PROPOSED NEW HOUSING COMMUNITY
WEST ALEXANDRIA - EGYPT

by

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Approved by:

F. Gene Ernst
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To my mother with love and admiration,

to the memory of my father, and

to the Egyptian people with deep afection

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CHAPTER (1)

(I) Introduction

Egypt is suffering from a housing shortage problem, because of the huge increase in its population.
Egypt, like most countries in the third world, faces that "population problem". The government of Egypt has actively attempted to curb these population pressures for about two decades but still the housing shortage exists.

Egypt is located in the northeastern corner of Africa. Roughly rectangular in shape, it covers an area of 386,000 square miles (999,740 sq.km). To the west lies the Libyan Desert, and the east is bordered by the Red Sea . The Sudan, on Egypt's southern border, is a natural stretch of desert and grassy plain leading into black Africa. To the north lies the Mediterranean Sea.[1]

Only about 4 to 5 percent of this vast country is inhabited, along the banks of the Nile, and its delta.

Egypt's population has more than quadrupled in 80 years from 9.7 million at the time of the first census in 1900 to nearly 50 million in 1986, over 50% are under the age of 20. A traditionally high birth rate, coupled with rapidly falling mortality rates, resulted in a natural increase of 2.8% annually in the early 50's, but a determined

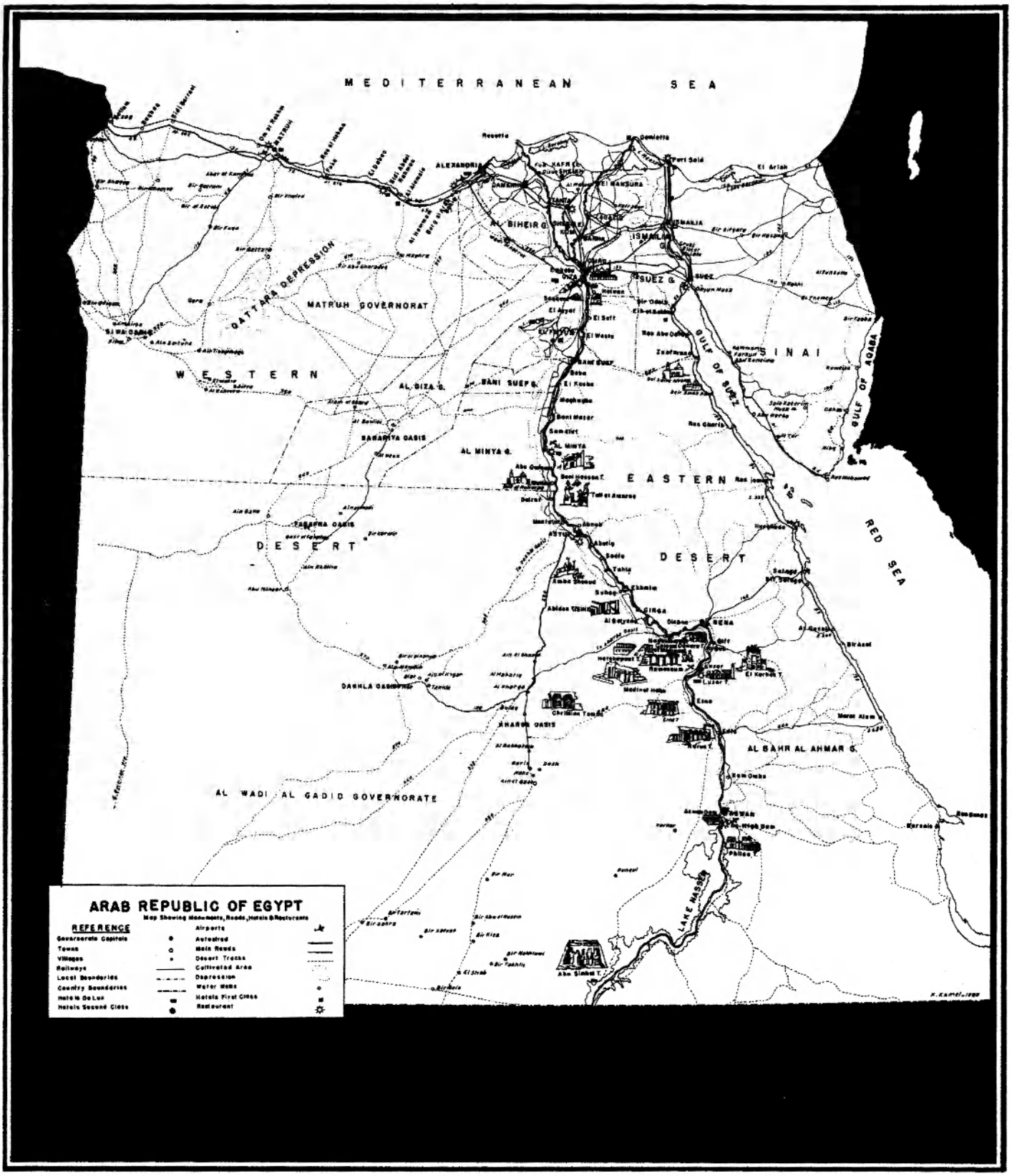

Figure 1 : Map of Egypt

effort to control the growth reduced it to 2.31% annually between 1966 and 1976 (by birth control methods). At the present rate of growth the population would reach 68 million. by 2000.[2]

Over 96% of the population live on 5% of the country's territory where the density is 727 per sq.km with 44% living in urban areas and most of the balance in some 4000 villages with populations ranging from 500 to 10000 inhabitants.[3]

In 1907, 81 percent of the people lived in rural areas. This dropped to 59 percent in 1966. By the year 2000 the percentage is expected to decrease to 36 percent.[4]

As a result, cities, especially Cairo and Alexandria, have experienced explosive growth. Greater Cairo alone, for example, has grown from a population of 3.7 million in 1960 to an estimated 14 million in 1986. This is almost a quarter of the nation's population, and nearly half the urban population, and the population is still growing at the rate of 4.1% annually. The capital city of Cairo is the largest in Africa and the sixth largest in the world.[5]

With most cities situated in agricultural areas, the nation's limited productive land area is being consumed by urban growth. This has been offset, in part by reclamation of 900,000 acres since 1952, but reclamation is slow and expensive. And soils in reclaimed lands are inherently

Figure 2 : View of Cairo.

inferior to historically productive lands.[6]

Some analysts suggest that urban growth has consumed as much agricultural land as has been reclaimed. Worse, the trend of losing productive land to non-agricultural purposes is likely to accelerate as population increases and cities grow.

Therefore, the national strategy calls for construction of new cities in desert areas. Three already are being built - Tenth of Ramadan, Sadat City, and Sixth of October. Two more are in the planning phase - El Amal and El Obour.

Tenth of Ramadan is situated on the Cairo - Ismailia desert road some 40 miles from Cairo. It is planned to accommodate 500,000 inhabitants by the year 2000. The main economic base for Tenth of Ramadan will be medium and light industry. Most of the infrastructure for the industrial areas is in place, and two areas already are occupied.[7]

Sadat City is planned as an industrial city mid way between Cairo and Alexandria on the desert road 60 miles from Cairo. It also is planned for a 500,000 population by century's end, but is being designed to accommodate as many as 1.5 million inhabitants by the year 2025. Under construction are 10,000 housing units, office buildings, public and community facility buildings and residential areas. Heavy, medium and light industry are planned for Sadat City.[8]

Only 10 miles from the pyramids and situated on the Cairo - Fayoum desert road is the Sixth of October City. Its ultimate size is 500,000 with an economic base of tourism and medium to light industry. Water and electric power already are in place and the infrastructure for three residential areas is under construction.[9]

All the new cities and hundreds of thousands of housing units are being built in and around Cairo by both the public and private sectors. The housing industry is booming, primarily because the government is determined to face its responsibilities in that direction.

But how about the city of Alexandria and its needs for housing projects ?

A Comprehensive Master Plan Project for the city of Alexandria was done and prepared by Alexandria University upon contractual agreement with the Governorate of Alexandria, in 1984.

The fundamental concern of the Alexandria Comprehensive Master Plan was how best to deal with the anticipated growth in population of approximately two million people above the present population within favorable environmental conditions. The comprehensive plan dealt with many other concerns that are not discussed in this thesis.

View of Alexandria

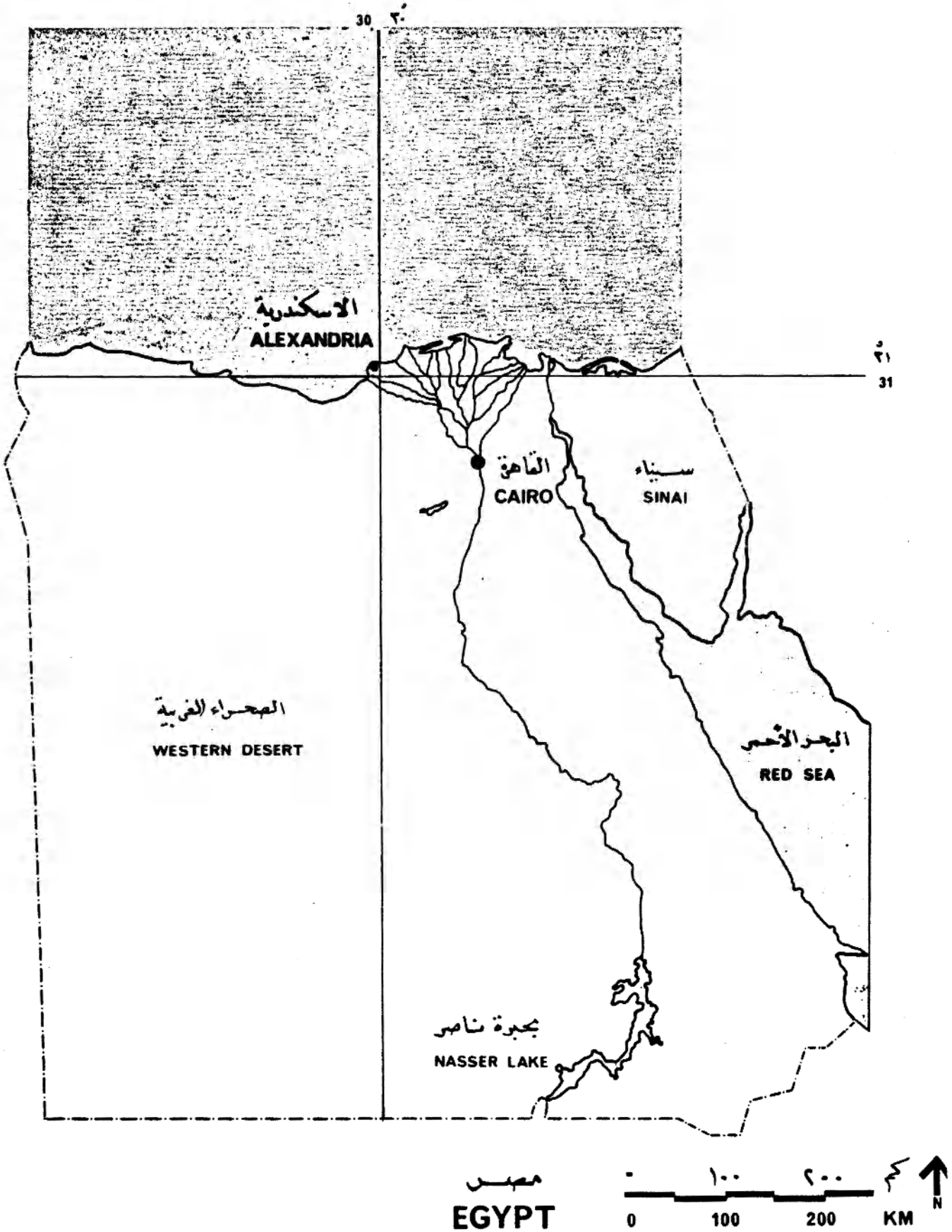

Figure 3 : Cairo and Alexandria on Egypt's Map.

The comprehensive master plan has located some areas within and around the city as proposed residential areas to absorb the growth in population.

For my thesis, I will design a proposed "Housing Community" West of the City of Alexandria on one of the proposed residential areas by the Comprehensive Master Plan.

(II) HISTORICAL BACKGROUND OF EGYPT

Recorded history began in Egypt around the year 4000 B.C., when nomadic hunters settled in the Nile Valley. In the region of Nagada, agriculture flourished, and man carved in stone, ivory and limestone. Gradually the fertile banks of the Nile attracted more people, and sociological and political systems began to emerge.

Until the year 3000 B.C. the country was divided into two separate entities : Lower Egypt (the Delta) and Upper Egypt (stretching from Memphis, 20 miles south of present-day Cairo, to Aswan). It was King Menes who unified both regions, established his capital at Memphis, and brought about the first concept of national unity. The First Dynasty was thus born.[10]

THE OLD KINGDOM (2680 - 2260 B.C.) :

This was a period of great achievement, especially in the fields of administration, astronomy and architecture. Monuments that exemplify this brilliant era can be seen today: the Pyramids of Zoser, Cheops, Chephron and Mycerinos constructed on the plain of Ciza [one of the great wonders of the world]. Due to their strong religious beliefs, and their concept of life after death, the ancient Egyptians built many great monuments which endured for centuries. They also developed methods to preserve the human body after death.

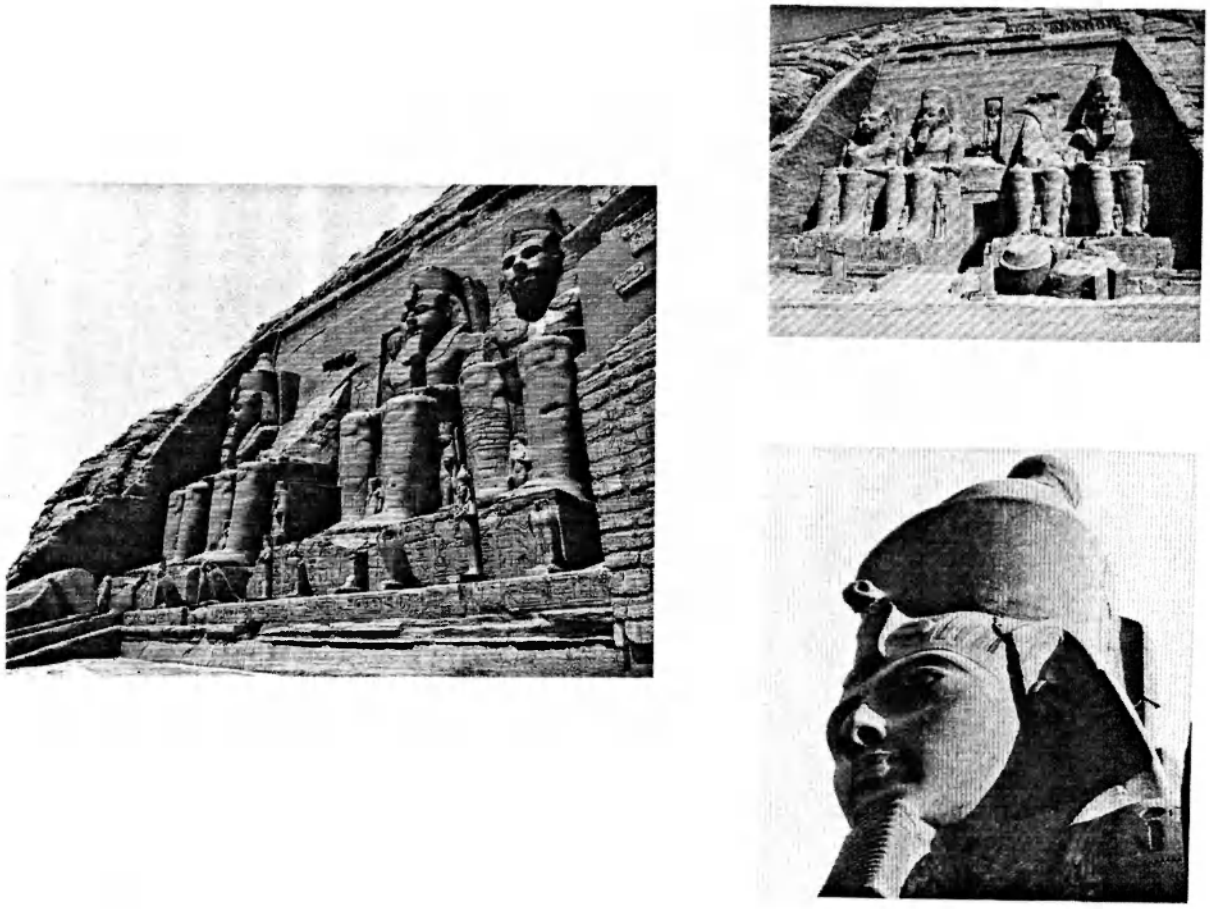

Figure 4 : Abu-Simble Temple - South of Aswan.

Many of the treasures and statues found in the tombs of the pharoahs indicate great skill and workmanship.[11]

THE MIDDLE KINGDOM (2260 - 1780 B.C.) :

The Delta was invaded by Indo-Europeans who were driven away around 2130 B.C. by King Kheti. Later, Mintuhotep, a strong ruler, brought about an era of prosperity and an expansion of political strength and economic horizons. Thebes became the capital. Later, however, another decline followed and Egypt was invaded by the Hyksos, descending from far off Caucasia. For some 150 years the Hyksos remained virtually unchallenged until finally driven back to Asia by King Ahmosis.[12]

THE NEW KINGDOM (1580 -1085 B.C.) :

Four centuries of splendor, prosperity and spiritual and artistic achievement. Architecture reached unparalleled heights: palaces, temples, tombs, decorations, and mystical writings bear witness to the high level of intellectual and artistic activity. This was the era when superb funerary temples were built at Luxor. Among the famous rulers of this period: Ahomse, Tuthmosis, Queen Hatshepsut, Aknaton (who advocated monotheism), Tut-Ankh-Amon and Ramses II.[13]

THE DECLINE (1090 - 332 B.C.) :

Toward the end of the New Kingdom, Egypt gradually fell under the influence of the priests of Amon. The country's days as an imperial power came to an end, and Egypt was subject to

Figure 5 : Tut-Ankh-Amun.

Figure 6 : From the Tut-Ankh-Amun collection "The Egyptian Museum".

various foreign suzerainties for 2,000 years. In 525 B.C., the country was conquered by the Persians; then for a brief period Egyptians regained their independence, only to be reconquered by the Persians.[14]

THE GRECO - ROMAN PERIOD (332 B.C. - 640 B.C.) :

Alexander the Great took possession of Egypt, called himself a Pharaoh, and founded the city of Alexandria. After his death in 323 B.C. the Ptolemaic Dynasty was founded, and the lower valley of the Nile became once more, for three centuries, a center of learning and prosperity.

Dynastic disputes and fratricidal wars ended the Greek domination, and Egypt became a Roman province. By 395 A.D. the Roman Empire was divided, and the Byzantine period began, with Egypt as part of the Greek speaking Eastern Empire administered from Constantinople. The ancient Egyptian language, written in the Greek alphabet, evolved into Coptic, and the Coptic Christian faith emerged.[15]

THE ISLAMIC PERIOD (640 - 969 A.D.):

In 641, the Byzantines were defeated at Heliopolis by Arab Moslem armies, led by Amer Ibn El-As. The call to Islam by prophet Mohammed penetrated Asia, Europe and Africa. Ibn El-As built his capital (641 A.D.) near persent-day Cairo, and in time Egypt became an Arab country with a Moslem majority.[16]

FATIMIDS PERIOD (969 - 1250 A.D.) :

Egypt passed through an important period in its medieval history during the reign of the Fatimids, who built Cairo to be the capital of their North African Empire. Economic conditions improved under the Fatimids who encouraged agriculture, industry, and east-west trade, which passed through Egypt. The Fatimids also established a highly centralized form of government. Saladin became minister to the Fatimid Caliph in 1169. Before his death, however, he became the Sultan of Egypt, and of practically the whole of the Eastern Mediterranean coast which he liberated from the Crusaders. It was later in this Dynasty that king Louis IX of France was captured with his army at Mansoura in Lower Egypt.[17]

MAMELUK PERIOD (1250 -1517 A.D.) :

Egypt was ruled by the Mameluks who were originally brought to the area as body guards of the Ayyubid Dynasty that succeeded Saladin. Following their defeat by the Ottomans in 1516 - 1517, they were kept as governors of Egypt, although the country was declared as part of the Ottoman Empire.[18]

MOHAMMED ALI PERIOD (1805 - 1849) :

The end of the Mameluks came after the Napoleonic invasion of Egypt in 1798 - 1801. Naploeon tried to conquer Egypt, but his troops had to withdraw after his defeat at the naval battle of Abo-Kir, near Alexandria. An Albanian officer in the

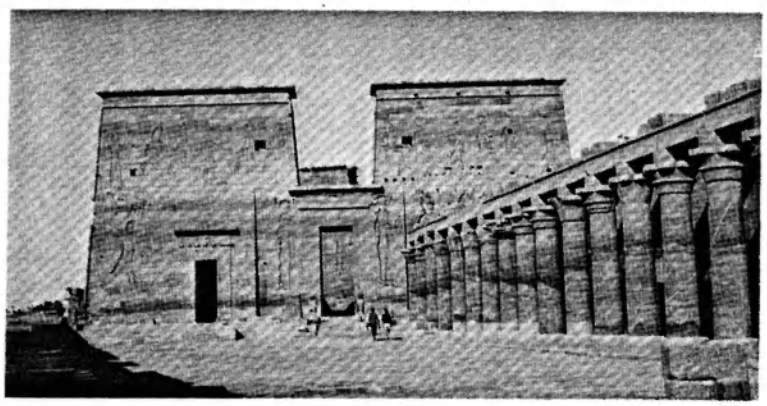

Figure 7 : Karnak Temple, Luxor.

