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THE EVOLUTION OF THE SPATIAL PATTERN OF WHITE RESIDENTIAL DEVELOPMENT AND THE HOUSING MARKET IN JOHANNESBURG

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A thesis submitted to the Faculty of Arts, University of the Witwatersrand, Johannesburg for the degree of Doctor of Philosophy

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DECLARATION

I hereby declare that this thesis is
my own work and has not been submitted
previously for any degree in any university.



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ABSTRACT

The problem of residential development and the price of residential property is investigated through an empirical study of the city of Johannesburg from its inception in 1886 to 1972. The analysis is temporal and spatial and is based upon municipal valuations and sales data of residential property. The analytic framework is developed from urban growth theory on the one hand, and the theory of the urban land market, on the other. The findings reveal that both residential development and residential property prices are dependent upon a wide variety of socially rooted and economically rooted determinants and that these act in concert to produce the dynamic spatial patterns found in the urban system.

INTRODUCTION

The Land Market and the Consumer

There exist a number of very important marketing institutions in the Western world. The members of this community participate widely in these markets. One such market is that for urban land which includes land for residential purposes. This component derives much of its importance from the fact that it occupies more of the urban landscape than any other in the system, and also because the residential mosaic of the western city largely reflects the sum of the complex social behaviour of the community.

From the multitude of spatial patterns which can be extracted from the residential mosaic an important one is that of property values. This is for some purposes among the most significant since the purchase of a house represents for many people the greatest outlay of capital, and it is undertaken neither lightly nor frequently.

The single most important problem facing the individual is a locational one: where to purchase. The answer to this question is equally important since it is an expression of many, if not most, facets of his social, economic and political behaviour, his familial age-structure, his religion, his ethnic origin, his performance as a consumer, his education and his professional status in the community. The price which the individual is prepared to pay for a particular piece of land in a specific locality represents the cost to him of satisfying these various factors which might collectively and loosely be described as his *cultural overlay*. So land value is a particularly significant element in the residential mosaic, and in analysing residential development and the spatial land value patterns which can be extracted from the mosaic, the cultural overlay must be accorded its rightful place.

Theories, Models and Empirical Analysis

It is a commonly expressed view in the realm of intellectual endeavour that there is nothing so practical as good theory. This view is subscribed to here with recourse to the theory of the urban land market, to the theory of urban growth and to the theoretical expositions of the various sub-systems which co-exist within the total metropolitan land value system. These sub-systems of values relate to areas and regions in the city the characteristics of which reflect specific processes such as those which produce the tract of high rent neighbourhoods, and the high status neighbourhoods, those responsible for the ghetto-like enclaves of groups of recent migrants and culturally-different people, those processes of urban renewal and renovation, and many others. Sub-systems of land values can be found which correspond to the areas in which these processes operate and for most, models can be developed to illustrate their effects in the total value system. Such models are developed and applied in the present study which is concerned with the spatial patterns of residential development and the housing market which emerged from this development, in metropolitan Johannesburg. Only the White residential areas are examined since these are the only members of the community permitted to participate in the free market system as it applies to land. However,passing reference to African, Coloured and Asian residential development is made where this facilitates a better understanding of the price of housing and the pattern of its development. Time is an important dimension in this study since the land value system in question is a dynamic one, and also because static analyses have neither prescriptive nor predictive value. Physical and cadastral maps of the area appear in Figs. i.1 and i.2.

The analysis adopts a qualitative approach. The reason for this is due largely to the many factors which influence land values and residential

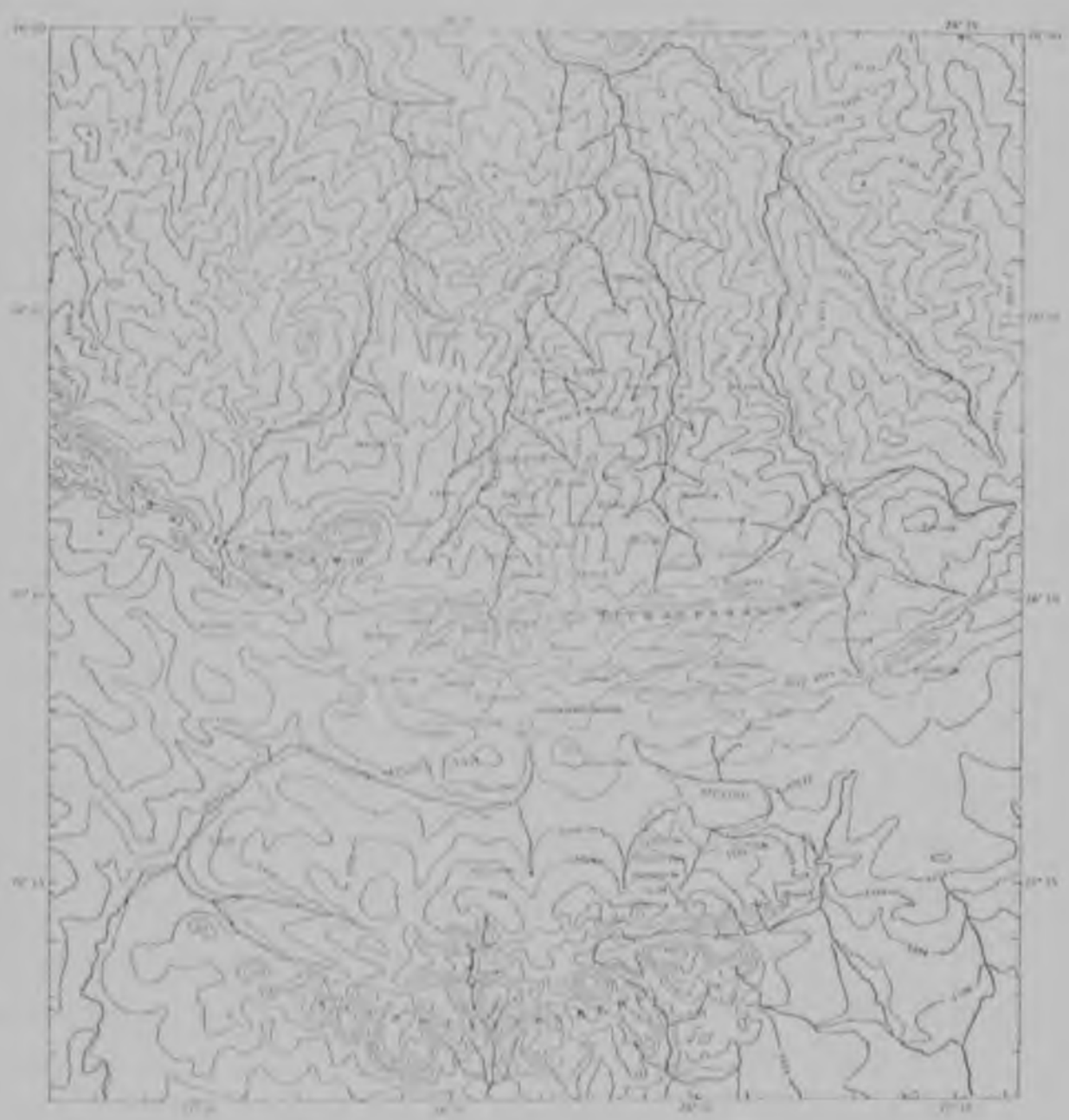


Fig. i.1 - Metropolitan Johannesburg : The Topography

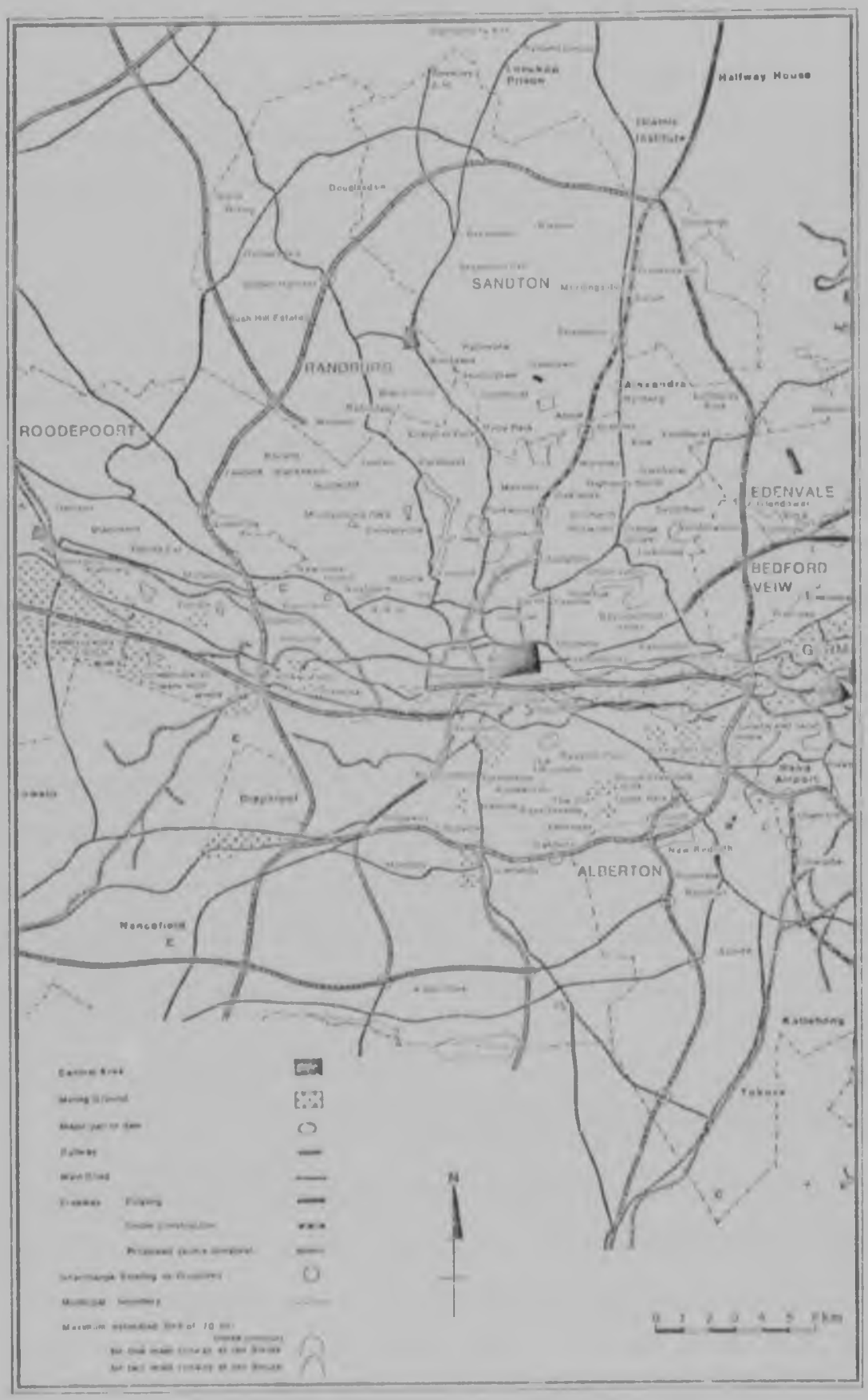


Fig. 1.2 - Metropolitan Johannesburg - The Regional Setting

(Urban and Regional Research Unit, Witwatersrand University, Johannesburg)

growth, and the unsuitability of existing quantitative procedures in studies of this type. This point is emphasised in the section which reviews the theories pertaining to the economically rooted determinants of urban residential land values.

The Data and Conceptual Framework

The data which are derived from municipal valuations and actual property transactions in the housing market are presented graphically and spatially. In this way both price fluctuations and the spatial growth patterns of housing can be examined. The analysis proceeds through a number of models or experimental designs which are extracted from theory, and the influencing variables are analysed for their effects upon the patterns which emerge. The conceptual framework of the study appears in Fig. i.3.

This framework is an outline which could be termed a meso-scale procedure, since the economic and spatial patterns it examines refer to *groups* of suburbs. At this level the pattern does not allow micro-scale observations. This omission is the subject of the final sections of the thesis where local spatial variations between residential properties belonging to the same class are studied.

Problems of Measuring Values Through Time

Many studies of real estate have interpreted urban land values on an area basis or, alternatively, on a front-foot basis. The former determines value through the square unit measure and the latter through the market value of a length of street frontage. The present study adopts neither approach. The measure which takes cognizance of the market value of a square unit of land is most applicable to commercial property and in particular to those

aspects relating to retailing or office uses. In these instances the entrepreneur finds this measure convenient for costing his enterprise. The front foot method pays no attention to details of the shape or size of a stand. This is an unreal assumption. Consequently, the present study takes as its basic unit for enumeration and analysis that unit of real estate having on it a single family dwelling, as required by the Town Planning Scheme.[1/] This is regarded as the most realistic measure since the constraint imposed, namely, that only *one* family may utilize the site at any time is sufficient to be the overriding factor in determining its value as a residential stand. Should more than one family be able to occupy the site, through subdivision, a change in the permitted bulk or for some other reason, its value would immediately change in proportion to the new yield on invested capital. It would then fall beyond the scope of this study. The size of the site and other important physical characteristics are considered at appropriate places in the thesis.

Another important consideration in the present study, where the prices of groups of properties are compared through time, is the degre of comparability of such data at successive dates. The method used here would be inadmissible to the property economist whose viewpoint is clearly stated by Evans (1973), Alonso (1964) and others. Their models are concerned with the quantity of housing consumed and they inevitably therefore have the inherent assumption that properties are homogeneous. Alternatively such models assume that a common unit measure of value is used. In the present study the homogeneity characteristic is applied in the less rigid manner of the social area analyst and the factorial ecologist. Both schools of thought acknowledge the existence of a cellular structure in the city in which the occupants of

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1/ City of Johannesburg Town Planning Scheme No. 1, 1946 (as amended) promulgated in terms of the Town Planning and Townships Ordinance of the Transvaal, No. 25, 1965 (as amended).

each cell exhibit social and economic similarities. These similarities are extended to include housing and house prices.

Determinants of Value

Having stated the problem as that of accounting for the evolution of the settlement pattern of Johannesburg and of the spatial variations in the value of residential land, it follows that the *determinants* of value must be uncovered. Attempts by social scientists to isolate the determinants of housing values have taken different directions. Two of these are recognised here (Fig. i.4). The distinction between them is based upon their underlying assumptions. The first is that which is primarily social in origin and consequently is behavioural in character. These determinants may collectively be referred to as the *social determinants*. The second is defined by its rôle in the market mechanism and its association with the natural forces of competition among economic activities in an urban area. This group of determinants might collectively be referred to as the *economic determinants*.

As in any deliberation upon a social problem of this nature the divisions between these two groups are not always clear, and at times it will be shown that they overlap. To prevent as far as possible the inevitable untidyness which is a consequence of this, the problem is approached through flow diagrams devoted to the social determinants, on the one hand, and to the economic determinants on the other (Fig. i.4). The purpose is two-fold. In the first instance it is necessary to illustrate the way in which the theory of the urban land market, and especially that part of the market devoted to residential uses, has evolved, and how it is associated with other aspects of urban theory in particular, and concepts relating to urban systems in general. More specifically, its relationship to theories of invasion and succession, to

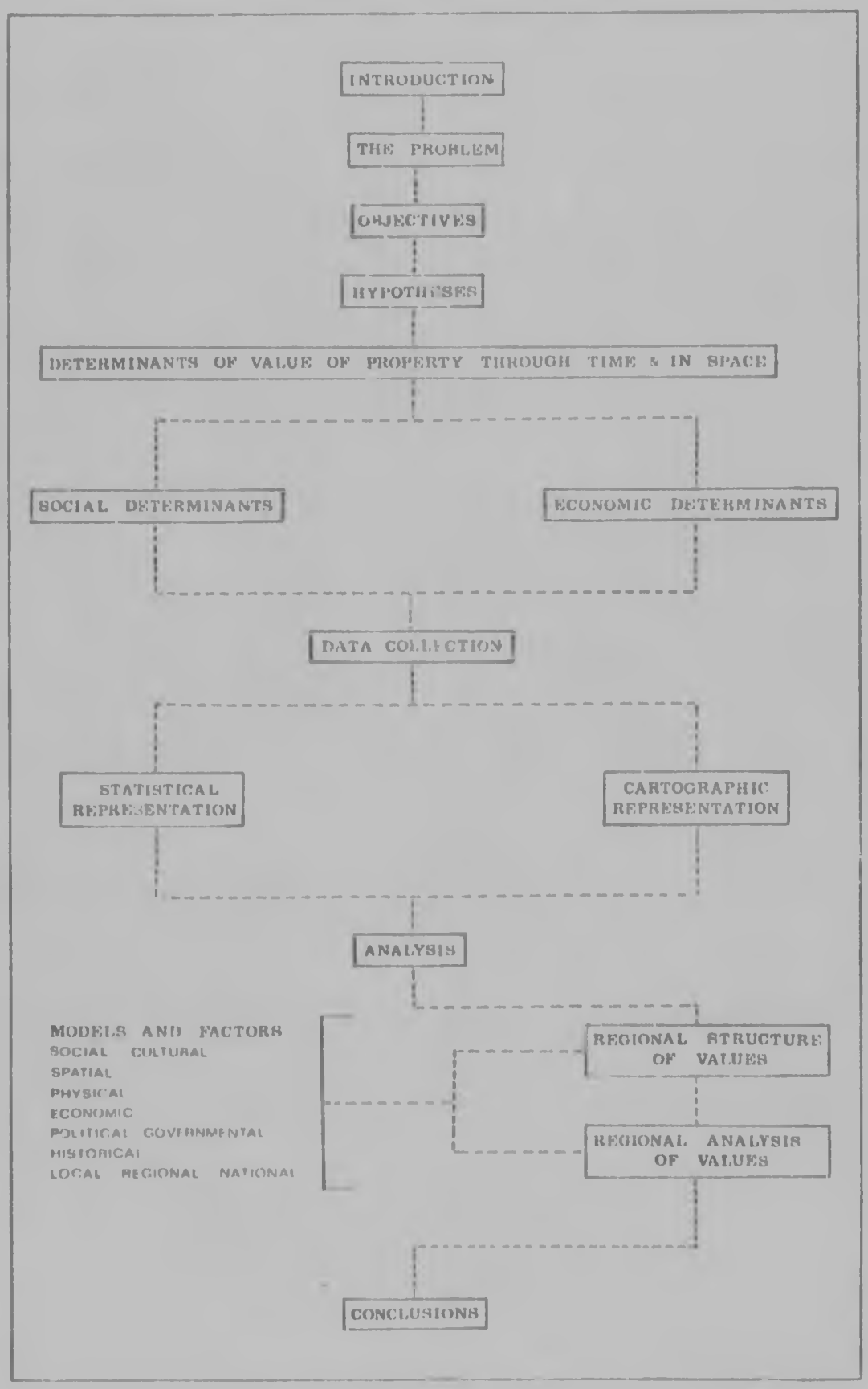


Fig. 1.3 - The Conceptual Framework of the Study

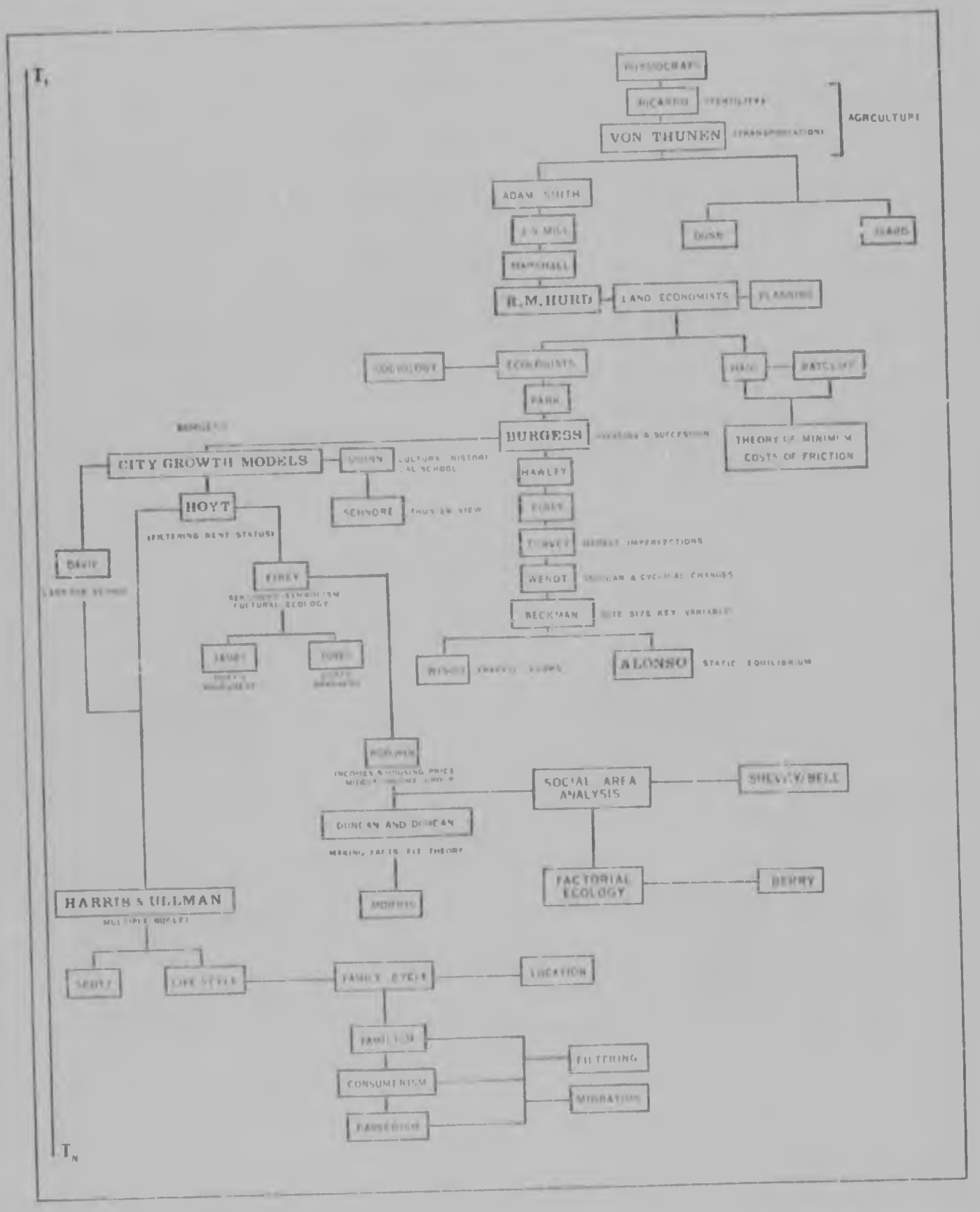


Fig.i.4 - Flow-chart Showing the Evolution of the Theory of the Urban Land Market

theories of filtering, to concepts underlying the renovation of old buildings and the effects of this upon the behaviour of the market, to the influences of the location of minority groups, to the theories of migration and its effects upon the city economy, to the significance of history as a determinant of value, to the significance of social distance and social space, to the influence of income and status on land values, to the influence of the perceptive quality of individuals and groups as shown in mental maps, and finally to the influence of life style, the family cycle and location. The importance of life style is perhaps best exemplified by income characteristics since persons of different incomes have different attitudes to environmental hazards, environmental quality and environmental control. In examining the evolving patterns of land values and residential townships in Johannesburg the influence of these social determinants is constantly borne in mind.

Secondly it is appropriate to review the concepts, hypotheses and theories of those students who see the market as the underlying control of the pattern of land values. As shown by Bourne (1971) and others, the basic arguments in the market-oriented approach are demonstrated by Alonso's theory of urban land use patterns. The limiting assumptions necessary in the formulation of these types of economic models can be criticized for what they overlook. Man can be shown to behave in an economically irrational manner when faced with a single set of market criteria and with complete information at his disposal. In fact this study will endeavour to show that his decisions reflect individual preferences, individual objectives, ignorance and even errors. It will become clear that a complex array of economic forces, technological and transportational innovations, social attitudes and urban development policies will add greater complexity to the patterns of urban land value than pure accessibility models. The review will trace the growth of this

branch of economic theory through the determinants of value from the *physiocrats* of the seventeenth century to the classical economics of Ricardo, von Thünen and their successors, since these were the scholars who laid the foundations for contemporary accessibility models. The flow diagram (Fig. i.4) will show points of divergence and convergence in thought and treatment where new students emerged, such as the social ecologists, the land economists and planners, those who related their models to agricultural location theory and rent theory, those whose overriding preoccupation was with the effects of transportation, and therefore with the imperfections of the market, and finally, those whose interests lay in individual market components such as the size of the site, traffic flows, zoning and taxation,legal complexities, the influence of parks and gardens on value and so on.

Two other points need to be made at this juncture. The value of any site in a city is largely a function of the city's evolution. This fact is taken into account by setting the housing market's development against economic history as seen at every scale, local, regional, national and internationai. In this way the principal events, both internal and external to the system, are examined. The other important point relates to the money market. Clearly the land market, and indeed all the major markets, are materially influenced by the state of the money market at any particular time. This phenomenon will be examined against the evolving property market, and an attempt will be made to show the influence of the availability of money, and hence its price, as the determining factor in setting the fiscal policies of the major financial institutions. In particular this will involve the building society movement since it largely controls the rate of house construction. A related problem is that of the business, trade and building cycles which will be viewed at all scales

Thesis

Thus far, the objectives of the study have been stated only in general terms. It remains to state these *explicitly*. The thesis presented here is that residential development and the value of residential property is determined by :

(a) the historical evolution of the settlement pattern of the city, including the evolution of the city's technology,

(b) the physical characteristics of residential areas and their neighbourhoods, including their accessibility to the city centre,

(c) the state of the international, the national and the local economies from time to time, and especially that of the money market,

(d) the cultural overlay of the individuals who occupy the sites and of those who reside elsewhere in the system. (The term embodies the religion, the ethnic origin, the language, the intellectual, professional and educational status, the socio-economic status and the stage in the life cycle of the individual or group concerned).

The thesis is therefore extremely wide-ranging, incorporating as it does, many facets both of city growth and of the inhabitants. This in itself presents logistical problems. Consequently, the theoretical framework is stated succinctly and clearly. This is done in the first two chapters where the determinants of land values and of residential development are identified. In the remaining chapters the residential development of Johannesburg and its associated residential property prices are examined against these determinants.

Having stated both the framework of analysis and the hypothetical postulates, one can move to an examination of the theory of the urban land market and of urban growth as a prelude to the empirical study.

CHAPTER 1 - URBAN RESIDENTIAL GROWTH AND THE SOCIALLY ROOTED DETERMINANTS OF RESIDENTIAL LAND VALUES

As stated in the introduction to this study the evolution of an urban residential land market is dependent upon the evolution of the city in which the land market is situated. Consequently the conceptual basis of this thesis lies in both the theory of urban growth, and the theory of the urban land market. The latter may be divided into two parts, the one accommodating the socially rooted determinants of land values and the other the economically rooted determinants. Chapin (1964), and others, acknowledge the difficulty of differentiating between these social and economic determinants. In this study all determinants which are market phenomena are deemed to be economic, all others are social although this classification cannot at all times hold true.

The present chapter reviews city growth models, shows their relevance to the growth of Johannesburg and where possible extracts from them the socially rooted determinants of land values. It also reviews those theories of the social area analysts and the factorial ecologists which succeeded the classical theorists. Inherent in these theories are many, if not most of the determinants with social origins. Finally a review is made of other important studies of the social geography of Johannesburg the results of which bear upon the problems of residential development and residential property values.

The fundamentals of city growth have been set out succinctly by the classical theorists Burgess (1924), Hoyt (1939) and Harris and Ullman (1945), and these principles have been developed and elaborated by, amongst others, Davie (1938), Quinn(1940a and 1940b), James (1948), Firey (1947), Shevky and Bell (1955), Scott (1959), Jones (1960), Morris (1968), and Berry (1969).

Studies of aspects of the socio-economic structure of Johannesburg have been made by Corke (1959). Lipworth (1961), Davies (1964) and Hart (1974). The initial problem is one of establishing the linkage which exists between *urban growth theory*, on the one hand, and *urban land market theory*, on the other. The clarification of this linkage is necessary since the pattern of land values represents a sub-system of the pattern of city growth, and if the city growth theories can accurately predict the city's development, it follows that they can simultaneously predict and to some extent explain the way land values have developed in the past and how they will develop in the future. This linkage is best put by Hoyt (1939) when he says that 'of the various shifts that take place in the internal structure of a city as a result of population growth the movement of the residential rental neighbourhoods most vitally concerns the home owner or the investor in residential mortgages'. The concern expressed here is clearly for the value of residential land and for the amenities available at any particular intensity of value. Johnston (1971) groups together three city growth models whose primary function is to explain the city's socio-economic mosaic, and this treatment is followed here.

The Concentric Zone Model

The first model was that developed by the Chicago urban sociologist E.W. Burgess in 1924. The central concern of this model was *people*, and it was the forerunner of the socio-ecological approach to the analysis of human communities.

From a great variety of maps of social parameters Burgess produced his famous inductive conceptualization of the city as a series of concentric zones which were elements of a dynamic model in which the emphasis was on change and its effects on social disorganization (Fig.1.1)(Johnston,1971).

The process of city growth is seen as outward expansion from the city centre in a series of rings each having certain distinguishing characteristics. The innermost zone is that of the Central Business District which is seen as the heart of the downtown retail district. Encircling this

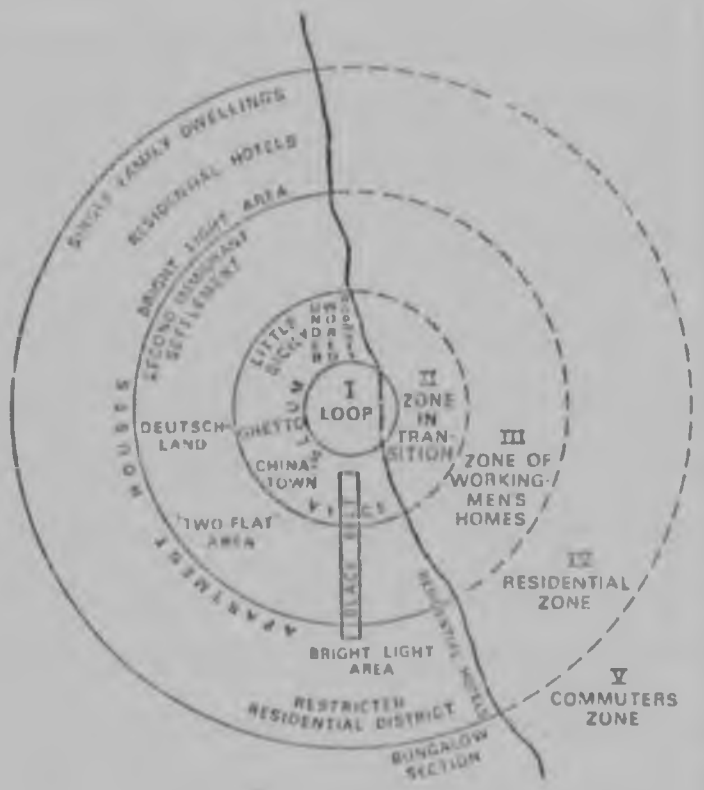


Fig. 1.1 - The Concentric Zonal Pattern of Urban Residen Areas, as applied to Chicago (Burgess, 1924)

area is the wholesaling district providing a service function for the core. The second zone is one of transition between functions which are strictly commercial in character to those of a residential nature. It is a zone of deterioration caused by the encroachment of business and industry from zone one. Burgess (1929) identifies a factory belt on the inner margin of this zone and an 'outer ring of retrogressing neighbourhoods. This is an important area from the viewpoint of the *price* of land since it embodies the ingredients of a land-use change. Once the change is initiated, depending upon the location of the change and the economic climate, an improvement can be

expected as quality business migrates into the area, seeking cheaper land and a lack of automotive congestion, while still retaining a close link with the CBD. This is a determinant of land value which although economic in character, has social origins. Only the proximity of this zone to the Central Business District and its social dislocation and decay make it amenable to invasion by quality business. Although Burgess saw this zone as a complete ring, the more common pattern appears to be one of thrusts outwards from the centre creating isolated districts of upward mobility of young people and property values.

The third zone of Burgess' model is called the zone of independent working-men's homes which is 'largely constituted by neighbourhoods of second immigrant settlements. Its residents are those who desire to live near but not too close to their work While the father works in the factory, the son and daughter typically have jobs in the ... (CBD), attend dance halls and motion pictures in the bright-light areas, and plan upon marriage to set up homes in zone four' (Burgess 1929). The social process which creates this zone simultaneously acts as a determinant of property values. The community has special social and economic characteristics which encourage settlement in this area and lead to a particular intensity of land values consistent with their economic status. In Johannesburg there is no evidence of these rings either of socio-economically similar communities or of similar property values.

The fourth zone is that of 'better residences in which the great middle-class of native-born Americans live, small business men, professional people, clerks and salesmen... In this zone men are outnumbered by women, independence in voting is frequent, newspapers and books have wide circulation and women are elected to the state legislature'. Burgess'

reading of this zone has strong sociological overtones which have important consequences in the present study. This group of people and the area they inhabit at any time in the city, forms the bastion, not only of the urban land market as a whole, imparting to it a *stability* essential for equilibrium, but they also represent the largest single group of bond holders, so they offer stability to the financial system, insofar as home mortgages are concerned. Land in this zone tends to be tightly held and maintains a high rate of growth. Since this middle-class characteristic is an underlying cause of the stability of the market for houses it follows that it must also, to some extent, determine the price levels. In this sense the processes and social factors which create this zone are determinants of values.

The fifth zone is called the Commuter's Zone .. 'a ring of encircling small cities, towns and hamlets ... which are also, in the main, dormitory suburbs ... Thus the mother and the wife become the centre of family life ... The communities in this Commuters' Zone are probably the most highly segregated of any in the entire metropolitan area' (Burgess,1929).

The *modus operandi* of outward movement was not initially explained by Burgess, but he subsequently (1928) outlined the mechanism as one of *invasion* and *succession*, in which one group succeeds another in the use of an area through the ecological process of competition (Johnston,1971). A similar process relating to the value of residential land in Johannesburg will be presented in this thesis in the form of a *graphical renovation model* showing the close relationship between land use succession and land value. The connecting link here is economic rent or the capitalization rate. Burgess pointed out that 'every community as it grows expands outwards from its centre. This ... is due partly to business and industrial pressure and partly to residential pull' (Burgess,1928). This statement neglects the influence of technology which is in large measure responsible for urban sprawl.

Only automotive transport in the case of Johannesburg, permitted extensive rather than intensive settlement patterns with obvious consequences for the price of residential land. The present study shows that city growth has been largely a function of changes in transport technology. It was constrained initially by the horse and carriage, and subsequently by the electric tram-car and the motor car. Johannesburg also deviates from the zonal model in that Burgess was concerned with heavy in-migration of people to the centre (of Chicago) with this pressure causing outward movement. Population pressure at the centre has not been the cause of Johannesburg's annular growth.

Another factor which influences property prices is that of the location of minority groups in the city. Burgess (1928) while not interested in the economic consequences upon property of this settlement observed that such people would concentrate in the zone of transition because ...

> 'for all new groups with one or more of the following characteristics - an alien culture, a low economic status and a different race - this point of arrival naturally tends to be in or near the central business district for a rooming house area puts up notoriously slightresistance to the intrusion of a new group.'

A related influence upon the property market is the subsequent spatial behaviour of the ghetto's or cluster's inhabitants. Representing an alien group as they do their presence can have a depressing effect on surrounding land prices, and their spatial movement tends to follow the line of least resistance as has been demonstrated by Morrill (1965) and Rose (1970). These thrusts outwards from the cluster into neighbouring residential areas cause a build-up of pressure in the transition zone owing to continued in-migration and there is consequently a conversion of land and buildings to non-residential uses. This phenomenon is found in this zone of the

property market of Johannesburg and illustrates Burgess' statement of the invasion and succession mechanism.

Burgess' Rings applied to Johannesburg : A Review

Processes which produce annular distributions such as those described by Burgess do not adequately simulate Johannesburg's early physical form. Ring formation was precluded by amongst other things, the pattern of land ownership at the time and the physical nature of the site. In more recent times, however, an annular pattern has been the dominant physical growth pattern. From the viewpoint of this study the most useful insights are obtained from the invasion and succession processes which Burgess outlined. These can be interpreted as both determinants of property values and as determinants of development and change. The ring concept is useful only insofar as it describes the pattern of family status, as demonstrated by Hart (1974).

Davie's Urban Structure Model

Davie (1938) discarded the zonal hypotheses following unsuccessful attempts to verify it, and he subsequently produced the following five principles of urban structure :

1. A central business district, irregular in size but more square or rectangular than circular.
2. Commercial land-use extending along the main radial streets and concentrating at certain strategically placed points to form sub-centres.
3. Industry located near rail and water transportation wherever in the city this may be.

4. Low grade housing (and therefore low priced residential land) near the industrial and transportational areas.
5. Second- and first-grade housing elsewhere.

He claimed these 'seem to be the general principles governing the distribution of utilities. There is no universal pattern, not even an *"ideal"* type' (Davie, 1938).

From the viewpoint of those whose central concern is residential development and property prices, and not sociological considerations, such as delinquency or crime, Davie's propositions seem more attractive. They embody a number of general principles of spatial association based primarily upon human behaviour.

The Sector Model

Homer Hoyt's sector model (Fig.1.2) was presented in 1939, although the origins of the model can be traced to his 1933 study of Chicago's real-estate market, and its development over the preceding one hundred years. In its initial form the model was developed inductively although not on the basis of a single city. It was the result of a commission to 'guide the development of housing and the creation of a sound mortgage market' (Fisher's preface in Hoyt, 1939).

Hoyt was concerned with the linkage between high-status people, their location in the city, and the rents their neighbourhoods demanded from them. *Rent* then is the *link* between the property market and Hoyt's sector theory. Much of his monograph is devoted to a discussion of techniques for analysing residential quality, and as a concomitant, the value of residential land - representing one facet of 'quality'. He concluded that housing quality

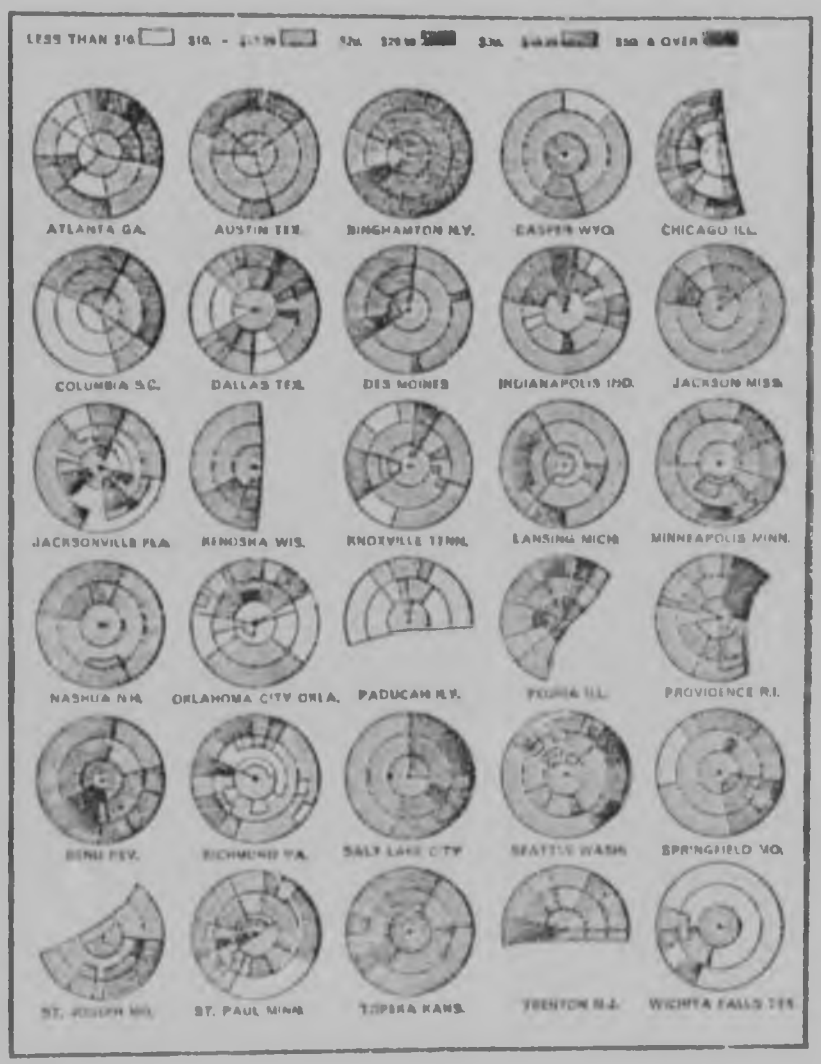


Fig. 1.2 - Schematic Diagrams of the Sectoral and Zonal Distribution of Dwelling Rents in American Cities, during the 1930's (Hoyt, 1939)

was best determined by its rent so that conceptually Hoyt should be grouped with the market oriented economic approach to the theory of the urban land market. However, a moment's reflection shows that at no stage was he influenced by marketing mechanisms, he took these very much for granted. In his later work in 1968 however, he predictably chose to include maps of where the *poor* lived and used *family income* rather than rent as his index of housing quality (Johnston, 1971).

Hoyt's diagrams, which are conceptually important in this thesis, were developed from a study of rental patterns in 142 cities (Figs. 1.2, 1.3).

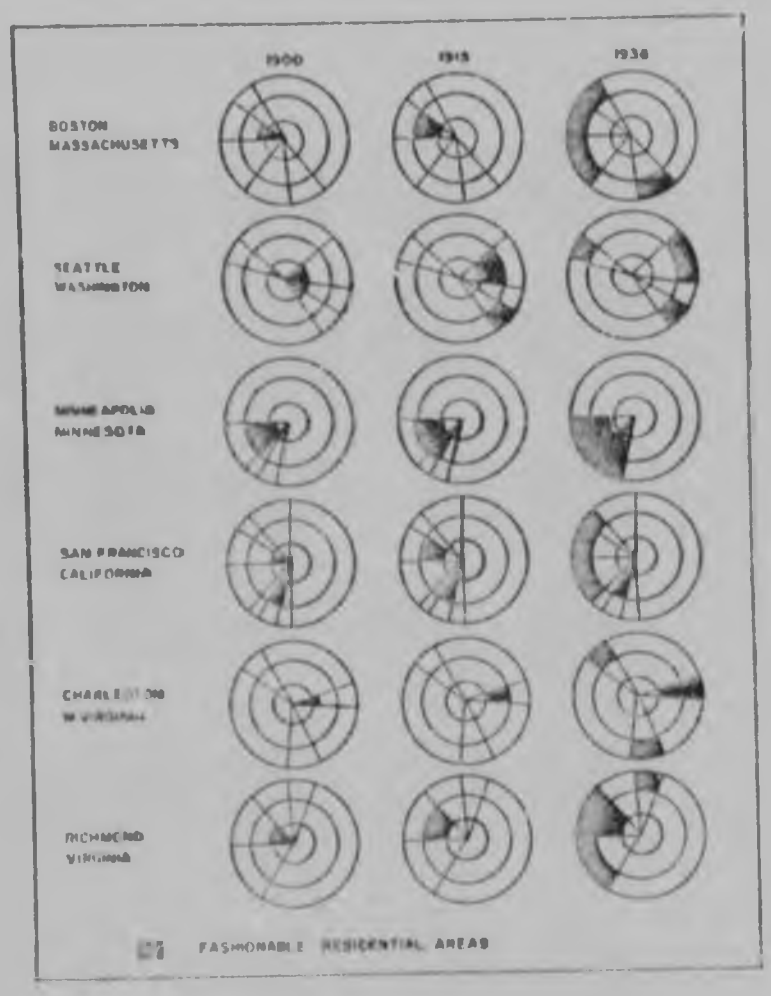


Fig. 1.3 - The Changing Distribution of Fashionable Residential Areas in Six American Cities. (Hoyt, 1939).

Five categories of rent are identified. Johnston (1971) summarizes the principal elements of these maps in the following terms :

1. The highest rental area is in every case located in one or more sectors on the side of the city ...
2. High rent areas take the form of wedges extending in certain sectors along radial lines from the centre to the periphery...
3. Intermediate rental areas or areas falling just below the highest rental areas, tend to surround the highest rental areas or to adjoin such areas on one side ...

4. Intermediate rental areas on the periphery of other sectors of the city besides the ones in which the highest rentals are located are found in certain cities ...

5. Low rent areas extending from the centre to the edge of settlement on one side or in certain sectors of the city are found in practically every city. There may be a low rent wedge extending entirely through the centre of the city ..., or from the centre to the periphery on one side or sector ... or a low rent area near the centre of the city with an intervening high rent area may be matched by an area with equally low rent on the periphery of the same sector ... One or more sections of a city thus acquire a low rent character, and in these sectors there is no tendency towards an upward gradation of rents from the centre to the periphery (Hoyt, 1939).

The great advantage of Hoyt's model over Burgess', particularly in the present study where the framework of these models is used to analyse one of their elements, is the fact that Hoyt's has greater flexibility. He shows that as the city grows, the fashionable (high status) areas follow a definite ordered path, creating a sector inviolate from lower order sectors. At the same time communities of lower orders endeavour to crowd against the high status group, seeking, perhaps by association, some advantage. The high status sector occupies not only the land which is geographically optimal, but also of course acquired at a high price.

The high status sector, which can be identified in the embryo stage of city growth is initially found adjacent to the retail and office functions of the core. The direction of growth is then determined by a number of factors detailed by Johnston (1971) :

1. High grade residential growth may proceed from the origin, along major roads such as those linking other important towns, ports and prosperous farming districts.
   In other words the line of movement of prime traffic affects the growth of the sector of the affluent and eminent members of the community.
2. The geographically prominent parts of the embryo city attract the sector. These parts would be desirable having as they would, good views and freedom from floods, away from the industry with its polluting odours, and close to fine recreational opportunities which may take the form of parks, forests or even the open countryside. An important point which Hoyt makes is that should the line of the contour travel in a direction contrary to that of the sector, then high status growth will move in that direction.
3. High rental districts will tend to move towards open parts where further expansion is possible, and not into a confining *cul-de-sac*.
4. The location of the leaders of the community is important in determining the direction of growth.
5. The trends of movement of office buildings, banks and stores, pull the high priced residential neighbourhoods in the same direction ...
6. The pattern of the most efficient and the earliest network of transportation tends to determine where the high status community will live ...
7. The growth of high rent neighbourhoods continues in the same direction for a long period of time.

8. De luxe high rent apartment areas tend to be established near the business centre in old residential areas.
9. Real estate promoters may bend the direction of high grade residential growth (Hoyt, 1939).

The consequences of these opinions are that the initial pattern of high status settlement laid down during the infancy of a city will persist and it will retain its peculiar character. The wealthy will be confined to this sector of the city, unless of course, they are, for other reasons prepared to live in a sector of lower status. The development of the sector will always be outwards from its initial point, and will be unlikely to bend in deviation from this *original* and *fundamental* direction. On either side of this high status sector there will be sectors of the next status group endeavouring to get as close to the high status homes as possible.

Hoyt's Sectors Applied to Johannesburg

Those processes which produce sectors of similar socio-economic structure in cities have operated in Johannesburg from its inception. This pattern is well known and has been described by Davies (1964), Corke (1959), Lipworth (1961), Fair (1963) and Hart (1974). The sector theory is important in this study because it provides the key concept which underlies the pattern of residential development. This concept reveals some of the most significant determinants of real property values. In particular one should note Hoyt's views regarding the choice of dwelling sites by the community's leaders and the wealthy. These are based upon certain physical and social advantages and they create an identifiable *order* in the real property market. In the present study of Johannesburg it will be shown that the high status sector has been the primary determinant of the city's

residential morphology and its evolution, and that this pattern is likely to be perpetuated.

Some Criticisms of the Sector Model

A number of important criticisms of Hoyt's model have emerged. Firey's (1947) attack encompassed the whole ecological movement. He called both the zonal and sectoral models 'idealised, description' and criticised the former because 'nowhere in the theory is there a definite statement of the *modus operandi* by which people and groups are propelled to their appointed niches in space'. His criticism of Hoyt was not unlike Davie's criticism of Burgess, that

> 'Though vague concentric and sector patterns are apparent in certain types of land use, the more important fact is the variation of land use within these zones ... There are, to be sure some rough cartographic patterns to be found now and then in land use which are just tangible enough to make the concentric-sector theories plausible. Indeed, if there were not, it would be something of a mystery how such theories had come to be formulated.' (Firey, 1947).

Perhaps the most significant contribution of Firey was one pointed to by Johnston (1971) in which he shows that city land use patterns (and therefore, residential land valuation patterns) are not based on purely deterministic, economic mechanisms, but are the product of man's cultural and emotional evaluation of places. In fact the two crucial variables in determining the urban pattern were 'sentiment and symbolism' (Firey 1945) and in support of this view detailed studies of Boston were presented. Johnston (1971) shows that this is a theme which parallels that of Quinn, with his special interest in city history. Firey viewed each city in terms of his 'cultural ecology' which by its tenets demanded their study as *individual* and

unique phenomena. In reviewing these themes one cannot se[illegible] models presented here and those counter ideas of Quinn (1940), Firey (1945, 1947) and Johnston (1971) as being mutually exclusive. In fact this study shows the existence of both zones and sectors while at the same time evaluating the presence of sentimental and symbolic factors as they affect individual groups and their behaviour in the urban land market. This view is corroborated by both Rodwin (1950) and James (1948). The latter remarked that 'the most revealing finding of Firey's study was the remarkable way in which it tended to confirm rather than refute, Hoyt's theory'. Rodwin showed that Firey was selective in his attacks, that he raised points adequately and satisfactorily covered by Hoyt, a criticism which could also be levelled at Jones (1960) who favoured Firey's findings (Johnston , 1971). The Duncans (1960), on the other hand, decried the pragmatic approach to sector definition on the grounds that it was a case of 'making the facts fit the theory'.

In reviewing criticisms to establish a conceptual basis for a city's land-value morphology, one should perhaps be reminded that Hoyt was interested in *where* the leaders of society lived. He saw these people as the major catalysts of the social topography. Where he was wrong was in an over-simplified morphology. As Rodwin points out, each group in the community will have its *own* leaders towards whose homes their residential patterns will be orientated. The result of this is a much more complex pattern than that which Hoyt presented. In the present study,this point of Rodwin's must inevitably be fully subscribed to, and a model showing the high status sectors or zones of different ethnic, racial or linguistic affiliations will be presented. Each of these will in turn have its *own* prime residential land-value region. It will be shown that

sentiment and symbolism illustrated by such items as language, religion and institution, can, and do, have a profound effect on residential development and the market for residential land in certain areas.

One final criticism of Rodwin's is worth pursuing. Hoyt paid no attention to the question of government activity and especially to the planning machine. Here is an area of neglect since by superimposing a plan on the social topography of the sector model, fundamental changes in the form can be achieved. Rodwin (1961) also noted that

> 'Among the diverse conditions sought today are adequate access to employment centres for the principal and secondary wage earner; convenient location to schools and shopping centres; and physical settings providing adequate and attractive housing, open space and recreation areas.'

No mention is made of the important consideration that *different groups* view this decision in *different ways*. For some, noise pollution is irrelevant, for others it is so important as to be a major factor in the location decision. The different behaviour patterns may be cultural or economic. They are the type of consideration this study will pursue.

