change in the process.

Diagram 1.1 shows an outline of the research. The following is a brief summary of contents by chapters, showing the major concepts developed in each one.

Chapters 2 and 3 present an overview of equilibrium factors of location from the point of view of economics and socio-ecology.

**ECONOMIC FACTORS OF LOCATION** are presented in Chapter 2. This chapter includes a summary of Alonso's residential location theory and an application of this theory for the definition of transition areas.

**Section 2.1: Economic Theory** is a summary of Alonso's Central Place theory. This part contains the main assumptions and concepts of economic theory. Residential location in this approach is seen as the result of a bidding process in which each individual and firm reaches an equilibrium by choosing an optimum price and quantity of three consumption goods: land, distance to CBD and other (composite) goods.

**Section 2.2: Location and Income**, discusses some implications for low-income
residential location. Location for those groups is suggested to be a function of the relative desirability of land as compared to accessibility for the high-income groups.

Section 2.3: Transition Areas: definition, applies the main concepts of economic theory to define the location and role of transition areas. Transition areas are defined as those areas in which developed urban land changes to different uses as a result of population growth.

SOCIO-ECOLOGICAL FACTORS OF LOCATION are discussed in Chapter Three. This chapter contains two sections:

Section 3.1: Socio-ecology and City Growth, describes residential location as related to the growth process; the theory presented in this section provides additional background for the definition of transition areas discussed in section 2.3.

Section 3.2: The Segregation Process, discusses residential location as the result of a segregation process between different social groups. Groups are classified in the three dimensions of social rank, race-ethnicity and family status. A summary of personalistic and non-personalistic factors affecting the segregation process in each of these dimensions is presented, as well as some of the implications of this process for the centralization of some groups in areas around CBD.

Chapters 4 and 5 center on the dynamics of the location process. Location dynamics is approached in terms of housing turnover and neighborhood change theories.

THE FIRST APPROACH TO LOCATION DYNAMICS, in Chapter 4, contains the following parts:
Section 4.1, The Filtering Process, which centers on the dynamics of housing turnover. Filtering is considered to be a mechanism whereby low-income groups have access to housing under free market conditions. The discussion centers on definitions of filtering and analysis of some factors related to the role of filtering in providing housing for the poor.

Section 4.2: The Neighborhood Change Process, which describe physical and social components of neighborhood change. The two theories presented (neighborhood life-cycle and invasion-succession) highlight some of the factors affecting the change process in transition neighborhoods.

THE SECOND APPROACH TO LOCATION DYNAMICS is the content of Chapter 5. The discussion in this chapter centers on the Arbitrage Model, which integrates housing and neighborhood dynamics into one comprehensive theoretical framework. This chapter has three sections:

Section 5.1: The Arbitrage Model, presents the main concepts and assumptions of the model.

Section 5.2: Discussion, suggests some of the positive and negative aspects of the model from the point of view of the preceding body of theory and suggests some additional elements that could be introduced to it.

Section 5.3: Arbitrage in Transition Areas, applies the main concepts of the Arbitrage Model for the analysis of the change process in Transition areas. The analysis in this section centers on the location factors affecting residential options for the poor and includes an assessment of the role of rehab in transition areas.
SYNTHESIS: THE GENTRIFICATION PROCESS, is the content of Chapter 6. This chapter has two parts:

Section 6.1: Summary of Location Factors: a Multidimensional Model, which suggests a framework of location theory that encompasses the location factors reviewed in the preceding chapters. The residential location game is presented as a multidimensional decision process in which different groups interact within the city.

Social groups are defined in three dimensions: social rank, family status and ethnicity; in each of these dimensions, they are assumed to make a choice related to five dimensions of the city: geometry, geography and the three dimensions of the social groups at play. The interrelationships between these variables are summarized in an accessibility matrix; the initial output of the matrix is a spatial distribution of population and housing (neighborhood) quality.

Housing and neighborhood quality, as well as population distribution, are assumed to behave as intervening variables in the accessibility matrix: an initial (equilibrium) situation yields a certain neighborhood and housing quality pattern. This pattern would affect successive location changes derived from population growth. The changes would, in turn, affect the existing housing and neighborhood quality and continue the change process.

Section 6.2, The Gentrification Process, applies the location model summarized above to derive some possible factors which could explain the gentrification process.

The causal factors of gentrification are derived from the accessibility matrix and described in terms of changes affecting the different dimensions of the location game. Thus, causal factors are assumed to be those factors which, by affecting the city geometry, geography, and/or segregation
attitudes, would result in different accessibility values in the multidimensional matrix.

Possible effects of the gentrification process are derived from the Arbitrage model. Assuming that gentrification is triggered by one or more of the suggested causal factors, the model is used to detect resulting changes in low-income housing options in the affected neighborhoods, in surrounding areas and in overall housing supply.

POLICY IMPLICATIONS are discussed in Chapter 7. The implications include:

- A summary definition of the role of transition areas on low-income location.
- A summary of causal factors of gentrification.
- A summary of possible effects of gentrification, particularly on low-income location options.
- A summary of possible effects of rehab in gentrifying areas.
- A discussion of policy implications for the design of low-income housing programs in gentrifying neighborhoods.
- A discussion of some future uses of the location model.
Chapter Two: Economic Factors of Location

The choice of 'where to live' is one of the most crucial decisions made by urban households - crucial not only for them but to the urban area as a whole - for the sum and synthesis of this residential decision by households is one of the prime determinants of the structure and character of our urban areas. The explanation of why households live where they do, however, is a complex and difficult task; the concerns involved are numerous and diverse, ranging from the price of land and its determinants to the social characteristics of neighborhoods. Theoretical approaches to residential location encompass areas of economics, sociology, geography; each of these approaches highlights some of the multiple dimensions in which the location game takes place.

This chapter summarizes the main concepts of economic theory, which approaches location as a trade-off process between accessibility and quantity of land. The concepts drawn from economic theory are used to present an initial explanation of low-income centralization around the Central Business District.

2.1 Economic Theory: Basic Concepts

The basic notion of location as a function of distance from other locations of interest has existed in economics for a long time. The earliest literature that dealt with this relationship centered on agricultural land. While Ricardo attributed differences in land-rents primarily to fertility differentials (Alonso, 1964, p. 3), Von Thunen was the first to show that the rents of land around a marketplace would also be determined by their proximity to that marketplace. The process of competitive bidding between potential users of various parcels of land would simultaneously determine both the level and rate of decrease of rents for land progressively farther from the central marketplace. (Alonso, 1964, p. 3, 4).

The relation between location, land price and transportation cost:
was applied to urban land by R.M. Hurd (1903):

"Since value depends on economic rent, and rent on location, and location on convenience, and convenience on nearness, we may eliminate the intermediate steps and say that value depends on nearness." (Alonso, 1964, p. 6).

In 1926, R.M. Haig applied Von Thunen's basic hypothesis to urban residential land. Location, in Haig's model, was presented as a trade-off between accessibility to the Central Business District and housing rents:

"An economic activity in seeking a location finds that, as it approaches the centre, site-rents increase and transportation costs decline. As it retreats from the centre, site-rents decline and transportation costs increase... The theoretically perfect site is that which furnishes the desired degree of accessibility at the lowest cost of friction." (Haig, 1926, p. 422-423)

"In choosing a residence purely as a consumption proposition one buys accessibility precisely as one buys clothes or food. He considers how much he wants the contacts furnished by the central location, weighing the 'costs of friction' involved - the various possible combinations of site rent, time value, and transportation costs; he compares this want with other desires and his resources, and he fits into his scale of consumption and buys." (Alonso, 1964, p. 8)

These concepts were formally stated by Alonso (1964) and Wingo (1961), and form the basis of what is now called the 'economics of residential location'. By considering the supply and demand for residential, industrial and agricultural land, Alonso formulated a general theory of the determination of urban land uses and land rents, based on the principle of accessibility. This theory provides a basic, common theoretical framework for all recent economic models of residential location and trip-to-work. A summary of its main concepts (related to residential location) is given here.

Basic assumptions of the model are:

A) **The featureless plain:** The city is assumed to sit on a plain which is uniform and contains no hills, views or any other feature. Each location is equal in terms of social status, land and geographical characteristics. Municipal services and tax rates are uniform throughout the city.

B) **The economic man:** It is assumed that individual households will try to
maximize satisfaction by consuming the goods they like and avoiding those they dislike. Each individual will spend whatever income is available in maximizing this economic satisfaction.

C) **There is no housing stock**: No fixed structures exist on the ground. Decisions of individuals and firms consider location only in terms of amount of land and distance to employment; housing attributes are considered nonexistent.

D) **Market equilibrium**: There is a fixed number of households and firms in the market. Each individual knows the price of land at every location. Land is bought and sold by free contract, without institutional or any other restraints.

E) **The simplified city**: All employment and all goods and services are available only at the center of the city. The city has unlimited room to expand, and this expansion is radial around the Central Business District.

F) **The decreasing price of land**: From the point of view of the individual, the price of land is fixed. This price decreases as transportation costs increase. Land has a maximum price at CBD, where transportation costs are zero, and a minimum price at the farthest location.

Within Alonso's framework, each household is assumed to derive utility from the residential site (in terms of size of the lot), and from a composite commodity representing all other goods and services, while disutility arises from commuting activity. In order to maximize utility subject to budgetary outlays, the household may trade-off a centralized location against larger lot sizes and/or the consumption of other goods and services.

The representative household's utility function is expressed as:

\[ u = U(z, q, d) \]

where \( q \) represents the quantity of land consumed; \( z \) represents the consumption of all other goods and services and \( d \) is the distance between the centre of
the city and the household's residence. The household faces a budget constraint of the form:

\[ Y = P \cdot z + R(d) \cdot q + (d) \]

where \( Y \) represents the income of the household, \( P \) represents the price per unit of the composite commodity \( z \), \( R \) is the price per unit of housing \( l \) and \( T \) is the transportation cost of commuting, which are both assumed to be a function of distance \( d \) from the CBD. It is assumed that these expenditures exhaust income, i.e., there are no household savings. (Gera, Kuhn, 1977, p. 19)

"...Utility is maximized when the household allocates its income in such a way as to equalize the ratios of the marginal utilities of the goods to their respective prices. For achievement of location-bal equilibrium, a process of substitution takes place between marginal increases in commuting costs... and marginal savings in the housing expenditures... as the household considers sites at increasing distances from the CBD. For the household's utility to be at a maximum, it must locate at a distance from the center of the city where the marginal rent-cost is equal to the marginal journey-to-work cost." (Gera, Kuhn, 1977, p. 21)

Individual equilibrium is described in terms of bid-price curves. A bid-price curve for a resident is defined as "the set of prices for land the individual could pay at various distances while deriving a constant level of satisfaction; that is to say, if price of land were to vary with distance in the manner described by the bid-price curves, the individual would be indifferent among locations" (Alonso, 1964, p. 59). Alonso emphasizes three points in this respect: 1) a bid-price curve refers to a given individual; 2) a bid-price curve refers to a given level of satisfaction; since there is an infinite number of levels of satisfaction for an individual, there would be for each individual a family of bid-price curves corresponding to different levels of

(1) To avoid thorny definitional problems and confusions between different terms, the term 'price' is used in its generic sense and includes market expressions such as contract rent, sales price and cost of ownership. Price is defined as "the amount of money the occupant pays or would pay to the landlord for the right to the use of a unit of land (for example, a square foot or an acre) for a given period of time. Thus, the price of land times the quantity of land in a site represents the payment for the use of the site". (Alonso, 1964, p. 16)
satisfaction; and 3) a bid price bears no necessary relation to the actual market price of the land at each location. "A bid-price is hypothetical, merely saying that, if the price of land were such, the individual would be satisfied to a given degree". (Alonso, 1964, p. 59)

The most important characteristic of a bid-price curve is that it has a negative slope; its value decreases with distance from the Central Business District. Two factors account for this negative slope: increasing commuting costs and the increasing disutility with distance:

"... Because outward movement produces disutility... (the marginal cost of movement)... must in effect be a saving in order that the bid-price curve maintain a given level of satisfaction. This saving must occur in land since commuting costs are increasing. The marginal cost of movement is equal to the quantity of land times the change of the price of land plus the increase in the cost of commuting. Bid price, then, has been defined so that, the income effect of cheaper land will counteract the depressing effect of commuting costs on income, and will permit the consumer to maintain a given level of satisfaction by substituting land and the composite good for accessibility as distance from the center increases." (Alonso, 1964, p. 71)

The steepness of each bid price curve can be viewed as 'an indication of how much an individual cares to be near the center in order to avoid commuting':

"The slope, and thus the shape, of bid price curves are ultimately determined by the tastes of the individual... The slope of a bid price curve may be equated roughly to the added (marginal) expense and bother of commuting as distance from the center increases. Thus, an individual who does not mind walking may be expected to have a gently sloped curve up to the limit of what he considers walking distance; if he dislikes other means of transportation, beyond this limit his curve will be fairly steep... On the other hand, an individual who detests walking and insists on driving everywhere will have decreasing increments of nuisance and expense as distance increases. His bid price curve has decreasing steepness with distance." (Alonso, 1964, p. 90)

In general, Alonso argues that individuals with steeper bid-price curves will locate closer to the center of the city. This is shown in diagram 2.1, which illustrates one bid-price curve for each of three individuals.
"... The individual or firm with the least steep bid-price curve will settle farthest from the center... The next individual towards the center will be the one with the next least steep bid price curves... Thus, the chain is formed, link by link, until the price paid by the user with the steepest bid price curve at the center of the city is established." (Alonso, 1964, p. 89)

The process of adjusting the values of different bid-price curves in order to fit actual market prices (i.e. a situation of market equilibrium) is explained in terms of supply and demand factors. The supply element is the total amount of land at any given distance from the center; the demand element is the total number of households for any given shape of the bid-price curves. Since each curve represents a set of prices and locations with which each individual achieves a given level of satisfaction, the process of adjusting to supply and demand factors can be viewed as a mechanism whereby each individual chooses a level of satisfaction such that he finds an optimum location within a given set of market prices.
Diagram 2.2 shows one example of how this adjustment takes place. An initial set of bid-price curves was derived for a certain level of satisfaction. If this initial set (showed in dotted line) yields less locations than bidders in the market, each household would have to adjust by moving to a next level and paying higher prices. This may in turn result in more land available than bidders, in which case the set of curves adjust downwards. After a certain number of iterations, a correct solution should be found in which the total land equates the total number of bidders and the envelope formed by the set of bid-price curves coincides with actual market prices.

2.2 LOCATION AND INCOME

The preceding section presented a very general overview of the main concepts of Alonso's theory. The next step in the discussion will be the analysis of how this theory explains the residential location of low-income groups. The discussion should provide some elements for a future analysis of how the main concepts of economic theory can be applied to explain the role of transition areas on low-income residential location and, in later chapters, to derive some possible causes of the gentrification process.

The following quotes summarize Alonso's view of low-income residential location:

"In large American cities the higher-income residents locate farther away from the center of the city than those of lower incomes. The principal explanation offered has been that, as the city grows, the wealthier build their houses on the vacant land at the periphery, leaving their old houses near the center to the poorer. This explanation is based on population growth. However, it can be shown that in a city which does not grow (that is, one corresponding to our static model), the same pattern of peripheral rich and central poor obtains, given certain tastes. (Alonso, 1964, p. 106 - Emphasis added)

"... The peripheral location of the wealthy in American cities may be explained without referring to the growth of cities, and will not be limited to rapidly expanding cities... Given a strong appetite for land, so that the holdings of land vary greatly with income, the wealthier are affected relatively less by the costs of commuting because they spread these costs over larger holdings. Consequently,
the rich are price-oriented whereas the poor are location-oriented. Less accessibility being bought with increasing income, accessibility behaves as an inferior good. This is a possible explanation of the paradox encountered in American cities, of the poor living on expensive central land and the rich on cheaper peripheral land...

(Alonso, 1964, p. 109)

The explanation of the central location for the poor is based on the argument that high incomes lead to more gently-sloped curves, therefore outbidding in the market for locations farther away from CBD.

The argument goes as follows: Given a strong appetite for land, the wealthier will tend to have larger holdings. When holdings are large, a small rate of exchange in price is necessary to offset the increased transportation costs. For instance, a man holding one acre needs only a one-dollar decrease in price to offset a one-dollar increase in commuting costs. A man holding one-tenth of an acre needs a $10 decrease in land price to offset the same one-dollar increase in transportation costs. This factor points to a gentler slope for higher incomes.

On the other hand, as land holdings increase, accessibility becomes more scarce, therefore more valuable; it could be expected, then, that individuals with large holdings would be willing to sacrifice more land in order to gain a small change in accessibility; this factor would suggest a steeper slope as income increases.

The actual steepness will depend, in the end, on the relative overall value given to land quantity as compared to accessibility. Again, if we assume that the appetite for land is strong, it can be expected that the increased desire for accessibility will not offset the overall desire for large quantities of land. The net effect between these two opposite effects, then, will point to a gentler slope for high income groups, as long as the dominant tastes are for large holdings.

In other words: given a strong appetite for land, the wealthy, who can afford high commuting costs, will prefer locations where they can purchase
large holdings. The poor, who cannot afford high commuting costs, will outbid at central locations; they will be able to do this by sacrificing land quantity, i.e. they will acquire very small holdings at a very high unit price.

If the dominant tastes were reversed, i.e. accessibility were considered as more desirable than land quantity (which in Alonson's view would be the case of the pre-industrial town or some Latin American cities), the location pattern would reverse accordingly: the high-income groups would locate in central areas and the poor would locate in the periphery:

"The American case, where the peripheral, suburban locations are occupied by the well-to-do, corresponds to a slowly decreasing marginal rate of substitution. In the pre-industrial town, where there were slight differentiation in the size of the lots, "the leading tradesmen live in the centre of town, the common people in the periphery" Similar conditions obtain in other cities of the world today in countries such as India and those of Latin America..."

"The centrally located luxury apartments correspond to a minority of the wealthy, who strongly object to commuting and do not want a particularly spacious site. This corresponds to a rapidly decreasing marginal rate of substitution, and consequently steep bid-price curves." (Alonso, 1964, p. 108-109)

Thus, in Alonso's view, assuming that location is a trade-off between accessibility and quantity of land, the spatial distribution by income will be a function of overall preferences between these two consumption goods; the high-income groups would tend to locate where the most preferred of those goods is maximized, and the lowest income groups will tend to locate where the least preferred of those two goods can be optimized. This notion will be referred to in future chapters, when other factors of location are discussed.

2.3 TRANSITION AREAS: ECONOMIC FACTORS

Transition areas located at the fringes of the Central Business District are traditionally considered one of the important location options for the poor. A review of the main economic concepts of residential location theory has provided some explanation of the location of low-income groups in those areas. This explanation assumed an "equilibrium" situation, that is, a
situation in which the total size of the population is fixed.

However, the location and role of transition areas may be also considered in a growth situation. The dynamics of city growth result in a process of change of use in those areas, originated by the expansion of the Central Business District. The economic theory of residential location, although it assumes a static model, can be used to make some inferences in terms of population growth. This possibility has been stated by Alonso:

"It should be noted that, all other things equal, with the poor in the center and the rich in the periphery, sheer population growth will push back the boundary between the rich and the poor, including some of the houses that were rich into the poor area. This phenomenon is quite ancient, as noted in a 1503 act of Parliament: 'Great mischief daily grow and increase by reason of pestering the houses with diverse families, harboring of inmates, and converting houses into several tenements, and exacting the erecting of new buildings in London and Westminster'. However, this process should not be confused with suburbanization, since overall density is increasing rather than decreasing." (Alonso, 1964, p. 110 - Quote from L. Mumford, 'The Culture of Cities', 1938, p. 123).

The following discussion introduces some growth factors into the equilibrium model, in order to define some characteristics of transition areas. Further background in terms of the role of growth on residential location will be presented in the next chapter.

In an equilibrium situation, different users will locate according to the relative steepness of their bid-price curves. In a simple case where two groups are competing, a bid-price system can be depicted as follows:
The firms, with a steeper curve, will locate between 0 and \( r \), and will pay prices ranging from \( p_2 \) to \( p \). Residents will locate between \( r \) and \( t_2 \) and will pay land prices ranging from \( p \) to 0. Point \( p_2 \), in this case, is a transition point, in which either of the bidders will locate and both will pay the same price for the land. Let us assume now that there is an overall expansion in the city: population has grown, and more land is needed for the expansion of firms. Pressures from growth will result in an up and outwards shift of the two bid-price curves:

![Diagram 2.4](image)

This shift results in an overall increase in land prices. It also results in an expansion of the urban land (from \( t_2 \) to \( t_2' \)). At the same time, the commercial area has grown from 0-\( r \) to 0-\( r' \). The new transition point, \( r' \), is now farther away from CBD.

The area \( r-r' \) can be defined as a transition area. 'Transition' is defined as a process of change over time, from one highest and best use to another. It should be noted that what defines a transition area is not the actual change of use, but the expectation of change. After the change has taken place, the area consolidates with the new use and a new transition area appears in the next outer ring.
The first part of the analysis of Transition Areas was a general overview of economic factors of location at a city level. Starting from the Central Place Theory, a definition of Transition Areas was derived, and two types of variables related to the location of the poor in those areas were described:

1) In an equilibrium situation, location of the poor in central areas results from a bidding process whereby low-income groups sacrifice quantity of land in order to gain accessibility to CBD.

2) In a growth situation, location of the poor in Transition Areas results from the relatively lower rental values derived from the expected expansion of CBD and the resulting change in land use in Transition Areas.

The first type of variables stems from economic theory. The second part, as will be seen in this chapter, has been suggested by human ecologists who focus on urban growth as the major variable determining residential location.

This first definition of Transition Areas focussed on those factors that relate the location of particular individuals to certain physical areas of the city. All the variables considered (distance to CBD, quantity of land, income...) relate an individual to a location, but say little about the social dimensions of the location game.

The purpose of this chapter is to explore some of the socio-ecological variables related to the role of transition areas in residential location. The discussion will shift from the concept of 'transition areas' to that of 'transition neighborhoods' by focussing on the characteristics and type of change process of the social groups that tend to locate in transition areas.

This chapter contains a discussion of the following issues:

1) A general overview of those theories in Human Ecology which relate
residential location to the urban growth process.

2) A general overview of some of the socio-ecological approaches to residential location which relate location to social segregation between different groups.

The socio-ecological variables introduced in this chapter add new dimensions to the location game. At the same time, they provide a background for the analysis of neighborhood change that will be discussed in the following chapter.

3.1. URBAN ECOLOGY AND CITY GROWTH.

The term 'Urban Ecology' was introduced by Park and Burgess in 1921 and represents an attempt to systematically apply the basic theoretical scheme of plant and animal ecology to the study of urban communities. The first studies in urban ecology emerged in France and England more than a century ago; those early studies centered on the distribution of crime, suicide and other social phenomena, and initiated what today is an important aspect of human ecology: the study of the spatial distribution of inter-related social variables.

Robert Ezra Park (Human Ecology, 1936) argues that a basic process in human relationships is competition, largely involving a struggle for space. This competition involves an automatic and unplanned degree of co-operation, forming what is called competitive co-operation. The struggle for existence, based on competitive co-operation, determines the spatial distribution of persons in urban areas. The organization of the ecological community is based upon the dominance of the Central Business District. Dominance, competition and human mobility are regarded as resulting in the process of centralization of services, concentration, segregation, invasion and succession of populations.

Burgess ('The Growth of the City: an Introduction to a Research Project',
1925) developed the famous concept of the five concentric zones of growth:

"The typical process of the expansion of the city can best be illustrated... by a series of concentric circles, which may be numbered to designate both the successive zones of urban extension and the types of areas differentiated in the process of expansion."

"(A city tends to expand radially)... from its CBD (I), to an area of transition, which is being invaded by business and light manufacture (II). A third area (III) is inhabited by the workers in industries who have escaped from the area of deterioration (II) but who desire to live within easy access of their work. Beyond this zone is the residential area (IV) of high-class apartment buildings or of exclusive 'restricted' districts of single family dwellings. Still farther, out beyond the city limits, is the commuters' zone - suburban areas, or satellite cities..."

"This chart brings out clearly the main fact of expansion, namely, the tendency of each inner zone to extend its area by the invasion of the next outer zone. This aspect of expansion may be called succession, a process which has been studied in detail in plant ecology."

Burgess' model is based on the observation of the spatial distribution in Chicago in 1920 and has, therefore, a limited generality. However, his description of the growth and expansion of the city in terms of expansion, succession and invasion, has had a considerable influence.

As will be seen later, Burgess' notion of location in terms of concentric rings successively moving outwards as the city grows and expands, constitutes the theoretical foundation upon which most of the neighborhood change studies are based.