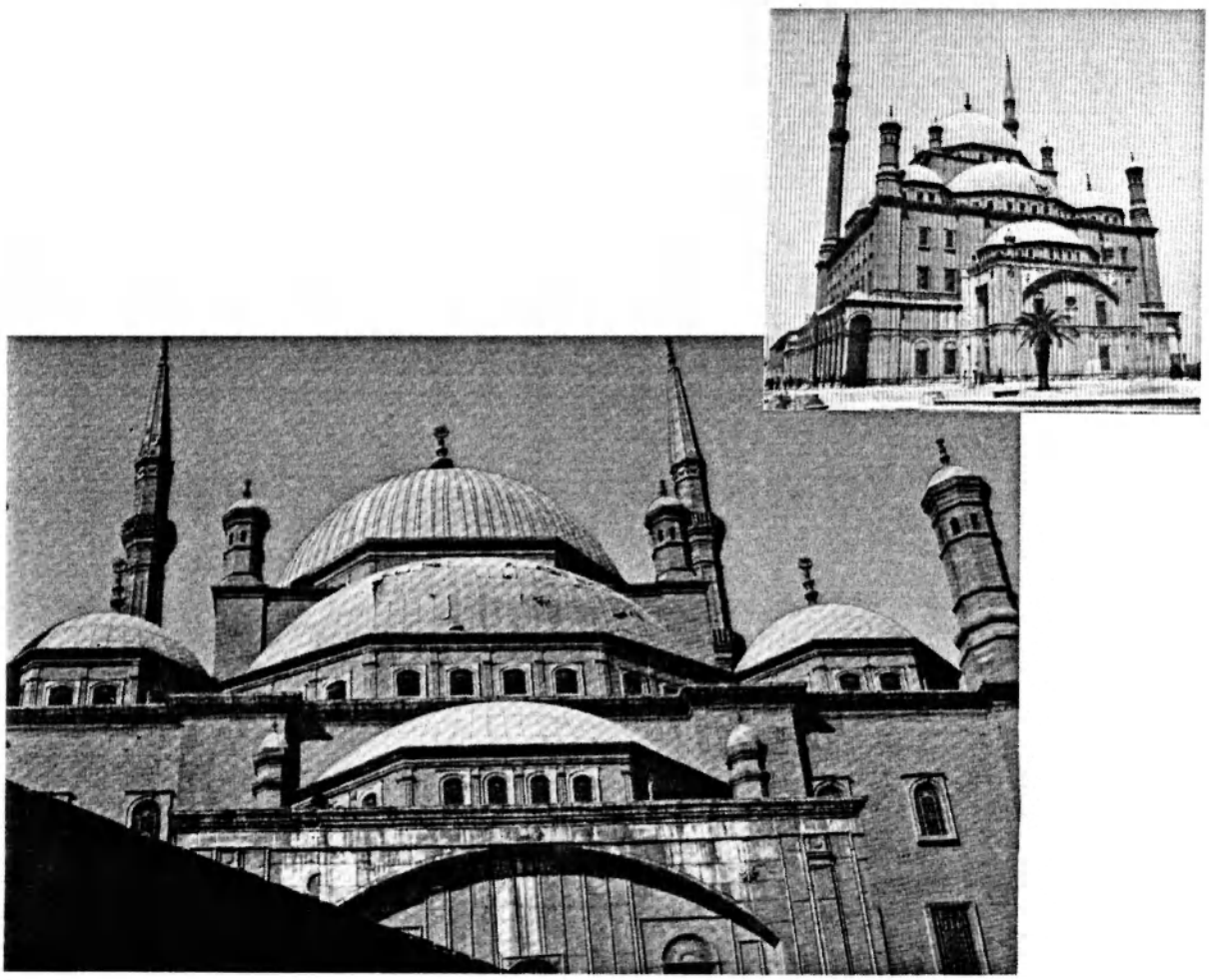

Figure 8 : Citadel of Mohammed Ali, Cairo.

Ottoman service, Mohammed Ali, seized this opportunity and declared himself ruler of Egypt establishing a Dynasty. His descendents ruled the country in various capacities (as Pashas, Khedives, Sultans, and finally Kings) until 1952. During the reign of Mohammed Ali the Nile Valley was unified, politically and economically. Land reforms, education, advanced irrigation methods, modern hospitals, and the establishment of heavy industries and a strong army were among his many accomplishments. In 1896, under the rule of his grandson, the Khedive Ismail, the Suez Canal was opened. The necessity for foreign capital to finance the project led to the British rule of Egypt.[19]

THE 1952 REVOLUTION :

The royal dynasty established by Mohammed Ali came to an end in 1952 when a group of army officers staged a bloodless revolution and forced the abdication of King Farouk. The leader of the coup, General Mohammed Naguib, was replaced by Colonel Gamal Abdel-Nasser in 1954. Nasser was Egypt's President until his death in 1970. He was succeeded by President Mohammed Anwar El-Sadat, who was assassinated in 1981. Vice President Mohammed Hosni Moubarak was elected to the Presidency.

Egypt's official name was changed to the United Arab Republic after establishing a Union with Syria in 1958. When the Union terminated in 1961, Egypt retained the name of the

United Arab Republic. However, the name was changed again in 1971 to the Arab Republic of Egypt.[20]

(III) ALEXANDRIA : FACTS AND FIGURES

Alexandria is a city of the sea - as other Egyptian centers are cities of the river. With its wide stretch of corniche and beach, its apartment houses and hotels fronting on the Mediterranean, it has much more the aspect of European Riviera resort than of an ancient Egyptian city.

Alexandria, called the "Pearl of the Mediterranean", once was the intellectual and cultural center of Greco-Roman civiliztion.

It is Egypt's second capital, Alexandria is also the country's main port, as well as the largest summer resort city. The city is named for Alexander the Great, who conquered Egypt in 332 B.C. He decided that the tongue of land between lake Mareotus and the Mediterranean Sea was an ideal place to locate the capital of his world empire. Under his successors, the Ptolemies, the city grew in size and importance and became the outstanding cultural center of the known world, attracting a brilliant company of scientists, scholars, and artists, and containing two famous libraries that housed collections of scrolls that numbered in the hundreds of thousands. Today Alexandria's population is 4 million.[21]

The existing city of Alexandria has a distinctive character that derives fundamentally from its ribbon-like development

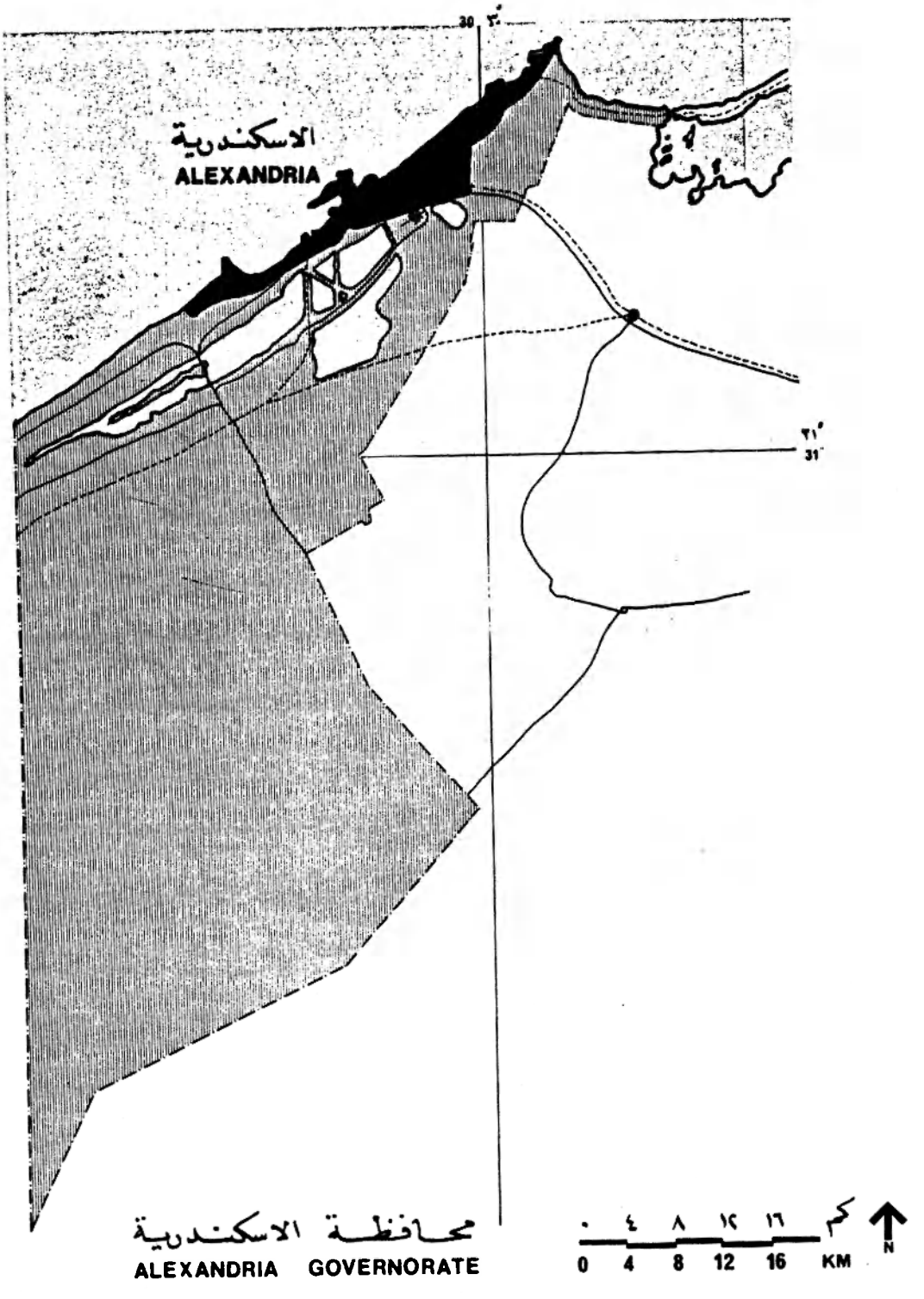

Figure 9 : Alexandria Governorate.

along the Mediterranean coast of Egypt. The development of Alexandria has centered principally around its importance as a port of trading center, and more recently its value as a major coastal touristic resort and industrial center. The importance of these activities to the local economy is indicated below :

- The port of Alexandria handles 80% of Egypt's shipping.
- Alexandria attracts one and a half million tourists each year.
- Alexandria's manufacturing industry constitutes 38% of Egypt's industrial activity.

Not until now has the scale of unanticipated growth threatened Alexandria's unique character and historical heritage. There is an urgent need to house the growing population (expected to reach 4.75 million by the year 2005) and to improve the deteriorating condition of many existing houses. This situation has been made worse by the inflation spiral of land values and building costs. In addition, there is a need to protect irreplaceable agricultural land from sprawling urban development.[22]

CLIMATE IN ALEXANDRIA :

TEMPERATURE (degrees in Fahrenheit) :

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Highest	66	67	70	75	80	83
Lowest	51	51	54	58	63	69

	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Highest	86	87	86	83	77	69
Lowest	73	74	72	68	62	54

WIND :

The duration of the prevailing winds, also the wind velocity and directions could be seen in Figure (10).

OTHER CLIMATIC CONDITIONS :

	Summer	Winter	
HUMIDITY %	69	65	(average)
RAINFALL mm.	147.4	0.3	(average).

REGIONAL CONTEXT :

The geographical relationship between the city of Alexandria and Egypt, the delta region (including principal towns) and the Alexandria governorate is shown in Figure (11).

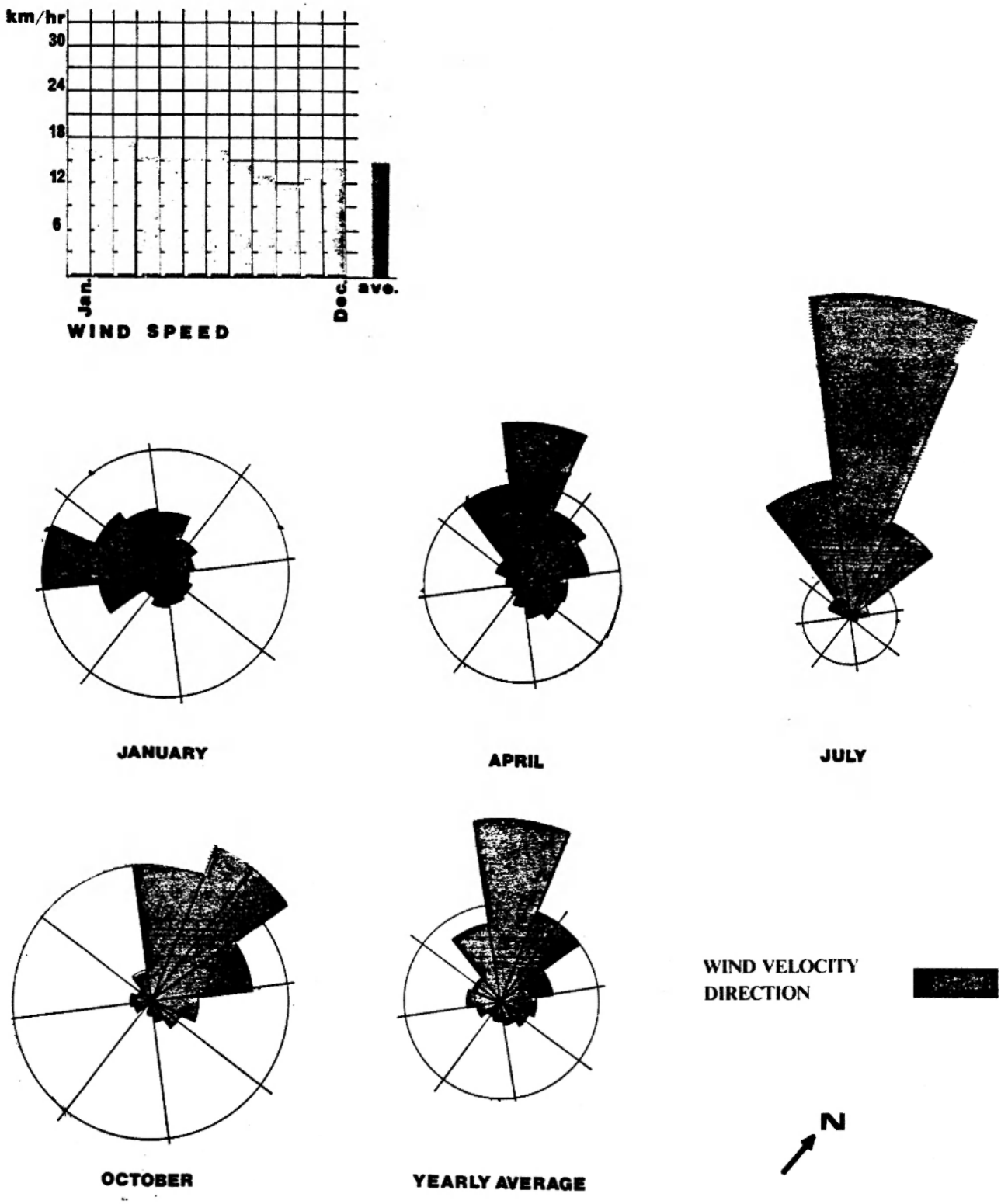

Figure 10 : Wind velocity and directions digrams.

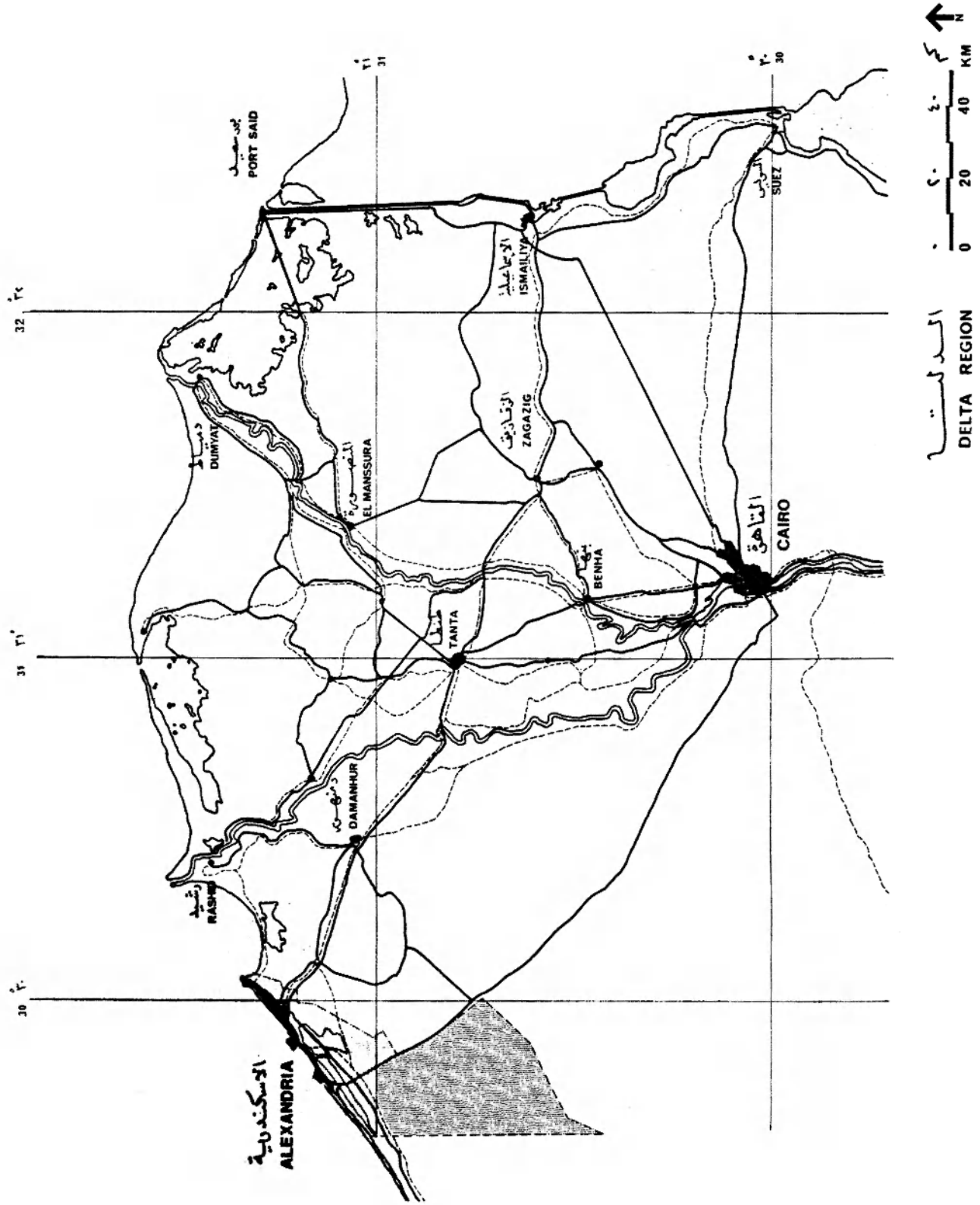

Figure 11 : Alexandria's relationship with the Region and the Nation.

NOTES

1. Misr Travel. Travel Guide to Egypt. New York, 1984, P. 12.
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3. Ibid., P. 7.
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8. Ibid., P. 20.
9. Ibid., P. 21.
10. Misr Travel, PP. 12-13.
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13. Ibid., P. 15.
14. Ibid., P. 16.
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18. Ibid., P. 18.
19. Ibid., P. 19.
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21. Ibid., PP. 48-49.

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CHAPTER (2)

HOUSING IN EGYPT

(I) HOUSING FINANCE

(II) BUILDING MATERIALS AND CONSTRUCTION.

(III) THREE 20th CENTURY SETTLEMENTS :

- 15th of May City, Helwan
- 10th of Ramadan City
- Sadat City.

CHAPTER (2)

(I) HOUSING FINANCE

This section is a summary of a document by the Ministry of Housing & Reconstruction, from a report by The University of Newcastle upon Tyne, U.K., 1984 - entitled, "Housing Finance in Egypt".

The acute shortage of housing in Egypt has been worsened by the effects of war which consumed a considerable amount of national financial resources. In order to tackle the severe shortage of shelter and amenities a team composed of representatives of some Egyptian ministries strengthened by a U.S. Agency was constituted in 1977. Its objectives were to set up a practical program, consistent with recommendations on land policy and low cost housing, which would result in the development and expansion of housing finance systems capable of mobilizing domestic savings and providing both construction financing and long term housing loans to a broad range of the Eygptian population.

The strategy propsed was intended to utilise government resources and those of both formal and informal financial systems.

INFORMAL MECHANISMS.

The informal sector seems to play a great role in building

activity. As an illustration, in Cairo it is estimated that 50% of all housing starts take place without building permits. This housing is normally in squatter settlements on government land or on private land illegally sub-divided and sold off at relatively low prices.