The Multiple Nuclei Concept

The last of the classical theories is the multiple nuclei concept of the geographers Harris and Ullman, produced in 1945 (Fig. 1.4). They concluded that both the concentric zone, as a general pattern, and the sector aspect, as applied primarily to residential patterns assume (although not explicitly) that there is but a single urban core around which land use is arranged symmetrically in concentric or radial patterns. In broad theoretical terms such an assumption may be valid, inasmuch as the handicap of distance alone would favour as much concentration as possible in a small

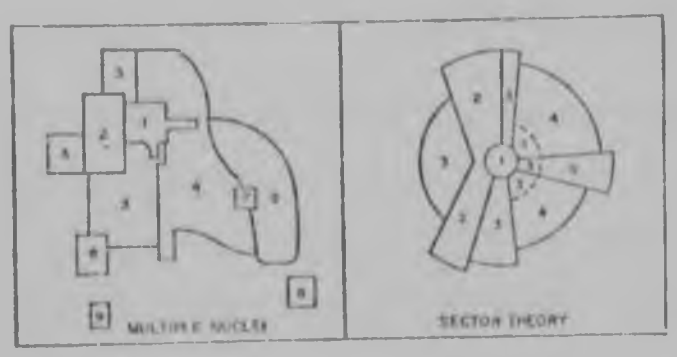


Fig. 1.4 - The Multiple Nuclei and Sector Conceptualisations of Urban Land-Use Patterns (Harris and Ullman, 1945)

Key : 1, CBD; 2, Wholesale and Light Manufacturing; 3, Low-class Residential; 4, Middle-class Residential; 5, High-class Residential; 6 Heavy Manufacturing; 7, Outlying Business District; 8, Dormitory Suburb; 9, Industrial Suburb.

central core. Because of the actual 'physical impossibility of such concentration and the existence of separating factors, however, separate nuclei arise' (Harris and Ullman, 1945). The assumption is tacitly made here that the concentrations are the result of economic forces. The present study looks upon any object in the urban landscape which has a concentrating effect as a nucleus, and therefore, admissible under this heading. As an illustration, a fine stretch of open park-land within the city may form a nucleus of high land values due to its recreational, scenic and other aesthetic qualities. It would be interesting to see how rapidly the land values fell off from a peak adjacent to such park-land. In the same way other features such as shopping centres, schools and universities, recreational facilities and important institutions would all act as nuclei, some attracting high values of residential land, and some affecting them adversely.

Filtering as a Process of Change

An attempt has thus far been made to establish the linkage between urban growth theory on the one hand, and the theory of the urban land market on the other. At this scale the city has been viewed as an *entity*. One is now in a position to abandon the meso-scale of analysis and concentrate upon change in the neighbourhood, since land values vary not only between *groups* of suburbs, but also within *individual* suburbs. The mechanism for the change of individual neighbourhoods is usually referred to as the *filtering process* and this is now examined more fully in relation to housing (Fig. 1.5).

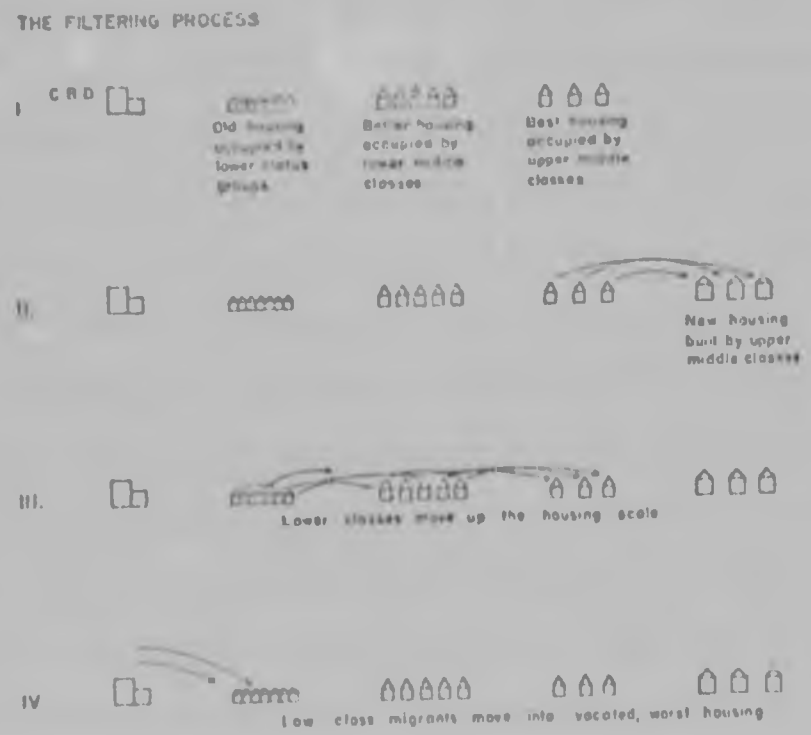


Fig. 1.5 - Simplified Cross-section through a City from CBD to Periphery to Show the Working of the Filtering Process. (Johnston, 1971).

Grigsby (1963) defined filtering as a change in occupancy down the income (or social) scale, of which the converse is the movement of individuals up the quality scale. It is a process which depends on the creation of *new supply*. This leads one to speculate upon the reasons why upper-income groups regularly choose to leave their homes and build new ones. Lowry (1960 who was interested in the process of quality decline in housing and its relationship to value, made the following observations! 'The initial cause of filtering is due to *technological obsolescence* where change in innovation is rapid. This applies particularly to heating and lighting systems, plumbing, the arrangement of rooms and the efficient utilization of space, to the general co-ordination of, and the provision for modern appliances and to the modes of family life' (Lowry,1960). The second consideration is *style obsolescence* which, as a production policy appears to have been borrowed by the automobile industry from the women's clothing industry, and has recently spread to the appliance industry. In house building there are clearly defined fads in architectural style which frequently evoke past styles. ' Moreover, identifiable *newness per se* does not seem to be so desirable a quality; people tend to be apologetic about the raw look of very new houses. Concomitantly, identifiable age, particularly antiquity, is not *per se derogatory*. While it seems unlikely that style obsolescence is very influential in the decision of home owners to change residence, it is almost certainly a consideration to renters who are considering a move to other rental quarters, or the purchase of a home' (Lowry, 1960). *Physical decay*, or depreciation, is the third consideration which causes the upper income groups to leave their homes and build new ones. The term physical-depreciation has always had an ambiguous meaning, and strikingly so in the case of housing. As Lowry says, 'the roof may sag, dry rot may undermine the foundations, the building may settle. These

are difficulties not easily remedied and involve a real decline in structural quality. Deterioration of this type is either implicit in the structure from the beginning, as an incident of fraud, or miscalculation, or it is the inevitable or unpredictable consequence of the passage of time'. Of these considerations the first two are most likely to initiate dissatisfaction with high-income people, and style obsolescence is probably the more important. Other causes of filtering may be added to those of Lowry : sites may become obsolete due to the local intrusion of a deleterious influence, such as the widening of a road; the construction of a power station; the removal of a belt of trees and so on. It is difficult to understand Johnston's (1971) contention that this type of change seldom affects high status areas. Another type of obsolescence namely locational obsolescence, is more serious, since it may affect a much larger number of families. It might be started by a number of cases of site obsolescence which could cause a mass out-migration and a reduction in values as often happens when a free-way or express-way is built without regard for property values. So hypothetically at any rate, neighbourhood change has a structural and social manifestation within the sector which may also be found at the periphery. It has been likened to a chain reaction which once started at some inner point ripples at varying velocity towards the outer margin. It is of course conceivable that the ripple could occur in the opposite direction as well. The market for residential land will fluctuate in sympathy with the filtering process, so in this sense filtering is a determinant of land values.

Social Area Analysis

Leading logically from concepts of the filtering process and the models of Burgess and Hoyt is the work of the social area analysts Shevky and Bell (1955). The relevance of this school of thought to the residential

mosaic and the concomitant property values lies in the questions which it seeks to answer. *Firstly*, do different population groups tend to occupy separate residential areas, and if so why? ; *secondly*, how many such basic dimensions of this differentiation exist ?; and *thirdly*, do the different groups tend to occupy certain types of locations relative to other land uses in the system ? (Shevky and Bell, 1955). The answers to these questions reveal three dimensions of the spatial divisions of society : *socio-economic status*, *family status* and *ethnic status*. Johnston (1973) notes that groups separate from each other in order to maintain their identity and to reduce contact with other groups. So the system of residential differentiation reflects group attitudes to space and accessibility. In a purely spatial sense, as Berry (1972) has observed, individuals of similar socio-economic status tend to be sectorally distributed, those of similar family status are arranged in zones and those of similar ethnic origin are gathered in discrete clusters. The resulting pattern is one of radial lines superimposed upon concentric circles which create a cellular mesh with each cell deemed to have a degree of social, ethnic and economic homogeneity and with a similar family status. Both Lipworth (1961) and Davies (1964) have noted similarities between the spatial disposition of selected social, economic and land use variables in Johannesburg and the models of intra-urban socio-economic organization. Cohen and Hart's (1973) study of Portuguese immigrants in Johannesburg showed that this alien minority group tended to cluster in residential enclaves that offer both cheap housing and proximity to place of work.

Some important considerations for the residential land market emanate from the views of the social area analysts. Firstly, the homogeneous nature of sub-groups in residential areas implies the homogeneity of property prices

in such areas. Secondly, this characteristic implies also that urban processes of growth, decay and renewal will have similar spatial manifestations. Finally the development of new housing at the rural-urban fringe will be in cells which conform both physically and socio-economically. This is important since it permits valid comparisons of property prices to be made over time.

Factorial Ecologists

Factorial ecology was born out of the critical examination of the provocative social area model, which in turn has its roots in the work of the early urban ecologists (Hart, 1974).

It seeks to describe and explain, using factor analytic methods, the areal differentiation of the characteristics and behaviour of human populations (Rees, 1971). Hart (1974) notes that the greatest research effort in factorial ecology to date has been at the urban scale and that a substantial body of cross-cultural urban factorial ecology has emerged. These studies, based mainly upon Western urban-industrial societies have shown that the residential areas of these cities may, in most cases, be differentiated according to economic status and the family structure and age of the sub-district populations. In instances where societies are ethnically heterogeneous the urban residential areas have been found to be further differentiated according to ethnic composition (Timms, 1970; Timms, 1971). Both economic and family status follow the broad findings of the social area analysts.

Factorial ecology became possible and feasible with the advent of the digital computor. This innovation made possible the handling of the vast data matrices which are a characteristic of these studies (Hart, 1973). The primary significance of employing factor analysis in social ecological

studies was that it made explicit and objective the multi-dimensional urban structure implied in the work of Burgess and Shevky. It also relates specific urban social dimensions in a general way to the spatial views of city structure held by Burgess and Hoyt (Hart, 1973). A model of the socio-economic structure of Johannesburg based upon the factor analytic approach (Fig. 1.6 and Table 1.1) reveals that the cellular characteristics have considerable relevance for the residential property market. If the symbolic designation of each cell accurately describes the characteristics of its population, then it should simultaneously describe the consumer preferences of that population insofar as housing is concerned. This proposition will be tested in a subsequent chapter of this thesis.

Table 1.1 - Simple Dichotomization of Socio-Economic Dimensions
(Hart, 1973)

Factor 1 Socio-Economic Status	Factor 2 Stage in Life Cycle	Factor 3 Southern European Immigrant	Factor 4 Jewish and Afrikaans Population	Factor 5 Non-White Population
High (H)	Young (Y)	Many (M)	Many (M)	Many (M)
Low (L)	Old (O)	Few (F)	Few (F)	Few (f)

The models and processes of urban growth and urban structure examined thus far have illuminated a number of questions relating to the spatial pattern of residential development and residential land values . They reveal that cities are constructed in zones, sectors and nodes with a social topography which in terms of income, occupation, religion, life style and

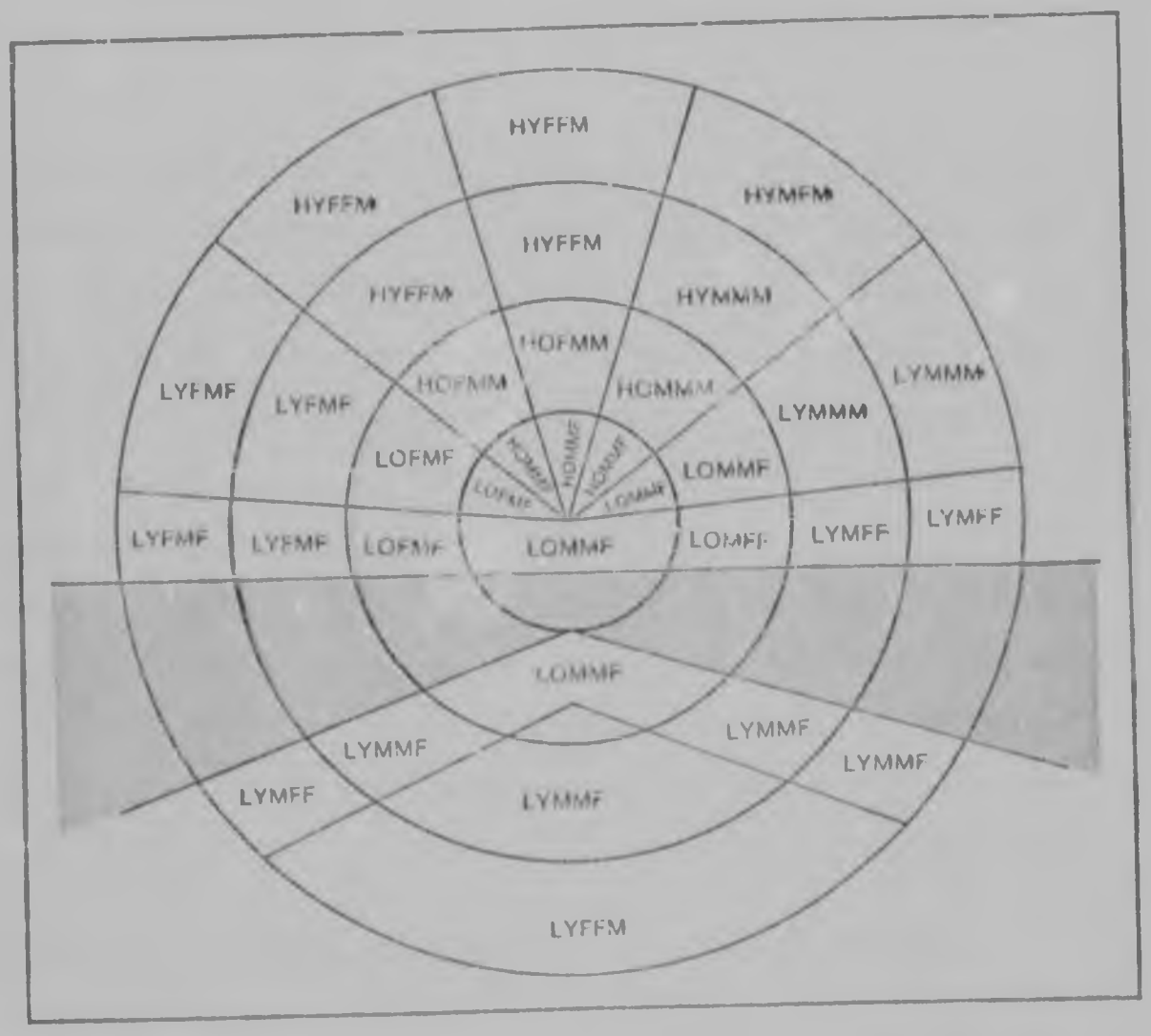


Fig. 1.6 - A spatial model of the socio-economic structure of Johannesburg. Letters in cells refer to the dichotomized factors of Table 1.1. Each cell contains five letters illustrating the character of the cell in terms of each of the five factors. (Hart, 1973).

stage in the family cycle is not uniform. To further understand this lack of uniformity in socio-economic status and urban behaviour, and the land valuation patterns which result from it, one must understand the reasons for the development of this social topography. The views of Louis Wirth (1938) are apt in this connection.

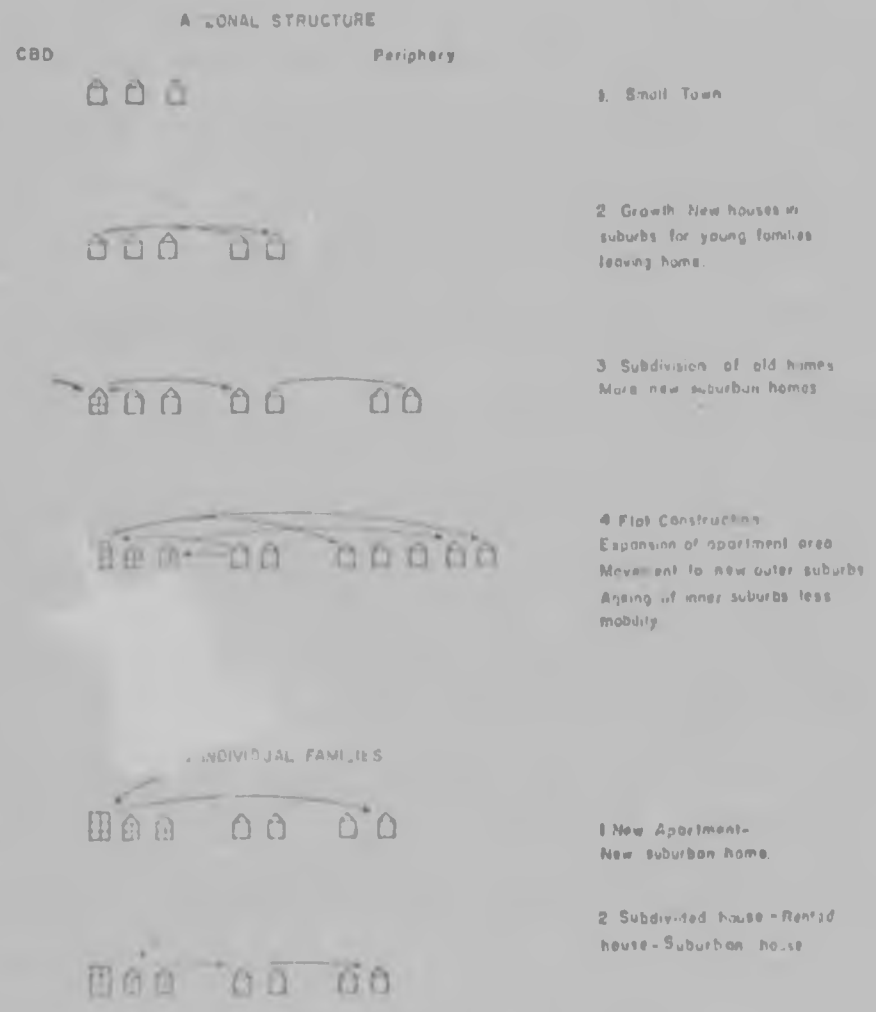


Fig. 1.7 - Simplified Cross-section Through a City from CBD to Periphery to Show the Working of the Family Cycle Location Process (Johnston, 1971).

Louis Wirth : A Behavioural Contribution

The housing requirements of an individual are likely to vary with the *life style* he chooses. In general people choose familism, consumerism or careerism, or combinations of these in their style of life. These are the three major life styles. In terms of residential patterns, family-

centred households tend to choose single-family units because of the space factor, the ownership factor and the family security factor. The career- and consumer-oriented individual tends to choose the rented apartment. At the outset therefore, one is confronted with a simple model of two housing markets. As has been noted elsewhere, an objective of the present study is to describe the way these two markets arrange themselves in space. This may be done by examining the transportational behaviour of the different groups, since transport overcomes the friction created by space.

The Journey to Work

Because employment is concentrated at the city centre the journey to work is the principal trip originating from a household each day. For those who are powerfully oriented towards the city centre the accessibility function assumes great importance, and they locate their homes as near the centre as possible. Residential land close to the centre is therefore more expensive than that further out. This pattern based on accessibility yields a curve of the form of a negative exponential function which declines rapidly with distance in the non-residential uses and then more gradually through the suburbs. The pattern was that found by Knos (1962) and others. The model makes the assumption that the city is mono-nucleated and that the housing markets are segregated with apartments close to the CBD and single family units further out. It is a simple two-zone model. Johnston (1971) comments that it does not allow for inertia since many older homes do not make way for flats as the owners may be relatively rich family-oriented persons, there may be no demand for land for apartments, or the sites may simply be unsuitable for a change in land use. This pattern is found in Johannesburg.

Other Journeys

While the first model was based on accessibility to work, or the desire to minimise commuting costs, a common trait of career-oriented households (Richards, 1963), Johnston (1971) shows that in the family-centred units, other trips such as to school, shops and recreational facilities may assume a greater importance, and the minimization of *total* costs may involve a long commuting trip. So the greater the commitment to familism the less important is the centre of the city. This has great significance for the land market since individuals and families of this ilk will seek cheaper land on the periphery where stands are larger, the air is cleaner, the traffic less dense, the noise level abated and the open spaces more extensive. These people will tend to have younger families, lower incomes, and be at an earlier stage in the life cycle, with the converse applying to individuals in the inner suburbs. This pattern is borne out by studies in Johannesburg (Hart, 1974).

The Age of Housing

Another consideration is the *age* of housing,with old houses near the centre of the city and new ones at the margin. The filtering model suggested the passing down of housing in the social scale which might be construed as incompatible with the young-marrieds on the fringe. This is however not necessarily so, since the land on which the older homes are built, because of its location *vis-a-vis* the peak-land-value of the city, is usually too expensive for lower income groups. This housing is either subdivided, thus giving a greater return with the large houses being occupied by groups of career-oriented individuals who give their home distinctive names, such as, in the case of Johannesburg, The Vicarage, The Eton Arms,

Milnerloo, The Pink House and so on, or single families with similar life styles occupy them. So the zonal pattern persists but with a sectoral overlay. Another factor relates to the money market. Mortgages are difficult to obtain on old deteriorated housing which is a reason why the older homes are usually occupied by older people who do not feel the need to join the filtering process (Johnston, 1971).

The Residential Cycle

Foote and others (1960) have developed a residential cycle which models the residential behaviour pattern typical of the individual. The cycle describes the various payments made in exchange for residential accommodation during the life cycle, and although it says nothing about *location*, this is readily gleaned when viewing it against the models presented above (Fig. 1.7).

'From the time of its formation by a marriage, until shortly after its dissolution by death of one of the mates, a family tends to go through this typical sequence of changes of residential status :

1. Rental of small furnished apartment, perhaps briefly preceded by living with parents of one mate.

2. Rental of larger unfurnished apartment connected with changes of husband's jobs.

3. Purchase of small second-hand house, building of small equity.

4. Purchase of larger new house, often coincident with further changes of husband's jobs or income: further increase of equity.

5. Expansion of house by some remodelling; completion of payments; "settling down" often while children are in high school.

6. For a few, custom-building of a house.

7. Children leave home, neighbourhood begins to deteriorate.

8. Sale of house longest occupied; purchase of smaller house or rental of apartment near centre of city.

9. Death of one mate; brief retention of separate home by survivor.

10. Sale of house, surviving mate moving in with a child or into an institution' (Foote, 1960).

The broad outlines between Foote's cycle and that of Abu Lughod and Foley (1960) are substantially similar. It is immediately apparent, of course, that for certain categories of the market the cycle is very important. In the case of small homes on small sites at low prices, but within a high status sector (the two are not mutually exclusive in terms of Hoyt's model) step 8 can radically upgrade the price of land. This is because retired people, looking for a smaller home when the space required by the children is redundant, are also sufficiently well endowed financially , to raise prices in these localities, since they will recently have sold large homes (step 7). This is a feature of certain parts of the Johannesburg housing market and in this sense is a determinant of value.

To conclude one may quote Johnston (1971) that, through the operation of the *land-value mechanism*, the different preferences for accessibility, space and seclusion, plus the spatial patterns in the housing stock, a zonal pattern of life style choices should emerge within the city.

The Migrant Minority - Group Cluster

One final social determinant of land value and residential development needs to be examined with its conceptual influences. This is the location of minority or migrant groups in the city and their effect upon the market (Fig. 1.8). Johnston (1971) identifies migrants as poor, unskilled people who are unused to city life who tend to form a cluster or an urban village for social and economic security. They are characterised by a lack of integration with the host community and a lack of mobility,

both social and physical. While it has been claimed that they become integrated with the passage of time the model presented here will produce evidence to the contrary. It will be shown that the spatial manifestations of these groups are strongly controlled by ethnic, linguistic, religious and economic considerations, that their cultural overlay sets them apart, and that this manifests itself in the land market by an upward moving price because of the desire of others of the same group to move into the area. It also shows that the host moves out of the locality as a result of pressure, on the one hand, and due to the possibilities of easy gains in a sellers' market, on the other. Here one is dealing exclusively with the lowest end of the socio-economic spectrum. At the upper end there are also ghetto-like enclaves of groups found in Johannesburg who for cultural reasons have resisted integration with the host, particularly where inter-marriage is concerned. This racially segregated group has affected the housing market

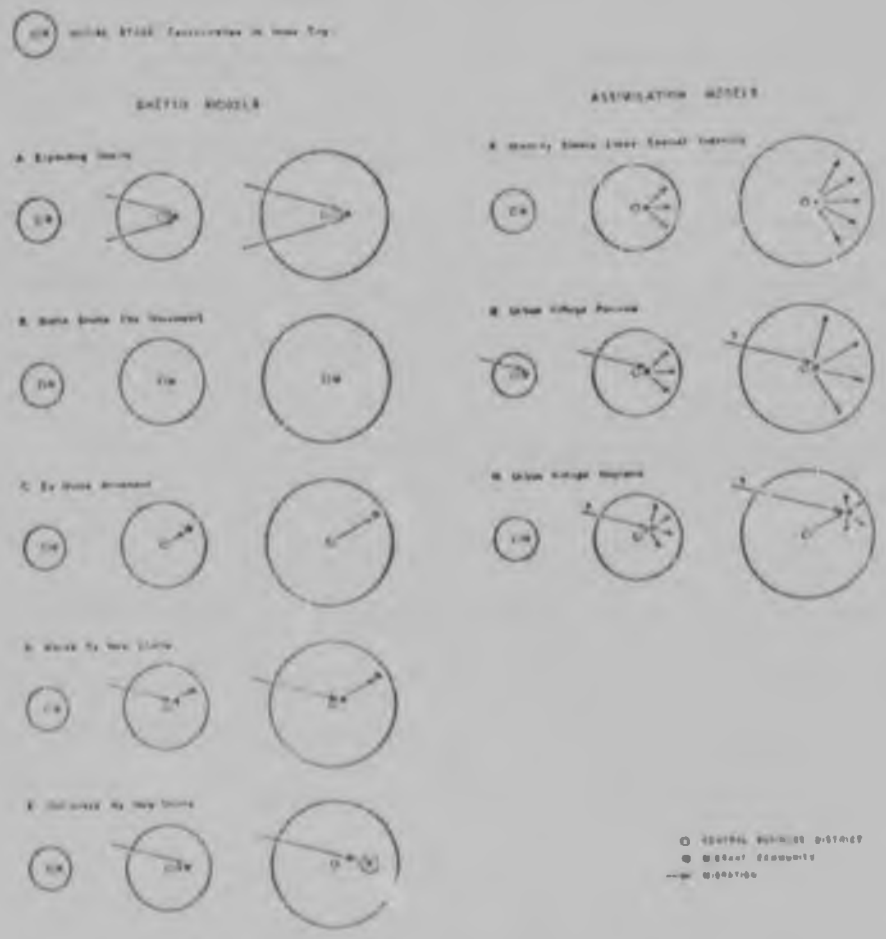


Fig. 1.8 - Schematic Diagrams of a Growing City, Showing the Various Hypothesised Distribution of Migrant Groups (Johnston, 1971).

considerably in certain areas, particularly where its institutions are located. Whereas the first type of migrant or minority group cluster tends to be found in the zone of transition (Burgess 1924), the latter is found in the penultimate zone and is characterised by rather less propinquity between members.

This chapter has reviewed a number of models which form the basis of much of our understanding of socially rooted determinants of residential property values and of residential development.

Socially Rooted Determinants of Residential Land Values

1. Socially rooted determinants dependent upon physical factors.

These are a set of determinants many of which were identified by Hoyt (1939). They encompass the inherent physical qualities of a site. More specifically, they reflect the views, the climate, the soils, the degree of prominance of the locality, the freedom from pollution by smoke or noise, the quality of the natural and exotic vegetation, the aspect, the slope and the facing, the degree of protection from winds and floods, the shape of the site and finally the relationship of the site to those in its general locality. Social values are attached to all these essentially physical qualities.

2. Socially rooted determinants dependent upon accessibility

Much value is attached to distance in the urban system. Watson (1955) has described this syndrome. He notes that distance can be measured in a variety of ways - physically, chronologically, emotionally,

psychologically or behaviourally. All have a social value attached to them which can be translated into monetary equivalents. The most important distances affecting the household are those to the place of work of the main wage-earner (usually the CBD) and those to the schools, shops and recreational facilities affecting the rest of the family. The geographical location of the household with regard to these distances will to some extent determine the value of the property it occupies.

3. Socially rooted determinants dependent upon site size

These spatial criteria refer specifically to the size of a site. Many, such as Beckman (1957) regard this as a key variable in the property-price equation, and probably because of its influence much importance is laid upon it by certain members of the community. This importance is reflected in the prices paid for larger sites.

4. Socially rooted determinants dependent upon status

Status is an extremely important factor in determining property prices in urban areas. As Johnston (1973) notes

> 'to transmit one's status in general terms, housing and, in particular, one's address are widely accepted as a symbol of position in society. Unlike many other symbols, address is usually not ephemeral; the characteristics of an area's social environment often remain constant for several decades, even though the residents may change several times over, and these characteristics become widely known, through such generally accepted indices as property values, neighbourhood appearance and dwelling styles'.

In another paper (1972) Johnston observes that '... there seems to be general agreement within cities of a district's social position ... the higher a district's status, the more desirable it is as a living area for most people'.

The influence of status can also be interpreted in other ways, some of which have been detailed in the present chapter. The leaders of society imbue their residential areas with high status just as migrant communities have the opposite effect. Areas in which the population is, for the most part elderly, will inhibit settlement by the young. Areas in which language, religion or ethnic origin play an important role in the community will be accorded a lower status by the host community. Status is therefore a wide ranging determinant with many interpretations.

5. Socially rooted determinants dependent upon historical factors

The importance of history as a determinant of residential property values reflects those situations which are usually ascribed to 'historical accident'. Every township is conceived, planned, designed and laid out both in space and in time. Inevitably the entrepreneurial decisions regarding the number of stands, the size of the stands and the nature of the survey reflect the times, and their imprint remains with the township for a considerable period. In this sense history determines land values.

6. Socially rooted determinants dependent upon the income of individuals and their socio-economic status

The level and the range of residential property prices in any urban system is dependent upon the range of incomes and the socio-economic status of the population. Income is the final constraint imposed upon the potential house-owner. Where the number of participants in the housing market is large and diverse there will concomitantly be a great diversity in prices.

Socially Rooted Determinants of Residential Development

The extension of the residential areas of an urban system is in the first instance a function of population growth. This must be true since the object of all residential townships is to house people. However, the nature of residential development is dependent upon a wide range of factors, most of which are economic, and will therefore be examined in the next chapter of this study. Those that are socially rooted emanate primarily from the processes of urban growth. These are the processes of invasion, succession, agglomeration, filtering, renewal, blighting, renovation, decentralization and dispersal. Residential development is also positively influenced by topographic factors, by the movement of other functions, such as offices, stores, banks and factories, by the location of important nearby towns and by the roads connecting towns.

Having examined the theories of urban growth and of the socio-economic structure of cities, and having established a set of socially rooted determinants of residential property values and residential development one can move to a consideration of the economically rooted determinants.

CHAPTER 2 - THE ECONOMICALLY ROOTED DETERMINANTS OF RESIDENTIAL LAND VALUES AND RESIDENTIAL DEVELOPMENT

This chapter reviews the economic accessibility models, extracts from them the economically rooted determinants of property values and those of residential development, and examines their limitations and their relevance to the present study. Many of the models chosen for review are concerned as much with commercial property as with residential property since they consider the principles governing values in each class of property to be fundamentally similar. The contributions of the physiocrats, the agricultural location theorists and the classical economists are included since they reveal the linkage between land fertility, land use, economic rent, transportation and land value. These elements which are all conceived as market phenomena appear in various guises as the underlying parameters in the economic accessibility models.

The approach of the economic school of thought with regard to property values is defined by the fundamental rôle of the market mechanism and the natural forces of competition among economic activities in an urban area. The assumptions upon which the economic models are founded are, in the main, severely limiting and far removed from reality. Despite this, however, they generate useful and testable spatial models (Bourne 1971). Because of their constraints they are regarded as belonging to the economic market category.

The Limiting Assumptions

The limiting assumptions are described by Alonso (1964) in the introduction to his study *Location and Land Use* :

> 'the approach ... will be ... that of economics, and from this wealth of subject matter only a pallid skeleton will emerge. Both the Puerto Rican and the Madison Avenue advertising man will be reduced to that uninteresting individual, economic man. The squalor of the pawnbroker and the flair of the exclusive fashion-house will disappear into that grey entity, the firm. The exquisite legal complexities of real estate will vanish into straightforward buying or renting, and the rich topography of the city will vanish into a featureless plain'.

These limiting assumptions can, of course, be severely criticised for what they overlook, and one sees that in contrast to Chapter One, the market approach seeks to *eliminate* most of the social determinants of value. Bourne (1971) criticises this aspect of the economic market approach saying 'man is not entirely an economically rational animal with a single set of market criteria and with complete information at his disposal.. In fact, contrary to the view of this school of thought, his decisions tend to reflect individual preferences, objectives, ignorance and even errors. The multitude of economic forces is extremely complex while there are also technological and transportational innovations, social attitudes and urban development policies which add greater complexity to the patterns of urban land use than the pure accessibility models would suggest (Bourne, 1971). The approach in this chapter is chronological and follows the pattern of the flow chart below (Fig. 2.1).

The Physiocrats and the Theory of Rent

The economic theory of land values began with the interests of the 18th century Physiocrats in the theory of *economic rent*. These theorists pursued their interests in an agrarian economy, so it was understandable that their interpretation of rent pertained to agricultural land, an interpretation still followed today (Alonso, 1964). Cities were relatively unimportant, and were regarded as parasites in the landscape. Alonso notes that this lack of

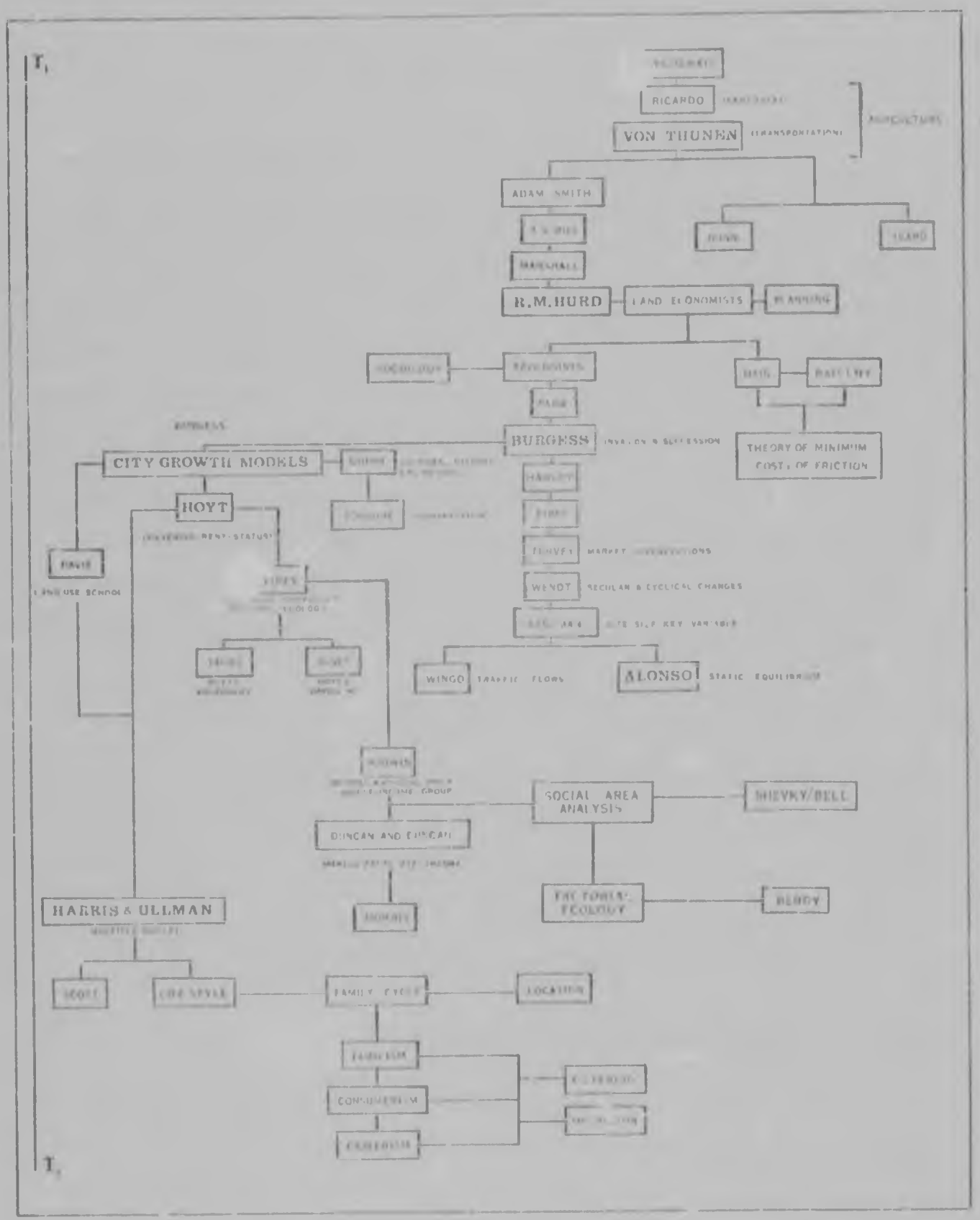


Fig.2.1 Flow-chart Showing the Evolution of the Theory of the Urban Land Market (Repeated from the Introduction) (Hart, G.H.T., 1974)

urban interest continued until late in the 19th century, and in some quarters persists to the present time despite the great increase in the importance of cities.

The foundation of present day theory is David Ricardo's classical theory of agricultural rent which he produced at the beginning of the 19th century. His theory, although well-known is reproduced in outline here. He said the first land to be cultivated in any area would be the land of the first quality. As the demand for agricultural products increased so land of the second quality would be brought under cultivation. This process continued until theoretically all land was in production. The rent upon a piece of land of a particular quality was determined by its *marginal productive advantage* over land of the next quality (Ricardo, 1817). Alonso (1964) relates that like Von Thünen, Ricardo recognised the advantage of proximity to the market in transportation savings, and that these savings would also accrue to landlords as rent. Ricardo's primary interest was, however, not in the *value* of land, but in the *fertility* of land, and he consequently offered no method of judging value. The great importance of Ricardo's work to contemporary theories of land values and to the present study is his clear statement of the relationship between the *quality* of a site (he used the term *fertility* in an agricultural setting) and the *rent* it could command. Clearly, although a wide-ranging term, site quality is a primary determinant of site value.

J.H. von Thünen's Theory of Rent and Land Use

In 1826 J.H. Von Thünen, sometimes called the 'father' of location theory, produced his theory of rent and land use, and therefore, the first theory of land values. This was applied specifically to agricultural land. He developed bid rent functions of the form of those in Fig. 2.2, and each land use bid against the others for the use of land. Land was in each case

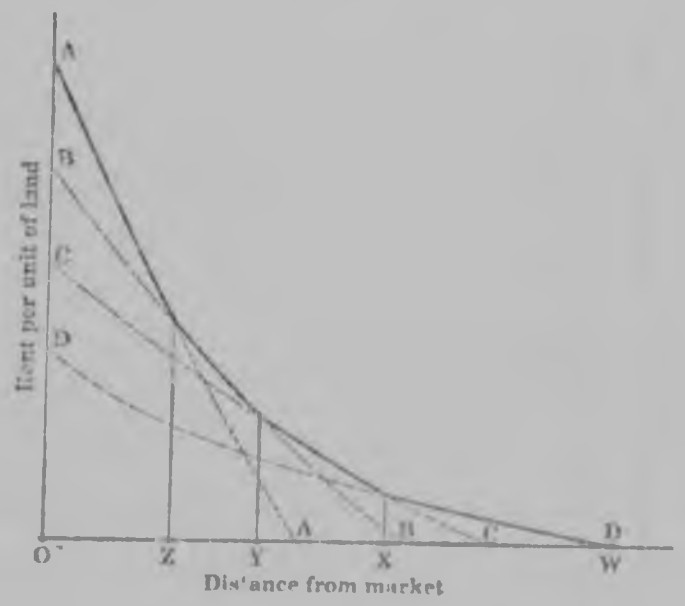


Fig. 2.2 - Von Thünen's Bid-Rent Curves (Isard, 1956)

assigned to the highest bidder. The rent each crop could bid at each location was the savings in transportation of its product which that site afforded in contrast with a more distant site (Alonso, 1964). Land at the margin of production yielded no savings in transportation and therefore, paid no rent. This idea is fundamental to all accessibility models and while Von Thünen produced one in which the distance function was *implied*, Dunn (1954) and Isard (1956) have extended this theory with *explicit* distance functions. The model of Von Thünen was the first to show that the linkage between land use and land value could be interpreted in terms of accessibility to some central point. The fundamentals of these accessibility characteristics can also be seen in Burgess' Concentric Zone model. It can also be shown that where both the price of residential land and its spatial development are concerned, transportation is an important factor. So, as a consequence of the accessibility requirements of human communities it may be argued that transportation can determine the broadest limits of urban property values. Von Thünen also makes a contribution to the subject of land

use competition. The competing properties are those which are located at the margins of homogeneous land use zones in the areas which Hoover calls the'zones of anticipation'. Here property prices are artificially increased in anticipation of changes in use and in a manner not very different from that described by Burgess (1929).

Contributions of the Classical Economists

Von Thünen was followed by the great classical economists of the nineteenth century, Adam Smith, J.S. Mill and Alfred Marshall but these erudite scholars produced little that would enhance our knowledge of the mechanism by which values in land are spatially differentiated. Their views are included at this point since they were instrumental in introducing so of the constraints which are found in the contemporary economic models. Adam Smith said nothing about land values, and contented himself with the remark that 'urban land is unproductive and the behaviour of the landlord consistent with the monopoly situation'. Nor did he offer any views on land use competition or the theory of competing rents. Mill's view was not substantially different. He said that the value of a fixed and limited supply of 'houses and building ground, in a town of definite extent' will be such that the demand is just sufficient to carry off the supply offered. This is once again consistent with monopolistic competition, with no mention being made of *peripheral* growth. The town was seen largely as a *static organism*, and not as a dynamic system, in which land value is largely dependent upon *growth*. Marshall (1916) in his *Principles of Economics* devotes considerable space to the question of urban land values. However, his interests are almost exclusively in what Alonso calls 'the profit-making land uses' such as the retailing component, its associated wholesaling system and manufacturing industry. He was concerned with location, and defines 'situation value' as the sum of money values of the

situation advantages of a site (Alonso, 1964). 'Site value' said Marshall, 'was the price which a site would fetch if cleared of buildings and sold in the free market, and this would be equal to its situation value plus its agricultural rent.' This is the first indication since Von Thünen of the economist's interest in land use competition, with the various components of the market bidding against each other for the use of a site and that use capturing the site 'from which the most profitable results are anticipated'. Another important factor in land values to which Marshall paid only indirect attention is the [illegible] of the site. He stated that 'if land is cheap he (the *entrepreneur*) will take much of it; if it is dear he will take less and build high'. This is an example of achieving *equilibrium* in the factors of production of an enterprise. Marshall concludes that 'the industrial demand for land is in all respects parallel to the agricultural'. So, in the urban as in the agricultural case, potential users of land make bids for various sites based on their respective location advantages, and the highest bidder captures the land in each case. The parallel does not extend to the *fertility* of land (Alonso, 1964).

Marshall's analysis contains the essentials of present day theory as it is structured around the market mechanism, but his theory does not extend to residential land (Alonso, 1964). Alonso (1964) cites other omissions :

> '... the size of the site is almost universally ignored. Yet the market equlibrium (in which the market is cleared) must concern itself with quantities as well as prices. (*In this study an attempt is made to show that site size is a diminishing utility with all except the very wealthy and that this is an example of the inconsistency of the economic models, where more of a good is not necessarily an advantage.*) Later writers, however, seem content with considering a location as a dimensionless point, and speak of bidding for a site, paying no attention to its size. The matter can be made very clear at the level of the firm. If two firms realize the same advantages with respect to a location, but one requires a site only half the size of that required by the other, the former will be able to bid a price per square foot of land at that location twice as large as the latter. Thus, for the purposes of a theory in which the land market is cleared, and for the purposes of determining the bids per unit of land, the size of the site must be considered, and the point of location must be given the attribute of extension.'

The question of site size to which Alonso directs attention here is of fundamental importance in this study. In the Johannesburg housing market there is a direct correlation between the size of a site and its price. In fact in some localities where space is a highly-prized attribute of residence this factor manifests itself in very high prices. An attempt will be made to show that for any particular area there is a standard site size which adequately reflects the requirements of that locality. The relationship between the location, the price and the size of a site will be examined in the final chapter of this study. An attempt will be made to show that site size is an important determinant of value.

R.M. Hurd's Model of City Land Values

The early nineteen hundreds saw most of the activity in this branch of economic theory pass to America and this change was emphasised by Hurd's (1903) classical statement of the problem in his *Principles of City Land Values*. His theory of urban land values is fundamental to all accessibility models and, therefore, to the present study. It closely resembles Von Thünen's model for agriculture :

> 'As a city grows, more remote and hence inferior land must be utilized and the difference in desirability between the two grades produces economic rent in locations of the first-grade, but not in those of the second. As land of a still more remote and inferior grade comes into use, ground rent is forced still higher in land of the first grade, rises in land of the second grade, but not in land of the third grade, and so on. Any utility may compete for any location within a city and all land goes to the highest bidder ... Practically all land within a city earns some economic rent, though it may be small, the final contrast being with the city's rentless and hence, strictly speaking, valueless circumference.'

In summary :

> 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 (Hurd, 1903).

From the viewpoint of this study, and from that of other theoretical constructs, it must be clear that Hurd's statement is similar to Ricardo's classical statement on agricultural rent. One notes also that Hurd follows Marshall in linking urban land value theory with agricultural location theory, a fact which, when one considers Dunn's (1964) thesis, and that of Isard, (1956) is seen to be germane to this study. Hurd does not consider the thorny problem of the *size* of the site, (Alonso, 1964) and he bypasses the question of residential land values by saying that their basis is *social* and not *economic*. He allows that 'where residences contain more than one tenant... the basis of value is economic and conforms closely to the principles governing business property,' but does not explore the *nature* of this type of demand or make clear why residences with more than one tenant should differ conceptually from single-family residences (Alonso, 1964). Hurd's important contribution is in his succinct statement of the relationship between rent, location, convenience and nearness to the city centre.

Contributions of Land Economists and Planners

As indicated by the flow diagram, in the early 1920's there was a divergence in the development of theory. The dichotomy lay with the new school of land economists and planners, represented chiefly by R.M. Haig, on the one hand, and E.W. Burgess and R.E. Park, the social ecologists, on the other. It was at this point that the market-controlled school of thought diverged from those who followed the social behavioural school. The latter have been examined and their relevance to the present study assessed.

Haig's theory presented little that was new. 'Rent appears as a charge which the owner of a relatively accessible site can impose because of the saving in transport costs which the use of his site makes possible', and a prospective occupant gains the use of a site by out-bidding competing users. Alonso (1964) points out that a significant contribution of Haig's theory is 'its strong statement of the complementarity of rent and transport costs.' He goes on, 'transportation is a device to overcome the "friction of space", and the better the transportation, the less the friction. But, 'while transportation overcomes friction, site rentals and transport costs represent the cost of what friction remains'. Haig recognises the location factor by saying that the costs of friction are never constant and will vary with the individual site. 'The theoretically perfect site for the activity is that which furnishes the desired degree of accessibility at the lowest costs of friction' (Haig, 1926). Alonso (1964) notes that certain profound hypothetical considerations emanate from this view: '... the layout of the metropolis ... tends to be determined by a principle which may be termed the minimizing of the costs of friction.' Such a severe constraint does not hold in the case of Johannesburg since it presupposes that land values are ordered entirely by the transportation component.

The theory of minimum costs of friction has, partly as a result of Firey's (see Chapter 1) view of the important rôle of sentiment in determining land values, been generalised to include non-economic factors :

> 'Ecological units tend to distribute themselves throughout an area so that the total costs of gaining maximum satisfaction in adjusting population to environment (including other men) are reduced to the minimum... As used in this hypothesis, the concept of cost has a very broad meaning. It includes much more than economic costs. Negatively it includes dangers encountered and disagreeable experiences undergone. It embraces whatever of value is given up or is enjoyed in lesser degree in obtaining any given pattern of adjustment.' (Quinn, 1950)

Others of the market oriented approach have shied away from the severely constrained but generally applicable economic accessibility models with views such as those of Turvey (1957). In his *'The Economics of Real Property : An Analysis of Property Values and Patterns of Use'*, he dwells at length on the subject of the imperfections of the market. It is a well accepted fact that the majority of residential sales in the urban land market are effected with very little knowledge of the range of possibilities and alternatives. Most typical buyers are influenced by salesmen, who, while their selling techniques are probably sound, themselves have a substantial ignorance of the market. Added to these imperfections are questions of legal complexities which are relevant to one city only; problems of zoning and taxation, the question of the permanence of structures and the intensities of use. Turvey (1957) notes that if buildings had very short lives the actual shape and form of the town would be close to an equilibrium pattern, but since, as Lowry (1960) says, there is a significant portion of a dwelling which gives little or no evidence of deterioration over time, most towns never reach equilibrium conditions. So it is therefore impossible to present a *comparative static analysis*

since the determining background conditions are insufficiently stationary in relation to the durability of the buildings (Turvey, 1957). The outcome of this condition is the thesis that each town should be studied temporally and spatially so that events of the past and past morphologies can be used to interpret present and future patterns. In Johannesburg the problems created by imperfections of the market and by zoning practices are numerous. Since no master plan exists for the orderly development of the city as a whole, individuals are compelled to purchase with a substantial ignorance of the market. Consequently *ad hoc* zonings, changes of density and bulk factors, subdivisions and expropriations proceed to the detriment of particular areas and these contribute to declining property prices. In this sense the factors listed by Turvey (1957) are important determinants of residential land values and are probably administratively rooted rather than economic.

Wendt's Theory of City Land Values

Wendt (1957) presented a market oriented semi-mathematical model which considers the city as having a finite stock of land. His theory is aimed at *secular* and *cyclical* changes in aggregate land values, and in this it differs from other theories such as Alonso's (1964) which are aimed at *static equilibrium* and the description of variations of land values within the city at a given point in time. The theoretical model is offered in the following terms :

$$V = \frac{f_x(P,Y,S,P_u,PI) - \Sigma(T+O_c+I_{im}+D_{im})}{f_x\,(i,R,Cg)}$$

Where V = (aggregate) value of urban land

f_x - expectations

P = population

Y = average income

S = supply of competitive land

P_u = competitive pull of area

PI = public investment

T = local taxes

O_c = operative costs

I_{im} = interest on improvements

i = interest rates

R = investment risk

C_g = capital gain possibility

D_{im} = depreciation on improvements

It is readily apparent from the notation and terms of the equation that the theory is not amenable to testing and remains largely hypothetical. However, its relevance to this thesis on Johannesburg lies in its cyclical analysis of urban land values. Since the study of the past is useful only insofar as it aids prescription and prediction for the future, cyclical analysis is clearly a sound approach to an examination of property prices.

Wendt's theory is also important in its use of economic parameters relating to the money market and to other cyclical indices such as the business and building cycles. These are employed in conjunction with other measures of economic change in the study of Johannesburg.

Beckman's Theory of Residential Land Values

Beckman's (1957) theory is one of residential land values only and is in many respects similar to Alonso's (1964) model. It is a mathematical model and is significant in its use of the 'size of the site' as a key variable. It has two explicit assumptions : that every household chooses its residential location so as to maximise its living space preferences in

terms of housing expenditure, and that the average expenditure on residence and commuting of the household is a *well defined function of income*. Alonso (1964) points out that these assumptions imply that the time and bother (i.e. behavioural phenomena) of commuting do not affect location decisions. One of Beckman's conclusions is that the wealthier families settle on the periphery of the city (Alonso, 1964). As with similar models discussed elsewhere, Beckman's is fouled by its constraints, it is inconsistent with reality and reminds one of an opposed pattern of high status sectoral settlements. However his statement on the complementarity of income and residential location is very important.