Amos H. Hawley ('Ecology and Human Ecology', 1944; 'Human Ecology', 1950) suggests that community structure is based primarily upon division of labour. The organization of sustenance activities - the way a community organizes itself for survival in a particular habitat - results in a spatial distribution. Those activities least able to withstand the time and cost of more distant locations and with a maximum need of accessibility will tend toward a central location. Hawley summarizes a theory of land values in relation to residential location:

"The residential property on high priced land is usually in a deteriorated condition, for since it is close to business and industrial areas it is being held speculatively in anticipation of
its acquisition by more intensive and therefore more remunerative land use. In view of that probability owners of such property are not disposed to spend heavily for maintenance or to engage in new residential construction. Hence the property can command a relatively low rent for family use...... Conversely, new residential structures appear on low-value lands, lands that have few if any alternative uses...... The tendency to high rental valuation is minimized somewhat by the lowered general accessibility to places of employment and specialized service that greater distance involves. Thus while land values, in the main, grade downwards with distance from concentrations of associational units, rental values for residential property tend to vary inversely with land values." (Alonso, p. 9-10)

The paradox of low income families living on high priced land while wealthier families live on cheaper land is explained in Hawley's theory in terms of a process over time in a growing city. Growth or its expectation is implicit in the behavior attributed to the speculators and in the expanding area which results from the continuous addition of new houses to the periphery.

The concentric zones models described above explain neighborhood change process in terms of invasion, succession, extension, and concentration, in which land use and population type in one zone initially invade and then succeed that of the adjacent zone. Change is envisioned as being much like the dropping of a pebble in a lake: a series of ripples radiate from the point of impact pushing into each other in their outward flow. Much of the literature on neighborhood change stems directly from the concentric zone model.

Homer Hoyt's sector model (Hoyt; "The Structure and Growth of Residential Neighborhoods in the United States", 1939) presents the most prominent alternative to the concentric rings theory. In a study of 142 American cities, Hoyt argued that the distribution of population is organized more in terms of homogeneous, pie-shaped sectors that run from the city's CBD toward the periphery. Thus, the high-income areas tended to be found in one or two major sectors rather than in the concentric zones described by Burgess. The social status of an area would not be related to distance from CBD; indeed, the types of neighborhoods that one would pass through in
driving from the center of the city would basically depend on the sector in which one started.

The sector theory explains growth in terms of axial development along major transportation arteries and lines of least resistance. The key element in change is that of high-status residence. Its location and expansion sets the parameters for the development of the other areas. Some of the basic propositions describing sectoral change are (Schwirian, 1977, p. 185-186):

- High-rent residential growth tends to proceed from the given point of origin, either along established lines of travel or toward another existing nucleus of buildings or trade areas.
- The zone of high-rent tends to occupy high ground that is free from risk of floods and to spread along lake, bay, river, and ocean ports where the waterfront is not used by industry.
- High-rent residential districts tend to grow toward the section of the city that has free open country beyond its edges and away from 'dead end' sections that are prevented from expanding by natural or artificial barriers.
- The high-priced residential neighborhood tends to grow toward the home of community leaders.
- Sometimes trends in the construction of office buildings, banks, and stores pull the high-priced residential neighborhoods in the same general direction.
- High-grade residential areas tend to develop along the fastest existing transportation lines.
- Deluxe apartment areas tend to develop near the business centers in old established residential areas.
- The growth of high-rent neighborhoods continues in the same direction for a long period of time.
- High-rent neighborhoods do not skip about at random in the process of movement. They follow a definite path in one or more sectors of the city.
- It is possible, under certain conditions, for high-rent areas to 'double-
back', or return toward the center of the city.
- High-rent areas tend to be adjoined by medium-rent areas; sharp disjunctions in rental areas are not frequent.

Harris and Ullman ("The Nature of Cities", 1945) suggest still another alternative pattern of city geometry, the multiple nuclei model. Change in the multiple-nuclei model is treated in terms of the factors that account for the emergence of separate nuclei within the city. The four factors that are involved in the development of the nuclear pattern are: 1) Certain activities require specialized facilities located in only a few sections of the metropolis. 2) Certain like activities profit from adjacent congregation. 3) Certain unlike activities are antagonistic or detrimental to each other. 4) Certain activities are unable to afford the costs of the most desirable locational sites.

The obvious question at this point is: Which of the three different models best fits the actual geometry of most cities? Although there is no clear answer to this question and researchers have different opinions on this matter, some additional elements related to the shape of urban areas can be drawn from the analysis of the segregation process between different social groups. This will be discussed in the following section.

3.2 SOCIAL FACTORS OF SEGREGATION.

From the early work to the most recent formulations, Human Ecology has seen residential location as a process of segregation between different groups:

"By its very nature, urbanization has led to the residential segregation of persons and groups within cities. Given large concentrations of population, given the heterogeneity of industrial society, and given differences in lifestyle and culture, it is almost inevitable that persons will sort themselves from other persons on the basis of subjectively important criteria. It would indeed be amazing to find urban concentrations where all neighborhoods or blocks or cities had exactly the same types of persons." (Avery Guest, p. 269).
A starting point for the analysis of residential segregation - its degree, spatial patterns, and its causes - is the Burgess theory of urban growth.

Burgess' ring concept seemed to be primarily a heuristic device to show how activities and groups become segregated, concentrated, and centralized in the city. The zones were meant to indicate general tendencies of location, rather than hard and fast areas. It follows from his theory that lower status persons, single and unattached persons (including homeless men and women), and ethnic and racial minorities should generally be located near the center of the city (centralized), while higher status persons, third-generation Americans and families with children should generally be located on the urban outskirts (decentralized). Within Burgess' model, groups become segregated in the city, not because they have a particular like or dislike for other groups, but because changes in the city's structural or morphological features lead them to live in certain areas of the city. Within the context of possible causes of segregation, the theory emphasizes the non-personal causes.

Following Burgess's framework, Zorbaugh developed the concept of 'natural areas', which can be considered a first attempt to explain the nature of neighborhoods. A 'natural area' is a geographical area characterized by a physical individuality and by the cultural characteristics of the people who live in it:

"A natural area is a geographical area characterized by a physical individuality and by the cultural characteristics of the people who live in it... Just as there is a plant ecology whereby, in the struggle for existence, like geographical regions become associated with like 'communities' of plants, mutually adapted, and adapted to the area, so there is a human ecology whereby, in the competition of the city and according to definable processes, the population of the city is segregated over natural areas into natural groups. And these natural areas and natural groups are the 'atoms' of city growth, the units we try to control in administering and planning the city." (Zorbaugh, 'The natural areas of the city', 1926, in Theodorson, 'Studies in Human Ecology, 1961, p. 47).

Zorbaugh sees these natural areas as human communities with similar traits which, in the process of struggle for survival, become adapted to a
particular geographical area. Again, the adaptation process relates to the geographical characteristics of each area, rather than to the interaction between members of these communities.

A more formal framework which provides methodological tools to identify the social variables that define different social groups in urban areas has been more recently developed by Schevsky and Bell (Schevsky and Bell, 'The Social Areas of Los Angeles', 1949). Social Area Analysis is a method for the study of social differentiation and stratification of groups. The original formulation of this method was presented in a study of urban phenomena in Los Angeles. The objective of the study was to understand urban aggregations, not as isolated, self-contained units, but as parts of a wider system or relationships; it was felt that the factors that define different groups in urban areas were a reflection of the more significant characteristics of modern society.

Starting from three main postulates concerning industrial society, Schevsky and Bell derived a set of indexes, obtained from census tract data, which relate to each of the postulates. The three main constructs are:

1) Social Rank (economic status), which would reflect the changing distribution of skills as a significant differentiating factor among individuals in modern society, and would be measured by education, employment status, value and quality of home.

2) Urbanization (family status), which would be a consequence of the increasing differentiation of function and resulting changes in the ways of living (women entering the labor force, alternative family patterns). Indicators of this index are: age and sex, persons per household, ownership status, house structure.

3) Segregation (ethnic status), derived from the increase in the complexity of organization: (increasing diversity, segregation and isolation of groups) and measured by race, country of birth, citizenship. It should be
noted that the term 'segregation' here is used in a restricted meaning, since it describes differentiation by ethnicity only.

Two hypotheses implicit in the formulation of this typology were tested in the Los Angeles study: 1) that the three types are necessary to account for the observed social differentiation between urban sub-populations; and 2) that the indexes constructed to measure the three factors are unidimensional measuring instruments. The results of the analysis supported these two hypothesis and, in addition, provided some evidence that the three factors are adequate, as well as necessary, to account for most of the observed variation between sub-populations that can be detected by census data.

Van Ardsol, Camilleri, and Schmid have carried out an extensive study in which social area analysis was applied to ten large American cities. The results of their study led them to conclude that this approach has high generality and is highly applicable to the cities studied. In eight of the ten cities studied the data supported the construction of the variables of social rank, urbanization and segregation on the basis of the specific indexes utilized by Shevsky and Bell. A study of certain areas of San Francisco, done by Bell, provides further evidence on how social area analysis provides a framework for the identification of the main differentiation factors in urban groups. (Theodorson, 'Studies in Human Ecology', 1966, p. 132).

Social Area Analysis provides a useful set of indicators to measure the characteristics that define sub-urban groups in urban areas. These sub-groups, or social areas, are groups with similar scores on three social dimensions: social rank, family status and ethnicity. Although these indicators do not describe the type of interaction that takes place between different individuals or groups, it can be hypothesized that people living in a particular type of social area would systematically differ with respect to attitudes and behavior from persons living in other types of social areas.

Shevsky's and Bell's typology defines segregation to refer only to
one type of group differentiation, which is ethnicity; but in fact groups separate themselves according to other factors as well. Avery Guest gives a broader meaning to the concept: (Avery Guest, 'Residential Segregation in Urban Areas'. "Contemporary Topics in Urban Sociology, 1977, p. 269-335).

"Segregation means dissimilarity in residential distribution - that is, the tendency of one type of person to live separately from another type of person in one small area in the city.... The opposite to segregation would be integration, and a process in which segregation is abolished would be called desegregation".

"Segregation... may also take the form of concentration. If members of a group are segregated so that all live in one region or large area of the city, they are concentrated. In the case of black-white segregation, the existence of large racial ghettos could be considered an example of concentration. But a group may be segregated without being concentrated, as would be indicated by a pattern on city blocks being completely white or completely black, but these blocks being randomly distributed around the city..." (Guest, 1977, p. 273-274).

Guest differentiates three dimensions of segregation: by social status, by family composition and by race/ethnicity. These three dimensions are more or less coincident with Scheyvsky's and Bell's typology; the only difference being the definition of segregation as a general phenomena, and ethnicity as only one dimension of it.

In terms of the reasons for segregation, Guest distinguishes two types of forces:

1) Non-personalistic forces, which produce an indirect type of segregation, result of physical features and characteristics of the city, rather than the attraction of rejection between different social groups. Non-personal segregation is considered as a product of two types of causes:
   - Sentiment and symbolism attached to certain areas and elements of the city. This factor relates to elements such as historical character of a neighborhood, traditions associated with a particular area, etc.
   - Morphological or structural features of neighborhoods, such as size and age of the housing stock, provision of open spaces.

2) Personalistic forces, which are conscious acts of individuals or groups
to live close or far away from each other. Personal segregation would be due to:

- The actions of individuals in terms of choosing to live with groups having similar values and lifestyles.
- The actions of institutions or specialized agencies within the community; for instance, it is frequently alleged that racial segregation in US cities, while sought by some individuals, is actively created by the actions of realtors who may refuse to show certain neighborhoods to blacks.

Guest argues that, although little is known about the causes of residential segregation, the evidence suggests that family segregation and segregation by social rank are primarily a result of non-personal factors, while ethnic-racial segregation results primarily from the desire to live close or far away from other groups. A summary of the argument presented by Guest is given below.

A) Family-life cycle segregation:

In Guest's view, segregation by stage in life-cycle is the direct result of the particular housing needs of each group in terms of size and age of the housing. These housing needs can be summarized by the following categories:

- Households of married couples with children present: this group should be located in spacious housing, and relatively new housing since they can be expected to move into houses when they start the child-bearing period and remain in them for a long period of time. Since most of the new housing is added at the periphery of the urban areas, families in the child-bearing stage would locate in those suburban single-family dwellings.
- Households of married couples in the age period over 45, generally without children present: people in this group would locate in spacious older housing, "if only as a relic of past housing needs"; they would age along with the neighborhood. Because of the older type of housing, they would be
located in more central areas than the young families.

Households in which no or very few married couples or children are present, generally containing the young, single population, the older, widower population, and the divorced-separated population. This group would need less spacious dwelling and should tend to locate in higher density areas; the old age component may also live in old, spacious units in central neighborhoods. In both cases, the location is close to the core of the city. Since this group represents a relatively shorter stage in the life-cycle, one can predict that apartment house areas of the city would be more transient in character (higher mobility rate).

In this view, segregation by family status is primarily non-personal, and results from structural or morphological features of neighborhoods rather than from sentimental features.

Several studies done in recent years support this notion. For instance, Peter Rossi (1955), in a study of residential mobility in Philadelphia, found that most of the families moving or planning to move were doing so to adjust housing needs with life-cycle changes. The space, quality, and structural soundness of housing was the overwhelming concern in their housing choice. (Guest, 1977, p. 286). A study of residential segregation by life-cycle stage in Cleveland, Ohio (1960) showed that differences by family status did not explain segregation; most of the segregation could be explained by differences in housing types (Guest, 1977, p. 287). Similarly, Guest's study of segregation by family types in 16 other metropolitan areas (1970), showed similar findings. Guest also found that the centralization-decentralization pattern was related to family status rather than social rank or ethnicity:

"In fact, the centralization-decentralization pattern was much more characteristic of families than of social status groups, white ethnic groups or racial groups, suggesting that family composition is the most clear-cut characteristic distinguishing the center from the outskirts of the American metropolis. On the whole, the study of the seventeen metropolitan areas showed
little tendency for family segregation to vary in clearcut concentration patterns other than centralization-decentralization."

B) **Social class segregation:**

The issue of segregation by social rank has provoked a wide-ranging debate on whether it results from personalistic or non-personalistic causes. More has been written about segregation by social rank than by any other dimension, but less is probably known definitively. There has also been a long-standing debate on whether social class groups are segregated on the basis of centralization-decentralization, or whether it follows other patterns, such as Hoyt's wedge-shaped areas emanating from the CBD.

Exponents of the non-personal, structural factors in determining social class segregation argue that persons of higher social status have certain tastes and desires for certain types of neighborhoods, and use their income to purchase location according to those tastes; those preferred neighborhood attributes would be primarily: little congestion, little business and industry, generous amount of internal and open space. Though not always explicit, it follows from this argument that the lower status persons would locate not according to their tastes but in those areas not chosen by the higher status groups.

The arguments presented by Guest in support of this theory are based on a study done by Otis and Beverly Duncan of occupational segregation in the Chicago Metropolitan District in 1950. This study was replicated in various other metropolitan areas. All those studies showed that segregation indexes by occupation were moderate (greater than those for family groups, and similar or smaller than those for ethnic groups). Segregation was found to be generally correlated to income and occupational prestige.

Another study done by Guest on 17 SMSA (Guest, 1971) shows that the proportion of white-collar workers in each area (as opposed to blue-collar workers) was highly related to the types of housing, particularly number of rooms and structural conditions of the house.
How this evidence supports the non-personalistic theory is not clear in Guest's discussion. The study by Duncan and Duncan appears to show that there is segregation by social status, but says little about its causes. Guest's study, on the other hand, relates location to differences in housing types by occupational class; the correlation between housing type and occupational class does not explain whether housing quality is a cause, an effect or a concomitant factor to location preferences.

Another type of non-personalistic location factors commonly associated with social rank is that of sentiment and symbolism attached to certain neighborhoods. One leading proponent, Walter Firey ('Sentiment and Symbolism as Ecological Variables', 1945), maintains that space has a symbolic value, not only cost-imposing qualities. Space takes meaning for man through cultural definition, and cultural values intervene between the physical environment and the human community. Firey suggests that the maintenance of Beacon Hill in central Boston as an upper-class residential district can only be explained in terms of symbolic values.

In Guest's view, however, the Beacon Hill case would be a residual, rather than a dominant phenomenon, since the overall pattern in Boston, with only that exception, is still that of centralization-decentralization by social rank.

Still another criticism of the ecological view sustains that actions of groups may result in class segregation. Higher status neighborhoods would defend their territory and prevent the entrance of others by collective behavior, or by indirect means such as restrictive zoning and land use controls.

In terms of geographical location by social rank, current evidence seems to suggest that income-class variations with distance from CBD are not very significant. Rather, segregation would follow patterns related to the location of transportation corridors, industrial areas and other geographical features.
In Guest's words: "As I have shown recently (Guest 1971, 1972b), the actual tendency of social status to vary with each mile of distance from CBD is not great, and thus we are really trying to explain slight tendencies, if present at all, of status to increase with distance from CBD." (Guest, 1971, p. 299).

Kent P. Scwirian (p. 187-193) shows that, in a study of US cities in 1960 by Schnore and Winsborough (1972), while 90 cities showed a centralization pattern (higher status in outer rings), 24 communities showed a reverse gradient (higher status in central areas), and 70 urbanized areas showed a pattern in which both the lowest and highest classes were centralized while middle-class was decentralized. The same study, though, showed that changes in time pointed to upper-class groups becoming less centralized and lower groups becoming more centralized. The following quote from Scwirian (p. 192) gives an interesting insight on how the existing evidence might be suggesting a developmental theory of land use:

"Schnore speculates that there might well be a sequential pattern of ecological change as societies modernize. In the early pattern of city development the 'inverse gradient' characterizes the city in which the affluent population lives near the city's center and the lower groups live towards the periphery. With growth, modernization, and aging the central portions of the city become less attractive residentially and the upper classes migrate towards the periphery. The vacated areas in the inner portions of the city become targets for those urbanites who cannot survive the stiffer competition for fringe housing." (Scwirian, 1977, p. 192)

In other words, the location distribution of highest and lowest groups, or the relative centralization of the poor, would be an indicator of the degree of urbanization of an area.

C) Ethnic segregation:

Until recently, most sociologists treated ethnicity as an aspect of social rank. Ethnic identification was seen as a temporary manifestation of the migrant's low economic status in American society. And it was presumed that distinctive ethnic traits would disappear as the migrant was assimilated economically into the society.
This perspective, in seeing status and ethnicity as very similar, seems to follow the view that residential segregation arises primarily from nonpersonal causes. Ethnic groups would become segregated primarily because their income status relegate them to certain types of housing and neighborhoods in the city. However, there may be certain personalistic components of segregation because the ethnic group, due to its low status, seeks out others of the same ethnicity in order to protect and defend its interests.

More recent research seems to suggest, however, that segregation by ethnicity cannot be explained by income alone. For instance, Nathan Kantrowitz (1973) (Guest, 1977, p. 304) suggests using the New York metropolitan area as an example, that a high degree of residential segregation remains among the foreign stock population of New York. This view is supported in two studies of residential segregation in the Toronto metropolitan area:

- In one study, A. Gordon Darroch and W.G. Martson (1971) found that segregation among ethnic groups in Toronto could be explained only slightly by the social class differences of the groups. In another study, Darroch and Martson (1969) argued for a multidimensional concept of ethnic residential segregation, showing that ethnic segregation could be explained by a variety of factors: period of immigration to Canada, religion, mother tongue, and country of birth. They showed that ethnic segregation could not be explained by period of immigration to Canada alone, indicating that it was not simply an artifact of having new, low status immigrants. (Guest, 1977, p. 305).

- The actual location patterns arising from ethnic segregation are not well understood. There is no clear evidence to prove that ethnicity produces either a centralization pattern, a sectoral pattern, or some other type of clustering. Some studies suggest that ethnic groups spatially concentrate on non-personal symbolic bases. For instance, Christen Jonassen (1945), (Guest, 1977, p. 307) argues that Norwegians in New York City have located
close to the sea and semi-rural areas, because they remind Norwegians of their native land.

Similarly, a study by Kosa ('Hungarian Immigrants in North America: their Residential Mobility and Ecology', 1956) suggested that location and movement of Hungarian groups could be explained in terms of their cultural values.

A good summary of what seems to be the current view in terms of residential segregation in the three dimensions suggested by the Social Area Analysis typology is K.P. Schwirian 'club sandwich' theory: (Schwirian, 1977, p. 198)

"While the social area analysis perspective developed fairly independently of the classic models there has been some interest in investigating the patterns of urban social areas in terms of concentric zones, sectors, and multiple nuclei. In studies of cities in the United States and Canada it was found that, overall, status tended to be distributed more in terms of sectors than distance gradient. Familism was distributed more by distance gradient than by sector. The main reason for this is that the familism's index major component is the relative concentration of single-dwellings as opposed to multiple-dwelling units. New housing at the fringe tends to be single-family while other neighborhoods in the urban core are being converted from single-family to multiple-dwelling units. Ethnicity was distributed neither by sector nor by distance but tended to appear more in terms of highly clustered nuclei... Thus it seems that the city is much like a multilayered club sandwich. Over the basic grid of streets we have a layer of social status sectors; then a layer of housing types distributed primarily by density gradient; all topped off by a layer of nucleated racial and ethnic minorities. Social Area Analysis attempts to separate these layers and examine their relative contribution to the city and then recombine them to observe their total configuration." (Schwirian, 1977, p. 198)
The review of location theory presented in the preceding chapters has centered on economic and social factors related to the centralization of low-income groups around the Central Business District.

From the point of view of economic theory, transition areas were defined as those areas in which a change in land use process is underway, this change being produced by the dynamics of growth and the resulting expansion of the Central Business District. Growth, and the expectations of land use change derived from it, were suggested to result in a deterioration of maintenance standards in transition areas; this in turn would result in residential location of low-income groups in those areas.

On the other hand, the overview of some of the social components of residential location suggested that centralization of the poor in areas around the Central Business District is one of the social dimensions in which the location game takes place. Other types of social segregation (by family status and ethnicity) are likely to result in the centralization of particular family types and ethnic groups.

Since the main element defining transition areas is the change process taking place in them, a key element to understand their role in terms of low-income residential location is the analysis of this change process, its causes and mechanics, and the effects of the process on residential segregation.

Studies of location dynamics stem primarily from the same body of social ecology presented in Chapter Three (section 3.1). The basic notion underlying all the studies of location dynamics is that, as the city grows and expands, new housing is added in peripheral areas. Housing additions, combined with the expansion of the Central Business District, produces an outward flow of the urban residents.

This outward flow has been described either in terms of successive
concentric rings around CBD (as described by Burgess), or in terms of axial movements along different sectors of the city (as described by Hoyt's sector model). In both cases, they assume that different groups move to successively outward areas as the city expands.

This chapter contains a discussion of some of the dynamic factors that influence the role of transition areas in terms of low-income residential location. The discussion centers on two approaches to residential mobility:

1) The Filtering process, which explains mobility from the point of view of housing quality. The filtering process is considered to be a market mechanism whereby low-income residents have access to housing.

2) The Neighborhood Change process, which includes those theories that describe physical and social components of neighborhood change.

4.1 THE FILTERING PROCESS.

One of the concepts underlying policies of maintenance subsidies for deteriorated housing is the filtering down concept. The basic idea of filtering is that additions to the housing stock will start a chain of moves in which each household of the chain moves to a better housing; successive users of each building belong to lower income groups. At the end of the process, the units are 'filtered' to the lowest income group. This process is considered to be the mechanism whereby the poor acquire housing under free market conditions.

In this scope, housing maintenance policies assume that filtering is an efficient mechanism to provide housing for the poor. Subsidies for maintenance have the objective of improving the quality of the housing thus provided, and at the same time these policies are supposed to protect the physical and social fabric of neighborhoods by preserving the old, deteriorated buildings.

The analysis of filtering in the following section will center on
the issue of how filtering provides housing for the low-income groups. This section contains:
- A review of different definitions of filtering;
- An analysis of the mechanics of filtering and its effects on low-income housing.

4.1.1 DEFINITIONS OF FILTERING.

The concept of filtering can be traced back to Hoyt's sector theory. Hoyt's essential notion was that, as a city grows, the fashionable residential district moves outwards from the center, always in the same direction. Obsolete houses left behind by the well-to-do become occupied by the poor, particularly the new immigrants, so that the wedge-shaped path taken by the high-income group contains both extremes in the income spectrum. Middle-income families group themselves about the well-to-do, hoping that some of the status of the fashionable areas will rub off to them (Wallace Smith, 'Filtering and Neighborhood Change; 1970, p. 65).