Buildings in the informal sector appear to be affordable by families with limited means. At the same time an informal organisation of co-operatives operates through which savings are made. These co-operatives are generally established only in order to make cash available when needed for the purchase of housing items, all the agreements on land remain under the control of the seller and the buyer. Agreements on land normally involve the full purchase price being paid over 12 years after an initial down-payment. Interest of between 10 and 20% is imposed as compensation to the seller for the amount of time he has been waiting to receive the full payment. However, the construction of houses can take place before the land is fully paid for and can involve construction of anything from a single storey dwelling to two or three storey flats. Meanwhile financing for this gradual form of construction takes place through direct payment to labourers on a piece-rate basis, or through several payments over the years accompanied by an interest payment.

To overcome the shortage of both construction financing and long-term mortgage financing, two more formal firms have been

developed : the Cairo Company and the Arab Contractors.

The former has developed a successful method of selling prior-to-construction equities in its units and selecting persons who will become the eventual purchasers.

The latter encourages foreign investors and non-resident Egyptians to purchase units in foreign currency with exemption from all taxes for five years and exemption from regulations on rent in perpetuity. They deal only with upper-middle and high income groups and they require 40% of the total cost of the project in foreign currency for the high cost, high-rise dwellings which depend on imported structural components. As a rule buyers are required to make down-payments of 15 to 20% before construction begins, with additional payments to be made during the construction phase, so that at the time of occupancy only about half of the purchase price remains outstanding.

GOVERNMENT MECHANISMS.

1- The General Authority of Housing and Building Co-operatives. This agency of the government was created in 1954 for the purpose of assisting co-poeratives. It has no capital and the overheads are paid out of the national budget. It sells buildings to co-operative members (usually in the middle income group: eg. teachers, police officers)

who are not able to buy a housing unit at its fixed price but can get long-term (30 years) loans. If unsuccessful in finding an existing co-operative buyer, the authority can form a co-operative, either by selecting individual members from a waiting list or by soliciting other individuals.

2- The Governorates and the Ministry of Housing and Reconstruction : (M.O.H.R.).

Most public sector housing for low income families has been built by M.O.H.R. working through the Governorates housing and reconstruction administrations which are funded from the state budget for this purpose. Problems have emerged concerning the low rents, high standards and difficulties arising from regular payment of rent by tenants. In order to tackle this acute matter, it has been suggested that the rent for the units shall be regarded as a full payment after 15 years. However, although this represents an improvement over payment of rent for ever, the payments required would be no lower per month and, therefore, would not ease the problem of repayment for the low income households. There appears to be no accurate data on people and their incomes in order to test the affordability of this policy.

3- National Housing Fund : N.H.F.

The creation of N.H.F. was a response to the ever increasing

shortage of low-income housing, being intended to provide some relief for the state budgets which are severely strained by efforts to finance housing and the related subsidies. Its function is to furnish loans to the co-operative organisations and to the Governorates. The fund is intended to help the very low-income families (whose income do not exceed LE. 500 per year) and the properties produced by the programme will be for sale. The proposed loan term will be 30 years with an annual interest of 3% . Any additional interest paid by the N.H.F. will be subsidised by the government.

FORMAL FINANCIAL SECTOR MECHAMISMS.

1- The Credit Foncier : (C.F.).

The C.F. has not had a great impact on housing, even though the Housing Finance Team identified it as the most suitable institution to act as the centre of an improved housing finance system in the country. The team probably chose it because of its experience in finance and to the fact that it is well-known, trusted and stable.

The terms of C.F. loans for construction are that the total amount for each loan cannot exceed LE. 10,000 and usually the entire loan should have been disbursed when construction is 80% complete. Meanwhile interest of 8% a year is charged.

2- COMMERCIAL BANKS.

These institutions are involved indirectly in housing finance in that they provide loans to the General Authority of Building and Housing Co-operatives, The Credit Foncier and the Construction Companies. Because of their function in the economy to finance commercial activities, it is unlikly that commercial banks will become important outlets for national housing funds suitable for low income groups.

THE INSURANCE COMPANIES.

In many countries insurance companies represent a significant source of long-term home financing. This is not the case for Egypt as insurance companies are not allowed to invest directly in mortgage loans. It may be appropriate, however, to change this at least to allow insurance companies to participate indirectly in housing finance in the same way as commercial banks are allowed to do.

(II) BUILDING MATERIALS AND CONSTRUCTION.

Although monumental masonry construction in stone was first developed in Egypt, and the knowledge and skill of quarrying and working stone has been known for almost five thousand years, it is for brick construction that Egypt is known. Traces of sun-dried mud-brick buildings survive from the earliest Pharaonic period, and sun-dried mud-brick is still the commonest building material in the rural areas. The manufacture of burnt-bricks in clamps or kilns has been known for at least two thousand years, though it is only in the last two centuries that the use of burnt-bricks has been widespread in urban areas. The comparative scarcity of suitable timber for building led to the early development of vaults and domes; whether in mud-brick, burnt-brick or stone, for spanning larger spaces, and of monlithic slabs supported on joists of timber or palm, for normal suspended floor and roof construction.

Two major recent developments have modified the traditional methods of construction outlined above :

1- the widespread introduction of reinforced concrete frame construction, made possible by the enormous expansion of the cement industry in Egypt, and

2- the unforeseen shortage of silt and clay for mud-brick and burnt-brick production, following the construction of the Aswan High Dam in the 1960's which put an end to the annual replenishment of the Nile valley soil by the silt-laden Nile water.

So much top soil has been removed from fertile agricultural land in the last ten years for bricks, that a virtual embargo has been placed on brick production in the Nile Valley, and the production of sand/cement bricks is being developed as a substitute.

The first of the above developments has already transformed the appearance of Egypt's cities and towns : virtually all legal building in urban areas is of reinforced concrete framed construction with brick infilling, and is usually rendered and painted externally. Gradually, the red brick of the Nile valley brick works is giving way to the sand/cement bricks of the new desert brickworks, but otherwise the external appearance is little changed, and a contemporary, urban vernacular, in many ways approriate to the local life style, has been created out of a limited range of materials.

The conventional methods of reinforced concrete construction have been widely replaced, in many major housing and commercial developments, by a variety of heavy industrialised systems of construction, with storey-height precast concrete

wall panels or tunnel systems using mobile formwork. All these systems require massive investments in plant and equipment which is viable only when the scale of production is very large and continuous. The major disadvantages of industrialised building systems are their inflexibility in accommodating alterations or variations in plan, and the high thermal conductivity of precast concrete, which causes rapid heating of the internal spaces in a hot , dry climate. Electrical, plumbing and drainage services are also difficult to accommodate, given the materials commonly in use in Egypt (cast iron drain pipes, for example), resulting in frequent fractures and leaks in pipes, and conseqent saturation and damp-staining of walls.

The future of sun-dried mud-brick construction, though ideally suited to the climate as it is durable, cheap, and easy to maintain, is not so secure, principally because of the embargo placed on the removal of soil from agricultural araeas. Investigation is underway into the suitability of the soils in the peripheral areas of the Delta, and on the desert fringes, for mud brick construction. Some alluvial deposits in the East Delta area contain sufficient lime to act as a binder when mixed with chopped straw and ash, and the General Organisation for Housing, Building and Planning Research has established optimum mixes for mud-brick production from these materials. The commercial exploitation

of these deposits, however, in place of the traditional Nile silt no longer available for building, will require determination on the part of the Ministry of Housing, Reconstruction and Land Reclaimation.

(III) THE 20th CENTURY SETTLEMENTS

The growth of Cairo, and its consequent problems of overcrowding and transportation, have caused the government of Egypt to adopt spatial planning policies based on development away from the metropolis. To this end a national strategy for developing satellite towns and previously unutilised areas of the country has been developed. Decentralisation is undeniably a necessary component of any development strategy for Egypt.

Some of the satellite towns, eg. El Obour and 15th of May City, are intended to provide integrated urban development close to, and under the direct influence of, Cairo. Others, notably 10th of Ramadan City and Sadat City, are intended to stand alone and form free-standing urban areas as poles of attraction in competition with Cairo.

This strategy is relatively new, having only been started after 1976. It is undeniable that impressive achievements are evident in this short time.

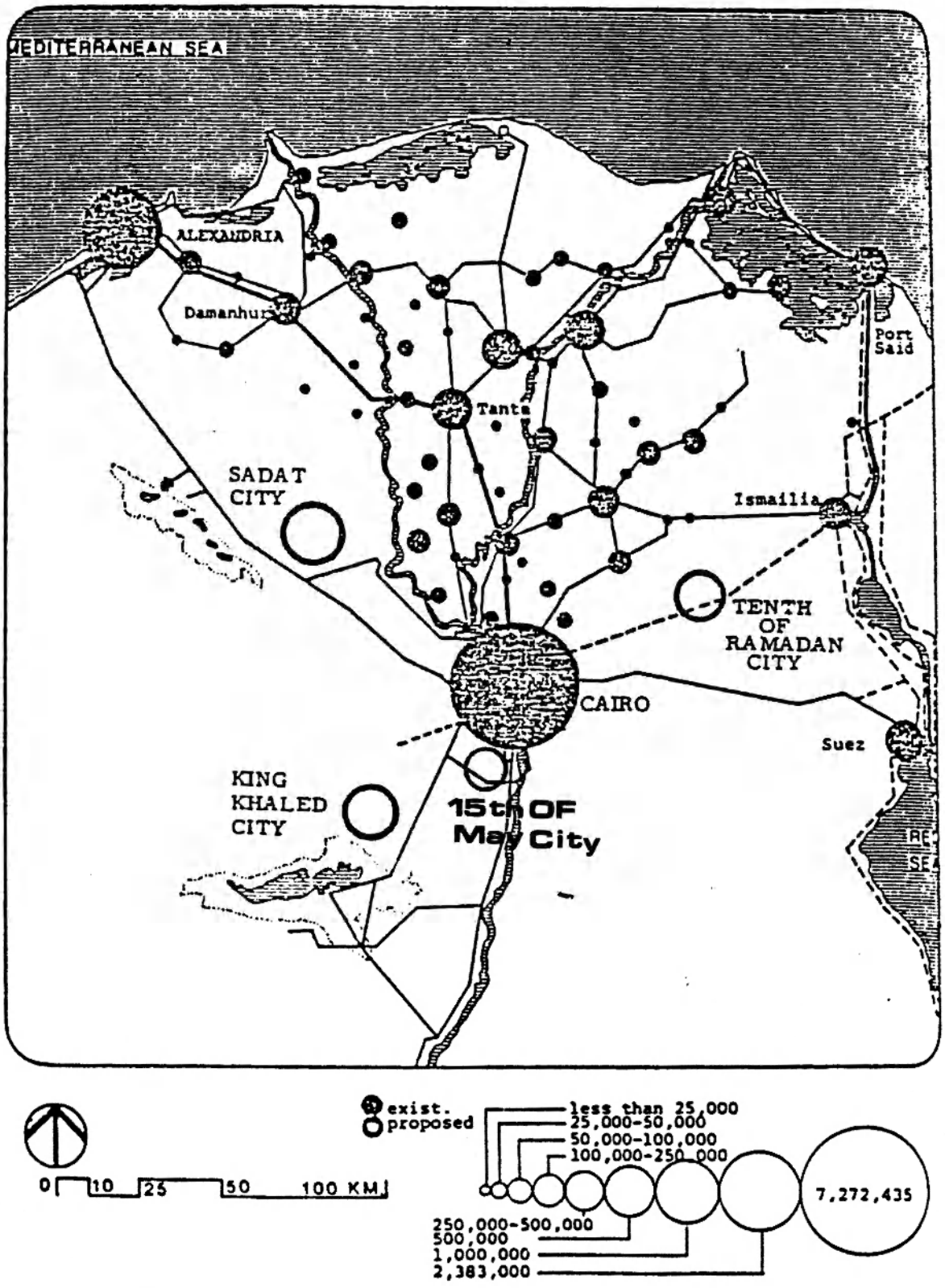


Figure 12 : New satellite cities sites.

15TH OF MAY CITY, HELWAN

Helwan lies on the east bank of the River Nile, approximately 30 Kilometres (19 miles) South of Cairo. It has become one of the largest industrial areas in Egypt, providing employment for more than 150,000 workers in a variety of heavy industries (steel, cement, automobiles etc.). About 60,000 workers have to travel daily by train or other means of public transport from their houses in Cairo and its suburbs because insufficient housing is available in Helwan. It was decided, therefore, to perpare a master plan for the area to sustain the growth of a major industrial centre including relocating the population in a more optimal pattern for national development together with an attempt to lessen the overall shortage of housing.

LOCATION AND REGIONAL CONTEXT :

The first residential city for the workers of the industrial area of Helwan, 15th of May City, lies in the desert area west of Old Helwan. 15th of May City is located about 2 Kilometres south-east of the existing residential area of Helwan, between the Nile Valley and the Mokkatam Hills, about 6.5 kilometres from the river. It is bounded on the west by King Khaled Highway (the Masr-El Gedida to Helwan highway).

THE MASTER PLAN AND ITS COMPONENTS :

The population of the Helwan area is expected to increase to around 400,000 by the turn of the century. 15th of May City is designed to accommodate about 150,000 of this number and is being developed in three phases, each housing 50,000 persons. The master plan area covers 1,030 hectares. The elements of the city structure are planned according to the optimal size and capacity of services and facilities.
The smallest element of the plan is a block which is a building with 10 - 17 flats per storey, that is equivalent to a total of 40-60 units per four storey building, and an estimated 200-340 persons per block. Between 13 and 23 blocks (of 80 X 80 m. or the equivalent) comprise a neighbourhood, which is considered to be the basic unit of the city structure. Inhabited by about 4,165 persons, each nieghbourhood is also served by a primary school and local shops.

The other stages of grouping the city layout are as follows : Six neighbourhoods of about 25,000 population form a district. Each district is provided with a secondary school, two preparatory schools and community green areas. Two of the districts are grouped to form a quarter which accommodates around 50,000 people. A quarter is provided with a Sub-centre containing Commercial and Administrative activities in addition to the facilities provided in a

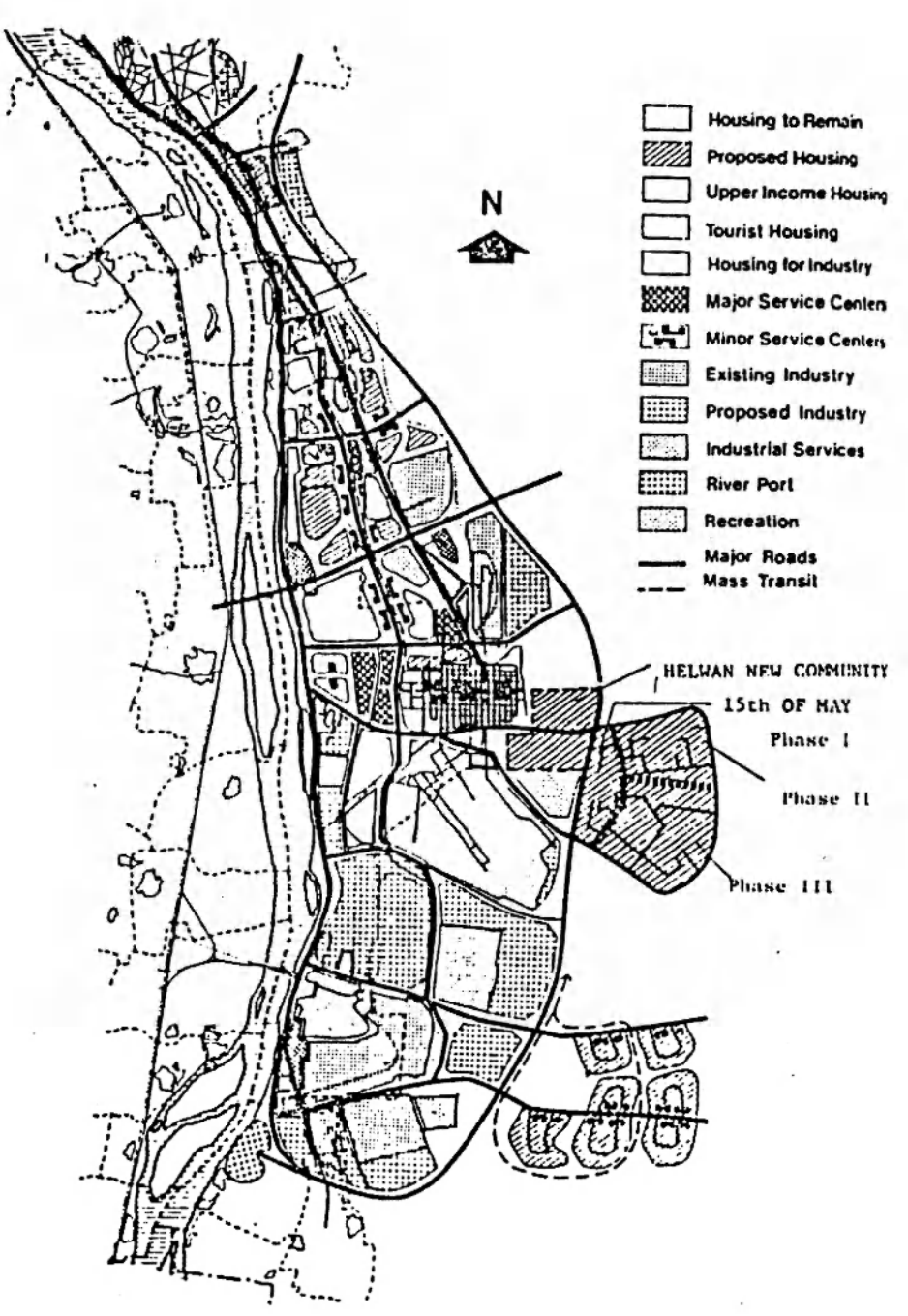


Figure 13 : Helwan Master Plan.

district. Three of the quarters combine in the city area as a whole with the 150,000 people served by a city center, located centrally, containing commercial, administrative and some light industrial facilities.

THE HOUSING INFRASTRUCTURE :

A total of 36,000 housing units are to be built in 15th of May City to accommodate the ultimate populataion of 150,000. Of these, 7,500 units have already been built within two neighbourhoods. About 65% of the units are intended for the low income group, while 28% and 7% are for the medium and high income groups respectively. Unit areas vary from 44-95 square metres according to the suitability, need and affordability of the people of particular income groups. There are about 65 different types of dwelling unit planned in the city but they are all flats.

Units are sold to the purchasers by monthly installments, equivalent to 25% of their existing salary, over 30 years. Purchasers' ability to pay is matched to a type of flat and this appears to be the sole criterion for fitting occupants to dwelling types. Most flats are in 4 or 5 storey walk-ups. Buildings related to education, commercial and community activities are mostly two storey. Buildings are constructed either of concrete frames with brick infill or from prefabricated panels manufactured locally.

10TH OF RAMADAN CITY

10th of Ramadan was the first of the new cities to be planned. Its implementation is to be in stages beginning in 1977 and completed in 2000 when the target population of 500,000 inhabitants is to be achieved.

The city is located on the north side of the Cairo to Ismailia Desert Road, about 50 km from Cairo. The total area covered by the masterplan is 30,800 ha. divided into the following land use :

Land Use	Area (Ha)	Percentage
Residential	12,000	39%
Industrial	6,000	19%
Services	2,000	6%
Green areas	3,000	10%
Roads	7,800	25%

Two major considerations seem to influence the overall layout of the city. The first is the minimisation of distances between home, services and work to encourage greater pedestrian movement. Thus the main services are centrally located and secondary services are located in neighbourhood centres, while some industries are located beside the residential areas. The second consideration is to allow for phasing and incremental growth of the city. This is to be

achieved by having a central spine where services can be developed as the city grows, and by having neighbourhoods indepedent from each other, each with its own main access.

The main economic base of the city is industry. Light and medium industries are located along the perimeter of the city. However, the heavy industries are located outside the city boundary on the south side of the Cairo-Ismailia Desert Road, in view of its pollution potential and the requirement of rail access.

The planning of the residential areas follows a hierarchial structure. At the lowest level of the hierarchy is the neighbourhood unit consisting of about 1,000 dwellings and housing about 5,000 people. Each neighbourhood has an elementary school, a primary school, a local mosque and a neighbourhood centre.

The next level is the community or district, consisting of about eight neighbourhoods with a population of about 35,000 to 40,000. Each district has a district centre with higher levels of services and amenities than the neighbourhood centre. These include secondary school, more shops, cinema, police station, post office, health clinics and other services.