Brigham's Theory of Residential Land Values

Brigham's (1965) '*The Determinants of Residential Land Values*' presents a model whose assumptions are that the value (V) of a particular urban area site is functionally related to its accessibility to economic activities (P), to its amenities (A), to its topography (T), to its present and future use (U - i.e. industrial, commercial or residential), and to certain historical factors that affect its utilization (H). The basic land value model of the i^{th} site then becomes :

$$V_i = f(P_i, A_i, T_i, U_i, H_i)$$

Brigham notes that for each component of the market the significance of the accessibility amenity and topography parameters will be different, so that the basic equation is restated :

$$V_{ri} = f_1(P_i, A_i, T_i, H_i,)$$

$$V_{ci} = f_2(P_i, A_i, T_i, H_i,)$$

$$V_{Ii} = f_3(P_i, A_i, T_i, H_i,)$$

where the subscripts r, c and I denote each component. The analytical

tool employed is multiple regression analysis, but Brigham points out that 'it is impossible to quantify all the important land-value determinants and incorporate them into the regression model. Many of the qualitative forces that shape the structure of urban land values can be considered at an *intuitive* level ...' (Brigham, 1965). He continues to develop an accessibility potential variable of the form :

$$P_i = \sum_{j=1}^{N} \cdot \frac{E_j}{a+b\,D_{ij}^{c}}$$

which assumes the CBD is *not* the only work place in the city, with this equation measuring the accessibility of a residential site. P_i is the accessibility potential of the i^{th} site, E_j is the total employment in the j^{th} work place, D_{ij} is the distance between sites i and j; a, b and c are parameters; and the summation is over all of the N work places in the community. Stated in this form the accessibility potential of site i varies directly with the employment opportunities surrounding it and inversely with the distance between it and these employment opportunities (Brigham, 1965).

Brigham's model, which can be classified with the accessibility or market oriented group is mentioned not for what it offers, but for its obvious deficiencies. Here he has hypothesized that variations in land values reflect differences in density of occupance, site improvements, stand size, topographic controls, local amenities and the distance from the city centre. Being a statistical and a quantitative model, Brigham is compelled to omit cultural influences. For example a spacious site has *different* values for an individual with children as against an individual who has none; or a site near a quasi-cultural institution such

as a school for these two people. The present analysis will endeavour to incorporate these influences upon price.

Wingo's Theory of Residential Land Values

Wingo's (1961) model combines a theoretical analysis of traffic flow and the theories of the land economists in an explicit mathematical model of the market for residential land. He views rents (and therefore, prices) and transport costs as being complementary. However, no allowance is made for the like or dislike of travel. Alonso (1964) notes that Wingo's analysis retains and makes even stronger Haig's view of the complementarity of rent and transport costs in the urban case, in perfect parallel to Von Thünen's model. Wingo's model has many of the failings already mentioned. His city has a population which is homogeneous with respect to income and tastes, although he does include possible deviations from this pattern. Much attention is paid to transport costs and related items such as congestion. Rent for land is equivalent to the costs of transport which have *not* been incurred :

$$pq = k(t_m) - k(t)$$

where $k(t)$ is transport cost in dollars, pq is price and quantity of land, and t_m is the residential location. Wingo's consumption function for land is :

$$q = (a/p)^b$$

which assumes a preference for *more* rather than *less* land, a fact which is true only of certain members of the community and certainly not all. (In this equation a and b are parametric constants, $b > 0$). This function states that the higher the price of land, the less land the consumer will buy (Alonso, 1964). Market equilibrium is determined by

$$n = 2\pi \int_{o}^{tm} t/q(t)\, dt,$$

where n is the total population of the city, and incomes and tastes are homogeneous. This also assumes the simple availability of land in a circle ($S(t) = \pi t^2$). Such models with a *finite land quantity function* lose much insofar as most cities are expanding rapidly at the periphery and contemporaneously undergoing renewal internally. This facet must be overlooked since it is not easily amenable to quantification. The usefulness of Wingo's theory in the present study of the Johannesburg housing market is the insights which it gives of the complementarity of property prices and travel costs. His considerations of the indirect costs and influences of congestion are also important.

Dunn's General Equilibrium Statement Applied to Housing

Dunn's (1964) theory of the location of agricultural production has some particularly apt statements for the theory of the residential land market. Of particular importance is his view relating to market equilibrium in the case of many agricultural products. His system of marginal rent lines and his argument for three competing industries, I_R, I_{R-1}, I_{R+1} is reproduced here. Consider any industry I_R depicted by the marginal rent line AB in Fig. 2.3. The total area producing product R is explicitly determined and is a ring about the market. So,

$$A = (k_{Ro}^2 - k_{Ri}^2)$$

By the same token the amount of the product supplied to the market is determined and equal to $E\ (k_{Ro}^2 - K_{Ri}^2)$.
If the price of a commodity (P_R) increases, so does the spatial extent of production which gives the greatest return and with it the area of production

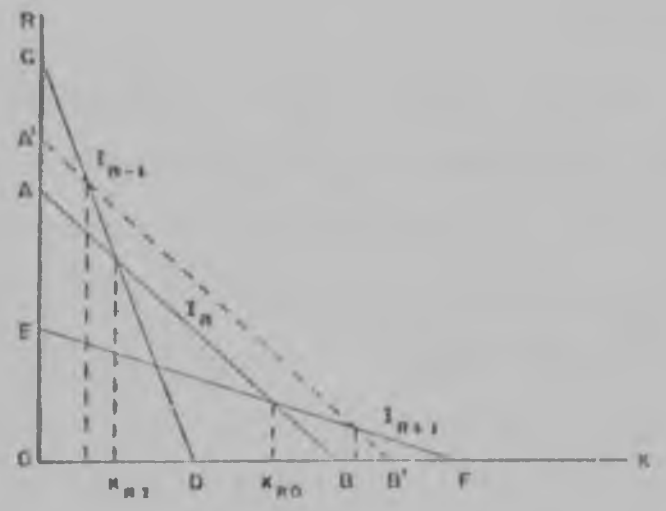


Fig. 2.3 - Considerations of Demand and a Mutually Interdependent Price System (Dunn, 1964).

and supply. This is shown graphically in Fig. 2.3 in terms of a shift from AB to A'B'. The increase in P_R does not change the slope of the marginal rent line (-Ef) but serves only to increase the R intercept ($E_R(P_R-A_R)$) and thus produce a vertical shift. The boundaries for I_R are further apart. Consequently the production area, and hence the supply of both I_{R-1} and I_{R+1} will be diminished. If the supplies of these two industries are in equilibrium with their prices before the increase in P_R, this equilibrium will be destroyed. And since the demand for these two pro ucts will be large relative to the supply at the old price, their prices will rise. This will cause vertical shifts in CD and EF similar to that depicted by A'B'. This will serve to increase the supply of the products of I_R-1 and I_{R+1} until equilibrium has been re-established for these two industries. However, the values of K_{Ri} and K_{Ro} are changed once again, and the production of I_R is restricted.

Dunn's theory of *competitive land use in agricultur* is applicable to *competing urban uses*. If, for example, a residential area corresponds

to I_R and is bounded on the inner side by a Central Business District (I_{R-1}) and on the outer side by a sub-regional shopping centre (I_{R+1}), any upward change in the demand for land in these two lateral uses will *restrict* the amount of residential space available to I_R. Assuming equilibrium, this will have the effect of increasing the price of sites at I_R. An attempt will be made to show this in an empiric statement in the present study.

Alonso's Theory of the Urban Land Market

Alonso's model (1964) employs classical consumer equilibrium theory, the fundamentals of which can be interpreted through a set of *indifference* curves. He employs most of Von Thünen's assumptions, namely an isotropic plain with equal accessibility in all directions, a single market centre, and rational economic man making decisions on the basis of complete information. He proceeds through a model of agricultural rent functions and the bid price curves of an urban firm and shows that the location decision of the householder is substantially the same as that of the farmer and the business man. The difference, however, is that the farmer maximises *location*, the business man *profits*, and the householder, *satisfaction*. The analysis is both graphical and mathematical. The limitations of the model are revealed when Alonso argues the case for the equilibrium of the householder (Chapter 2).

> 'An individual who arrives in a city and wishes to buy some land to live upon will be faced with the double decision of how large a lot he should purchase and how close to the centre of the city he should settle. In reality he would also consider the apparent character and racial composition of the neighbourhood, the quality of the schools in the vicinity, how far away he would be from any relatives he might have in the city, and a thousand other factors. However, the individual in question is an "economic man", defined and simplified in such a way that we can handle the analysis of his decision making.'

Alonso's model is included for his views on the location decision of the individual householder. His use of indifference analysis and the insights it yields of the satisfaction gained by the consumer at different locations is an important behavioural element in his theory. In the present study consumer behaviour in the market for residential land is a significant element of the analysis.

Evans' Theory of Residential Location

A.W. Evans' (1973) study is one of the most recent in the field of the economics of residential location. Its undoubted value lies in the new assumptions it introduces and in the empirical evidence it offers in support of these assumptions. The initial assumption is that there is one work place (the CBD), centrally located and that cost and speed of travel are a function of distance from the centre. On the basis of this assumption the value of a unit of housing must decline at a diminishing rate from the centre. This is an important concept for the present study. Evans next introduces a theory of supply of housing space which with other assumptions shows that the value of land and the density of space units decline at a diminishing rate from the centre. This is also important to the study of Johannesburg. Population density is then introduced and confirmation of the predictions regarding rents, land values and densities is achieved through empirical analyses. Evans introduces assumptions regarding people's attitudes to different densities of occupance, to the quality of housing, to the characteristics of the occupiers and to the immediate neighbourhood. In this way he discounts the importance of filtering. The trade-off theory is used to explain the relative location of different groups. This pattern is interpreted in terms of the possible range of income elasticities of demand for housing and on the distribution of incomes in the population relative to

cost, speed and comfort of travel. Under these conditions the rich live at the centre, the very poor live adjacent to them, and incomes generally increase with distance from the centre, so that the very rich also live at the edge of the city. Next, Evans introduces the idea that households of a given socio-economic group will prefer to locate in a similar neighbourhood as others in the same group. This assumption introduces sectors to the spatial socio-economic pattern. The reasons for house-renovation are examined, status as a determinant of value is noted, travelling characteristics of different families are analysed, comparative statics is used to show the effects of improvements in transport speed, sub-central work places are introduced, the geographical variation of wage rates in the city is noted, and finally, the variation in household size in the city is described. Evans' model of residential location is a refinement of previous economic models and serves to bridge the conceptual gap between the social and the economic models. Although the question of land values is a by-product of residential location in this model, many of its tenets will be employed in the study of Johannesburg.

The Economically Rooted Determinants of Residential Land Values and Residential Development

From the models which embrace the tenets of the economic market approach to the study of residential property prices a number of determinants can be extracted. As has previously been noted, these sometimes overlap those which are socially-rooted.

1. Economically rooted determinants dependent upon the money market, the business cycle and the building cycle.

These determinants are all market phenomena and are among the most common economic indices. They tend to fluctuate in sympathy with one

another and are primary determinants of the general level of property prices. Political factors and institutional factors weigh heavily upon them so that in the present study these determinants will be related to the general state of the local and national economy.

2. Economically rooted determinants related to the physical characteristics of properties.

These determinants relate largely to the size of properties and the densities which they afford. Site size will be shown to be a particularly important consideration.

3. Economically rooted determinants emanating from land use competition.

In the zones of anticipation in any city, property prices escalate in anticipation of land use changes. These areas are those in which processes of invasion and succession are imminent. Such areas are examined in the present study and the changing prices are ascribed to these processes.

4. Economically rooted determinants associated with taxation, zoning practices, and administrative changes.

Under this heading are all the forces usually emanating from the local authority which result in a change of land prices and lead to changes in densities in bulk or in use.

5. Economically rooted determinants relating to forces of supply and demand.

In any dynamic urban system the rate of increase of population determines to a large extent the supply of, and the demand for, housing. The present study will make an assessment of these changing factors over time.

6. Economically rooted determinants associated with the factors of production.

Under this heading are the prices paid for land, labour and capital. These include all the facilities required for home construction and their varying prices and availability. The supply of the factors of production in Johannesburg will be examined and these will be related to the price of residential properties from time to time.

Economically Rooted Determinants of Residential Development

It has been noted elsewhere in this study that the primary determinant of residential development in a city is the rate of population growth in the city. Population increases in urban situations are usually a function of the potential of the city to attract people which in turn reflects the character and the strength of the economic base of the city. In the case of Johannesburg residential growth is related in successive periods to changes in the city's economy. This type of change can be regarded as a positive change. It is also conceivable that a city can grow as a consequence of some misfortune in other parts of a country or elsewhere. So, major conflicts such as wars or droughts can cause a flood of migrants into a city and so precipitate a demand for housing. This would be regarded as a negative change.

Having reviewed the theory of the urban housing market and of residential growth, and having identified the major determinants, one can move to the empirical study. The chronological development of the Johannesburg housing market is examined from its inception in 1886 to

1973 through municipal housing values, actual property transactions and other relevant events which bear upon the spatial evolution of the market. It is convenient to identify phases of growth which correspond to periods of expansion or quiescence in either physical or economic terms. At the conclusion of the analysis of each phase the relevance of the determinants listed above is examined, and their changing relevance over time is scrutinized.

CHAPTER 3 - FORMATION 1886 - 1902

The first phase of the development of the Johannesburg housing market, that from 1886 to 1902 is called the Formative Phase. It is given this name because the foundations of the city's future structure were laid during this period. In fact, so firm were these foundations that the socio-economic and physical structures which were discernable at the end of this phase are still discernable, although obviously at a much greater scale. The settlement history of the city is presented in some detail here since it allows one to gain insight into the nature of the land value sub-system and of residential development. Consequently the earliest mining camps are investigated, their location relative to the present city structure is examined and the evolution of settlement and of the different socio-economic groups is traced to the present day. Using this approach the underlying *causes* of land value differentials and residential development are brought to light.

The question of choosing a starting point in time is not as simple as it might at first appear. Clearly the discovery of gold was significant in determining the broadest limits of the city of the future, but the cadastral system of old farm boundaries in this part of the Transvaal was extremely important as can be demonstrated by the allocation of various pieces of land to different uses and to different groups of people. Consequently it seems appropriate to describe briefly the situation obtaining in the second South African Republic (as the Transvaal was then known) at the time of the discovery of the richest gold reefs in the world.

Transvaal Settlement Patterns Before 1886

The settlement pattern of the Transvaal in the 1880's represented what Rostow (1960) calls the Traditional Society, what Friedman (1966) calls the Pre-Industrial Society and de Kock (1935) a

Semi-Civilised Society. It was characterised by a number of self-sufficient enclaves, largely isolated from one another. There was no urban hierarchy, and only the most rudimentary network existed. Three groups were clearly identifiable:

(1) The Potchefstroom group,

(2) the Soutspansbergers, and

(3) the Lydenburg community (Thompson, 1969).

The main towns were Potchefstroom and Rustenburg in the west, Pretoria and Heidelberg in the centre and southeast, and Potgietersrus and Lydenburg in the north and northeast. These served as centres of religious and social activity, and only secondarily as administrative collecting and distributing centres, since economic considerations were minimal. The community although 'free and independent' was also poor, scattered, disunited, politically inexperienced and virtually surrounded by Africans. In short the Transvaal was a pure frontier area (Thompson, 1969).

The Discovery of Gold

In 1884, shortly after the War of Independence, when the Republican Government was on the verge of bankruptcy, Frederick Struben, a prospector, began assaying on Sterkfontein, a farm near Roodepoort. His reef yielded 6 dwts. of gold. In September of the same year he struck a richer vein, and on the strength of this erected a mill. This success was followed the next year by the discovery of an auriferous reef which outcropped at the surface, and in 1886 the conglomerates mined by another prospector J. Bantjies returned 8 dwts. per ton. The Main Reef was found by a stonemason named Walker[1/] who, while engaged in building on the widow

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1/ Leyds and other chroniclers aver that George Harrison, an Australian miner, discovered the reef.



Fig.3.1 - The Original Farms on the Site of Johannesburg

Oosthuizen's farm, Langlaagte (Fig.3.1), came across the outcrop while walking one Sunday morning. He took a piece down to the farm house, crushed it, and found it to be gold-bearing (Longland 1893). Despite the positive finds the gold rush was slow to develop. The De Kaap fields in the Eastern Transvaal around Pilgrims Rest and Barberton were still flourishing, and many would-be prospectors by-passed the Witwatersrand. However, toward mid-1886 J.B. Robinson and William Knight, Kimberley men of substance visited the Rand, the latter floating the Witwatersrand Gold Mining Company at Driefontein, and the former purchasing the Langlaagte Estate (Fig.3.1). Having shown their confidence, other capitalists, among them Rhodes, Rudd and Caldecott

acquired property and the price of land rose from a few hundreds to several thousands of pounds (Longland, 1893). Colonel Ignatius P. Ferreira, who maintained law and order among the diggers during the first days after the discovery, informed the Government of the finds. This resulted in nine farms being proclaimed and opened for prospecting. These were Langlaagte, Driefontein, Randjeslaagte, Doornfontein, Vogelstruisfontein, Paardeplaats, Turffontein, Elandsfontein and Roodepoort (Fig. 3.2). News of the discovery spread and in no time the rush was on.



Fig.3.2 - Wyld's Map of the Witwatersrand Gold Fields, 1889, and the Associated Cadastral Pattern.

The Initial Settlement Pattern

The youthful housing market of the town which was conceived early in 1886, was born in November when the first mining camps developed. There were three distinct settlements on the northern margin of the outcrop, known as the Paarl Camp, Ferreira's Camp and the Natal Camp (Fig. 3.3). The Paarl Camp was laid out in November 1886 by the Paarl Gold Mining Company and surveyed by W.H. Auret Pritchard. The survey was earlier than that of Randjeslaagte (Smith, 1971) about which more will be said shortly. The Paarl Camp was located on the homestead grounds of Langlaagte No. 129. The Argus Annual (1892) provides a good reason for its location in noting that it had 'a very good supply of running water throughout the whole season, many of the building stands are water erven, having attached to them a piece of land, 300 feet by 150 feet, and are suitable for growing vegetables.' The initial inhabitants of the camp were from Paarl in the Cape Province, and belonged to the Paarl Syndicate. No indication is given of the price paid for leasing erven in this township at the time, but its significance lies in the fact that it was the original township and could have become the *core* settlement of the city.

Further east was Ferreira's Camp, located on the farm Turffontein and adjacent to the outcrop. It was centred on a spot near the old Worcester Mine on the west of what for many years was the Marshall Square Police Headquarters (Rand Daily Mail, 22.9.1936). Gray (1937) places the boundaries as Commissioner and Ferreira's Streets, and Alexander and Frederick Streets. The survey date is unknown but incorporation of the Camp into Johannesburg occurred later in 1887. The name stems from the fact that the lessee of the ground from the owner of the farm Turffontein was Col. Ferreira, who paid approximately £3,000 per annum for



Fig. 3.3. - The Location of the Mining Camps Which Formed the Primary Nodes of Settlement in Johannesburg, 1886.

the lease of the total area (The Transvaal Critic, 26.8.1904). Once again, although it is not possible to make an in depth analysis of this rudimentary property market, it is a necessary part of the early structure of the city upon which the subsequent residential land market developed.

The third node of settlement was the Natal Camp, located near the present Jeppe Subway, where Main Street crosses the railway line. Its location was chosen by Veldcornet Johannes Petrus Meyer, who was the representative of the Government in his official capacity, and who prior to the proclamation, carried out all the duties devolving upon a Mining

Commissioner. He established his tent adjoining the spruit and near what was then known as No. 1 Reef on the southern portion of Doornfontein - now City and Suburban. In this camp he transacted all his business. In the beginning it was known as Meyer's Camp, but as many of the diggers who came from Natal made it their headquarters, it became known later as Natal Camp, and the spruit as Natal Spruit (Gray, 1937).

While it might well appear from the discussion so far that the early housing of Johannesbury was in three *discrete* clusters, this was not strictly so. The settlement, although centering on these camps, was in reality scattered along the length of the outcrop. Fordsburg, for example, between Ferreira's Camp and the Paarl Camp had leases which date from 1 May 1887, indicating that shacks were on the land in the first year of mining. The Fordsburg Dip which carried the stream, the Fordsburg Spruit, which had its source in the Kazerne brickfields, (Braamfontein) (Fig. 3.3.) was home to a large number of miners in 1886.

The cadastral system was formalised with the laying out of streets and stands on the well-known triangular property Randjeslaagte, the *'uitval-rand'* from the survey of the farms Braamfontein, Turffontein and Doornfontein (Fig. 3.4). In all 986 stands were allocated to the city proper with additional stands in Marshallstown (1886) and City and Suburban (1889).

The Development of Gold Mining 1886-1889

During the first three years of its existence, the residential areas of Johannesburg expanded at a remarkable rate. The reasons for this expansion are to be found in the rapid development of the gold mining industry at this time. The exports of gold increased from £67,500 in 1886 to £1,496,700 in 1889. Schumann (1936) notes that a more important

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1/ A widely used Afrikaans word denoting a stream.

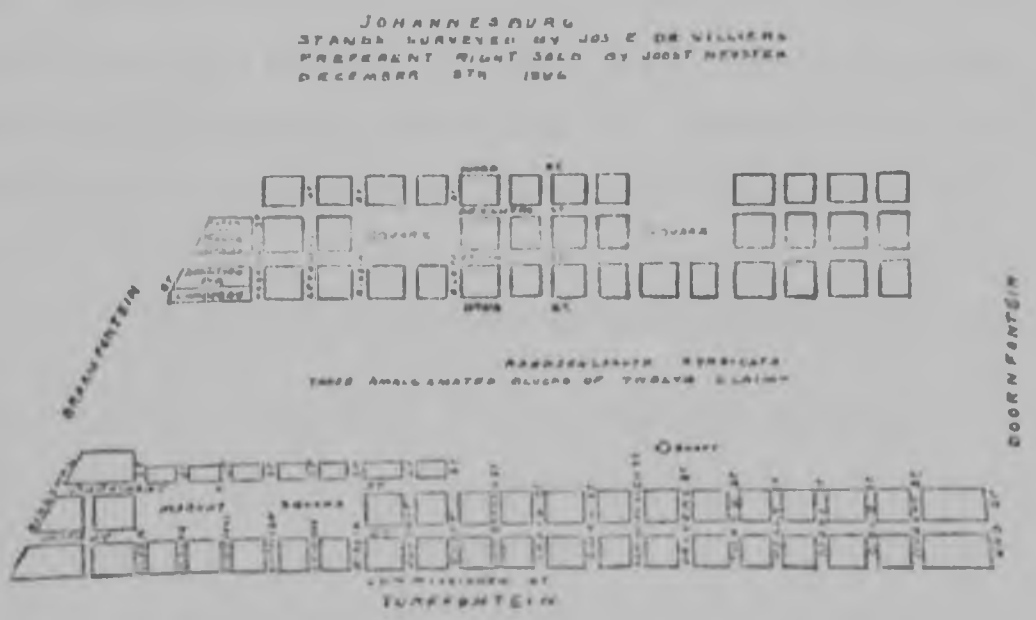


Fig.3.4 - The Initial Survey by Jos. E. de Villiers of Blocks on Randjeslaagte, December 8, 1886. (Strange Library, Johannesburg).

factor which was characteristic of the period was the *speculative* activity and the extensive flotation of new mining companies. By the end of 1887 no less than 270 gold-mining companies had been formed, (Amphlett, 1932) and by February 1889, the market valuation of the thirty best-known shares amounted to £24,813,200 (Economist, 8.3.1890). This gives an impression of the capital investment which had taken place in the industry in the first three years, and in a geographical sense this investment was *all* in Johannesburg. Amphlett notes that at Johannesburg the speculation was rampant, and public interest was raised to a 'state bordering on excitement.' Early in 1889 the speculation came to an end, and there was a collapse in the market with a loss in value in a matter of weeks of some £12,000,000 (Economist, 1.6.1889). Schumann notes that the share valuation of nine land companies, with a nominal capital of £5,283,000 which had reached a maximum of £30,110,000 in 1889, fell to £18,605,000 in March 1890 (Schumann, 1936). Housing was naturally one of the first components

of the city to be affected by the depression and this is the main reason for the few townships gazetted at this time. By 1892,however, recovery was complete and development in building surged ahead once again.

Spatial Structure in the 1890's

In viewing the first five years as a whole it is difficult to identify any clear differentiation in commercial, residential and industrial usage, since the city was, as yet, in an embryonic state. However,certain key functions quickly emerged during these years, and in a spatial sense laid the foundations of important future patterns. In the first instance the mining outcrop was the most influential feature. To the south of this the land was devoted to the mining industry with the headgears of most mines coinciding with the emergence of the Main Reef. Other forms of industrial undertaking were non-existent, with the exception of a few brewing establishments. The commercial activities were largely confined by the four main squares, Von Brandis in the north-east, Market in the north-west, Marshall's in the south-west and the Government Square in the south-east (Fig. 3.4). These open spaces were the termini of traffic from Pretoria and Delagoa Bay, Rustenburg, Kimberley and Port Natal respectively, and since practically all goods were initially imported by ox-wagon, these areas naturally assumed a commercial significance. As Gregson notes in his diary of 23 February 1893 'Every day I have to pass four times over the Market Place or Government Square, as it is called, an immense place ... and it presents a very busy aspect in the morning, especially on Saturday when it is crowded with ox wagons drawn by teams of 16 oxen which come from all the surrounding districts, particularly from Pretoria, Potchefstroom and the fertile country about the Natal routes.'

An overlay to this spatial pattern was the location of the Stock Exchange in Commissioner Street, and the Rand Club nearby. These two institutions completed the picture and commercial undertakings such as shops, tailors, dispensers, wholesalers, banks, post offices and the judicial institutions arranged themselves with reference to these points. One might well enquire into the *relevance* of this information to the *housing* market ! The justification is not hard to find. It relates directly to Hoyt's ideas *vis-a-vis* the location of the high rent, and therefore, the high status neighbourhoods. In this embryonic town the wealthiest members of the community were able to outbid others for the prime housing sites, and in a market where *proximity* to workplace was made important through the lack of mobility of the community, the high status group chose to live near the institutions described here. Sites to the south of Commissioner Street and into the mining land were clearly out of the question. This land was undermined to the extent of 40 feet (the bed dipped at 45^{o}S) and was therefore unsafe, and the by-products of mining were beginning to litter the landscape. Climatically the area was also undesirable. particularly in winter when the mine dust added to the dust from the streets and covered all and sundry. As Gregson (1893) upon his arrival by train from Cape Town noted 'The town of Johannesburg itself is very large considering its short life, and stretches for miles along the reef. Whatever gold there is below the earth I have seen little besides dust or mud on the surface. The streets are in a vile state, no drains, no pavements, dust, mud, slush, puddles, rivers - wretched. Here you walk on soil except in Commissioner Street ! ' The western extensions of the town had received an early setback with the location of non-White labourers and others in the 'Kaffir location' and the 'Coolie location'

in this sector, and the presence of a brickfield in Burghersdorp (Fig.3.5). Also, as Mallows (1961) has pointed out the land to the west drops into the Fordsburg Dip, which as has been shown was a swamp and subject to flooding in summer. The eastern end of Commissioner Street suffered the same vicissitudes in the vicinity of the Natal Spruit, although this was not as deleterious an influence. This clearly left only the northern part of the settlement for the wealthy.

'Lawn Tennis' Square and Doornfontein

Within this area there were a number of possibilities. That chosen by the high status group, as Berry(1972) calls them, was in the vicinity of Plein Square, an open space between Rissik and Eloff, De Villiers and Plein Streets which appears in the earliest maps of Johannesburg (Fig.3.5). It was marked simply 'Plein', which is Dutch and Afrikaans for an open space in a built-up area, and is used rather like the English 'Square' irrespective of its shape (Smith, 1971). On Tomkins' plan of Johannesburg and Suburbs, September 1890, it is marked Plein Square and one can only assume that the non-Dutch-speaking inhabitants did not know the meaning of 'Plein' (Smith,1971). The character of this piece of land which is of course vital to its utilization, was captured by the Star of 15 September 1891. They refer to passing from the busy centre of the town to the *peaceful neighbourhood* of what is commonly known as 'Lawn Tennis' Square and to realise from the context that this is Plein Square (Smith, 1971). The 'Plein' was taken over from the Park Tennis Club in November 1893 by the Sanitary Committee (the equivalent of the City Council) who erected the telephone tower, the exchange for the telephone service which started in 1894 (Fig. 3.5). Be that as it may, the elite gravitated to this site in the nineties giving the housing in

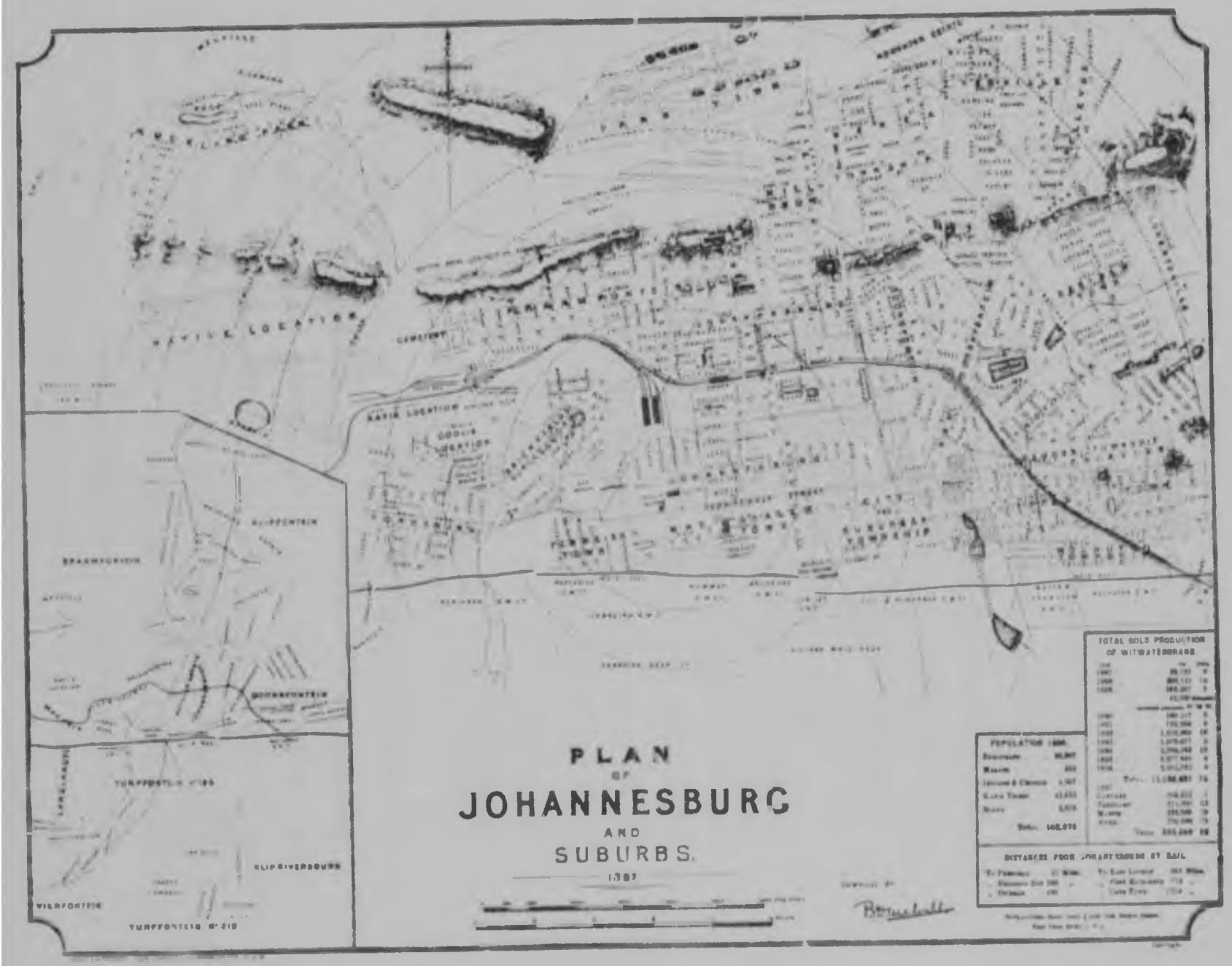


Fig. 3.5 - Melville's Map of Johannesburg and Suburbs 1897.

the area a markedly inflated value. This was where Sir Lionel Phillips first lived with other notables in King George, Noord and Rissik Streets. Phillips was a rising executive with the Corner House group of mines, and in 1892 he was elected President of the Chamber of Mines, a post which required him to entertain a constant round of dignitaries who came to visit the new 'Eldorado on the Rand'.

The mining magnate, Col. Sir George Farrer had his home in Rissik Street. Others of this group built fine homes to the north of the Wanderers Ground (Fig. 3.5) overlooking the city and therefore, with a southern aspect. These homes were built in the appropriately named suburb of Wanderers View. The area declined after the first railway pushed up to Johannesburg in 1892, and the station turned out to be almost coincident with Plein Square, so in the middle nineties the movement was eastwards along the ridge to Doornfontein. The decline was also initiated by the cutting which was excavated for the Rand Steam Tram which destroyed the quiet character of the Plein Square zone. It was taken over by Chinese Launderers and small shopkeepers as the rudimentary Central Business District of the day invaded the southern portion of this formerly salubrious area. In much the same way, those in Wanderers View abandoned their homes and moved across to Doornfontein and more particularly to Charlton Terrace. Inevitably one must ask why the sector having been initiated to the north of the town did not continue in that direction and instead moved to the east. In answer to this, one must call two factors to mind. In the first instance, the quartzites, variously known as the Hospital Hill quartzites and further north the Orange Grove quartzites, form a barrier to the

northward development of the city. On the site of Johannesburg the geological structures are quartzites interposed with weak shales which yield the expected ridge and vale topography with the quartzites forming the ridges and the shales the valleys. The history is one of an advancing and retreating shoreline in former geological times, each being associated with a different deposition. To the housing market this topographic feature is extremely important since this first ridge was a barrier to the development of residential areas in a northerly direction at the time. The second reason for the eastward movement of the elite group was a former historical fact which placed the hospital on the ridge overlooking the city, with the gaol (known later as 'The Fort') nearby. These institutions were not conducive to high status settlement and acted as barriers to northward movement. Consequently a high status sector failed to develop, despite the good start of the early nineties, and most of the wealthy moved to Doornfontein. Gregson, writing home from Johannesburg in March 1893 observed the same trend

> '...You will remember I sent word some time ago that the town was a collection of tin shanties, except in the main streets. This will not be so for long, particularly in the newer parts. I have been looking round as much as possible and it seems to me that it is growing most on the north-east or higher side, away from the Reef. Here some really good houses are being built, some are almost imposing enough to be called mansions, and I notice there is no difficulty in covering a house with greenery, which grows profusely. As you are aware even an ugly shapeless house with creepers and flowers about it can look very attractive'. '

The Development of the North Eastern Suburbs

The north eastern suburbs were also those whose positions combined elevation with an excellent view of the city, and perhaps fortuitously it was Barney Barnato whose foresight developed this area. He had arrived from Kimberley after Hermann Eckstein and the other mining magnates, and

consequently failed to acquire any of the best mining properties. Instead he turned to the development of real estate, particularly in Yeoville, Doornfontein and the Berea, the last of which was the location of his own home, Barnato House (although he never lived there). Doornfontein was laid out by T. Yeo Sherwell as a township in 1887 (Neame, 1955),the same year that James Sivewright started the Johannesburg Waterworks and Exploration Co. Ltd., (Fig.3.5) which took over the township (Smith, 1971). At the northern extremity of Doornfontein, James Sivewright reserved a small township (which was never gazetted) which was called Charlton Terrace. The name commemorates John Charlton of the Pioneer Meyer and Charlton Mine (Smith, 1971). For a short span of about ten years this part of Doornfontein housed the elite of Johannesburg. The homes were large, constructed primarily from imported materials, as witness the stained glass windows and walnut staircases, tney overlooked the 'lake' of the Waterworks Company (later to be the site of Ellis Park), they were backed by a precipitous dip-slope of the Hospital Hill series, the area was well-served by horse-drawn tram, had an excellent water supply, and was close to the city. Larger than usual stands permitted an extensive form of settlement with large gardens, conservatories and private recreational facilities such as tennis courts. This movement eastwards, which was actively encouraged by the Johannesburg Consolidate Investment Co., (Barnato Bros.) appeared likely to continue, when Sir Julius Jeppe built his mansion on the highest ground of Jeppestown, but the proximity of the mines, the falling away of the terrain towards Gillooly's Farm in the east, and the tenacity of the Corner House group in developing parts of Braamfontein,effectively terminated the high status housing sector of the early nineties. It is worth mentioning in passing that the acquisition

by JCI, of the Houghton Estate, which adjoined the Ekstein properties in the north, in 1896, is probably evidence that the directors intuitively realised which way the elite would move. The property was acquired for £90,000 (Gregson, 1896).

The Origins of Parktown

During the middle nineties the path of high-rent-neighbourhood growth swung around from a north-easterly direction to a northerly one. It is a commonly held view of most chroniclers of Johannesburg's housing patterns that the movement from Doornfontein, previously described as 'the swagger suburb par exellance' to Parktown, was the work of Lady Phillips. She discovered the site on Parktown ridge which was destined to become Hohenheim ('Home on High') the first of her two Parktown mansions. The ridge is a natural watershed between the Limpopo and Vaal river systems and standing at almost 6 000 feet above sea level, it commands uninterrupted views of the Magaliesberg some 40 miles to the north west, and the Pretoria hills to the north east. Hohenheim occupied a site of about 20 acres of relatively level land, just below the northern rim of the ridge. It was thus the pre-eminent residential site of the city in 1894. The immediate reaction of Phillips' contemporaries was to view the site as literally outlandish, since it was beyond the Hillbrow ridge (at the time the effective limit of housing) and also beyond the limits of the city's horse-drawn tram service. In consequence it was called 'Phillips Folly' - but not for long. Benjamin (1972) notes that the Phillips were society leaders, and their choice inevitably affected the decisions of others of the wealthy set, so that within a few years all sites between Hohenheim and the Johannesburg boundary (one block south of Empire Road) had been sold.

Parktown Becomes Pre-Eminent

In laying out Parktown, Eckstein and his associates were setting

up an opposing property prospect to that offered by the Johannesburg Consolidated Investment Company of the Barnato's in Doornfontein. It was if anything pitched at a higher level, and with the advantage that all the senior members of the Corner House went to live there. Benjamin (1972) notes that apart from Phillips, Hennen Jennings, the American consulting engineer of the Corner House group acquired the twenty acre estate of Sunnyside; John Hayes Hammond, another director moved in the mid 1890's and Edouard Lippert whose forests incorporated Parkview, Forest Town, Saxonwold and Parkwood, lived in the original Braamfontein farm house *Onderkopje* below the ridge (Fig. 3.6). Alfred Beit - at one time seriously considered to be the richest man in the world - and Sir Percy Fitzpatrick bought stands, so that in its early days Parktown almost resembled a company compound (Benjamin, 1972). Following the lead offered by the first group of magnates, leading citizens like Henry Nourse, C.S. Goldmann, T.M. Cullinan, Godfray Lys and George Farrer moved to Parktown with the anticipated effects on the land market. Whereas Phillips paid only £500 for his original 20 acres at an average of £25 an acre in 1892, the price of acre lots rose by a factor of four in early 1893, shot up to £150 by mid year, £300 in 1894 and £1 000 at the end of 1895. Considering prices on the Hillbrow ridge and in Doornfontein were below £300, these in Parktown at a much greater distance from the city were considered astronomical. In 1896, 52 lots had been sold in Parktown and it promised 'to become the principal suburb of Johannesburg'. In 1897 the Star reported that Parktown was '[illegible] the favoured township so far as the upper crust of Johannesburg is concerned'. Benjamin (1972) notes that within another 10 years Doornfontein was quite eclipsed.



Fig. 3.6 - The Residential Sites of Johannesburg's Most Prominent Citizens at the Turn of the Century. (African Realty Trust Limited).

Quite apart from its admirable geographical location and physical qualities Parktown's legal and zoning constraints were formidable and undoubtedly did much to establish its pre-eminent position. Since Parktown was responsible for the direction of the subsequent high ɪ ntal neighbourhood's growth and therefore, high land values in Johannesburg this aspect warrants further d scussion.

No stands in Parktown were of less than an acre and some estates exceeded twenty acres. The streets were of an abnormal width, and the design of the suburb departed from the standard grid which had previously been used in the city. Streets were allowed to follow the contour in elegant crescents and small parks and open spaces were introduced to relieve the monotony (Fig. 3.7). The land was still leasehold as wer all other suburbs at this time. The main streets in Parktown were gravelled, culverts and drains were built, and they were lined with exotic trees grown in the Sachsenwald nurseries belonging to the Corner House Group (Benjamin, 1972). Stand holders were required in terms of their leases to fence their properties in a fitting manner. Nothing unsightly was permitted and in this regard, galvanized iron, a common fencing material in the less opulent suburbs was specifically excluded. Plans had to be submitted for all buildings, and buildings to the value of at least £500 had to be raised within the first year after purchase. Commercial components of land use were explicitly prohibited, as also were reed or grass houses, and cattle kraals (Benjamin, 1972) although coach houses and the associated fodder lofts and stabling for horses were attached to most homes. The distance from the city, especially in the early days made private transport essential. The services



A general plan drawn to the Provincial's Government Land Surveyor, 1904 (Source: City Engineers Department Johannesburg).

Fig. 3.7 - A General plan of Parktown, 1904 (Transvaal Govt. Land Surveyor).

applied to this wealthy enclave were numerous and in terms of the existing technology extremely good. Shortly after its inception Parktown had its own sanitary service and street lamps provided with electricity from the private plant at Hohenheim. Water came from the stream at Sans Souci in Parktown West, and was stored in two towers in Ridge Road between Nos.17 and 18 (Benjamin 1972). The scheme cost £11,500. A carriage to and from the city was organized for the benefit of Parktonians, and rights of way across the township were guarded with a main gate in the vicinity of present day Clarendon Place. Benjamin notes that it was closed one day a year to assert the company's proprietary rights, and when a rival estate was advertised at Rosebank in 1896, the Braamfontein company hastened to place advertisements in all three local papers, warning prospective purchasers that they would have no right of access to the new suburb,through the roads of Parktown and Sachsenwald. Another aspect of exclusiveness was derived from Parktown's refusal to allow any 'coolie or kaffer locations' to be started anywhere near its borders, recognizing the deleterious consequences of such a move. They were also appalled at the government's decision to build a Fever Hospital on the suburb's southern boundary- in this instance officialdom won! (Benjamin, 1972).

Parktown suffered a period of hibernation in the late nineties, following the abortive Jameson Raid, and the onset of the Boer War. Many homes were abandoned, as most of the English population fled to the Cape. As Mrs. Isabelle Lipp, wife of the Standard Bank manager noted in 1900 when she walked through the deserted streets of Parktown : 'On some plots mild-eyed cows were grazing, standing knee-deep in rich green grass ... Many of the houses had an unoccupied look, but the gardens, except in a

few cases, are well cared for, native boys left in charge, no doubt, seeing after them.'

Following the Anglo-Boer war in 1902, Parktown flourished to even greater heights than previously and consolidated its pre-eminent position. This discussion will return to the subject of Parktown when the period of Consolidation, 1903-32, is examined. This followed the first exciting flush of the discovery, and the first twenty years of development. The significant point to make with regard to Parktown, is that it rose to such fantastic heights of opulence during the 1890's, that the high rent sector was firmly established, and the direction of growth of the city was irrevocably made. This development was so important to the contemporary structure of the housing market that one is justified in devoting considerable attention to the social details of the area.

Location of Lower-Order Socio-Economic Groups

Having traced the development of the movement of the high-rent neighbourhood, initially around Plein Square, then eastwards to Charlton Terrace, and finally over the quartzite ridge to Parktown, one is now in a position to look at the location of the remaining socio-economic groups. Berry (1972) has made it clear, as did Hoyt and others before him, that the spatial pattern of a city's residential development depends in the first instance upon the preferences of the wealthy. This group, has the financial power to seek out the optimum locations in the site and occupy them in the manner which has been described. In competing among themselves they set the level of prices for housing in these areas to which less wealthy people cannot aspire. Consequently the lesser groups move in on the wealthy, gathering as close as possible to the high-rental neighbourhoods, and in this way gain status from proximity and by association. In much the same way that

the high status Parktonians feared the intrusion of other ethnic groups or institutions on their borders, so the second order socio-economic group built homes as close to Parktown as possible. In terms of this pattern of behaviour one would expect sectors to develop on either side of the high-status sector appearing in Fig. 3.6. These lower order sectors are now examined.

The Characteristics of Lower-Order Housing

One's attention is drawn in the first instance to the properties of the Barnato Brothers and, therefore, of the Johannesburg Consolidated Investment Company. These collectively comprise the upper part of the north eastern sector during the Formative Period. They were the Berea Estate, Yeoville, Bellevue and Hillbrow, the last of which was situated on Randjeslaagte and belonged to the Transvaal Mortgage, Loan and Finance Company with which S[illegible] Goldreich and Emmanuel Mendelssohn were associated. The municipal values (Fig. 3.8) show that these suburbs could be grouped with those inner areas to the east of the city, namely Doornfontein, Bertrams, New Doornfontein, Fairview and Jeppestown. The latter group later formed a distinctive eastern sector, but during the early Formative Period the entire north eastern quadrant was distinguished by similar property values. This was not surprising since the quadrant was initially conceived as a *middle* [illegible] area, despite the great variation in physical qualities of the different suburbs. Another unifying characteristic was the similarity in stand sizes within the zone. Stands ranged from one-eighth to one-quarter acres (with the exception of upper Doornfontein) and any departure from these sizes was unusual. This in itself laid a pattern of socio-economic status for the area for the next two decades. The first-settled parts of the quadrant were those immediately



Fig.3.8 - Johannesburg : Mean Municipal Valuation per Suburb, 1904
(Ranked by Socio-Economic Status)

to the east of the city and including the Joubert Park vicinity. This was a natural development since the long east-west trending valley militated against movement northwards. Consequently housing spread down through Doornfontein and Bertrams to Fairview and Jeppestown, with a small offshoot towards the mining village of Wolhuter in the east. The City and Suburban township next to the commercial quarter had become an industrial area at an early stage and provided a barrier to movement in that direction. Development above the ridge to the north started shortly afterwards with the sale of stands in Hillbrow in 1895.

Having delineated the north eastern middle class quadrant of the Formative Phase it is necessary to make a more detailed investigation of the *character* and *quality* of its various parts which will reveal the reasons for its place in the city's status ranking. The *upper* parts of Doornfontein have been described and are seen as the antithesis of the *lower* parts. In the latter area the social climate is affected by the low-lying nature of the site which is near the lowest parts of the valley so naturally there is no outlook or view; the railway line runs through this portion of the township; the south western corner is next to the City and Suburban township which was given over to workshops and industry; and finally, Melville's (1897) map shows a water reservoir and a brick and tile works in the south eastern portion of the township. Another factor which applies in a general sense to the residential market in Johannesburg is that the more southerly locations of houses have always been associated with people of lower status, and the more northerly ones with people of higher status. So it is reasonable to view the southern parts of Doornfontein and Fairview (then known as Faucus Township) as less desirable. Jeppestown proved to be an exception in the residential market of the Formative Period.

The single most significant factor is the association which the township had with the Jeppe family, one of the notable families of the time, and in particular with Sir Julius Jeppe who was the founder of Jeppestown (Smith, 1971). The second factor concerns the elevated position the suburb occupies. It was in the highest part that Julius Jeppe built his baronial mansion. Whereas Doornfontein was within easy walking distance of the commercial centre of Johannesburg, Jeppestown was a mile and a half to the east and across the Natal Spruit, a factor which made it develop many of the qualities of a village. It can be looked upon as a satellite village of this period. It had its own Market Square (as shown in Goldmann's Map of the South African Mines 1895-96) two Churches, a Masonic Temple, a Club House, the first library outside Johannesburg proper, a Police Barracks and the St. Mary's Collegiate for girls, and by 1893 could boast almost 500 buildings (Smith, 1971). In addition the founder of the township Julius Jeppe and his main partner, Ford, tended to sponsor cultural amenities and activities. As a chronicler observed in the early nineties

> 'From a property owner's point of view... the existence of a good library considerably enhances the value of the estate upon which it is situated. Newcomers seeking desirable residential quarters are undoubtedly largely influenced to settle in a locality where such social advantages are to be obtained.'
>
> (*Standard and Diggers News*, 29.1.1897).

Within Jeppestown was a named but ungazetted township of Belgravia, called after the elite area of this name in London. It was viewed by many as being a rival area to Doornfontein and many of its inhabitants subsequently moved to Parktown.

The middle class areas to the north of the ridge, namely Hillbrow, Berea Estate, Bellevue and Yeoville developed shortly after their neighbours in the vale below. Hillbrow's sale of residential stands was extensively reported in the *Standard and Diggers News* on 25 July 1895 and this report gives useful evidence of the intentions of the township developers. Recognising the trend to move north (started by Ekstein's group in Braamfontein and Parktown) and encouraged by the booming conditions and the free availability of money, messrs. Goldreich and Mendelssohn placed their Hillbrow property on the market. The sale was handled by Richard Currie, probably the most knowledgeable property auctioneer in Johannesburg at the time. The distance factor was immediately apparent in the higher prices paid for properties overlooking the city and, therefore, closer to town. These sold for an average price of £165 per stand of a quarter acre, which was a good price bearing in mind the price ruling in Doornfontein of £300 per stand. Once over the brow of the hill and proceeding into the shallow valley which is a feature of the central portion of Hillbrow, the prices dropped off to £55 per stand. The sale was commonly regarded as a good omen for the northern suburbs and for the long-term prospects of the property market.

The Berea Estate, Yeoville and Bellevue represent the remaining residential suburbs which in the late nineties occupied this part of the Witwatersrand ridge. In contrast to the earlier settlements which were controlled to some extent by the transport technology of the day, then the horse and buggy, (Fig.3.9) these were influenced by the horse-drawn tram which supplied a service up to the Berea (Fig. 3.10). This, and the rapid influx of population to the gold mines made property

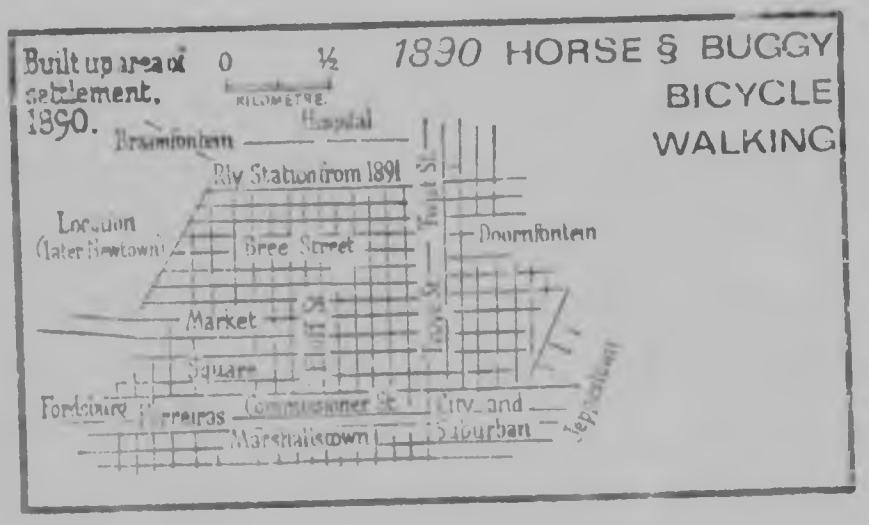


Fig. 3.9 - The Settlement Pattern Largely Conditioned by the Horse and Buggy and the Bicycle (Rand Daily Mail, 1971).