William Grisby (The Filtering Process, 1963) provides a good review of alternative definitions of filtering:

A) The traditional definition (Radcliff, Urban Land Economics, 1949) relates changes in housing price to changes in occupancy:

"This process (filtering) is described most simply as the change in occupancy as the housing that is occupied by one income group becomes available to the next lower income group as a result of decline in market price, i.e. in sales price or rents value." (Grisby, 1963, p. 96)

This definition assumes that rent and occupancy changes occur simultaneously and are simply two sides of the same coin. Of these, the key element is considered to be occupancy change, the value change being the permissive factor.

B) A reformulation was provided by Fisher and Winnick (Ernest Fisher and Louis Winnick, 'A Reformulation of the Filtering Concept', 1951). This definition recognizes that change in price and change in occupancy do not
always occur simultaneously:

"Filtering is defined as a change over time in the position of a
given unit or group of dwelling units within the distribution of
housing prices and rents in the community as a whole." (Grisby, 1963, p. 96)

Thus, filtering is measured in terms of change in relative value
rather than in terms of changes in occupants.

C) Grisby suggests still another concept - that of filtering as an improvement
in real housing standards among low-income families. This welfare concept
suggests that filtering occurs only if low-income housing standards have
been raised:

"Such a definition would hold that filtering (change in housing
prices and rents) must be measured while holding income, quality
and space per person constant, or in more relaxed form, that fil­
tering occurs only when value declines more rapidly than quality
so that families can obtain either higher quality and more space
at the same price, or the same quality and space at a lower price
than formerly." (Grisby, 1963, p. 97).

Grisby's definition also excludes the change in occupancy element.
The only difference between this and Fisher's concept seems to be the welfare
notion that filtering occurs only when a real improvement in housing for the
poor occurs. As such, it does not consider the concept of 'filtering up' (or
change to a lower quality housing) as part of the filtering concept.

D) Wallace Smith (Filtering and Neighborhood Change, 1970) argues that the
key element in the definition of filtering is the change in occupancy,
rather than the quality change. He approaches the concept of filtering in
terms of market behavior:

"Optimization in the use of a durable good requires shifting it about
among different classes of users as its relative usefulness declines
or rises. The shifting about, in itself, affects welfare only as it
is an efficient or an inefficient reallocation... Filtering in res­
ponse to deterioration of the housing stock could well leave aggre­
gate and individual housing welfare unchanged."

"If filtering is to be understood as a basic pattern of market be­
havior, then it must be defined as a response to any change in condi­
tions of supply or demand - in the number or types of households and
their incomes, in the physical quality of the stock or any portion of
it, or in construction of particular types of new units. The res­
ponse must be measured in terms of occupancy of particular houses or
neighborhoods by some different class of households."
"Filtering... is simply a change in the allocation of housing units among households of different types." (W. Smith, 1970, p. 74-75)

In summary, the concepts of filtering discussed above seem to describe two distinct types of processes which, although interrelated, do not always occur simultaneously. The first approach, or market approach, defines filtering as a process of change in the allocation of the housing good to different submarkets; this approach centers on the housing unit itself and the way it changes in occupancy within a market system. The second definition, or welfare approach, centers on the relationship between housing quality, neighborhood characteristics and overall housing standards.

In the analysis that follows, the two concepts will be used at different stages. The first part of the analysis (mechanics of filtering) will be based on the market concept of filtering. The welfare approach will be discussed at a future stage, as part of the factors determining neighborhood change.

4.1.2 MECHANICS OF FILTERING.

Wallace Smith defines filtering as a basic pattern of market behavior. As such, he argues that filtering is the market response to changes in conditions of supply and demand: changes in the number or types of households, changes in income, changes in the physical quality of the housing stock or portions of it, construction of particular types of new units. Each of these external changes would have an effect in terms of housing turnover.

The analysis that follows centers on the effect of each of these external factors on the process of housing turnover. The analysis will attempt to show how the filtering process works in terms of providing housing for the poor, and how this process is affected by subsidies to housing maintenance.

General assumptions for the analysis are:
A) An hypothetical community consisting of three families, differing as to income but not otherwise, and three houses differing as to quality.

B) An initial allocation in which the lowest-income family occupies the lowest quality house (house 1 in diagram 4.1) and the highest-income family occupies the highest quality house (house 3 in diagram). (1)

![Diagram 4.1](image)

C) Housing quality refers to the building characteristics only. There are no location differences between the dwelling units.

The analysis in this sense would be similar for the allocation of any other durable goods (cars for instance) that can be resold in the market.

D) High-income household is defined as a household which has access to new housing; low-income household is a household which cannot afford new housing; middle-income household is defined as a household which cannot purchase new housing but can purchase a high-quality accommodation.

E) All the households are home-owners. A discussion on some eventual effects on tenants will be included at a later stage.

The first part of the analysis centers on some likely effects on housing moves of the following variables: housing deterioration; income changes; population changes, and additions to the housing stock. The second part of the analysis will introduce rehab as an additional variable in the process.

(1) A discussion of why this is an optimum market distribution can be found in Wallace Smith, 1970, p. 77-78.
In a no-rehab situation, then, the following situations can be expected:

**Case 1: Housing deterioration.** (Population and income remain constant.) If the change is just a time change, the overall housing stock can be expected to deteriorate due to age alone. Housing deterioration will produce dissatisfaction with the existing allocation and pressure to add a new housing unit in the market. The effect of deterioration can be depicted as follows:

![Diagram 4.2](image)

The new unit added will be purchased by the highest-income household. This will start a chain of moves whereby each household will move to a higher quality housing and the last house is eventually abandoned. In this case, there has been a filtering process but no real improvement of the overall housing situation: the effect of filtering is that of recuperating the housing standard existing before aging. If no units are added to the market, aging with no investment in rehab results indeed in an overall deterioration of housing standards.

**Case 2: Income increases.** (Time and population are held constant.) Overall income increases can be expected to result in dissatisfaction with the existing housing allocation, since each household can afford higher housing quality. To the extent that this pressure produces the construction of a new dwelling unit, the effect can be depicted as in the following diagram:
It should be noted that in this case, though income is the triggering element, the direct cause of the improved housing situation is in fact the filtering process; to the extent that income increases are spent on other goods, there is a housing improvement in terms of affordability, but no real improvement in housing quality.

Thus, income increases have a positive effect in terms of housing improvement through filtering. It is worth pointing out that this improvement occurs regardless of the distribution of the increased income. Taking the extreme case: only the high-income household has a higher income, it can be expected that this household will be willing to sell his former unit at a relatively lower price in order to purchase the new unit in the market; the lower price will make this unit more affordable for the next household, which in turn can lower his price by a fraction of his gain; thus, the effect of higher income can be expected to percolate to at least some extent all the way down to the bottom group.

On the other hand, if only the bottom household has an income improvement, this household will be willing to pay a premium for the next housing in the chain; the middle-income household will find that he can sell at gain and spend part of this gain in offering a premium price for the highest quality house; this in turn will improve the high-income household's possibility to purchase a new unit.
Case 3: Population increase, income and age remain constant. The effect of population growth varies, depending on the income group of the new households. Let us consider them case by case:

3a) New household, high income: Population growth creates pressure for additions in the housing stock. If the new unit is added, the effects are as follows:

The new household will compete with the existing top-level household to purchase the new unit; whoever gets the new unit, the 'filtering', if any, is blocked at the top level, and the chain will not continue. At the same time, the bidding for the new house will raise the price of this unit. The owner of the first 'existing' house will try to pay at least part of the higher price by raising, in turn, the selling price of his unit. To the extent that this process continues all the way down, it can be argued that prices are 'pulled up' (raised by pulling from the top).

The effect of a new high-income household, then, is neutral in terms of filtering but negative for all groups in terms of prices. There is in this case both an increase in prices and a deterioration of housing conditions (less affordability).

3b) New household, medium income: The diagram on the next page shows the effect of a new unit in this case, which can be summarized as follows:
The newcomer will bid for the house available for the old resident of the same income level; either of them will move to it, and the other will block the filtering at this level. Again, there will be a pulled-up increase of prices for the lower levels of the chain.

At the same time, the bidding raises the price of the top-level units, which will then experience a 'pushed-up' price. As opposed to the bottom half, this pushed-up price can be considered beneficial for those groups, since it improves their possibility of moving up the chain.

Thus, a medium-income newcomer will improve the housing situation of the top groups and deteriorate that of the bottom groups. For the existing medium-income household, the new situation may be either better or worse, depending on the selling-price/purchase-price differential he can achieve in the bidding.

It is worth considering the effect of a newcomer in a case where no units are added to the market:

As the diagram shows, the effect would be neutral for the top group and an additional deterioration for the lower group, which would experience a reverse filtering and crowding at the bottom of the housing supply.
3c) **New household, low income:** The low-income newcomer can be expected to bid for the house occupied by the existing low-income household.

![Diagram 4.7](image)

The effect is a 'pushed up' price all the way up the chain. For the bottom household, again, the new situation depends on the relative price he gets for the house he sells and the one he purchases.

If the pressure created by the new household is not enough to result in a new dwelling unit, the effect can be expected to be, again, crowding at the bottom level and no filtering process.

In general, all the cases of filtering produced by population growth can be expected to have some effects in common:

A) Population growth results in some degree of filtering down only when it is accompanied by housing additions. Population growth without housing additions produces in all cases crowding at the bottom level; depending on the income level of the new household, there may be also a 'filtering up' process which results in a deterioration of housing quality for the medium-income household as well.

B) In all cases, the last (bottom) dwelling unit remains occupied, either by the same household or by a low-income newcomer. Additions to the housing stock produce different degrees of filtering, but the process never reaches the bottom household. The effect of population growth is, thus, that of lengthening the filtering chain and blocking the filtering process at the level of the newcomer income group.

C) The effect of population growth on the filtering process is regressive:
the lower the income group, the higher the probability of having a deterioration of housing quality resulting from growth. In this respect, the lowest income groups are indeed paying the highest cost originated by population growth, and the eventual gains for other groups.

D) The effect of filtering on improvement of low-income housing has a negative correlation with population growth: the more growth and the higher the income of the newcomer, the lower the probability of improved housing for the poor.

Case 4: Income decreases: (Other factors are held constant.) Lower purchasing power produced by factors such as inflation, or economic recession can be expected to deteriorate the affordability aspect of housing. To the extent that higher costs (such as taxation) are significant, some type of reverse filtering process can be expected:

![Diagram 4.8]

In the theoretical situation in which no investments in rehab are considered, the effect can be expected to be vacancy for the top level dwelling unit and crowding at the bottom level. The vacancy is likely to occur at the level in which the income deterioration is most severe. For instance, if only the medium-income household suffers an income deterioration, this is likely to result in vacancy at the medium level and no change for the high-income household. In all cases, though, crowding can be expected for the bottom households. Thus, the relative rank of existing vacancy in an urban area could be an indicator of decreasing purchasing power for the corresponding income group.

Case 5: Population decrease: The effect of population reduction is more or
less similar to that of income increases: a vacancy will occur at the level of the out-moving household, and this vacancy can be expected to trigger a chain of moves whereby the remaining households down the filtering chain may move to better housing.

![Diagram 4.9](image)

The diagram depicts a situation in which a medium-income household moves out. In general, it can be expected that the effect of population decrease is favorable for the lowest income groups, regardless of the income level of the out-moving household.
4.1.3 The Effects of Rehabilitation.

Some housing programs in Canada, such as the Residential Rehabilitation Assistance Program (RRAP) and the Neighborhood Improvement Program (NIP), attempt to improve the housing conditions of the poor by subsidizing investment in housing and neighborhood improvement. For instance, the main objective of RRAP has been stated as follows:

"... To improve the housing conditions of low and moderate income people through assisting in the repair and conservation of existing residential buildings." (CMHC, RRAP delivery handbook, 1978, p.2)

This type of program makes grants and loans available to households that meet certain conditions in terms of income, type of occupancy and existing housing quality. The loans and grants are used to undertake repairs and/or improvements required to meet minimum standards of maintenance.

This section attempts to apply the main concepts of the filtering process to assess some effects of government subsidies for housing improvement. Two types of subsidies will be considered:

A) Subsidies provided for different groups with a decreasing amount as income increases. This type of subsidy would level-off the capacity by group to invest in housing maintenance and upgrading; this type of subsidy is described in the following analysis as a situation in which all income groups invest in rehabilitation.

B) Subsidies with an income ceiling that makes them available for the lowest income group only. This subsidy is described as a situation in which only the bottom group invests in rehabilitation.

The analysis that follows centers on the same variables discussed in the preceding section. To each of the external factors of filtering, the option of investing on housing improvement (rehabilitation) is introduced.

Case 1: Rehabilitation in a situation of housing deterioration

Case 1 in the preceding analysis referred to the effects of housing deterioration in terms of filtering. If rehabilitation is introduced as an
In this case, group 3 will move to the new unit, and group 2 will move to unit 3, but group 1 will not move. If we assume that the cost of moving to the next unit is at least partly financed by the selling price of the unit currently occupied by each group, then group 2 is in fact worse-off in this case, since the unit he leaves will have no buyer and therefore his cost of moving will be higher. So the benefit obtained by rehabilitation in the bottom group will be paid by the next group in the chain. It can be argued that this cost will extend to some degree all the way up the chain and produce an overall "pulled-down" decrease in demand/price; this effect will most likely be higher for the lower groups (with the exception of the very bottom one) and diffuse upwards.

This assumes that the effect of rehabilitation is that of levelling-off the two lower groups. If the investment in rehabilitation is not sufficient to upgrade unit 1 to a 2 level, then unit 1 will move to position 2
anyways. The effect of rehabilitation will be in this case nil, since nobody will use the improved house.

On the other hand, if the rehabilitation investment upgrades unit 1 to a level higher than unit 2 (say, between 2 and 3), the effect to be expected would be a re-ranking of the households in order to match the new quality rank:

![Diagram 4.11](image)

Household 2 will want to move to unit 1 which, though not as good as 3, is probably more affordable. Household 1 may want to move to unit 2 which, again, will let him end up with a better house and still have some money left in his pocket. This relocation reaches an equilibrium when the new quality rank coincides with the income rank. The result is a net gain for groups 2 and 1 (quality improvement at a lower cost) and a net loss for group 3, which now has no buyer for the house he wants to abandon. In terms of overall social cost, though, addition of a new unit results in the abandonment of house 3, the best one of the old units.

The following policy implications can be derived from the preceding analysis:

- A subsidy for rehabilitation should be substantial in order to have any effect at all; if the subsidy is not sufficient, the bottom group will abandon the rehabilitation unit anyways, or will not be interested in the subsidy.

- A subsidy for rehabilitation should not be tied to permanence clauses. In the cases described above, such a permanence clause would not allow the rearrangement of the ranks allocated to each household, thus impeding the
optimum allocation to occur.

Case 2: Income increases. The effect of rehabilitation in this case is similar to situation 1, depicted in diagrams 4.10 and 4.11. The only difference is that 'benefits' in this case are actual gains in quality, while in case 1 they are only the recovery of quality lost with aging and deterioration.

Case 3a): Population increase, high income.

A) Rehabilitation for all groups: This case would be similar to a no-rehabilitation case in which rehabilitation does not off-set the pressure for adding a new unit. Either with or without rehabilitation, if there are no additions to the housing stock, the effect to be expected is a reverse filtering with crowding at the bottom of the filter.

![Diagram 4.12](image)

Addition of a new unit results in a one-step filtering at the top and quality improvement at all levels:

![Diagram 4.13](image)

B) Rehabilitation for the bottom group only: Rehabilitation at the bottom level without housing additions produces again crowding at the bottom, with a likely higher pressure from upper groups to occupy the improved dwelling:
Rehabilitation combined with housing additions results in a variant of case 1, in which there is now a potential purchaser for the top existing unit:

Depending on the level reached by unit 1 after the upgrading, a swap of occupants may occur between households 2 and 1; the newcomer will purchase either the existing top unit or the new unit added to the market. If the improvement is not significant, household 2 will be relatively worse-off, since the opportunity to upgrade his housing standard is blocked.

3b) **Population increase, medium income, age and income constant.**

A) Rehabilitation for all groups will have an effect similar to that of a high income newcomer. The only difference is that the filtering chain goes a step lower. In other words, there is crowding at the bottom if no
units are added, and overall improvement when new units are introduced.

B) Rehabilitation for the bottom group with no new units added increases the pressure for crowding at the bottom of the chain:

Diagram 4.17

With addition of new units, the situation is as follows:

Diagram 4.18

The newcomer offsets the decrease in price imposed upon house 2 by the lack of interest from household 1. Or the newcomer may outbid him for the purchase of unit 3, in which case the medium income household ends up at the bottom of the quality scale. Again, a swap between 2 and 1 may occur (if the improvement is big enough to raise unit 1 above a 'medium' level).

In terms of policy implications, this is probably the optimum case for a RRAP-like type of program. Note that the permanence clause, though not a problem, does not improve the case either; furthermore, if a re-ranking results with the upgrading, the permanence policy can prevent the two lower groups from re-ordering their positions to a quality rank equivalent to their income positions.

3c) Population increase, low-income.

A) Rehabilitation for all groups: if no units are added to the housing
market, there is no filtering process; the new household will try to occupy the lowest quality house; the result to be expected is either crowding or displacement at the lowest-income level.

Diagram 4.19

If additions to the housing stock occur as well as rehabilitation, a filtering process all the way up the chain can be expected.

Diagram 4.20

There is an overall improvement in this case. The only problem is that, if rehabilitation is subsidized, the cost of the subsidy is, in fact, paid by the newcomer, who will not have to purchase an improved, more expensive house.

B) Rehabilitation for the bottom group, no housing additions: again, the effect to be expected in this case is an additional pressure to displace the occupant of the improved unit:

Diagram 4.21
Additions to the housing stock produce, again, a likely levelling-off of the two lowest groups, and a higher housing cost for the newcomer. The newcomer may occupy either unit 2 or unit 1, but in both cases will encounter an affordability problem.

Diagram 4.22

Case 4: Income decreases. The likely effect of rehabilitation for the lowest income household in a situation of decreasing incomes can be depicted as follows:

Diagram 4.23

Households 3 and 2 can be expected to compete in this case for the purchase of the renewed unit; this will push-up the price of this unit, and household 1 will likely move. Since his income is also assumed to be decreasing, though, it is not clear where this household will move. In a landlord-tenant situation the result would be outright displacement. In an owner's situation, the most likely result seems to be higher affordability problems for all groups.

It should be noted that most of the preceding analysis refers to homeowners. In case where the low-income occupants are tenants, a displacement effect can be expected in a number of cases. For instance, in cases of population growth and no housing additions (see diagrams 4.17, 4.19, 4.21) the likely result is a high proportion of evictions and higher rental values for
tenant-occupied dwellings.

4.1.4 SUMMARY OF FINDINGS

The preceding analysis showed how, in an hypothetical community consisting of three households (high, medium and low-income), the filtering process takes place. The analysis centered on the effects on housing improvement through filtering of the following variables: population changes, income changes, housing deterioration, additions to the housing stock and rehabilitation policies.

The findings can be summarized as follows:

A) In all cases, the factor that triggers the filtering down process is the addition of a new dwelling unit in the market. This addition may be either the construction of a new dwelling, or a vacancy left by out-migration. If no new houses are available, the filtering down process does not occur and in some cases (such a population increase) a reverse process takes place, in which the bottom households experience crowding and/or displacement.

B) The effects of income increase are generally positive in terms of housing improvement through filtering. The improvement occurs regardless of the distribution of the increased income.

C) The effect of population growth is negative, particularly for the poor. Growth produces a longer filtering chain and different degrees of improvement for the medium-to-high groups. But the effect of growth is also that of blocking the filtering chain, thus leaving the lowest group unaffected by the eventual benefits of the filtering process. In a growth situation, housing additions provided by the private market should, thus, be combined with some type of housing policy directly addressed to the poor.

D) Rehabilitation results in maximum benefits for all groups only when additions to the housing stock are produced at the same time. Rehabilitation without housing additions has a net benefit only when the cause of
filtering is income increase. In a growth situation, rehabilitation with no housing additions produce housing quality improvements but does not change the major problem of growth: crowding and displacement of the poor.

E) Rehabilitation results in benefits for at least some groups in all cases, but it also results in costs for some groups. The most common case is that in which a low-income newcomer encounters higher housing costs after rehabilitation takes place; another eventual loser from rehabilitation is the medium-income household (see case 3a, diagram 4.16).

F) The effect of rehabilitation subsidy is nil unless the subsidy is significant in terms of housing improvement.

G) If the situation is that of income deterioration, maintenance subsidies for the lowest quality housing may have an additional problem for the poor, since the renovated homes would be more desirable for higher-income groups. Although the owner of the renewed house may eventually gain in the process, in case of tenants the displacement problem becomes worse.
4.2 THE NEIGHBORHOOD CHANGE PROCESS.

The preceding section was a discussion of residential mobility from the housing quality point of view. The discussion suggested some of the external factors that may be related to the rate of housing turnover and its effects on the housing options of different income groups. One major assumption in the analysis was that the choice of housing was based on housing characteristics alone, that is, no neighborhood or location attributes were associated with different types of housing.

An alternative approach to residential mobility is based on the location components of housing choice. Residential mobility within this approach would be seen as the result of changes in the physical and social components of different neighborhoods. The question would be, thus, how different groups are affected by external change factors, and how these changes affect the location patterns in different areas of the city.

The dynamics of location can be approached from two perspectives:

A) The focus can be on each particular area of the city; the analysis in this case would center on the process of occupancy changes and changes in the physical aspect of each neighborhood.

B) The focus can be on each of the social groups and how they move throughout the city.

These two approaches do not necessarily reflect different theoretical positions in terms of residential mobility. They both explain the same phenomenon, only from a different point of view. In fact, most of the research on residential location dynamics take to some extent the two approaches, with different degrees of emphasis on one or the other.

Since the main objective of this research, though, is the study of transition areas, approach a) seems to be more appropriate in this case. Therefore, the emphasis here will be on how the segregation process, or the dynamic components of it, affect the physical and social aspects of those
areas affected by change. Some elements of perspective b) residential mobility, will be included only to the extent that they help to support different theories related to the change process in Transition Areas.

Again, a starting point for the discussion of neighborhood change has been provided by Burgess’ theory of urban growth. Within Burgess’ theory, groups become segregated within the city as a result of morphological changes produced by city growth. In terms of neighborhood change, the implications of Burgess’ theory of growth can be summarized as follows:

"Early in its history, a neighborhood contained a variety of population groups, although higher status persons, native urban dwellers, and families with children would predominate. As the CBD expanded, the previously peripheral neighborhood would become desired for other uses, setting off a process of invasion and driving out higher status persons, native Americans, and families with children. Eventually, a complete process of succession would occur so that the neighborhood population would disproportionately consist of lower status residents, the foreign born ethnic population, and homeless men and women, or at best, the single and childless population." (Guest, 1977, p. 281).

Thus, external causes of central city instability were seen as occasioned by growth - both of the commercial heart and of new immigrants to the city. While these forces caused decay of neighborhoods, they also created an economic rationale for the continuing usage of outlying areas. With the decline of immigration and the decline of the CBD, the inner zones (the processing places for new immigrants to the city) lose a portion of their justification for being. With need diminished, the ultimate fate of the worst structures is abandonment.

The Burgess theory laid the basic concepts for two main approaches to neighborhood change in transition areas: the 'neighborhood life-cycle' and the 'invasion-succession' theories. These are complementary, rather than opposite views of the neighborhood change process: while the first one explains change in terms of income segregation and focuses on the physical aspects of neighborhood change (deterioration, density changes), the second one centers on social aspects of neighborhood change and introduces segregation.
by race/ethnicity as a major variable.

4.2.1 THE NEIGHBORHOOD LIFE-CYCLE.

Hoover and Vernon (Anatomy of a Metropolis, 1959) offered a five-stage model of neighborhood evolution in their classic study of the New York Metropolitan Region; these five stages were hypothesized as follows:

Stage 1: Residential development: transforms undeveloped rural land to residential use. The building boom of the 1920's defined this stage for many Northeastern North American cities. Most urban neighborhoods at this stage develop as single-family dwellings. There is a high population growth, high vacancies of short duration because the construction rate may run ahead of population growth.

Stage 2: Transition stage: comprises a time of apartment construction. Many of the undeveloped sites are either patches of open space bypassed in the first building wave, or obtained through the demolition of the oldest single-family dwellings. This stage is most evident in the inner rings of metropolitan areas, and is also characterized by both substantial construction and population growth.

Sometimes the prospects of a neighborhood moving from its initial (single family) stage of development to the transition stage can be quite alarming for some residents, who see this change prospect as destructive to the essential character of the area. Eventually the fears of the residents can be galvanized into collective social action aimed at prohibiting the incursion of multiple dwellings.