Further services which will serve the whole city are located in the city centre. These include hospitals, offices, high

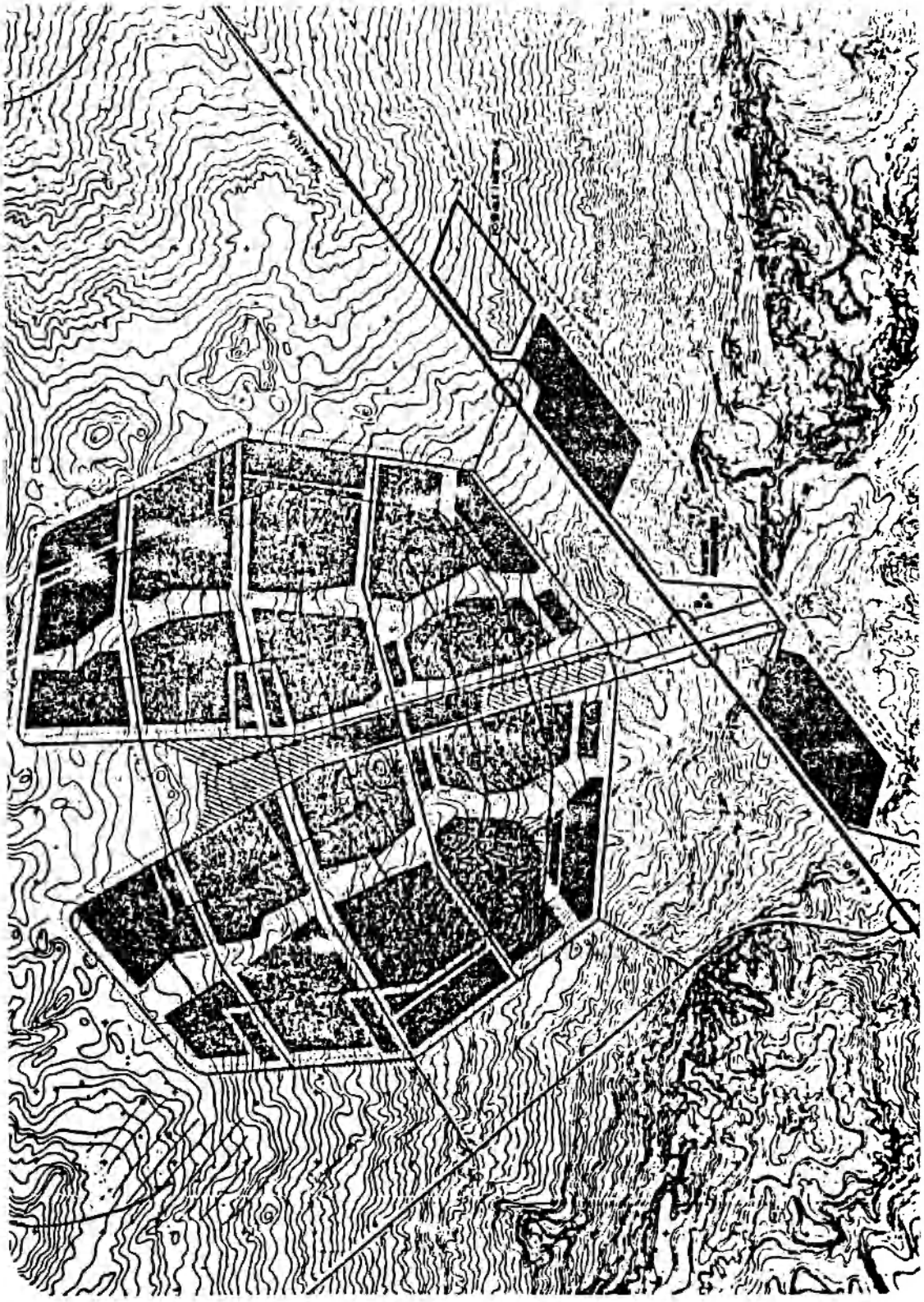


Figure 14 : 10th of Ramadan City, Master Plan.

schools and the larger and more specialised shops.

The predominant type of dwelling is in the form of four or five storey walk-up flats. The floor area is about 96 square metres. The size of dwelling units provided range from the smallest of about 30 square metres to the largest of about 155 square metres. About 60% are of the smallest size of 30 square metres.

Construction of the first stage, consisting of 4 communities of about 40,000 inhabitants each, was started in late 1977. Four neighbourhoods have been completed and the present population of the city is 10,000.

SADAT CITY

LOCATION :

Sadat City is located halfway between Cairo and Alexandria, far enough away from both to discourage daily commuting but close enough to benefit from the proximity of Cairo, the International Airport at Cairo, the port at Alexandria, and the people of the Nile Delta, for worldwide export and local consumption of its industrial and agricultural produce. Sadat City is on both a main junction of the Desert road and proposed railway line. One third of Egypt's population is within one hour's drive. Its location should also stimulate the growth of Wadi-el-Natrun and other satellite communities around it.

PLANNING :

Sadat City is planned to be a self-sufficient, independent city. The economic base is to be mainly industrial but supplemented by some government ministries, a university, research and training centres, a communication centre, recreation facilities and a construction industry. The informal sector is also to be promoted. The plan incorporates a central spine intersected by district spines and crosstown roads. The industrial spine is located downwind of the main city to minimise air pollution. To

reduce the wind speed and minimise blown sand, a shelter belt of trees has been planted to the south-west where the city has started. The street orientation is north-east and north-west to catch the north-west wind and shade generated by the two to three storey buildings. The commercial araea has narrow streets to maximise the effect of shade.

HOUSING :

In the plan, three and four storey buildings are intended to be closely grouped in order to provide shade and minimise the open space requiring irrigation. Currently there are two major types of construction on site, the prefabricated concrete panels and the traditional concrete framework with brick infill. It is intended that Phase II which started in 1986, will accommodate some self-help building, using core-houses suitable for expansion. Sandcrete blocks and prefabricated concrete planks are intended to be the main materials used and the average plot size will be 7m X 20m. The house floor area will vary from 37 square metres to 110 square metres.

SERVICES AND UTILITIES :

The neighbourhoods are planned for 4,000 - 6,000 people and each will have facilities to serve daily needs including a primary school, a nursery, social and communication services, and even workshops. These will be joined by footpaths

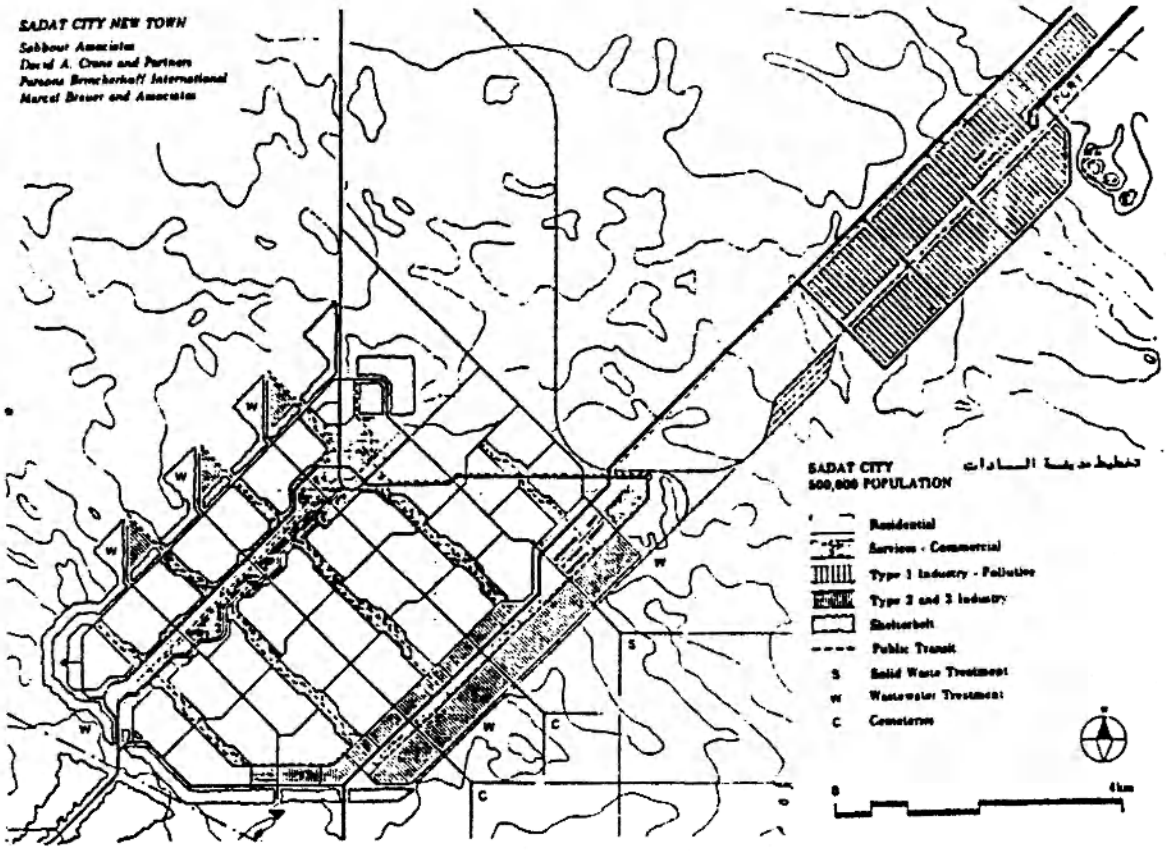


Figure 15 : Sadat City, Master Plan.

leading to a neighbourhood spine road connecting three neighbourhoods and leading to a district spine serving six neighbourhoods. The facilities at the district centre will include preparatory and secondary education, health care, social services, and cultural and religious facilities. The district spine roads in turn will connect the district centres to the city. Public transport is to be emphasised throughout.

The water supply is from a local aquifer estimated to be 300m thick, also the water supply is augmented by two pipelines from the Nile.

CHAPTER (3)

A STUDY OF THE GARDEN CITY

CONTENTS

The author has considerd the use of the Garden City idea as a design form for the proposed new housing community, therefore; a comprehensive study of the Garden City idea seemed to be appropriate.

In the following chapter, a study of the Garden City from its begining, with a review to some of the communities that had used the Garden City idea in their design and planning.

The purpose of this study was to find out which elements and principles if not all, would be usefull to use and adapte in the design of the proposed new housing community.

"EACH GENERATION SHOULD BUILD TO SUIT
ITS OWN NEEDS"

EBENEZER HOWARD.

The Garden City invention:

The Garden City idea was found by Sir Ebenzer Howard, in 1898. The program he proposed, was to halt the growth of London, also repopulate the countryside by building a new kind of town.[1] The movement originated from his manuscript entitled To-Morrow: A peaceful path to real reform (now known under the title of the 1902 edition, "Garden Cities of To-Morrow".)

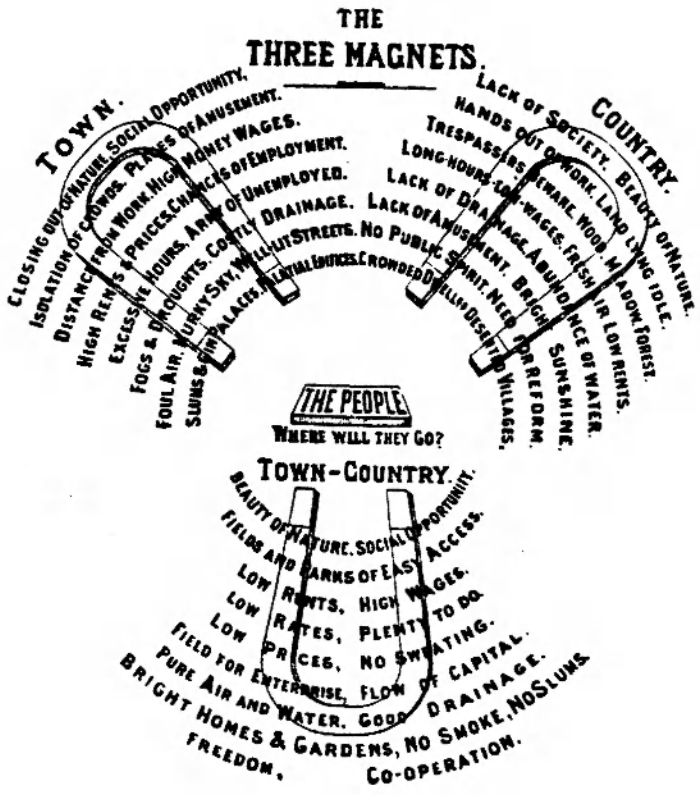
Ebenezer Howard was born in 1850 at 62 Fore street in the City of London, he was the son of small shopkeeper and had no special advantages of class or education. At fifteen he became a clerk, drifting from one insignificant job to another untill he was twenty-one, when he came to America with two friends. In Chicago, he worked for a firm of shorthand writers, he became an expert reporter for the courts and the press. Returning to England in 1876, he joined Gurneys, the official parliamentary reporters, and after one unlucky attempt at a private partnership he settled down to working for Gurneys and other firms in the same business for the rest of his days.[2]

The idea of the Garden City started in Ebenezer Howard mind when many people started to think about how to restore the people to the land , and how cities can be effective for redistributing the population in a spontaneous and healthy

manner. As Howard said : " From that view point there are in reality not only, as is so constantly assumed, two alternatives - Town life and country life - but a third alternative, in which all the advantages of the most energetic and active town life, with all the beauty and delight of the country, may be secured in perfect combination, and the certainty of being able to live this life will be the magnet which will produce the effect for which we are all striving - the spontaneous movement of the people from our crowded cities to the bosom of our kindly mother earth, at once the source of life, of happiness, of wealth, and of power."[3]

The town and the country may, therefore be regarded as two magnets, each striving to draw the people to itself - a rivalry which a new form of life partaking of the nature of both, comes to take part in. This may be illustrated by a diagram of "The Three Magnets", in which the chief advantages of the town and of the country are set forth with their corresponding draw backs, while the advantages of the Town-Country are seen to be free from the disadvantages of either.[4]

The Town Magnet, offers, as compared with the Country Magnet, the advantages of high wages, opportunities for employment, tempting prospects of advancement, but these are largely counterbalanced by high rents and prices. Its social



THE THREE MAGNETS

Figure 16 : The three magnets digram.

opportunities and its places of amusement are very alluring, but excessive hours of toil, distance from work, and the "isolation of crowds" tend greatly to reduce the value of these good things. The well-lit streets are a great attraction, especially in winter, but the sunlight is being more and more shut out, while the air is so vitiated that the fine public buildings, rapidly become covered with soot, and the very statues are in despair. Palatial edifices and fearful slums are the strange, complementary features of Modern Cities.[5]

The Country Magnet declares herself to be the source of all beauty and wealth; but the Town Magnet mockingly reminds her that she is very dull for lack of society, and very sparing of her gifts for lack of capital. There are in the country beautiful vistas, lordly parks, violet-scented woods, fresh air, sounds of rippling water. Rents, if estimated by the acre, are certainly low, but such low rents are the natural fruit of low wages rather than a cause of substantial comfort; while long hours and lack of amusements forbid the bright sunshine and the pure air to gladden the hearts of the people.[6]

But neither the town magnet nor the country magnet represents the full plan and purpose of nature. Human society and the beauty of nature meant to be enjoyed together. The two magnets must be made one. As man and woman by their varied

gifts and faculties supplement each other, so should town and country. The town is the symbol of society - of mutual help and friendly co-operation, of fatherhood, motherhood, brotherhood, sisterhood, of wide relations between man and man - of broad, expanding sympathies - of science, art, culture, religion.[7]

And the country ! The country is the symbol of God's love and care for man. All that we are and all that we have comes from it. Our bodies are formed of it; to it they return. We are fed by it, clothed by it , and by it we are warmed and sheltered. On its bosom we rest. Its beauty is the inspiration of art, of music, of poetry. Its forces propel all the wheels of industry. It is the source of all health, all wealth, all knowledge.

But its fullness of joy and wisdom has not revealed itself to man. Nor can it ever, so long as this unholy, unnatural separation of society and nature endures.[8]

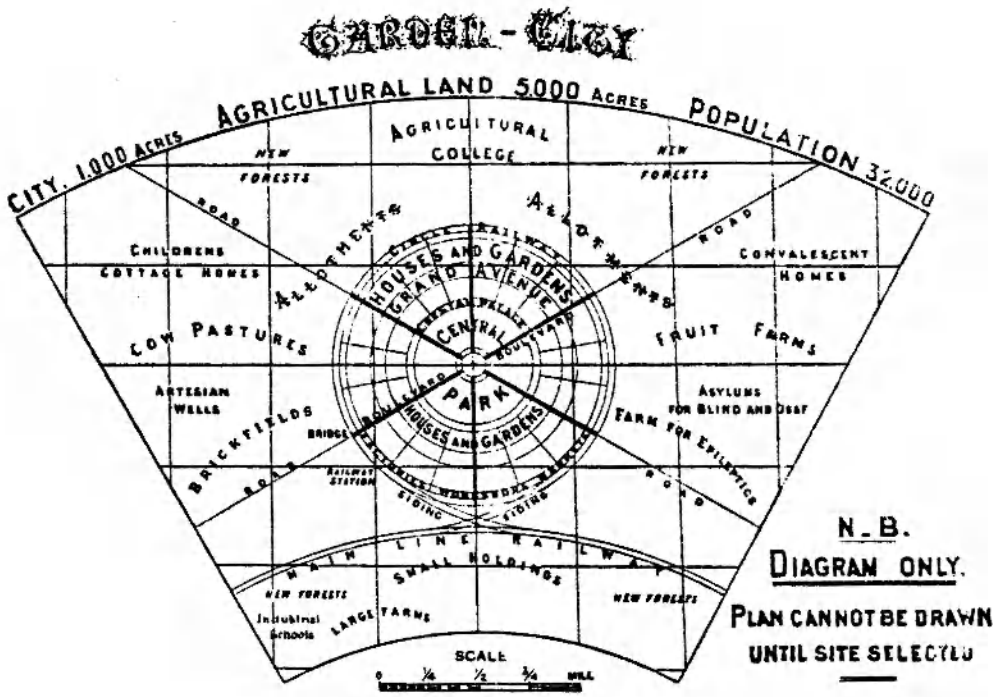
Town and Country must be married, and out of this joyous union will spring a new hope, a new life, a new civilization. That is what is called The Garden City.[9]

The Garden City as Howard pictured it is to be built near the center of a 6000 acres, covers an area of 1000 acres, or a sixth part of the 6000 acres, and might be of circular form, 1240 yards (or nearly three-quarters of a mile) from centre

to circumference. Six magnificent boulevards - each 120 feet wide - traverse the city from centre to circumference, dividing it into six equal parts or wards. In the center is a circular space containing about five and a half acres, laid out as a beautiful and well-watered garden; and surrounding this garden, are the larger public buildings - town hall, principal concert and lecture hall, theatre, library, museum, picture-gallery, and hospital.

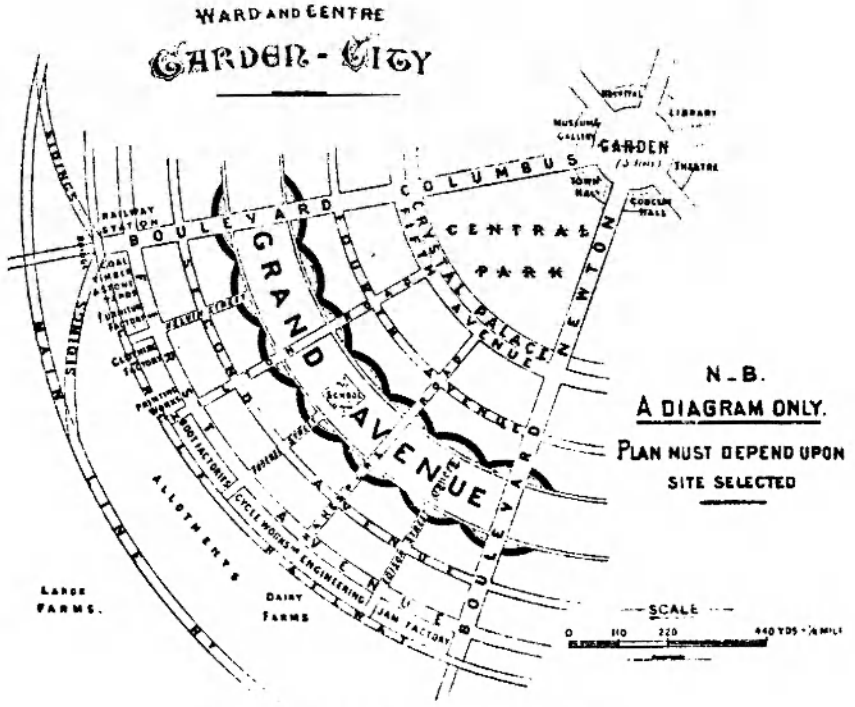
The rest of the large space encircled by the Crystal Palace is a public park, containing 145 acres, which includes ample recreation grounds within very easy access of all the people.[10]

Running all round the Central Park (except where it is intersected by the boulevards) is a wide glass arcade called the "Crystal Palace", opening on to the park. This building is in wet weather one of the favourite resorts of the people, whilst the knowledge that its bright shelter is ever close at hand tempts people into Central Park, even in the most doubtful of weathers. Here manufactured goods are exposed for sale, and here most of that class of shopping which requires the joy of deliberation and selection is done. The space enclosed by the Crystal Palace is, however, a good deal larger than is required for these purposes, and a considerable part of it is used as a Winter Garden - the whole forming a permanent exhibition of a most attractive



GARDEN CITY AND RURAL BELT

Figure 17 : Garden City and rural belt.