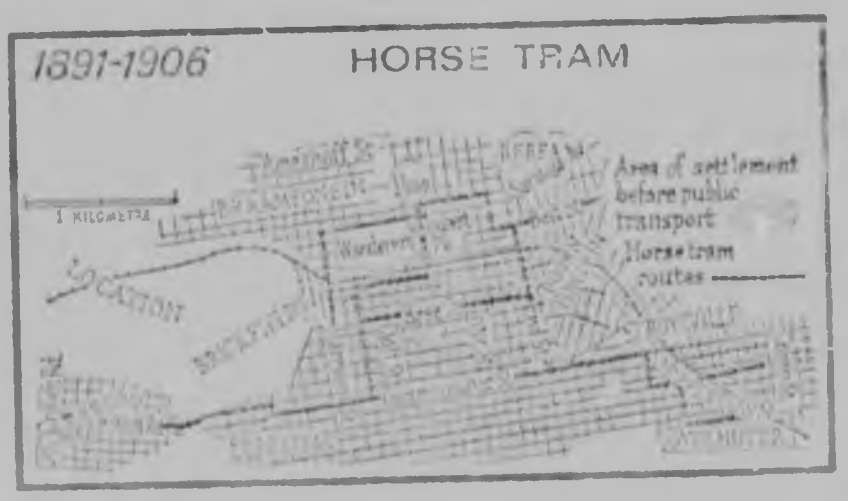


Fig. 3.10 - The Settlement Pattern Largely Conditioned by the Horse Tram (Rand Daily Mail, 1970).

development *above* the ridge an economic proposition. There is of course, the immediate poser as to why residential development did not at this time continue in the eastern sector, beyond Jeppestown, towards what a few years later was to become Kensington. The reason seems quite clear when one consults the map of the existing networks. The horse tram routes extended along Commissioner Street eastwards into Jeppestown and southwards to the borders of Wolhuter. Consequently property development beyond this would have required a settlement of sufficient economic strength to provide its own bus service, similar in fact to that provided by the Parktonians. As a result the eastern axis had to wait until after the turn of the century and the introduction of the electric tram before residential development became an economic proposition there.

Another factor of some small significance pertaining to the Berea Estate and its associated middle-income suburbs, was the trend developed in the mid-nineties of siting townships with regard to the excellent views to the north of the Witwatersrand ridge. This view initiated the settlement of Parktown by Lady Florence Phillips, and the same advantages accrued to the elevated sites of Berea and Yeoville which look down upon the valley now known as The Wilds, which carried traffic to the orchards and market gardens beyond the Houghton Estate's plantations.

The North-Western Quadrant

Thus far attention has been directed towards the residences of the middle rank which developed in the north-eastern quadrant of Johannesburg. At the same time a similar development was taking place in the north-western quadrant which involved the suburbs of Mayfair, Fordsburg, Braamfontein

and Auckland Park. Braamfontein, although rated in the same category as Doornfontein had in fact a rather motly collection of housing, which ranged from fairly substantial dwellings at the eastern end to poor quality residences, many of which were semi-detached, at the western end. The reasons for this pattern are not hard to find. The first cemetery of Johannesburg was at the corner of Harrison Street and Bree Street, where twelve stands were allocated for this purpose in 1887 (J. & E. Gray, 1937). This first burial ground very quickly proved too small and later in the same year the Braamfontein cemetery was taken into use. This is the first important cause of low quality housing at the western end of Braamfontein. The eastern end of Braamfontein formed, together with the townships of Argyle and Wanderers View, an enclave of better quality homes. This part was higher and overlooked the Wanderers Ground.

Auckland Park is an anomaly in the early residential land market of Johannesburg, since it was almost three miles from the city, and separated from it by a large area of open veld. Its origins were similar to many a Johannesburg township. It started as a gold mine which was subsequently turned into a residential township. It began as the Auckland Park Gold Mining Company, having been named by a New Zealander after the largest city in that country. The first advertisement for the sale of stands appeared in 1888. By 1890 the original farm house had been turned into a hotel, and a lake had been constructed (*Diggers News*, 25.3.1890). The township was laid out on larger than average stands, and with its fine situation on a gentle north facing slope it attracted middle-class residents. The problems created by its distance from the city were overcome with the establishment of the Auckland Park Motor Service which ran eight services on ordinary week days, nine on Saturdays and one on Sundays. These, if

correctly reflecting the linkage between the township and the city, show that there were strong employment and commercial linkages between the two areas.

Mayfair and Fordsburg, although rated with the suburbs of the second rank (Fig.3.8) were socially inferior. When the manager of the Standard Bank in Fordsburg fell off his bicycle in 1906, John Gregson who worked at the Commissioner Street branch was sent to relieve him. His comments speak eloquently of its character and standing :

> 'Fordsburg is the western prolongation of Johannesburg and has its interests closely bound up with the very prosperous mines of Robinson, Langlaagte and the Crown Reef group. It is mainly a place devoted to the working classes and bears about the same relation to Johannesburg as say, Ancoats might to Manchester. In appearance Fordsburg is just about the opposite to the locality in which I live near Joubert Park, for there is not such a thing as an hotel or bar in that area, simply a nice residential suburb, whilst here there is the noise of the mines, the smoke of the central electric power station, the smell and smoke of the gas works and the griminess of several engineering shops and kindred places, with an abundance of bars and drinking saloons. I am told that for some distance along the main road it is, with intervening retail shops devoted to other things, just an alternating advertisement for Ohlssons and the Castle Company's noted ales.' (Gregson, 1906).

The high rating in Fordsburg would appear to stem from its commercial involvement.

Mayfair is a residential suburb of one-eighth acre stands which is next to an area marked as a 'native location' on Melville's 1897 map. It was on the railway line affording good access to the city. Despite this, it is difficult to find a satisfactory reason for its abnormally high rating. In terms of social standing, it has always been of a low order.

The Coloured Sector and the Southern Suburbs

Two patterns complete the picture of housing during the Formative Phase. The first of these is the embryo Coloured sector to the west of the city, comprising Indian, Coloured and African communities; the second is the separate group of townships collectively called the Southern Suburbs.

The gold mining industry had largely been founded upon non-White labour so that one notes from Melville's 1897 map that the non-White population of Johannesburg in 1896 (one decade after the discovery) was some 51,000 out of a total population of 102,000. They were made up of 952 Malays, 4,807 Indians and Chinese, 42,533 Africans and almost 3,000 Coloureds. As commonly occurs in human settlements, these various ethnic groups gravitated to their own areas and formed 'locations' which carried the distinctive stamp of their culture. A glance at the settlement map of Johannesburg for the mid-nineties reveals that most factors conspired to create a western Coloured sector at an early stage. There are a number of reasons for this pattern. In the first place one would expect the poorest community to be remote from the wealthy. In this instance the Coloured locations were antipodally located with regard to Doornfontein. In the second, one would expect the poor to be housed in the least desirable locality. This element of environmental quality was fulfilled by their close association with the industry of Fordsburg, the Braamfontein cemetery, the Gas Works and the Brickfields. The final consideration is proximity to places of employment. This community would not have the economic strength to move great distances to work, and this made it imperative that they should live near the city. These factors produced the Burghersdorp, Pageview, Vrededorp and other non-White complexes which have since been extended for many miles to the west.

To the south of the mining land the southern group of suburbs were

laid out in the late eighties. The first of these were Booysens and Ophirton. They were some miles from Johannesburg and on the Kimberley road so they represented an isolated hamlet which derived a reason for its existence by servicing the wagon traffic from both Johannesburg and the northern Cape. The Booysens hotel was a well-known landmark as also was Chandler's brewery in Ophirton. The residential land values in these townships were of a lower order commensurate with their isolated position. Further east were Turffontein, West Turffontein, Rosettenville and La Rochelle. The *Star* of 2 August 1897 describes the sale of stands in Turffontein in the following terms :

> 'On Saturday afternoon the Australian Trust Company offered by auction sixty-one stands (100x50) in Turffontein or Casey's Township. The sale took place on the ground and was fairly well attended. Selling started shortly after two o'clock, and at four o'clock, thirty had been disposed of at £45 upwards. In a few instances over £100 was reached. Eventually all ... stands were disposed of at prices ranging from £45 to £117.10s. per stand, the average price being £74.16.6.'

Turffontein was fairly representative of the Southern Suburbs so residential land values in the south were about one quarter of those ruling in Doornfontein and a fifteenth of those ruling in Parktown. The Southern Suburbs were occupied largely by blue collar White workers and especially the mining community. Before 1906 there was no municipal bus service to the city and access was by means of the few roads across the mining land.

A Synthesis : Land Value Determinants, Residential Development Determinants Spatial Patterns and Relevant Concepts

In reviewing the evolution of the Johannesburg housing market during the Formative Phase, a synthesis of the major social, economic and

other determinants of land values, enables one to assess their impact upon the spatial patterns of residential development and to examine the relationship of each to the appropriate concepts and models.

The primary determinants of the initial settlement pattern were the mining outcrop, a linear feature trending from east to west, and the series of ridges and valleys comprising the Witwatersrand. Like the auriferous outcrop, these were also linear, and were sufficiently prominent to limit the development of residential construction. The southward dipping reef was mined to a depth of four hundred feet which made the surface unstable and precluded any form of construction. Even if this was not the case, the mining properties with their scourge of dust and debris were quite unsuited to residential settlement. Consequently the first year of mining produced a lineal settlement of impermanent structures between the mines on the one hand, and the Witwatersrand, o the other, where access to work was perhaps the most sought-after attribute. Secondary considerations were the availability of water and the absence of swamp or marshland, considerations which gave rise to two of the three initial mining camps.

The promise shown by the first year of mining, and the influx of people, prompted the Transvaal Government to set aside the triangular piece of land *Randjeslaagte* for a town, and this was formalised with the survey by Jos. E. de Villiers in December 1886. The four squares, each the terminus of a major route from the surrounding countryside were instrumental in confining the settlement pattern during the next decade. Market Square attracted not only the headquarters of the mining houses, the Stock Exchange and the Rand Club, but also the main commercial centre in Rissik Street. The location of the Wanderers Ground near Plein Square, and the recreational and social facilities it offered, attracted the leaders of society whose homes

were in Noord and King George streets, and this was consequently the locality of the most expensive residential property. It is clear therefore that the de Villiers survey, and the disposition of the topography and that of the mining activities determined the disposition of both the residential land values and the settlement pattern. The middle-class residential areas were in the town itself where homes were intermingled with shops, banks, warehouses and other components of commercial life. Later, in the 1890's, the middle-class people moved to the new townships of Doornfontein, Jeppestown, Bertramstown and Troyville. Accessibility remained a dominant determinant of residential location and of residential quality. The blue collar white workers settled in the inner western townships, (Fordsburg, Mayfair and Vrededorp) living in close proximity to the non-White slums of Burghersdorp, or in the Southern Suburbs. Industry gravitated towards the mines to which most of the manufacturing activities contributed. The principal determinants of land values and of the development of residences during the first seven years were therefore, *first*, the economic strength of the ore deposits which created an area of opportunity conducive to migration; *second*, the linear pattern of the outcrop of the auriferous reef; *third*, the cadastral influence of the *vitvalgrond* known as Randjeslaagte; *fourth*, the nature of the de Villiers ground plan; *fifth* the east to west trending Witwatersrand ridge which confined settlement on the north; *sixth*, the importance of accessibility to the mines and associated industrial areas; *seventh*, the location of the Wanderers Ground and therefore the homes of the leaders of the community; *eighth*, the deleterious influence of the non-White cluster to the west of the town-centre which adversely affected land values in that vicinity, and *ninth*, the adverse influence of the industrial zone which developed along the Main Reef road which acquired its name from the

outcropping of the Main Reef.

With these determinants in mind one can consider the extent to which they reflect the underlying theories and models of both residential development and of the land market. The approach employed in this study in identifying the major determinants is the cultural-historical approach of Quinn (1940). It is proved appropriate since it considers both the temporal and the spatial dimensions of settlement. These reveal the behaviour of the typical consumer from time to time which in turn manifests itself in the physical fabric of the urban landscape. While the absence of either an annular pattern or of invasion and succession processes discounts the applicability of Burgess' Theory, that of Davie (1938) comes close to modelling the embryonic structure of Johannesburg. In keeping with his view, the CBD was 'more square or rectangular than circular', industry was located near transportation and it extended along the major roads, low grade housing was close to the industrial and transportational areas and finally first and second grade housing was elsewhere. Far greater insights are afforded however, by the views of Homer Hoyt (1939) and by those of the social area analysts who followed him. The processes which give rise to sectors of similar socio-economic quality were evident in Johannesburg once the ground-plan became a reality. By 1892, six years after the gold-rush, the socio-economic structure was manifested by clusters of differing status and ethnicity, these being representative of the sectors of the future. Clearly those processes associated with internal change in the urban structure, such as filtering, were absent in view of the comparative youthfulness of the town. In terms of the economically rooted determinants of residential land values a number of considerations are relevant at this juncture. Although no municipal valuations were conducted before 1904 it is reasonable to assume that site rentals reflected the socio-economic

structure of the town. Likewise, site size and the density of settlement revealed a strong positive correlation with land values, the most densely settled areas were those in the Insanitary Area of Burghersdorp, a non-White area where land was cheap. Residential development and the introduction of new townships followed the business cycle which in turn was dependent upon the production of gold, the economic base of the town. Finally the journey to work and the constraints of transport technology (the horse and buggy and the bicycle) militated against a dispersed settlement.

The residential development of Johannesburg during the latter part of the Formative Phase, that from 1893 to 1902, was influenced by seven factors. *Firstly*, the high status cluster of residences around Plein Square was adversely affected by the arrival of the railway line on the Rand and the decision to build the railway station next to the Wanderers Ground. This precipitated the first movement of a socio-economic group to the new locality. *Secondly*, the increasing number of people arriving in Johannesburg created a new demand for residential stands. *Thirdly*, the greater population density justified the introduction of the horse-drawn tram. *Fourthly*, the competitive property interests of the Johannesburg Consolidated Investment Company (the owners of Doornfontein) and the Braamfontein Company (the owners of Parktown) introduced, for the first time, rivalry in property development. *Fifthly*, the spread of settlement northwards out of the valley and into Parktown, Hillbrow, Berea and Yeoville was affected by the community's leaders. *Sixthly*, the garden city theory of Ebenezer Howard introduced a new set of principles which affected the design of residential townships, and created new residential environments in certain areas. *Finally*, the political developments which began with the Jameson Raid and ended with the Anglo-Boer War effectively terminated the Formative Phase.

In conceptual or theoretical terms Davie's model of urban

structure comes close to simulating the Johannesburg pattern in 1893 when the railway line became the primary determinant of industrial location, and when commercial land uses began to extend along the main radial streets, especially Commissioner Street. However of much greater significance were the socio-ecological views particularly those of Shevky and Bell and Hoyt. The latter makes special mention of the fact that high 'rental districts tend to move along the line of the contour and towards the more elevated parts of the town's site' (Hoyt, 1939). In conformity with this principle the leaders of Johannesburg's society in the 1890's moved eastwards along the contour from Plein Square to Charlton Terrace in Doornfontein and incidentally to the upper elevated parts of the suburb with the better views. As has been described, this cluster of wealthy people were shortly prompted to move on to Parktown as a consequence of Sir Lionel and Lady Phillips' development of their new home at *Hohenheim*. The homes of the society's leaders acted as a powerful magnet to others of the high status community, as Hoyt observed, so that Parktown's future was assured by these events. Another significant aspect was the route taken by the road linking Johannesburg to Pretoria. This passed through Parktown and confirmed Hoyt's view that 'high grade residential growth may proceed ... along major roads ... linking other important towns ... His theory is also confirmed insofar as movement was towards open elevated country, away from 'floods, and industry with its polluting odours'. The Shevky-Bell (1955) model which postulated a degree of socio-economic homogeneity in discrete parts of cities was generally applicable to Johannesburg in the 1890's with Parktown representative of such a high status cell. The invasion of parts of the downtown area by commercial uses once it had been evacuated by residents conforms admirably to the well-known processes of Burgess although no annular pattern is discernible in the townscape of the period. Stand size

and the preference for space which was a feature of Parktown, and to a lesser extent to Doornfontein, relates directly to the garden city concept of Ebenezer Howard and represented a changing pattern of behaviour on the part of consumers of real property. This was probably related to a disenchantment with traditional early Victorian environmental principles, on the one hand, and greater affluence, on the other. Considerations of access to the city, site rentals, and the principles governing the residential location of other socio-economic groups did not differ from those prevalent earlier in the Formative Phase. One final influence needs to be mentioned. Quinn's cultural-historical viewpoint would find the political events which culminated in the Anglo-Boer War of considerable significance to urban residential development. This was indeed the case. The war curtailed mining, reduced investment, caused a freezing of property prices and an outflow of capital and people. In this sense it had a profound effect upon the urban system, albeit for a relatively brief period.

Having synthesized the determinants of residential land values in Johannesburg during the Formative Phase and having related these to both the spatial patterns of development and the underlying concepts and models, one can move to the next phase during which the early developments were consolidated. For this reason it is termed the first phase of Consolidation and covers the period 1902 - 1913.

CHAPTER 4 - THE FIRST PHASE OF CONSOLIDATION : 1902 - 1913

The phase of Consolidation is so called since very little *real* growth took place particularly when compared with that during the Formative Period. The amount of building however was considerable, as is illustrated by Fig. 4.1, but the same cannot be said of growth in the value of real estate. The depression which began in 1904 was one of the severest and most prolonged South Africa had experienced, and only in the late thirties did property values move back to levels comparable with those of the previous century.

The data in this chapter come from two sources. Firstly a family of graphs (Fig. 4.2) which show the growth of the residential property market from 1904 to 1967. These statistics, which are municipal valuations are plotted at approximately six-year intervals. They are based upon market conditions. Secondly, the same information is shown cartographically and the market is divided into five status rankings for each valuation The status rankings have been arrived at by plotting the values of the city's residential suburbs in ascending order, and dividing the negative exponential graph which this procedure gives, into five categories. From these, sectors emerge which represent areas of similar land values (Fig. 4.3). Each is analysed temporally and spatially. These two representations of the housing market, enable one to determine the rates of growth (or decline) in different localities and also to examine their spatial manifestations.

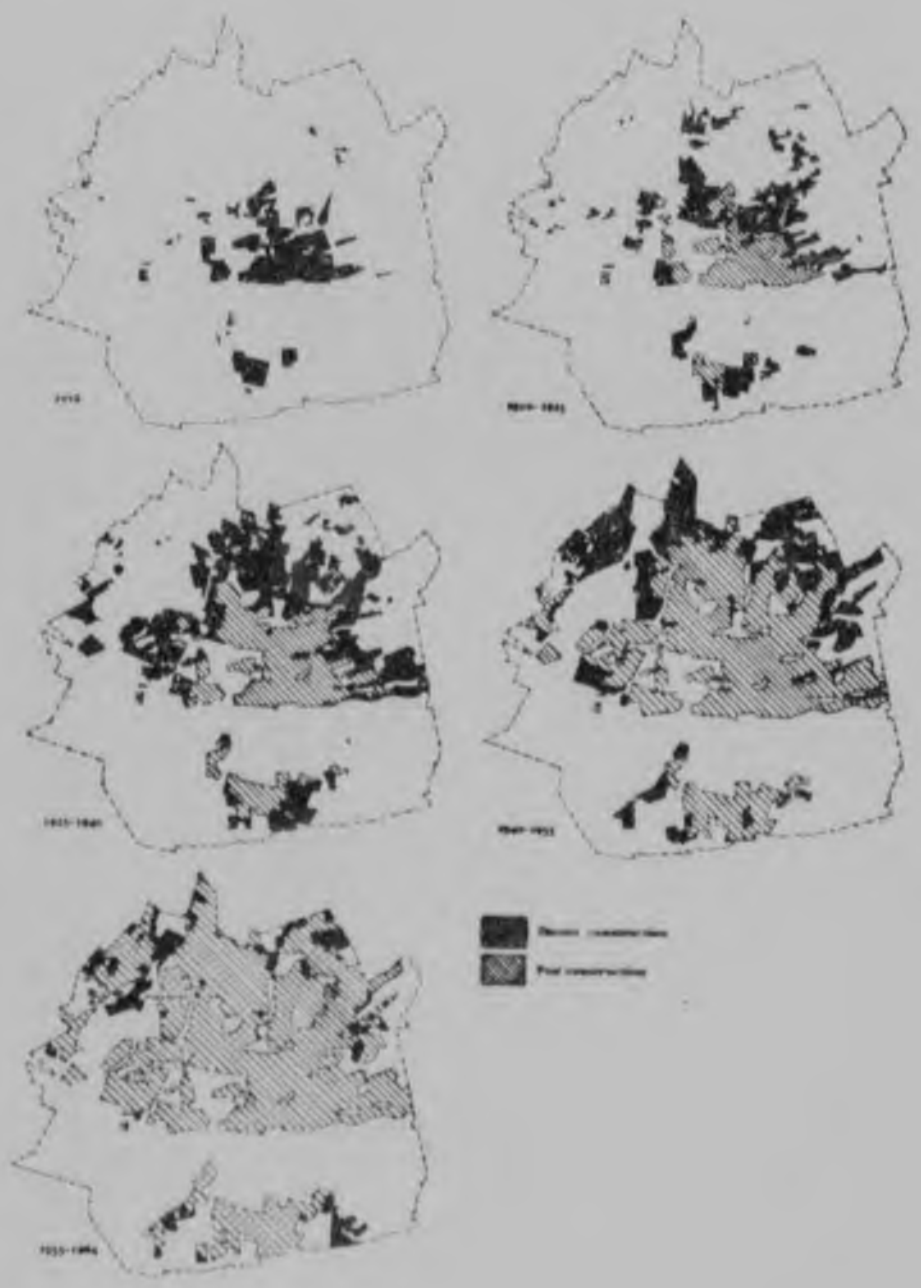


Fig. 4.1 - Johannesburg : The Growth of Buildings 1886-1964.
(City Engineer's Department, 1964).

(Tabulated Statistics : Appendix A)

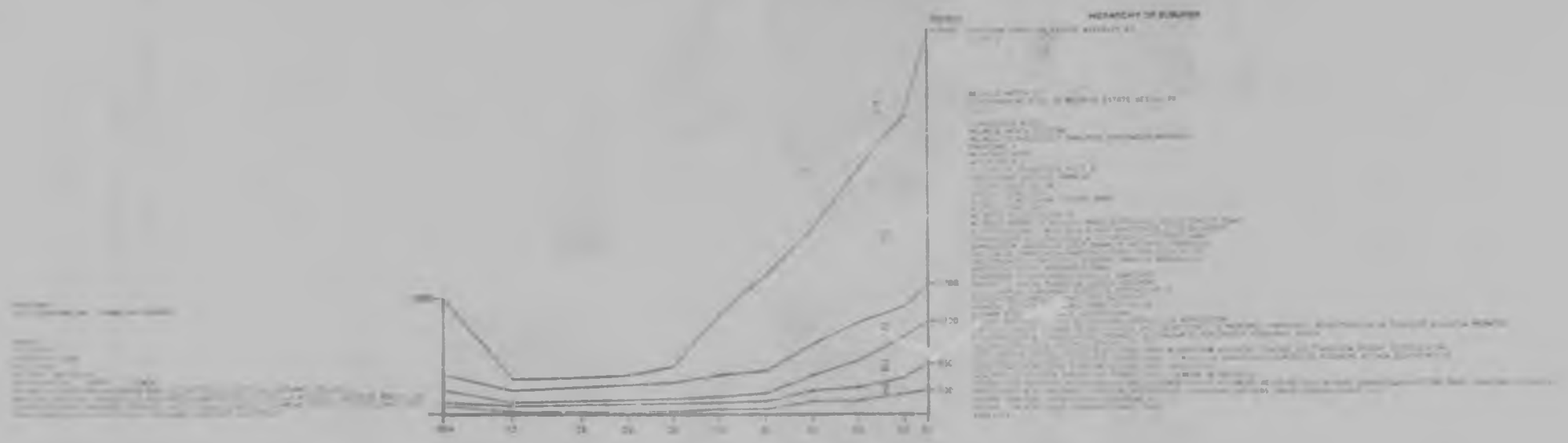


Fig. 4.2 - A Family of Graphs Showing the Pattern of Municipal Valuations in Johannesburg, 1904-1967.

(Tabulated Statistics : Appendix A)



Fig. 4.3 - Johannesburg : Mean Municipal Valuations per Suburb, 1913 (Ranked by Socio-Economic Status)

(Tabulated Statistics : Appendix A)

Prevailing Economic Conditions

At the start of this period, the Anglo-Boer War caused the almost complete cessation of gold mining. The value of gold output fell from £15,452,000 in 1899 to £1,481,000 in 1900 (Schumann, 1936). Total exports fell rapidly, while imports continued to rise in a conspicuously unfavourable trade balance. Immediately after the cessation of hostilities, boom conditions prevailed in the Transvaal. Prospects for the future seemed good, the gold mining industry was resuscitated, a development loan of £35 million was acquired, and reconstruction schemes further contributed to the speeding up of economic activity and stimulated a speculative environment (de Kock, 1936). As both de Kock (1936) and Schumann (1936) note, the result was an influx of foreign capital and immigrants, an undue increase of imports, the inflation of credit and the enhancement of revenue. More specifically, in 1903, more than 70,000 persons landed at the Cape and Natal ports, most of them bound for Johannesburg; imports advanced from £30 million in 1901 to £45 million in 1902, and £49 million in 1903, and exports from £13 million to £20 million and £25 million; the population of the Cape, Transvaal, Orange Free State and Natal increased from about 630,000 in 1891 to 1,117,000 in 1904; finally, the total bank deposits which stood at £25 million in 1899, rose to £47 million in 1902 (de Kock, 1936). The consequences of this financial environment to the housing market of Johannesburg are obvious. Vast sales of real estate ensued and property developers rushed ahead with plans to develop land for townships in a wave of speculative optimism. However these conditions did not obtain for long. For a number of reasons the boom could not be maintained. The primary source of trouble was the labour shortage which afflicted the gold mining industry. After the Anglo-Boer War there was a general shortage of unskilled native labour which

was remedied only in 1904 with the importation of Chinese coolies (de Kock, 1936). A secondary reason for the depression was the stimulus which Natal and the Cape had received as a result or the Anglo-Boer War, when there was a great demand for their products. Production had been increased again after the War in anticipation of a boom and the increased growth of the gold mines. When this growth failed to materialise a reaction set in and the economic disequilibrium caused a cyclic recession. The depression lasted until 1908 when the economy again began a rapid recovery. De Kock (1936) notes that the shortage of Black labour was removed and the gold industry advanced by leaps and bounds. The diamond industry also recovered and resumed its progress and the benefits of the corstruction of branch railway lines in many parts of South Africa were increasingly felt and promoted the development of farming operations (de Kock, 1936). All these factors produced a buoyant economic climate in the country as a whole, and in Johannesburg in particular in view of its increasingly important position as a domestic market. The establishment of the Union of South Africa in 1910 stimulated the economy further. Progress was severely curtailed, however, by a wave of labour unrest in 1913 and the outbreak of war the following year. These events created the economic and political climate which prevailed in South Africa during the period, here termed, the first phase of Consolidation, and against which residential development and residential property values in Johannesburg will be traced.

Technological Innovations Influencing Residential Development

The most important single factor which permitted the expansion of the Johannesburg housing market in the first decade of the twentieth century was the introduction of the electric tram car. Prior to the Anglo-Boer War, the public transport system of the city was the horse-

drawn tram. This rather slow and ponderous vehicle operated within a framework of topographical controls. The primary routes are shown in Fig. Fig.3.10.

It is clear that the quartzite ridge of the Hospital Hill series prevented the horse trams from operating beyond it and similarly militated against township development. To the south, the 22 square miles of mining land made the Southern Suburbs appear almost as another town, and quite beyond the reach of Johannesburg-based trams. The developer of La Rochelle in the Southern Suburbs stated on 5 November 1895 that 'in order to facilitate communication with Johannesburg, (I) will order two handsome and comfortable omni-buses, build stables, and hand the same over to some fit and responsible person, and will pay him a monthly subsidy of £15, on condition of such person establishing an hourly service at a maximum fare of sixpence per head per trip. This service is to be inaugurated within six months from the date of sale' (Norkel, 1895). This statement illustrates the importance of transportation to residential property development. Apart from La Rochelle, both Parktown and Auckland Park, then also considered remote, operated their own private horse-drawn buses.

Development and expansion of the housing market was therefore constrained locally by two factors : in the first instance by the topography and in the second by the level of technology. The electric tram was introduced in 1906. The pattern of this network is shown in Fig. 4.4. It reveals the perpetuation of a trend which has already been described, namely, the development of the north-eastern quadrant. Within the sector bounded by the ridge on the north, with its more elevated properties of Hillbrow, Yeoville and Observatory, and the mining outcrop to the south associated with its properties of Jeppestown, Kensington and Malvern, five

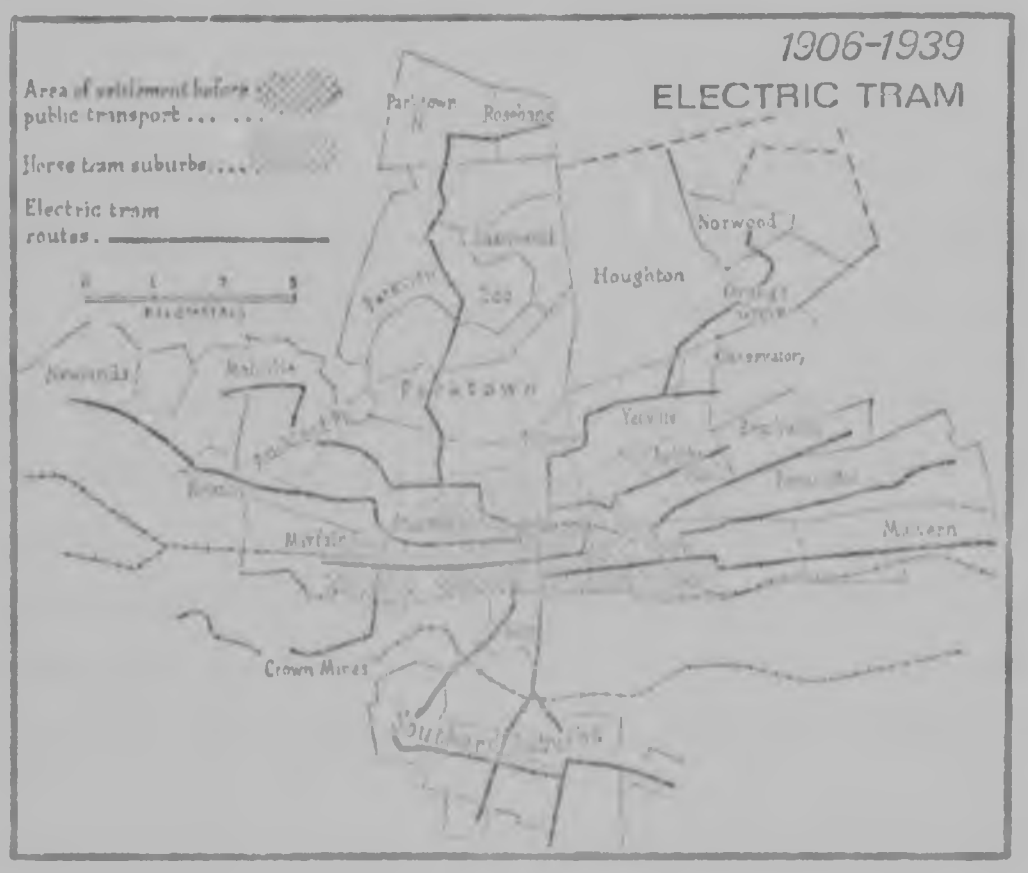


Fig. 4.4 - The Routes Followed by the Electric Tramcar Introduced in 1906. (Rand Daily Mail, 1970)

tram lines operated. In the north-western quadrant there were only three, namely, those to the Mayfair and the Crown Mines areas, to Newlands by way of Braamfontein and Brixton, and to Melville by way of Auckland Park. To the north a line ra along what was then called the Old Pretoria Road, (now Jan Smuts Avenue) to the terminus at Rosebank. This route was by way of Parktown, between Forest Town and Westcliff, east of Parkview, west of Parkwood and through Parktown North to Rosebank. Saxonwold was by-passed completely, a factor which contributed to its late development. A second north-bound route descended the ridge at Orange Grove and went as far as Norwood. Two routes, one along Eloff Street Extension, and one along the Booysens road, extended southwar's

through the mining land, to serve the Southern Suburbs. This transportation network encouraged the development and settlement of townships which would have been regarded as remote during the Formative Phase. In this sense it was a powerful determinant of residential expansion, and in the account of township development which follows its influence and that of the prevailing economic climate is constantly borne in mind.

In view of the emergence of an incipient sector-pattern during the latter stages of the Formative Phase it is reasonable to continue the analysis within a sector-framework. Consequently a sector by sector analysis of the patterns of residential development and residential property values follows. Smith's (1971) *Johannesburg Street Names* is the standard reference relating to Johannesburg townships, and it is used extensively in this section.

The Northern High Status Sector

The Formative Phase of Parktown's development set the character of the high rent sector at an early stage. Consolidation took place with the arrival of Sir Alfred Milner, the British High Commissioner, who took up residence at unnyside at the suggestion of Sir Percy Fitzpatrick. A man of Milner's stature had a profound effect on the housing market, both in Parktown and in the neighbouring suburbs. His occupation of one of the premier sites ensured that not only would his vice-regal influence spread across that corner of the city, but that many other notable people would visit the area. Benjamin (1972) noted that Sunnyside counted such men as Lord Kitchener, Lord Baden-Powell, General the Hon. Sir Neville Lyttleton, and Britain's colonial secretary, Mr. Joseph Chamberlain, among its guests.

By 1904 there were 170 houses in Parktown, and an acre of land

could be sold for almost £2 000. A number of public schools and a convent were built in the suburb, and the architect Sir Herbert Baker was persuaded by Milner to leave his Cape Town practice to aid in introducing 'a better and more permanent order of architecture in the Transvaal'. He lived in 'The Stonehouse' on Parktown Ridge.

Parktown's eminence is well reflected in its lay-out and in its design is perhaps a reflection of the fact that it was conceived at a time when there was a strong desire to escape city life. '*Rus in urbe*' had become the ideal, and Parktown's establishment derived from the social impulses of a 'desire for privacy, for exclusiveness, for an environment of snobbish isolation - *these were things driven from the same root*' (Mumford, 1938). The layout of Parktown reflected the prevailing social and economic forces. As has been noted elsewhere, the stand sizes lacked uniformity in all senses except one - namely, that they were uniformly large. A cult of individuality pervaded the area. This argued against stereotyped or regular layouts and further expressed itself in the architecture of non-conformity (Zar, 1972). The ground plan of the township departed from the formality of the grid-iron pattern, and the planners took note of natural determinants such as contours and outcrops. Zar (1972) notes that there were certain arbitrary factors which also had an important bearing on Parktown's planning, notably the establishment of *Hohenheim* before the suburb was formally laid out. Perhaps the underlying concept which *is* Parktown, is best displayed by the views of Ebenezer Howard regarding Garden City Theory of which the *garden suburb* was the progeny : '(it) was a total contradiction of the concept of collective idealism and here, ... in Parktown, the cultivation of individuality and social competitiveness were powerful forces. The garden suburb had as its basic concepts the idea of a

suburb *'within a park'* and the word 'park' represented some association with the rural approach inherent in Garden City Theory' (Zar, 1972).

Next to Parktown, to the north, and further along the ridge to the east, the Johannesburg Consolidated Investment Company acquired the property of the Houghton Estate Company. This township was in time destined to become a rival to Parktown for the pre-eminent position in the housing market. Smith (1971) notes that the earliest record of the area was an entry in the South African Financial Record of 24 March 1894 regarding a case in the High Court, Pretoria between the Houghton Estate versus Mr. B. Barrett and others: 'On 1 February 1888 Samuel Fox, acting on behalf of Henry Roberts, took a lease of a portion of J.J. Grobler's interest in the farm Klipfontein. On 18th July 1888, Fox sub-let a portion of the property to W.S. Barrett and E.S. McHattie at £100 per annum. On 20th July 1888, Fox q.q. ceded the lease to Joseph Nicholson who ceded it, on 7th March 1893, to the Houghton Estate Company. The company bought one portion of Grobler's ground on 10th March 1889, and the remaining portion on 1st April 1889. On the portion leased by him, Barrett had planted blue gum trees numbering 270 000, which he cut down from time to time.' The immediate predecessor of the Houghton Estate Gold Mining Company was the Houghton Syndicate comprising a group of prospectors from Pietermaritzburg who hoped to find gold in the early nineties. When the mining venture proved unsuccessful they started planning a township in 1894. As has been stated elsewhere, Barnato, one of the Rand Lords, had captured much of the real estate to the north east of the city, and in 1896 he consolidated his position with the acquisition of the Houghton Estate. Stands were sold from 1901 on the upper portion, north of the Pretoria Road (Louis Botha Avenue). A year later the Johannesburg Consolidation Investment Company purchased the plantation from Messrs. Barrett and Co., and added it

to the township (U.G. 34-1912, p.53). This latter portion is Lower Houghton, named so because of its position in relation to Houghton Estate (Smith, 1971). The pattern and character of the township *above* the ridge is quite different from that *below*, especially with regard to the age of buildings. The *Star* of 4 January 1902, quoting the J.C.I. Director's Report dated 16 December 1901, stated that Houghton was being surveyed as a very high class residential suburb with larger plots than usual. Lower Houghton, although generally described at this time as being covered by eucalypt plantations, was not entirely so. In a letter written to relations in England on 27 September 1896, John Gregson notes that much of the land on 'the north side of the rocky ridge is now being bought up for residential purposes and for market gardens ... The land is fetching handsome prices, of the order of £140 an acre'. He goes on to mention that the 2 100 acres of the Estate was transferred to the Barnato Brothers for £90 000. Land above the ridge, because of its better location with regard to the city was fetching prices of up to £240 a stand. Of particular interest to the present study is the relationship of these prices to those ruling in Parktown which show that the Houghton Estate was infinitely inferior in the eyes of the buying public. The gap between the housing markets of these two prestigious suburbs tended to close in the years that followed, especially as the commercial sector of the city took over from the mining sector, and spawned its share of people with the wealth and the inclination to live there. The market-gardening element in the landscape of Lower Houghton and Orange Grove was quite important at the turn of the century, as is evident from the following passage from a letter by John Gregson (27 September 1896) on the subject of a market gardener in this locality named Louw ... 'it speaks well for the prosperity of these gold fields that a man like Louw can come here with practically nothing, as he did four years ago, build a house and stable,

plant about 400 trees, and send two of his daughters to the Ladies Seminary at Wellington, Cape Colony, to finish their education; all out of planting potatoes and cabbages etc. and growing barley which he sells green on the Johannesburg Market at fabulous prices.' It is clear from the next passage of the letter that growth in the direction of Houghton Estate was anticipated: 'Louw has an option to purchase his farm for £700, and I believe it would have been bought over his head, but fortunately for him he has a 10-year lease from oneViljoen, a burgher of this State. The grounding is 13 morgen in extent, equal to about 24 acres, and its rental is £40 a year. He tells me that within the past month he has been offered £1 000 cash, and 12 morgen of ground two miles further away from Johannesburg for his lease, but he does not wish to accept, as he think- that by purchasing the property he may succeed in finally getting about £4 000 for it'. These notes show that this part of Houghton Estate, which then represented the *rural-urban fringe*, was eagerly sought-after by speculators, and that there was some anticipation of good profits in real estate.

With Houghton Estate developing to the east of Parktown a complementary development took place to the west. Two suburbs of note should be mentioned in this context. The first was Westcliff. It was laid out by the Braamfontein Company (Ecksteins) on 'the elevated ridges and terraces facing the Magaliesberg Range, to the West and adjoining Parktown.' Richard Currie who handled the private sales noted that the majority of plots commanded extensive views, th t the title and leases would be issued on the same terms and conditions as those of Parktown 'the Premier suburb of Johannesburg', that the suburb was within easy walking distance of Hospital Hill, that a number of private estates recently acquired by prominent citizens adjoined

Westcliff on its northern boundary, that the suburb was nearer to Johannesburg than any that had recently been laid out, that the roads were 50 feet wide, that it would soon become as 'fashionable' as Parktown, and finally, that the stands were of large size, ranging from half to one acre. A number of significant factors emerge from this description. Firstly, there is a constant reference to Parktown, both as to relative location, and to fashionable quality. This reinforces the view that Parktown established the spatial pattern of rental neighbourhoods. The second important factor is the emphasis given to the *distance* from Johannesburg, and the qualities of the site as to size of stands and views. It became clear that these were the sought-after qualities of the upper echelons of society in the Johannesburg of the time. Stands were sold in Westcliff for £300.

Finally, to complete the pattern of the high rental neighbourhoods of the city for this phase, one must consider the site and situation of Observatory. This suburb, like most others belonging to this category is situated on the elevated Orange Grove quartzites and commands excellent views. It was established as part of the farm Doornfontein in 1903 by the Reserve Investment Co. Ltd., and named after the Government Meteorological station which was built on a site of ten and a half acres donated at nominal cost, by the Bezuidenhout family (Smith, 1971). The suburb conformed in most respects, but to a lesser degree to those prestigious areas further west. It had large stands, good views and perhaps most important, had recently been connected to the city by means of the electric tram service.

The Northern Middle-Class Sectors

The middle-class areas of the early part of the initial phase of

Consolidation tended to be somewhat randomly located as is evident from the 1904 valuations and the 1913 valuations. There is evidence to suggest a ring of second order suburbs which include Parktown West, Braamfontein, Hillbrow, Berea and Doornfontein, (Fig. 4.3). Anomalies in terms of value in this ring are Parkview and Auckland Park.

Parktown West, that part of Parktown west of the Old Pretoria Road (Jan Smuts Avenue) developed a character quite different from Parktown proper. Whereas the latter had been laid out in acres or more, Parktown West was laid out on quarters and halves, with some blocks as small as eighths. The smallest stands occurred in Loch Avenue, and involved a number of cottages designed by Sir Herbert Baker to accommodate the employees of Hermann Eckstein, the head of the Braamfontein Company. This group of properties became known as 'Eckstein's Compound' and the name is useful in defining the socio-economic status of the area at the turn of the century. This part of Parktown was allocated to a lower status group, largely for reasons of physical quality and layout. Unlike its more opulent neighbours, Westcliff and Parktown, this portion is built on a slope with a *westerly* aspect which, next to a southerly one is the *least* sought after aspect in Johannesburg. It produces cold mornings and hot afternoons. The view was also amongst the least desirable of those available, looking as it did, towards the non-White locations west of the city. Prices of stands in Parktown West (judged by the municipal valuations of 1904) were of the order of £100 in the late nineties which made them comparable to Berea, Yeoville and Bellevue, and to parts of Braamfontein. Parktown *Extension*, that part of Parktown immediately contiguous with Milner Park (on its northern side) is a small zone deserving special mention. Originally, this part of Parktown was known as Parktown South, (Mayor's Minute 1904). The stands in this subdivision

are in general larger than those in Parktown West and their situation relative to the deep valley of the Braamfontein Spruit, which forms part of their southern outlook, is one which gives a commanding position. This was a more sought-after area, a fact supported by the number of residences it has designed by Sir Herbert Baker. Across the valley to the South, forming the northern slope, is Milner Park, the agricultural showground. This large open area was presented to Johannesburg by the Transvaal Government at the instigation of Lord Milner in 1903 (Maud, 1938). At first this open space was listed as a park, and inevitably, it did for the residences of Parktown South (which overlooked it) what the Zoo Lake did for properties in that locality. So a small island of higher land values has obtained in Parktown South (now called Parktown Extension) since its inception.

Parkview, which adjoins Westcliff on its northern margin, but at a much lower elevation, belonged initially to the Braamfontein Company and subsequently was sold to the Transvaal Consolidated Land and Exploration Company, which was its successor. It was laid out by C.P. Tomkins in 1960 'when it was almost universal practice to adopt the grid-iron pattern, irrespective of natural tonography, and one can appreciate his vision in ignoring custom and creating a garden township, taking advantage of all the best natural feature.' (S.A. Survey Journal, 1951). The five primary factors which contributed to Parkview's rating value at this time (1913) (Fig. 4.3) can be listed. The first was its location very close to the high rental neighbourhood sector and the fact that it formed, in a physical sense, the natural northward prolongation of the Westcliff promontory, with a gentle slope over much of its area; secondly, the mayor of Johannesburg, Major J.N. O'Hara, perhaps emulating the practice of the Rand Lords in Parktown, lined the streets with exotic jacaranda and oak

trees, adding significantly to its general appearance; thirdly a golf course was built along the north-western border, filling the bottom of the valley, and providing not only a facility commonly associated with the higher socio-economic groups, but also affording an attractive open space; fourthly, the Hermann Eckstein Park or the Zoo Lake (as it was more recently known) formed the north-eastern boundary; finally, it must be remembered that the electric tram-car, initiated in 1906, ran out along the Old Pretoria Road along the eastern edge of Parkview, and afforded an added attraction. It is clear that had the stand sizes been larger, the group living in Parkview would undoubtedly have occupied the first socio-economic rank. However, the demand for real estate in that category had not only been fairly well saturated by the development of the huge Houghton Estate, but the economic climate, as has been shown, militated against extensive spending on property.

Because of its effects upon land values in the vicinity, it is appropriate to examine the characteristics of the large open space created by the Zoo Lake and the Zoological Gardens. Smith (1971) notes that the Zoo, as it is popularly known, is part of the Hermann Eckstein Park, and in the terms of the gift of the Braamfontein Company, which had started its own Zoological collection, a piece of land of some three hundred acres was given to the city. The Zoo Lake is an artificial lake which was first sanctioned by the City Council in February 1906. The intention was to discover whether a larger lake was feasible. The trial proved successful and a larger lake was constructed as relief work during the depression of the next few years (Smith, 1971). This park straddles the Old Pretoria Road and occupies the lower portions of the broad valley below the Parktown Ridge. It forms the focus of a group of suburbs including Parkview, Greenside East, Parkwood, Saxonwold and Forest Town. In a later section of this study the

contemporary housing markets of these suburbs will be examined, and the influence of the Hermann Eckstein Park upon them will become apparent.

The ring of second order suburbs for the first part of the Consolidatory Phase was completed with Forest Town's development from 27 March 1894. Smith (1971) notes that this township was mentioned again in the Johannesburg Census of 1896, on Pritchard's Commercial Map of the same year, and on the Jeppe-Pritchard plan which was issued in about 1897. It was, however, not until 30 October 1908 (i.e. after the new township ordinance had come into force) that the Braamfontein Company applied for permission to lay out Forest Town on the farm Braamfontein No. 127 'under Article 93 of Gold Law No. 15 of 1893' (Smith, 1971). It was gazetted in the Union Gazette only on 10 January 1911. There are two important points relating to Forest Town which are germane to the present study. It was firstly in many respects the mirror image of Parktown West. The distribution of stand sizes was the same, the planning and layout of the townships (which take cognizance of old roads and lanes which traversed the area, are the same) and the socio-economic group inhabiting the areas,closely resemble one another. The site of Forest Town was originally a plantation which belonged to the Braamfontein company, so it was necessary to have on the property a number of officials to manage the timber in all aspects of its culture and marketing. These men had cottages built for themselves and their families in the present Sherwood and Torwood Roads, near the Old Pretoria Road. The most important of these people were the plantation manager and the company secretary. Some way below their homes and in the direction of Saxonwold was a saw mill from which the timber was brought by ox-wagon (Perrins, 1972). The second point is that this was the *rural-urban fring* of the day, the Sachsenwald was a wooded area as also was Forest Town and it was used, not

only for commercial purposes, but also for recreation, particularly on Sundays. Lord Milner was one who rode in the Sachsenwald every morning. In economic terms the encroaching city inevitably questioned the returns which could be derived from timber, as an alternative to those from real estate, and the suburb was consequently surveyed and offered on freehold terms to the public. As in Parktown West, the group moving to this area were of middle-class stock, the area was initially regarded as remote from the city, and this probably accounts for its fairly slow development. As late as 1920 the lower portions near the Zoo were still clothed in forest. The prices of land in Forest Town were comparable with those of Parktown West and Parkview, £80 per stand, as is evidenced from building plans of houses of the period. In 1913 there were only 13 buildings in the township and these belonged to company employees.

Beyond the Zoo from Forest Town, on the northern side, the suburbs of Parkwood (1907), Parktown North (1903), Parkhurst (1903) and Rosebank (1895) were laid out and offered for sale. These, as with other properties further east were initially speculative in character. Unlike the inner ring of older suburbs demarcated by the Parktown Ridge, the *newer* areas were beyond the limits of public transport, which proved to be the main consideration in limiting their development. Their survey and sale was for the most part a symptom of the upsurge in economic activity, and in anticipation of buoyant conditions following the Anglo-Boer War. The boom failed to materialise however and for some time these estates were almost devoid of buildings while consolidation and in-filling took place in the inner areas.

Arthur Heikle the doyen of Johannesburg real estate agents sold the freehold plots of Parktown North on 20 January 1904. Smith (1971) notes that apart from the excellent soil and water, and the beautiful views, much was made of the fact that 20 000 young trees ready for transplanting would be

given free to purchasers, pro rata, and that the electric tramway that was shortly to be laid to Hermann Eckstein Park would make communication easy, as Parktown North was only *five minutes walk* away ! This suggests that the success of the sale of stands depended somewhat upon the approaching tram-line. More support for this idea comes from the valuation role of 1913 which notes that at that time there were 299 stands to be sold, and that the value per stand was £60.

The case of Rosebank was not materially different from that of Parktown North. Richard Currie was the owner, and sold plots on 10 September 1896 (Bulpin, 1955). The stands were of large size and the township realized the good return of £25 000 (Smith, 1971). Little building followed the sale as is shown by A.J. Henochsberg's statement in *An Old Stager's Memories*, published by the CNA in 1933 :

> 'I was at the auction sale when first the Rosebank stands were sold. There was a fairly good demand. I purchased four. When going to Rosebank, several times after the purchase, I could not find the way to where these stands were situated. There were only one or two very small places erected and no other building was done for some considerable time. I sold the stands at a small profit, but today they would fetch at least four times as much as they cost me.'

Despite this comment of an early speculator in the Rosebank property market, its future was assured, since, at the turn of the century it had been chosen as the terminus of the northern route of the electric tram car service.

The municipal valuation roll at the time of the post-war boom (1904) shows that there were twelve houses in Rosebank, giving an occupancy rate of 7 per cent with a mean valuation of £150. This fell to £100 in 1913.

Parkhurst, (at first known as New Parktown) dates from 1903, and was a suburb which held the attention of the property market before the post-war recession. Stands were offered and sold at £100 for one-eighth of an acre, on the basis of ten guineas down, and the balance in nine annual, interest-free instalments. Within the ensuing decade the municipal valuation was £8 per stand. The sale of stands was well advertised and was stimulated by a competition run by the township owners, the African Realty Trust, to find a name for the suburb. This competition brought the remarkable response of no fewer than 12 000 entries. Much was made of the rural setting, free from dust, the advantageous location 'within less than 4 miles of the Market Square, (and) in the direct line of growth and development of Johannesburg's most aristocratic suburbs', the advantages of being near the Hermann Eckstein Park and near 'The proposed Municipal Electric Tramways.' (Transvaal Critic, 21.8.03).

Close to Parkhurst but almost a separate village was Linden. The average value of residential stands was £30 in 1904 and £35 in 1913. These were large but the township was well ahead of its time and tended to develop the character of an agricultural rather than an urban settlement. It was laid out in 1901 by Lourens Geldenhuys and Johannes R. van der Linde, the former being the owner of the farm Emmarentia, a portion of Braamfontein (Smith, 1971). It was for many years well-known for its production of excellent peaches, and while most of the inhabitants found employment in Johannesburg they were also committed to growing fruit. With subdivision, the agricultural aspect of the suburb declined.

The Western Low-Income Residential Sector

The broad zone of lesser-priced residential land which ringed the city in the first decade of the twentieth century was represented in the western sector by a number of suburbs of the poorest quality. These were,

in order of their increasing distance from the inner core, Vrededorp and Pageview, Cottesloe, Richmond, Bri.ton, Paarlshoop, Westdene, Sophiatown, Newclare, Claremont, Newlands, Albertville and Albertskroon. In the previous chapter, two observations we.e made which are relevant to this pattern. Firstly, it was noted that in the embryonic settlement of Johannesburg, this western sector harboured the lowest socio-economic group and was identified with the native and coolie locations on its inner margins. Secondly, the physical nature of Johannesburg's site produced a convenient corridor (with the mining land to the south and the quartzite ridge to the north) within which this sector could evolve. This physical fact enabled a predominantly non-White community to occupy a number of suburbs which were almost obscured from the views of nearby exclusively White townships. Bearing these factors in mind one can examine the residential development of this sector, on the one hand, and its housing market, on the other, from 1902 to 1913.

Smith (1971) notes that as early as 1893 the Executive Council of the South African Republic in response to a petition from *burghers* and brickmakers at Braamfontein, requesting that stands be granted to them at a nominal price, decided to empower the Mining Commissioner of Johannesburg to issue not more than 160 stand licenses to indigent persons at Braamfontein. This resolution was subsequently amended, and the Transvaal Critic of 23 June 1905 reported that of the 771 original holders, 321 were still in possession at the time. In this instance the individual had only squatting rights, and could pass the land either to heirs or to poor persons approved by the government (Smith, 1971). After the Anglo-Boer War the British authorities removed the restrictive clauses concerning the *burghers'* right of selling, and immediately speculators moved into the area.