Stage 3: Downgrading: can occur several years later. In this period the neighborhood can lose a number of dwelling units through demolition, accidental destruction, abandonment, or conversion to other uses. Population and densities increase through the crowding of existing structures by the newest immigrants to the region. The group of young families generates additional
strains on an aging infrastructure. This downgrading stage is often associated with the 'slum invasions' by segregated ethnic and minority groups, since the physical conditions of the dwellings become crowded or dilapidated. Many slum owners enjoy a financial advantage for maintaining deteriorated housing through tax write-offs, low taxes on the deteriorated structures, almost no improvement expenditures, and high income return from the large number of renters in the crowded structures.

Stage 4: Thinning-out: occurs after the immigrants have settled down. Both population density and dwelling occupancy decline in this period. This is mainly a process of household size shrinkage as children and boarders move out. Higher mortality rate characterizes this somewhat older population; and formerly subdivided dwellings begin to merge as vacancy rates begin to rise. Building abandonment spreads and dangerous structures are demolished.

Stage 5: Renewal: is the final stage in which the obsolete areas are replaced by new multiple-family units. Most often this has been either subsidized moderate or low-income housing, or luxury apartments. In almost every case, this stage is initiated through public intervention.

The neighborhood life-cycle model suggests that density, dwellings, and the local population of urban areas regularly change through time as areas age and move from stage to stage. Not all neighborhoods pass through all the stages, and the rates of change vary considerably. Schwirian (1977) suggests several factors influencing the life-cycle process:

- Housing supply: pressures for neighborhood change in urban areas are affected by the relative rate of growth of new houses (at the periphery) to population gain.

- Access to employment and mode of transportation: areas gaining accessibility will tend to undergo more fierce competition in the urban housing land market.

- Social characteristics of residents, and their capability to mobilize res-
responses in order to maintain or to order neighborhood change.

The life-cycle model was formulated in 1959 and, as presented here, does not consider more recent trends to preserve and revitalize central neighborhoods. Nevertheless, it can be considered a useful starting point for the study of the dynamics of neighborhood change.

4.2.2. THE INVASION PROCESS.

The invasion-succession theory evolved from studies of racial discrimination in USA. Stemming from the general framework provided by Burgess' theory of growth, it intended, in its original form, to describe the patterns of location of Negro population in northern US cities. More recently, it has been applied in a more general way to describe a process of occupancy change in neighborhoods.

Duncan and Duncan define succession as follows:

"An area undergoes 'succession' when one type of land use replaces another. The term 'residential succession' means, more specifically, the replacement of one population group in an area by another. The initial population and its successor may differ with respect to economic function, social status, ethnic or national background, race, or other socially significant characteristics or a combination of characteristics."

"Accompanying residential succession may be changes in the density of population, the composition of households, the ways in which residential structures are used, the character of local institutions, etc. Such changes, however, are not considered to be invariable concomitants of succession." (Duncan & Duncan, 1957, p. 108)

In Duncan and Duncan's view, succession is considered to have four main stages: penetration, invasion, consolidation and piling-up, recognizing that there is no sharp line dividing these stages and the sequence is not necessarily complete in all cases:

**Penetration** is the initial stage, in which some Negroes enter an area occupied by whites.

**Invasion** occurs when penetration is followed by the movement into an area of substantial numbers of Negroes.
Consolidation refers to the continued increase in number and proportion of Negroes in an area, after invasion has been accomplished.

Piling up is the stage when, after complete occupancy by Negroes, Negroes continue to increase in numbers. Piling up represents an increase in Negro population without a corresponding increase in living space.

The invasion-succession process whereby Negro population would occupy initially white neighborhoods was initially seen as a 'self-fulfilling prophecy' produced to a great extent by the racial attitudes of whites:

"When a few Negro families do come into a white neighborhood, some more white families move away. Other Negroes hasten to take their places, because the existing Negro neighborhoods are overcrowded due to segregation. This constant movement of Negroes into white neighborhoods makes the bulk of the residents feel that their neighborhood is doomed to be predominantly Negro, and they move out - with their attitudes against the Negroes reinforced. Yet if there were no segregation, this wholesale invasion would not have occurred. But because it does occur, segregational attitudes are increased, and the vigilant pressure to stall the Negroes at the borderline is kept up." (Taeuber & Taeuber, 1965, p.21; quoted from Gunnar Myrdal, An American Dilemma, 1944).

This view assumes that the invasion is irreversible. Irreversibility is implicit in the widely accepted concept of a 'tip point', defined as "the percentage Negro in an area which exceeds the limits of neighborhood tolerance for interracial living" (Taeuber & Taeuber, 1965, p.100). Once the percentage Negro passes the tip point, it is assumed that whites will leave the area at an accelerated rate and be replaced by Negroes until the neighborhood becomes entirely Negro.

The particular characteristics of the succession process in terms of racial attitudes between white and black populations in North American cities are not relevant here. Nevertheless, some aspects of it are worth discussing, since they can be applied to broader definitions of the succession process. For instance, Taeuber & Taeuber showed that the magnitude and the rate of the process could be related to factors such as population growth and housing construction. Their findings can be summarized as follows:

- The largest succession areas tended to be in those cities in which the rel-
ative growth rate of black population (as compared to that of the white population) showed the highest growth differential. (For instance, a city with a 3% black population growth and a 1% white population growth would have larger succession areas than another city where the growth rates were 3% and 2% for the same groups.)

- The areas where succession proceeded at a faster rate were also those with higher growth differentials.

- This pattern was affected by the addition of new houses at the periphery and their availability to black population:

"In the large Northern cities, white population growth, on net balance, tends to be absorbed in the suburbs, while increases in Negro population are absorbed... in central cities. A high rate of Negro immigration (with)... restrictions on available housing outside existing Negro areas will necessarily result in the replacement of white population by Negro population if... these areas are already built-up. ... In the South... due to the lesser volume of Negro immigration and the alternative offered by new residential building, the pressure for Negroes to occupy dwellings formerly occupied by whites is less..."

"Much of the sociologists' knowledge of the nature of racial change in urban neighborhoods has come from the study of Northern cities during decades of extremely high Negro in-migration coupled with net losses in white population... The data presented... demonstrate that the fortunes of residential neighborhoods in a city are to a large extent tied to broader changes occurring in the metropolitan area and the economy as a whole. An important implication of the findings here is that as the source of Negro population growth in cities shifts from a predominance of migration to a predominance of natural increase, and as the urban growth context is altered, modifications of the patterns of racial change in residential neighborhoods may be expected." (Taeuber and Taeuber, 1965, p. 125).

4.2.3. NEIGHBORHOOD CHANGE AND RESIDENTIAL MOBILITY.

A basic notion underlying neighborhood change theories is that, as the city grows and expands, households tend to move to adapt their needs to the changing environment. Since most of the new housing is built in peripheral areas, it is assumed that adaptation to housing needs tends to produce an outward flow of some groups, while some other groups in-migrate to the older housing in central areas.

Empirical research on residential mobility supports this notion in different ways. Some of the findings of those studies can be summarized as
follows:

A) Residential mobility is related to housing needs: the degree of housing turnover has been suggested to be highly related to the degree of satisfaction with housing. For instance, an extensive study carried out by Abu-Lughod and Foley ("The consumer votes by Moving, 1960) on residential mobility in USA suggested that dissatisfaction with current housing underlies the majority of the decisions to move; the major sources of discontent would be, according to this study: space within the dwelling unit, the social and physical characteristics of the surrounding neighborhood and the cost of housing. Dissatisfaction with housing and neighborhood quality would be the result of changes in housing needs as well as changes in the quality of the dwelling itself or its environment.

B) Residential mobility is related to family status: most of the dissatisfactions with housing and neighborhood characteristics derive from changes in family status. Changes in family size, increase or decrease in number of children, aging, were reported by Abu-Lughod in major changes resulting in housing dissatisfaction.

C) Residential mobility is related to ethnic status: the same study suggested that, while white households tend to move mostly from the city to the suburbs, with a minority of whites moving from suburbs to central cities, the non-white groups tend to move primarily within the city proper.

D) The mobility pattern that created the suburban shift is not a simple move, but a complex of different moves. The phrase "flight to the suburbs", according to Abu-Lughod, is far from accurate: an important part of the suburban population has been drawn, not from the city itself, but from small towns and farms or suburban areas in other regions, and represents an actual in-migration into the area. Those who do move from city to suburbs rarely do so in one move: "The suburbs are not reached by one
flying leap, but by a series of short hops, each one a little farther out from the center of town". (Abu-Lughod, 1960, p. 190).

E) The relationship between mobility and income is not clear: on one hand, as discussed in page 40 income differences result in different types of centralization-decentralization patterns, although changes in time tend to lead to higher centralization for low-income groups and decentralization for higher-income groups. On the other hand, Abu-Lughod suggests that low-income groups tend to be more mobile than higher-income groups, although income increase expectations would tend to result in higher mobility.
CHAPTER FIVE: THE ARBITRAGE MODEL

The preceding discussion consisted in an overview of different aspects of location dynamics. From the point of view of housing quality, the analysis suggested some variables affecting residential mobility and the effects of this mobility on low-income housing options. From the point of view of neighborhood dynamics, a general overview was presented of some variables affecting the process of neighborhood change. In general, housing turnover and neighborhood change was related to the following variables:

A) Housing characteristics and their relation with housing needs and affordability for different groups.

B) Neighborhood characteristics, in terms of physical and social components of neighborhoods.

C) External factors, such as population growth, changes in income, additions to the housing stock.

D) Social attitudes, in terms of segregation between different groups.

These four sets of factors were detected to be interrelated: in a dynamic situation, housing and neighborhood characteristics were found to be affected by external growth factors; the effect of external factors was found to be related to segregation attitudes; and the changes in housing and neighborhood characteristics would, in turn, affect at least some external factors, such as housing additions and moves to different types of housing.

The first part of the discussion (the filtering process) centered on changes in housing occupancy while holding neighborhood characteristics constant. The second part (neighborhood change) reviewed some approaches to neighborhood change.

The purpose of this chapter is to combine housing and neighborhood variables and to discuss how these variables interact in terms of low-income residential location in transition areas. The theoretical framework chosen for this analysis is the Arbitrage Model as presented by Leven et al.
This chapter contains:

1. A presentation of the main concepts of the Arbitrage Model.
2. A discussion of some of the advantages and problems of this model in terms of the body of location theory previously discussed.
3. An application of the Arbitrage Model for the assessment of the role of Transition Areas in terms of low-income residential location.

5.1. **THE ARBITRAGE MODEL: MAIN CONCEPTS.**

The Arbitrage Model as developed by Leven et al represents an attempt to capture the complex set of variables related to neighborhood change. It combines previous research on filtering and neighborhood change theories in one comprehensive formulation which includes all the previously mentioned variables that intervene in the process: housing quality, neighborhood attributes, external factors and social attitudes of segregation.

The model is partly based on the concept of filtering, down and partly based on theories of market racial transition. By redefining the concept of filtering, and defining housing in terms of 'housing bundle' (that is, a commodity which includes both the dwelling unit and the neighborhood surrounding it), Leven et al extend previous theories to a broader view of the housing decision-making process.

As opposed to the classic economic theory which approaches location in a static situation as the result of an equilibrium between supply and demand factors, the Arbitrage Model is a model of market disequilibrium, and describes the type of forces that come into play when mismatches between supply and demand occur. This mismatch is produced by external changes (such as changes in population and changes in the housing stock) and, by producing shifts in the market, results in changes in the allocation of housing to different groups.
A starting element for the formulation of the Arbitrage model was provided by Martin J. Bailey (Bailey, 'Notes on the Economics of Residential Zoning and Urban Renewal', 1959). Bailey described a market model of residential clustering that resulted from preferences for living in high-income rather than low-income neighborhoods and for living in neighborhoods with relatively few blacks. If one group preferred to live among others of the same group and lived in the boundary between groups only at a discount, and if members of the other group paid a premium over what they would pay to live in housing surrounded by their own group, there is a price incentive for changing land use from those groups paying the discount to those paying the premium. This process of shifting users continues until prices in the boundary area reach an equilibrium value; prices will be highest where the high-income groups live together and lowest where the lowest-income groups are clustered.

Leven et al extend this basic reasoning and introduce to it other parameters. Basic definitions of the model are:

A) "Housing" is defined as a bundle of services extending beyond the dwelling unit. The housing bundle includes neighborhood attributes and expected future status of those attributes:

"... The amount a household is willing to pay for a particular dwelling unit depends on multiple considerations: structural qualities such as size and soundness; accessibility; scope and quality of public services, and the several characteristics that define neighborhood quality. Collectively, we call all these characteristics of the property the housing bundle."

"The estimated value depends not solely of the characteristics associated with the property today, but also on the expected future status of those characteristics. To the household, then, value is the present value of the future stream of services expected from the property." (Leven et al, 1976, p. 35).

B) "Filtering" is defined in a broad meaning that includes both changes in housing quality and changes in occupancy:

"Filtering takes place when a household, without change in its income or tastes, experiences a change in its housing bundle to a different rank on its scale of preferences. "Filtering up" - or upranking - occurs when the change is to a more preferred bundle; 'filtering
"... Filtering can occur even if the household does not experience a locational change in its dwelling unit. The definition elicits two significant corollary definitions: for active and passive filtering. Active filtering occurs when a household experiences a change in the ranking of its housing bundle by moving to a different unit. Passive filtering occurs when the household does not move but experiences a change in the ranking of its housing nevertheless." (Leven et al, 1976, p. 96)

This definition of filtering is similar to what was previously discussed as the welfare approach to filtering, but it has at the same time a significant difference: by focussing on the change experienced by the household rather than the change experienced by the dwelling unit, it also contains the mobility element; this is reflected in the two corollary definitions of passive and active filtering.

C) Households are assumed to change residences voluntarily for two reasons: 1) when family circumstances change, such as a change in size, income, or place of employment, and 2) when the household perceives it can obtain the desired quantity of services at a more favorable price at another location. This second factor is associated with the passive filtering down of the neighborhood and constitutes the central element of the arbitrage process.

D) Arbitrage is the change in location produced by mismatches in supply and demand:

"The Arbitrage process is the mechanism whereby supply shifts from one submarket to another; sometimes this occurs by households moving from one neighborhood to another, sometimes by a change in the housing bundle so that the neighborhood can serve a new clientele." (Leven et al, 1976, p. 37)

The Arbitrage process describes: "a moving boundary between high- and low-income or status areas, where a protracted mismatch between supply and demand makes it profitable to convert from high-income to successively lower-income occupancy. In end stage is reached when values have declined so far that it is no longer profitable to maintain the units for occupancy. They are then abandoned, vandalized, and eventually demolished." (Leven et al, 1976, p. 38)
How does the arbitrage process come into play?

Figure 4.24 depicts a simple situation in which only two groups are at play. These two groups are:

- Group one, high-income households, defined as those households which can afford new housing.
- Group two, low-income households, which are those who cannot afford new housing.

These groups could also be defined in other social dimensions. For instance, black groups in USA, who do not have access to houses in the suburbs, could be defined as group two as well.

The diagram depicts the initial position of these two groups. This initial position implies two major assumptions:

- The rich prefer to live away from the poor.
- The poor prefer to live close to the rich.

These location preferences introduce social segregation attitudes into the model and result in the following location pattern:

Diagram 5.1

Part of the highest-status groups locates in an 'exclusively rich' area. This group has the most desirable location and pays the highest housing values. At the other extreme is the group who lives in an 'exclusively poor' area and pays the lowest rents. In between, there is a boundary area in which
part of the residents are rich and part of them are poor. Those high-status households will locate in the boundary area only at a discount price: the negative effect of living close to the poor results in lower housing values. At the same time, the low-income households are paying a premium for living closer to the rich. Thus, the price of housing in the boundary area will be somewhere between the high-status and the low-status areas.

As long as the supply remains a reasonable match to the demand of each of these submarkets, the market may be said to be in equilibrium, a condition under which arbitrage remains inoperative. This equilibrium, though, can be disturbed in a number of ways:

On the demand side, population increases on the high-income side will inspire new construction: new houses are added in a new high-income area, and the rest of the neighborhoods remain unchanged.

Population increases on the lower-income side, though, will bring about a different process: since there is no resource to new construction, families must double-up; increased demand pushes prices upward within the low-income neighborhood and the premium paid for boundary units increases. This widening gap in boundary prices makes it profitable to shift occupancy from high-income to low-income occupancy in the boundary area, and at this point arbitrage comes into process.

On the supply side, demolition of low-income housing (growth of CBD, construction of new highways) will generate a shortage of housing for low-income families. Again, it would become profitable to shift housing from high-income to low-income occupancy in boundary areas. This movement, in turn, would reduce the stock for high-income housing and result in pressures for new additions in the new high-income neighborhood.

On the other hand, the process can also be triggered by additions of houses at the periphery due to income increases, rather than population growth. New houses will initiate a chain of moves in which a high-income
household will move to the new unit and leave a vacancy which in turn will be occupied by a household moving out of the boundary area. This new vacancy, in turn, gives an opportunity for a low income household to move into the boundary area. The net result in this case is the abandonment of a unit in the exclusively low-income sector.

**The role of expectation: the tipping point**

In the initial situation, the three described areas had a relatively stable composition: two areas were exclusively occupied by one income group, and the boundary area had an income mix in which the stability was due to the price-location trade-off in which each of the two component groups made an 'equilibrium' type of decision.

The arbitrage process alters this equilibrium: although the two extreme areas continue to have only one type of residents, the boundary area has altered its relative proportion of low-to-high-income population. It has undergone a 'passive filtering down' in the perception of the remaining residents of this area. It is here where the 'expectation' factor comes into play: the increase in low-income percentage has altered the 'tipping point', or the maximum percentage of low-income households that the higher group is willing to tolerate at the price they paid. The area is perceived as 'going poor' or 'going black'. At this point, lenders will be less willing to finance housing improvements and maintenance, and the remaining high-income households in that area will exert pressure to move out to the exclusive high-income group, with the resulting new additions to the high-income housing stock in new high-status neighborhoods.

Expectation, then, behaves as a 'self-fulfilling prophecy', and results in a continuing of the arbitrage process, even after the mismatch between supply and demand for low income groups ceased to exist. To the extent that the pressure results indeed in new housing additions, low-income groups
will continue to move into boundary areas.

The end stage of this process, unless halted by public action, is the abandonment of the initial low-income area, the filtering of the boundary area to a low-class neighborhood, and the filtering of the initial high-income area into a boundary neighborhood.

In summary, the arbitrage model suggests that:

- Neither age of housing stock or racial (income) character of a neighborhood does, in an by itself, have any causal relationship with the succession process.

- The reranking of housing values is a function and a consequence of changes in the neighborhood socio-economic levels (socio-economic composition). The movement is most often a downgrading following a drop in average income (by increasing the proportion of low-income households), but it could be also an upgrading due to increase in income.

- A neighborhood in immediate proximity to one which is experiencing or has experienced the downranking sequence will, unless external constraints are imposed, experience the same succession sequence.

"We see the housing stock as an inert commodity, the values of which are determined by the housing preferences of the householders. These preferences express concern not solely with the physical characteristics of the housing (as in the traditional approach), but with a whole constellation of attributes (those collectively designated 'neighborhood characteristics') that have greater impact in setting housing values than such physical traits as age or modernity, once regarded as decisive in determining market values and initiating the cycle of succession". (Leven, 1977, p. 48-49)

Neighborhood change, then, as described in the arbitrage model, is initially the result of external forces (population growth, housing additions ...) The initial effect is accelerated or continued by the social perception of the neighborhood status. Physical deterioration is seen, at best, as a concomitant element brought about by the perception of change (expectation), by lenders and investors who are not willing to spend in maintenance because
of the 'unstable' character of the neighborhood.

5.2. THE ARBITRAGE MODEL: DISCUSSION.

The model presented by Leven et al. and outlined in the preceding section is an attempt to capture the main variables affecting the dynamics of neighborhood change. The authors complement the presentation with empirical evidence drawn from St. Louis; the succession process, as detected in different St. Louis neighborhoods, appears to support the main concepts of the arbitrage model.

Although there seems to be some evidence on the reliability of the model in other case studies, (Meadows, AIP Journal Vol. 44 #3, July 78) it is probably too early at this point to assess its value in terms of accuracy to describe actual phenomena. Therefore, the discussion here does not attempt to compare the model with actual empirical evidence. Rather, the focus will be on the internal consistency of the model and its relationship with the body of theory discussed in previous chapters.

In reviewing the advantages and problems of the model, an attempt will be made to bring together the set of dynamic factors affecting neighborhood change. This, in turn, will be the starting point for the next section, in which the Arbitrage model will be applied to assess the role of transition areas in terms of low-income residential location.

On the positive side

1) The model shifts the emphasis from a descriptive approach that characterizes the neighborhood change theories reviewed before (neighborhood life-cycle, invasion-succession) to an explanatory one. It is in fact a theory of why people move.

The causal relationships relate neighborhood change to two types of variables:
- External factors, such as population growth, additions to the housing stock, availability of housing to different groups.
- Social factors or segregation attitudes between groups.

These two sets of independent factors produce a combined effect which is defined as 'expectation' and behaves as an intervening variable in the process.

The effect is twofold: household moves and physical deterioration of housing, with abandonment as the final stage. Diagram 5.2 shows the relationship between these variables.

![Diagram 5.2](image)

The important innovation introduced is what is shown as a loop in the diagram: the multiplier effect produced by the 'expectation' variable, and the relationship between this 'expectation' effect and social (segregation) attitudes.

2) The reasoning can be extended a bit further by introducing the concept of 'tipping point' and relating it to the 'expectation' variable. If 'tipping point' is defined as the percentage of one group relative to another in an equilibrium situation and at a certain housing price, it
would be possible to measure the value of the 'expectation' effect as related to the two causal factors (changes in demand-supply and segregation attitudes):

In cases in which there is a strong discrimination against a group, a small change in the tipping point would be sufficient to trigger the chain of moves. Examples of this case would be the white-to-black succession processes in some North-American cities. It could be said in this case that expectation is very inelastic to household moves.

Conversely, if discrimination is low, the expectation effect would not come into play until the tipping point has changed substantially.

If there is no discrimination at all (which could be the case when the two groups belong to different family status), the expectation element would not come into play. The following diagram depicts the relationship among the three variables:

![Diagram 5.3](image)

It should be pointed out that 'expectation' does not necessarily mean 'flight out'. If we assume that a certain mobility rate is normal in any community, the same expectation effect is produced by a not-moving-in type of reaction.

This set of variables provides at the same time one indicator of neighborhood stability: it can be expected that a 'stable' community will have
no more moves than those produced by strict demand-supply changes, while an 'unstable' neighborhood would have a high compounded effect produced by the expectation variable.

3) The model focusses on income and racial changes in a neighborhood, but it can have a more general application if the 'expectation' variable is approached as discussed above. If we start with the classification of groups in terms of social rank, family status and race-ethnicity, it should be possible to identify the type or types of social differentiation at play for each particular succession case; an expectation value could then be found for the aggregate effect of the relative discrimination predictable for each type. For instance, succession by a different ethnic group of similar social rank should produce a lower expectation value than would be the case if there is also a social rank difference between the two groups.

4) The 'attitude' element discussed so far refers only to the degree of discrimination of the 'high' group towards the 'low' one, but the model also assumes that the lower groups want to live close to the high ones. It could be argued that this attitude is not always true in real life (a number of examples could be shown in which ethnic or low-income minorities do not want proximity to other groups). Nevertheless, within the logic of the arbitrage model, this assumption is not necessarily the result of a social attitude: since 'low groups' are defined as those who cannot afford new housing, the assumption must necessarily hold true by definition, since the existing 'high income' housing are the only housing alternatives (other than crowding) for increasing demand in the low income group.

This apparent redundancy of assumptions can prove to have useful implications for public policy, in terms of provision of new housing for the poor:

- To the extent that the assumption reflects a true attitude, location of low
income housing must consider the effect of 'stigma' (separation from the high income groups).

On the other hand, availability of new housing for the poor through public programs may indeed reduce the pressure for succession to take place, to the extent that the advantages of new housing overrides the perceived benefits of living close to the rich.

On the negative side

1) The model is unidirectional, because changes are seen as invasion of 'high' areas by 'low' groups, but does not explicitly include the reverse process, although this possibility is accepted in the definitions of filtering. The fact is that, within the model, high income groups will always move to new housing and new housing is assumed to be in peripheral areas. The possibility that high groups prefer old houses (or central locations) could eventually be included, but the model does not provide any causal variable to explain how this reverse process could occur.

2) The model is also somewhat deterministic, since it considers abandonment as the only end state. Although abandonment is a very topical problem in USA, similar cases in Canadian cities are relatively rare. This is not necessarily a deficiency of the model itself; rather, the focus on abandonment derives from the particular situation in which the model was initially used.