WARD AND CENTRE OF GARDEN CITY

Figure 18 : Ward and centre of Garden City.

character, whilst its circular form brings it near to every dweller in the town - the furthest removed inhabitant being within 600 yards.[11]

Passing out of the Crystal Palace on our way to the outer ring of the town, we cross Fifth Avenue - lined, as are all the roads of the town, with trees - fronting which, and looking on to the Crystal Palace, we find a ring of very excellently built houses, each standing in its own ample grounds; and, as we continue our walk, we observe that the houses are for the most part built either in concentric rings, facing the various avenues (as the circular roads are termed),or fronting the boulevards and roads which all converge to the centre of the town.[12]

30,000 in population are in the city itself, and about 2,000 in the agricultural estate, in the town there are 5,500 building lots of an average size of 20 feet x 130 feet - the minimum space allotted for the purpose being 20 x 100 feet.[13]

Walking still toward the outskirts of the town, we come upon "Grand Avenue". This avenue is fully entitled to the name it bears, for it is 420 feet wide, and, forming a belt of green upwards of three miles long, divides that part of the town which lies outside Central Park into two belts. It really constitutes an additional park of 115 acres - a park which is within 240 yards of the furthest removed inhabitant. In this

splendid avenue six sites, each of four acres, are occupied by public schools and their surrounding playgrounds and gardens, while other sites are reserved for churches, of such denominations as the religious beliefs of the people may determine, to be erected and maintained out of the funds of the worshippers and their friends. We observe that the houses fronting on Grand Avenue have departed (at least in one of the wards - that of which Figure (18) is a representation) -from the general plan of concentric rings, and in order to ensure a longer line of frontage on Grand Avenue, are arranged in crescents -thus also to the eye yet further enlarging the already splendid width of Grand Avenue.[14]

On the outer ring of the town are factories, warehouses, dairies, markets, coal yards, timber yards, etc., all fronting on the circle railway, which encompasses the whole town, and which has sidings connecting it with a main line of railway which passes through the estate. This arrangement enables goods to be loaded direct into trucks from the warehouses and workshops, and so sent by railway to distant markets, or to be taken direct from the trucks into the warehouses or factories; thus not only effecting a very saving in regard to packing and cartage, and reducing to a minimum loss from breakage, but also, by reducing the traffic on the roads of the town, lessening to a very marked extend

the cost of their maintenamce. The smoke fiend is kept well within bounds in "Garden City"; for all machinery is driven by electric energy, with the result that the cost of electricity for lighting and other purposes is greatly reduced.[15]

When Howard's Garden City is built up, it's population has reached 32,000. How will it grow ?.

Howard answers :

It will grow by establishing another city some little distance beyond its own zone of "country", so that new town may have a zone of country of its own.

And this principle of growth - this principle of always preserving a belt of country round our cities would be ever kept in mind till, in course of time, we should have a cluster of cities, not of course arranged in the precise geometrical form of the shown diagram, but so grouped around a Central City that each inhabitant of the whole group, though in one sense living in a town of small size, would be in reality living in, and would enjoy all the advantages of, a great and most beautiful city; and yet all the fresh delights of the country.[16]

A rapid railway transit would be realized by those who dwell in this beautiful city or group of cities. Reference to the diagram will show at a glance the main features of its railway system. There is , first, an inter-municipal railway, connecting all the towns of the outer ring - twenty miles in circumference - so that to get from any town to its most distant neighbour requires one to cover a distance of only ten miles, which could be accomplished in, say, twelve minutes. These trains would not stop between the towns -

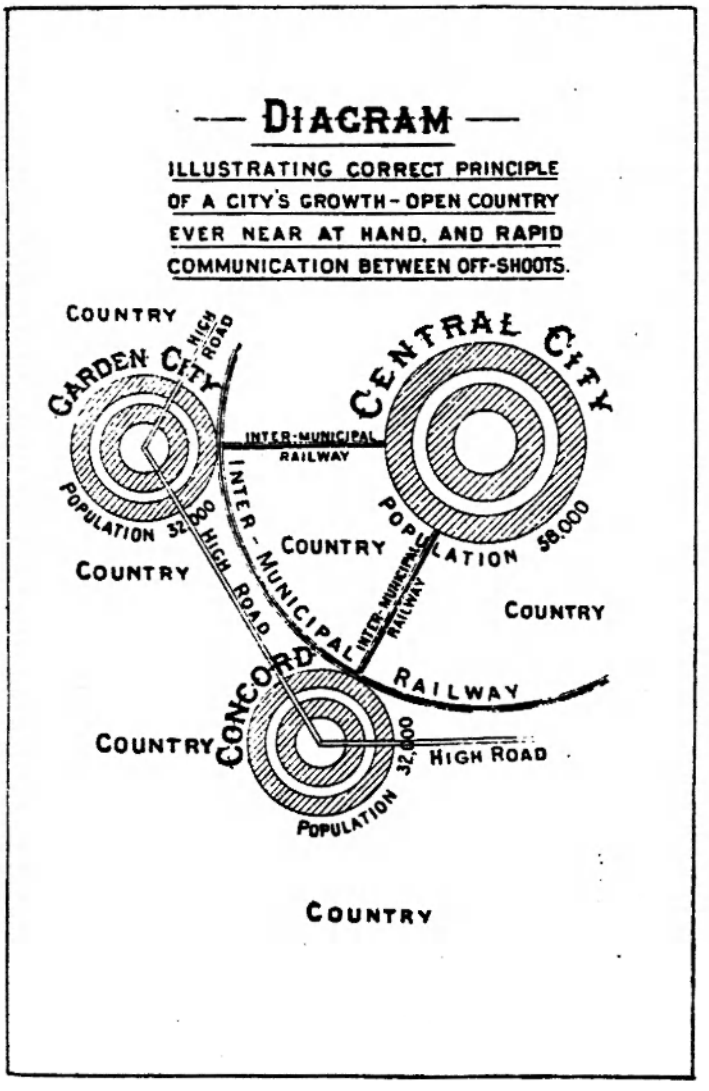


Figure 19 : Correct principle of a city's growth.

means of communication for this purpose being afforded by electric tramways which traverse the high roads, of which, it will be seen, there are a number - each town being connected with every other town in the group by a direct route.
There is also a system of railways by which each town is placed in direct communication with Central City. The distance from any town to the heart of Central City is only three and a quarter miles, and this could be readily covered in five minutes.[17]

Ebenezer Howard suggested that a simpler problem must first be solved, one small Garden City must be built as a working model, and then a group of cities.

FACTS ABOUT HOWARD'S GARDEN CITY :

As we see, Howard's Garden City is to be industrial and commercial, with a balanced mixture of all social groups and levels of income. Areas are worked out for the zones; public buildings and places of entertainment are placed centrally, shops intermediately, factories on the edge with the railway and sidings. Houses are of different sizes, but all have gardens, and all are within easy reach of factories, shops, schools, cultural centres, and the open country. Of special interest is the central park and the inner green belt, or ring park, 420 feet wide, containing the main schools, with large playgrounds, and such buildings as churches.[18]

Howard never claimed that his areas and densities were more than a provisional estimate. But they were based on a pretty sound assessment, on the standards of the time, of the likely balance of needs. The population suggested was 30,000 within the town giving an overall density of 30 persons per acre; and 2,000 in the country belt, or 2 persons per 5 acres.[19]

The maximum housing density, including access roads, works out at 80 persons in about 14.5 houses per acre, the size of family assumed being 5.5 .[20]

F.J. Osborn, in his book, Green - Belt Cities, 1946, states that : the same number of dwellings, at a present day

average of 3.5 persons per family, would bring Howard's maximun housing density to 51, his overall town density to 19, and his total town population to 19,000 on the 1,000 acres. Osborn also indicates that in the 47 years since 1898 space requirements for nearly all town purposes have risen; and popular housing standards have greatly advanced . Howard's space standards have proved somewhat too low; but at least he can be acquitted of being an advocate of "sprawl and scatter".[21]

The layout of the town was to be planned in advance, and its development controlled by leases limiting the use of sites to their appropriate purposes. Building and architectural controls were to be applied, but Howard is insistent on variety, freedom for individual taste, as well as order. The planning is conceived as a teamwork of many minds - "of engineers, architects, artists, medical men, experts in sanitation, landscape gardeners, agricultural experts, surveyors, builders, manufacturers, merchants, financiers, organizers of trade unions and co-operative societies." But "there should be unity of design and purpose" :

"A town, like a flower, or a tree, or an animal, should, at each stage of its growth, possess unity, symmetry, completenes, and the effect of growth should never be to destroy that unity, but to give it greater purpose, nor to mar that symmetry, but to make it more symmetrical".[22]

In detail, the houses and groups of houses , display varied architecture and design, and some have common gardens; and there is insistence on general observance of street line or harmonious departure from it. It is to be noted that Howard had no nostalgia for the past. He was a true Victorian, a child of Macaulay, and almost uncritical believer in progress. Everything in his town was to be the very latest thing; all further developments of science were to be allowed for, and adopted as they came along. He was perfectly sure that further Garden Cities would be as great an advance on his own ideas as these were on the towns of the past.[23]

A feature of Howard's town plan was its division into neighbourhoods, each based on the population required for one school, and having its community sub-centre.

"Each ward, or one-sixth of the city (with about 5,000 population) should be in some sense a complete town by itself, and thus the school buildings might serve, in the earlier stages, not only as schools, but as places for religious worship, for concerts, for libraries, and for meetings of various kinds.... Work , too, would be practically completed in one area before commencing on another".[24]

Another feature was the limitation of the number of shops, in the interest both of a better service and of a higher ground rent revenue. Howard evolved an ingenious system for "local option", by which the admission fc further shops could be authorized by popular vote, giving the existing shopkeepers a strong incentive to satisfy their customers. The principle was to be that of competition on a basis giving enough turnover for a trader's livelihood, the public authority and co-operative societies joining in the competition.[25]

Howard's scheme was offered as a solution of the problem of land rent as well as of the problem of city congestion, which were obviously inter-tangled. His proposal that the site of any new town, including its country belt, should be in one ownership, and that profit on the land development should be limited to a normal commercial return, was intended as means for securing land rent, due to the increase of population, for the community. Much of his book is devoted to this financial aspect of the scheme; and it is well done; the figures are out of date, of course, but the arithmetic is sound. Land values increase as a town grows, and Howard's method of leasehold control remains the best way to secure for the public the surplus value over cost of development in a new town.[26]

THE MAIN COMPONENTS OF HOWARD'S GARDEN CITY IDEA :

1- PLANNED DISPERSAL :

The organized outward migration of industries and people to towns of sufficient size to provide the services, variety of occupations, and level of culture needed by a balanced cross-section of modern society.

2- LIMIT OF TOWN-SIZE :

The growth of towns to be limited,in order that their inhabitants may live near work, shops,social centers, and each other, and also near open country.

3- AMENITIES :

The internal texture of towns to be open enough to permit of houses with private gardens, adequate space for schools and other functional puropses, and pleasant parks and parkways.

4- TOWN AND COUNTRY RELATIONSHIP :

The town area to be defined, and a large area around it reserved permanently for agriculture; thus enabling the farm people to be assured of a nearby market and cultural centre, and the town people to have the benefit of a country situation.

5- PLANNING CONTROL :

Pre-planning of the whole town framework, including the road-scheme, and functional zoning; the fixing of maximun

densities; the control of building as to quality and design, but allowing for individual variety; skilful planting and landscape gardening design.

6- NEIGHBOURHOODS :

The town to be divided into wards, each to some extent a developmental and social entity.

7- UNIFIED LANDOWNERSHIP :

The whole site, including the agricultural zone, to be under quasi-public or trust ownership; making possible planning control through leasehold covenants, and securing the social element in land value for the community.

8- MUNICIPAL AND CO-OPERATIVE ENTERPRISE :

Progressive experimentation in new forms of social enterprise in certain fields, without abandoning a general individual freedom in industry and trade.[27]

Anyone who knows the history of towns and of housing - almost anywhere in the world except in very high latitudes - will realize that people working in towns have always wanted for their dwellings the amenities of both town and country; and that the carriage-folk, sometimes a small, sometimes quite a large class, have always obtained these combined amenities. Unless the town was open enough - as Athens was, for houses with large gardens right inside it, invariably the carriage-

folk placed their houses, in the classic phrase,"between town and country",that is in what we now call suburbs.[28]

What did the internal combustion engine and the electric motor do but vastly enlarge the noble company of carriage-folk ? The tram, the bus, the train, the tube, enabled millions to seek the eternally desired situation between town and country. And the history of town development since 1900 is in the main the working out of that theme.

The Garden City way; which limited the size of towns, brought the natural atmosphere within them, and used electricity for driving factories and petrol engines for transporting goods, rather than both for shuttling human beings back and forth.[29]

THE FIRST TWO GARDEN CITIES :

Ebenezer Howard stated in his book, To-Morrow (1898) :
"A simpler problem must first be solved. One small garden city must be built as a working model, and then a group of cities..."

After that, Howard founded both the Letchworth and Welwyn Garden Cities as experiments in and demonstrations of his thesis. They were intended to show the way to the redevelopment of great cities as groups of beautiful towns on a background of open country : a conception now informing the advance regional planning schemes. As successfully working, they are a great importance and interest.[30]

Letchworth was founded in 1904, when town planning was unknown in Great Britain, the idea of starting a town was looked on as just madness, and pleasant planted surroundings for the urban masses seemed a Utopian dream. Welwyn Garden City was started in 1920, just after the first World War, when "town planning" was in existence and feeling its way as a branch of government and was identified in the public mind with openness of layout.[31]

But in 1920 the garden city idea was even less understood than in 1904. Both towns were the result of the enterprise and persistence of small groups of people who believed that

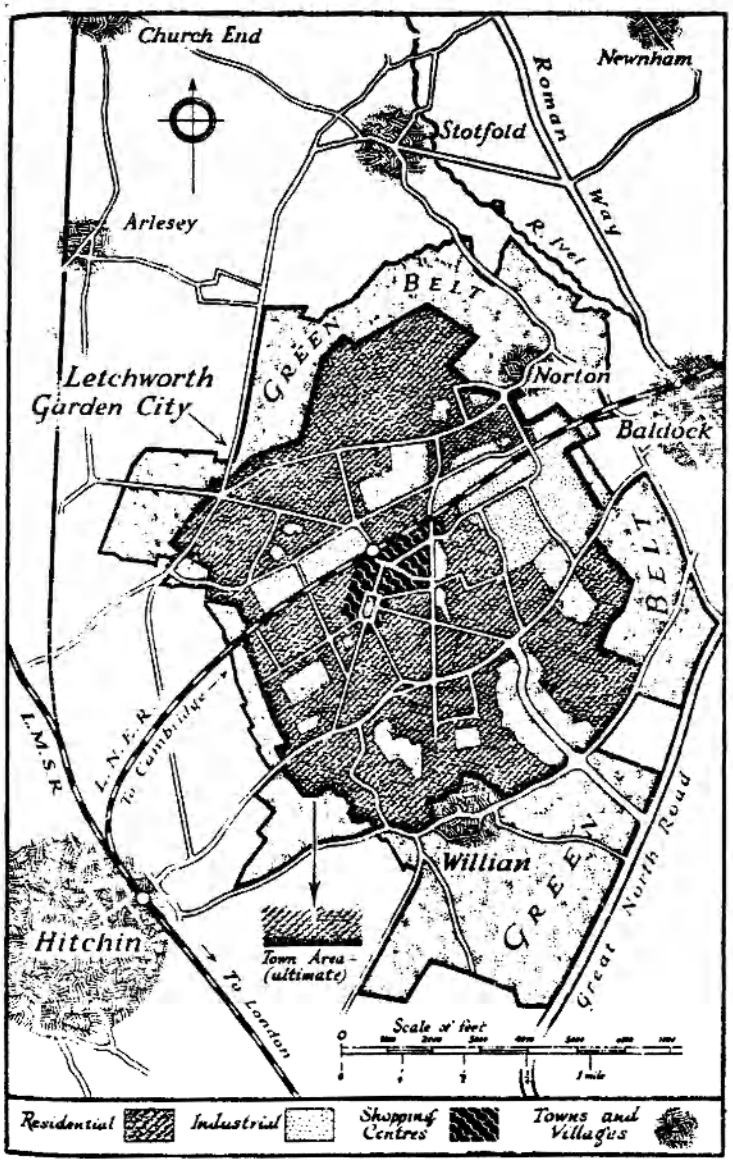


Figure 20 : Plan of Letchworth.

the idea was sound, working against a background of general public indifference and with the minimum of official encouragement.[32]

In 1904 the Garden City Association had accumulated enough capital to purchase land for the construction of the first garden city. The site chosen was Letchworth, in Hertfordshire, about forty miles north of London. Howard's principles were applied there to a remarkable degree, though Letchworth's architects and site planners, Raymond Unwin and Barry Parker, softened the sharp edges of Howard's geometric design by forgoing his strict circular pattern. They preferred instead to respect and to utilize the contour of the land in formulating their site plan. But Letchworth suffered from two problems that were continually to plague the garden city movement in both Europe and the United States - undercapitalization and the inability to provide decent low cost housing for the poor. Despite the support of several wealthy entrepreneurs, the community suffered from a shortage of "front-end" capital. But despite these difficulties and limitations, Letchworth achieved a moderate degree of success.[33]

The approach conformed to Howard's notion that a single garden city must be built and be a proven success before demands for more garden city would emerge.

It would be 1920 - sixteen years -before the second garden

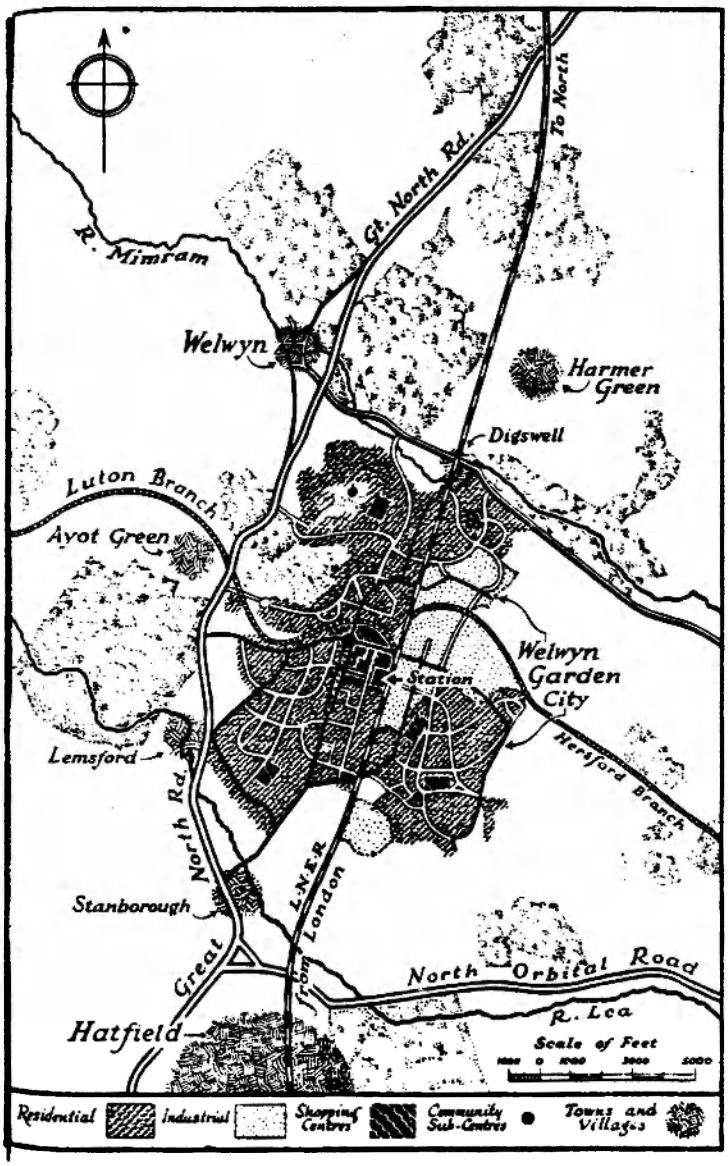


Figure 21 : Plan of Welwyn.

city was built, on a tract of land twenty-one miles east of London, at Welwyn. The Parliament's Housing Act of 1919 had provided a subsidy for the construction of working class homes, thus permitting Welwyn to meet the housing needs of a larger spectrum of English society than had Letchworth. But once again the management of the new town suffered from a shortage of capital which forced the community to grow slowly.[34]

Town planning, as experience has shown, can be a dismal art when the planners do not know what sort of town they want to produce. They tend to rely on research and surveys to make up their minds for them; but research and surveys only tell you what things are; not what they ought to be.

The founders of Letchworth and Welwyn were fortunate in being agreed upon a sufficiently defined target. Consequently the preparation of preliminary town plans, and the surveys necessaary to adapt the governing ideas to the site conditions, could proceed side by side. Much other preparatory work had also to be done before actual development started. Following is a list of the more important matters studied or negotiated in the case of Welwyn; nearly all of which were necessary for Letchworth also. The list include :

LAND PURCHASE :

Terms of conveyances : including vendors reservations, pre-emption rights (in case of failure of scheme), safeguards for certain tenancies, and severance of farms; fencing of new boundaries; etc.

FINANCE :

Basic estimates, on provisional periodic schedule.

FLOTATION OF COMPANY :

Capitalization; directorate; solicitors and brokers; prospectus; advertising the issue.

AGRICULTURAL INTERESTS :

Revision of farm tenancies to permit of taking possession by stages; right of access for survey, trial holes, etc.; compensation for disturbance and tenant right. Study of soils suited to smallholdings, market gardening, etc.

CONTOUR AND PHYSICAL SURVEY :

Levels; trees, hedges, watercourses, and features deserving preservation.

GEOLOGICAL SURVEY :

Soils for different types of utilization; water sources, brick-earth, sand, chalk.