Freehold title was acquired by the Town Council in 1907 (Act No.27) and thereafter it could transfer freehold tenure to owners on certain conditions. The effects of these actions upon the price of housing in the area was significant. There was still a large residue of Indian families and Coloureds intermingled with the poor Whites, the stands were tenths of an acre and most of the surrounding influences, particularly the Braamfontein Cemetery, the Gas Works, the Railways, the Brickfields and the industry of Fordsburg constituted an environment of poor quality. It is interesting to note, therefore, that while Vrededorp was not rated in 1904 (presumably because of the Government-controlled leasehold title), in 1913 this was fixed at £55. When compared with the rating of Parktown North at £60 one is reminded of the views of Alonso (1964), Berry (1972) and others, that poor people live *close* to their work-places on [illegible] land.

Pageview is an organic part of Vrededorp and was from the outset a Malay quarter, so that in most respects it was similar to Vrededorp, with the same strong commercial interests, but with fewer Indians and no Whites. It was not rated separately since it only acquired its separate status, and indeed its name in 1943. It was marked on Melville's (1897) map of Johannesburg as a native location and was presumably distinguishable from the 'Kaffir location' which Melville shows to the south of the railway line. The latter district, bounded by the railway's reserve and the mining outcrop and in many respects coincident with the shallow valley, the Fordsburg Dip, holds a special place in the evolution of the western low-status sector. Melville (1897) describes the various parts of this zone as comprising the 'kaffir' and 'coolie' location , the Brickfields (usually known as Burghersdo) the Gas Works (the precursor of the present power station) and parts of Fordsburg and Ferreira Town, (as it was then called). At the

turn of the century this low-lying area had developed into a severely *blighted* district, and because of the conditions it was called the *Johannesburg Insanitary Area*. It formed the inner region of the Indian, Malay, Coloured and African sector, and in establishing this ethnic settlement pattern it has left its mark in perpetuity. Smith (1971) notes that the Johannesburg Insanitary Area Improvement Scheme Commission investigated the problem in 1902 and this resulted in Ordinance No. 19 of 1903, which empowered the Council to expropriate the slums. The area in question, according to evidence given to the Public Health Committee by the Medical Officer of Health, Dr. C. Porter, on 12 August 1902, included Burghersdorp as far west as Malherbe Street, and including the part known as the 'Brickfields', another area known as the 'coolie location', in addition to part of Burghersdorp, and the eastern part of Fordsburg, limited on the west by Pine Avenue (Smith, 1971). The district was expropriated in September 1903 but by March 1904 [illegible] were still living there in the utmost squalor, because of the enormous opposition to any plan for moving them elsewhere. An epidemic of bubonic plague[1/], which broke out on 19 March galvanised the Council to action. A cordon of police was thrown around the location and the inhabitants were sent to a segregation camp at Kliptown (subsequently Pimville). A corrugated iron fence was constructed enclosing the entire area and early on the morning of 3 April 1904, the Fire Brigade set the whole place alight (Neame, 1960). The area was surveyed and replanned and in October 1904 renamed, appropriately, Newtown (Smith, 1971). The story told in these lines has some important consequences for the housing market both within the western

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1/ Some chroniclers note that the outbreak of plague was fictitious and was in fact the creation of a newspaper reporter who hoped it would galvanise the authorities into action !

sector and for the city as a whole. During the Formative phase of development of the settlement, the foundations of the slums of the western sector were laid, and there is evidence that this pattern has been perpetuated in both its social and spatial character to the present day. In fact a succession of slums have developed within the sector and a variety of clearance schemes have been initiated, but apparently to no avail. The root cause of the problem is economic, a community constrained by low income. It is significant that the population of the Insanitary Area was sent to Klipspruit which was merely an extension of the existing sector. There was in fact,no other locality in the environs of Johannesburg willing to accept a low status non-White community, and clearly one of the reasons was the deleterious consequences which such a move would have on property values in the vicinity of such a settlement.

Further west, beyond Mayfair, the property of the Langlaagte Estate and Gold Mining Company intervened between the city and the isolated hamlet of Paarlshoop, whose settlement geography has been outlined in a previous section. At the onset of the Consolidatory Phase, Paarlshoop was well settled. Land was valued at the modest figure of £40. The plan of the township resembled that of a village as also did its socio-economic character. The stands were water-erven giving rise to vegetable and fruit cultivation, the centre of the village had a Church Square, and as Smith (1971) observes, most of the inhabitants found employment in the adjacent gold mines. This separate identity of Paarl hoop is also attested to by its omission from Melville's Plan of Johannesburg and Suburbs (1897). In drawing up his map, Melville placed Mayfair, Melville and Auckland Park as the western-most suburbs of the town, and he looked upon Paarlshoop as a separate entity.

At the western extremity of the sector the suburbs of Newlands, Albertville, Claremont and Albertskroon formed the somewhat rudimentary rural urban fringe at the turn of the century. Smith (1971) quotes The Star (15.2.1972) in suggesting that the name of Claremont was derived from the suburb of the same name in Cape Town. The fact that Newlands adjoins Claremont in Johannesburg as also in Cape Town would appear to lend some credence to this view. Claremont was surveyed on the farm Waterval No. 79 and the first stands were auctioned by Arthur Meikle on 3 December 1896. An advertisement appeared in the Critic on 23 October 1896 which described the suburb in glowing terms. The first advertisement was followed by another on 13 November 1896 which detailed the stands as numbering about 1200, of 50 x 100 feet (one-eighth acres), and being on an elevated slope between the Langlaagte and Maraisburg stations. The trams, it intimated, would stop at Claremont regularly on and after Sunday 15th November and would transport individuals to the Park Station (i.e. Wanderers Ground) in the city in fifteen minutes. Other attractions were the 'presence of reticulated water from the Johannesburg Waterworks, the magnificent views (presumably to the south), the . air, the lack of building restrictions and the convertibility fr easehold to freehold at a nominal cost of fifteen pounds'. Smith (1971) notes that the development of the township was retarded by the outbreak of war in 1899, and this is largely true. However, there are other factors, possibly more significant which delayed its development. On the other hand, the suburb was quite remote from the main settlement, being far beyond even Auckland Park, which, as has been described was then considered a separate village beyond the limits of continuous settlement. On the other hand, Claremont's location was within the sector of low status neighbourhoods, and while it might be argued that its rural situation would tend to suggest a different

settlement history from that of the main parts of the sector, the gold mines nearby largely determined the *status* of the community and consequently the value of the land. In 1904 Claremont was valued at £30 a stand which placed it in the lowest category of the hierarchy of suburbs.

Of Albertville and Albertskroon the former was the first to be surveyed and auctioned. The auctioneer H.J. Morkel offered 500 stands for sale on behalf of the Albertville Syndicate on 22 October 1896. The township, like Claremont formed a part of the farm Waterval and according to the advertisement was situated in a lovely valley about three miles from Jonannesburg, and five minutes drive from the railway. The topography was said to yield excellent protection from wind and dust (Smith, 1971). In common with Albertskroon, which was named after Andries Johannes Alberts (apparently no relation of Hendrik Abraham Alberts, who gave his name to Albertville) these townships were laid out on the smallest stands. For reasons similar to those of Claremont, and because of their greater distance from the railway line, they were extremely thinly settled. In 1904 there were only eight houses in Albertskroon, and the value of stands in Albertville was £8 each. This was the lowest valuation for any township in Johannesburg at the time.

Newlands, the last of the suburbs promulgated at the turn of the century on the fringe of the low status sector, dates from 1897. In 1904 at the time of Arthur Meikle's first valuation he placed a mean value of £17 per stand for the suburb, a figure which matched the lowest status ranking for the city. The township conformed to the now common pattern in the locality with small stands in a grid pattern yielding an extremely fine texture and close settlement. Its socio-economic evolution has been consistent with the conceptual developments described earlier.

In reviewing the low-status western sector for the period 1902 to 1913 it would be true to say that the pattern can be traced to the origins of the city's socio-economic landscape, that the topographic and mining controls tended to accentuate an otherwise normally observed phenomenon, that the community was largely non-White, that the stand sizes were small and relied mainly upon the railway line to provide the linkage with the core, and that the values were uniformly low, creating the lowest echelons of the market for residential land. Within the sector a few urban villages (such as Paarlshoop) persisted as historical relics of an earlier period, and developed as anachronisms. It remains now to examine residential development and residential land values of townships situated to the east of the town centre.

The Eastern Middle-Class Sector

The 1904 value surfaces reveal a ring of suburbs of the second-order, close to the core area of Johannesburg. These were New Doornfontein, Bertrams, Troyeville, Jeppestown, Fairview and Wolhuter. Further down the valley were third-order townships of Bezuidenhout Valley and the large suburb of Kensington. Those of the inner zone can be divided into two groups, on the one hand, those to the north of the railway line, and on the other, those to the south. The northern group were, in 1904, fully settled, and represented upper middle-class people, and were the mature townships of the day. The inhabitants were professional and commercial people and the age and the condition of the buildings had an appearance of good quality. The southern group, comprised the City and Suburban and Wolhuter townships which were no longer residential townships and had become industrial and engineering areas and were rated according to this predominantly commercial orientation.

The outer ring of suburbs comprising Bezuidenhout Valley and Kensington developed in response to the demand for land of the middle rank, close to the city, and with good accessibility which was afforded by the electric tram-car. When the farm Doornfontein was proclaimed a part of the gold fields in 1886, the northern portion was excluded from the proclamation by the owner F.J. Bezuidenhout. This he reserved for himself and his family, and in 1902, following his death, the area became the township of Bezuidenhout Valley (Smith, 1971). The Star (23.6.1902) notes that the advertising of the property was undertaken by Arthur Meikle and that the first sale took place in October 1902. Its low rating was due to its relative newness and its location on the eastern perimeter of development. It lies in an east-west trending depression, which approaches a depth of three-hundred feet below the surrounding ridges. On the northern side are the quartzites, backing upon Observatory, and opposite are those of Langermann's Kop (Fig. 4.4). The relationship of the topography to the site of the township gives it very little outlook so that residential sites have no good views. Added to this, the land drops away from this point to Gillooly's Farm further east. Through the centre of the valley is the Bezuidenhout Spruit, a small stream which, although undistinguished in this part, becomes more substantial further down. It divides the valley into two parts, each of which has been distinguished by the size of the stands allocated to it in the original survey. Fifth Street forms the boundary between one-quarter acre sites to the north and one-eighth acre sites to the south. Although the differentials in property values between the two parts is not available, it is not unreasonable to suppose (provided that the smaller stands were not notarially tied) that the larger stands commanded the higher prices. The 1904 valuation of £250 declined dramatically in 1913 to £50 per stand.

Adjoining Bezuidenhout Valley on the southern margin is Kensington, a suburb of considerable proportions, with almost eight-thousand stands. It extends from Jeppestown on the city side, along both the main eastern valley and the southern quartzite ridge, a distance of almost one and a half miles. Within this vast area, a variety of socio-economic groups, topographic characteristics and life styles are discernable. On the one hand, there were those who lived on the Jeppestown border who, in a relative sense were close to their places of work in the city, while on the other, those at the opposite end of the township were at the rural-urban fringe, which had to wait another half-century before it was developed in the late forties and fifties. In terms of stand-size there were the smallest subdivisions in the south-west, and some residential sites of over an acre in the north and east. Some of the properties on the Kensington ridge not only combined size with a magnificent northern aspect (similar to that enjoyed by Westcliff, Parktown and Houghton Estate) but also had an excellent view of the northern areas, the north-west over the city itself and the north-east to the rural farmland with its picturesque, undulating grasslands. The deleterious influences of the mine properties were screened from most of the township by the Kensington ridge as also were the unfavourable climatic influences, and the wind-blown dust from the mine dumps. The Langermann's Kop locality, because of its prominence, and because of its difficulty of access, and its restrictive building situation, was allocated fewer sites in terms of area than other parts. The promontory was named after Max Langermann the Chairman of the Kensington Estate Co., and sometime city councillor (Vade Mecum, 1967). In the centre of Kensington, Rhodes Park was laid out in 1903 to 'increase lung space ... in the centre of the property' (S.A. Mines, Commerce and Industries, 1903). It was subsequently enlarged

(September, 1915) to a greater size with the gift from the Kensington Estate Co., of 43.88 acres. This extension was subject to the condition that the City Council should spend £2 000 on laying out the ground within two years (Smith, 1971). Unfortunately with the onset of the war this was delayed, but Smith (1971) notes that bar-iron for fencing was obtained from Bethlehem, and with this the park was enclosed. The fact that it bears the name of Cecil Rhodes is coincident with the event of his death which had occurred in the year previous to its development (1902). In the centre of the park, which is near the bottom of the Kensington valley, there were some good springs and from these an ornamental lake and water gardens were developed. The significance of Rhodes Park to the housing market was not as apparent in those early years as subsequently, but its position as a feature of great beauty, and an open space make it very significant to the contemporary pattern. In another sense, Rhodes Park provides a focus for the township as a whole, and in many respects it does for Kensington what the Zoo Lake contributes to the valley in which Parkview, Parkwood, Saxonwold and Forest Town are located. This unity expresscs itself in a socio-economic and cultural outlook which is a distinctive feature of the Kensington scene. In fact, it would not be too extravagant to say that this syndrome reflects a Kensingtonian spirit which has some of the qualities of those of the Parktonian, insofar as a sense of belonging to an area is a distinctive part of the thought and life of the locality.

Smith (1971) notes that the origins of Kensington can be traced to the 7 October 1896 when Max Langermann obtained a lease from the owners of the farm Doornfontein for the site of the township. Wood and Ortlepp's New Map, *Witwatersrand Goldfields*, issued in 1899 has Kensington 'proposed township' marked on the site. The Kensington Estate Co., Ltd., purchased

Langermann's rights on 4 April 1902, and later in the year James B. Tucker and W.H.A. Pritchard surveyed the township (Smith, 1971). The Transvaal Critic (June, 1904) ran an advertisement on the suburb which, because of its attention to details of an environmental and locational nature is worth reproducing :

> 'Kensington Estate is a suburb which affords scenery of a great natural beauty and, in addition to commanding truly magnificent views, it is most conveniently situated for the professional and business men of Johannesburg, as the Eastern Extension of Commissioner Street enters the Property about Two Miles from Market Square. Its varied and strikingly agreeable characteristics are rapidly becoming more widely known, and astonishment is general on the part of visitors that residential building sites of so desirable a nature should be available so near to the business centre of the city - being, practically speaking within even easy walking distance. The grandeur of the Mountainous Kopjes on the one hand, and the Open Rolling Veld, gently sloping towards the Bezuidenhout Valley, on the other, together with miles of Picturesque Avenues and Roads reveal a park-like prospect, which can scarcely fail to captivate the eye of those who delight in locating their homes amid Nature's Artistic Surroundings.
>
> As a Bracing Health Resort the township is unsurpassed in the whole country. Even when the summer is at its height and the atmosphere in the town and elsewhere is oppressive and heavily charged with dust, there is invariably on this Estate a cool, refreshing breeze, which is as enjoyable as it is invigorating and recuperating to those who are subjected to the wear and tear of city life. Another important feature is that the deleterious and deadly dust scourge is conspicuous by its absence.
>
> Notwithstanding the prevailing commercial depression, shrewd and far-seeing observers are continually securing surpassingly choice positions, and clients rarely view the property without convincing themselves of the advisability of selling out elsewhere and hastening their steps in the direction of this Ideal Residential Quarter. The Estate Company is only disposing of a limited number of Stands at present prices, which are appreciably lower than current rates in the adjoining neighbourhoods, and it needs no expert experience on the part of intending purchasers to enable them to readily assess the relative values of the respective situations themselves.
>
> Arrangements have been made to ensure the running of the new Electric Cars through the Estate at the earliest possible date in a direct route connecting Roberts Avenue with the centre of the Town
>
> As A Medium For An Investment also, these Stands are unequalled, and all who wish to inspect same are cordially invited to communicate with the Estate Manager.'

The relevance of this advertisement is the way it establishes the qualities which appealed to the buying public at the time. By and large the same qualities are sought after at present. Much was made of the semi-rural atmosphere and, in an otherwise featureless environment, of the ridges and valleys which abound in the area. Much was also made of the air and the healthy qualities it induced, since there was a prevailing consensus that respiratory ailments were the inevitable outcome of a polluted atmosphere. One might also note the reference to 'the deleterious and deadly dust scourge' which shows that the mentally and physically abrasive properties of wind-blown mine sand were factors to be considered when purchasing a site on which to build a house. Another important influence was the 'miles of Picturesque Avenues and Roads which revealed a park-like prospect...' When in July 1909 freehold title was offered to certain leasehold townships, Kensington was included and had a number of restrictive clauses attached to the title to properties in the suburb. These were not dissimilar from those obtaining to Parktown and may well have emanated from that quarter. The stipulations (Gazette, 2.7.09) were that 'the transferee shall have no right to construct or keep grass or mud huts or grass or mud houses, or cattle kraals or pigsties ... nor shall he plant any blue gum (*Eucalyptus globulus*) or black wattle trees (*Acacia decurrens*, variety *Mollisima*) ... (nor erect) unsightly fences (in which) are included barbed wire, reed, loose stone, (and) galvanised iron (unless) well and properly painted' (Smith, 1971). This and what has been said previously is evidence that the township developers made a conscious effort to place Kensington fairly well in the hierarchy of suburbs in the hope that it would not only maintain its value-levels, but perhaps improve them with the market as a whole.

The significance of the new electric tramcars shortly to link

Roberts Avenue with the commercial core of the town cannot be overlooked. Those areas with either a direct link, or an anticipated one, with the town-centre, were rather more sought after for residential purposes than those not so favoured. The transport technology was a most significant factor at this time.

Reference has been made to the commercial depression which prevailed at the time of Kensington's proclamation. It was a bad time to flood the market with a vast number of stands. On the other hand, being a large suburb with a great variety of stand sizes in different localities to choose from, it was possible to 'pick the eyes' out of the estate, and this appears to have happened. Many large properties on the Kensington Ridge and opposite at Langermann's Kop were settled first, and at prices comparable with those ruling in Houghton Estate, while the smaller sites adjoining Langermann's Kop on the west, and that part contiguous with Lorentzville and Troyeville, were also settled. Proximity to the already developed part of the town was an important determinant.

Behind Kensington and adjoining it on its southern margin, the township of Morristown was surveyed and laid out. The first reference to the township was contained in Article 775 of the Executive Committee of the South African Republic dated 17 December 1889. It records that Mr. H. Morris was allowed 'to give out' a piece of ground at Doornfontein as claims or surveyed into stands (Smith, 1971). Hyman Morris was the accredited representative of the Duvenhage Syndicate and the Z.A.R. Staatscourant of 26 February 1890 contained a notice to the effect that Doornfontein No. 323 was to be surveyed into stands. The assumption is that this is the beginning of Morristown (Smith, 1971). The township appears on Goldmann's Map of the *Witwatersrand Goldfield. No. 98* in his

South African Mines, Vol. 3 and on Wood and Ortlepp's *New Map* (February 1899), but not on the Mining Industry Commission's Map of 1902. The first indication that Morristown and Malvern are one and the same township comes from an observation in the Transvaal Critic (8.7.1904) which noted 'some interested members of the Witwatersrand Township, Estates and Finance Corporation, Ltd. met on 1 July 1904 and reported that some of its property east and north of Jeppestown had lately been amalgamated with other properties and floated as the Malvern Estates and were laid out as stands for a residential resort.' The first notice of the sale in the Star (20.9.1905) is worth reporting for the insights it offers into the market of the eastern sector :

> 'During the past few years the growth and development of townships in the immediate vicinity of Johannesburg (presumably the Randjeslaagte area) has proceeded at a brisk pace, but in no direction have these extensions been so rapid and numerous as in the Eastern Suburbs. Jeppestown has become a thriving business centre, the one time lonely plantations and drives of Belgravia now abound with villa residences, while houses and shops have sprung up in all directions (and) in the adjacent properties known as Fairview and Jeppes Extension. The demand for residential and business sites in this direction still continues, however, and an opportunity is about to be offered to those who wish to acquire stands by the sale of Malvern Township...'

Malvern was a well-attended resort on Sundays and public holidays, and the popular pastime of promenading during which one saw, and was seen, was followed on the riding ground. Although no evidence has been found as to the precise locality of this meeting place, one assumes that it was either at the western reserve or the eastern reserve. These two open spaces later came to be called Alexander and Fotheringham Parks respectively. The probability is that the riding ground was the latter since mention was made in The Transvaal Critic (16.2.1906) of 'the excellent view of the surrounding country (which) can be obtained in all

directions'. By 1906 the electric tram rails had been laid through Jules Street, and the Cleveland and Denver railway stations were close to the border of the property. Consequently, the township enjoyed 'greater facilities of access to the centre of the city than any other suburb.'

Being, in some respects the reciprocal of Kensington, Malvern had an elevated position but with a southern aspect overlooking the mining properties and the associated engineering and metal-working shops of Denver. The outlook was perhaps somewhat better than in more recent years, since the waste-products of mining had yet to assume their gargantuan proportions and a view to the green hills beyond could be obtained. The stands were of the smallest size so that socio-economically the inhabitants were of middle and lower order. The 1913 land-value surface map reveals, together with Jeppestown, a second order ranking, which is due to the more generally settled nature of the township, when compared with Kensington beyond the ridge. Values at this time were closely associated with the degree of occupancy.

The Low Income Community of the Southern Suburbs

Leaving the settlement and property values of the townships north of the mining land, and viewing those of the Southern Suburbs, one sees a pattern little changed from that of the Formative phase. Only one new township was proclaimed in the 1902 to 1913 period, and the already existing townships continued with in-filling. Regents Park, adjoining La Rochelle on the east dates from 1 January 1904 when Dr. J.E. Neale started the township on Klipriviersberg No. 25 (Smith, 1971). On 30 March 1905 the Regents Park Estates Ltd., took over the township and

Sam Goldreich (who also developed Hillbrow) had a hand in its development. The suburb was named after Regents Park in London (Smith, 1971). The location of the suburb against the mining land, and on a grid pattern with one-eighth acre stands, and with no means of access to the city accounts for its low status ranking. Its mean value in 1913 was a mere £[illegible] per stand which was second only to Forest Hill (£15) and Rosettenville Extension (£15) as the cheapest property in the Southern Suburbs. The terms of the sale at Meikles saleroom adds weight to these values. Stands were obtainable on payment of only £10 with the balance free of interest - surely an adequate incentive to purchase.

Changes in Municipal Values [illegible] 1913

In reviewing [illegible] changes in residential property values in Johannesburg (Fig. 4.2), one notes that properties belonging to different socio-economic sectors responded differently to the depressed economic conditions. Those in the high status sector declined by at least 60 per cent of their 1904 values.(Fig.4.5). Properties in the second rank tended to lose less (>41 per cent); in the third rank still less(>30 per cent); while in the fourth and fifth ranks the losses were >24 per cent and >12 per cent respectively. If one is permitted the assumption presented by the large group of market oriented models, that the price paid for residence is a function of income, this set of data is more meaningful. The distribution of income in the population follows a curve, which shows a small percentage of the population in the upper income bracket, and a

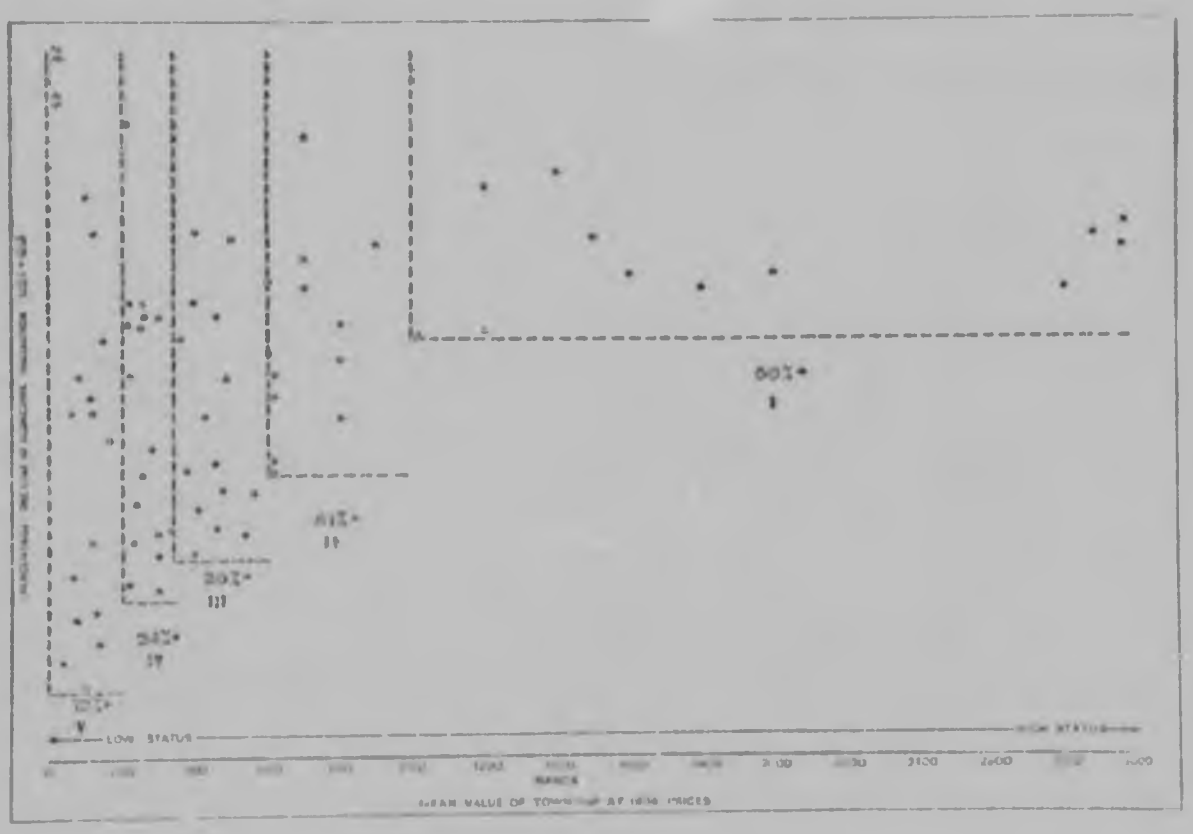


Fig. 4.5 - Percentage Change in Mean Municipal Valuation per Township, Johannesburg, 1904 to 1913.

large percentage in the lower income bracket (Fig. 4.6). In Johannesburg where there are ethnic factors creating a caste society, this syndrome is emphasised. The income curve and the curve of residential status rankings (Fig. 4.6) are of the same general form. Consequently, the number of participants in the market at the upper levels (Status Rank I and II) is very small, so demand in this area is elastic. In response to a change of price, the quantity of the good demanded varies greatly. In the lower categories (Status Rank IV and V) the number of participants in the market is large, (possibly as much as 75 per cent of the market) and demand is therefore inelastic, so the consumer buys whatever the price. In passing, one notes that price changes in the lower categories (because of the low initial price) will be small. This is shown in Fig. 4.6. In the cent

of the curve (Status Rank III) the elasticity of demand may approximate unity, where the change in demand is proportional to the change in price, revealing an area of *stability* in the system.

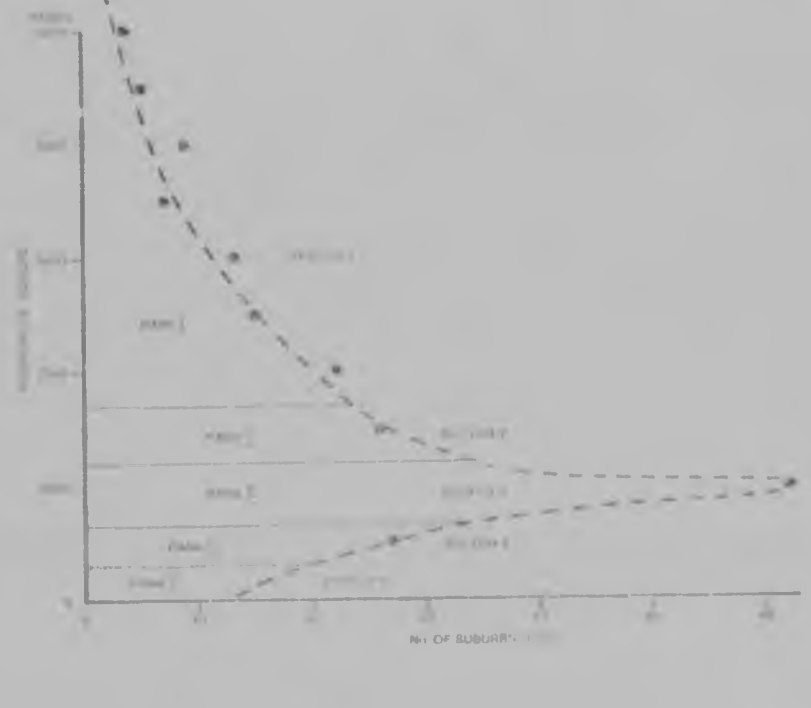


Fig. 4.6 - The Curve of Housing Status Rankings and Income, Johannesburg.

A Synthesis : Determinants of Residential Development, Residential Land Values, Urban Spatial Patterns and Relevant Concepts

The objectives of the present chapter are threefold. Firstly, to describe the economic and political climate which existed in South Africa as a whole, and in Johannesburg in particular during the period from 1902 to 1913. Secondly, to trace the development of residential townships and the associated land values in those townships during the same period and finally, to describe the spatial patterns which emerged from this urban growth. From this the determinants of residential development and of residential land values during the period can be identified, and these in turn can be

compared to the determinants during the Formative Phase and related to the underlying theories and models.

Residential development in Johannesburg during the period from 1902 to 1913 occurred in three phases, each of which was determined by the oscillations of the business cycle. The principle expressed here, namely that residential development is largely controlled by the general level of economic activity, has been articulated by Wendt (1957), Bourne (1951) and others for whom urban land values are the result of the interplay of economic forces. The first phase of development was precipitated by the anticipation of general prosperity throughout the country following the Anglo-Boer War. Some of the circumstances which contributed to this climate have been described here. The spatial manifestations of this optimism emerged in Johannesburg when a great number of new townships were surveyed, promulgated and gazetted between 1902 and 1904. The locations of these townships, their configuration, the numbers of stands and their sizes, their municipal valuations and their general prospects have been the subject of much of the present chapter. It is appropriate therefore to view the business cycle as a powerful determinant of residential growth. The economic recession in 1904 was a cyclical recession caused by a labour shortage. It left Johannesburg with numerous residential townships but with little prospect, in the short term, of their occupation. The unoccupied areas were mainly those beyond the Parktown ridge so that sheer distance from the commercial area was a limiting factor in residential growth under recessive conditions. This situation conforms closely to Evans' (1973) model. The final phase, that from 1908 to 1913 was one of relatively rapid recovery with the labour shortage removed and the gold mining industry advancing 'by leaps and bounds' (de Kock, 1936). However, the residential land market did not respond to this revival because the

supply of new township land following the Anglo-Boer War had yet to be taken up by the public. So an important feature of the business cycle's relationship to residential land is its capacity to stimulate a gross over-supply which might not be utilised for a considerable period of time.

The second determinant of residential growth and of property prices is that of transportation. The review of suburban development in the present chapter reveals a close association between the changing transportation network, largely as a consequence of introducing electric tramcars, and the density of population and settlement. The new form of transportation encouraged the settlement to break its topographic bonds and new townships proliferated beyond the Parktown ridge and elsewhere. The desirability of these new estates was commonly linked to the approaching tramcar system. Perhaps the significance of this new development is realised when one recalls Alonso's (1964) statement that transportation is a device to overcome the friction of space, and one appreciates that the commercial district of Johannesburg was still the main employment area, so this innovation set in motion some very important forces. Their effects were only really manifested in the physical development of the landscape during the following decade. However, it can be noted in passing that the profound influence of transportation on accessibility which occurred at this stage of Johannesburg's development is in close conformity with the accessibility models of Von Thünen, Ricardo, Dunn, Haig, Alonso and Hurd.

The third determinant of residential development and the price of land was one which grew out of the principles embodied in Ebenezer Howard's 'garden city concept'. This determinant was largely absent during the Formative Phase. The primary characteristics of the philosophy of the garden city concept were embodied in the suburb of Parktown and to a lesser degree in Westcliff, Houghton Estate and Observatory. Space for

living in a garden atmosphere, space for recreational pursuits, space for large trees and shrubs all combined to produce the phrase *rus in urbe*. Allied to these strong spatial preferences and the amenities they afforded were those associated with a fine aspect (usually north-facing) fine views, elevated sites free from the dust of the mines and the noise of the industry. In short, the third determinant is an environmental one, and since those who subscribed most to this philosophy were the wealthy, the spatial manifestation was sectoral. The only exception to this pattern was found in those townships along the Parktown ridge which derived their importance from the elevated nature of the ridge itself. In all respects the high status sector confirms Hoyt's theory and of course those of his successors the social area analysts.

Another area of confirmation for the sector model at this time was the influence of the location of the society's leaders upon the spatial pattern of property values. Quite apart from the local notabilities of the phase of Consolidation, were those people associated with government, the most important of whom was Lord Milner, the High Commissioner. His occupation of the Sunnyside estate in Parktown further confirmed the pre-eminence of this township and must inevitably have influenced the residential land prices.

Just as Milner influenced Parktown, so the non-White community determined the residential quality and status of the western sector. These numerous suburbs have been described in detail and from these descriptions emerge common denominators which account in large measure for the residential property prices there. The determinants taken collectively refer to the size of stands which were universally small; the reliance

upon the railways as a means of access to the commercial parts of the town; the employment of many of the inhabitants in mining and industrial occupations; the poor environmental quality which was influenced by the mines and the associated industries; the presence of large numbers of non-Whites; the density of population, and finally the poor quality of housing, lacking in many of the refinements found in the high-status sector. In most respects this sector fulfils the criteria which create the lowest socio-economic areas of Davie's and Hoyt's models. The processes that produce annular distributions, such as those of Burgess were not discernable in this youthful urban system, however, the ethnic component of the population can be regarded as a determinant of the level of residential prices in those parts occupied by them and the associated White suburbs.

The final determinant of the pattern of residential growth, if not that of property prices, was the pattern of land ownership. Since much of the site of Johannesburg was in the hands of either the Braamfontein Company or the Johannesburg Consolidated Investment Company, these groups determined the general character of suburban growth. This was achieved by controlling the layout, location and design of new townships, prices of stands and the circumstances of their selling. This influence is illustrated in the case of Houghton Estate which, with over two thousand stands of one acre and more in size, effectively saturated the market in this category for a considerable period.

In reviewing the determinants of residential location, residential growth and residential property prices during this brief first phase of Consolidation, one notes the development of a continuum. In many respects the key determinants of the continuum are those embodied in Beckman's (1957) model, namely, the size of the site and the income of the individual. As

Johnston (1973) notes, groups separate from each other in order to maintain their identity and to reduce contact with other groups. So here in Johannesburg in 1913 the young city was uni-centred socio-economically and ethnically sectoral, with high income communities occupying large expensive sites with excellent amenity characteristics, remote from the town centre, near the leaders of industry and government and well served by public transport, while the low income communities occupied small, cheap sites with poor amenities, close to their work places, remote from the society's leaders and generally near the railway line. The middle income groups occupied sectors between these extremes. Finally, the spatial limits of residential development were largely determined by the business cycle.

CHAPTER 5 - THE SECOND PHASE OF CONSOLIDATION : 1913 - 1932

The slackening of progress in the gold mining industry after 1913 and a series of political, economic, and social events, militated against expansion of the settlement spatially and fostered a desire to consolidate *within* the existing framework. This took the form of building upon the many vacant stands in the established townships, and also the rebuilding in a more substantial manner of those dwellings made from less satisfactory materials, primarily wattle and daub and corrugated iron and timber. It also took the form of a widespread *subdivision* of larger stands which had been a feature of the initial survey into smaller, more manageable properties. The spirit of consolidation is illustrated by the first major urban rehabilitation scheme, that of Newtown, which was completed during this phase, and with it the construction and re-location of important institutions of local government and administration. In particular, one should note the building of the City Hall on the Market Square, and that of the Newtown Market with its abattoir and railway sidings. These are signs of a maturing of the settlement and of a movement out of the youthful phase.

The maturity of the settlement, at this juncture allows more attention to be paid to the *national* economy and to *international* events. This is the wider background which provides the framework of the economic and social environment in which residential development continued. This is followed by an examination of changes in the construction industry, the money market, the residential land values and residential development and the business cycles and local events which affected them. The year chosen as the commencement of this phase is because it was a year in which a valuation occurred. In terms of the economic climate however one must

return to 1910, since an important event occurred in May of that year.

Economic Developments Following Union

The establishment of the Union of South Africa may be regarded as an important landmark for several reasons. The erection of a uniform national policy created a favourable environment for economic development; the transportation network was unified and operated on business principles and this favoured the Witwatersrand, a uniform and well-equipped department of agriculture was formed, and finally, the creation of a department of commerce and industries encouraged industrial development. This was the first official recognition of the importance of manufacturing industry. The sites which grew most rapidly were those at the ports and at the centre of mining in the interior, the heart of which was Johannesburg. The significance of industrial growth to residential development and property prices will be examined presently. Industry was also stimulated by a semi-protective tariff introduced in respect of a number of items when the Customs Tariff Act was passed in 1914.

In the first four years of Union the foundations were laid for a new national policy of economic development. This policy was making sound progress and one notes from the interest in building and from the behaviour of the business cycle that the cyclical depression between 1904 and 1909 came to an end. The optimism associated with this minor boom evaporated however, with the outbreak of hostilities in Europe in July 1914, and with the South African Rebellion in September. The civil war lasted two months, and was suppressed only in December 1914. It was followed by the South West African campaign which was completed in July 1915. These events caused serious disturbances in trade and industry. De Kock (1936) reveals that imports declined from £41 million in 1913 to £35 million in 1914, and to £31 million

in 1915. Exports declined from £66 million to £39 million and £34 million in these years, respectively. The revenue of the Union declined from £15 million in 1913/14 to £14 million in 1914/15, causing a deficit of £2 million. Finally, an amount of about £20 million was appropriated from loan funds during the period August 1914 to March 1916 for the purpose of defraying expenses incurred in connection with the rebellion and the South West African campaign which meant an increase of £1 million in the annual interest charge which had to be met out of taxation (de Kock, 1936).

After 1915, the shortages created by the First World War acted as a stimulus to the South African economy and especially to industrial development. Prices rose with an abnormal demand for foodstuffs and raw materials from Europe. Imports into South Africa which traditionally came from Europe or America were in short supply because of the war, and local producers and manufacturers took advantage of the opportunity created by a lack of foreign competition and a rise in prices (de Kock, 1936). The increase in production stimulated banking, and the spread of financial institutions provided the economic support to sustain growth. Finally, the natural protection enjoyed by South African industry because of its remoteness from Europe and America, was further enhanced by a rise in freight, insurance and import charges (including customs charges), the latter to provide more revenue to cover the greater expenditure.

As a result of these factors South African agriculture expanded rapidly and a large number of new factories came into existence. Schumann (1936) notes that from £17 million in 1911, the gross value of industrial output rose to £40 million in 1915/16 and to £98 million in 1920/1921, and the value added by the process of manufacturing rose from about £8 million to £18 million, and £40 million, respectively. The number of industrial establishments in the Union increased from 2,500 in 1911 to 7,000 in 1920 and the employees from 66,000 to 180,000 .

Exports were increased proportionally. This was a time of great inflation in money values, as is indicated by the rise in the index number of wholesale prices from 1,000 in 1910, to 1,723 in 1918, and 2,512 in 1920. Paradoxically, in this climate of expansion and growth, with credit easily obtained, and profits and dividends at a high level when one would expect property speculation, the prices of dwellings in Johannesburg remained depressed. This phenomenon will be examined shortly.

The inflationary and expansionary phase which dominated the war years and those immediately following, was terminated in 1920 by a severe depression which affected most countries. The manifestations and symptoms of this depression were similar to those of previous depressions, especially that following the Anglo-Boer War. Prices fell rapidly, profits dwindled, there was a contraction of trade, heavy losses, bankruptcies, budget deficits, unemployment, wage reductions and strikes (de Kock, 1936). Of [illegible], the last was represented on the Witwatersrand by the severe strike of 1922 when considerable damage to property occurred. The cyclical recession came to an end in 1923, although the locust plague which ravaged much of the country at the end of the year threatened to plunge it into another gloomy phase.

The White population of the country grew from 1,116,000 in 1904 to 1,276,000 in 1911 and to 1,519,000 in 1921. This growth approximated the natural increase of two per cent so very little immigration took place during this period. However, the internal redistribution of population was significant, and resulted from a rural-urban migration. The Witwatersrand was a major magnet for many of these migrants. The White urban population of South Africa increased by 29 per cent between 1911 and 1921, whereas the rural population showed a net increase of only 9 per cent during the same

period (Schumann, 1936). The significance of this increasing population for urban residential development and the market for residential land is not hard to find and will be examined presently.

The period from 1924 to 1929 was one of a major revival in economic fortunes. It represented the longest continuous phase of expansion which the couhtry had witnessed for half a century. De Kock (1936) observes that exports increased from £78 million in 1923 to £84 million in 1924 and to £97 million in 1929, while the corresponding figures for imports were £57 million, £65 million and £83 million. The value of the gross output of factories and workshops rose from £79 million in 1923/24 to £13 million in 1928/29, and that of mineral production from £52 million in 1923 to £60 million in 1929. Gold production increased steadily and diamond sales rose dramatically with the discovery of the alluvial deposits near Lichtenburg and in Namaqualand. These discoveries were well-placed to capitalise on the booming conditions which obtained in America. The agricultural scene was also one of substantial increase, and pastoral production, especially in the case of wool reached new heights of output. The export of farm products rose from £22 million in 1923 to £31 million in 1928 (de Kock, 1936).

A change in fiscal policy occurred in 1925 which encouraged the growth of the urban centres and with it the demand for residential accommodation. Prior to 1925 the Government viewed the customs tariff on imported items as a source of income, so most imported commodities were liable to taxation to provide the revenue needed by the Government during the first fourteen years of Union (de Kock, 1936). In this way, local producers acquired an incidental protection. Under the revised tariff of 1925 however, a policy of protection and encouragement of local industries was *definitely* and *systematically* brought into effect (de Kock, 1936). This

not only protected the local producer but allowed the free access of raw and semi-processed materials required for manufacturing purposes. This industrialization policy emerged from the conviction that mining and agriculture would be unable to support the rising White population.

The final phase, that from the last quarter of 1929 to the second half of 1932 was one of acute economic depression. Imports fell despite an increase in gold exports, bank clearings and bank deposits fell, the Union revenue declined in spite of increased taxation, and railway receipts dropped (Fig. 5.8). Most of the recessive factors were in agriculture and diamond mining, since world prices in both fell drastically. The gold mining industry, on the other hand, was the 'only bright star on the horizon...' (de Kock, 1936). It continued to expand, and while it reaped the advantages of the lower priced inputs, its own product maintained a price at the old level. These events were important for Johannesburg because the decline in agricultural prices further increased the flow of people fro the rural areas, and added to the problem of accommodating them.

In 1933 the Government abandoned the gold standard and the pound was linked to sterling. In view of the favourable trade balance enjoyed by South Africa in her dealings with Britain, and in view of the volume of this trade, the new financial arrangements effectively brought about a change in the general economic position of the country. In doing so it terminated the second phase of Consolidation. After 1934 the values of residential properties returned for the first time to levels obtaining during the Formative Phase.

Building Activity in Johannesburg After 1910

Building activity in Johannesburg increased rapidly from 1910, following the depression of 1904 to 1909 (Fig. 5.1). The statistics showing the annual building plans approved for the city reveal that the number in 1910 was the highest since 1905. Of particular significance was the tendency to move away from the construction of wood and iron buildings, and to erect what the City Engineer called 'a good class of dwelling'. It showed, he said 'that Johannesburg is becoming more and more the home of the people who have to work in it'. During 1911 there was a *renaissance* of large building schemes which had more or less been in abeyance over the previous six years. The largest of these were the premises of Messrs. Norman Anstey and Company in the heart of the retailing district, while among the public buildings the new law courts were nearing completion. At the same time the subdivision of residential lots in a number of townships occurred, and caused a proliferation of new stands. It also emphasised the need for good residential sites close to the city since the subdivision took place in the inner areas around the core.

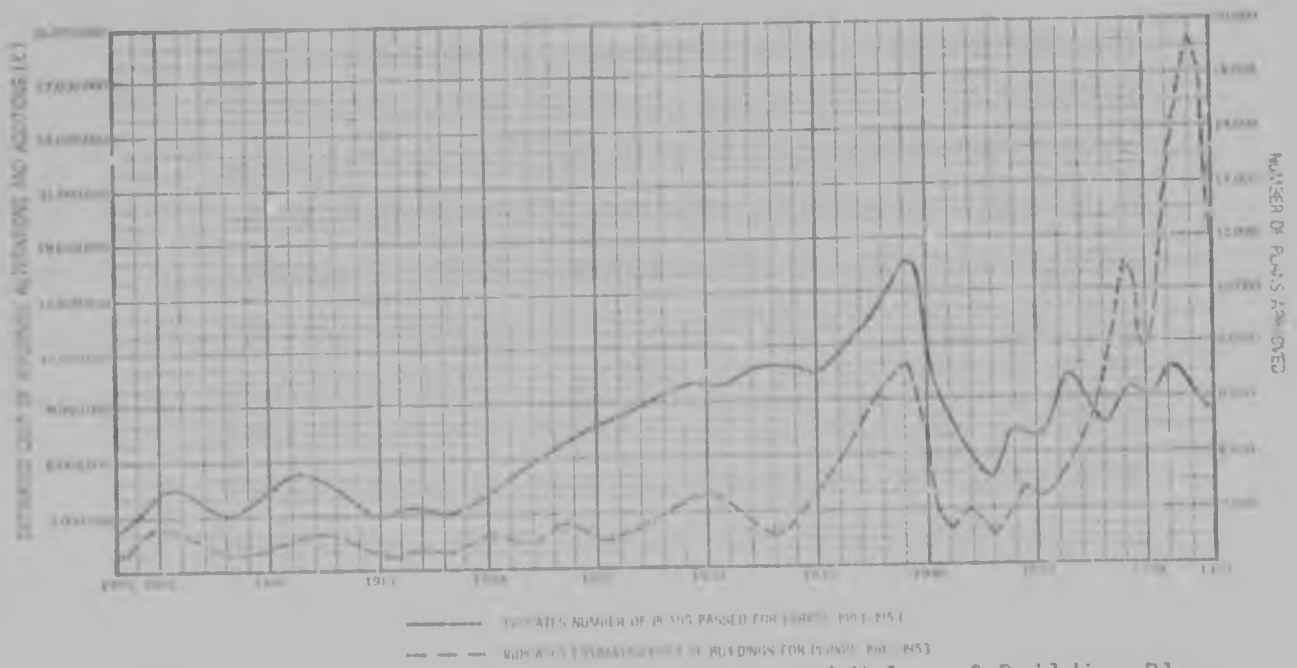


Fig. 5.1 - Johannesburg : The Number and Value of Building Plans Approved 1903 to 1953. (City Engineer's Reports).

Topographic Influences on Settlement

The value of buildings in each township in 1910 is a good index of *where* the majority of the people lived in Johannesburg at the time. The pattern is one which correlates closely with that showing the revenue from rates levied. Despite the fact that these were paid on land only (and not on buildings) there is a positive correlation between the suburbs of high land value, and those which were fully-built. The surprising feature is that the pattern was still strongly constrained by the limitations of topography. Despite the opening of the first electric tramway on February 26, 1906, and the initiation of all the contemplated routes by August (City Engineer's Report, 1910), the number of buildings to the north of the Parktown Ridge was relatively small. Birnam, Illovo and Dunkeld were for example, virtually without any dwellings, as buildings in these suburbs accounted for values of less than £500 each. So although the electric tramcar encouraged settlement in the outlying townships, its inflexibility, the prevailing economic climate and the proliferation of vacant stands in the older, inner areas militated against this residential expansion. The topographic controls can also be related to the heavy dependence upon the horse-drawn cab and carriage, and most important, the bicycle. In April 1903 there were 785 drivers of carriages and carts in Johannesburg where 12 000 bicycles, 279 scotch carts, 484 cabs, 67 wagons, 10 traction engines and 28 motor cars were registered (City Engineer's Report, 1904). Under a heading 'Johannesburg on Wheels', a press item read :

> 'Perhaps the best time to see Johannesburg on wheels is at one o'clock, and the best place is Von Brandis square. There you see suburbia going home for lunch. Georgeous private carriages, and less gorgeous hired ones, heavy double-seated traps and light single-seated spiders, noisy nerve-shaking motor buses, and silent smooth-running motor cars, rickshas, motor-cycles, cycles - all join in the endless procession from the throbbing centre of the city to the quiet homes in the suburbs'. (Shorten, 1970).

The *rendezvous* at Von Brandis Square is significant for it represented the corner of the city closest to the developed north-eastern quadrant, where most people lived. From there they could go up the ridge to Hillbrow, Berea, Yeoville and Bellevue, or eastwards to Doornfontein, Bertrams, Jeppestown and beyond to Bezuidenhout Valley and Kensington.

In 1908 the Press drew attention to the waning popularity of the bicycle, remarking that in 1906 there were 27,600 in the town, a figure that had dropped to 22,977 by the following year (Fig. 5.2). At the time, (1910) nearly everyone in Johannesburg owned a bicycle, and at week-ends even some of the mining magnates and their wives were seen cycling to the Wanderers Ground. This reliance on the bicycle as a means of getting to and from work meant that the advantages of living *beyond* the Parktown ridge, not only at a great distance from the city but also with a major impediment intervening between residence and work-place, militated against those suburbs. Consequently the value of buildings in Bramley, Fairwood, Gardens, Highlands North, Killarney, Orange Grove and Parkwood, was in each case below £15,000, and since dwellings cost between £500 and £1,000, these areas, considered conservatively, could not have had more than twenty houses each. The influence of the electric tramway, which proceeded along the Old Pretoria Road and along what was to become Louis Botha Avenue, played an important role in building up *individual* townships. For example Melrose (£15,490), Parkview (£24,875), Parktown North

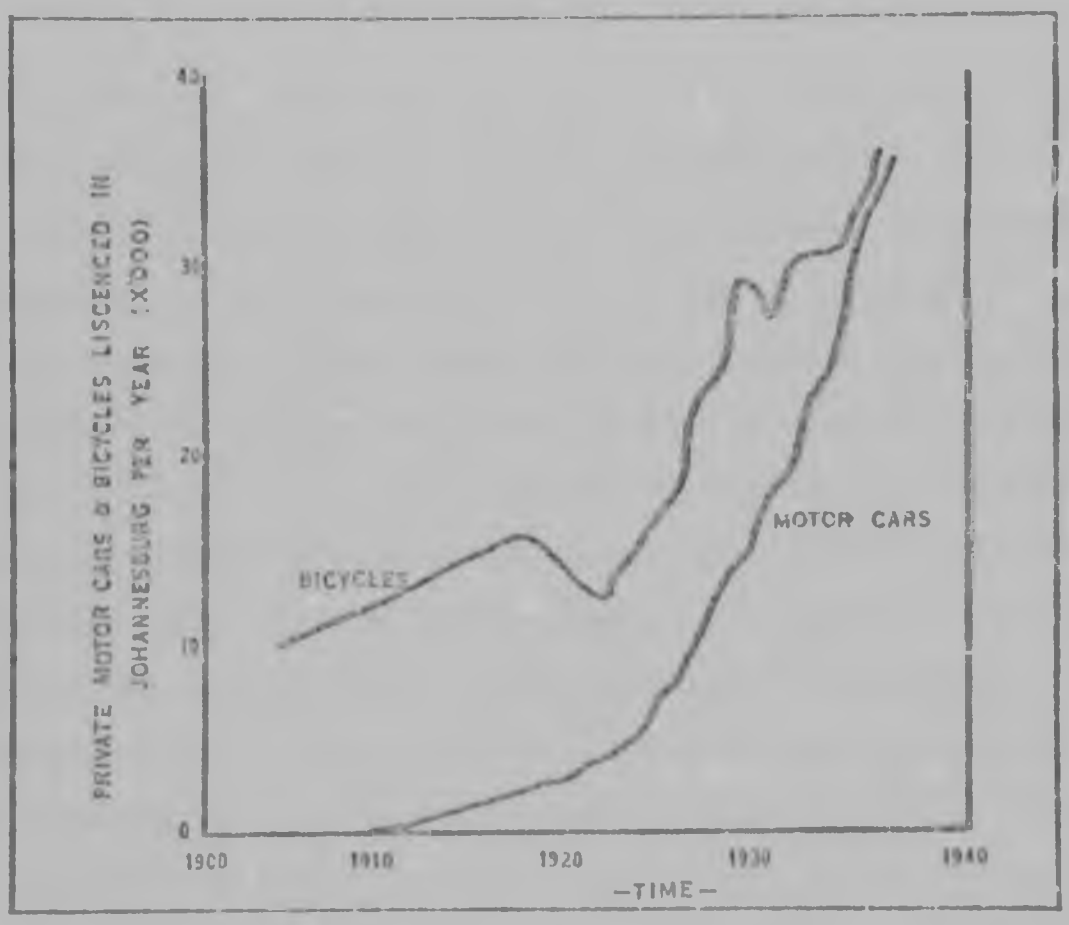


Fig.5.2. - Private Motor Cars and Bicycles Licensed in Johannesburg, 1900-1940. (City Engineer's Reports).