In fact, by using the same line of reasoning developed in the model, it may be possible to detect some explanations as to why US and Canadian cities are different in this respect:

- One possible explanation relates to the exogenous variables (demand and supply changes). It can be argued that, other things equal, abandonment results only when additions to the housing stock exceed increases in population. If Canada has indeed a lower ratio of new-constructions to new-
households, it would be reasonable to predict a lower incidence of abandon-
ment.

- The second explanation may be the difference in racial segregation: Canada
does not have the black discrimination problem typical of US cities;
within the model, this would reflect in lower 'expectation' values and,
therefore, lower pressure for completing the succession process.

In other words, abandonment is not necessarily the end stage of the
process; its relative occurrence depends on the relative effect of the expecta-
tion factor in terms of compounding the process, which in turn depends on the
degree of discrimination. To the extent that discrimination is low and
housing additions more or less match population increases, there will always
be a client for the lowest income house.

3) The model rejects the notion that housing quality (age, soundness...) has
an effect on the succession process. Quality is seen, at best, as a con-
comitant to succession, resulting from the causal variables that determine
succession. A case could be made, though, for the notion that quality,
even if it is a result of social and demographic forces at play, does have
a causal relationship with intentions to move. In diagram 5.2 (p. 84)
showing the relationship among different variables, deterioration should
be considered as an intervening variable, similar to 'expectation'. The
dotted line in the diagram would show the multiplier effect of deteriora-
tion, which should be added to the 'expectation' effect.

4) There is no consideration to CBD expansion as a variable related to popu-
lation growth. This is somewhat contradictory with the more traditional
theories which explain succession as resulting primarily from CBD expansion.
One way of introducing CBD expansion in the model may be the assumption
that every increase in population produces additional demand for CBD
space. The effect of population growth, then, would be twofold: increase
in demand (new unit needed) and decrease in supply (a unit changes from
residential to non-residential use). This argument will be developed in the next section dealing with implications of this model for housing policy in transition areas.

5) Variables related to land availability are not included in the model and they would be difficult to introduce. Implicit in the model are two assumptions: 1) there is a fixed stock of housing in each area, and 2) there is unlimited land to expand. To the extent that these assumptions can be manipulated by policy (i.e. upzoning to higher densities, urban growth boundaries), the succession process would be different, and the result of this change is not clear.

6) Although one of the major advantages of this model as compared to other theoretical formulations is the introduction of some social variables (segregation attitudes), there are still a number of other social forces at play which affect the process of neighborhood change. For instance, the level of cohesiveness and organization existing in each neighborhood, the capability and interest to take active participation, either to encourage the process or to stop it by impeding the penetration of other groups, are without any doubt important factors to consider.

These factors are hardly measurable and it is almost impossible to generalize them in a way that permits their inclusion in a model. Perhaps a more reasonable approach would be to consider them on their own merits in each case, and leave to the good judgement of the researcher to assess their incidence in terms of the reliability of the model in the light of those specific situations.

7) In terms of geographic and geometric factors of location, the model explains the dynamics of the change process but does not consider the spatial distribution of the two moving groups. It is implicit that the movement occurs outward from CBD, since new houses are implicitly assumed to be added in peripheral areas. Nevertheless, while traditional theory
relates this outward movement to income increases, this mobility is related in the model to the passive filtering down of houses and neighborhoods.

It could be argued that, to the extent to which the optimum distance to CBD is indeed related to income, this outward move without income increases may result in a new type of non-equilibrium in which the filtering down of neighborhoods results in locations farther away from CBD than the optimum distance for a given income. If that is the case, at some point of the process a 'come-back-to-the-city' movement would be reasonable to predict. This factor, again, does not alter the model, but makes it necessary to use it in conjunction with other location factors.

In summary, the Arbitrage model is probably the most comprehensive theoretical approach to date to neighborhood dynamics. It has clear advantages over former approaches in terms of higher explanatory value. Although there are a number of variables not taken into consideration, most of them can be introduced without changing the basic structure of the model. Still, some other factors of location dynamics not taken into account cannot be easily introduced; perhaps the way to consider these remaining variables is on a case-by-case basis.

5.3. THE ARBITRAGE MODEL AND TRANSITION AREAS.

The discussion in the preceding sections centered on how the Arbitrage model provides a general framework to understand the dynamics of neighborhood change; in this section, an attempt will be made to apply these general concepts to the specific change process which takes place in areas around CBD, and the effects of this process on low-income residential location. The analysis will include an assessment of the effects of rehab programs in terms of neighborhood preservation and housing improvement for low-income groups.
A first assessment of the role of rehab programs was presented in Chapter 4. The filtering process; in that chapter, rehab was approached in terms of housing quality alone, with no consideration of neighborhood change in the process. The discussion that follows introduces neighborhood characteristics, social and location variables in the analysis, thus complementing the conclusions related to the effects of rehab in transition areas.

At the same time, the following discussion is intended to provide a framework for the analysis of the dynamics of the gentrification process that will be presented in Chapter 6. These three dimensions of the role of rehab (in terms of housing turnover; in terms of neighborhood change dynamics, and in terms of dynamics of the gentrification process), are summarized in Chapter 7, Policy Implications, and constitute the central part of the analysis of the role of rehab in terms of residential location for low-income groups in transition areas.

In order to introduce some of the variables discussed in the previous section, which are not contained in the initial formulation of the model, some assumptions will be added to the initial set. Starting with this enlarged set of assumptions, the analysis will show how some external factors (population changes, additions to the housing stock, rehab subsidies) affect the dynamics of neighborhood change.

The basic assumptions of the analysis can be described as follows:

A) Two groups of households are at play: high-income households, who can afford new housing, and low-income households, who cannot afford new housing.

B) The high-income groups want to live away from the poor, while the poor prefer to live close to the rich.

C) Low-income groups live closer to CBD and high-income groups live towards the periphery of the city. This spatial distribution 'makes economic sense' in economic terms.
D) Each addition in population has a twofold effect:
- Effect on demand (a new unit is needed)
- Effect on supply (a unit changes from residential to non-residential use) (1)

E) For simplicity, it is assumed that each area has initially the same number of units.

F) The price of the dwelling units increases with distance from the CBD. This reflects both segregation preferences and economic preferences in terms of distance from the CBD.

G) There is unlimited land to expand at the periphery of the city.

Diagram 5.4 below depicts the initial position of the two groups in three different areas: Area 1, the exclusively poor area is adjacent to CBD and has the lowest prices. Area 2, the boundary area, has an 'equilibrium' proportion of high-and low-income households. Area 3, the exclusively rich area is farthest from CBD and has the highest values.

Diagram 5.4

The analysis that follows introduces the same external factors already discussed in the filtering process; a slightly different sequence has been chosen this time in order to explain the mechanics of the arbitrage process.

(1)...... This assumption reflects the effect of population growth on CBD expansion. The actual rate of population/commercial growth is not really 1/1 (in Vancouver it is probably about 5/1 - the 1/1 rate has been chosen only for simplicity.
Case 1: Aging of the housing stock (population and income are held constant)

The Arbitrage model posits that aging of the housing stock alone does not have an effect on turnover. As long as the social characteristics of the neighborhoods don't change, each group will remain in their locations. The effect of aging of the housing stock is suggested to be different degrees of maintenance (depending on the affordability of the different groups), but no moves. It should be noted that, other things being equal, aging of the housing stock affects the lowest group more than the high ones: since those groups will likely spend less in maintenance, aging will result in increasing differences in quality between the different types of housing.

On the other hand, to the extent that maintenance level is related to income, it can be argued that aging does have an effect on turnover as well. The critical variable in this case is the boundary area; if the initial households distribution in this area reflects social segregation attitudes, it can be expected that, as low-income dwelling units deteriorate in the boundary area, this physical deterioration can be perceived by the other groups in the boundary area as a downgrading of the neighborhood. These high-income households will find that it is not worthwhile to spend in maintenance in a decaying neighborhood and will likely create pressure to move to the exclusively rich neighborhood.

Diagram 5.5

The turnover in this case is started in the boundary area and results in the addition of a new unit in the periphery. At the same time,
the unit left vacant in the boundary area creates an increase in supply, the effect of which on prices is likely to result in a household moving from the exclusively poor to the boundary area. Thus, the arbitrage process continues as described in the preceding section.

Case 2: Population increase, high income (other factors held constant)

As stated in the initial assumptions, the effect of population increase is twofold:

- Demand effect, which will result in one unit added at the periphery, with no arbitrage effect.
- Supply-effect, which will create pressure to convert one unit in the fringe area to CBD uses. This new pressure will reduce the stock available for the low-income groups; prices in this area will increase, and it may be worthwhile for some houses in the boundary area to shift from high to low-income occupancy. The succession process is, thus an arbitrage process, and can be depicted as follows:

Thus, the high-income newcomer is producing an upward move in the chain and a change of expectation in two areas: the boundary area is perceived as 'going poor', and the low-income area is perceived as 'going commercial'.

The initial move, before the expectation effect, produced a relative improvement of the homeowners who moved, since the demand for CBD space
allowed them to sell at a price such that they could afford a better quality house. For tenants, the effect is likely to be simply a higher rent and eventual displacement from the low-income area.

After the expectation effect, though, the situation is somewhat different:

- Expectation 1 (area going poor) is likely to result in a drop in prices in the boundary area, so that homeowners who initially didn't move became worse-off. The longer they stay in the neighborhood, the higher the price differential between their current location and the next one available to them.

- Expectation 2 (area going commercial) pushes up prices in the low-income neighborhood; this increase is an increase in land values and is accompanied by a decreasing interest in the dwelling units, since the expected use is not residential.

Thus, the net result in both cases is neighborhood deterioration, produced by a change in expectation which is not matched by an equivalent increase in demand. Deterioration will increase the expectation effect and behave as an additional multiplier in the process.

Case 3: Population increase, low income (other factors constant)

Diagram 5.7 depicts the effect of an increase in the number of low-income households. As in the preceding case, there is a twofold effect: reduction in supply produced by CBD expansion, and increase in demand produced by the direct housing needs of the newcomer. The effect is similar to case 2, but the new low-income housing needed results in an additional succession chain.
Again, there are two types of expectation effects: area (1) is expected to go commercial and area (2) is expected to go poor.

More households and less dwelling units available in the low-income area produce a price increase in that area. Owners in the intermediate area may find it profitable to sell their houses to low-income households and the arbitrage process, as described before, is triggered by a double impact on demand increase and supply decrease in the fringe area.

The low-income newcomer has to face a situation of increased prices for his first dwelling unit, and has no previous equity gain to pay this increased cost. So in this case, the price of the process is paid by the new, low income population.

Similar situations are encountered by tenants in fringe areas, who now have to pay higher rents due to the increase in price of their dwellings. In this case, there is an increase in price for both the land and the dwelling units in the fringe areas; the relative incidence of each factor in determining the final price depends on the relative interest (or bidding price) offered by the two competing users.

In this case, again, and more so, there is an improved situation for the high-income households who move to the 'better' area, and a deteriorated price for those who prefer to stay in their neighborhoods.
It should be noted that households in area 1 and 2 are making a choice based on housing price alone, this price assumed to be deteriorating due to the changes in social composition of each area. To the extent that other location factors are important for them (i.e. 'character' of each neighborhood in terms of physical features, historic value, type of social services, etc.), every household is indeed facing a different type of trade-off:

- If they remain in their areas, they lose by price deterioration of their dwelling units.
- If they move, they lose the eventual benefits of existing neighborhood characteristics.

**Case 4: Income increases (other factors constant)**

Increases in income may have several alternative effects, depending on which group receives the income increase and how important are the segregation factors of location as compared to the income/distance to CBD relationship.

To the extent that location is primarily determined by segregation attitudes, income increases are likely to have little effect in terms of arbitrage. Overall income improvements can be expected to result in higher maintenance and upgrading of all the neighborhoods, with a negligible effect on turnover. Income increases for the bottom group may produce a chain of moves as described in the discussion on the filtering process (see Chapter 4) since the moves are accompanied by income increases, they do not affect the perceived character of the affected neighborhoods and therefore, there is no expectation effect. Income increases for the rich group, on the other hand, may induce some households in the boundary area to move to the exclusively rich neighborhood and trigger an arbitrage process as described before.

To the extent that location is related to the relationship between income and distance to CBD, income increases will tend to produce an outwards flow of those groups receiving the income improvement. Again, this move will
have little expectation effect if the initial move is produced by an improve-
ment for the bottom group households, but may result in an arbitrage started at
the boundary area if the high-income groups are the ones who receive the
increased income. In this case, the likely result would be a relatively higher
deterioration of the boundary area, since the potential clients for the vacated
dwellings would move only at a loss in terms of accessibility, and they would
try to compensate this loss only by paying a discount price for the new
location.

In fact, these two types of effects suggest a more general considera-
tion that should be introduced into the analysis. If the starting position of
the two groups represents an equilibrium in two dimensions (distance to the CBD and
proximity to desired social groups) each moving decision will be a trade-off
between gains in one of these dimensions and losses in the other one. For
instance, a move of a low-income group produced by population growth may be
worthwhile in terms of social gains, but at the same time represents a loss in
terms of accessibility to the CBD. This loss may have an effect on prices or may
result in just a higher affordability problem for that group.

Thus, it can be argued that, to the extent that each location repre-
sents an equilibrium between different dimensions of the location decision, the
household moves produced by external factors alter this equilibrium in differ-
ent ways and produce different types of mismatches between demand and supply.
The analysis tools provided by the arbitrage model are not sufficient to
assess these effects, and calls for some additional theoretical framework to
be introduced.

This line of argument will be pursued in Chapter 6, in which some
elements of a multidimensional model will be suggested. The remaining part of
this chapter will center on some possible effects of rehab policies on the
neighborhood change process.
The role of housing improvement subsidies (rehabilitation)

As discussed in Chapter 4 (see page 56), housing rehabilitation policies have two main objectives: neighborhood preservation and low-income housing improvement. These two objectives are expected to be met by subsidies in housing maintenance and neighborhood improvement projects.

From the analysis above, it seems reasonable to expect the following effects of rehabilitation:

1) Housing improvement subsidies for low-income groups are likely to produce net benefits when aging is the major reason for housing turnover and arbitrage. The subsidies would in this case compensate the differences in maintenance capability between groups; by improving the physical appearance, they would reduce the number of moves produced by the perceived physical deterioration of the low-income households.

2) In all cases, housing improvement subsidies improve the housing situation of those groups who decide not to move, since better maintenance can be expected to counteract at least to some extent the drop in prices produced by the succession process as described, particularly in the boundary areas.

3) By subsidizing housing and neighborhood improvement, the direct effect of the programs is to counteract the physical deterioration effect accompanying succession.

4) However, the preceding analysis has shown that physical quality of housing and neighborhoods are only a concomitant factor in the process, the real causal factors being external factors such as population increase, additions to the housing stock, segregation attitudes. Thus, the effects of rehabilitation in terms of neighborhood preservation will be at best weak, since they are aiming at the effects rather than the causes of neighborhood change.

5) In terms of low-income housing, housing repair subsidies improve the situation of those groups that don't move. However, the group that is paying the highest cost in the process is the new, low-income household; another
loser is the low-income tenant. Tenants of subsidized rehabilitation units may be considered protected to the extent that subsidies are tied to rent ceiling clauses, but the effect of growth affects tenants of other units as well. For these tenants, and for the newcomers, the effect of rehabilitation can be considered negative, since rehabilitation increases the probability of overall price increases in rehabilitation areas.

6) In terms of low-income households eligible for rehabilitation, there is a positive effect in the affordability aspect of the problem; to the extent that low income groups cannot afford new housing, it can be expected that their capability to invest in adequate maintenance will also be limited; in this sense, rehabilitation represents an actual improvement, and behaves very much like any other type of income subsidy.

7) At present, one of the conditions to gain rehabilitation subsidy under RRAP program is the requirement: to stay in the rehabilitation dwelling for a period of five years. The likely effect of this particular clause is worth some comments. Looking again at one of the 'arbitrage' diagrams (for example, population increase, low-income, diagram 5.7, two likely effects appear reasonable to expect:

a) The housing options for each low-income newcomer is related to the mobility rate of the low-income households. For the newcomer, the net effect of the permanence clause is similar to that of reducing supply: each rehabilitation unit in the low-income area is, in fact, moving out of the market until the permanence time expires. So again, the benefit of the subsidy is paid in terms of higher pressure over the remaining units, increased prices and crowding.

b) In terms of the CBD expansion, each houseowner eligible for rehabilitation faces a choice: either they sell to a commercial bidder, or they gain the rehabilitation subsidy. Their interest in rehabilitation will depend, therefore, on the benefit differential between these two
options. In other words, the amount of the subsidy must be substantial indeed to compensate for the actual or expected gains derived from CBD expansion.

8) It would be worth comparing rehabilitation with at least one alternative oriented to act upon some 'triggering factors': additions to the low-income housing stock in central areas. The effect of this type of policy can be depicted as follows:

![Diagram 5.8](image)

Diagram 5.8

Direct increase in the low-income housing supply makes new housing available for low-income groups. The mismatch in supply and demand needs not, in this case, resolve by filtering, but it is solved by the new stock. The succession process does not take place at all. The low-income groups (both existing and newcomers) have an improved housing situation, since the increase in supply, and their effect on price, improves their housing affordability. Neighborhood social balance is also preserved by maintaining the 'tipping point' unchanged.

This type of solution can be achieved in a number of ways, for instance:

- By extending the use of rehabilitation for conversions of old housing into two or more dwellings.
- By encouraging infill and innovative housing projects in central areas in which higher densities can be achieved without significantly changing the character of the area.
CHAPTER SIX: THE GENTRIFICATION PROCESS

In preceding chapters, a general overview was presented of some of the current approaches to residential location. The review has included economic and socio-ecological theories of location; from both the economic and the social point of view, the analysis has shifted from static (equilibrium) location models to theories of location dynamics. The analysis of different bodies of theory has been used to define transition areas, to explain the role of these areas in terms of residential location for the poor, and to derive some implications related to the effects of rehab subsidies on low-income location options.

Throughout the analysis of different variables affecting residential location in transition areas, a certain type of location preferences has been more or less implicitly assumed which resulted in peripheral locations for the high-income groups. These preferences relate, among other variables, to the assumptions that new housing is built in peripheral areas and preferred by the rich, and that income increases correlate to larger quantities of land and increasing distance to the CBD.

On the other hand, the evidence presented in the first chapter suggested that a new type of location pattern is emerging in some North American cities. This new phenomenon, which has been called gentrification, middle-class resettlement or private rehab, is characterized by a change in location preferences whereby middle-to-high status groups which traditionally locate in suburban districts would now prefer old central neighborhoods.

The purpose of this chapter is to apply the main concepts contained in the review of location theory for the analysis of the gentrification process. The analysis should provide elements that could be useful for the following objectives:

- Identification of those variables that can be used to predict the nature and extent of the gentrification process in different areas.
- Identification of some effects of gentrification on low-income location options, and the factors related to those effects.
- Identification of some effects of rehab programs in gentrifying areas, in terms of low-income location options.

In other words, the analysis should provide some tools that a policymaker could use to improve low-income housing programs in gentrifying neighborhoods.

The first part of the chapter is a synthesis of the main location factors derived from the body of residential location theory. The synthesis is presented in the form of a multidimensional location model which contains both the equilibrium and the dynamic variables related to residential location.

The second part of the chapter applies this multidimensional model for the assessment of possible causes and effects of the gentrification process, as derived from the location factors suggested in the model.

6.1 FROM ALONSO TO ARBITRAGE: A MULTIDIMENSIONAL LOCATION MODEL.

The analysis starts with Alonso's view of the city. The variables considered in the Central Place Theory are consistent with the following set of assumptions, as described in Chapter 2, (p. 18):

- The city is a featureless plain
- Man is an economic man
- There is no existing housing stock
- There is a fixed population
- There is one (central) CBD
- There is unlimited land to expand

Given these assumptions, the location game relates an economic dimension of individuals (income) to a geometric dimension of the city (distance to CBD, size of the lot). The result of this two-dimensional rela-
In a two-dimensional game, location results from the equilibrium between a utility curve and a budget line. Both curves depict the assumptions that: each individual wants to live close to CBD, and each individual wants large quantities of land. The trade-offs between accessibility and quantity of land result in a radial distribution around the CBD in which the gradient is a function of income. The slope of the income gradient is determined by the relative steepness of the bid-price curves for each income group, which in turn is determined by overall preferences for quantities of land as compared to accessibility.

From the discussion in Chapter 1 (see pages 29 to 37) it should be remembered that the income gradient does not necessarily yield increasing income with distance to the CBD. This is the case when overall preferences are for large quantities of land rather than accessibility. In cases of high transportation costs, generally low incomes (as in some South-American cities) or, more generally, stronger desire for accessibility over land quantity, accessibility is considered a scarcer commodity and high-income groups will tend to have steeper bid-price curves; the lowest-income groups in those cases will outbid only at more distant locations. Two important notions are important to remember from the previous discussion:

- The income gradient is a function of the relative value of accessibility to the CBD as compared to other location factors (such as quantity of land).
- The location of low-income groups is a function of the high-income group's utility curve. Low-income groups will tend to locate where the factors least preferred by the high-income groups are optimized.
First assumption relaxed: the city is not featureless. By relaxing the first assumption, the dimension added is city geography. For simplicity, two types of features will be considered as part of the same dimension or geography: natural features (topography, shorelines, sun exposure...), and man-made features (cemeteries, transportation corridors...).

The same reasoning behind the central place theory can be applied to this dimension. If we assume that individuals want to locate close to certain features and far away from others, location can be expressed again in terms of accessibility. Individuals now face a trade-off game in two dimensions:
- Accessibility to the CBD vs. quantity of land.
- Accessibility to positive features vs. distance from negative ones.

Two sets of utility curves could be derived, one for each of these two dimensions. The resulting utility function would, again, have to meet a budget constraint. Thus, an optimum location could be found for each income group. The income gradient around the CBD becomes a more complex income shape in which the high-income groups are likely to outbid in those areas with positive geographic features, and the low-income groups are likely to locate in those areas where the negative features are found.

If transportation corridors are considered negative features of the city, for instance, the emerging pattern at this point starts to resemble Hoyt's wedge-shaped income distribution: low-income groups will locate closest to the transportation corridors and each sector will have a particular income-gradient, depending on the geographical characteristics of each of them.

Second assumption relaxed: Man is not only an economic man. From the contributions of Social Area Analysis it was shown that social typology can be described by the three categories of social rank, families and ethnicity. These
categories can be interpreted as three dimensions of each individual. The standing of each individual in each of these three dimensions will relate to the individual location preferences, both in terms of the city dimensions (geometry and geography) and the corresponding dimensions of the other groups at play. In other words, segregation attitudes can be defined as a social dimension of accessibility; preference to live close or far away from certain social groups adds new terms of trade-off to the location game. What emerges at this point is an accessibility matrix, in which individuals will try to balance-off all the dimensions of their accessibility preferences.

Diagram 6.1 depicts one of the possible ways in which this accessibility matrix can be visualized. Some of the trade-offs involved in terms of social segregation are summarized below.

A) Accessibility to the city (geometry and geography). In terms of city dimensions, it was suggested in Chapter 3 that different social types have different accessibility requirements. For instance, the social rank dimension behaves more or less like the economic man described above: the trade-offs in terms of social rank relate to both distance to CBD and geographic features. The location pattern by social rank will thus be similar to the sector-radial gradient combination already described.

Family status, as suggested by numerous empirical research studies (see pages 36-38) tends to have a clear radial gradient: family size increases with distance from the CBD. It could, thus, be concluded that family status relates mostly to the geometry of the city. If family size is substituted for income in Alonso's utility curves, a family-status location function could be derived.

In terms of ethnicity, the accessibility trade-offs would appear to be mostly related to the geographic dimension of the city (remember the example of Norwegians in New York, p. 42, who look for features resembling those of their native land). The ethnicity dimension, on the other hand, is a changing
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one: as the groups become integrated into the new society, the ethnicity dimension tends to become less important and other factors tend to prevail in the location decision.

B) Accessibility to other social groups is one way of describing what was previously defined as segregation attitudes. Although this aspect of location is probably the one in which least is definitely known, there seems to be at least some evidence to suggest that:

- In terms of social status, high-income groups would prefer to live far away from low-status ones, but the preferences of the low-status persons towards the high-status ones are not clear.
- Familism seems to be neutral in terms of segregation. There is hardly any evidence suggesting either attraction or rejection attitudes between groups having different family status only.
- Ethnicity would appear to result in the desire of at least some groups to live close to their own group, mostly in the initial period of settlement.