WATER SUPPLY :

Technical and financial data.

DRAINAGE AND SEWAGE DISPOSAL :

Lines of drainage, and choice of practicable sites for outfall works.

GAS AND ELECTRICITY SUPPLY :

Technical investigations as to methods and costs; decision as to whether to create new works or take supplies from existing undertakers.

RAILWAY FACILITIES :

Technical study as to siting of station, goods yards, factory sidings, etc.; negotiations with railway company; planning of light railway for development work.

HIGHWAYS :

Study of existing roads, bridle paths, footpaths; methods and costs of new construction; negotiations with Ministry of Transport, County Council, Rural District Councils.

HOUSING :

Study of types, design and costs; negotiations with Ministry, local authorities, public utility societies, architects, contractors.

BUILDING REGULATIONS :

Study of existing local byelaws; drafting of Company's own regulations under leases.

LAND DISPOSAL :

Decisions as to principles and terms of leases, preparation of drafts, settlement of restrictive covenants; policy in fixing rentals.

BUILDING MATERIALS :

Technical and cost investigations as to production on estate of bricks, gravel, sand, etc.

CONSTRUCTION :

Decisions as to the agencies for development and building; respective spheres of "direct labour" and contract work; negotiations with prospective contractors; finance and methods of reward.

INITIAL BUILDINGS :

Plans for temporary accommodation for development force, including housing, workshops, meals, recreation, etc.

STAFF AND WORKERS ;

Engagement of technicians and key personnel; inquiries as to sources of labour for devlopment; administrative set up; provision of offices.

FORESTRY AND PLANTING :

Reports on woodlands and scattered trees; consideration of nursery garden for production of trees, shrubs, etc.

TOWN PLAN :

Decisions as to ultimate population; areas needed for factories, public buildings, shops, houses, open spaces; standards of density; control of design; amenities. Appointment of planning team; conferences with consultants.

Now all these matters are interrelated, and some progress had to be made with each before a preliminary town plan could be intelligently drafted, though certain elements of the plan crystalized fairly early.[35]

At the end of this part I would like to mention the root idea of Howard's book as stated by the Provisional Board of Second Garden City, 1919 :

"The root idea of Mr. Howard's book is to deal at once with the two vital questions of overcrowding on our towns and the depopulation of our rural districts, and thereby reduce the congestion of population in our great towns, or at least arrest its progress. The advantages anticipated from this new departure in the development of a building estate are :

FIRSTLY :the provision of hygienic conditions of life for a considerable working population.

SECONDLY : the stimulation of agriculture by bringing a market to the farmer's door.

THIRDLY : the relief of the tedium of agricultural life by accessibility to a large town.

FOURTHLY : that the inhabitants will have the satisfaction of knowing that the increment of value of the land created by themselves will be devoted to their own benefit.[36]

REVIEW TO SOME GARDEN CITIES :

Here, is a brief survey to a number of cities and communities in England, U.S.A. and Switzerland, which used the Garden City approach in its planning and design.

FIRST : ENGLAND :

After the first garden city ever (Letchworth), and after the second one (Welwyn), many cities and communities were designed using the Garden City idea. For instance :

1- WEOLEY CASTLE ESTATE - BIRMINGHAM (1933) :

Weoley Castle Estate, which is 312 acres in extent, is approximately oblong in shape, three-quarters of a mile long by nearly two-third of a mile wide. It lies a little over four miles from the center of the city. The estate accommodates 2718 houses, together with central and other shopping areas, public recreation areas, etc. The central shopping area is planned to contain also the civic buildings required in connection with a community of such a size.

The layout of the estate has been designed to conform, as pleasingly as possible, with the natural topographical features of the site, great care being taken to preserve all the old sound trees and to add extensively to their number.

There are several areas on the estate which, for various reasons, are impracticable for building upon, and they are being retained as public open spaces. These are connected by parkways or parkway roaads which form very pleasant features. An interesting innovation has been to design some of the roads with open forecourts to the houses, which not only adds to the spacious appearance of the setting of the houses, but also gives the roads beautiful parkway effects.

The houses have been constructed in pairs and blocks of four and six, designed with variety of both layout and elevation.[37]

(F-22).

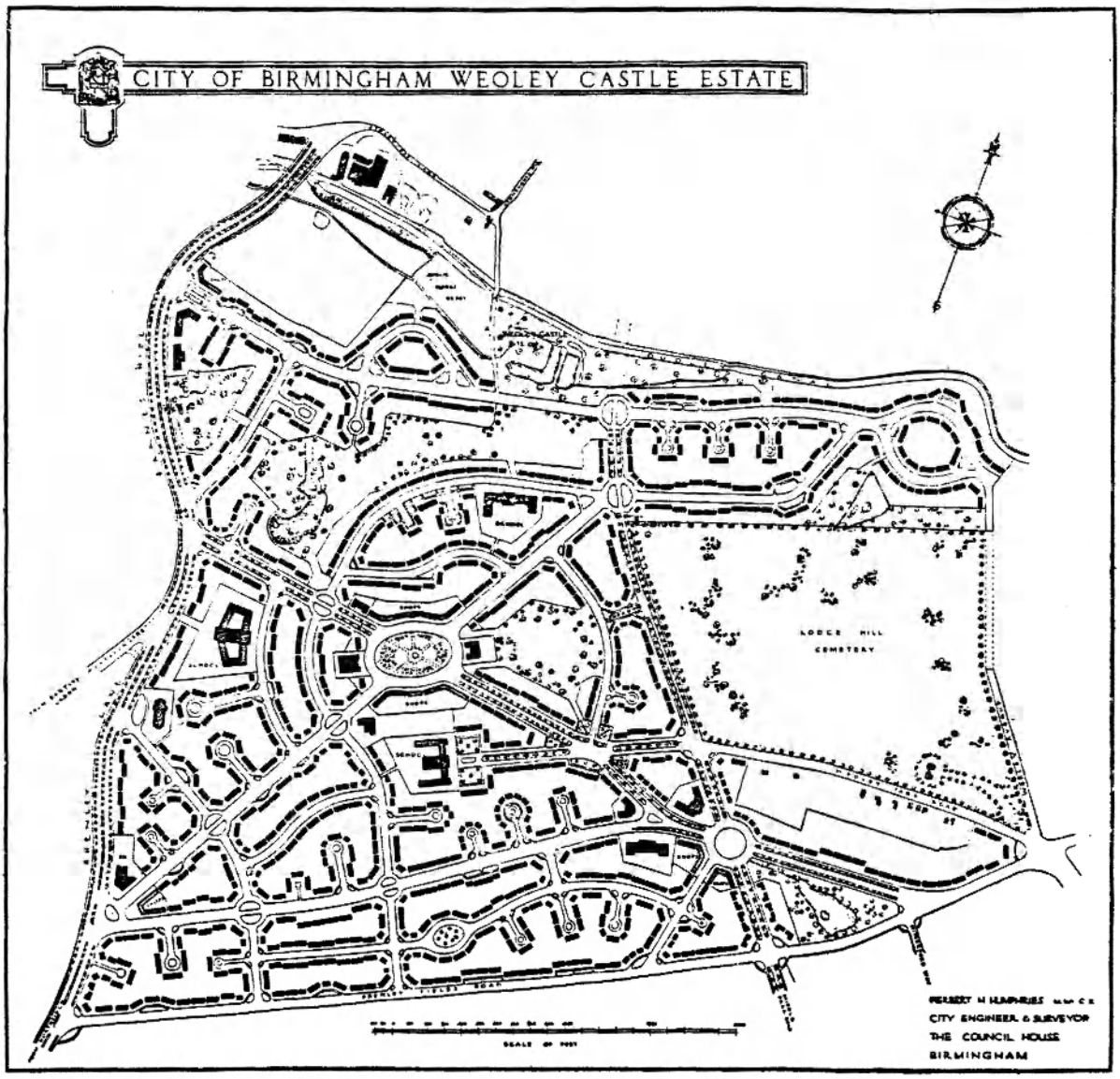


Figure 22 : Weoley Castle Estate, Birmingham.

2- CITY OF LIVERPOOL - SPEKE, (1934) :

Planned as a self-contained community and comprises 2208.5 acres, of which 626 acres is allocated to factories, approximately 626 acres to housing, 430 acres to the airport, 101.75 acres for railway sorting sidings, and 709 acres to open-spaces and including an institutional area.

The city contain about 6000 houses, made up approximately of:

250 Cottage flats for aged peresons.

2129 Houses with living-room and dining-room, and 2 or 3 bed-rooms.

3014 Houses with sitting-room, dining-room, and 3 or 4 bed-rooms.

92 Flats of single persons.

221 Larger flats with living-room, dining-room, and 2,3 or 4 bed-rooms.

294 Larger houses with garage and 4 bed-rooms for professional men, managers, etc.[38]

6000

(F-23).

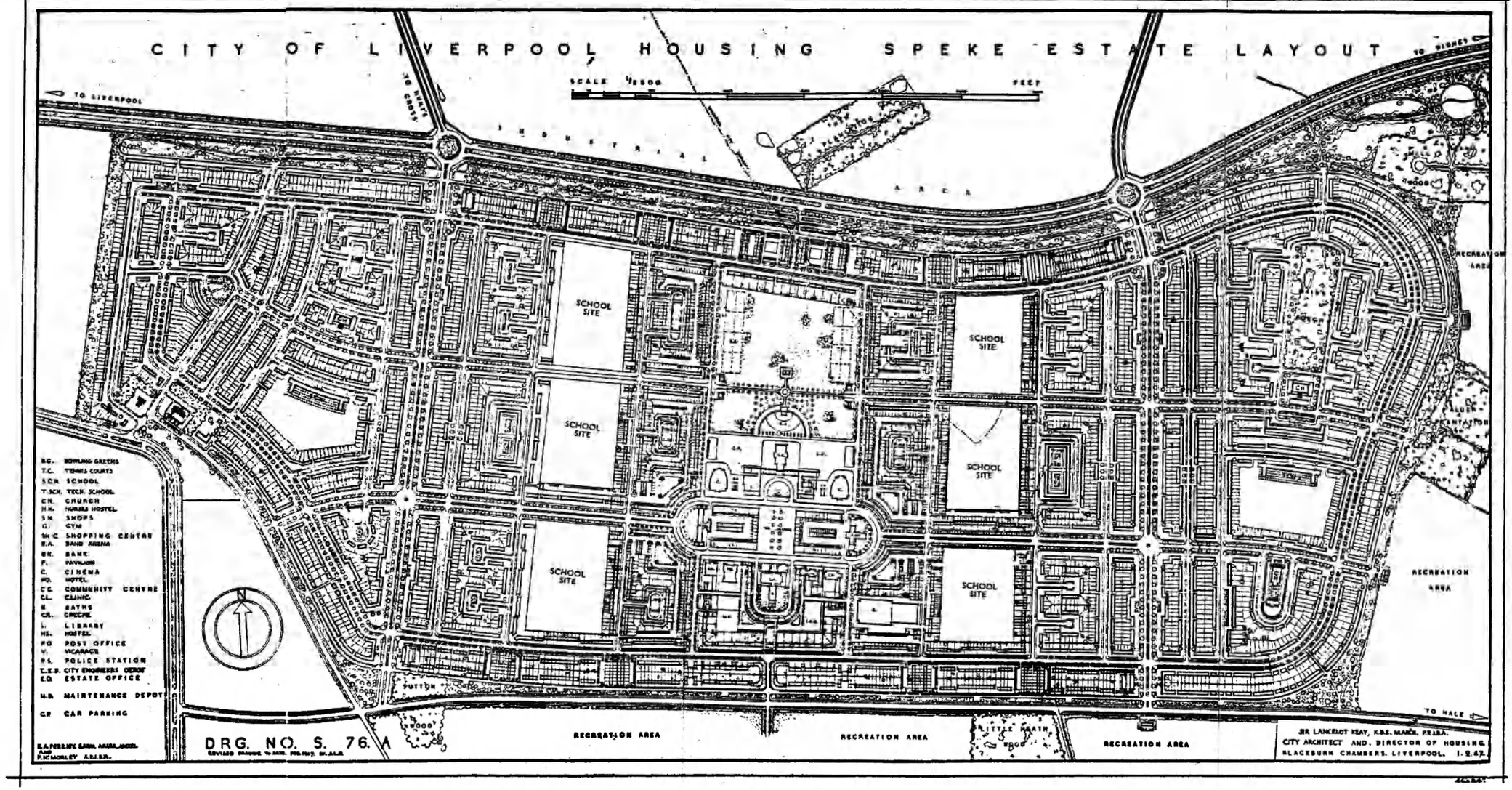


Figure 23 : Speke Housing Estate, Liverpool.

3- PENILEE HOUSING ESTATE - GLASGOW , (1939) :

Consists of some 1900 dwellings, in three-storey tenements and two-storey blocks of flats and cottage houses. The scheme is of particular interest because it is the most advanced of the larger war-time housing schemes, and because of the careful preparatory research which was undertaken before the scheme was initiated.[39]
(F-24).

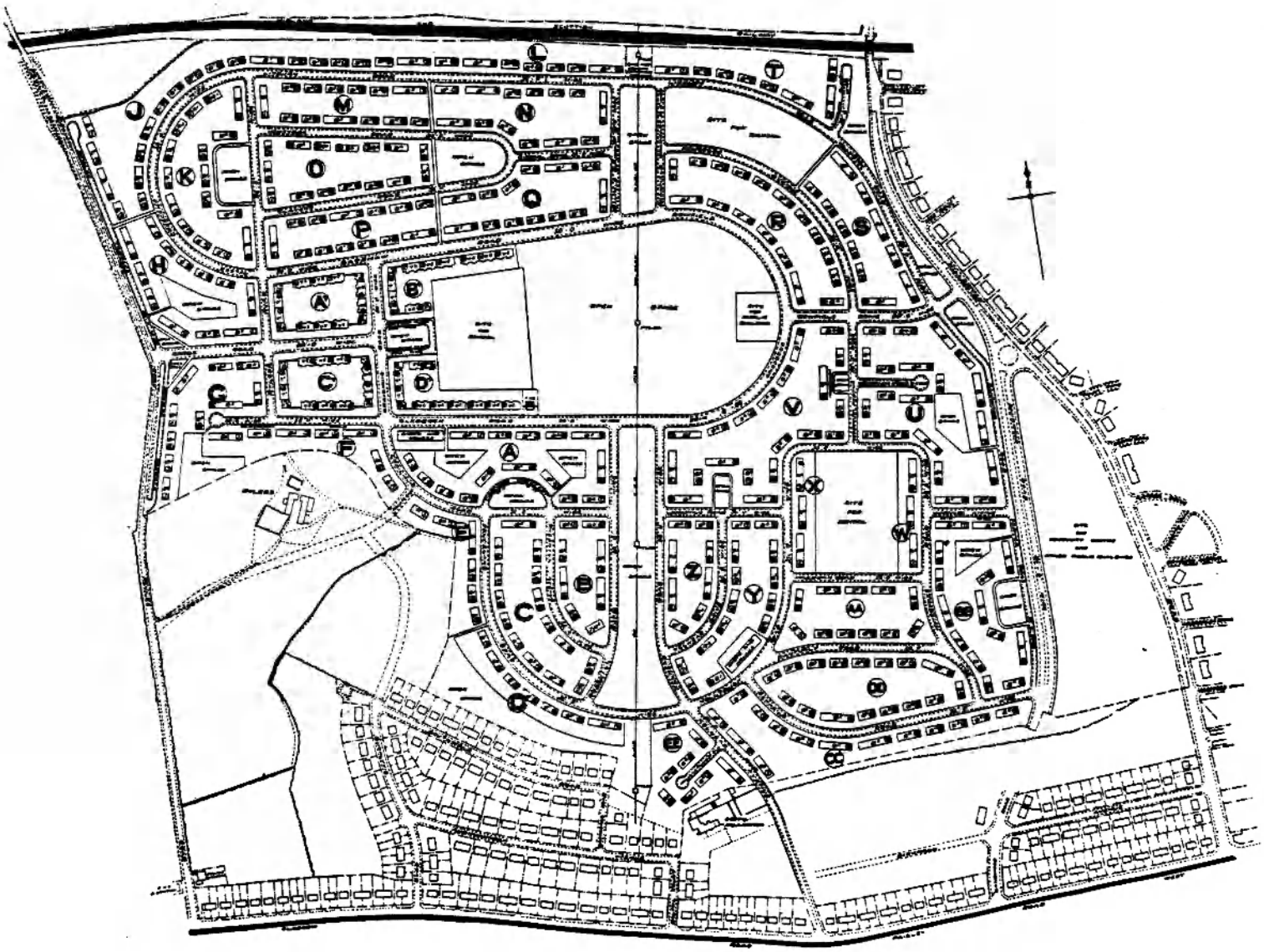


Figure 24 : Penilee Housing Estate, Glasgow.

4- CITY OF NOTTINGHAM - WOLLATION PARK ESTATE, (1926) :

Few housing estates throughout England have such a desirable environment as this particular estate, forming part of 744 acres of beautiful park land, containing a public museum, a municipal golf-course, and a lake available for public fishing by permit; while a greater portion of the park is free of access to the public.

The housing area is approximately 93 acres and is located on the western side of the city at a distance of 2.5 milles from the city centre. Middleton Boulevard, 120 ft. wide, with dual carriageways and generous verges planted with trees, runs through the estate between Derby Road and Wollaton Road, Both of which give direct access to the city centre.

A shopping centre consisting of six shops with living accommodation was provided in a central position, from which roads radiated to serve all parts of the estate.[40]

(F-25).

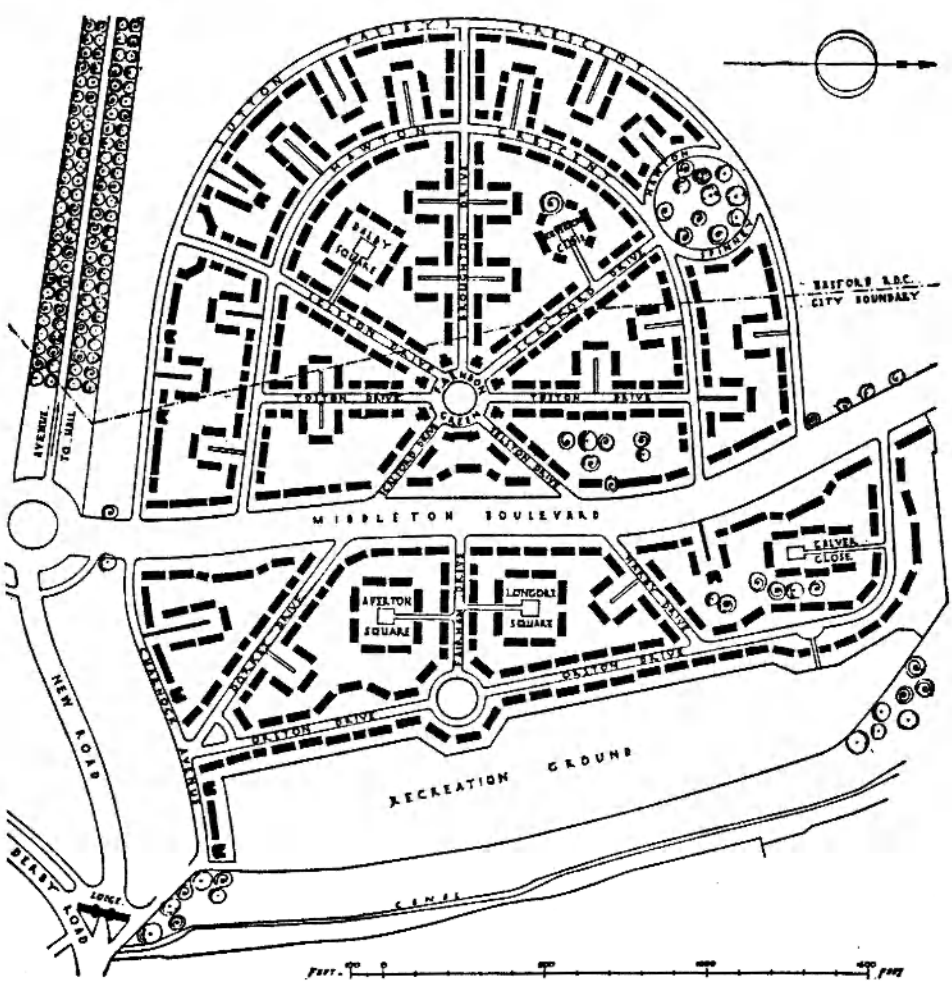


Figure 25 : Wollaton Park Estate, Nottingham.

5- THE MERVILLE ESTATE - BELFAST :

In this Estate the designer has produced an outstanding example that set a new standard both in layout and in the grouping and design of the units.

Flanking the main entrance on the south-east is a large group of flats and shops with access roads on each side, climbing to the higher ground, on which the main development is placed on each side of a central double roadway in the form of groups of flats and of small houses. The flats are of three stories high, of two - and three -bedroom type, and have been so arranged to take full advantage of the magnificent views over Belfast Lough. The number of flats is 256, cottage flats 28, and houses 146.[41]

(F-26).