(£16,450) and Rosebank (£15,630) (the terminus at that time), had rather more dwellings than the townships away from the tramway. On the other northbound route, Norwood (£34,475) and Oaklands (£26,550) were well represented. These figures for the values of buildings in townships *north* of the Parktown ridge pale into insignificance, however, when they are compared with those of properties to the *south* of the ridge. Yeoville, for example, had buildings to the value of over a quarter of a million pounds, while Parktown (no doubt a special case), exceeded half a million. The older inner ring of Melville (£64,705), Mayfair (59,280), Lorentzville (£80,275), Kensington (£81,705),

Jeppestown (£649,075), Fairview (£159,635), New Doornfontein (£317,105), Bezuidenhout Valley (£163,525), Bertrams (£148,875), Berea (£210,490) and the Bellevues (whose combined building values stood at £250,000 in 1910) were the *hard core* townships of the White population of Johannesburg. This was the area of *major demand* for housing, and very few people (as indicated by the amount of building) evinced a desire to dwell in the ring of townships to the north of the Parktown ridge. This is an important consideration for the second Consolidatory period of residential development. During the entire phase the residential property market remained extremely quiet. The difference in values between the sectors was relatively small, and only three decades later did values return to those ruling at the beginning of the century (Fig. 4.2). One of the major reasons was not that the demand had fallen off, but rather that the market had *over-reached* itself in the Formative Phase. At the end of the Anglo-Boer War and the period immediately after it when boom conditions prevailed, the number of stands placed on the market through new township development, far exceeded the demand. Consequently the population (Fig. 5.3) was able to grow quite dramatically without materially affecting the *price* of residential land, since many surveyed stands in proclaimed townships were awaiting occupation. Added to the influence of an early over-supply of stands was that of the state of the economy. Shorten (1970) has summarised the position in these terms : 'during the first ten years of the century there was a disconcerting fluctuation in land values in the municipal area. Up to the end of 1905 these values continued to rise until a peak of just under £30 million was reached. In the following two years a considerable drop was recorded and the downward trend continued until June, 1911, when all land in the town was valued at only £27,985,738, practically the same figure

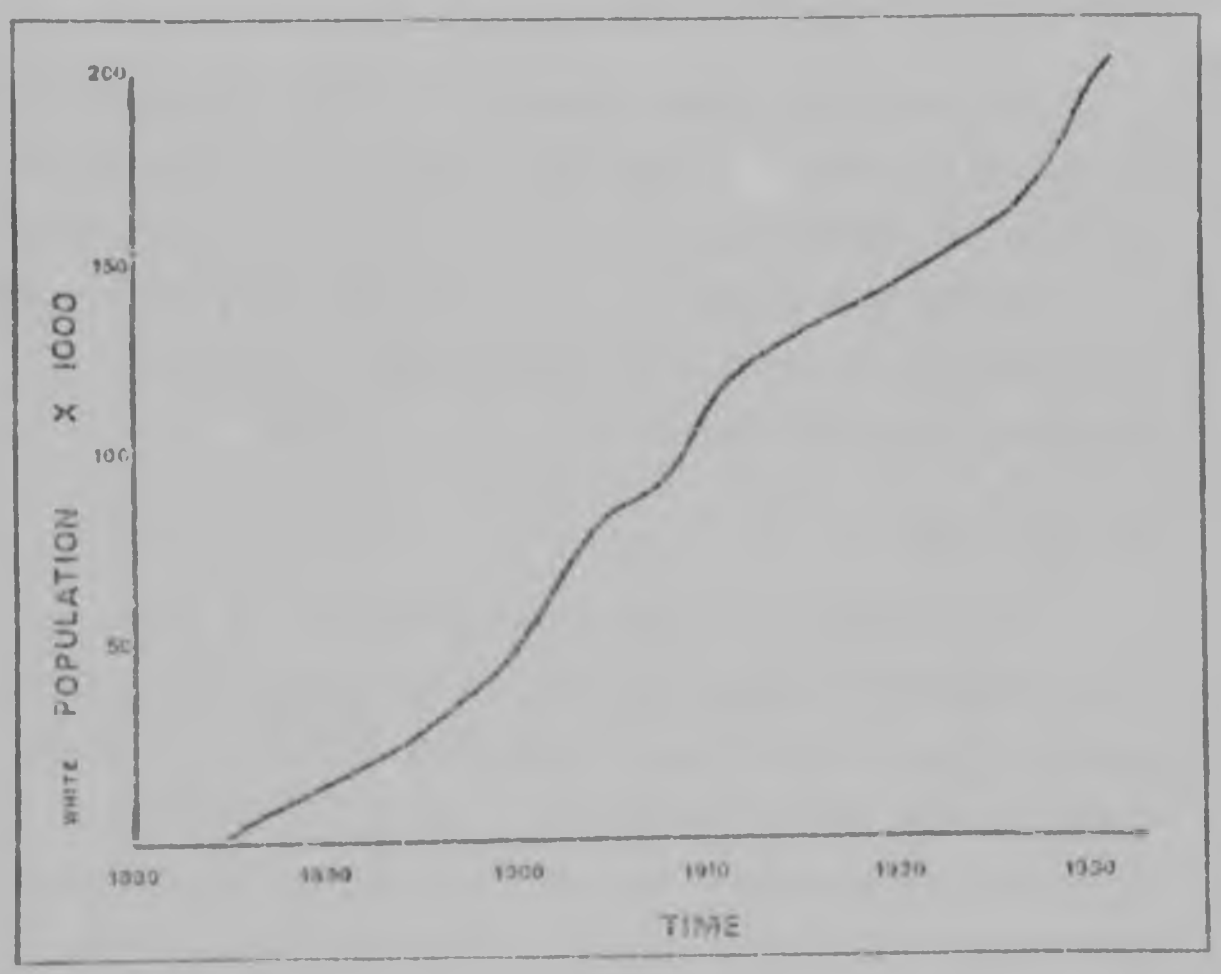


Fig. 5.3 - The Growth of the White Population of Johannesburg, 1880 - 1930 (Vade Mecum)

as in 1902 (Fig.4.2). This period, referred to as the '*financial blizzard*', was one of the rare occasions in Johannesburg's history when the usual rising tendency was reversed and the overall value of land dropped. The fall was due partly to the factors already mentioned, but also to a feeling of uncertainty engendered as a result of the replacement of Crown Colony administration by responsible government in the Transvaal, and partly to the world-wide economic crisis, alluded to above, and the Rand miners' strike of 1907 (Shorten, 1970). For 31 years overall values continued at a depressed level, and it was not until 1936, four years after South Africa's departure from the gold standard, that the total again

reached parity with the 1906 figure.

The core of the Southern Suburbs at Turffontein, was consolidated with buildings to the value of £207,455 in 1910, while Rosettenville with some commercial property was nearby, with a building value of £49 365, as was La Rochelle, with £67,030. The Southern Suburbs had not expanded much beyond these limits although stands awaiting homes were vacant in Kenilworth. The value of buildings here was only £6,000.

Population Growth

It is perhaps appropriate at this juncture to depart from the central theme of the residential property market, and the reasons for its depressed state, to examine another relevant factor, namely, the growth of the White population of Johannesburg. Population growth holds a special place in the theory of the urban land market because of the price response which occurs under conditions of increasing and diminishing populations. Most of the accessibility models rely upon a stable and unchanging urban population and therefore a constant rate of demand, and inevitably minimal spatial growth, and in this way their variants can be quantified. In practice, however, a changing urban population is the rule rather than the exception.

Since its inception, Johannesburg has had an increasing population, with the rate of increase, especially during the depressed periods of the Consolidatory phases, greater than in prosperous times (Fig. 5.3). The reasons for this are not hard to find. The depressed state of gold mining after the Anglo-Boer War was due, in the first instance, to a labour shortage. During the war most of the gold mines closed down and the native labour force which numbered 110 000 in 1899, had dispersed. Some of the mines were gradually

reopened after the British occupation of the Rand, but a year later in 1901 only about 30,000 Native labourers had returned to their jobs and barely a third of the available 7000 stamps were in operation. The solution to the problem was sought in the importation of Chinese labourers, and by 1906 some 51,000 had rescued the position and prosperity returned to the industry. There was therefore the anachronous position of a country in the ravages of a depression, but Johannesburg, because of the buoyant position of the mines, relatively booming. Consequently the White population increased from 83,363 to 119,953, and the total population from 155,642 to 237,104 between 1904 and 1911. Under normal conditions any town with an increasing population of this magnitude would expect a corresponding increase in the demand for residential property, and therefore an increase in prices. However, for reasons which have been detailed the anticipated boom in real estate failed to develop.

Political and Economic Developments 1913 to 1920

Local events confined to the Witwatersrand and centered upon Johannesburg during the period 1913-1914 had a considerable effect upon residential development. The first was the 1913 strike which culminated in a full-scale rebellion by thousands of workers, disrupting production, destroying public property, and taking life. The value of buildings approved and the number of plans submitted (Fig.5.1) declined dramatically during this period. Fortunately, the objects aspired to in the rebellion were not attained, and the events of 1913 were rapidly overshadowed by the declaration of war in Europe, and by the resolve of the Union Parliament on 9th September to declare war on Germany.

The effects of the war on Johannesburg in general, and on the property market in particular, fall into two periods. The immediate effect after 1914 was a diminution in the supply of essential materials

and especially in a wide range of manufactured items. These included not only machinery, rolling stock, generating plant and foodstuffs, but also a complete range of building materials, from bricks, cement and tiles, to stoves, sanitaryware, corrugated iron, and doors and sashes. The shortage is revealed in the general decline in building operations at this time (Fig. 5.1). It is important to remember that many items for the building industry were still imported from Britain, just as was most of the skilled artisan labour. The overall position is well illustrated by the comment of the City Engineer :

> 'Soon after the year under review began (1914), the outbreak of the Great War in Europe, early in August, caused an immediate stoppage of many projected works and a cessation of the preparation of any new schemes. The consequence of this disturbance resulted in such a decrease in building that the returns touched a lower point than at any period since the resumption of activity after the Peace of Vereeniging in 1902.
>
> The monthly decrease indicated amounted to fully 75 per cent, i.e. only about one-quarter of the work was being executed. This continued for several months - till the effect of the Victory of the Marne, the suppression of the South African Rebellion and the success of the campaign in South West Africa, caused a revival of confidence. Since then there has been a gradual recovery towards normal conditions, and at the close of the year the usual amount of work had practically again been reached. Although the progress of the town has been disturbed, as indicated, by the great European War, there is still a good deal of growth noticeable, and the commercial and industrial centres in East Market Street and Newtown have continued to show activity, and some new buildings have been erected. Dwellings are still being erected in large numbers, the total during the year being 458. The tendency has been to open up new districts in outlying parts with a consequent depreciation of districts near the town. This number of dwellings is only half that put up during the previous year and is entirely due to the great war. The houses are more comfortable and better fitted than during the previous periods,it now being the exception not to have hot water and electric light. There is a large indication that the succeeding year will show considerable improvement on the year just passed, as it is known that the conservative dealings with loans on buildings has been bearing the building market by the comparative stoppage of advances.' (City Engineer's Report, 1914).

Of particular significance at this time is the reference to an

increasing interest in the more remote northern suburbs, a fact which is closely associated with the improvement in roads and municipal transport services. Another technological factor was the reticulation of water by the Rand Water Board to these areas. Parktown North for example, was included in the reticulation scheme in 1914, as also was Rand View. These are indications of a sufficient population to warrant such expenditure almost at the fringe of settlement. Previously the inhabitants of Parktown North got their water from wells and boreholes as the water-table on the granites of that area was close to the surface. Riviera was incorporated in the reticulation scheme in February 1914. The Rand Water Board Act of 1914 affected residential development materially since it enabled the Board to proceed with the Vaal River scheme to secure an additional water supply of ten million gallons per day. This encouraged the extension of the residential townships to accommodate the rapidly increasing population. The migration of rural dwellers to Johannesburg during the first two years of the war caused some alarm among municipal authorities and prompted the mayor, Norman Hanstey, to observe that ...

> 'The provincial authorities must be convinced of the necessity for legislation to cope with the growing volume of indigency that is due to the influx of people from the country to the towns and the increase in the numbers of unskilled white people ...' (Mayor's Minute, 1914).

In 1915 the local community began to respond to the shortages and dislocations induced by the war. The City Engineer (1915) noted an increase in the number of industrial and commercial warehouses in the Newtown and Market Street East localities, and that in Newtown 'a number of industrial establishments of a large size have recently been erected, such as up-to-date and well-equipped mills for the preparation of

cereal foodstuffs, soapworks, candle works, animal manurial works, and other trades of industrial importance.' He also noted 'that the town is becoming an important commercial and industrial centre for the whole of a very large country - as large as the half of Europe. This has apparently caused the increase in building,for during a period of four or five years the gold mining industry has not itself shown any considerable extension to warrant this.'

The *diversification* of the economic base of the town, away from the narrow mining orientation towards a commercial, financial and industrial function largely induced by the war, attracted people to Johannesburg. It became the major growth centre for the national economy, a factor which caused a diversification in population structure, and began for the first time to introduce other ethnic elements, mainly Jews from the middle European countries and the Russian satellites, and of course the formerly rural Afrikaners of the *'Platteland'*. So for the first time the settlement pattern was divided, not as in the past, only on the basis of colour, on the one hand, and wealth on the other, but now, on the basis of ethnic origin as well. This variation had a spatial manifestation with the different ethnic groups gravitating to their own ghetto-like enclaves, and in doing so, influencing those parts of the residential mosaic in which they settled. This influence was both structural and economic, the latter being expressed in price. The technological overlay continued to exert itself especially through the development of tramways so that in 1915 lines had been laid to Jules Street extension and to the Municipal boundary in the eastern sector, to Rockey Street extension in Observatory, and to Forest Hill Township in the Southern Suburbs. Water and electricity reticulation and the main drainage scheme for the town made considerable headway, and the Sewerage Scheme for the northern districts was initiated in 1915. All these factors

combined to affect residential development, although the over-supply of land for houses and the process of subdivision in existing townships kept prices at subdued levels.

The proclamation of new townships, which had proceeded apace from the birth of the city in 1886 to the First World War in 1914, slowed down appreciably after this time. The first quarter-century had seen 111 new townships proclaimed. During the course of 1914, plans were submitted for an extension to Brixton, and for the new township of Hurst Hill, which was surveyed by W.H. Auret-Pritchard, on the farm Braamfontein No. 11, for the Auckland Park Real Estate Company (Smith, 1971). This township which had 263 stands was only 63.45 acres in extent so it added little to the stock of residential land. Its situation in the western sector, among those townships of the lower rank was also significant. These were hard times when little credit accrued to the township developer who dabbled in high status property. At the same time that Hurst Hill was proclaimed, a part of the Albertville township was withdrawn (Mayor's Minute, 1914). No reason was given for this move.

The consolidation of the towns infrastructure was further improved in 1916 when a formal move was made to utilise the £200,000 left in 1905 by Mr. Alfred Beit, for the formation of a university. A site of 80 acres was reserved by the Council in Milner Park. It was chosen because of its location *vis-a-vis* the bulk of the population, because of its proximity to the high-status sector, and finally because this large area of open space was so close to the city.

In 1916 the general state of building operations continued at a depressed level. Although the effect of the war was less in Johannesburg than in most other places, this continued to be the case. The condition was partly ascribed to the difficulties in transport conditions, and also to the high prices of certain building materials brought about by the interference with the normal sources of supply. These factors greatly increased the price of timber and all classes of steel and iron work, including roofing iron. According to the City Engineer (1916) the prices of these and other materials increased by two to three-fold over those of normal times. As a result building became more expensive and the quantity of work available was reduced. In 1916 only 4551 buildings were erected in Johannesburg, a figure which reflected most unfavourably with the 7422 in 1911, 7590 in 1912 and 6698 in 1913 (Fig. 5.1). In 1917 the full effects of the shortages became apparent when the price of houses in the northern and eastern sectors increased by 30 per cent (City Engineer's Report, 1917). A side effect was the stimulus afforded local tile manufacturers who advanced their production in the face of a shortage of corrugated iron. In fact the demand for earthenware and cement tiles of local manufacture was so great that they were unable to supply in under three months notice (City Engineer's Report, 1917).

The reticulation of electricity to the suburbs of the inner areas was almost complete by 1917. Of the more important townships still without electricity at this time, Orchards, Oaklands, Parkhurst, Sophiatown, Claremont, Gardens, Abbotsford, Martindale, Newlands, Langlaagte and Prospect were identified as such by the manager of the Electricity Department. This fact in part explains the lower values and the lower population densities in these areas. They were, without exception, suburbs situated near the rural-urban fringe.

In 1918 one new township, Haddon, was passed by the Council. It was situated south of Turffontein and adjacent to the western boundary of Forest Hill. The area was 65.69 acres with 182 lots of one-quarter acre in extent. In the same year the Pretoria Main Road became Louis Botha Avenue and the Old Pretoria Road became officially Jan Smuts Avenue. The naming of these two major access routes after the Prime Minister and a senior politician coincided with their return from the Peace Conference on 24 June 1919. These roads, together with Oxford Road, have played a major role in providing access from the north to the city, especially after the tramway system was completed, and consequently have materially influenced the pattern of residential land values, and the direction of residential growth of the high status sector.

The termination of the conflict in Europe witnessed the end of the building depression and heralded in a new phase of development. This is shown by the increase in the number of plans passed and the number of buildings approved (Fig. 5.1). However only one new township was proclaimed during 1919. This was The Hill which was established on Klipriviersberg No. 25 by City Deep Limited (Transvaal Provincial Gazette, 29/1/1919). Its character although adequately described by its location is further attested to by an earlier comment in 1912 when Raymond W. Schumacher, Chairman of City Deep Limited, mentioned starting a township, 'to which he had given the descriptive name The Hill, to the south of Regents Park. It was to be a model village where miners of his own and other companies were to be encouraged to acquire their own homes' (Smith, 1971). The township was presumably delayed by World War I.

The Hill is of interest because it represents the perpetuation of a trend which exemplified the times. Money was expensive, there was cost inflation in building and a demand for cheaper houses. This, associated with the aftermath of war precluded the expansion of the high status sector and restricted development to the eastern and western areas and the Southern Suburbs.

The housing shortage became serious in 1919. The City Engineer reported (1919) :

> 'It has been increasingly difficult to hire houses, and the number of sales at increasingly enhanced figures has been phenomenal - about three or four times the normal rate - due to people being forced to own their own homes to obviate being turned out by a new tenant or a new owner. Building has not for a long time kept pace with the requirements, and although there has been no definite survey of the position, it is probably within the mark to say that the shortage is 1500 dwellings of small and middle size. As the building progress is only about 50 houses per month, it will be seen that unusual steps will have to be taken to ease matters. The Town Council is seriously considering the erection of private housing, but is at present hampered by want of statutory powers.'

The situation was further aggravated by a builders' strike, which, following the strike of the employees of the Municipal Power Station in March 1919, and was probably the forerunner of the serious dislocation of 1922, which affected the residential land market for some time.

During 1919 the General Triennial Valuation of all rateable property in the municipal area was completed. The buildings were each separately inspected and valued by a staff from the Building Survey Office. At the end of the eight-month operation, it was found necessary to considerably

increase the values in certain parts. These occurred mainly in Parktown, Houghton, Riviera, Wanderers View, Berea, Argyle and Westcliff. The City Valuer noted that the increase in prices was 'evidently of a "boom" nature, and could not be justified on the cost of land *plus* the cost of improvements'. Further, he added, 'In some cases, particularly in the good districts, the price of large houses has doubled' (City Valuer's Report, 1919). The price changes were clearly related to the overall increase in the price of labour and materials and to the favourable economic climate after the war.

In dealing with the value of land, Mr. Arthur Meikle, 'the well-known Estate Auctioneer and Salesman' noted that 'while the value of land for business in the central area has appreciated, in the suburbs and especially the outlaying parts there has been little change, owing to the vast quantity of empty and unsold land available all round the city.' It is evident therefore that the residential land market, insofar as site values were concerned, was still labouring under conditions of gross over-supply, the result of the environment which obtained during the Formative Phase of Johannesburg's development.

Political and Economic Developments After 1920

The analysis of the market for residential land in Johannesburg after 1920 must be viewed against a number of events, of which the following are most important: the financial crises in the gold mining industry in 1920, the problem of unemployment, and the consequent problem of the dilution of the colour bar in mining, the period of labour unrest which culminated in the 1922 revolt, the ensuing period of unprecendented prosperity and

building activity, with an *increase* in the value of buildings, but a relative *decrease* in the value of building land, the remarkable increase in the population both white and black induced by the migration of rural dwellers to the towns, the change in the mode of transport from the bicycle and carriage to the automobile, and finally, the gradual decrease in the cost of building materials and labour.

Since 1919 the working costs of the gold mines had risen steadily from 17s 1d to 25s 9d per ton. Towards the end of 1921 the price of gold dropped suddenly from 104s to 97s 4d, and soon afterwards the price was down to 95s (Shorten, 1970). With a gold price at this level seven of the fifteen marginal mines showed a loss, and the opinion was mooted that if the remaining ten shillings of the then existing premium disappeared, and the gold price fell to the pre-war figure of 85s, 21 of the 39 producing mines would be forced to discharge some 10,000 Whites and many thousands of non-Whites (Shorten, 1970). Clearly, to avoid the impending crisis in the primary industry of the country, costs had to be reduced. At the same time crises presented themselves in agriculture and in the diamond industry. When the British boom collapsed in 1921 the wool farmers, who had been saved in 1919 (by the purchase in Britain of much of their clip at 20 per cent above the current prices) had to watch their product being auctioned off at a fraction of the figure it had fetched two years previously. Produce prices also fell disastrously, there was no market in diamonds and secondary industry was depressed. The retail trade lost half its volume and when the banks were obliged to restrict credit, many overstocked merchants and storekeepers were ruined (Shorten, 1970). As a consequence of these depressed conditions, cost-of-living allowances and war-bonuses were cut back so that any advantages

which might have accrued to the urban consumers due to the general price decline were offset by a decline in wages. Retrenchments followed and unemployment increased, prompting the mayor of Johannesburg to note that 'the question ... is one of grave concern ... during the year I have received many deputations, and attended meetings and conferences on the subject, - including a conference of Reef Mayors' (Mayor's Minute, 1920).

The unemployment was also aggravated by the return of large numbers of men from active service, the closing down of certain gold mining and diamond concessions and a restriction of expenditure. Allied to this, the number of rural dwellers moving to the Witwatersrand increased dramatically (Table 5.1). Schumann, (1936) writing shortly after this second Consolidatory phase, noted that the rural-urban migratory process was one of the most interesting indices of socio-economic structural change. In most countries, he said, the process was one which marked the gradual industrialization of the modern community. It introduced numerous social city problems, and in the case of Johannesburg, it necessitated not only the adaptation of traditionally rural people to the totally different environment of the city, but an equally difficult adaptation of a mainly Afrikaans-speaking community to a mainly English-speaking environment (Schumann, 1936).

The general changes induced by internal migration in the twenties are abundantly clear from the figures (Table 5.1). Schumann (1936) distinguished between secular and cyclical fluctuations. He noted that in several countries there was a marked internal net migration towards industrial areas during times of prosperity, and that this movement subsided, or was sometimes reversed, during depressions. The movement

Table 5.1 - The Percentage Increase of the European Population of the Urban Areas, of Larger Cities and Towns, 1921-1936. (Preliminary Report, Union Census, 1936).

Urban Areas	54.6
Ten Largest Cities with Suburbs	61.9
Thirty following cities and towns	20.3
Witwatersrand	73.1
Cape Town and Suburbs	46.6
Durban and Suburbs	59.1
Pretoria and Suburbs	69.6
Port Elizabeth and Suburbs	100.7

seemed to be related to the business cycle. In the present case it may be noted that the exceptional increase in the urban population seems undoubtedly to have been influenced by the depressed conditions ruling in 1921. The depressed state of agriculture and the relative prosperity of the mines largely determined the trends of population movement of the twenties in all South African towns and cities, and Johannesburg proved to be a powerful magnet. Clearly, just as in the previous decade, this influx of people to Johannesburg materially affected the town's residential land market and the pattern of residential growth.

In 1922 the Witwatersrand was paralyzed by a serious strike. The importance of the 1922 strike in the present study concerns its influence upon residential property values in Johannesburg. The strike was precipitated when organized White labour on the gold mines confronted the Chamber of Mines on the use of non-whites in the industry. The civil unrest which culminated in extensive damage to property and loss of life on 9 March 1922, was finally quelled by military action.

The behaviour of buyers of houses between January and March 1922 is reflected in the prices ruling in the classified columns of *The Star* at the time. Another guide is the number of properties offered for sale over the same period, as compared with any other period. No significant variation in either the *volume* of business or the *prices* can be discerned during January and February. During the second week of March, and immediately prior to the major outbreak of violence on 9 March, all potential sellers withdrew their properties from the market, and for a period of eleven days no houses were offered for sale. Thereafter during the latter weeks of March, selling was resumed, but at a lower level. Properties were offered at prices ranging from 10 per cent to 30 per cent lower than during October 1921. Spatially, a pattern is difficult to discern, but it would appear that the higher status communities reacted more unfavourably to the revolutionary climate than the lower status communities. The prevailing mean price asked for Parktown properties in 1922 was approximately £5,000, and that in Houghton Estate £3,400; the middle income suburbs of Parkview, Yeoville, Berea and Kensington, commanded prices prices in the range £1,750 to £2,500; while the poorer areas of Mayfair, Paarlshoop, Melville, Bertrams, Doornfontein and those in the Southern Suburbs, varied between £600 and £1,500. The recovery of the market was remarkable so that by May 1922 values had returned to their former levels. The price of building land was quite unaffected by the situation, almost certainly because of the over-supply.

The same could be said of the Equity Market (Fig. 5.4), a fact which is attested to by a report which was couched in these terms :

> '"The Financier" draws attention to the remarkable firmness of the Kaffir market in the face of the parlous conditions at present prevailing on the Rand, and considers that it speaks volumes for the confidence felt in the future of the gold mining industry, and opines that the resuscitation of the dormant mines on the East Rand and the exploitation and extension of the Reef southward will be interesting phases of the aftermath of the strike'. (The Star, 13/3/1922)

The building industry was also unaffected by the strikes. Following the trend established in 1920, when there was a grave shortage of houses, and when labour, especially plumbers, plasterers and bricklayers were almost unobtainable, the position improved and approached an equilibrium situation by 1923. By then the cost of building had been greatly reduced by introducing more local sources of supply, in both materials and labour. In terms of building cost indices, the City Engineer (1925) placed the highest post war period of cost inflation at 1920 (170), decreasing gradually in 1922 (140), 1923 (130) and 1924 (125). The value of buildings approved during this period continued to increase (Fig. 5.1) although a slight fall-off was noted in 1924. However, very few new townships were proclaimed. In 1920 Wemmer Township, situated south of Marshallstown, and the Western Native Township, situated south of Martindale, were approved. The former was established on the Wemmer section of the property of the Village Main Reef Gold Mining Company Limited. Smith (1971) alludes to a quotation from the Municipal Magazine, 1 October 1917 which probably referred to this township, and is of interest in indicating the attitude towards the development of disused mine property :

' A New Central Township

In a recent issue of the official "Gazette" of the Province of the Transvaal appears an application for permis ion to establish a township under the provisions of the Act No. 33 of 1907, the applicants being the Village Main Reef G.M. Co. Ltd.

The application for the permission to turn mining ground in juxtaposition to the trading centre of Johannesburg to useful purposes should be supported, and would be supported, by commercial interests, for it would mean, if established, closer touch with the big customers for the wholesale people and closer touch with thousands of retail customers with retail dealers. The big Central Depot on the Village Deep is close by.

As a gold producer on the present company basis the Village Main Reef will probably come to an end within a couple of years' time, but whether the gold production from the ground will come to an end is quite another matter, and whether, if the company suffers demise within that time or not it by no means follows that the government will grant the application for the establishment of a township over worked-out mining ground situated not far distant from the outcrop.

The Mines Department, to do them the least justice to which they are entitled, is not swayed by the matter of profitability, but by reasonableness and safety. The Village Main Reef area belongs to the very, very first row of deep levels, and but for the fact that a couple of rows of outcrop claims were exhausted by the defunct Jubilee and Salisbury Co. would be, and is, considered as an outcrop mine. In these circumstances the instability of the foundations is such that it is highly improbable that the consent of the Government Mining Engineer will be obtained for authorization to lay out such a township. Creeping ground is not the kind of place on which factories are likely to be anchored, but tin shanty stores and wholesale dens for the distribution of the unclean things might readily find a home there.'

This comment is useful as it demonstrates the thinking, not only of developers, but also of the gold mining companies, who began to find themselves in possession of large tracts of land no longer useful for mining operations, close to the commercial part of the city. That Wemmer developed as an industrial and warehousing township was not surprising, since this land was in short supply, while that for residential uses was

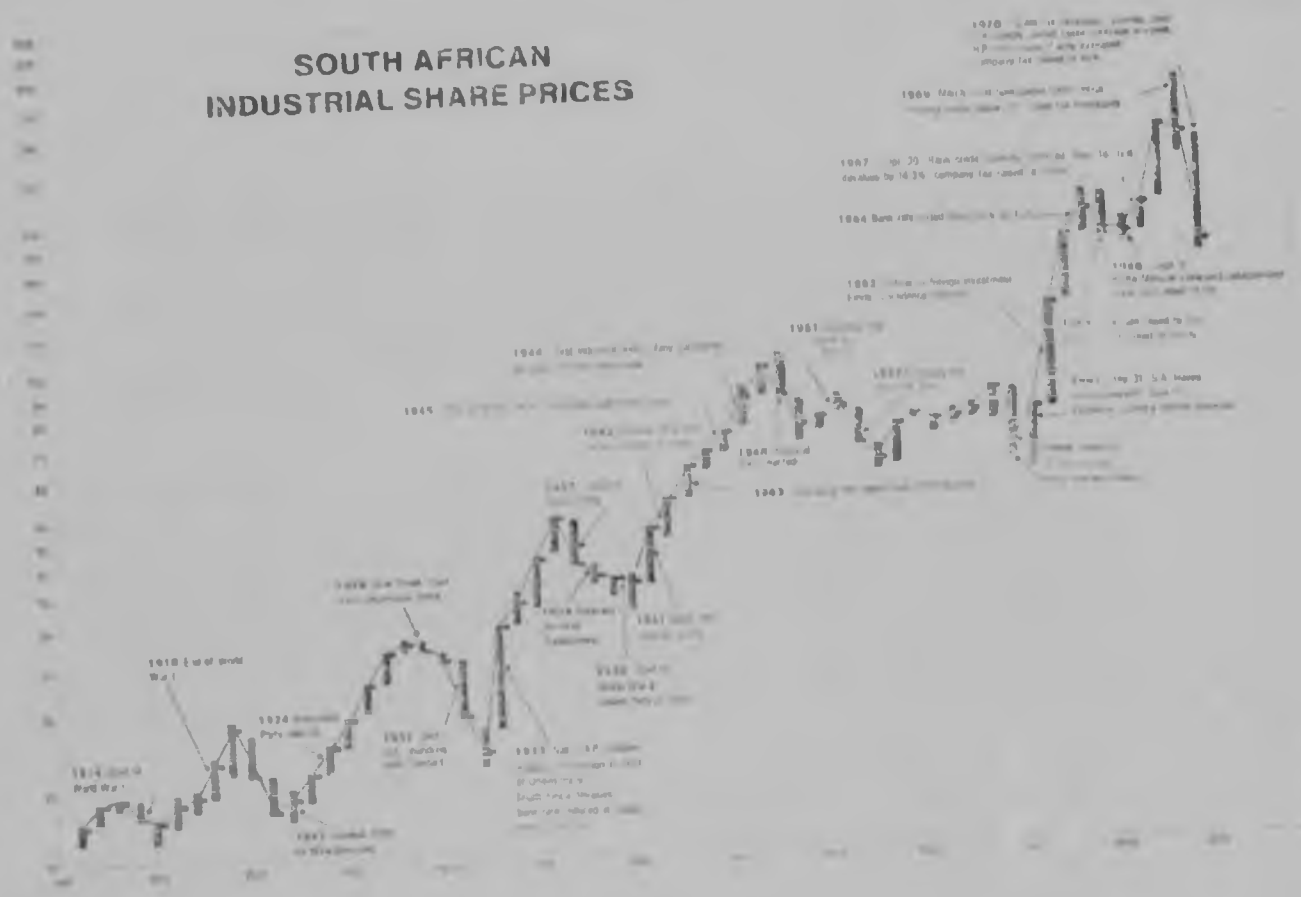


Fig. 5.4 - South African Industrial Share Prices, 1910 to 1970 (Johannesburg Stock Exchange)

not. The Wemmer development in 1920 was also significant for the effect it had of leading manufacturers down the Booysens Road and Eloff Street Extension into the heart of former mining land.

The Western Native Township's proclamation was a City Council decision. It decided, initially, in 1918, to use Newlands farm as a non-White township. The proposal was consistent with the practice of confining non-White settlement to the western sector. The township of

Newlands which dates from 1897 is contiguous with the Western Native Township, a fact which accounts in part for the former's low valuation of 1922 (Fig. 5.5).

Because of the post-war recession in 1921 no new townships were proclaimed for most of the year. In October however, the Salisbury Claims township and an extension to Wemmer township were placed on the market. Both were part of the industrial zone south of Marshallstown. On the town's north-eastern boundary Linksfield was surveyed on Doornfontein 24, and gazetted, and approved on 8 March 1922 (Provincial Gazette, 1922). In terms of the *contemporary* residential townships, Linksfield accommodates most of the desirable qualities. It is located on the dip slope and at the foot of the eastern section of the quartzite ridge which in this part is well defined. It affords a measure of protection climatically which, when allied to a fine northerly aspect and a good view produces an admirable residential environment. The stand sizes were large (40,000 square feet) by existing standards. However despite these favourable factors there were others which, at that time, militated against the township. It was, for example, a considerable distance from the city, and well beyond the limit of existing settlement, and being on the northern side of the ridge its accessibility was made even more difficult. These factors combined to give Linksfield a municipal valuation in 1922 of only £65 per stand, which placed it in the lowest status ranking (Fig. 5.5). Very few properties were developed, as is shown by a total building value of only £11,055 in 1925. In terms of people this probably accounted for no more than twenty families, so it was not, at that stage, sought-after land.

During 1923, Townsview, Turf Club, South Kensington, West Turffontein

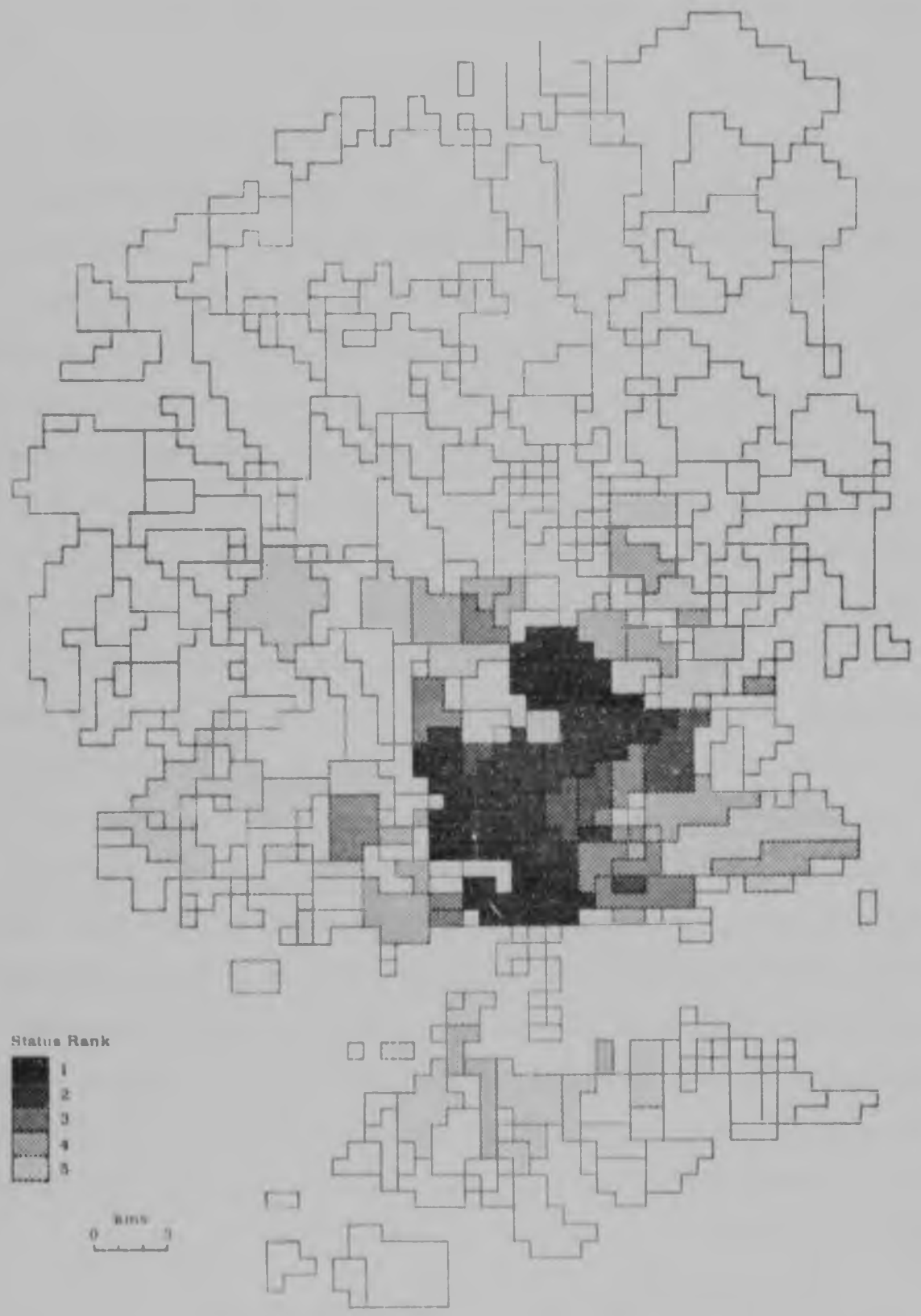


Fig.5.5. - Johannesburg : Mean Municipal Valuations per Suburb, 1922
(Ranked by Socio-Economic Status)

Extension and the Klipriversberg Estate Small Holdings were gazetted, which once again showed the demand for land in the lower status areas. With the exception of South Kensington, all are located in the Southern Suburbs on small stands. Nineteen twenty five saw the further development of the new industrial and warehousing area on the mining land when Village Main township entered the property market, and in the same year Saxonwold was gazetted. The property on which Saxonwold stands was bought originally by Hermann Eckstein as part of the farm Braamfontein. His intention of mining the property did not rise to expectations, so he planted an extensive eucalypt plantation and called it Sachsenwald, after Bismark's estate in Germany. An account of the area in The South African Empire (18 March 1893) by Mr. Garth, the farm manager of Prince Bismark's plantations in Germany, records that the trees were at the time about 30 cm. high (Smith, 1971). The planting was undertaken by Edouard Lippert who lived at Onderkoppies (Oxford Road, Parktown) and this is no doubt why Melville, on his 1897 map, refers to the area as Lippert's Plantation. In laying out the township, Tompkins the surveyor, took the Rand Regiment's memorial as the salient feature and directed the streets so as to give as many views of this edifice as possible (S.A. Survey Journal, 1951). He also suggested that building line restrictions should be imposed to preserve unobstructed views of the monument. Smith (1971) observes that such were regarded as revolutionary ideas at that time.

Saxonwold, which acquired its anglicised name at the time of the First World War, is an important township in the northern suburbs, and deserves special mention. It was a late developer, in the sense that the general proclamation of land for residential purposes had gone far beyond it, and had enclosed it on either side. Consequently it

represented a large wooded area (387 acres) in the centre of the prime residential areas of the city. It also contained as open spaces the Rand Regiment's Memorial, which has an area of 40 acres, and to the west the Zoo grounds and Hermann Eckstein Park. This environment of park-like landscape prompted the citizens of Johannesburg to press for its retention as a wooded park, and a number of public meetings were held to bring this about. The last of these (Mayor's Minute, 1925), was held at the City Hall and was very poorly attended and 'indicated an incredible state of apathy and indifference on the part of citizens, more especially ratepayers, whom it more nearly affects, to the vital interest of the town.' Although the motion of protest at the establishment of Saxonwold as a township was passed, the matter was taken by the Transvaal Consolidated Lands Company to the Townships Board, and it was gazetted on 11 March 1925.

An important feature of Saxonwold is the use of large stands around all the open spaces. This ensured that users of the Zoo and the parks would be unaware of the encircling houses, as these were concealed behind the foliage of large trees. These peripheral stands were over an acre in extent while the others were half-acres. As far as was possible Tomkins, the surveyor, departed from the conventional grid pattern which distinguished most townships at the time, and introduced crescents and curved streets which followed the line of the contour. These were planted with exotic trees, mainly planes and jakaranda, which came from the nurseries in the original plantations. A number of other factors conspired to make Saxonwold a financial success. The first was the state of the money market. South Africa as a whole, and Johannesburg

in particular was going through a period of great financial stability and general prosperity. The urban system was under expansionary pressure due to the arrival of many settlers, not only from the country districts, but also from other towns and overseas. The number of plans passed and the value of buildings approved was higher than at any other time (Fig. 5.1). Under such conditions of prosperity and general liquidity, a new township with an excellent location *vis-a-vis* the city, the high status sector, and the major roads, parks and gardens of the city, and laid out on large stands offering splendid amenities of space, promised to be an instant success. Consequently it is not surprising that the city valuer's map of 1928 placed Saxonwold in the higher-status category (Fig. 5.6).

Political and Economic Development from 1926 to 1929

In 1926 the favourable economic conditions of the previous five years continued to stimulate the construction industry and to maintain building and property prices at a high level. The volume of output in manufacturing continued to rise, and with it the employment in all sectors (Fig. 5.7). Other business cycle indices reflecting the activity of banking and other financial institutions, wholesale prices and industrial equity prices, imports and revenue from railways, all combine to present a favourable economic environment for the country as a whole and consequently for Johannesburg in particular, in view of its dominant position at the core of the space economy (Fig.5.8). This phase also coincided with the fortieth anniversary of the discovery of gold and allowed a series of extravagant celebrations to be held in the city. Building in the City Centre resulted in five large structures, namely, the North British Building the Netherlands Bank, the Alliance Building , the Locarno Building and the Penrey Roberts Building. Some of these added to the

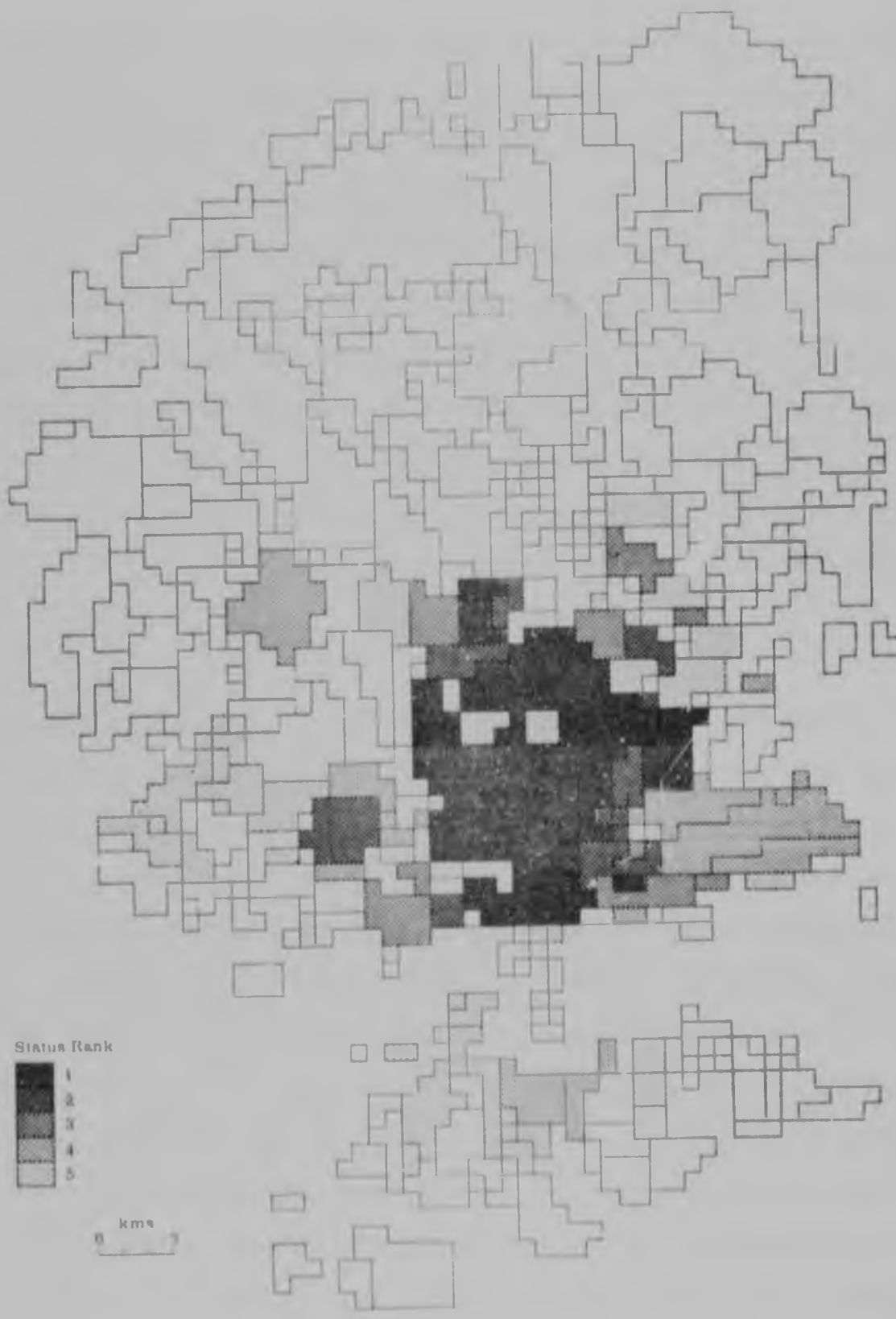


Fig. 5.6 - Johannesburg : Mean Municipal Valuations per Suburb, 1928. (Ranked by Socio-Economic Status).

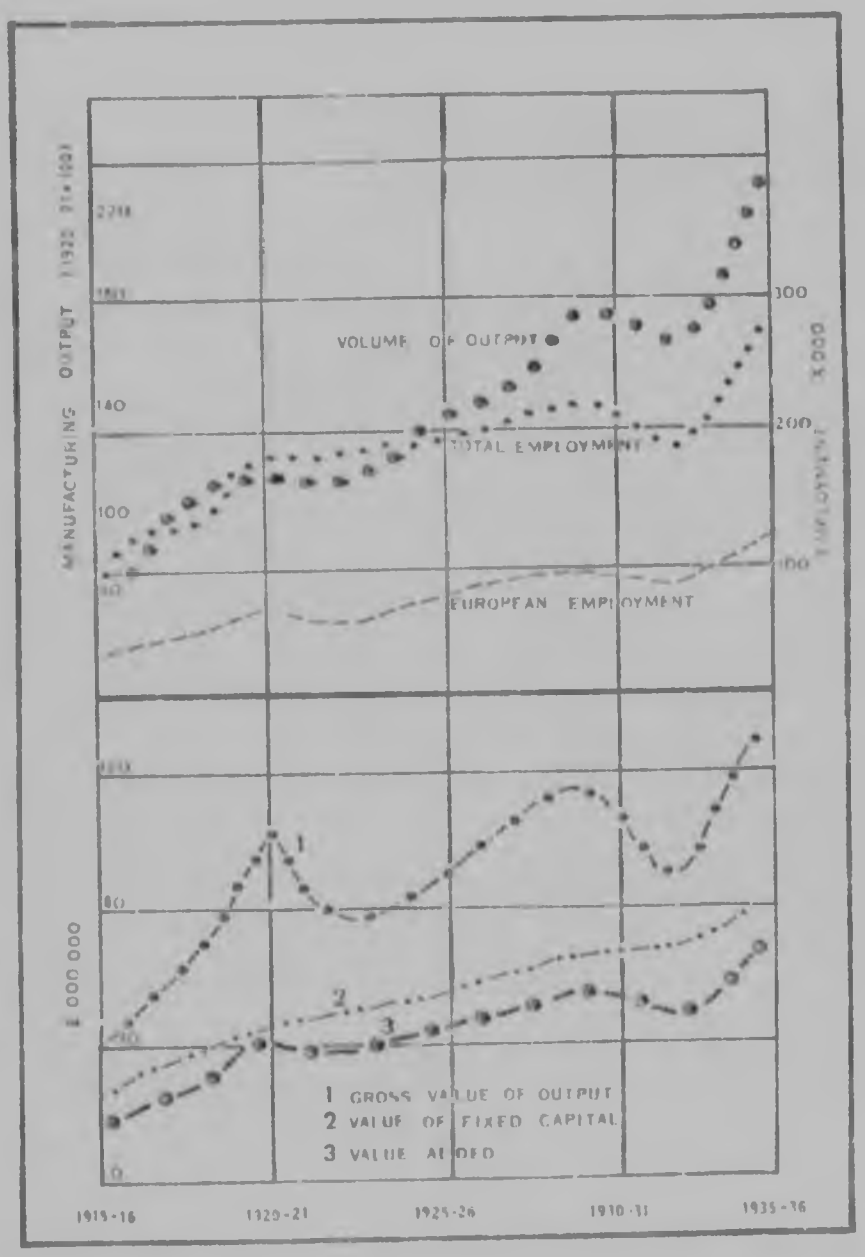


Fig. 5.7 - Some Business Cycle Indices in South Africa, 1915-1916 - 1935-1936 (Schumann, 1936).

financial heart of the core, near the Stock Exchange, and in most instances represented a second generation of construction. The City Valuer (1926) noted that 'Many of the older properties are being removed and are giving place to large palatial structures. In fact it may well be doubted if the City has ever experienced more activity in building than at present. Property values in the centre of the city in particular are increasing year by year, and are in some cases double those paid 10 or 15 years ago.'