Long-time residents would have different types of closeness-distance preferences to new immigrants, depending on the particular ethnic/racial origin of the immigrants and the ethnic composition of the old residents. Thus, the positive/negative components of the ethnicity dimension of the accessibility matrix cannot be generalized and should be derived from the specific analysis of the groups at play in each case.

The location factors summarized up to this point suggest at least five dimensions for the accessibility matrix. Two of them refer to the city (geometry and geography) and three of them refer to the individuals (social rank, family status and ethnicity). Each of these five dimensions would yield a specific type of accessibility requirements and trade-offs for each of the three dimensions of the social groups at play. This multi-dimensional set of interactions is depicted in Diagram 6.1.
The diagram shows the relationships suggested for the accessibility matrix which appear to be consistent with the evidence presented in Chapters 2 and 3 (Economic and Socio-Ecologic Factors of Location). It should be noted that, although these values are reasonably consistent with the preceding evidence, they represent only a first and very general approximation which should be developed by future research into a more accurate and precise formulation.

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- Positive correlation
- Negative correlation
- No clear evidence
- No correlation

Note: Symbols represent relative rather than absolute preferences. For example, the 0 value in Children/CBD box indicates that households with children are less interested in CBD accessibility than childless households.

Diagram 6.1
At this point, the initially radial income gradient has been modified by the whole set of trade-offs identified in the accessibility matrix. The emerging location pattern is likely to be very similar to the 'club sandwich' described by Schwirian (see quote on page 42), in which each of the social dimensions adds a different layer to the overall residential configuration.

The role of income: In terms of social class segregation, income was considered as an indicator of social rank; income in this respect would be regarded as one of the parameters of the accessibility matrix and, as such, it is one of the variables related to the utility function. In other words, the role of income would be described in this respect as one of the dimensions of the preferences of each individual.

At the same time, income has an additional effect. If we apply again the basic notion of economic theory, i.e. that the location function represents the equilibrium between a utility function and a budget constraint, the new role of income can be explained in terms of affordability:

In the multidimensional model, the location decision is in fact described as the choice of optimum amounts of a larger set of consumption goods. To the initial consumption of land and distance to CBD (geometric choice), four other 'consumption goods' have been added: distance to geographic features and distance to the three social dimensions of the different groups.

The optimum amount of a given set of consumption goods an individual will purchase is that in which the preferences of each individual are at equilibrium with the quantities he can purchase with his income within a given set of prices. Thus, to the extent that these added dimensions of location have indeed an effect on prices, location in this multidimensional model will be again a function of income; optimum location will be the location in which each individual can purchase the optimum quantities of these multidimensional location factors given a certain set of preferences and a budget constraint.
Again, it would be reasonable to predict that higher income groups are likely to outbid in those areas where the amount of the most desirable location factors is maximized (better geographical features, higher-status neighborhoods and so on) and lower income groups will tend to locate where the least preferred or inferior goods are maximized. Thus, location of the high income groups is primarily related to their own preferences in terms of family, ethnic and social characteristics while location of the lower income groups is, again, related primarily to the preferences of the higher groups.

Third assumption relaxed: housing stock is added. The next step of the analysis is the introduction of housing quality as an additional dimension. Let us assume that, given a fixed population, an optimum location was found for each individual in terms of the accessibility matrix previously described. The situation at this point is not unlike that of a group of settlers having different social status, family and ethnic characteristics, who start a new town around a production/commercial centre in a new land. After some deliberations, the group can be expected to distribute spatially around this centre and occupy a certain amount of land. Each household will acquire a piece of land and build a dwelling unit appropriate to their rank, family and ethnic preferences; neighborhood services can be also expected to be built at this point.

Thus, the housing bundle is suggested to be initially the result of the 'first round' of the location game. Location and housing quality are at equilibrium: each household has built the best possible house at the best possible location. Housing quality within this framework is not an independent variable, but the result (or concomittant factor) of the first five dimensions of location.

Fourth assumption relaxed: population grows. The introduction of population growth has the effect of altering the initial equilibrium of location factors.
Either natural growth or immigration will bring new households to the hypothetical equilibrium town. These new households will have varying characteristics in terms of social, family and ethnic status. It can be expected that newcomers will have similar preferences to those of the groups already living in the city. At the same time, since the old residents have already occupied the land around the centre, the only place where housing can be added is at the periphery of the city.

At this point, housing quality is more than the result of the initial location round and behaves as an additional dimension of the location game. To the extent that newcomers have housing preferences similar to those of the old residents, their location decision will be influenced by the housing quality component. Several points are worth noting here:

A) Population growth is related to CBD expansion. The immigrant comes attracted by the growth in the city's economic base, and the arrival, in turn, results in additional demand for commercial and other services.

Whatever the effect of this economic multiplier, the spatial counterpart of it is the change in use of some units to non-residential use. So the newcomer brings both an additional demand and a reduced supply of the housing stock.

B) The supply-reduction effect has been described in Chapter 5 in terms of succession process in which residents of the inner ring move to successively outlying areas. This initial move produces an expectation effect which behaves as a multiplier and accelerates the succession process.

C) In addition to the supply-reduction effect, there is the demand effect produced by the housing needs of the newcomer. To the extent that the location needs of the newcomer matches the distance/land quantity position in peripheral areas, population growth proceeds without altering the initial equilibrium in this respect. If, on the contrary, the newcomers have different types of needs, a different process would occur. This pro-
cess was described in the arbitrage model in terms of succession by two different income groups in one linear direction, starting from CBD and yielding a new house in the periphery.

D) To the extent that location follows the multi-dimensional matrix, though, the succession process is not necessarily lineal. For instance, low-income groups and childless households may prefer central locations; people of particular ethnic groups will want to live close to those of the same ethnic origin; high-income families may want to avoid lowlands eventually located in the periphery, and so on. So the location finally chosen by the newcomer will trigger a multidimensional chain of moves, in which each affected household will re-assess the equilibrium factors of the initial position against the cost-benefits of several alternative next locations.

At this point, the housing market is no longer in equilibrium: the initial mismatch in supply and demand has produced several multipliers which accelerate and alter the succession process in a number of ways. Some of these disequilibrium factors have already been described in Chapter 5 (i.e.: CBD expectation effect, 'area going poor' expectation effect). Some others are still worth pointing out:

- People move but the housing bundle is fixed. This housing bundle includes not only a housing quality component; it also represents an optimum accessibility/land quantity position. The next position may represent an improvement over the 'going poor' neighborhood, but is at the same time a deterioration of the accessibility optimum.

- The number of units added at the periphery is a function of population growth. If the growth rate is significantly high, the total amount of houses needed at each stage may be such that exceeds the land available at any given distance for the equilibrium lot/size-accessibility combination. Whoever moves to the new units will be gaining in terms of housing quality,
but the geometry of the new location will be farther away from the optimum.

In short, the result of population growth is to transform an initial equilibrium situation in one of continuum disequilibrium: social attitudes will accelerate the process beyond the actual demand-supply needs. Each new position will result in an improvement for one of the elements of the accessibility matrix, but a deterioration of other elements. This continuum of disequilibrium positions relates to the number of variables in the accessibility matrix: the more dimensions we consider, the more succession effects we can reasonably predict.

Fifth assumption: there is one central CBD. The assumption of one central employment centre will not be relaxed in this analysis. The purpose of the whole exercise has been to highlight some variables affecting the role of transition areas around the CBD. For this purpose, the introduction of a multi-nuclei type of model of urban structure would only serve to add complexity without significantly altering the major concepts highlighted in the analysis.

Sixth assumption: there is unlimited land to expand. This last assumption is in fact part of the geometric dimension of the city; in this sense, its relaxation would not introduce a new dimension to the location game; rather, it would alter the distance-to-CBD/quantity-of-land relationship in the utility function. Restrictions to land expansion reduce the total amount of land for urban development. Land being generally more scarce, overall prices and densities can be expected to increase; thus, each individual can purchase less land at a higher price at any given distance than would be the case if no restrictions to land availability are present.

Two types of restrictions to land availability can be visualized: 1) natural barriers to expansion (such as lakes, mountains, floodplains) and man-made barriers, such as urban growth boundaries or freeze of agricultural
land. One aspect of land restrictions worth pointing out is the relation between land availability and the central location of the CBD. If natural barriers, for instance, do not allow a perfectly radial expansion but limit growth to only some sectors around the CBD, as shown in the two cases depicted in Diagram 6.2, the effect is overall larger commuting distances for any given population: the lack of land in some sectors must be compensated by additional expansion of the remaining sectors where there is land available. To the extent that commuting distances have a threshold determined by each individual's income and time available for commuting, this threshold is reached at an earlier stage of growth in cities with natural barriers to radial expansion.

\[ \text{Diagram 6.2} \]

In summary, the multidimensional model outlined above is suggested as a theoretical framework that encompasses the most important location factors reviewed in the preceding chapters. Social groups are defined in three dimensions: social rank, familism and ethnicity; in each of these dimensions, they as assumed to make a choice related to five dimensions of the city: geometry, geography and the three dimensions of the other groups at play. The interrelationships between these variables are synthesized in an accessibility matrix.

One output of the accessibility matrix is an aggregate set of utility functions which represent the preferences of each individual for the five dimensions. The optimum location for each individual is suggested to be that in
which this aggregate utility function meets a budget constraint. For the higher-income groups, the actual location is suggested to be a function of this group's preferences in terms of family status, social rank and ethnicity, while for the lowest-income groups location it is suggested to be primarily a function of the high-income groups' preferences.

Housing and neighborhood quality are suggested to behave as intervening variables in the accessibility matrix: an initial (equilibrium) location yields a certain housing and neighborhood quality pattern. This pattern would affect successive location decisions and location changes derived from population growth. The changes would, in turn, affect the existing pattern and continue the process.

6.2 THE NATURE OF THE GENTRIFICATION PROCESS

The body of theory outlined in preceding chapters has attempted to explain some of the characteristics of the residential components of Transition Areas, as they appear in most North American cities. These characteristics can be summarized as follows:

- In terms of population composition, Transition Areas tend to contain disproportionate amounts of low-income and lower status persons, first generation ethnic and racial groups, and small households without children. A relatively significant proportion of this population is transient in nature.

- In terms of physical characteristics, T.A. tend to be composed mostly of old, deteriorated dwelling units and declining neighborhoods. There is a relatively higher proportion of rental accommodations over owner-occupied dwellings.

- In terms of neighborhood change process, T.A. show a process of change from residential to CBD type of uses. This change, and the expectations derived from it, tend to accelerate the decline process and extend this process to adjacent neighborhoods.
The theoretical framework provided some insight as to the major residential location factors related to these characteristics of T.A.

However, as shown in the introductory part of this chapter, a new trend appears to be emerging in some North American cities: traditionally old and deteriorated housing in central areas seem to be attractive for some middle-to-high income groups; this trend would result in changes in population composition, physical characteristics and change process in Transition Areas.

The purpose of this chapter is to provide some theoretical background that can be helpful in explaining the causes, characteristics and effects of this new location trend, particularly in terms of low-income groups.

By briefly reviewing the location factors derived from the body of theory, an attempt will be made to identify those factors that may be related to this change in trend and the effects of it on the overall location game.

This section contains a discussion of the following issues: 1) definition of gentrification, 2) causes of gentrification, 3) effects of gentrification and 4) effects of rehab subsidies. The first part is based on definitions of related concepts, such as filtering. The second part is based on the accessibility matrix described in the preceding section. The third and fourth parts apply the Arbitrage model of neighborhood change.

6.2.1 DEFINITION OF GENTRIFICATION

The evidence presented in the introductory chapter describes a change in location trends which has been defined as 'gentrification', 'private rehabilitation' or 'resettlement' by different researchers. This phenomenon is characterized by both a change in location preferences of some social groups and a change in housing quality in some central areas; these areas typically undergo a process of privately financed restoration of old buildings, which are then occupied by some middle-to-high-income households.

A definition of this process could be approached from two points of view:
A) The focus can be on the household; gentrification in this case would be defined as a change of location preferences.

B) The focus can be on the dwelling unit, in which case gentrification would be defined as a change in housing quality or occupancy pattern.

The two approaches refer to the same process, only with different points of view; for the purpose of this research, the first approach appears to have at least two advantages:

- A definition based on housing quality changes would be difficult to differentiate from the concept of filtering, which is characterized by housing quality changes as well. Furthermore, a definition based on preference changes makes it possible to derive the causes of the process from the location preferences described in terms of the accessibility matrix.

- On the other hand, the process of resettlement described by the evidence presented before appears to be suggesting two distinct types of phenomena: in some cases, resettlement occurs around well defined areas, while in others, the trend reflects a more general change in the population composition in central areas with no clear location focus.

Although the first case is more apparent in terms of perceived physical changes in the affected areas, the second one is probably more frequent. Furthermore, the first case is likely to be strongly related to specific characteristics of certain areas (such as cultural or geographic traits), while the second case is likely to be more clearly related to more general location trends.

Given these considerations, it would be reasonable to define the gentrification process as a change in the socio-economic composition of some central neighborhoods, from a predominance of low-income households to a higher proportion of relatively higher-income residents; this location trend
is likely to result in the upgrading of the physical quality of the affected neighborhoods.

6.2.2 CAUSES OF GENTRIFICATION

From the theory research, it was suggested that location is a process whereby social groups interact with the city. The interaction was suggested to take place in several dimensions: the social groups were categorized in terms of social rank, familism and ethnicity. In each of these dimensions, groups would make a choice related to five dimensions of the city: geometry, geography, and the three dimensions of the other social groups at play.

Housing and neighborhood quality was suggested to be an intervening variable: an initial (equilibrium) situation would result in a certain housing quality distribution; this distribution would affect successive location changes derived from population growth. The changes would, in turn, affect housing and neighborhood quality and continue the change process.

On the other hand, gentrification has been defined as a change in location preferences of a certain social group. The typical component of this group was described as a young, childless household with high education and medium-to-high income; most of the resettlers are white, but other components of the ethnicity dimension are not clear from the existing evidence. This social group is typical of the first stage of the gentrification process; as resettlement consolidates over time, the social composition appears to show a higher proportion of families with children and lower education/income status.

Our task, then, consists in the identification of the attitudes of this group in at least two dimensions (familism, social rank) as they relate to the five dimensions of location in the accessibility matrix. In each of
these dimensions, the analysis should show some possible factors that may lead to the observed change in attitude. The dimension of housing quality should be treated as an intervening variable related to both the causes and the effects of the gentrification process.

The analysis starts with the two-dimensional game which relates the economic dimension of the social groups with the geometry of the city, and continues with the successive introduction of the remaining dimensions.

**Gentrification and city geometry.** Assuming that location relates to individuals preferences in terms of lot size and distance to the CBD, the first part of the analysis should detect those changes with which high-income groups' preference for central locations would make economic sense.

Within Alonso's model, the users of land with steeper bid-price curves locate nearer the center of the city. The wealthy will locate in the periphery as long as the steepness of the bid-price curves tend to decrease with income increases. Decreasing steepness with income occurs when land is generally valued more than accessibility. In economic terms, this is the same as saying that a strong appetite for land yields higher rates of substitution for land (positive rate) than the (negative) substitution rate for distance. This has been summarized by Alonso as follows:

"Given a strong appetite for land, so that the holdings of land vary greatly with income, the wealthier are affected relatively less by the costs of commuting because they spread those costs over larger sites. Consequently, the rich are price-oriented whereas the poor are location-oriented. Less accessibility bought with increasing income, accessibility behaves as an inferior good." (Alonso, 1964, p. 109)

Thus, the change in steepness of the bid-price curves with income increase is a function of the relative utility of land as compared with the
disutility of transportation. It can be argued, then, that a reverse situation may occur (that is, steeper slopes with increasing income) in cases when the extra utility of land is generally considered less valuable than the extra disutility of distance.

In Alonso's words, again:

"The American case, where the peripheral, suburban locations are occupied by the well-to-do, corresponds to the case of a slowly decreasing marginal rate of substitution. In the pre-industrial town, where there was slight differentiation in the size of the lots, 'the leading tradesmen live in the centre of town, the common people in the periphery'. Similar conditions obtain in other cities of the world today in countries such as India and those of Latin America." (Alonso, 1964 p. 108-109. Quote from G. Paulson, The Study of Cities, 1959).

At the same time, it was submitted in Chapter 2 that location of low-income groups would tend to be in places such that they consume less of the good considered 'superior' and more of the good considered inferior, because their affordability ceiling would not let them outbid the rich in other locations.

Given these considerations, some cases in which a reverse income/steepness situation (steeper curves with increasing incomes) would occur may be:

A) \textit{Relatively low appetite for land}: in cases where large parcels are not greatly desired, it can be expected that the size of the parcels would not change greatly with distance. The marginal utility of land would be less than the marginal disutility of distance; therefore, high income groups would tend to show steeper bid-price curves. This case will be examined later on, when population growth factors are introduced.

B) \textit{Higher transportation cost}: this would produce generally steeper land/price gradients; prices will be extremely high in central locations and reach close to 0 value at relatively short distances. The effect of this in changing the income gradient can be shown in two ways:

- If the price of land in central location becomes so high that the low-income group cannot buy even a minimum parcel, then these groups will have to choose those places where land price approaches 0 value. By sacrificing
distance (paying the high commuting costs) they can get a relatively cheap piece of land.

Transportation being a scarce commodity, the marginal disutility of transportation will tend to be higher than the marginal utility of land. As income increases, it can be expected that the optimum location would tend to give more economies in transportation (shorter distances).

Thus, to the extent that fuel becomes expensive and scarce, it can be expected that people will try to maximize transportation savings over savings in land. In terms of a market equilibrium model, this yields more central location for high income groups.

C) Population Growth: sheer population growth may alter the accessibility/land quantity relationship. The pattern of increasing income with distance assumes that land is generally preferred over accessibility; however, a city expanding radially with no restrictions to land supply yields increasing quantities of land with increasing distances. Even in an initial case where land is considered more desirable, it is reasonable to expect that, if population grows beyond a certain threshold (which may be defined, for instance, as a maximum commuting time within a given transportation technology), the relative desirability of more central location would become more important than the desired for land quantity.

D) Zoning: In general, it can be argued that zoning increases the desirability of land, to the extent to which it restricts the overall supply; if land is generally scarcer, the bid-price curves would tend to be gentler; in this sense, zoning would lead to peripheral location of the rich. However, the effect of zoning depends on the actual regulations in each case. For instance, if central areas are zoned for very low densities, purchasers would be forced to buy more land than they would under free market conditions; if that is the case, site prices in central areas can be expected to become higher than what the lowest-income groups can afford. This effect can be increased if, at the
same time, lot sizes in peripheral areas are smaller than the optimum land-quantity/distance-to-CBD relationship.

Thus, the effects of zoning cannot be generalized. It would be reasonable to expect that, if minimum lot sizes in peripheral areas are sufficiently small and lot sizes in central areas are relatively high, the rich would tend to outbid in central locations, where they would obtain both land quantity and accessibility to CBD.

**E) Urban Growth boundaries:** The effect of urban growth boundaries must be considered in conjunction with population growth. To the extent that the already developed area of a city is close to saturation under current zoning regulations, increases in population must result in additions of new housing in peripheral areas. Under free market conditions, the urban area will expand until all the new households achieve the optimum lot-size and distance combination.

If a limit is fixed to expansion, however, the size of the new sites has to be such that the total number of sites matches the number of new households within the boundary. In rapidly growing areas, this may result in site sizes smaller than the optimum. If such is the case, high income groups will be willing to pay a premium for more central locations.

This effect may be compounded over the years. If we visualize urban growth as successive rings added to the periphery of the city, each new ring will have a lot size optimum for the population, income level and available land at the corresponding time of growth. To the extent that population growth rate increases, and restrictions to urban expansion also increase over the years, this may well result in lot sizes decreasing with distance. Lots being actually smaller in peripheral areas, the trade-off is no longer distance versus quantity: centrally located lots may represent a net gain in both quantity and distance.

Thus, population growth is likely to produce, again, a change in
location trends at some point. If population grows without restrictions to expansion, the threshold would be determined by a maximum commuting time after which accessibility becomes a more desirable good than land quantity. If, on the other hand, restrictions to expansion are present, the threshold is reached when lot sizes become less than optimum in peripheral areas.

The effect of population growth may be multiplied if growth boundaries (such as mountains, water bodies or other natural barriers) obstruct a perfect radial expansion around CBD. If growth can occur only towards some directions, expansion must be constrained in smaller available land at any given distance; or higher commuting time for any given amount of land. Thus, both the distance and the quantity of land thresholds are reached at an earlier stage of growth.

F) Income restrictions: Deterioration of overall purchasing power due to inflation or other reasons are likely to produce a preference for generally living closer to the city centre. This is consistent with the initial assumption that the steepness of the bid-price curves decreases as income increases. The effect of decreasing purchasing power is depicted in diagram 6.3.

![Diagram 6.3](image)

In this case, the overall preference for more central location would push down the land prices in peripheral areas, which would start to show the low-maintenance, deterioration effect characteristic of transition areas. Again, this factor points at central locations for high-income groups and pe-
Peripheral locations for the poor.

Gentrification and city geography. Changes in physical characteristics of a city may result in changes in location preferences. If we include within geographic features both natural and man-made physical characteristics, the question is: does a general suburbanization process produce physical changes such that location preferences may be altered?

The causes, characteristics and effects of the suburbanization process belong to a field of location theory which has not been explored in this research. However, at least one factor is worth some speculations:

- Traditionally, central areas are considered to be both commercial and employment centers. As such, they have a location 'plus' (savings in transportation costs), but also what could be described as a 'geographic minus', i.e. the negative externalities usually associated with commercial and industrial uses (noise, traffic congestion, etc.).

To the extent that suburbanization results in a reduction of both commercial and industrial activities in central areas, it can be argued that at least some of these negative externalities are also reduced. At the same time, the savings in transportation tend to occur towards peripheral locations, at least for some groups, such as industrial workers. It could be expected, then, that the accessibility function in both its geometric and geographic dimensions would tend to show a reverse pattern: peripheral locations for the groups which value accessibility to industrial employment, and central locations for groups who are less related to industrial or commercial jobs and less affected by the remaining externalities of central locations.

Social dimensions of gentrification. Social groups were described in terms of three dimensions: social rank, familism and ethnicity. In each of them, each group would have location preferences with respect to geometry and geography
of the city, and the three dimensions of the remaining groups. We have explored some possible factors related to the income/geometry and geography dimensions. The remaining task is, therefore, the analysis of at least one additional dimension (familism) with respect to both the physical and social dimensions of location, and income with respect of the social dimensions.

**Familism and physical traits.** As discussed previously, family status is strongly related to distance from the CBD: central locations are traditionally preferred by singles and childless couples, while peripheral locations are generally preferred by families with children. From this perspective, then, the gentrification trend does not represent, at least in its initial stage, a change in location preferences; rather, it would be just the effect of a higher proportion of young, childless households. If familism is considered alone, the logical implication would be that the gentrification trend would tend to disappear as the baby boom generation gets older and other groups become dominant.

**Familism and income.** This prediction should be scrutinized more carefully, though. To the extent that the new groups have both an income and a familism dimension, a preference originally derived from family status may have an income effect: increasing proportions of high status persons change the social character of a neighborhood. If it is true that high status households tend to locate close to one another, and there is no segregation between different family status groups, it could be argued that the new high status groups may produce an expectation effect and pull other high status groups to the upgraded central neighborhoods. This expectation effect seems to be supported by the stage theory of gentrification discussed in Chapter 1: it would appear, from the existing evidence, that the young, high income households are followed, as the gentrification process consolidates over time, by other groups tradi-
tionally associated with suburban locations.

**Segregation attitudes.** It has been argued that, although the primary reason for location of the poor may be non-personalistic factors (affordable housing, accessibility to employment), an area perceived as 'going poor' drives out other, higher status groups, thus facilitating the move-in of additional low-income groups.

Some significant changes with respect to this traditional view have occurred in more recent years:

- Urbanization brings about increasing diversity of social types. In terms of family status, for instance, the unmarried, childless status of young households has evolved from a transient stage in the life-cycle to a more permanent choice of lifestyle for larger sectors of the population. This increasing diversity brings increasing variety of housing and location needs.

- Related to increasing diversity is a change in attitudes among different groups: as a wider range of types appear, the differences between groups become less apparent, and interaction increases. It is significant, for instance, that those households surveyed by the N.U.C. who had moved to rehabilitated housing generally perceived social mix as a positive factor, and many of them cited exposure to a variety of lifestyles as one of the reasons for their location choice. The irony of this situation is that, according to the same survey, private rehab resulted in dislocation of previous residents who could not afford the higher prices, maintenance requirements and assessment values produced by large-scale rehab. Thus, the rehab process at the end defeated one of the very purposes that started it.