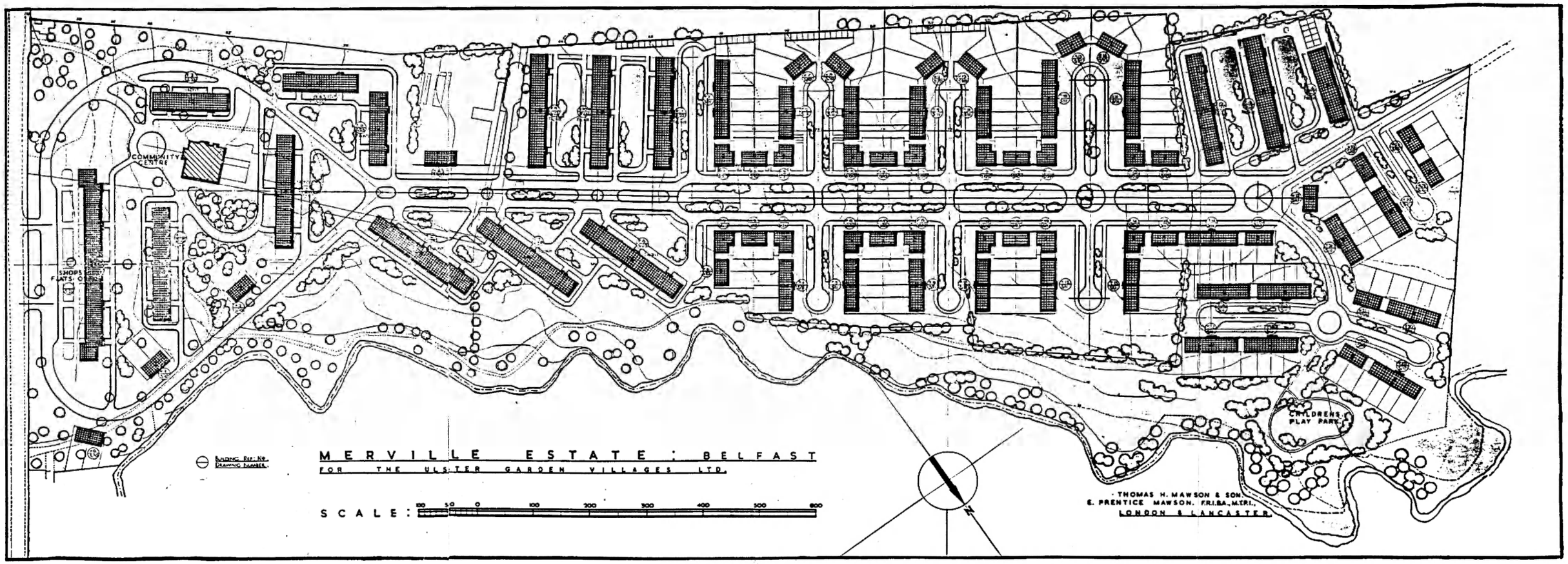


Figure 26 : Merville Estate, Belfast.

SECOND : U.S.A :

The Garden Cities Association of America was formed in 1906, the year Letchworth opened its doors in England. The Garden Cities Association immediately drew tentative plans for the construction of a series of garden communities to house 375,000 families in Long Island, Connecticut, New Jeresey, Pennsylvania, and Virginia; but its aspirations outreached its resources. After languishing for over a decade, and without a single house constructed under its direction, the first Garden City Association in America was dissolved in 1921.[42]

Despite the failure of organized support, garden city principles were partially expressed in several planned communities built during the early years of the twentieth century - most notably in Forest Hills, New York.
It would be the effects of World War I on housing conditions in the United States, not the construction of the pre-war "garden suburbs", which led to the founding, in 1923, of the nation's second Garden City Association - The Regional Planning Association of America (RPAA).[43]

In the summer of 1923, while the RPAA was being organized, Bing, Stein, and Wright - in their first unified effort - prepared a "preliminary study of a proposed Garden Community in New York Region". The report contained a blue print of a

garden suburb for 25,000 residents to be built on one square mile of land. That led to the construction of Sunnyside and Radburn, the first American garden cities[44] (I shall talk about these in details later).

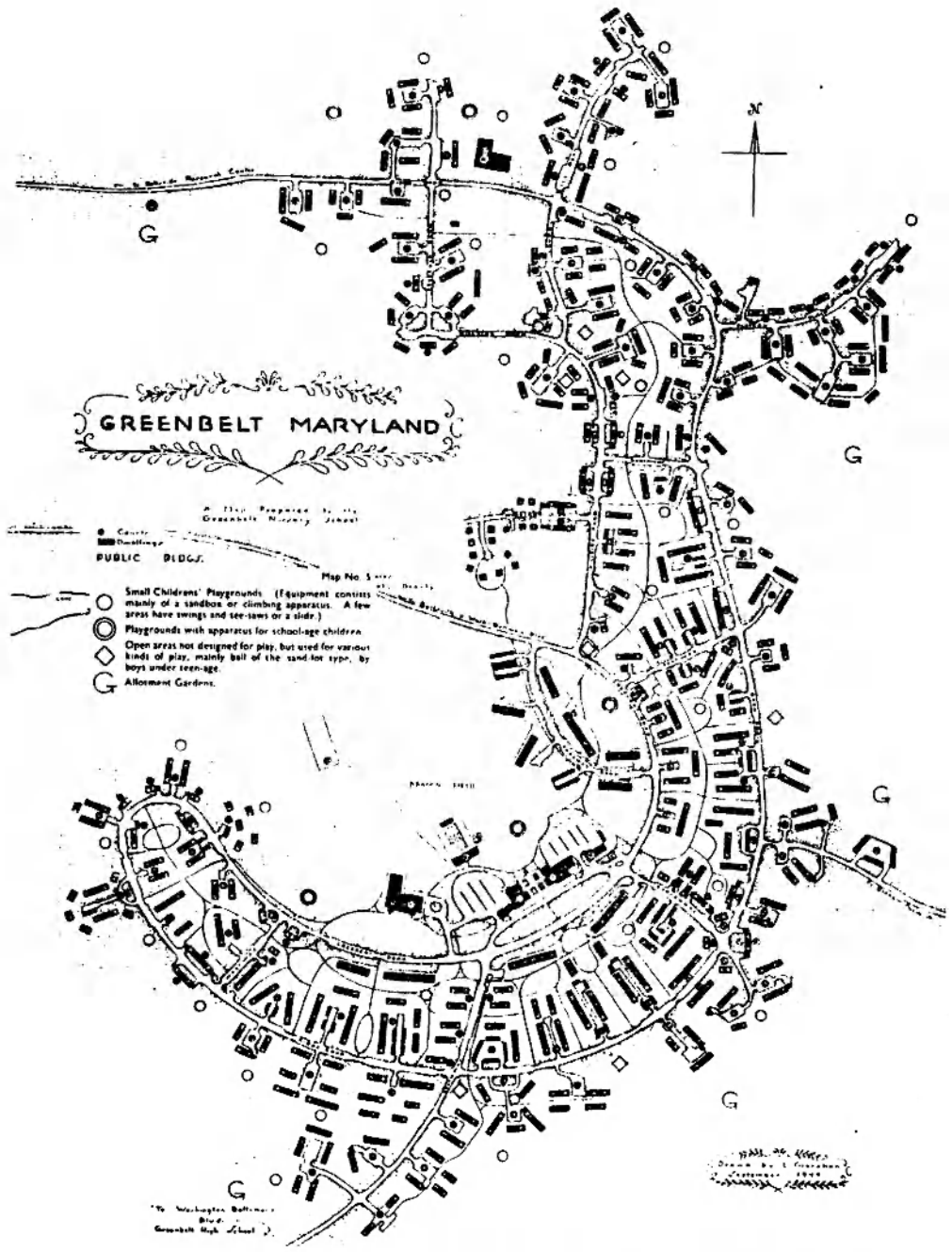
After that many cities and communities were designed and planned using the Garden City approach in America, for instance :

1- GREENBELT, MARYLAND (1935) :

Greenbelt was the first of three new towns built by the suburban resettlement division of the Federal Resettlement Administration under the direction of Rexford Guy Tugwell. They were the first to combine the three basic ideas of modern community planning : the Garden City, the Radburn concept, and the Neighborhood Unit.

Hale Walker's plan for Greenbelt follows a natural, crescent-shaped plateau surrounded by woods. Two major roads, Crescent and Ridge Road, form the perimeter of the crescent. The area between is cut about every 1,000 feet by connecting streets which divide the site into residential superblocks. The inner crescent cups the community center, the focal point to the town. This is the seat of government and the location of the community's cultural, religious, educational, recreational, entertainment, and marketing activities. Though some of the woodlands have been sold for development, Greenbelt remains largely intact today.

Total acres for Greenbelt : 3,370.[45] (F-27).



General Plan of Greenbelt prepared to show outdoor recreational facilities in housing areas. Note the location of play areas for groups of various ages.

Figure 27 : Greenbelt, Maryland.

2- GREENHILLS , OHIO, (1936) :

The plan for Greenhills, executed by Justin R. Hartzog and William A. Strong, follows the natural contours of the undulating, wooded site. The many ravines of the site are preserved in the open space system.

The plan generally follows the Radburn concept, though not as completely as that of Greenbelt. An interior path system is not included, thereby isolating the interior commons and negating the idea of a pedestrian communication system. In the centre of the plan, fronting on an inner park, are a shopping center, common, community school and swimming pool. A large playfield is situated at the southeast edge of the site.

Total acres for Greenhills ; 5,900.[46]

(F-28).

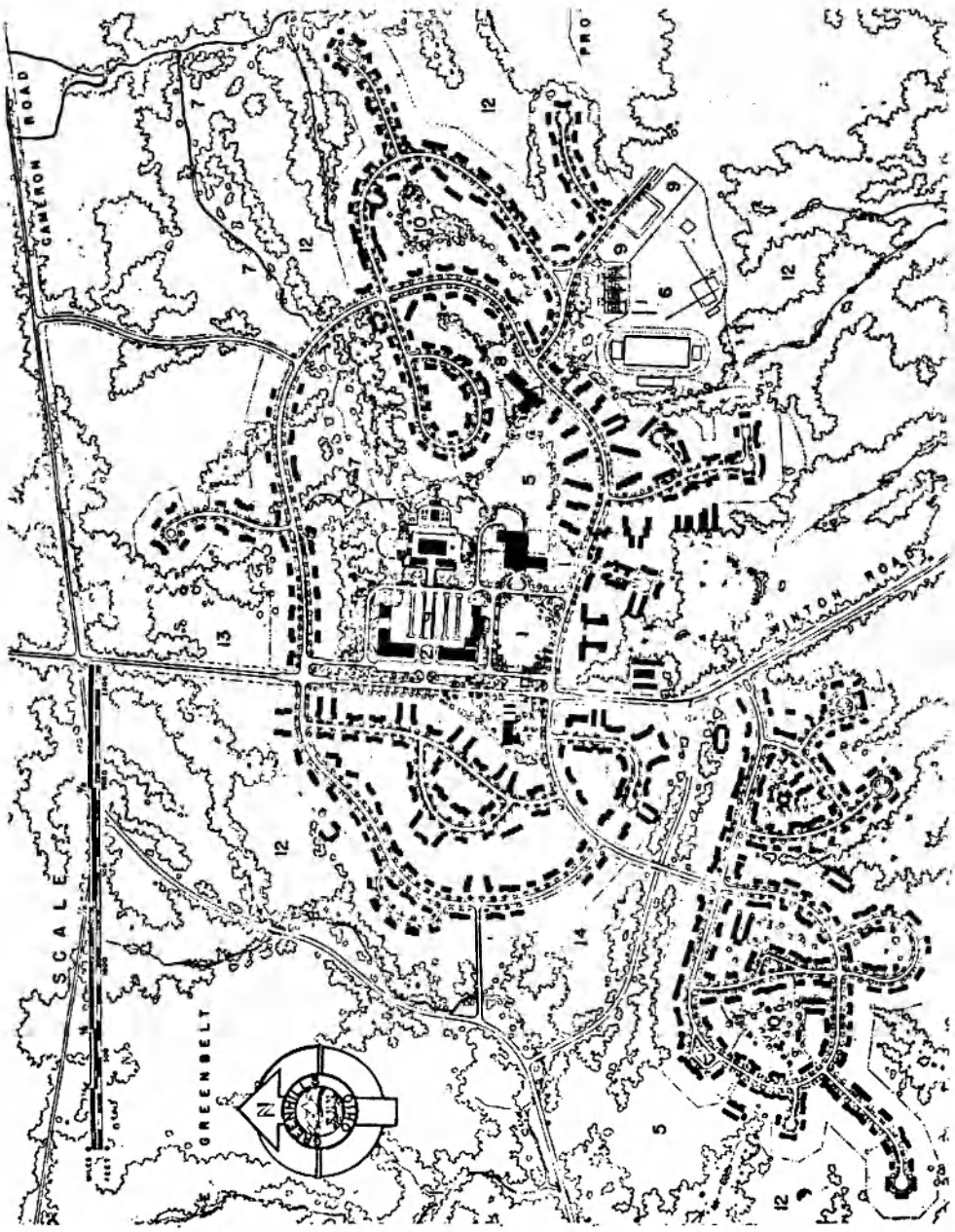


Fig. 126—Greenhills, Ohio. Town Plan showing 1/ Common; 2/ Shopping Center ; 3/ Community School; 4/ Swimming Pool; 5/ Inner Park; 6/ Playfield; 7/ Stream; 9/ Parking Areas; 10/ Small children's Play Areas

Figure 28 : Greenhills, Ohio.

3- BALDWIN HILLS VILLAGE, LOS ANGELES, CALIFORNIA, (1941) :

At Baldwin Hills Village, stated Clarence S. Stein in his book, Toward New Towns For America, "the Radburn idea was given its most complete and most characteristic expression". Like Radburn's, its plan incorporates superblocks, houses facing central greens, and the separation of pedestrians and autos. There are no streets within the Village, and the dead-ends of the Radburn prototype have been replaced by garage courts. The planners and designers, Reginald D. Johnson and Wilson, Merrill & Alexander, devoted a quarter of the site to green commons consisting of inner parks and garden courts. Walled patios for the private use of ground-floor residents - are situated on the garage court side of the houses.

Lewis Munford has said of Baldwin Hills Village :

"Here every part of the design, speaks the same robust venacular : simple, direct, intelligible. I know of no other recent community that lends itself so fully to strict scruting, simply because every aspect of its physical development has been thought through."

Total acres for Baldwin Hills Village : 80.[47]

(F-29).

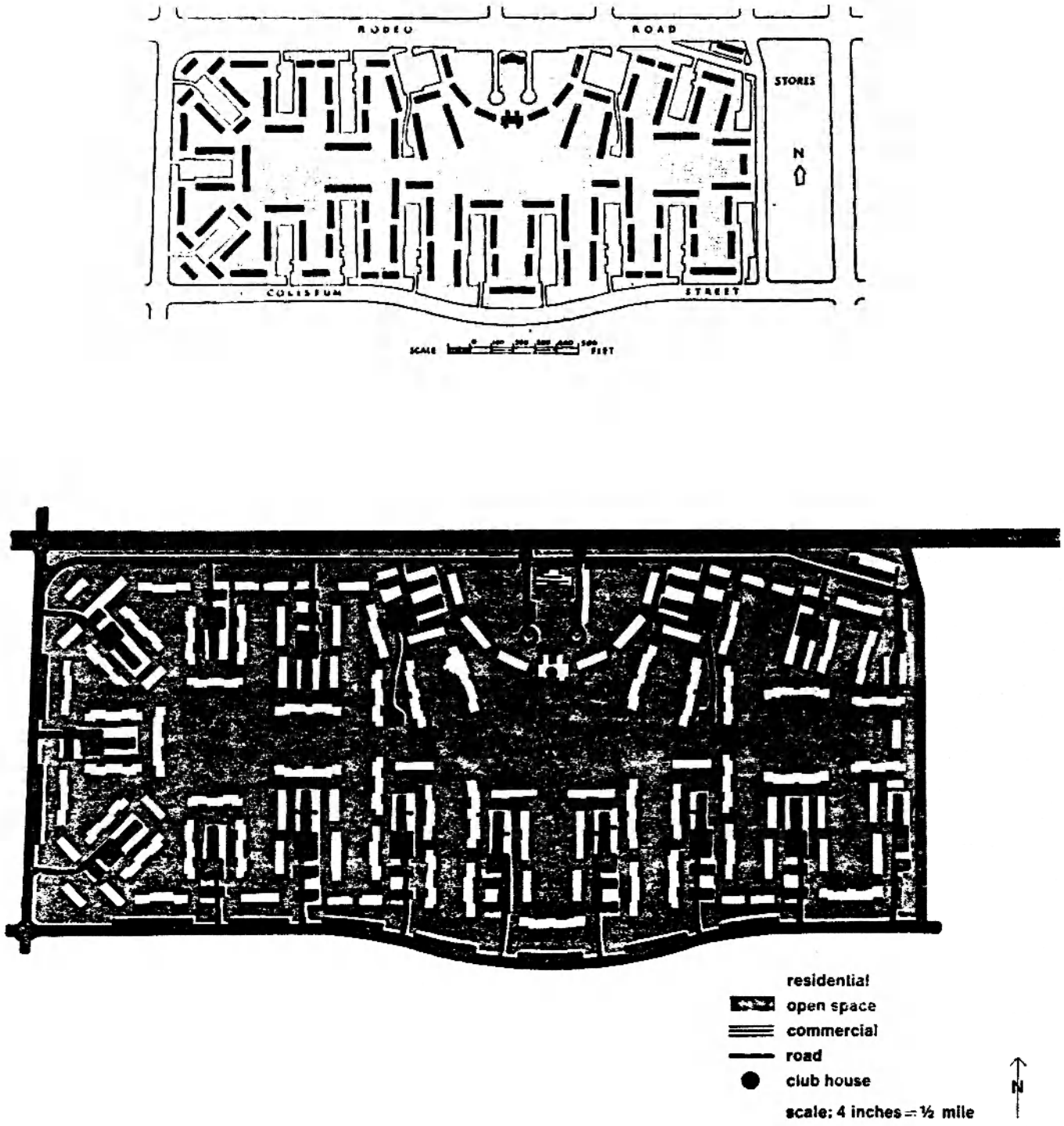


Figure 29 : Baldwin Hills Village, Los Angeles, California.

THIRD : SWITZERLAND :

1- STADTRANDSIEDLUNG AN DER WALLISCLLENSTRABE - ZURICH, (1944) :

Remarkable organization of a large triangular site situate between two arterial roads, comprising 191 houses with three, four and five rooms and 18 three-room flats in blocks. The houses are accessible via a net work of foot-paths and a single secondary road.

In the centre, a kindergarten building accommodating two classes, shop unit and estate assembly hall on the secondary road. The Saatlen council school with its large open spaces and playgrounds is the immediate vicinity. Well-organized types of houses of different kinds and sizes; two-storey houses and three-storey blocks of attractive simplicity. Largely standardized building elements.[48]

(F-30).

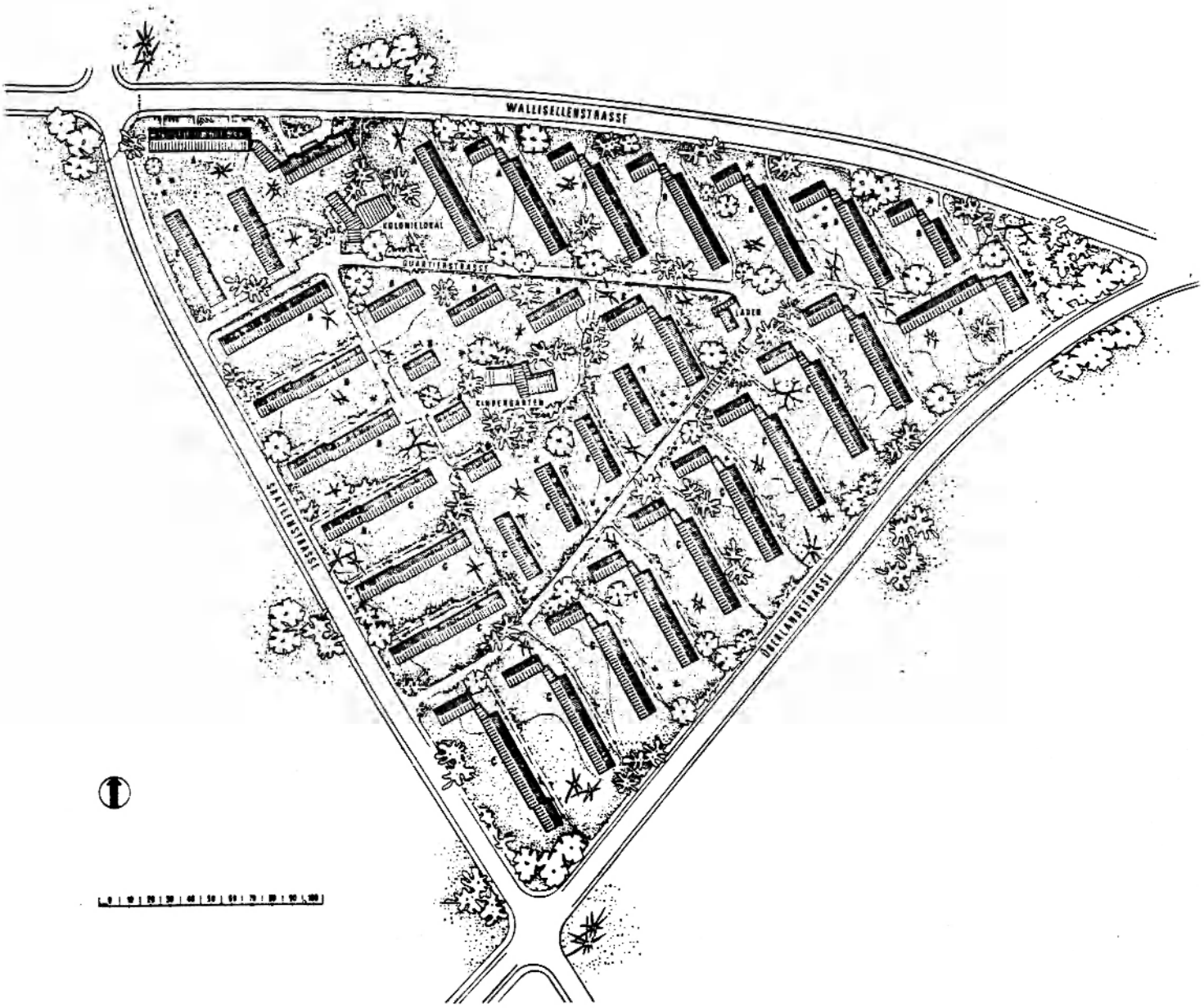


Figure 30 : Wallisellenstrabe, Zurich.