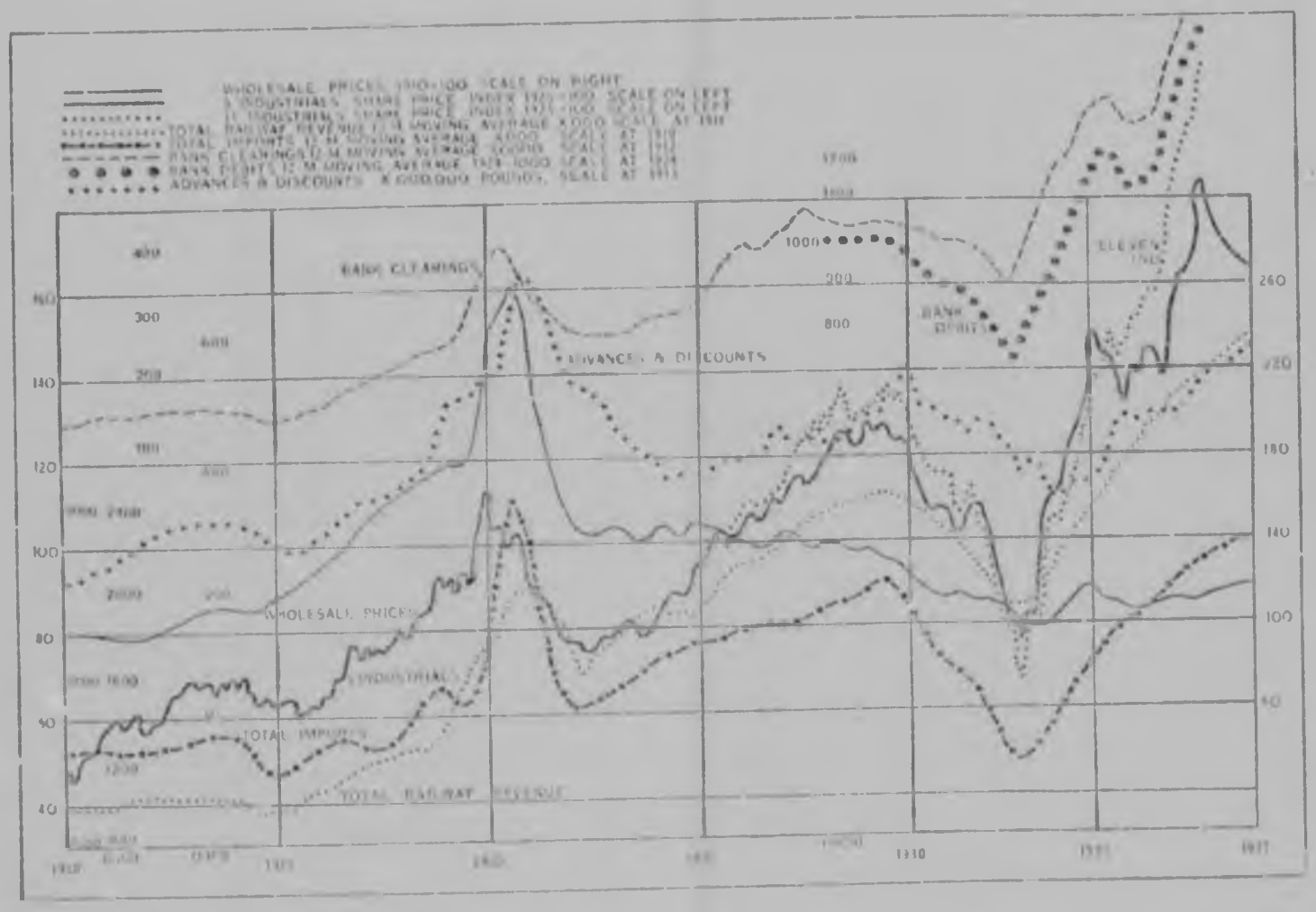


Fig. 5.8 - Some Business Cycle Indices in South Africa, 1910-1936. (Schumann, 1936)

While this favourable situation obtained in the *commercial* district, showing the new diversity of Johannesburg, the same could not be said for prices in the *residential* areas. Due to falling costs of construction in 1926, the market for residential property did not increase except in the best areas, and in some parts there were actual declines, although these were marginal. One such area was Wanderers View, previously one of the better suburbs of Johannesburg. The decline here was due to the agreement between the Railways Administration and the Wanderers Club, in which the latter agreed to sell its property for £53,300. The prospect of losing this valuable open space which formed part of the

outlook of Wanderers View and having it replaced by an enlarged Park Station, reduced the demand for housing in the area. Howeve a common form of investment in the late twenties was the low-rise apartment building (usually less than five storeys) and this new and more intensive form of land use, which was permissible in the absence of a formal town planning scheme, started to make its presence felt in the Wanderers View, Joubert Park, Argyle and even Braamfontein areas. It is important to note that this was the first major outward ripple of commercial land use from the Central Business District, into the adjacent residential areas.

The pattern of non-White settlement was further entrenched when the Eastern Native Township was developed on former mining land at George Goch, south of Jeppestown. In 1926 the Council spent £52,983 on housing in this area. The proclamation was an important one for the spatial pattern of residential development in the city because it revealed the fundamental principle of settlement which was to apply to Johannesburg for the next fifty years, namely, that the mining property and the railway reserve to east and west of the city and the land adjacent to it, would in future be devoted to industrial and commercial uses, with pools of non-White labour conveniently located along it. This principle permanently downgraded the White townships which were in this ribbon.

In Jeppestown, the laying of the foundation stone of the new Synagogue in 1926 was an important event. It revealed that, together with the growing Lordsburg-Mayfair Hebrew Congregation on the opposite side of the city, the Jewish Community of Johannesburg was growing.

In common with many such groups which exhibit a high degree of ethnocentricity, and who, in a residential sense, tend to be exclusive, these two communities gave a measure of stability to prices in areas which, were it not for their presence, would have declined before they did. It is a common observation that the Jews, because of their commitment to a commercial way of life, tend to live close to their businesses. This is an observable pattern which stems from the settlement of the twenties, and has been perpetuated with little change. The subject of the contemporary Jewish settlement pattern and their influence upon the residential property market will be examined presently in more detail.

Only one suburb was proclaimed in 1926. This was Rossmore, the township next to Auckland Park on its western side. Smith (1971) suggests that it was named after Sir Abe Bailey's second wife, Mary Westenra, who was the daughter of Lord Rossmore. This seems reasonable since the African Township, Mining and Finance Corporation, Bailey's firm, was responsible for Rossmore. The Council approved the establishment of the township, and expressed the opinion that there was no necessity to lay out further townships for the time being, a clear intimation that the market was saturated. Rossmore was established upon half-acre lots which matched much of its neighbour, Auckland Park, and consequently pitched it at the upper middle socio-economic group. Its insulation from the lower-income townships of Brixton and Westdene, by the ridge on the one hand, and the Racecourse and Country Club on the other, ensured it of this status (Fig. 5.6).

The next year, 1927, saw a perpetuation of the now well-established trend of the twenties, with an active property market and an active construction industry, and 'the erection of several large blocks

of residential flats in various parts of the Municipal Area' (Mayor's Minutes, 1927). In 1928 the town of Johannesburg acquired its city status, the Cottesloe Gas Works were inaugurated, thus changing the character of the Richmond Valley and that of the Braamfontein *Werf* (or Water Erven) from one of rural tranquility to one of industry. Other industries, and in particular laundries, were quick to move into the area. The city as a whole was rapidly increasing its industrial holding, and this stock was further complemented in 1928 when Industria township was proclaimed.

This was a large township (93 morgen) which lay along the railway line between the non-White townships of the western sector and the mining land. It is important to the city's residential development in terms of both its natur[illegible] numbers it would in future employ. As the industries moved to, or grew in [illegible]annesburg, so more people gravitated towards the city and in [illegible]o filled the empty stands of the residential areas and raised the prices. Because of the range of occupations offered by industry, the socio-economic spectrum of the population widened, and the residential land market became more diversified.

On 18 April 1928, Observatory Extension was gazetted, although at the time it was called Observatory East. Development in this direction was logical since land above the Parktown-Houghton and Observatory ridges was still regarded as superior to that further north, mainly because of its accessibility to the town. It came into the 1934 Valuation Roll at £100 per stand which compared favourably with Auckland Park and Rossmore and thus occupied a position in the third rank.

The Depression 1929 to 1932

The crisis years of 1929 to 1932 during which the world was

plunged into a depression of great magnitude are of some interest in the present study. During 1929 the progress of the city in terms of land and improvement values was unchecked. There were 1,425 new houses built, the property market was keen, and the demand for business sites in the city remained firm. Eighteen stands were sold in Industria township and the building boom which had then lasted nine years maintained its growth-rate. The wages of artisans went up one penny to 3s. 5d. per hour, and the price index for building remained at 120 (1914 = 100). There was still a large proportion of the city's population living in unsewered townships despite the fact that 2,337 properties were connected during the year, bringing the total to 24,758 (Mayor's Minutes,1929).

Two new townships were gazetted. In the eastern sector Cleveden was developed by the Central Rand Freehold Proprietary Ltd., on proclaimed mining land between Denver and Cleveland, from which it derives its name (Smith, 1971). It entered the market with a mean value per stand of £45 which placed it among the most inferior suburbs, a fact which was consistent with its location near both the railway and the mining property. The other township to be gazetted was the Crown Township, yet another industrial township which was laid out on Langlaagte No. 13 (Council Minutes 1930).

During the following year the first signs of a recession were evident, with unemployment in a number of major industries. As in the past the City Council, in conjunction with the Central Government, introduced relief work for Whites. This took the form of road building, sewer construction and the extension of the tramway from the terminus at

Kensington Golf Course. The extension cost £6,800, and in addition £18,244 had to be spent on a new electric sub-station to provide additional current to meet the heavier demands on the Malvern and Bezuidenhout Valley routes, where the density of population had so rapidly increased. The main areas of unemployment were the working class areas of Fordsburg, Jeppestown, Fairview, Booysens and the Southern Suburbs. The property market of the period presents some conflicting evidence. The City Engineer, in his report of 1930 notes that 'the building boom has continued with no appreciable change in price', while the City Valuer observes 'that the property market has been easier than it was twelve months ago, and although there is very little business in central business properties, they appear to be well-held and are maintaining their prices'. Perhaps the conflict is one of degree and interpretation.

Construction work was maintained at a good level with the building of the new station £318,000 while another industrial township, City and Suburban was gazetted, and the residential extension to the west of Dunkeld entered the market. Both were conceived in better times.

During 1931 the unemployment situation deteriorated further. There were a number of demonstrations, some of which necessitated the interference of the police. The Mayor received six deputations during the year, representing the unemployed. The main reason advanced by the Labour Bureau was the influx of people from the rural districts, particularly from the alluvial diamond fields in the Lichtenburg area. These had been forced to find other means of employment owing to a lack of workable ground and the low prices offered for diamonds. Despite these recessive conditions the property market remained firm, and three new suburbs were proclaimed. Two of these, Greenside

and Melrose East were far out to the north of the city, while the other, Reynolds View, was established on a portion of the western reserve of Malvern (Lot 1895, Malvern). Reynolds View had in fact come before the Council in 1924, when the economic climate following the disturbances of 1922 was not altogether favourable, but the application had been allowed to lapse.

Residential Development in the North-Western Sector after 1930

The general pattern of events of the early thirties continued into 1932, but of special interest was the development of the north-western sector. Thus far residential growth had largely taken place in a north-easterly direction. The first township to be proclaimed in the north-western quadrant was Greenside, and this was followed by the Council's decision to purchase land for a cemetery, well beyond the urban fringe. A site was chosen on the northerly slopes of the quartzites on the farms Braamfontein and Waterval. It was purchased from Mr. Frans Geldenhuys presumably related to Lourens Geldenhuys who was closely connected with the townships of Emmarentia and Linden. This move was due to pressure on both the Braamfontein and the Brixton cemeteries, and the need for additional burial ground. The land chosen for the West Park Cemetery was well-suited to residential usage so the decision was unfortunate. However the City Council was apparently not aware of the probable future residential development of the city. At the time the site was well beyond the built-up areas and was to all intents and purposes, in the country. At about the same time, Mr. Frans Geldenhuys gave the Council sixty acres of land for a picnic site on the stream which flowed through the quartzites near West Park. The park was named the Frans Geldenhuys Park (Council Minutes,

1932). While the cemetery probably had no effect upon settlement in the north-western sector, the development of Greenside certainly precipitated a move in that direction.

Technical and Planning Developments from 1927 to 1932

Of pressing importance in the late twenties was the development of an efficient sewage system for the whole city. The influence of other technological innovations on the price of residential properties and residential land have been examined. Among these innovations were the influence of transportation services, the influence of electricity reticulation and the influence of roads. The technological innovations in waterborne sewage disposal of the early thirties were considerable, and since this service is the most important in township development it can be examined here in some detail.

Until 1927 Johannesburg possessed only one sewage treatment works in the Klipspruit Sewage Farm which was constructed in 1905. All sewage from the Municipal area was treated here although only the inner portion of the Municipality was provided with waterborne sewage. In the outlying suburbs the night soil system of collection was in vogue until 1927. The sewage collected was introduced at various specially constructed sanitary intakes along the sewers and then conveyed to Klipspruit for purification.

In 1926 the Council decided on the extension of waterborne sewage to the suburbs, portions of which had rapidly become populated after the war. Because of the configuration and general topography of the municipality it was decided to establish separate sewage disposal works in the various natural drainage basins. These were termed the Central,

Eastern, Western, North-Eastern and North-Western drainage basins. The Parktown ridge, a natural divide between so many things was also the divide for the sewage schemes. The North-Eastern system divided along a line to the west of Forest Town and east of Parkview, the latter being in the North-Western system.

While it is not necessary to go into the technical details of these innovations, it requires no great insight to see that the northern suburbs, which prior to this date had had their sewage removed through their sanitary lanes, benefited tremendously from the new system. This allied to the other technologies of electricity, transportation, water reticulation, stormwater drainage, paving, curbing and road-making, transformed the area from the viewpoint of the quality of living it could sustain. The amenities which each stand offered could now be said to be on a par with those older suburbs of the inner areas which were the first to reap the benefits of these innovations. Partly as a consequence of this one sees a rapid change in the value structure of the northern suburbs after 1932 (Fig. 4.2).

Another important milestone in the evolution of settlement and the residential land market was the passing in 1931 of the Township and Town Planning Ordinance. Prior to this much of the development was made on an *ad hoc* basis and while no great damage was done in the early days, the City Engineer of the late twenties and early thirties complained of the difficulties of moving between suburbs. It was, at this time, almost impossible, for example, to gain access to Houghton Drive from the adjacent suburb of Parktown. Many examples of this sort were cited. The Ordinance also intervened on the question of land use, and on 4 November 1932 a Town Planning Committee was formed and a Civic Survey of Johannesburg was started. The objectives were similar in some respects to those of the

present study. These were to examine the growth and the development of the city both past and present. It was felt that an understanding of the development was essential to making proposals for future development. Maps were prepared illustrating various portions of the city, the densities and growth of population, the increase in property values and the development of business and industrial areas, the use of existing land, the restrictions on townships, the provision of services of water, light, sewage and gas, transport facilities and main roads, parks, open spaces and children's playgrounds and their relation to the various residential areas as to distance and size. Regrettably none of this information has survived.

Economic Developments from 1929 to 1932

Some of the effects of the world-wide depression from 1929 to 1932 upon Johannesburg can be guaged from the statistics of the plans submitted by the public for approval under the Building and Drainage By-Laws. These figures 'show the startling variation between the first and second six-months in this respect' (Table 5.2) (Council Minutes, 1932). The total value for 1931 to 1932 and the number of plans passed is actually higher, but this latter fact is mainly accounted for by the large number of plans for small drainage jobs dealt with on account of the rapid extension of the sewage system.

Table 5.2 - The Number and Value of Plans Submitted under the Building and Drainage By-Laws, July 1927-June 1931 (Council Minutes, 1932)

	Number	Value (£)
July 1927 - June 1928	5496	2,735,377
July 1928 - June 1929	6625	3,258,148
July 1929 - June 1930	6462	3,408,829
July 1930 - June 1931	6646	3,080,564

In 1932 three new townships entered the market. These were Glenesk, Mayfair West and Selby. The first of these is in the Southern Suburbs, while Mayfair West represents a continuation of Mayfair in both conception and in design. It was ranked among the lowest grade of townships in 1934. Selby is a township on the site of the old Ferreira mine which was named after Paul Selby (1877 to 1940) the American manager of Ferreira Deep from 1926 to 1927 (Smith, 1971). It added to the increasing stock of industrial land in the city.

Despite the depressed conditions, building continued at a brisk pace in the central area with the new Public Library (£225 000) on the Market Square, the Metro Cinema, the Colosseum Theatre (£200 000) and flats and warehouses in the eastern parts, however residential development came to a virtual standstill for a few months. Orlando Native Township was also established at this time to house 80 000 Africans. It was an important event for it revealed a new policy, that of developing a south-western sector for Africans, ultimately to become a dormitory area of almost a million people. It shows also that the old east-west axis of low status White and non-White housing along the railway line was becoming saturated.

By late 1933 the City Valuer observed the signs of a revival in the building trade as indeed occurred for the whole economy following the departure from the gold standard. The ensuing boom in the property values of the thirties, and the reasons for this boom are the subject of the next chapter, which, because of the spectacular nature of the economic revival will be called the phase of Acceleration. It remains to draw together the many factors which determined the value of residential land, the character of the residential development and the spatial manifestations of each during the second phase of Consolidation. From this synthesis one can relate the determinants to the underlying theories and concepts.

A Synthesis : Determinants of Residential Development, Residential Property Prices : Their Spatial Manifestation and Linkage to the Underlying Theories and Models

Johannesburg was almost fifty years of age at the end of the second phase of Consolidation and *this factor*, more than any other, contributed to the complexity of the urban system at this time, and distinguished it from the previous phases. Consequently the determinants of residential development, of residential land prices and of the spatial patterns emanating from these are drawn from a very much wider range of criteria than was previously the case. The *social determinants* embrace population growth (of which rural-urban migration is a part), urban rehabilitation, filtering of groups of individuals, and the location of high status people and institutions. The *economic determinants* embrace all phenomena which emanate from the market place. These are the price of gold, its output and its changing significance with regard to the city's economic base; the business cycle and its influence upon the money market, the price of building materials, new township development, the price of houses and land, the influx of population, the building cycle and the alternating periods of prosperity and recession. The *political determinants* embrace those external factors which affected the city as a whole, and inevitably therefore, the residential component. These include on the one hand, important events, such as the formation of Union in 1910, the first World War, the South African Rebellion, the strikes of 1913 and 1922, and on the other hand, important policy changes such as the fiscal change which occurred, in 1925. The *other determinants* embrace miscellaneous factors of which topography, technological innovation, spatial friction (evaluated largely in terms of distance) and local government (such as the town planning ordinance) are the most significant.

Each of these groups of determinants can be examined with its spatial manifestation and its linkage to the underlying theories and models. Finally it is possible to assess the varying influence of these determinants in each of the phases examined thus far.

The Social Determinants

The most important of the social determinants during the phase from 1913 to 1932 was undoubtedly that of population change. In the present chapter a close accordance has been noted between the oscillations of the business cycle and the influx of migrants to Johannesburg. In times of recession, precipitated by low prices for agricultural and pastoral commodities, or by plagues of locusts or drought, large numbers of Blacks and Whites drifted to Johannesburg. Here the strength of gold mining supported a range of ancilliary industries which could offer employment to these people. The Whites were mainly Afrikaans-speaking people and fulfilled most of the characteristics ascribed to them by the theory. Johnston (1971) summed up these characteristics by saying that migrants are usually poor, unskilled, unused to city life and individuals who tend to form a cluster or an urban village for social and economic security. They settled mainly in the western low-status sector and in the Southern Suburbs and inevitably imbued these areas with the low values consistent with their status. Hart (1973) in his factorial ecology of contemporary Johannesburg has revealed a pattern in the western sector which still retains the socio-economic characteristics it acquired between 1910 and 1930.

The second social determinant is that which emerged from the movement of the high-status community from Doornfontein to the view sites of Parktown, Westcliff, Houghton Estate and Observatory. This movement was initiated in the Formative Phase, but like so many social processes,

took many years to complete. In theoretical terms it is not unlike the filtering process described by Lowry (1960) but is more akin to the invasion and succession process of Burgess (1924). The mansions of Charlton Terrace (Doornfontein) were gradually taken over by a community of lower-status as movement to the north took place. Elsewhere in the eastern quadrant a similar pattern of movement could be seen as individuals moved from Belgravia and Jeppestown to Houghton Estate and Observatory. The effect of this process on the property market was noted by Arthur Meikle the estate agent and auctioneer when he said that the price of residential land in the older inner areas was declining at the expense of the newer areas more remote from the city.

The next social determinant, that of the location of the leaders of society and prestigious institutions has been identified in each phase of the residential development of Johannesburg. When the University site was to be chosen, attention was inevitably drawn to Milner Park for this was not only within the high-status sector and adjoining Parktown, it was also a large open space very near the centre of the urban system. Its position undoubtedly influenced the pattern of residential development near it. The leaders of society continued to live in Parktown and in the large homes on the ridge from Westcliff ot Observatory.

The environmental quality of these sites continued to be the primary determinant of their value. In every respect this pattern conforms to Hoyt's model. He noted, in particular, that should the line of the contour (which controlled the direction of high rental development) move in a direction contrary to that of the sector, then high status growth would move in that direction. This is why the high status

properties spread along the ridge rather than immediately into the valley in which was the Hermann Eckstein park.

Prior to examining the economic determinants it is as well to observe that by 1930 Johannesburg's residential mosaic had the ingredients of the contemporary system. The socio-economic status was undoubtedly sectoral, a rudimentary zonal pattern of family status was discernable on the basis of township age while ethnic contrasts were evident between the predominantly English, Afrikaans and non-White communities and to a lesser extent, the Jews. So the fundamental spatial divisions of society as propounded by Shevky and Bell (1955) were to be seen in Johannesburg during its second consolidatory phase and this is evidence of some maturity in the system.

The Economic Determinants

An examination of the economic theories and models of the urban land market reveals an almost complete disinterest in the type of determinants which operated in Johannesburg between 1910 and 1932. Only Hoyt in a recent paper (1964),Brigham (1965), Bourne (1971) and Wendt (1957) acknowledge the importance of the business cycle, the building cycle, and the city's economic base as determinants of its behaviour. The fortunes of Johannesburg and especially its residential areas were closely tied to the gold mining industry. When it faltered, as happened in 1922 through falling prices, the market for residential property softened. Conversely in times of general economic recession as was the case between 1929 and 1932 the strength of the gold mining industry was evident in the firmness of the urban land market. Johannesburg's expansion was also closely tied to the industry as the main attractive force for people from other parts of the country and overseas. The development of the large domestic market of Johannesburg was due entirely to the gold mining industry.

The business cycle can also be regarded as a determinant of residential development and of residential land values because it largely controls the liquidity of capital in the system. When capital is available for investment new townships are proclaimed, construction advances and the price of land, houses and materials rise. The opposite is generally true in times of recession. During the second consolidatory phase in Johannesburg, residential development could not advance spatially due to the oversupply of residential land during the Formative Phase. However a large amount of construction took place in the inner areas (aided by extensive subdivision of stands) and in this way the rapidly increasing population was housed without extensive peripheral growth.

Another important economic determinant was the development of a strong industrial component in Johannesburg. It grew in response to the expansion of the gold mining industry, the increasing numbers of people on the Witwatersrand, the change in fiscal policy in 1925 which actively encouraged local industry and the development of a large interior market. It also grew out of the stimulus afforded by the First World War when new sources of many industrial commodities had to be found. The changes in the economic base of the city emerged gradually and were by no means complete at the end of this phase. However the property market responded to the changing economic and social environment in a gradual recovery. This began after the 1922 strike, and a decade later the municipal values had returned to parity with those ruling in 1904.

Other Determinants

The theories and models of Ricardo (1817) Von Thünen (1826), Dunn (1964) and Alonso (1967) all contain either explicit or implicit distance-decay functions. This aspect of the friction created by space

has many manifestations in Johannesburg between 1910 and 1932. Some of these were physical, some behavioural. The introduction of the electric tramcar in 1906 had in theory, reduced the importance of distance from the commercial district, however, in practice, a combination of the impediments to movement caused by the Parktown ridge, on the one hand, and the reliance on the bicycle on the other, restricted residential development to the north of the city. Inevitably it also placed limits on the prices of properties. In the latter stages of the phase, particularly from 1920 onwards when prosperity was the keynote of the society, the popularity of the bicycle and the horse-drawn vehicle waned, and automotive transport and the mass-transit system encouraged development in the more remote townships. Prices in these areas responded accordingly (Fig. 5.6).The spatial pattern of residential settlement in 1932 revealed the truth of Hurd's (1903) comment that 'value depends on nearness'and Haig's (1926) view that 'the perfect site ... is that which furnishes the desired degree of accessibility at the lowest costs of friction . It also confirmed Von Thünen's principle that 'maximum net earnings are attained when the intensity of cultivation is proportioned to the price of the gross product'. In the case of residential property,earnings are equated with satisfaction, and intensity of use and price are a function of distance and cost. In this sense distance was an important determinant of residential land values.

An important factor influencing the spatial development of the residential areas was that of technological innovation. The behavioural models such as those of Beckman (1957), Muth (1961) and Evans (1973)imply that innovation diffusion is largely a function of the intensity of development. So a technological innovation reveals its maximum development at the centre of an urban system where development is at a maximum, and declines with distance towards the periphery.

The technological innovations in Johannesburg between 1910 and 1932 were those contributing to the quality of residential life - water, electricity, sewage, communications (roads, postal services, telephones) and transport. The inner areas received these facilities first and these benefits were passed to the price of residential properties in the inner areas. As the services spread, and they spread into the most desirable localities first, so the construction of homes followed. In this sense these services influenced both residential development and residential prices.

Turvey (1957), who was interested in the imperfections of the market for urban property examined the influence of local government upon the pattern of prices, and concluded that matters such as zoning can have a material effect. In Johannesburg the Town Planning Scheme introduced in 1931 could conceivably have had such an influence. The role played by the scheme will be examined in the following chapter in view of its introduction at the end of the phase of Consolidation.

The main differences between the rather brief first phase of Consolidation, and the much longer second phase can be summed up in the following points : firstly, in the phase from 1902 to 1913 Johannesburg's residential component was influenced by local factors of which the most important were the production of gold, the small and relatively uniform population, the narrow socio-economic spectrum and the limited range of residential property types. The urban processes were simple, technology was unsophisticated and the distance separating residence and workplace was small. After 1910 the town was influenced by events of a national and international nature and it came under the influence of intensive population migration (a phenomenon which has been termed the

most important process of social change). The urban processes became more sophisticated when the elements of invasion and succession and renewal and rehabilitation became evident. The population acquired new ethnic groups which influenced the residential mosaic and the economic base began to move away from a mining orientation to a mining and industrial orientation. Technological innovations encouraged the lateral spread of settlement but this was also constrained by the process by which residential properties were subdivided. Towards the latter part of the phase the influence of automotive transport became evident in the settlement pattern.

CHAPTER 6 - THE PHASE OF ACCELERATION : 1932 - 1960

Many students of the social and economic history of South Africa look to the events of the latter months of 1932 as heralding a new phase of development in the country. Among these are de Kiewiet (1941), Richards (1935), de Kock (1936), Schumann (1936), Knowles (1936), van Eck (1951) and Hobart Houghton (1967). The last follows the descriptive and somewhat imprecise phases of Rostow in his *The Stages of Economic Growth (A Non-Communist Manifesto, 1960).* Houghton describes the period as *'Stage Three - The South African Take-off into Self-sustained Growth.'* In the present study the term 'Acceleration' is used to describe the phase since it describes the sentiments embodied in Houghton's terminology and it follows logically from the previous Chapters: hence, Formation, Consolidation, Acceleration. Figures 5.1 and 4.2 reveal the *rate of building,* and the *increase in the municipal values* at this time, surely sufficient justification to use the term 'Acceleration' in the present context.

Building as an Index of Economic Activity

Schumann (1936) notes that building activity is considered a good index of general economic conditions. It has been accorded a special value for purposes of forecasting. A study of the monthly figures of building plans approved in South Africa since 1922 (Fig. 6.1) reveals the building boom which developed after the depreciation of currency in 1932. A study of the statistics for individual cities shows that Johannesburg and the Rand had the greatest relative increases (Schumann, 1936).

While it must be noted that business cycle indices (Fig. 6.1)

reveal an improvement in economic conditions prior to the depreciation of currency, there is agreement that this event had a greater impact than all others in creating the improvement which lasted until 1936. It had a profound effect upon building activity on the one hand, and residential property prices on the other. It also had a profound effect upon the primary industry which formed the economic base of the city whose housing market is the subject of the present study. Clearly, therefore, one would expect th fluctuating price of gold to be more influential upon residential property prices in Johannesburg, than upon those in any other South African city. The increase in the price of gold was equivalent to a reduction of

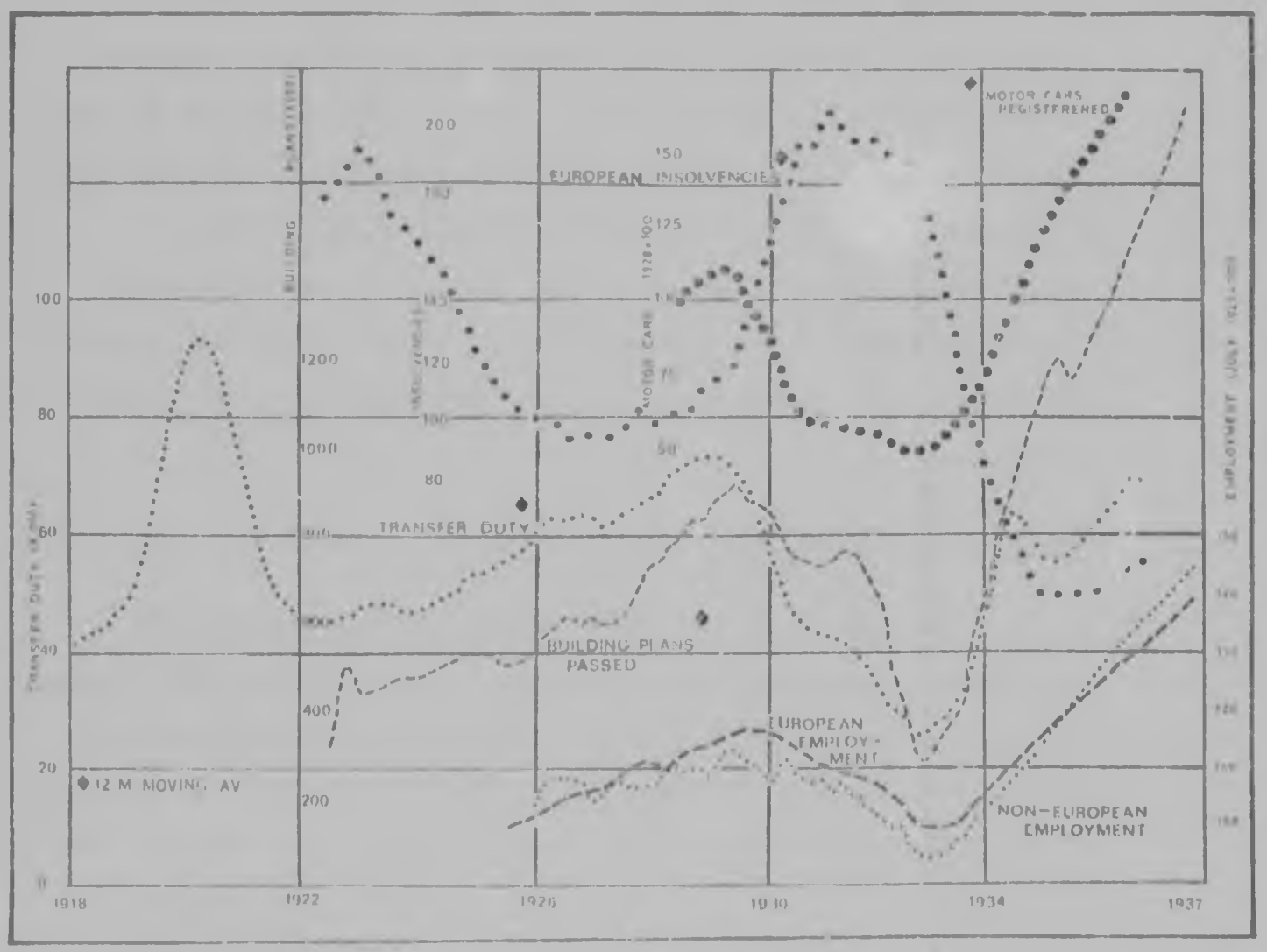


Fig. 6.1 - Some Business Cycle Indices in South Africa, 1918 to 1937 (Schumann, 1936)

working costs of six shillings a ton, which is more significant when it is noted that in 1932 it was estimated that a reduction of only four shillings would double the available tonnage. By 1934 the Treasury was reaping £13,000 000 a year from gold profits, whereas in 1932 its share had been £4,300,000. Equally important for South Africa was the £80,000,000 of new capital invested in the gold mining industry in the course of the next six years (Shorten, 1970). This was the *financial foundation* of this phase of development. It not only *enabled*, but indeed *compelled* building and property prices to escalate as they subsequently did. Clearly, therefore, this single event, the abandonment of the Gold Standard, created a completely new and optimistic economic climate in the country, and most of all, in Johannesburg. The mines received a new lease of life, and the range of activities supporting the mining industry was favourably influenced. The ripple effect was apparent with a rise in the number of bank clearings, increases in imports and railway revenue, a decrease in wholesale prices and a reduction in the number of European insolvencies (Fig. 6.1). The commercial sector of the community gained unparalleled prosperity, the population of Johannesburg swelled with new arrivals from both the country districts and overseas, and in consequence the demand for housing in all categories grew rapidly. The analysis of the spatial patterns of residential land values which developed in response to this economic climate, will follow presently.

Increase in Manufacturing

Another important event, related to the prosperity of the gold mining industry, was consolidation of the manufacturing function of the Witwatersrand. Although all towns in the region were affected, Johannesburg showed the greatest increase in the number of factories.

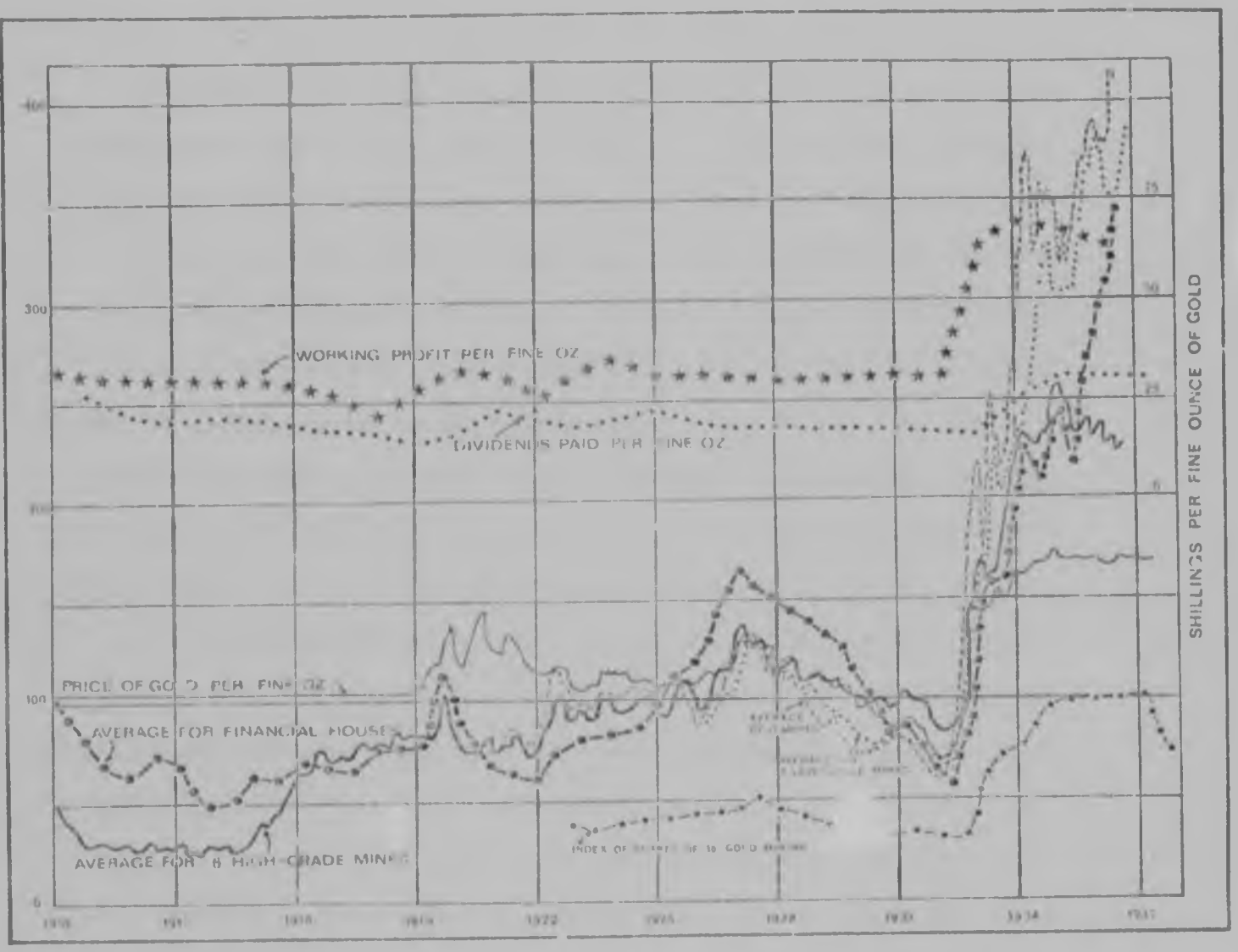


Fig. 6.2 - Indices of Gold Production, 1910-1937
(Schumann, 1936)

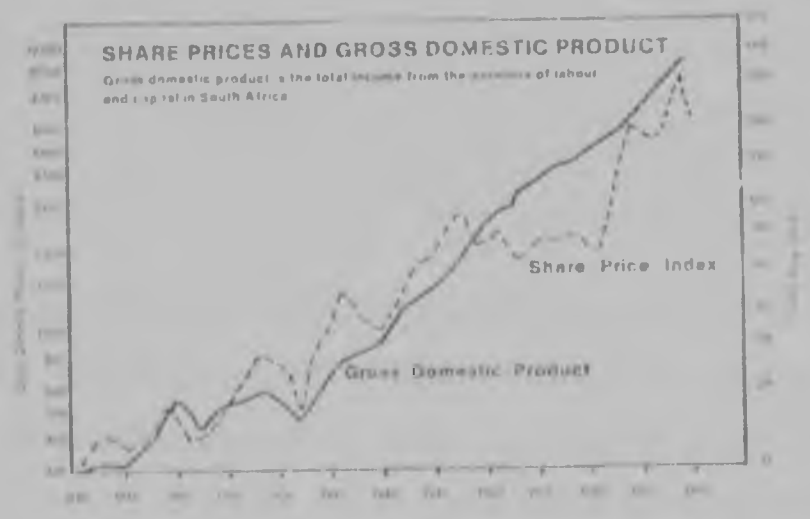


Fig. 6.3 - South African Share Prices and Gross Domestic Product, 1910-1970 (Johannesburg Stock Exchange)

Of particular significance were the iron, steel and engineering industries whose fortunes had up to that time been closely associated with the gold mining industry. An increase in the prosperity of the one inevitably had a similar effect upon the other. Drake (1971) notes that while wages in the engineering industries remained more or less constant between 1933 and 1937, the value added to the product increased from 350 in 1933 to 539 in 1937, an increase of 54 per cent, or a growth rate of 13.5 per cent per annum. The numbers employed rose from 24,812 in 1933 to 50,982 in 1937, an increase of 26,170 or 26.3 per cent per annum. The fact that the industry was able to absorb this number without any significant rise in wages is indicative of the unemployment which existed during the depression. Capital investment increased rapidly during the phase, most of it being invested in machinery. In fact during 1933, 1934, 1935 and 1936, the amount invested in *machinery* on the Witwatersrand exceeded that invested in *land and buildings* throughout South Africa. Much of this investment was in Johannesburg. Houghton (1968) notes of this phenomenon :

> 'As the economy in the country improved and gold production increased, the Witwatersrand engineers extended their scope and their markets, a situation closely associated with a gold price rise from £12-5s an ounce in 1933 to £15-5s an ounce in 1939'.

At the same time the Government recognised the need to foster manufacturing on the Witwatersrand, and consequently introduced protective railway tariffs which favoured the area. Discriminatory tariffs were also applied to imported articles. These moves, together with the influx of Whites from the '*platteland*', variously estimated at between 200,000 and 300,000 people, created a substantial market on the Witwatersrand and in Johannesburg in particular. These are the principal events in the immediate pre-war period against which residential development is seen.

The Second World War presented a great challenge to South African manufacturing industry the growth of which is reflected in statistical form below (Tables 6.1 and 6.4).

Table 6.1 - Growth of Manufacturing During World War II (Hobart Houghton,1968)

	1938-1939	1944-1945	1939-1945 % Increase
Number of establishments	8614	8316	8
Number of workers :			
All races (thousands)	236	361	53
Whites only (thousands)	93	112	20
Non-Whites only (thousands)	143	249	74
Value of gross output (R million)	281	608	116
Value of net output (R million)	128	276	116

Most of the new industry was located on the Witwatersrand, with Johannesburg at its centre. This inevitably had a material effect upon residential development.

The increasing dominance of the Southern Transvaal over most of the other major centres of the country is reflected in Tables 6.2 and 6.3. The first shows output and employment of the industrial regions, the second the ratio of population in the core areas to the national average. As indices of economic and social growth these statistics show the accelerating importance of Johannesburg at the heart of the Southern Transvaal. The demand for houses which these changes imply is clear.

Table 6.2 - Output and Employment of Industrial Regions as a Percentage of the South African Total. (Hobart-Houghton, 1968)

Southern Transvaal	1916-1917	1928-1929	1938-1939	1945-1946	1949-1950	1953-1954
Southern Transvaal						
Value of net output	37.4	34.7	44.0	47.1	45.6	48.0
Total employment	28.2	34.1	43.9	44.9	44.1	45.2
Cape Western						
Value of net output						
Total employment	20.9	19.6	16.5	16.2	15.8	14.3
Durban and Pinetown	11.7	11.6	12.2	12.5	12.3	11.4
Value of net output	11.7	11.6	12.2	12.5	12.3	11.4
Total employment	11.1	11.5	10.9	11.2	11.1	10.8
Port Elizabeth/						
Value of net output	3.1	5.8	5.7	5.4	7.6+	7.0+
Total employment	3.4	5.0	4.6	4.6	5.8+	5.8+
The Rest of South Africa ++						
Value of net output	25.7	25.6	19.6	17.6	17.4	18.3
Total employment	36.4	30.0	24.7	23.1	23.2	23.9

\+ Uitenhage added to Port Elizabeth

++ A residual category comprising all industries other than those in the four main regions.

Table 6.3 - Ratio of Population in the Core Areas to the National Average (Browett and Fair, 1972)

Year	Cape Town	Durban	Johannesburg	Southern Transvaal
A. All Races				
1904	1.69	1.98	2.24	1.46
1911	1.40	1.88	2.81	1.80
1921	1.46	2.05	2.88	1.84
1936	1.51	2.10	3.47	2.15
1946	1.64	2.20	3.97	2.40
1951	1.77	2.35	4.07	2.46
1960	1.77	2.37	4.03	2.47
1970	1.83	2.31	3.93	2.45
B. Whites only				
1867	4.81	1.71	0.68	0.69
1890	3.55	1.74	1.73	1.27
1904	3.98	2.00	4.16	2.21
1911	2.87	1.81	5.11	2.71
1921	2.98	2.10	5.29	2.81
1936	3.00	2.26	6.19	3.21
1946	3.06	2.38	6.50	3.47
1951	3.06	2.43	6.35	3.49
1960	2.93	2.58	6.14	3.52
1970	2.90	2.71	6.13	3.66

Other Indices of Johannesburg's Growth

The statistics which collectively reflect the growth of Johannesburg further substantiate its increasing dominance at the heart of the country's economy (Figs. 6.4 and 6.5). The total population, which between 1886 and 1932 had reached 400,000, took only a further sixteen years to double; during this latter period

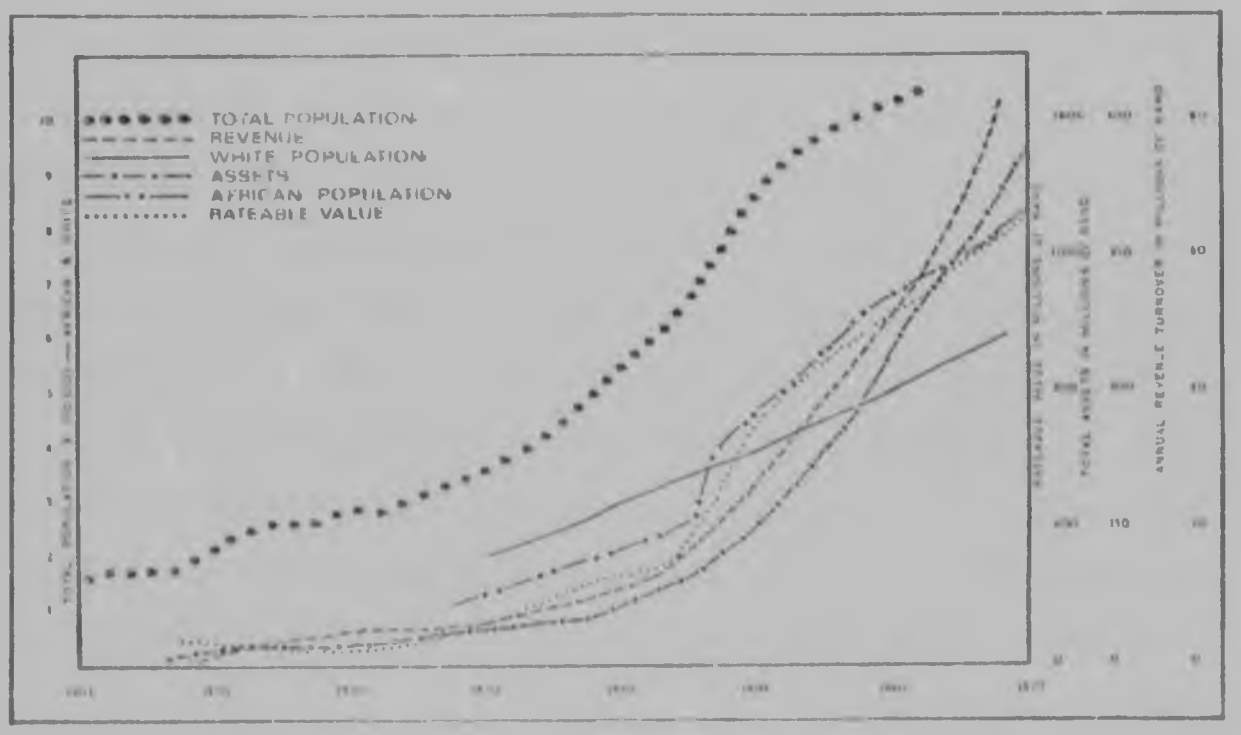


Fig. 6.4 - Johannesburg : Indices of Growth, 1903-1970
(City Engineer's Reports)

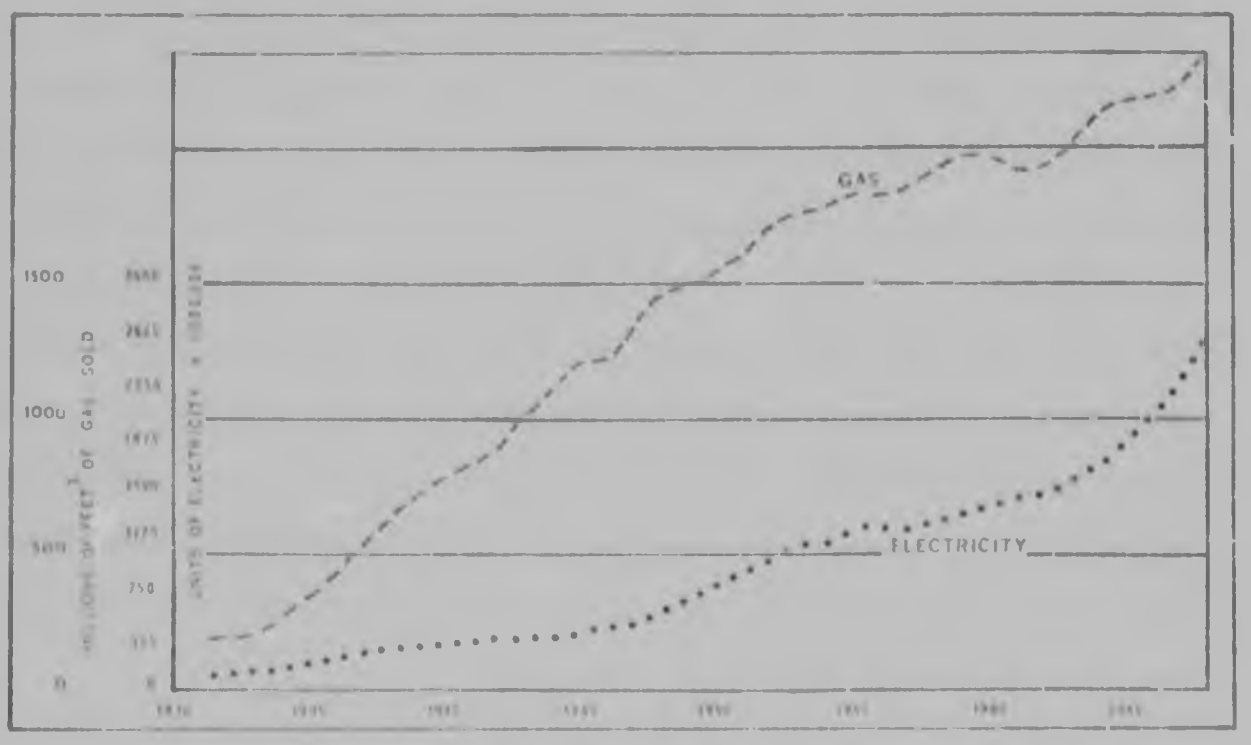


Fig. 6.5 - The Johannesburg Energy Budget, 1930-1965
(City Engineer's Reports).

the influx of Africans into Johannesburg was partly due to the higher wages and the better employment opportunities which presented themselves there; the total assets of the city, which in 1903 were £637,552, had moved from £23 million at the time of the Depression, to £39 million in 1941, and to £77 million in 1950, an increase of 100 per cent in less than a decade; the net rateable value of land in the municipal area, and the annual revenue turnover increased exponentially, both appreciating by more than 400 per cent between 1932 and 1950. Another useful measure of economic activity in an urban system is the amount of *energy* consumed per annum (Fig. 6.5). Since manufacturers are commonly large consumers of either gas or electricity, this measure is used as an index of the increase of this component in Johannesburg during, and immediately following. the Second World War (Table 6.5).

Gas consumption increased from approximately 200 million cubic feet in 1932 to 700 million in 1940, and to 1,500 million in 1950. This represented an eight-fold increase in the use of this form of energy in less than twenty years. Electricity consumption was not materially different. Here the statistics for 1932 show that 100 million units of electricity were sold in Johannesburg, rising to 350 million units in 1940, and to 700 million units in 1950. Finally, the statistics relating to the value and number of building plans approved each year during the same period shows that 7,000 plans with a value of £5.5 million were passed in 1935 (the values are not given before this date), rather less than 5,000 plans with a value of £3.8 million in 1940 (due no doubt to the restrictive conditions of the Second World War), rising to 5,000 plans with a value of £30 million in 1960, most of these were private dwellings (Table 6.6).