**Housing quality.** One of the main explanations of the decentralization of some groups is related to housing needs and preferences. The assumption is that a) young families with children prefer large, new housing, b) high-income
groups can afford and prefer new housing, c) new housing is mostly provided in peripheral areas, d) therefore, families with children and high status persons tend to locate in a decentralized pattern. Thus, decentralization would relate to the extent to which high income groups prefer and can afford new housing.

On the other hand, existing evidence on private rehab in central areas suggests that; a) the income status of resettlers is higher, but not always significantly higher, than that of old residents; b) resettlers mention the architectural/historic character of old houses as a positive factor, c) resettlement often relates to historic designation of buildings and neighborhoods, d) high cost of suburban housing is often mentioned as a reason for private rehab in central areas.

Thus, there seems to be a change in both affordability and preferences attributed to some income groups. These two changes are probably interrelated, and it is hard to say which one is more important. It could be expected, however, that in areas where suburban housing prices are escalating and/or there is evidence of interest in the historic preservation of buildings and neighborhoods, some degree of private rehabilitation is also likely to be present.

The problem is, again, the effect of this trend on housing prices. To the extent that middle-to-high groups initiating the resettlement process produce an increase in housing prices in the target neighborhoods, the low-income groups are out-bid by other middle-incomes, thus continuing the process and displacing the older residents.

6.2.3. EFFECTS OF GENTRIFICATION

The location factors that have been suggested as possible causes of the gentrification process appear to have different long term effects on low-income location options. Causes such as income restrictions, increase in
transportation costs would produce a reversal of the income gradient, with the rich locating in central areas and the poor in the periphery. The geographic dimension of suburbanization would contribute to the central location of the rich with the poor locating close to the industrial areas in the suburbs.

The long term effects of social factors of gentrification are not very clear. To the extent that gentrification is merely the result of an increase in the number of small, childless households, it can be argued that the phenomenon would become less significant as this group moves to the next stage in the family life cycle. On the other hand, the neighborhood upgrading produced in the process may be sufficiently significant to attract other middle-to high-income groups; the expectation effect would, thus, continue the upgrading process. In either case, at least some displacement of the poor can be expected but the location options for this group are not clear.

Finally, causal factors such as zoning and urban growth restrictions may produce varying effects on low-income location, depending on the actual shape of the growth boundaries and the lot-size/accessibility relationship resulting in each case. Thus, the long term effects of this type of causal factors are hard to generalize and should be assessed on a case-by-case basis.

In terms of the short-term effects of the process, the analysis of causal factors has not given sufficient insight as to the manner in which the process develops over time. Even if peripheral location of the poor is to be expected in the long term, this eventual pattern may either be reached in one single move or develop gradually by successive moves to outlying areas.

The analysis that follows attempts to provide some insight on the dynamics of the gentrification process as related to the causal factors previously discussed. This analysis should be useful to identify the groups affected during the process and their short-term options in terms of residential location.

The theoretical framework for this analysis is the Arbitrage Model
as presented in Chapter 5 and applied to discuss the dynamics of change in Transition Areas. To the set of assumptions used as a starting point in the analysis of Transition areas (see p. 91), the following variables are introduced:

A) A new dimension in the social groups in which high-income households have two types of family status: families with children and childless households.

B) Location preferences for the new groups are:

- Families prefer peripheral areas, while childless households prefer central locations.

- No special preferences of different family status households to live either close or far away from one another.

The analysis of the dynamics of transition areas contained the assumption that the CBD expands with every increase in population. This assumption will not be maintained here, since it would complicate the analysis and does not bring additional insight to the effects of CBD expansion previously discussed.

This set of assumptions, plus the general assumptions of the Arbitrage model, describe the starting position of the different groups. To this initial position, the last assumption introduced is that all the new households are small, childless households with middle to high-income.

Diagram 6.4 depicts the initial position. An exclusively rich neighborhood composed of families with children is located in the periphery: a boundary area contains an equilibrium mix of high and low-income households. Close to the CBD are located the low-income households, plus one high-income, small-family household.
If a new household of high-income and small family status is added to the scheme, this addition will start a chain of moves in which the new household locates close to CBD. The stages of this sequency of moves is depicted below.

The first move, depicted in diagram 6.5, is the direct location of the new household. A low-income household has incentive to move to the next possible option in the boundary area. A household in this area moves to the exclusively rich neighborhood in which, in turn, a household results located in a new dwelling unit in more peripheral locations.

This first move has resulted in better housing for all the households within the chain of moves; the price paid by the newcomer for his dwelling has permitted a low-income household to afford a unit in a better
area; this in turn allowed a high-income household to finance a new dwelling unit. The arbitrage has, thus favored these households.

It should be noted that this 'first round' effect is not unlike the effect produced by the addition of a low-income household to the existing population: the newcomer is in fact financing the upgrading of all the households moving up the filtering chain (see diagram 6.6 below). The only loser in this first round is the eventual newcomer of low income, which would be encountering a more affluent competitor for the central unit and therefore, a higher bidding price; the low-income newcomer has indeed, in this case, his housing option closed by the high-income household's preference for old, central housing.

![Diagram 6.6](image)

From the neighborhood point of view, though, the effect is somewhat different. The central area is upgrading, but the boundary area is downgrading, while the high-income area remains unchanged. The low-income households remaining in the central area now have a 'better' neighborhood surrounding them, but this quality improvement may also bring higher pressures for better maintenance standards, higher taxes and similar affordability problems. The households remaining in the boundary area, on the other hand, experience a net deterioration of housing prices, since this area is starting to be perceived as 'going poor'.

As shown in the diagram, this first round effect may trigger a continuation of the arbitrage process: the upgrading of the central neighborhood may attract additional households of high-income status.
The second move, depicted in Diagram 6.7, shows the effect of this type of expectation: in this case, a household in the exclusively rich area has chosen to move to the upgraded central neighborhood.

Diagram 6.7

This move brings about, again, improvement for those who participate in the chain of moves. The price for their housing improvement has been paid this time by the high-income household is likely willing to pay a premium for the house he purchases. At the same time, the neighborhood change process started by the new household (upgrading of the central area, downgrading of the boundary area) is continued by this second round of moves.

The third move, depicted in diagram 6.8, shows a likely move started in the boundary area. The high-income household remaining in this area has experienced a passive filtering down of his neighborhood below the quality he expected at the price he initially paid for his location. This household is, thus, likely to sell at a discount and try to move to the exclusively rich area.

Depending on the preferences of the high-income households, two types of moves can occur in the exclusively rich area: either a household builds a new unit in peripheral areas, or a household decides to move back to the upgraded central neighborhood:
Households of low income still remaining in the central area, on the other hand, are experiencing several changes: their neighborhood is becoming more expensive, which may result in higher property taxes, higher pressure to improve maintenance standards. At the same time, the adjacent neighborhood is downgrading to a point in which they can expect to purchase a dwelling unit at a lower price. Depending on the impact of the affordability problem, they may find it worthwhile to move to the downgraded neighborhood. This pressure to move out will be higher if the upgrading of the central neighborhood is attracting families previously living in peripheral areas.

At this point, the decision to move for the low-income household is no longer produced by house improvement incentives, but by price and affordability incentives. Thus, the effect of the gentrification process at this stage can be considered a displacement effect. Low-income households are moving to cheaper, more deteriorated areas in which they lose not only in terms of neighborhood quality, but also in terms of accessibility to the CBD.

The preferences of the high-income households have also another type of effect: to the extent that these households still prefer new houses in peripheral areas, the process continues more or less as in the traditional Arbitrage model discussed in Chapter 5 (see, for instance, case 3), and houses in central areas are either abandoned or purchased at a low price by new, low-
income households. On the other hand, if the upgrading expectations in the gentrifying areas are significant enough to attract other high-income households, there is no further additions to the housing stock. Diagram 6.9 shows these two alternatives.

![Diagram 6.9](image)

In a situation of relatively fixed population, this effect can be viewed as a more efficient utilization of existing resources, since old houses are recycled and land is saved in peripheral areas. In a case of relatively high population growth, though, the price of the gentrification process is paid, again, by the new, low-income household, who encounters a reduced housing stock and a stiffer competition for an eventual location in central areas.

**Summary of short-term effects.** The analysis has suggested an eventual sequence of moves triggered by the addition of one high-income household to a predominantly low-income area. To the extent that the gentrification process more or less follows the described pattern, its effect can be summarized as follows:

1) Two types of effects can be expected:

   - The direct effect produced by the allocation of the high-income household ('first round' in the sequence). This first move improves in the short term the housing quality of the households that move up the chain, and results in some degree of social changes in each of the affected neighborhoods.
The indirect or longer term effect produced by the change expectation, as the central area is expected to 'go rich' and the adjacent areas are expected to 'go poor'. In the boundary area, this effect is similar to that produced by the traditional arbitrage process: the initial downgrading triggers additional moves and continues the process.

In the gentrifying area, the upgrading expectation may trigger additional moves of other high-income households. This, in turn, accelerates the change process in the adjacent neighborhoods.

2) Throughout the process, those households that move first have at least some initial housing improvement; in later stages, this improvement deteriorates as the downgrading of the boundary area consolidates over time. At the end, the low-income households locate in a predominantly low-income area and lose in terms of accessibility to the CBD.

3) The households that prefer to stay in their neighborhoods experience the neighborhood deterioration and its effect on prices; when they move, they do so at a discount for the dwellings they sell and a premium for those they purchase in order to obtain the desired neighborhood quality.

4) The low-income newcomers suffer the effect of increased prices and less housing options as the traditionally low-income central areas change in character; these newcomers are probably paying the highest price of the process.

5) For the old residents of low-income, their loss is that of affordability, as pressures for better maintenance or taxes push them out of the upgrading neighborhoods. If they sell, they trade-off a better affordability for a deterioration of their location.

Factors related to the occurrence of these effects may be:

A) Size of the childless, high-income household: To the extent that these households are not significant in numbers, their location preferences are
not likely to produce any special expectation effect and the process would proceed with no difference from the traditional arbitrage process. If this population is significant, on the other hand, their location is likely to trigger additional moves and accelerate the process.

B) Preferences of the high-income groups: These groups are choosing between the traditional large sites/low accessibility of peripheral areas and an eventual status/accessibility gain in central locations. To the extent that the perceived assets of the central neighborhoods are not important for them, the expectation effect in central neighborhoods is not likely to occur.

C) Population growth rate: The housing improvement effects eventually produced in the process are higher for the low-income groups in a situation of fixed population. A high population growth situation diminishes the low-income improvement options. The extreme case occurs when population growth is mostly low-income, since the new low-income groups are the most negatively affected in the process.

6.2.4. EFFECTS OF REHABILITATION

In the discussion of the Arbitrage model it was argued that physical quality of housing and neighborhoods should be viewed as an intervening variable in the location game; as such, a certain quality would result from an initial location decision determined by the multiple dimensions of the accessibility matrix. This initial quality would, in turn, add another factor to the location decision as new groups enter the game and households change location throughout the city.

The occurrence of gentrification, on the other hand, was suggested to be related primarily to external factors that would change the location variables described in the accessibility matrix (such as changes in transportation costs, income, availability of land, etc). Given at least some of these ex-
ternal causes, the gentrification process would affect both the physical quality and the social configuration of the affected neighborhoods.

Within this scope, the effect of rehabilitation subsidies for housing and neighborhood improvement would be that of changing part of the effects of the gentrification process. The impact of rehabilitation would depend on the relative importance of the social factors of neighborhood change as compared to their counterpart in terms of physical quality of housing and neighborhoods.

In other words: to the extent that the physical appearance of a neighborhood is perceived as an important element of the 'quality' or 'status' of a neighborhood, policies oriented to improve this physical appearance would affect the decisions to move and, therefore, the neighborhood change process. If, on the other hand, the decisions to move are primarily based on the social configuration of the neighborhoods (who lives where), the moving decisions would not be significantly affected by rehabilitation subsidies.

The effects of rehabilitation suggested below assume that both physical quality and social factors play a role in the decisions to move. Thus, rehabilitation subsidies would have at least some effects on the dynamics of neighborhood change triggered by gentrification. These effects depend on which areas are selected for improvement: as was previously discussed, two neighborhoods are affected throughout the process: the central, gentrifying area (or exclusively poor area) and the adjacent neighborhoods (or boundary areas). In the boundary area, gentrification would have an effect similar to that of the traditional succession process: deterioration and increasing proportions of low-income households. In the central areas, on the other hand, the effect is that of physical quality improvement and higher proportions of high status groups. Both effects produce a change in expectations, which contribute to accelerate the process.
Rehabilitation subsidies in central areas: In the exclusively poor areas, the effects of gentrification were suggested to relate to the occurrence of the expectation effect: to the extent that these areas are perceived to be 'going rich', they would attract other high-income households previously locating in peripheral areas. To the extent that physical quality of neighborhoods affect the process, it can be expected that the upgrading produced by these additional moves would be accelerated by rehabilitation and neighborhood improvement subsidies.

In terms of low-income housing options, it was suggested that low-income residents in gentrifying areas encounter primarily an affordability problem derived from taxation and eventual pressure to improve maintenance standards. Rehabilitation subsidies would act upon one aspect of this problem by financing higher maintenance, but does not affect the taxation effect. Thus, households eligible for rehabilitation programs would face a more complex choice: either they use the program and have part of the affordability problem reduced, or they get the financial benefit of selling and moving to the adjacent area. Their decision will probably depend on the relative pressure for selling as compared to the advantages of not-moving, and this in turn would depend on the magnitude of the affordability problem.

For those households not eligible for the program (say, those just above the maximum income eligibility ceiling), the situation is somewhat different: to the extent that rehabilitation subsidies are successful throughout their neighborhoods, their affordability problem would increase, since both the rehabilitation of surrounding houses and their effect in attracting new high-income households would add up to increasing pressure to move out.

Finally, low-income newcomers who would eventually locate in the deteriorated, low-income neighborhoods would encounter, after rehabilitation, an additional factor against their location options in those areas. Their loss has two causes: the increased demand for central housing, and the decreased
rate of new housing construction originated by the change in preferences of the high-income households.

Rehabilitation subsidies in adjacent areas. The effect of gentrification, as the traditional succession process, is that of changing the boundary area from a mixed to an 'exclusively poor' status; this is accompanied by a physical deterioration produced by the income limitations of the in-moving groups. Deterioration, both in physical and social terms, would accelerate the succession process.

The effect of rehabilitation subsidies in this area would, therefore, be similar to those suggested previously (Chapter 5) as general effects of rehabilitation on transition areas: some degree of slowing down of the succession process, better affordability for the low-income groups. Again, this effect, though generally positive, is relatively weak, since it acts upon an intervening variable, rather than on the actual causal factors of neighborhood change. As in the previous analysis of rehabilitation in transition areas, the same effect, with additional advantages for all groups, would be achieved by direct housing construction in either the central or the boundary area: the increase in low-income housing supply represents for the poor an opportunity to remain in areas more desirable in terms of accessibility and neighborhood quality, at the same time preserving the social composition of both the central and the boundary areas.
CHAPTER SEVEN: POLICY IMPLICATIONS

The preceding research is an overview of location factors affecting the location options for low-income groups in transition areas around the Central Business District. The general overview of location factors has been used for the analysis of one particular type of neighborhood change process: gentrification or middle-income resettlement in central neighborhoods. The research has been undertaken with the following purposes:

- To identify the role of transition areas in terms of low-income residential location.
- To identify those variables that can explain the gentrification process in central neighborhoods.
- To identify the effects of the gentrification process, particularly in terms of low-income residential location.
- To assess the effects of housing and neighborhood improvement subsidies on low-income location options in gentrifying areas.

The research started with a review of different bodies of location theory which provided some insight as to the major economic, social and physical forces affecting urban residential location, both from a static and a dynamic point of view. From the general overview, a multidimensional location model was derived, which attempts to synthesize the major variables at play and the way they interact in the location game.

The model has an 'equilibrium' component (summarized in an accessibility matrix) and a 'dynamic' component (summarized in the Arbitrage model). The accessibility matrix was used to derive some causal factors that can explain the occurrence of the gentrification process and likely long-term effects on low-income location options. The Arbitrage model was used to assess the dynamics of low-income location in transition areas, the effects of gentrification in this process, and some likely effects of rehabilitation and neighborhood improvement policies on low-income residential location options.
This chapter contains: 1) a summary of the main findings derived from the theoretical analysis in terms of the four main objectives listed above, 2) a discussion of some policy implications derived from these findings and 3) a brief discussion of how the suggested location model could be used for public policy.

7.1 SUMMARY OF FINDINGS

7.1.1. TRANSITION AREAS AND LOW-INCOME LOCATION

The location model presented in Chapter 6 suggested that location preferences of each individual could be synthesized in an accessibility matrix in 5 dimensions. Two of these dimensions (geometry and geography) would define the city, while the remaining three (social rank, familism, ethnicity) would define the social groups at play. An additional dimension (housing and neighborhood quality) would result from the interaction between the social groups and the city and behave as an intervening variable in the process.

In an equilibrium situation, the accessibility matrix defines the preferences of each individual. The actual location choice would be at the point where the aggregate preferences meet a budget constraint. Thus, whatever the preferences of each group in each of its social dimensions, the actual location is always related to income. Location of high-income groups was suggested to coincide with those areas in which the most desirable location factors are optimized, while location of the lowest-income groups would be at those points where the least preferred location factors prevail.

Transition areas, on the other hand, were defined in Chapter 2 as those areas in which a change in land use is underway. This change is in most cases from residential to CBD type of uses in areas surrounding the employment centre, but it can also be a change from one residential use to another, a change from commercial to residential use, etc.
The role of transition areas on low-income residential location is related to three major types of location factors:

A) In an equilibrium situation, low-income location in transition areas relates to the geometric dimension of location: low-income groups would tend to concentrate around the CBD so long as accessibility to CBD is generally less desired (or more affordable) than large land holdings.

B) In a growth situation, low-income location in those areas is related to CBD expansion: low-income groups would tend to concentrate in those areas where growth expectation results in low maintenance standards. In this sense, the stability of low-income neighborhoods in central areas is related to factors such as population growth, income changes and other factors affecting the rate of CBD expansion.

C) In both the equilibrium and the growth situations, low-income location in central areas relates to social dimensions of location: an initial location of the poor in central areas may drive away other, higher status groups, thus increasing the centralization of the poor; this effect may be stronger if ethnic minorities and other segregated groups also locate in central areas. Thus, segregation attitudes and existence of minority groups are factors affecting low-income location in transition areas.

In terms of neighborhood change dynamics, transition has been defined as a process of change over time from one highest and best use to another. In this sense, what defines transition areas around CBD is not the actual change, but the change expectation. After the change of use has taken place, the area consolidates with the new use and a new transition area appears in the next outer ring. Thus, the change process can be described as a continuous sequence of moves to successively outer areas.

7.1.2 CAUSES OF GENTRIFICATION

Gentrification has been defined as a change in location preferences.
whereby some medium to high-income households, which during the 1950's and 60's, preferred new dwelling units in peripheral areas, tend to locate in old, deteriorated housing in central areas. This process of private rehabilitation results in the upgrading of the physical and social status of the affected neighborhoods.

The possible causal factors that could explain the occurrence of the gentrification trend have been derived from the five dimensions of the location preferences synthesized in the accessibility matrix, and can be summarized as follows:

1) In terms of city geometry, gentrification would be related to factors that may affect overall preferences for land as compared to accessibility to CBD. In general, this type of factors would tend to reverse the income gradient and yield, in the long term, central location for high-income groups and peripheral locations for the poor. Some factors related to the accessibility/quantity of land relationship are:
   - Higher transportation costs and/or restrictions in fuel consumption.
   - Zoning regulations resulting in relatively large lots in central areas and relatively small lots in peripheral areas.
   - Urban growth boundaries, either fixed by policy or resulting from geographic barriers.
   - Population growth and city expansion beyond a certain 'threshold' commuting time.
   - Income restrictions.

2) In terms of city geography, gentrification may be related to changes in the relative attractiveness of both central and peripheral areas resulting from suburbanization. By reducing the negative externalities traditionally associated to central areas, suburbanization of industrial areas may increase the attractiveness of central neighborhoods for residential uses.

3) In terms of social dimensions of location, gentrification would be related
to those factors that affect the choices of individuals in their family and ethnicity dimensions as related to the physical components of the city, and factors modifying the preferences of different groups to live close or apart from one another. The long-term effects of these changes on low-income location options are not clear and tend to vary depending on the causal factor in each case. Some changes affecting the social dimensions of location may be:

- Higher proportion of childless households which are less interested in large sites and more interested in the accessibility to employment and amenities associated to central locations.

- Increasing diversity of social groups and their housing and location needs. As new types of social groups develop (such as the change of the childless status from a transient to a more permanent choice of lifestyle), at least some of these new groups can be expected to have lifestyles associated with central city rather than suburban living.

- Changes in segregation attitudes between different groups resulting in higher interaction and increasing attractiveness of areas presenting a diversity of groups and lifestyles.

- The initial stage of the gentrification process itself, which, by altering the social status expectations of central neighborhoods, may tend to attract other groups traditionally living in high-status peripheral areas.

4) In terms of housing quality and neighborhood characteristics, gentrification may be related to the increasing costs of housing in peripheral areas and changes in preferences from new to old houses with historic or architectural value. Since housing quality is suggested to be an intervening variable in the location game, it can also be expected that the housing quality improvement produced by private rehabilitation would behave as an additional attraction for high-income groups in central areas.
7.1.3 EFFECTS OF GENTRIFICATION

The dynamics of neighborhood change triggered by an initial location of some high-income groups in central areas produce a number of changes in terms of low-income location options. The location of the high-income household starts a chain of moves in which other high-income groups, at the other end of the chain, start a new unit. To the extent to which the dynamics of change can be accurately described by the Arbitrage model, four major types of effects can be expected:

1) Effects on rehabilitation neighborhoods. The new settlers are likely to produce an improvement of the physical appearance of the affected neighborhoods and a corresponding increase in housing prices. Some of the effects of the process, as described in Chapter 6, can be summarized as follows:

- Price increases may force out tenants, who are likely to be the first ones displaced.
- Homeowners may be better-off if they get the benefit of the increased price by selling at the right time and obtain a better dwelling unit in a more desired location. However, low-income owners who do not want to move face two problems:
  - affordability of housing, when tax increases and eventual pressure for better maintenance standards result from private rehabilitation;
  - changing character of the neighborhood;
  - involuntary moves due to the affordability problem.
- The housing stock may be reduced either in absolute or in relative terms:
  - the change from rental to owner-occupied homes reduces the number of rental units in the market;
  - the rehabilitation of old, converted rooming housing to single-family use may produce an absolute reduction of the housing stock.

On the other hand, private rehabilitation in some North American cities has resulted in the recovery of old, abandoned housing and the revita-
lization of whole areas. Thus, the effects of rehabilitation in reducing the housing stock cannot be generalized. However, some factors are worth considering when private resettlement appears to be taking place:

A) Type of housing occupancy: since the first and most likely to be displaced are tenants, a high proportion of rental accommodations would call for specific actions in this respect.

B) Availability of equivalent housing in surrounding areas.

C) Relative income levels of in-coming and out-coming groups. The lower the income level of old residents, and the higher that of resettlers, the most likely an affordability problem due to increase in housing prices on the neighborhood.

D) Segregation attitudes, related to income, family status or ethnic differences between the two groups. Although diversity of lifestyles is often attractive for the new settlers, this attitude may not be shared by the old residents, and tensions may occur. For instance, if the old neighborhood has a high proportion of ethnic minorities, resettlement may be perceived in a racial-ethnic dimension. Tensions may be even higher in the opposite case: low-income majorities displaced by high-income minorities.

E) Existing social fabric and community services in the neighborhood: resettlement may be highly disruptive in areas with a high degree of cohesiveness and personal interaction of particular groups. For instance, senior citizens may be very sensitive to privacy, quietness; new settlers with higher mobility, presence of youth or children, may affect their neighborhood in a negative way. If displaced, they may lose access to special services or friends. In the case of some ethnic groups, clustering may be desired as a way to preserve their language and cultural traits.

2) Effects in surrounding areas. Displacement resulting from private rehabilitation produces an increased demand for low-income housing in surrounding areas. The process, as discussed in Chapter 6 using the Arbitrage model,
is not unlike the chain of moves produced in other cases of invasion-
succession: neighboring areas filter down, middle-income groups move out,
suburban housing is built in peripheral areas. This process is also com-
parable with the effects of urban renewal:

"Thus, the urban renewal projects in the city caused large numbers of
poor and black families to find new housing somewhere. The Arbitrage
model fairly well describes how this was accomplished. These renewal
projects, which were meant to bring industry and middle-income fami-
lies back to the city, may have caused more middle-income families to
leave through the mechanism of Arbitrage than were accommodated in the
subsidized middle-income housing actually rebuilt within the renewed
areas, even when such housing was actually built." (Leven et al, 1977, p.
168-169)

Some effects are worth pointing out:

- Newcomers from central areas encounter higher prices. For tenants, this is
  a net loss in terms of affordability. For homeowners, the cost/benefit
depends (in terms of housing quality alone) upon the price differential
between the old property and the newly purchased one. Since the primary
reason for the low-income homeowner to move to adjacent areas was assumed to
be affordability, it can be expected that a) he would purchase the lowest
quality (cheapest) house in the new neighborhood, b) he would undertake
minimum, if any, repair work.

- The neighborhood filters down as low income population increases. Although
  the initial increase in demand may push the prices up, as the area is per-
ceived to be 'going poor', decreased interest from other middle-income
households may result in a long-term price decrease.

- Homeowner residents face two choices: a) sell the property at an early stage,
  thus benefiting from increasing demand, and move to a more suburban location.
  Or b) remain in the neighborhood for a longer period, thus having, in the
  end, a net loss in housing price. The choice will depend on the desirabi-
  lity of suburban locations, the degree of attachment to the neighborhood,
  and the household's perception of the change in the neighborhood.

- Tenants would face a stiffer competition and also a deterioration of their
housing quality since landlords may choose to save in maintenance and rent the units to the increasing low-income population.

3) **Effects on overall housing supply.** We have seen that private rehabilitation may produce a reduction of low-income housing stock in the rehabilitation neighborhoods. In addition to this, some overall effects should be noted:

- **Decrease in housing options for new, low-income households.** New, low-income population that would normally locate, either temporarily or more or less permanently in rundown central housing encounter this choice closed by the middle-income resettler.

- **Effect on turnover rate: change from rental to owner-occupied accommodation generally relates to longer permanence.** On the other hand, central areas are traditionally preferred by some transient groups who need the services and opportunities of central locations. These groups will increase the bulk of rental accommodations in adjacent areas; thus, these groups lose in terms of accessibility to CBD. This effect cannot be generalized, since it depends on the specific location of rehabilitation areas, which may not affect those central locations at all; but it points out the need to assess the relative importance of accessibility to CBD for those groups either displaced or not allowed to move in after private rehabilitation takes place.

On the other hand, it was suggested that private rehabilitation, and the chain of moves triggered by it, is assumed to produce an outwards move process whereby the last household in the chain will start a new unit. If this is the case, at least some of the stock reduction produced by private rehabilitation may be balanced by normal market mechanisms.

It should be noted that if the new, middle-income household had chosen a new house rather than an old one in central areas, the chain of moves would have not taken place. Thus, private rehabilitation, to the extent that
it produces new units through the arbitrage process, has a positive effect on housing improvement through filtering for some groups.

Some qualifications to this conclusion should be pointed out, however:

A) The occurrence and volume of new housing construction is positively related to the segregation attitudes between different groups: to the extent that changing neighborhoods are perceived as 'bad' by some groups, the succession process proceeds and new units will be produced by market demand.

B) The occurrence and volume of new construction is positively related to the desirability of suburban living and will proceed as long as the high-income groups prefer new housing over old units in central areas. As the expectation effect produced by the initial upgrading of gentrifying areas increase, other high-income groups would move to these areas, thus reducing the pressure for new housing construction.

C) The occurrence and volume of new construction is negatively correlated to the degree of attachment of individuals to their neighborhoods. If households prefer to maintain their locations, because of neighborhood attachment or lack of interest for suburban living, the pressure for new construction will be reduced; overall price structure in developed areas will rise, and bottom groups will have increased crowding.

The relationship between new additions and preferences for suburban type of housing is particularly important. So far, most of the conclusions are based on the assumption that at least some households (high-income, large families) tend to move to peripheral areas. However, this assumption is not very clearly supported by the existing evidence on private rehabilitation; on the contrary, it would appear that, as the resettlement process consolidates over time, it attracts increasingly larger proportions of medium-income families:

"Early in the revitalization of a neighborhood, come the pioneers:..."
artists, writers... gays, interracial couples. Also, persons with a special feel for the neglected potential of a grand home... "Later comes... the doctor and lawyer crowd. And then the suburban crowd with big bucks from the sale of their homes." (Housing, June 1980, p.16)

"... Slightly over 40% of the neighborhoods which indicated the presence of families with children indicated that their numbers had increased after rehabilitation. In many cases, the rehabilitated areas were composed of a mixture of singles, childless couples and families with children." "... Neighborhoods attracting families with children include St. Louis' Lafayette Square, Indianapolis' Lockerbie Square... Philadelphia's Cedar Park..." (NUC report, 1978, p. 7)

4) Effects on overall location trends (long-term effects). The effects of gentrification pointed out so far are those produced by a particular action (location in central areas) undertaken by a particular social group (small, middle-income households), on low-income residential location. This action, however, may be just a first indication of a more profound change in location trends; if that is the case, some more structural, long-term effects can also be expected.

An assessment of the long-term effects of the process must be based on a more clear knowledge of the real forces at play which are producing this change in preferences. If private resettlement is caused primarily by more or less temporary factors, such as preferences of some groups for older housing, stage in the life-cycle of the baby-boom generation, etc., the long-term effects will be relatively less significant as this generation moves to the next stage in life-cycle.

However, there is some evidence of more structural factors at play, as was discussed in Chapter 6. In terms of low-income residential location, the effects will depend on which are the dominant underlying forces. For instance:

A) Gentrification due to economic forces (transportation restrictions, income restrictions, etc): this set of location factors would tend to produce a reversal of the income gradient, to a future equilibrium situation with the highest income groups in central areas and the poor towards the periphery.
B) Morphological changes in the city (suburbanization of industrial areas, limits to urban expansion, lot size configuration by area...): the effects of these factors will vary, depending on the particular characteristics in each case.

C) Social changes (less segregation between groups, more diversity of social types, decreasing attractiveness of suburban life-style, etc.), may result in either a change of the shape of the income gradient (such as centralization of low-income groups in intermediate areas, with 'urban' high status groups in central areas and 'suburban' high status groups in peripheral areas), or different degrees of integration between different groups at each location.

Most likely, the gentrification trend is being caused by a combination of temporary and structural changes occurring in urban areas. This multiplicity of factors at play creates a situation of uncertainty with respect to future location options for low-income groups; as the process develops over time, these groups are likely to be pushed out from successive locations and encounter increasing difficulties to enter the location market altogether.

This situation is a constraint for planning strategies available because of this long-term uncertainly in terms of optimum location for low-income groups. In cases where a gentrification process appears to be present, planning strategies should be sufficiently flexible to adapt to changing circumstances and include a continuous process of monitoring in order to detect those indicators that eventually suggest new changes.

7.1.4 EFFECTS OF SUBSIDIES TO HOUSING AND NEIGHBORHOOD IMPROVEMENT

The occurrence of gentrification was suggested to be related primarily to external factors that would change the location variables as described in the accessibility matrix. Housing and neighborhood quality changes would result from these initial changes in location trends and, in turn, contribute
a new factor in the overall location game.

In this scope, the effect that can be expected from subsidies to housing and neighborhood improvement would be that of altering some of the effects of the gentrification process; at the same time, although housing improvement per se is not a direct causal factor, at least some modification in the dynamics of the process could be expected in terms of modifying part of the expectation effects associated with the process. This effect on expectation would be related to the relative importance given to housing quality as compared with social configuration as determinant components of a neighborhood's character.

Rehabilitation subsidies in gentrifying areas can be expected to contribute to the upgrading of these areas originated by the gentrification process. In this sense, rehabilitation would increase the upgrading expectation of these areas, thus contributing to accelerate the process.

Rehabilitation subsidies, at the same time, would improve at least partially the affordability problem encountered by the low-income residents. However, for those low-income households not eligible for the program, the effect would be just the opposite: by producing an overall upgrading, the resulting price increases and taxation, along with the higher maintenance pressures, would worsen the affordability problem for those groups. For eventual newcomers of low-income, rehabilitation subsidies on existing neighborhoods would also have the negative effect of higher prices and higher demand from other groups in the areas where these low-income newcomers would locate.

Rehabilitation subsidies in adjacent areas, on the other hand, can be expected to counteract to at least some extent the downgrading of these neighborhoods. This physical improvement should slow down to some extent the succession process produced by the 'going poor' expectation.
However, this effect can be considered weak, since it does not touch the major determinants of the succession process: increased demand for low-income housing in intermediate areas, provision of new houses in peripheral areas only, and social segregation attitude between the in-coming and the out-coming groups.

Households eligible for rehabilitation, on the other hand, have a net gain from rehabilitation subsidies in terms of affordability; in this sense, rehabilitation subsidies are similar to any other income subsidy for low-income groups.

Alternative policies may meet the main objectives of rehabilitation programs (better low-income housing, neighborhood preservation) in a more efficient way. For instance, a policy of higher densities and direct construction of low-income housing in central areas both increases the housing options for the poor (either old residents or newcomers) and, by reducing the displacement effect produced by gentrification, contribute to a better preservation of adjacent neighborhoods.

To the extent that gentrification is caused by the desire to live close to a diversity of groups, this type of higher density/new low-income housing also contributes to achieve this diversity goal. Programs such as incentives to in-fill housing, innovative housing design, may represent indeed an optimum balance between the need of new housing and the preservation of both physical and social components of neighborhood character.

7.2 POLICY IMPLICATIONS

7.2.1 GENERAL IMPLICATIONS

The preceding analysis has attempted to identify some effects of the gentrification process and rehabilitation subsidies in gentrifying areas on
location options for different residents, particularly low-income groups. In terms of public policy, the analysis suggests a planning situation defined by two major characteristics:

A) Gentrification is characterized by a situation of long-term uncertainly. Although the process appears to be initially triggered by the specific preferences of a relatively transient group (a certain stage in life-cycle of the baby-boom generation), there is some evidence at the same time of more profound changes in location trends. To the extent that those trends are in fact appearing, the long-term effect on low-income location options is not clear, and will vary depending on which are the major forces underlying the process. Some factors point at peripheral location of the poor, some others point at low-income location in intermediate areas (between two peaks of high-income groups in both central and peripheral areas), and some factors suggest a continuous succession of moves and increasing difficulties to enter the location market altogether.

B) Gentrification is characterized by a situation of conflicting goals. Both the process itself and eventual rehabilitation subsidy programs in gentrifying areas tend to achieve some planning goals to the detriment of others. For instance, the following conflicts appear to be present:

1) Gentrification brings improvement of the physical appearance of neighborhoods. This is consistent with objectives related to historic preservation and the like. However, if displacement occurs, the improvement of some areas will bring about the deterioration of other, adjacent areas.

From this point of view, rehabilitation subsidies in both resettlement and adjacent areas would ameliorate the problem; subsidies would be probably more efficient in non-gentrifying neighborhoods.

2) Middle-class resettlement is consistent with overall objectives of social mix. However, its effects on housing prices and maintenance
pressures may defeat this purpose by producing affordability problems and eventual displacement of some low-income groups.

Rehabilitation subsidies for homeowners have a limited effect here: maintenance may be subsidized, but the very improvement it produces multiplies the price-increase type of affordability problem (i.e., increase in taxes). This type of conflict calls for rehabilitation subsidies tied with policies oriented to increase the housing stock.

3) Resettlement reduces housing options for in-coming low-income groups in gentrifying areas. Rehabilitation subsidies, on the other hand, while protecting the rest of the residents, further reduces the availability of housing for new, low-income households. Thus, rehabilitation subsidies should be tied to new housing construction in central areas.

4) Gentrification may be reflecting profound changes in location trends; in the long term, there is uncertainty with respect to a) which locations will be open to low-income groups, b) how these locations will meet location and housing needs for low-income groups.

Rehabilitation programs, on the other hand, aim to immediate relief. Furthermore, two clauses often tied to rehabilitation (permanence in the housing for a period in order to gain forgiveness, and restriction of subsidies to pre-defined areas), may conflict with long-term options or needs. This uncertainty calls for flexible policies, which can adapt to changing needs and options.

5) Private rehabilitation is consistent with goals of preservation of resources, by making use of previous investment.

However, middle-income resettlement, unless it triggers new construction through filtering and arbitrage, reduces the total supply of housing. Thus the advantages in terms of resource preservation are more apparent than
real, since the need for new construction is not reduced, and in some cases it may be increased.

7.2.2 FACTORS AFFECTING THE EFFECTS OF GENTRIFICATION AND REHABILITATION

The implications suggested above refer to general effects that gentrification and rehabilitation subsidies may produce in gentrifying areas. The incidence of these effects will vary in each particular case, depending on the nature of the long-term forces producing the gentrification trend. At the same time, local circumstances may suggest specific implications for policy, depending on the factors present in each area undergoing gentrification.

Some factors that may affect the choice of policy in gentrifying areas are suggested below:

A) At the neighborhood level:

- Occupancy level (vacancy rates): private rehabilitation targeted to abandoned buildings will maximize efficient utilization of resources and produce a minimum displacement effect. Even if rehabilitation goes to other units, a high vacancy rate would indicate that the displacement problem is likely to be less significant, as long as vacant units have relatively similar prices as the rest of the units.

- Type of housing occupancy: a high percentage of tenants would call for some controls over rehabilitation of multiple-dwelling for single-family use. Since tenants are likely to be the first ones displaced, rehabilitation subsidies should include tenant protection clauses, either rent ceilings or direct subsidy for tenants, and tenant participation in the rehabilitation decision.
- Affordability level of residents: residents who can afford tax increases produced by overall neighborhood upgrading are in fact getting a benefit in terms of appreciation of their housing value. Homeowners below this affordability level may be pushed out (forced to sell) and would need a special type of subsidy.

- Social differences (income, age, ethnicity...) between the in-coming groups and the old residents: big income differences may result in an improvement of housing beyond what old residents can afford, thus creating tensions between groups. Historic designation of neighborhoods are likely to be rejected by very low-income residents. Rehabilitation subsidies and other programs should aim at minimizing the differences in housing quality that each group can achieve. Ethnic, age differences, though they can eventually be an asset to the upgrading neighborhood, may produce additional tensions. Neighborhood policies should contemplate the active participation of all groups, oriented to detect tensions and find a way to minimize them.

- Social fabric, type of community services: a closely-knit neighborhood may suffer more severe disruption by massive resettlement. The location and type of the improvement works should in this case be controlled, in order to minimize this effect. Rehabilitation of buildings providing services to the community (grocery store, recreation centers) should be scrutinized.

- Relative importance of location for old residents: preservation policies should give priority to those households for which their location is highly related to accessibility to work, friendship and other neighborhood ties. Those groups less sensitive to location may in some cases be better-off since the sale of their houses in upgraded areas may allow them to move to more desirable locations.

- Land availability, existing densities: since at least two groups are competing for the same area, and a third group (new, low-income house-
holds) is also affected, available land for development, or potential for higher densities would present a good potential in order to accommodate the increased demand. In any case, rehabilitation combined with housing stock increases should be encouraged.

B) At the city level:

- Population growth rate and characteristics: since one of the major problems of the gentrification process is the deterioration of housing options for new, low-income population, the rate of low-income immigration is an important element in the assessment of the costs and benefits of the process. At the same time, the rate of growth of the type of households that trigger the process is also important: a low proportion of these types of households would not produce a significant change in trends; this would happen only if these groups grow at a rate such that they alter the 'tipping point' and change the expectations in the affected neighborhoods.

- Land availability in peripheral areas: this factor relates directly to the occurrence of gentrification and the magnitude of the expectation effect, which will be higher in cases where restrictions to urban expansion reduce the average size of the lots in peripheral areas.

- Rate of new building construction: the proportion of new construction as related to the rate of population growth may be an indicator of the effects of segregation attitudes in multiplying the succession process. This would be true regardless of the occurrence of gentrification. Building construction beyond the direct demand produced by growth would indicate, other things equal, at least some degree of instability in some neighborhoods produced by the alteration of the social mix considered acceptable by some groups.

On the other hand, a relatively low rate of new building construction
may be indicating the occurrence of gentrification, since it may be resulting from changes of preferences of some groups for old rather than new housing. If this is the case, other factors should be analyzed to assess the impact of this particular indicator.

- Transportation changes, such as new transit systems, new transportation corridors, may affect the accessibility component of the location variables. Improved accessibility can be argued to play against the occurrence of gentrification to the extent that gentrification is indeed related to the relative importance of accessibility to CBD as compared to other location factors.

Improved accessibility, in any case, reduces some of the problems affecting low-income groups in gentrifying areas, to the extent that these improvements reduce the time and monetary costs of commuting in areas where the poor may be displaced in the gentrification process.

In summary, the gentrification process appears to represent a planning situation characterized by conflicting goals and long-term uncertainty. Rehabilitation subsidies in this situation contribute to achieve some goals but defeat others. The analysis submitted in this research suggested some of the groups affected (either positively or negatively) by both gentrification and rehabilitation, some indicators that can be useful for the assessment of the incidence of these effects in specific cases, and some planning tools that could be used either in conjunction or as an alternative to rehabilitation in order to improve the achievement of particular goals.

The conclusions and implications outlined above are primarily based on the conceptual location model that was derived from the review of different bodies of location theory. Although the major variables presented in the model appear to be consistent with most of the approaches to location theory that could be reviewed in the research, the validity of the conclusions and impli-
cations is still subject to the accuracy of the model in describing real life situations. In this sense, both a more complete development of the model and its testing by empirical research may affect the set of conclusions presented here.

This uncertainty with respect to the reliability of the model adds to the uncertainty of long-term effects as predicted from the model itself and suggest a more general implication for planning policy. Whatever the priorities determined by the policymaker in terms of different planning goals, the actual planning decisions should be such that permit the achievement of these goals within this framework of uncertainty. Thus, rather than one particular program (such as rehabilitation or neighborhood improvement subsidies), this situation calls for a more comprehensive planning strategy which includes a range of different policies to apply as different factors change in each case and at each point in time; at the same time the strategy should include a monitoring system capable of detecting changes over time of the long-term trends.

The research has suggested some of these possible planning tools, and some indicators that could be helpful for monitoring. The actual choice of plans and programs depends on the priorities determined by the policymaker.

7.3 FUTURE USES OF THE LOCATION MODEL

The research could be considered finished at this point since the conclusions and implications already outlined have met, within the time and resource limitations, the main objectives initially stated. However, the location model developed throughout the research is an additional output that can serve a number of uses. Some comments on the uses of the model were, therefore, considered worth pointing out.

The location model as presented in the research is conceptual in nature. It provides a very general framework to synthesize a set of variables and their interrelationships. It is at a very initial stage of development
and, as such, needs further study oriented to define more accurately each of the variables, to design an operational counterpart, and to devise a more precise measuring of the interrelationships among the main variables.

Given these considerations, some comments can be made on how the model works and what type of uses could be expected from it.

Description of the model. The model is in fact a set of two interrelated sub-models: an accessibility matrix, which summarizes location preferences in five dimensions, and a dynamic model of household moves. The dynamic model describes the occurrence and volume of household moves and the accessibility matrix describes the spatial distribution of residents, either with a fixed population or the distribution of moves as detected in the dynamic model. In general, the model permits the transformation of a set of data obtained from census information and land surveys into a spatial distribution of residents and household moves. In doing this, it allows a description of different areas in terms of physical and social characteristics, as well as a prediction of possible changes.

One way of describing the mechanics of the model, its inputs and outputs, may be as follows:

1) The spatial characteristics of a city can be plotted in a map, and areas can be identified with similar accessibility to CBD, lot size configuration and geographic traits. Each of these areas is given a first, two-dimensional accessibility coefficient (geometry and geography dimensions).

2) The spatial distribution of the existing population, defined by social status, familism and ethnicity, can be also plotted. This distribution would affect the initial boundaries of homogeneous areas. An accessibility coefficient can then be derived for the resulting areas; this new coefficient would include both the two initial dimensions plus the social segregation coefficients derived from the existing spatial distribution.
3) Housing quality by area can be predicted and checked against the actual housing quality in different areas, and a value can be found for the housing (neighborhood) quality dimension:

At this point, the accessibility matrix in all the dimensions has been built, and relative aggregate accessibility coefficients have been found for each of the homogeneous areas.

4) Given an accessibility matrix which describes both the physical and the social components of location, the dynamic part of the model can be used. The next input is, thus, population forecasts by social type and forecasts of housing additions.

5) The next output is a forecast of moves. By assigning the new population to areas having accessibility coefficients similar to those chosen by the first residents, the model should be able to detect where the moves would start, in which direction they are likely to proceed, and how the process would affect the social and physical characteristics of both the affected and the surrounding neighborhood.

6) To the extent that the accessibility matrix accurately describes segregation attitudes, the model should also show in which cases this initial change in location affects the stability of a neighborhood. "Instability" in this sense would be measured as the difference between the initial social composition and the one resulting after the first iteration of moves; this instability is assumed to be directly correlated to the segregation attitude between the two groups at play.

Thus, an initial set of data (land surveys, distance to CBD, lot sizes, population - existing and forecasted - by rank, familism and ethnicity, housing construction) can be used to predict a pattern of residential distribution, a pattern of location moves and a pattern of physical and social changes in different areas of the city.
Uses of the model. To the extent that these general data are available, some possible uses of the model are suggested as follows:

1) The model can be used for direct forecasting: the first and more obvious use would be that of predicting the population composition and its counterpart in terms of housing and neighborhood characteristics in different areas, and the changes that can be predicted from the population forecasting.

2) The model can be used to detect eventual problem areas: this first forecasting should be able to detect cases in which growth produces some types of problems, such as household moves beyond what could be considered the limit in terms of neighborhood stability insufficiency of land or housing stock in specific areas, displacement of some groups to less desirable locations, types of social mix incompatible with some types of segregation attitudes, etc.

3) The model can be used to assess advantages and problems of planning policies: a number of policies can be introduced to the model by assuming a specific effect of these policies on the values of the accessibility matrix. For instance:

- Zoning regulations affect the lot sizes in the affected areas: therefore, they modify the geometric dimension of the accessibility coefficient.

- Urban growth boundaries can be introduced in a similar way.

- Rehabilitation subsidies modify the housing quality dimension and the resulting coefficient in each of the affected areas.

- Transportation programs modify the CBD accessibility or the geometric coefficient in those areas where transportation is improved.

- Immigration policies affect the social coefficient, and so on.

These coefficients modified by policy would affect the overall spatial distribution and the pattern of moves. The model can be used to predict those changes and detect eventual gains or losses for different groups
in terms of location changes.

4) The model can be used for planning analysis: some external forces not controlled by the policymaker (such as changes in social attitudes, economic expansion or recession) could also be introduced by assuming an effect on the coefficients of the accessibility matrix. The incidence of such external factors could be derived by comparing outputs of the model before and after the occurrence of these external phenomena.

Another way of using the model for analysis would be reversing the mechanics of the model: for instance, changes in location trends could be detected by comparing accessibility matrices derived from an area at two different points in time; differences in spatial distribution of residents would result in different values of some of the accessibility coefficients. This type of analysis may be helpful to explain the causes of the changes in location trends.

This last use is essentially the method that was chosen for the analysis of the gentrification process, in which some causal factors of gentrification were related to factors that would change the values of the accessibility matrix. The analysis was carried out in a very conceptual level, since the purpose of the research was to point out general rather than specific effect of the gentrification process.

A more specific application is also possible, however, if sufficient data are available. For instance, an assessment on the probability of gentrification to occur in Vancouver could be based on essentially the same reasoning. Let us assume that in Vancouver the following variables are present:

- High rate of population growth (high immigration rate)
- Limited land to expand (Agricultural Land Reserve, urban growth boundaries, natural geographic barriers).
- Saturation of population capacity under the current zoning.
- Relatively low densities in central areas.
Growing importance of historic preservation movements.

Given these assumptions, it would be reasonable to predict that at least some degree of private rehabilitation should be underway or should occur in the near future. By deriving the corresponding accessibility matrix, before and after the occurrence of these eventual causal factors, and introducing population growth forecasting by social type, it should be possible to predict where this gentrification process is likely to start, which neighborhoods would be affected and which groups would gain and lose in the process.

At the same time, if gentrification indeed occurs in Vancouver, planners would be faced to the choice of policies which would present conflicting planning goals: the housing needs of the newcomers are in conflict with the rights of the residents to have their housing choice protected. Control of urban expansion conflicts with the need of new housing. Goals of diversity of lifestyles would be both looked for and defeated by high-income resettlement.

The model presented here may prove a useful tool to assess in more specific ways the incidence of these conflicts and the effects on location options of policies oriented to meet each of these goals.
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