Table 6.4 - Growth of Manufacturing in South Africa 1944-1955
(Hobart Houghton, 1968)

	1944-1945	1954-1955	Increase % 1945-1955
Number of establishments	9,316	13,725	47
Number of workers			
All races (thousands)	361	653	81
Whites (thousands)	112	184	64
Non-Whites (thousands)	249	469	88
Value of Gross Output (R million)	608	2,221	266
Value of Net Output (R million)	276	964	249

Table 6.5 - Electricity and Gas Production, 1932-1968
(City Engineer's Reports)

Year	Units Sold	Energy gas/ft^3	Year	Units Sold	Energy gas/ft^3
1932	103 m	197 m	1951	790 m	1598 m
1933	111 m	199 m	1952	928 m	1708 m
1934			1953	1063 m	1741 m
1935	150 m	326 m	1954	1064 m	1759 m
1936	190 m	435 m	1955	1149 m	1819 m
1937	232 m	546 m	1956	1179 m	1802 m
1938	267 m	618 m	1957	1170 m	1857 m
1939	298 m	714 m	1958	1219 m	1919 m
1940	319 m	762 m	1959	1281 m	1952 m
1941	330 m	789 m	1960	1350 m	1958 m
1942	357 m	845 m	1961	1393 m	1914 m
1943	350 m	1008 m	1962	1444 m	1926 m
1944	397 m	1111 m	1963	1532 m	2014 m
1945	416 m	1194 m	1964	1640 m	2107 m
1946	428 m	1232 m	1965	1808 m	2161 m
1947	471 m	1346 m	1966	2101 m	2143 m
1948	523 m	1449 m	1967	2247 m	2216 m
1949	621 m	1498 m	1968	2631 m	2344 m
1950	716 m	1530 m			

Table 6.6 - Johannesburg : Value and Number of Building Plans Approved, 1932 - 1968. (Vade Mecum)

Year	Value (£) (x 000 000)	No.	Year	Value (£) (x 000 000)	No
1932	-	7,329	1951	20.0	7,128
1933	-	5,863	1952	29.0	6,018
1934	-	-	1953	18.0	5,150
1935	5.5	6,962	1954	20.0	5,270
1936	8.5	28,973	1955	20.7	5,561
1937	11.4	11,522	1956	17.5	4,794
1938	8.3	9,175	1957	13.0	4,116
1939	6.5	8,128	1958	15.7	4,488
1940	3.8	5,230	1959	13.5	4,237
1941	2.3	4,485	1960	20.0	5,091
1942	3.0	4,120	1961	14.9	5,752
1943	1.4	2,960	1962	11.0	4,577
1944	4.1	4,893	1963	13.0	4,394
1945	3.7	4,135	1964	19.5	4,471
1946	6.1	5,052	1965	32.5	4,373
1947	7.7	6,163	1966	31.1	4,356
1948	9.5	4,970	1967	26.0	4.476
1949	16.6	6,391	1968	32.3	5,284
1950	11.5	5,832	1969		

Economic and Spatial Development 1950 to 1960

One final phase of the economic, social and political events germane to this study is that of the 1950's. It is impossible to establish a definite point at which the minor recession of the fifties affected the national economy and concomitantly, the Johannesburg city economy. However, the

national election of 1948 in which the National Party was brought to power appears as a significant event (Fig. 5.4). The prices of stocks and shares and the Gross Domestic Product (Fig. 6.3) settled back markedly after 1948, and most other indices reveal a minor recession in the economy. In Johannesburg however, changes were minimal. The population continued to grow at an ever-increasing tempo (Table 6.7), the annual revenue turnover, the net rateable value of property and the total assets improved as never before, although a decline in the consumption of electricity and gas was noted (Fig. 6.5). The phase of Acceleration came to an abrupt halt in March 1960 with the Sharpeville Riot, after which there was a sharp fall-off of interest in both the housing and the equity markets. This is an appropriate point at which to close the phase.

The *spatial* growth of residential development is shown for the periods 1925 to 1940, and 1940 to 1955 by Fig. 4.1. Here one notes the unusual amount of construction which took place, especially in the former period, when the abandonment of the gold standard affected the building industry so markedly. One notes also the extension to the north-western sector which was initiated by the proclamation and development of Greenside during the latter part of the Consolidatory Phase. Finally a *ring* broken only by the mining land and of varying width was added to the total stock of residences, strongest in the north and north-east (the areas best served by roads)and weakest in the west and south-west, those sectors in which the lowest socio-economic groups lived.

Table 6.7 - Johannesburg : Population Growth (All Races) 1932-1968
(Vade Mecum)

Year	White	Native	Coloured	Indian	Total x 000
1932	205	151	20	8	385
1933	-	-	-	-	-
1934	-	-	-	-	-
1935	240	183	15	11	430
1936	248	160	19	10	438
1937	272	204	23	11	508
1938	-	-	-	-	508
1939	285	221	23	11	540
1940	295	227	23	11	557
1941	307	247	26	12	593
1942	317	246	25	12	600
1943	328	256	26	13	623
1944	339	265	27	13	645
1945	350	275	28	14	667
1946	320	260	22	16	619
1947	329	388	25	15	758
1948	336	400	26	16	778
1949	343	452	27	17	839
1950	350	470	27	17	86
1951	350	470	27	17	864
1952	347	393	31 +	21	791
1953	351	401	32	22	804
1954	354	409	33	22	818
1955	357	413	34	24	827
1956	361	418	36	25	839
1957	-	-	-	-	-
1958	393	562	47	29	1.030
1959	404	725	50	32	1,211
1960	409	711	58	34	1,213
1961	415	721	57	27	1,220
1962	394	687	52	39	1,172
1963	406	712	66	40	1,222
19 4	435	706	71	35	1,247
1965	442	713	67	39	1,2
1966	449	733	107	37	1,327
1967	476	773	76	38	1,364
1968	415	673	57	12	1,15

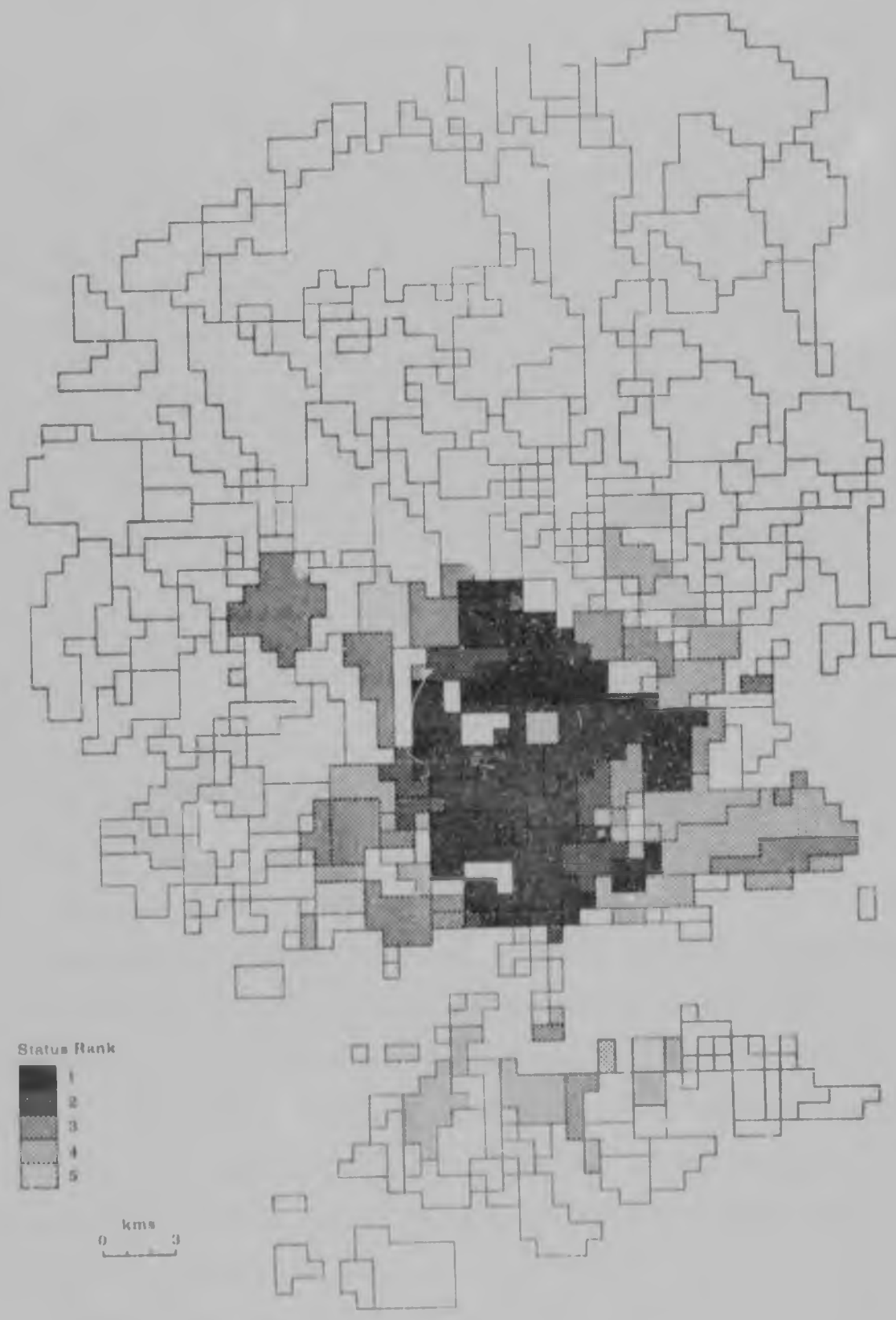


Fig. 6.6 - Johannesburg : Mean Municipal Valuations per Suburb, 1934 (Ranked by Socio-Economic Status).

These spatial patterns of development were summed up by the Mayor in his Minute (1934-1935) in the following terms :

> 'During the year under review, great and increasing progress has been made in the growth of our city. The increase in the rate of progress can, in large part, be ascribed to the rise in gold price, with the consequent expanding of mining activities all along the reef. Its progress will be to a large extent, reflected, particularly from a Municipal point of view in the comprehensive reports contained in this minute. I would like, however, to stress the tremendous strides that have been made in the building sphere. When one realises that during the short period of my term of office - November, 1934, to November, 1935, - 8207 plans for buildings, with an estimated value of considerably over £6,000,000, were passed by the Council, one will, I think, gain some conception of the phenomenal progress that is being made in the "outward" or "visible" growth of Johannesburg. Again, when one considers that the valuation of land and improvements in Johannesburg in December, 1924 - that is ten years ago - was approximately £51,000,000 and that at the end of December, 1934, it was approximately £75,000,000 and to which must be added the sum of £8,000,000 for non-rateable property, one is forced to the realisation that one is a citizen of what is becoming "no mean city"'.

The new township development at the start of this period of prosperity reflects the economic mood of the times. Greenside East was gazetted in November 1933 and contributed to the stock of properties in the higher status category. It was established by the Transvaal Consolidated Lands and Exploration Company (a legacy of the Eckstein Group of companies), and although it was surveyed by C.P. Tompkins in 1929 it was only made available to the public in early 1934, presumably because of the inhibiting influence the Depression would have had upon prices. As it was, it entered the property market with an average municipal value per stand of £120, which made it comparable with Auckland Park, Observatory Extension and Rossmore, but rather lower than its neighbours to the east (Fig. 6.6). Stand sizes in Greenside East are larger than average. An exact size cannot be applied to the township since, in the survey, Tompkins

employed a variety of shapes, and most of the stands are neither square nor rectangular. This is due to the physical location of the township at the bottom of a valley where it is "shoehorned" into the space remaining within the boundaries of earlier suburbs, namely, Parkwood, Parkhurst, Parkview, Greenside proper, and the northern end of the Parkview golf course.

The Village Deep township was proclaimed in 1933, (Council Minutes, 1934), although Smith (1971) places the date at 14 February 1934. It appears on Goldmann's Map as Ingramsburg, according to an entry in the South African Financial Record, on 19 February 1898. Even at that time, due to the new interest in deep level mining, the name of Village Deep was mooted. It was started by Village Deep and Rand Mines, who applied to lay out the township on the farms Booysen Estate No. 20 and Turffontein No. 21 (Smith, 1971). Within a year of its proclamation, Village Deep ceased to have a residential function and became an industrial area. This is important since the economic climate was changing in favour of industrial land and the good location of Village Deep well within the mining land made it unsuitable for residential purposes. The stands were large, which favoured factory construction, it was on Eloff Street extension, the principal street of the city, and close to the railway line. In consequence the Valuation Roll of 1934 gave the mean value of £210 per stand which accorded with the average values for sites on former mining ground. It has subsequently become a prime location for warehouses for large retail outlets which operate from the centre of the city.

In 1934 a valuation was taken of all property in the municipality. The mean values (Fig. 6.6) do not show appreciable changes over those of

1928, although in certain localities there is evidence of improvement. The central high status sector (Rank 1, Fig. 6.6) moved ahead rapidly, and in some cases residential properties doubled in value. This was especially the case in those townships further from the centre, such as Parktown North, Rosebank, Melrose, Dunkeld and Dunkeld West, Saxonwold and Houghton. This was due to the favourable economic conditions which obtained in 1934. The supply of money in Johannesburg enabled the wealthy to raise the bidding prices in the more salubrious neighbourhoods. Another factor which increased the values in peripheral townships was the movement towards the ownership of private motor cars (Fig. 5.2). In this regard one should note the declining interest in the bicycle and the greater reliance on automotive transport which enabled people to commute from greater distances. Inevitably this made the remote townships more desirable since land could be had at lower prices, while affording the same accessibility in terms of time, as the inner suburbs. This situation with regard to the residential prope.ty market was acknowledged by the City Valuer (Council Minutes, 1934) when he noted that 'the property market for central sites in particular is very firm and suburban properties also show an appreciation. Vacant stands in the more popu ar suburbs are becoming more difficult to obtain.' The developments within the other sectors were, at this stage, unspectacular, in terms of the overall *value* of property. However in terms of spatial development the pattern is one of rapid expansion. The eastern sector advanced rapidly in building, with Kensington leading the way from Bezuidenhout Valley. Improvements to property in the former advanced by almost £250,000 between 1929 and 1934 (Council Minutes, 1934).

Between 1935 and 1938 the full effect of the buoyant economy was felt with a proliferation of new townships serving all members of the

community and in all localities. These ranged from Orlando African township in the south-western sector, through Paarlshoop Extension 1, Braamfontein Werf Extension and Crosby in the western sector; Greenside Extension 1 and 2 in the northern sector; Linksfield Ridge, Raedene Estate, Percelia, Rouxville Extension 1, Cyrildene and Highlands North Extension in the north-eastern sector; and finally an extension to The Hill, and Stafford in the Southern Suburbs and on the mining land. These townships ranged from the very smallest stands in Orlando (which was not a freehold township) to the acres and more of Melrose North and Linksfield Ridge.

The general condition of the property market is indicated by the auction of Greenside Extension 1 in which 507 stands were placed before the buying public on 26 April 1936. Of these 444 were disposed of at the sale. It first appeared in the valuation roll in 1940 at a mean per stand value of £350. This placed it in the second rank (Fig. 6.7). Two years later, Greenside Extension 2 was auctioned and the stands numbering 151 in all, were disposed of at the sale.

Also in 1936 Melrose North was laid out in large stands on ground adjoining the Bird Sanctuary and in the valley of one of the tributaries of the Jukskei River. This was part of the farm Syferfontein No. 2. Prior to its development as township land, Melrose North was a dairy farm, which was sold to the Dalmally Country Club, which because of financial difficulties had never functioned.. The township had a municipal value of £350 a stand in 1940, with improvements of over £30,000. This value reflected the advantages which had accrued to the area.

Other developments of note were the recommendations of the

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Other developments of note were the recommendations of the

Johannesburg and Germiston boundaries Commission. As a result of these findings, the municipal boundary was extended to include the townships of Craighall, Greymont, portions of Craighall Park and Illovo, the remaining portion of Linden, together with portions of the farms Waterval No. 7 and Klipfontein No. 4 (Smith, 1971).

Craighall took its name from the estate of Craighall which was purchased in 1891 for £3,000 by William Rattray. He had named it after his home in Blairgowrie, Perthshire (Smith, 1971). It is one of the older townships in Johanresburg, dating from 2 October 1902, when Arthur Meikle auctioned 229 plots at his sale rooms. It was laid out in one-acre stands and was described as being five or six miles from the Market Square, s[illegible]endidly watered, since it had a stream running through it, and bounding the Yokeskei (sic) River, besides innumerable fountains on the ground'. At the time it was just beyond the Municipal boundary so that purchasers escaped municipal taxes. The original owner, Rattray, had formed a lake on the Braamfontein Spruit in 1902 by building a weir across it, and this was one of the added attractions. Despite these many advantages Craighall was conceived long before its time, and for many years its only claim to fame was as a picnic spot over week-ends and public holidays. However, because of its early proclamation and the fact that trees were planted along all the streets, it was regarded as a good area when it was incorporated into the Municipality in 1937, and in the valuation roll of 1937 it was accorded an average value per stand of £180.

Illovo was also partially incorporated at this time. It was however regarded as a far more salubrious suburb and first appeared in the valuation roll with average values in the vicinity of £625 in 1940. This placed it in much the same category as Dunkeld (£900), Melrose Estate (£600), Rosebank (£650)

and Waverley (£550), all of which were part of the high status sector, and with similar physical attributes. When compared with the premier suburb of Parktown (£1,000) the comparative value of Illovo becomes more meaningful. It had first been surveyed on the farms Zandfontein No.32 and Cyferfontein No. 380 before March 1904. Smith (1971) records that the part within the Johannesburg Municipal area had formerly been known as Rhebok's portion of Cyferfontein. Plots were offered for sale on 7 August 1902 (The Star, 11.7.1902) but by 1916 no stands had been sold (Council Minutes, 1916). Illovo was surveyed during a period of recession. It was well beyond the fringe of development of even the early twenties, and the so-called bicycle and buggy era. Later, however, in the thirties, when Jan Smuts Avenue and Oxford Road were extended, metalled and widened, (the islands in the latter as far as the municipal boundary were completed in 1938) and the motor car became a common mode of transport and the Wanderers Club moved from the city to Kent Park, next to Illovo, the township came into its own. Stands were large, the aspect was north-easterly and gently sloping, the outlook pleasant, and the neighbourhood of adjacent Dunkeld, Melrose and Rosebank well-planted with trees. Added to this was the buoyant economy and the community was, by and large, prosperous. Under such circumstances a township like Illovo could only have a good future as is shown by the values attached to that portion in Johannesburg (Fig. 6.6).

A description of Craighall Park, which was also incorporated in 1937, appeared in The Transvaal Leader of 10 March 1911. It is typical of the style used to describe what was in reality a barren stretch of farmland which in common with Craighall and Illovo, was ahead of its time as an economic proposition in real estate. Because of the insights it offers into the qualities of the township the article is reproduced verbatim :

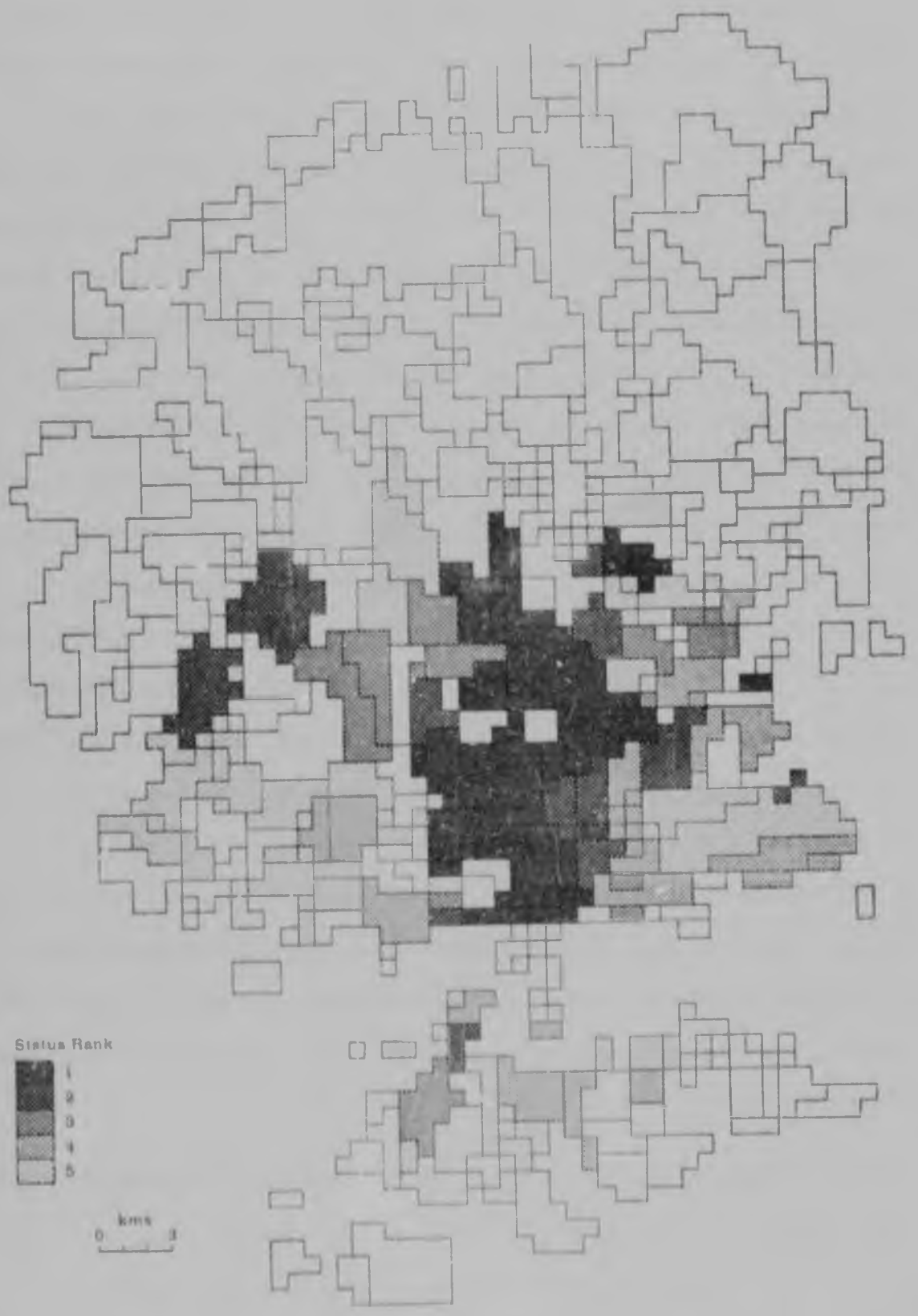


Fig.6 7 - Johannesburg : Mean Municipal Valuations per Suburb, 1940 (Ranked by Socio-Economic Status).

"Craighall Park - Its Beauties and Advantages

Craighall Park Township, which forms the northern boundary of the Johannesburg Municipality, is one of the beauty spots of the Rand. A drive or a ride through the pretty bits of scenery met with in Parktown, the Sachsenwald and Rosebank is one of the most charming obtainable. The business man finds in the exhilarating air, peace and calmness, which are part of the place, a restorative to the nerves. Craighall has accordingly won its way into popular favour. In the way of scenery there is much to interest one on the estate. The hotel and grounds which have been purchased by Mr. Harry Curtis at a good round sum, are attractively designed and prettily laid out, and from the position they occupy on top of the hill a commanding view is obtained of picturesque country. Plainly visible are the townships of Parktown North, Melville and other well-populated suburbs. The main avenue, with its stately trees and broad way leading to Craighall Park, is another feature of interest of the estate which cannot fail to attract notice. On the west and south sides of the hotel broken stretches of water which have been caught and collected by the surrounding hills. glisten in the sunlight, Craighall being particularly fortunate in possessing an abundant supply. The lake itself is a fine sheet, where boating can be had in the most favourable circumstances. There are any number of boats to be had. In the vicinity are to be found numerous shady nooks, leafy trees, patches of verdant green, and miniature waterfalls, restful and cooling to the eye; while the place suggests ideal spots for walks and picnicking. Fishing, too, is a pastime that can be indulged in owing to the lake having been stocked with carp. Apart from these advantages, the estate possesses that of a rich soil, and at present the agriculturist is to be seen at work on the slopes of the hills and flat-lying ground. It is asserted that crops, fruit, vegetables and flowers are readily grown on the property. Excellent stone is obtained from the quarries of the estate, the interesting bridge on the north side of the lake having been built from stone obtained from these quarries. Five different varieties of marble are also found at Craighall.

With the object of giving the public an opportunity of purchasing plots at the Craighall Park Estate, it has been decided to sell 300 of these in freehold. The sale will take place on Tuesday, the 21st instant, at 11 a.m. at the auction mart of Messrs. Lezard and Co. Six hundred plots are being shown on the plan at the auctioneers' sale room, so that a purchaser has an excellent opportunity of making his choice. The price for each half acre lot is £30, which includes free transfer and other expenses, an estimated saving of £12.10s. per plot. The auctioneers are instructed to offer purchasers at this sale good terms, namely, one-third of the purchase price in cash on day of sale, and the balance in two equal instalments at six and 12 months.

Craighall should certainly make an ideal residential part, while purchasers will not only obtain the freehold of their property, free from transfer expenses, but will have no municipal rates and taxes to pay. The sellers are also allowing the owners of plots the right of quarrying their own building-stone free of charge for a period of three years after the sale. At present the tram service runs to within 900 yards of the Craighall Park boundary, and in the event of the proposed electric rail scheme from Johannesburg to Pretoria being carried out, residents will be enabled to run to town in 12 minutes." (cited in Smith, 1971).

Reference to the Growth of Buildings in Johannesburg (Fig. 4.1) shows that Craighall Park had practically no buildings at the end of the thirties. However the municipal value of the half-acre lots in 1940 was £120, which placed it in about the middle of the hierarchy of townships comprising the residential property system.

One other township deserves mention for the special properties which it embodies. This is Linksfield Ridge. It was proclaimed on 28 June 1939 being part of the farm Doornfontein No. 24. Linksfield Ridge which should not be confused with Linksfield further north, occupies the northern slope of the steeper parts of the Orange Grove quartzites. Hermann Kallenbach, the township owner, restricted the number of stands because of the topographical qualities of the township. Consequently, a line of homes appear on the *crest* of the ridge, all of which have a magnificent outlook to the north-east and to the north-west and a second line of houses lie along the base of the ridge. The properties are long and narrow. Linksfield Ridge was slow to develop for a number of reasons. Building costs on the steep slopes of the quartzites have always been abnormally high. This is due to the expense of assembling materials on the building sites and to the difficulties of laying foundations in the shallow, rudimentary soil and as often as not in solid rock which requires the use of explosives. High costs are incurred in building roads in sewering and in providing other essential services. In return for these costs the incumbent of a stand on Linksfield Ridge gains one of the finest view-sites in the Transvaal. The upper portions of the property reach 6,000 feet above sea level, about 500 feet above the surrounding country. Due probably to the proclamation of Melrose, Illovo, Craighall and the other high status townships at this time, the Linksfield Ridge properties were sold slowly and mostly after the Second World War. The average municipal value of a stand in 1946 was £900.

Development Near the Centre of Johannesburg

At the centre of the city two factors, one economic, the other technological, caused a transformation. The first concerned the price of centrally located commercial sites. The best commercial sites increased in value from an average of £400,000 per acre to £800,000 between 1932 and 1934. At the same time the high-rise commercial buildings, designed specially for American cities, were introduced to Johannesburg. The City Engineer noted in 1938 'the type of building and street architecture which prevailed here for about 35 years, is undergoing rapid transformation, whilst the erection of so many buildings and blocks of the "sky scraper" type have given something of the impression and skyline effect of the ambitious structures regarded as typical of American cities'. The second important factor was the introduction of the first town planning scheme under the Ordinance of 1931. It was designed to control the city's development in all its stages, but its relevance to the present study is its influence upon zoning practices with regard to density, bulk, building lines and, perhaps most important, land use. The single-family residences in the Hillbrow portion of Johannesburg, in Argyle, in Wanderers View and in Braamfontein, gave way, in places, to low-rise blocks of apartments, and the process was formalised in terms of the Town Planning Ordinance of 1931. Zonings of 'General Residential' and General Business' were applied to these townships which were previously 'Special Residential' areas. This encouraged property developers and entrepreneurs to increase the density of the area which overlooked the city from Berea in the east to Braamfontein in the west.

At the same time another process, (or perhaps another part of

the *same* process) became apparent. Signs of automotive congestion appeared in the commercial area of Johannesburg and on the major roads leading to it. Access to the Central Business District, especially from the Northern Suburbs, was restricted by the South African Railways property. This unit of land cut the commercial heart of the city from its limbs, the large mass of residential townships. Consequently a vast programme was mooted to lower the railway lines and to produce a series of bridges linking the Central Business District with the suburbs to the north. It was conceived in 1932 and had barely begun by the outbreak of the Second World War. The scheme for the city to be more effectively linked with its hinterland did not stop at bridging the railways to the north, it was to be pursued in all directions so that in the course of time all the dish-crossings[1/] which had served the population for forty years would be removed.

This scheme affected residential development and the residential land market in a number of ways. In the short-term the effects were felt close at hand in Braamfontein, Wanderers View and Argyle where prices rose sharply after the Second World War. This sector became an extension of the Central Business District and prices advanced in anticipation of this, especially when the Town Planning Scheme's zoning practice facilitated the changes. In the long term, the development ultimately affected the price of land in Parktown, and brought about its ultimate decline as the pre-eminent residential district of Johannesburg, although it should be noted that the invasion process here differed from that nearer the Central Business District.

The Spatial Pattern of Residential Values 1940

The spatial patterns of property values for 1940 (Fig. 6.7) show the perpetuation of a now well-established process. A very strong high

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1/ A term used by the City Engineer to describe the dish-shaped roadways which had previously been used to cross the Railways Reserve.

status sector ran from Parktown to Dunkeld and Illovo, northwards along the interfluve separating the drainage basins of the Braamfontein Spruit, to the west, and the Klein Jukskei, to the east. These expensive residential properties were associated with two main arteries, Jan Smuts Avenue and Oxford Road (previously Rosebank Road, and renamed in 1935). Within the sector could be identified three zones corresponding to the settlement period , 1886 to 1902 (which terminated at Parktown ridge), 1902 to 1929 (the limit of this zone at Rosebank coincided with the limit of the electric tramcar) and finally the third zone incorporating the Craighalls, the Dunkelds, the Melroses, and Illovo. Within this sector an incipient sub-regional shopping complex at the transport terminus at Rosebank had made its presence felt and had developed a variety of functions.

The western sector had continued to develop its primary function, that of housing the Coloureds, the Indians, the Malays, some Africans and low status Whites. So this area was a corridor of blue collar and factory workers. Within the area, as at Sophiatown, the most appalling and insanitary conditions developed as more and more Africans came to Johannesburg, seeking employment in mining, industry and commerce. The development of Orlando township was the result of the slums in this sector. With the exception of Auckland Park and Rossmore,whose average municipal values per stand in 1940 were £250 and £225 respectively, all other townships fell into the lowest quality rating (less than £140) (Fig. 6.7).

The most conspicuous changes appeared in the north-western sector. This quadrant of the city's housing was developed *after* the Great Depression. In fact, the only suburb of long standing was Linden, which dates from the turn of the century. The northern portion was

incorporated into Johannesburg in 1937. The reasons for this development are not hard to find. The Geldenhuys brothers, Lourens and Frans held much of the land in this sector. Lourens' farm, Emmarentia, named possibly after his wife, Emmarentia Margaretha Botha (Smith, 1971), was a portion of the farm Braamfontein, and although the township of Emerentia (sic) appears in Proclamation No. 31 of 1903, issued by the Lieutenant-Governor of the Transvaal (31.7.1903) it was not developed as such at the time. This was due to Geldenhuys' reluctance to turn his farm into a township during his lifetime. After his death, his heirs, some of whom resided at the original homestead (still standing at 14, Greenhill Road) established the township. Since the owner of the farm died only in 1929, this land was virtually frozen for the first three decades of the century. The situation was in some respects analogous to the case of Saxonwold. In view of this position much of the land between Greenside and Linden, comprising the greater part of the north-western quadrant, could be developed only after 1930. The fact that the application was submitted in 1930 probably determined the nature of the layout and size of the stands in Emmarentia. It was conceived in prosperous times when there was a market for large stands (mainly over half an acre). The township was proclaimed on 28 April 1937, and the extension to Emmarentia in October of the same year (Smith, 1971). The situation of Emmarentia is most attractive. It is on the north-facing slope of the quartzites with a prominent view over the Parkview golf course to the north-east and Jan van Riebeeck park to the north-west. Adjoining the township on the west is the nature reserve which is a part of the Melville Koppies. This latter area was retained as an open space in the township plans when it was submitted to the Council. In the valley below the nature reserve is Emmarentia Dam, built after the war of 1899-1902 by Louw Geldenhuys at a cost of £12 000. The water was used for irrigation. The dam became part of the endowment to the city at the time of the proclamation of the township. In a sense, the

dam forms a focal point for much of both Emmarentia and its extension, just as, in the nearby valley, the Zoo lake is a focus for the townships there. The average municipal value of stands in the township in 1940 was £375 which placed it at the top of the third-order suburbs (Fig. 6.7). This position was to improve in the years ahead.

Beyond Emmarentia at the rural urban fringe, the township of Northcliff on Aasvogel's Kop was gazetted on 3 October 1934. It was in many respects similar to Linksfield Ridge, and suffered the same vicissitudes. Difficult of access because of its steep slopes, remote from the city, poor in developed roads, and having a rock structure which, on the northern face, was found to be deeply weathered and not entirely suitable for foundations, this township tended to flounder in the early years. It was, one must also remember, at the edge of the most undeveloped sector of the whole system, so that despite the magnificent outlook, people were reluctant to live there . However, with the passage of time, and the rapid development of the north-western sector in the thirties, the township grew from an improvement value of £23,125 in 1936 to £156,245 in 1946. The average municipal value of stands in 1940 was £400, making it a second order suburb.

Linden's development and placing in the second rank is associated with the size of the stands which were unusually large, and its long standing as a township. Originally a group of agricultural holdings, successive sub-divisions have been a feature of its history and development. In 1940 it had a mean municipal value of £400.

The north-eastern and eastern sectors, both containing townships of long standing and extremely well served by public transport, had a

good share of the building boom. Most of the vacant stands were built upon and with the exception of properties in prominent positions (Mountain View, Kensington Ridge, Langermann's Kop,Linksfield and Observatory) the townships were all middle-ranking providing accommodation for the large middle-class community (Fig. 6.7).

In the Southern Suburbs Booysens ceased to be a residential area and became a manufacturing district specialising in the engineering industry. Because of the overall increase in manufacturing in Johannesburg and the consequent increase in the worker-component of the population, the townships of Turffontein, Kenilworth, Regents Park, The Hill and La Rochelle experienced a substantial increase in building operations. In terms of quality, as indicated by the municipal values, the Southern Suburbs as a whole occupied the third, fourth and fifth status ranks, with the age of the township being the primary value-determinant. The older townships were generally of a higher order.

Residential Development During the Second World War

The onset of the Second World War had a considerable effect upon both the spatial evolution of residential development in Johannesburg, and on the price of new construction. It did not however materially affect the price of the existing housing stock which continued to rise (Fig. 4.1). This single international event so dominated residential patterns and prices in Johannesburg that it is appropriate to deal with these five years as a separate phase.

At the outset, the Johannesburg community was both prosperous and economically buoyant, although most indices reveal a general slowing of the

economy after the boom years of the middle thirties. A number of major construction works were completed. One of these, the building of theatres and cinemas illustrates the spread of this function to the suburbs. Cinemas traditionally follow settlement and seldom precede it, so it is not surprising that the Lake Cinema in Parkview, the Adelphi in Rosettenville, the Curzon and Clarendon Cinemas in Hillbrow and the Twentieth Century Theatre in the Central Business District were all commissioned in 1939 and 1940. Following this spate of major construction, conceived no doubt in better times, the Second World War temporarily put an end to the building of large structures.

New township development was restricted to the lower socio-economic areas, primarily the Southern Suburbs, and without exception these were extensions to existing townships. This was due to the increase in the manufacturing function of the city and with it the increase in the number of factory workers requiring housing. Two significant aspects of this development were the location, and the size of individual townships. They were near the mining ground, and of less than 10,000 square feet in area and they consequently had low municipal values and low market prices. So average municipal values of £200 were found in Regents Park Extension 2, £400 in Rosettenville Extension 2 and £350 in Kenilworth Extension 2. All this was in the Southern Suburbs but despite this, large open spaces could still be found very close to the Central Business District and the growing industrial areas on the railway lines. The 'hard core' of the Southern Suburbs had advanced very little from the previous century. By contrast, northern residential development was ten miles from the City Hall, in the distant townships of Craighall Park, Northcliff and Linden. This pattern reflects the demand for housing in each area.

The only other township to be gazetted in the first year of the war was a second extension to Highlands North. It was laid out in less than quarter-acre lots with a few larger stands making up the ends of blocks. This development placed 16 stands on the market, and so made virtually no difference to the stock of land in the Northern Suburbs. The location and the fact that the stands were slightly larger gave a municipal valuation of £375 (1946).

The growth and development of the north-western areas prior to the war also affected the inner parts of the sector. In 1940 the Muldersdrift Road through Melville was widened and macadamized to accommodate the increased traffic from this quarter, and at the same time some streets in Braamfontein were extended. Melle Street prior to 1940,had terminated at Hoofd Street, near the crest of the ridge in Braamfontein. However the need to connect the municipal bus service with Empire Road, led to the excavation of 'an extensive embankment from Hoofd Street, through Milner Park to Empire Road, the object being to facilitate traffic from the north and north-west to the central area during the reconstruction of Jorissen and Biccard Streets'. The latte two had assumed some importance as major arteries for traffic to the north, north-west and western sectors. The improvement of roads to the north-western sector was in response to residential development there.

In his report to the Council in 1940, the City Engineer alluded to the effects of the war on building in the following terms :

> 'The phenomenal expansion and development of the City, which formed a marked feature of my previous report on building work, has, during this year, 1939/40, been subject to the vicissitudes consequent upon the outbreak of war in Europe. This has been reflected in nearly all departments of life and activity of the City, and, as is usual under crisis and upheaval, not least in connection with the building trades, in which the deterrent effect is immediate and often prolonged beyond the period when a crisis and its concurrent influences have passed. In consequence of the war, with its world-wide repercussions, the volume of work administered by this Department, as indicated in the amount of expenditure, shows a considerable diminution.'

Early in 1941 all building materials were placed under the control of the military authorities who directed their use towards the war effort. The effect of this move brought the construction of private housing to a halt. However two new townships were proclaimed in 1941, these being extensions to Bramley and Cleveland. The first added only .88 acres to the total stock of housing land in the northern suburbs, while the latter had an area of .90 acres comprising seven stands, so its effect was equally inconsequential.

The following year another spate of suburbs for housing the lower income groups entered a depressed property market. These were Blairgowrie, Rewlatch and Rewlatch Extension 1, and Rosettenville Extension 3. The original application for the establishment of Blairgowrie situated at the northern fringe on a portion of Craighall and the farm Klipfontein No. 4, was made in October 1938. So the idea of a township across the Jukskei from Craighall had been established well before the war. However the Council had, at that stage rejected the application, and a new one was considered on 25 April 1940. Proclamation occurred on 20 August 1941 (Smith, 1971). Practically no building took place in Blairgowrie until the late fifties and early sixties. After this it blossomed, and the proliferation of homes across the landscape was one of the features of the boom years of the period. The portion in Blairgowrie within the Municipality was 139.63 acres which comprised 409 stands each of approximately 10,000 square feet. The average municipal value of £250 in 1946 was a token value since no one lived there. A similar situation obtained in the additions to the Southern Suburbs. Rewlatch and its Extension were valued at £250 and £275 respectively, and the third extension to Rosettenville at £300 per stand.

In the south-western sector the City Council was making stout

efforts to overcome the problem of housing the many thousands of non-White families which were in the slums of Sophiatown and Alexandra township. The Orlando housing scheme, which was initiated in 1940 with 750 houses was completed, as also were 350 at Noordgezig nearby. An indication of the times was the response when the Council called for tenders to fence these newly-completed properties and none of the leading firms in the city was prepared to submit a tender. The reason given by all being that the restrictions on materials and the shortage of skilled labour made the probability of fulfilling such contracts too uncertain.

Between 1942 and 1944 another five townships were proclaimed. The pattern established earlier was perpetuated as, without exception, these catered for the lower socio-economic communities. Welfare Park was established for sub-economic homes. The Witwatersrand in general, and Johannesburg in particular, still suffered from the problem of the poor-White, many of whom had come to the urban areas from the *platteland* during and immediately after, the Depression. Welfare Park was the outcome of a number of attempts to ameliorate this problem. In 1937 the Council bought land at Klipriviersberg Estate on which the township was laid out. It conformed in most respects to other townships in the Southern Suburbs. The land had previously been used by itinerant farmers as the Klipriviersberg Small Holdings, and was a poor location for residential purposes. It was close to the mine dumps and slimes dams of the City Deep Gold Mining Company, the Eastern Native Township and the South African Railways Reserve. With Rewlatch and its Extensions, Welfare Park occupied the lowest socio-economic rank of the system although, presumably because of its sub-economic character, it did not appear in the valuation roll of 1946. It was later changed to South Hills and South Hills Extension and, because

of the large pool of White labour which this group of densely settled suburbs afforded, the industrial estate of Electron was established on land adjoining them to the east immediately after the war. Nearby, Regents Park Extension 3 was also proclaimed at this time, and had an average municipal value of £200 per stand. It conformed in all respects to Rewlatch, but was marginally better than South Hills.

Homestead Park, south of the railway line between Paarlshoop and Mayfair in the western sector was proclaimed in 1942. It was surveyed by H. Nielsen on Langlaagte No. 13, and called Homestead Park because of the original homestead of the widow Oosthuizen, on Langlaagte (Smith, 1971), the farm from which the first gold on the Witwatersrand came. Smith (1971) notes that J.B. Robinson, the mining magnate also lived in this particular house. Be that as it may, the township comprised 563 stands, on an area of 130.73 acres which yielded very small sites. The average municipal value per stand in 1946 was £325. A large park in the centre of the township, to which the name Oosthuizen Park has been unofficially appended (Council Minutes, 1939) was accepted by the Council in lieu of endowment at the time of proclamation.

A township which did not conform to those proclaimed between 1941 and 1944, was Winston Ridge. It was named after Winston Churchill the British Prime Minister (Smith, 1971). Situated almost at the municipal boundary it adjoined Bramley on its western margin. It comprised 79 stands and had an area of 56.27 acres. Stand sizes were of the order of 18 000 square feet or 1/3 acre, and the municipal values in 1946 averaged £450, although no buildings had been erected in the suburb (Fig. 6.7).

The paucity of buildings in the townships proclaimed during the early war years was the outcome of shortages of materials and labour. An indication of this is given by the City Engineer who observed that in 1943 he had only 4 per cent of his pre-war staff, the other 96 per cent being on active service or in para-military occupations. This meant that the city and indeed the whole country was living off its capital stock. It was as much as it could do to replace the worn and depleted, let alone renew the obsolete. From this situation developed a housing shortage such as had never been experienced. The City Engineer described it in the following terms in 1943 :

> 'Shortage of housing accommodation becomes increasingly acute, and will, undoubtedly impose a severe strain upon local resources in the near future, a condition that will be greatly intensified on the return of troops on the cessation of hostilities.'

And in the following year the report was similar :

> 'The prolongation of the war with world-wide ramifications continues to exert general restrictions on building operations, municipal and private, although modified relaxation of controls has enabled work of a more urgent nature to be carried out. The shortage of houses commented upon in 1943, has become greatly aggravated and calls insistently for the adoption of drastic measures for amelioration. The adoption by local manufacturers of substitute building materials has been much in evidence during the year, but no wholly satisfactory solution of the emergency building problem has yet been put forward' (City Engineer's Report, 1944).

The amount spent by the public on housing continued to decline although the City Valuer was moved to remark that 'the demand for suburban stands and properties continues firm'. This statement was of course in

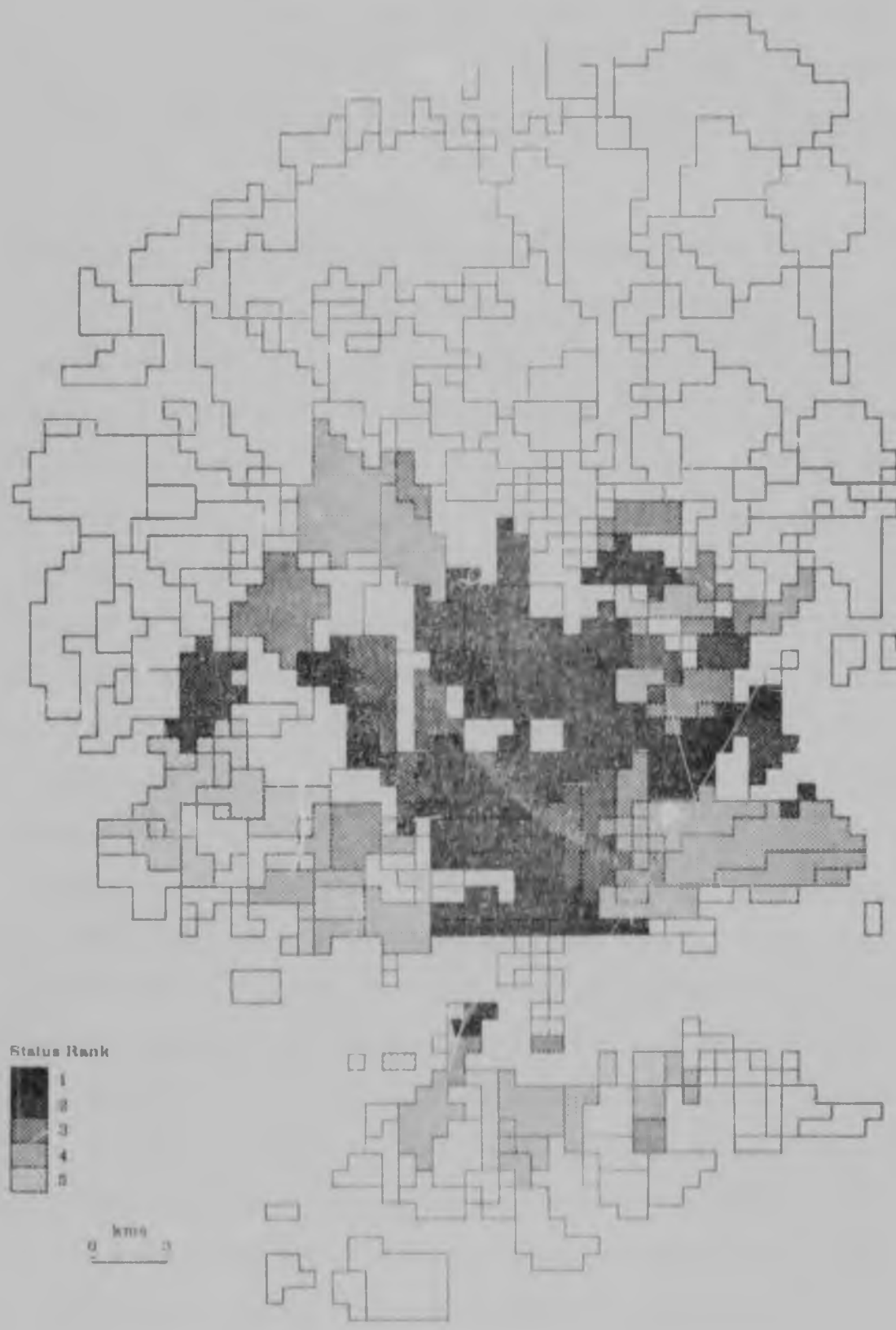


Fig. 6.8. - Johannesburg : Mean Municipal Valuations per Suburb, 1946 (Ranked by Socio-Economic Status).

keeping with the anticipated trend. As the general stock of housing declined and consequently became scarcer due to restrictions and shortages, so prices rose in sympathy. In fact the upward revaluation of property in Johannesburg after the war (as compared with the pre-war values) was of the order of 76 per cent.

After the collapse of Germany in May 1945 and that of Japan in August, the general condition of Johannesburg's housing was in a deplorable state. There was a grave shortage in the middle and lower income categories. Most residential areas showed signs of functional and economic obsolescence and physical decay. There was not only a back-log of homes to be build, but also a back-log of general maintenance to be done. Fortunately, the Town Planning Scheme of 1931 and its various amendments up to 1945, had rezoned a large parcel of land near the Central Business District in the Joubert Park, Argyle, Hillbrow, Wanderers View and eastern Braamfontein areas (east of Bertha Street) from special to general residential. This, with the technological innovations which produced high-rise structures, and the latent demand for accommodation, sent entrepreneurs into constructing residential apartments at a pace which was unprecedented. Apartment buildings of more than £30,000 in value were built on the corners of Nugget and Smit Streets, Paul Nel and Claim Streets, Banket and Smit Streets, Pretoria and Banket Streets, Ockerse and Klein Streets, in de Villiers Street, in Aster Street, (Cyrildene) and in Loveday and Stiemens Streets. Apart from a few similar buildings in Turffontein almost all of these were in the new general residential zone overlooking the commercial part of the city. Clearly, these buildings which were usually only four storeys (a greater number required an elevator), formed a new generation of land use. This is not to say that Berea, Yeoville, Hillbrow and Joubert Park had not been townships without many private hotels

and guest houses for a number of years previously. (The chronicler John Gregson lived in one overlooking Joubert Park in 1896). But these were, neither in concept nor in design, similar to the post-war apartment building.

Despite the acute shortage of cement, the lack of spare parts for construction machinery, and the critical shortage of bricks and pipe layers, the building industry set to work to make good the deficit which the City Engineer (who had been co-opted to the Government ranks as Director of National Housing) described as 'a national and local problem'.

New township development in 1945 included an extension to Selby for more industrial land, Talboton, two extensions to Percelia in the Southern Suburbs, and the proclamation of Sandringham. This last, named after the British Royal estates, came before the Council in December 1938 (Smith, 1971). It was delayed by the war and was only heard of again on 25 April 1944, when the British Empire Service League purchased it and applied for its incorporation within the municipality (Smith, 1971). When it was gazetted it became a township housing the families of returned soldiers, so it was conceived as a middle ranking suburb on a mean stand size of slightly less than 20,000 square feet. Those properties which bordered the Royal Johannesburg Golf Course and the Huddle Park Golf Course further on, were rather larger than the others.

In reviewing the residential development and the value of residential properties during the war period, one notes that the overriding consideration was the shortage of materials and labour. This, allied to a rising black and white population, both of which were being supplemented by migration from outlying districts, and also the direction

of materials away from housing and towards the war effort, created a chronic shortage of residential accommodation. New township land added conspicuously to the amount of third, fourth and fifth order stands and virtually not at all to the higher orders. This was no doubt due to the saturation of this category by Emmarentia and its extension, Northcliff and the extension to Melrose North immediately prior to the outbreak of war. The spatial pattern shows the same strong axis of the central sector extending to Dunkeld, Craighall and Illovo, a conspicuous new strengthening of the north-western sector, an upgrading of the ridge-townships, especially Observatory Extension, Mountain View and Linksfield and a thrust eastwards from the old core of the Southern Suburbs. A more detailed description of these patterns is unnecessary at this stage since much of such description is implicit in the discussion thus far.

Residential Development After the Second World War

The five years following the war were most difficult, both for the Johannesburg housing market, and for those who exercised some administrative control over it. The problems can be enumerated as follows : Firstly, the Controller of Building Materials placed severe restrictions upon most materials for construction, and especially iron and steel; secondly, the White population of Johannesburg, already short of accommodation as a result of the paucity of building during the war years, was further affected by a major migration of people from the beleagured countries of Europe, and a steady influx from the farming districts of South Africa; finally whereas the population of Johannesburg, as a whole, had increased by 47 per cent between 1936 and 1946, that of the non-Whites had increased by 68 per cent. In 1936 the number of non-Whites in and around Johannesburg was 61,140 *less* than the total of the other races. In 1946 it was 6,346 *more*. So the third major

housing problem was that associated with the presence of large numbers of non-Whites. In fact of all the problems which afflicted Johannesburg in this period (1945 to 1950) this was by far the most important.

In 1945 the lowest socio-economic order of White housing was increased in size when additions to South Hills brought the number of stands there to 933. The City Engineer noted that the scheme had proved an unqualified success in accommodating families whose incomes were in the range of £30 to £40 per month. Rentals on these Council homes were from £7-10s to £8-10s.

The problem of accommodating returned soldiers who were able to purchase property in the B.E. . township of Sandringham was further attended to with the proclamation of Roosevelt Park in 1945. It was owned by the City Council who developed 1,300 stands of approximately 18,000 square feet, in the north-western sector near van Riebeeck Park. Stands were transferred at cost by the Council, and building loans at 3½ per cent made the scheme a popular one, and contributed to the township's rapid development.

General residential development beyond the established zone of apartments in Hillbrow, Joubert Park and Braamfontein responded to the shortage of accommodation with schemes at Killarney, Rosebank and in Illovo. These were on important roads to the north, and situated in the high-status sector. There was considerable opposition to their development since they introduced a new and non-conforming land-use to these areas. Killarney is on Braamfontein No. 11 and dates from 1906, when it was surveyed by F.Z. Melville (Smith, 1971). Before that, it was owned by J.O. Cook, and his name appears in this area on Wood and

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