2- STADTRANDSIEDLUNG "IM TRIEMLI" - ZURICH (1946) :

Attractively patterned in respect of both plans and architecture. Alternating three-storey blocks of flats and two-storey houses. The garden plots between the short rows arranged vertically to the slope are dotted with fruit-trees and merge into the woods. This estate comprises 144 flats the majority of which contain three rooms.[49]
(F-31).

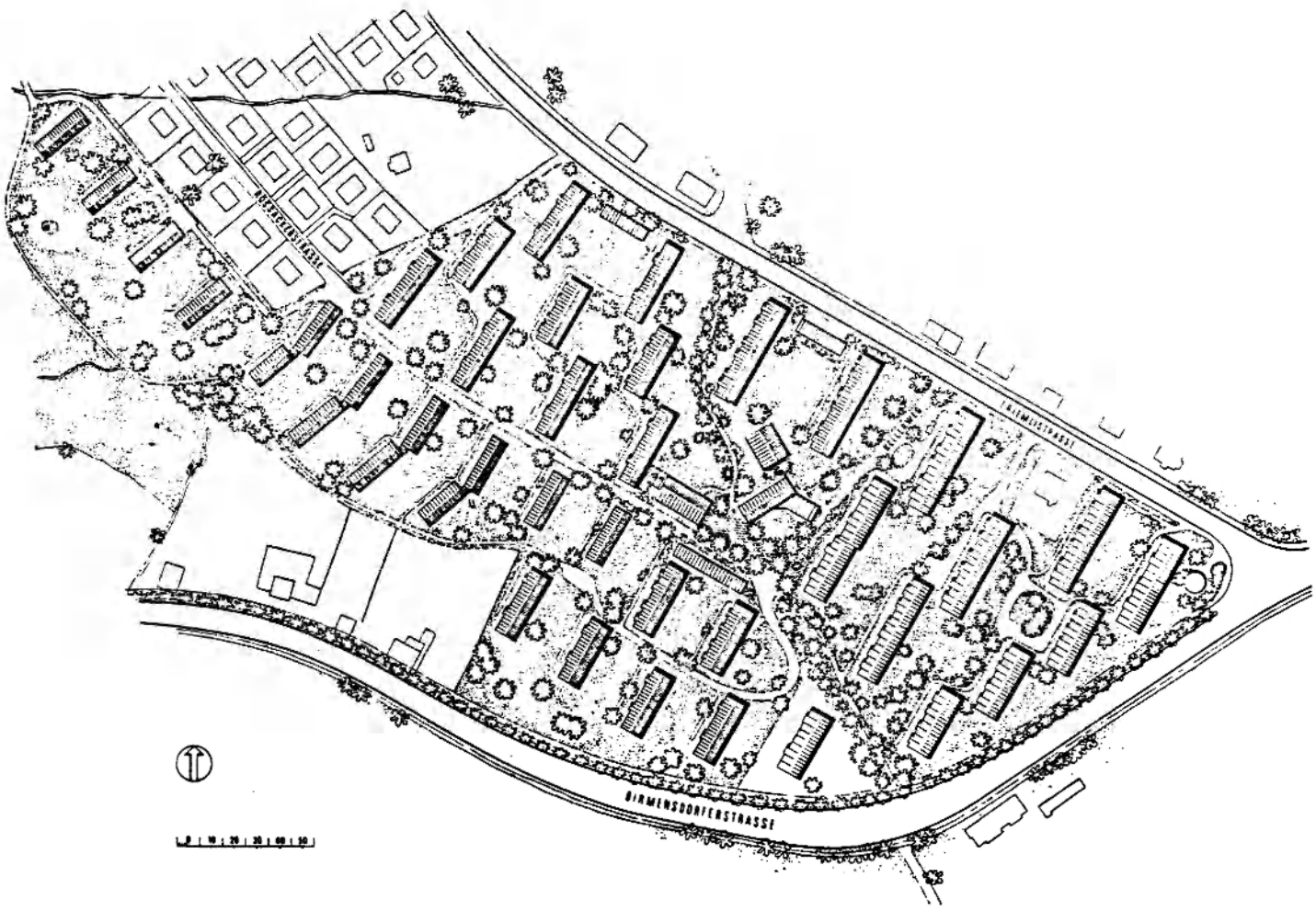


Figure 31 : Triemli, Zurich.

COMPARISON BETWEEN TWO GARDEN CITIES :

In the following I shall describe two of the Garden Cities, (Radburn and Columbia) in more details so one can compare and see the differences between them, and note the Radburn's effect on the new towns in America.

FIRST : RADBURN, NEW JERSEY, (1924)

"A Town for the Motor Age"

Radburn brought Ebenezer Howard's Garden City concepts to the U.S.A. and opened a new era in American planning. For Radburn, Architect/Planner Clarence Stein and Planner Henry Wright adapted Howard's ideas to a plan "in which people could live peacefully with the automobile - or rather in spite of it".[50]

The site for Radburn was chosen 16 miles from New York City in the Borough of Fairlawn, New Jersey. Given their interest in relocating urban population into new regional cities of different sizes, Regional Planning Association of America members (RPAA) rejected both suburbanism and metropolitanism. They did embrace a concept of urbanism with cities in relationship to one another much like Howard's "clustered cities" concept, hence the suburban location of Radburn. On this site the City Housing Corporation (CHC) planned to build a new town with an ultimate popualtion of 25,000 , complete

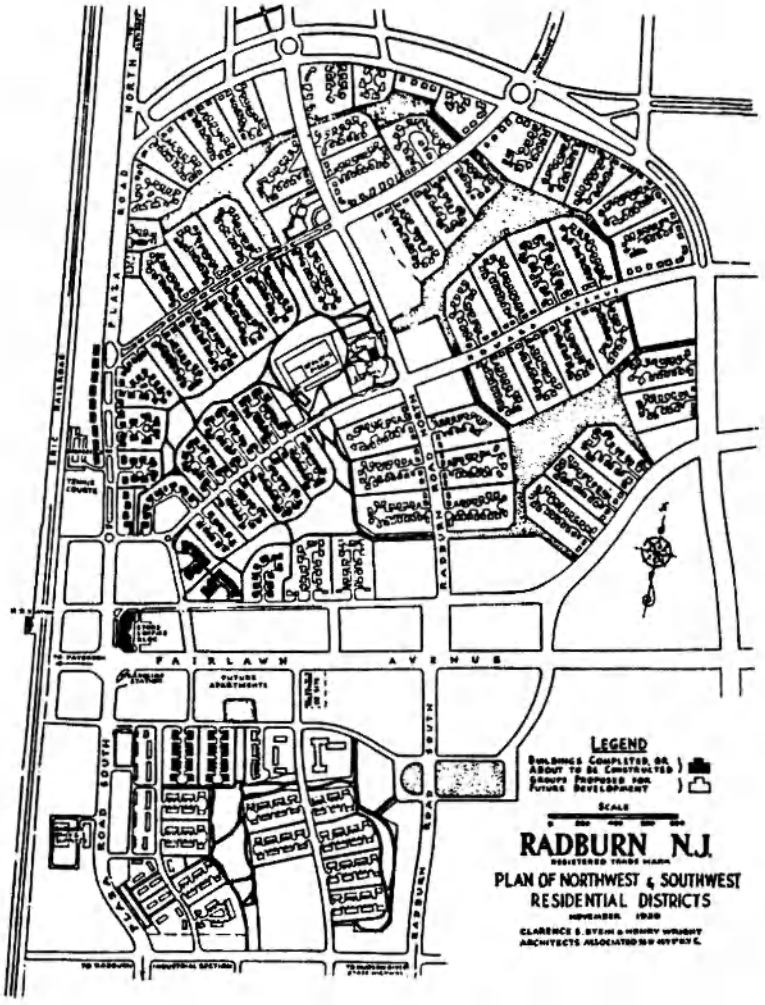
with commercial and industrial offerings.[51]

Wright's studies had demonstrated that parks and other amenities could be provided at no additional cost if the gridiron was abolished and a more efficient layout were used. Radburn was planned as a series of three neighborhoods of 7,500 - 10,000 people, each with its own elementary school and shopping center. A larger commercial center was planned as a regional market, and along with industry, this was to be located on the periphery.[52]

Although originally begun as a garden city, few of the critical elements of Howard's plan were included. The developers liked the idea of essential protection the greenbelt provided against outside encroachment, but there was not enough land to have both the greenbelt and the three proposed neighborhoods, so the greenbelt was excluded from the start.

As a part of a larger vision of regional population dispersion, the developers also planned for industry. With the Depression, however, none came; and with no greenbelt and no industry, Radburn was forced as Stein admitted, " to accept the role of a suburb ".[53]

A major study conducted between October 1931 and April 1933 by Robert Hudson, a member of the corporation's staff, remarked that : "from the very beginning most Radburn



The Neighborhood Unit (1929): Radburn's answer to the faceless metropolis would contain 10,000 people and include an elementary school and a shopping center to achieve a degree of self-sufficiency. There is a striking similarity between Radburn's neighborhood unit and Howard's garden city ward.

Figure 32 : Radburn, New Jersey.

residents were commuters. Hudson noted that 70 percent of the men were employed in New York and 17 percent in New Jersey. They had moved to Radburn because "they had business connections in the metropolitan area and needed a desirable, economical place to live, where they and their families [could] enjoy the amenities of life that are not found in all suburban communities."[54]

Radburn's developers never intended their town to be a garden city where all land was held in common ownership. Only the inner block parks were held in trust for the community.
The Depression contributed to Radburn's failure to materialize as garden city, but it was not the sole cause. Stein wrote, "eventually the pressing need of demonstrating The Radburn Idea overshadowed the Garden City idea. In large part it superceded it."[55]

"The Radburn Idea" had five interrelated elements. Technically it meant :

1- THE SUPERBLOCK :

In place of the characteristic narrow, rectangular block.

2- SPECIALIZED ROADS PLANNED AND BUILT FOR ONE USE INSTEAD OF FOR ALL USES :

Service lanes for direct access to buildings; secondary collector roads around superblocks; main through roads; linking the traffic of various sections, neighborhoods and

districts; express highways or parkways, for connection with outside communities. (Thus differentiating between movement, collection, service, parking, and visiting.

3- COMPLETE SEPARATION OF PEDESTRIAN AND AUTOMOBILE :

Or as complete separtion as possible. Walks and paths routed at different places from roads and at different levels when they cross. For this puropse overpasses and underpasses were used.

4- HOUSES TURNED AROUND :

Living and sleeping rooms facing toward gardens and parks; service rooms toward access roads.

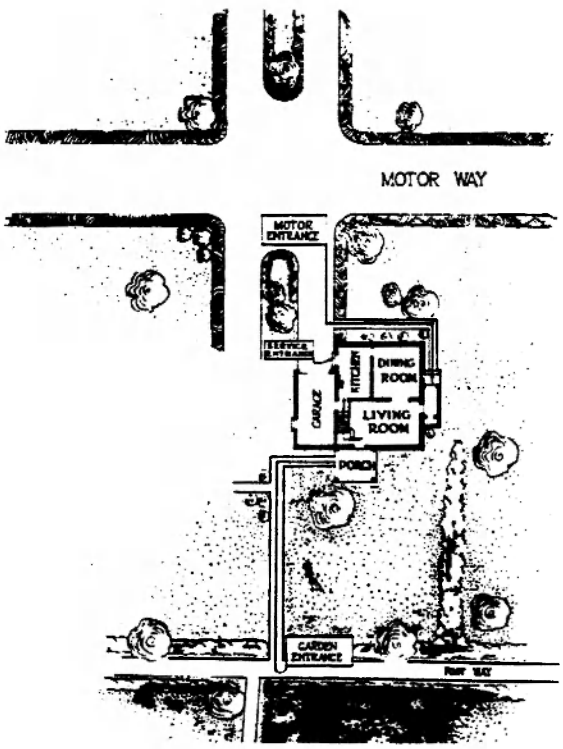
5- PARK AS BACKBONE OF THE NEIGHBOURHOOD :

Large open areas in the center of superblocks, joined together as a continuous park.[56]

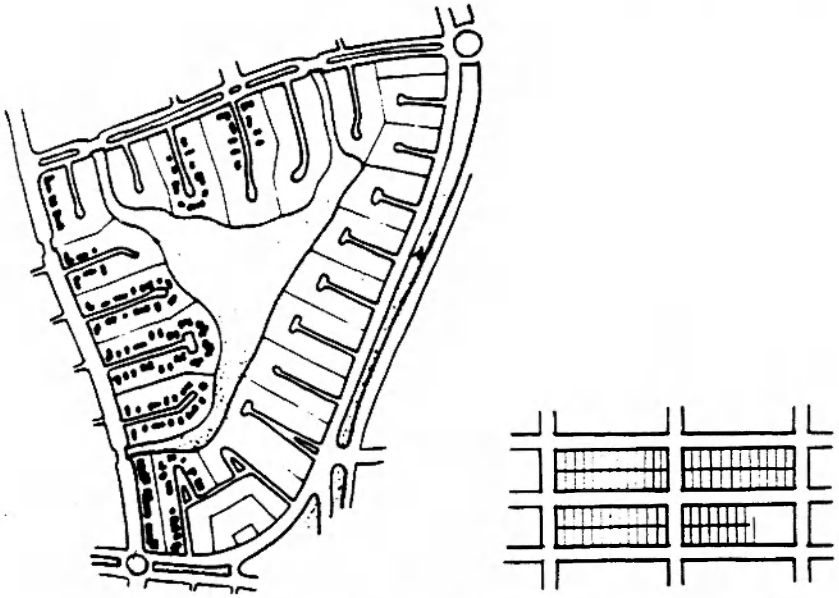
Spatially it meant the organization of the city into a series of integrated superblocks, each a mile or greater in circumference and 30 to 50 acres in size, and each centered around a spacious green park. Around this open space, houses were grouped informally through cul-de-sacs, an arrangement popularly thought to encourage social interaction. Whether single-family home or apartment building, all residential structures had two sides, each with different functions. The living and bedrooms fronted the park, while the kitchen and

Figure 33:

Turned around houses.



Turned-around Houses: the interior layout of each house is opposite from the conventional design—the living room faces the interior parkland and the kitchen fronts the cul-de-sac.



The Radburn Superblock (1929): a core of open space surrounded by a network of cul-de-sacs or dead end streets. Compare to the urban grid: the conventional physical landscape in America, dominated by the street and private lot.

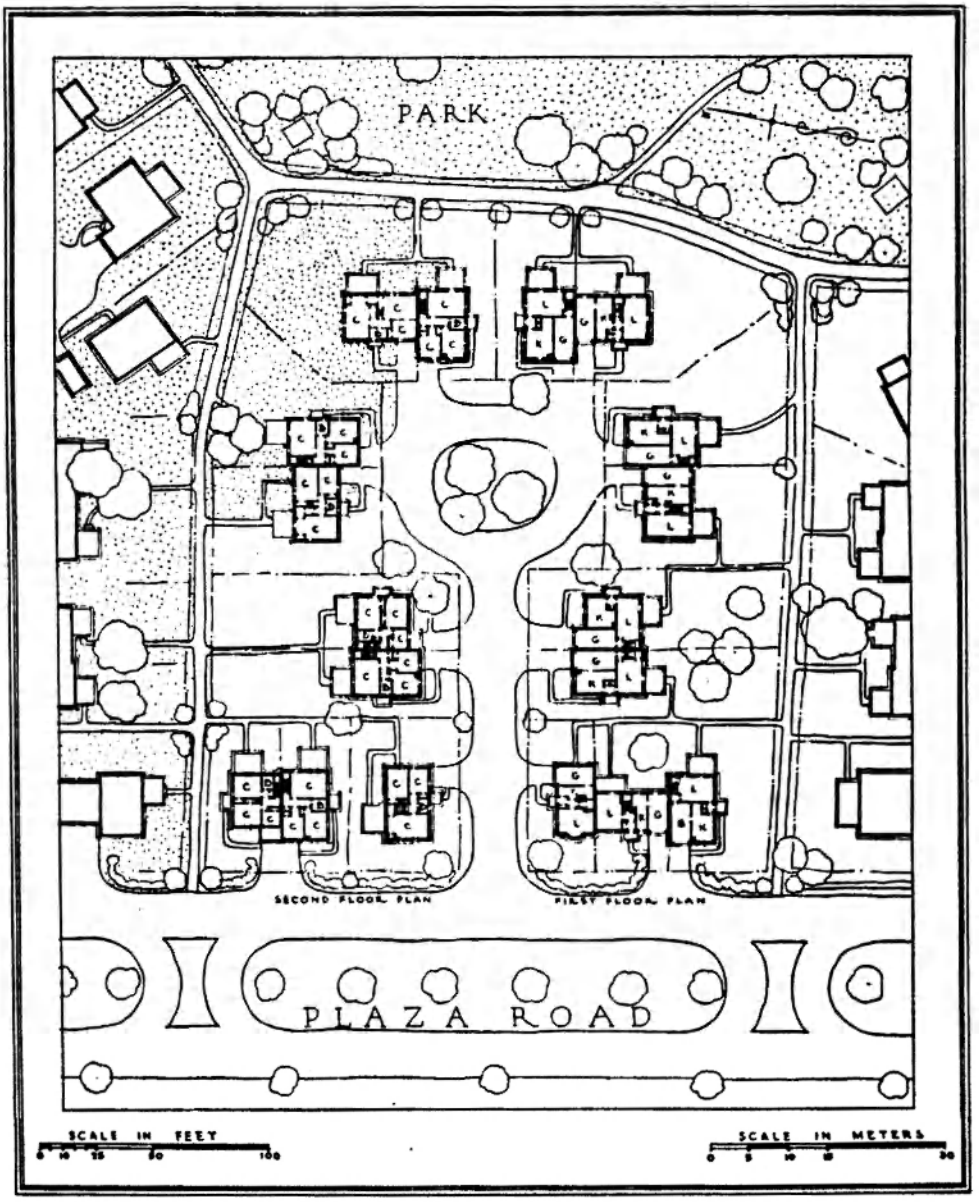
Figure 34 : The Radburn superblock.

utility areas opened on the rear courtyard. Through streets surrounded the superblock but did not penetrate its interior. Only access lanes opened into the cul-de-sacs. A system of overpasses and underpasses was used for safety. Pedstrian traffic was directed along the parkway where the only sidewalks were located. Separating "incompatible" uses was considered safer, more rational, more economical, and more aesthetically harmonious. Unlike conventional cities, where "porches faced bedlams of modern thoroughfares, with blocked traffic, honking horns, noxious gases....parked cars, hard grey roads and garages," Radburn had resolved the problem of the automobile so vital to the city's very existence. This feature alone earned Stein and fellow planners enthusiastic praise.[57] Geddes Smith (writer) described Radburn compactly as:

"a town where roads and parks fit together like the fingers of your right and left hands. A town in which children need never dodge motor trucks on their way to school."[58]

Among RPAA members there was marked concern for cities' effect on family life and upon procreation. Stein identified the declining birthrate as one of the "evils" of the modern city, and Mumford contended that the garden city would have a salutary effect on fertility.

Seeking to encourage marriage and family life, Radburn's planners were conscious of the effect the physical design had



Plan of Burnham Place. This, with its grouped houses and turning circle, is the most spacious cul-de-sac. The turning circle allows vehicles to turn and get away more easily, and it provides an island for planting

Figure 35 : Plan of Burnham place.

on the primary unit. Stein observed :

> Doing things together is an everyday indication of happy family life. This grows out of the physical plan and the plan for living. Mother and children can spend the afternoon together at a swimming pool by strolling across their park; father and daughter can play tennis on Sunday morning - within easy call of the dinner bell.[59]

Hudson pointed out that most of Radburn's community activities were deliberately arranged "so that men and women [could] participate in them together, making for the creation of family interest".

Concern for the nurturance of the individual personality as outlined by Coolev led Radburn's planners to special concern for children. Stein was absolutely correct when he said that "Radburn was above all else planned for children," and it is indeed striking how young children dominate the plan and define the institutions of the city. Other cities have been given form by economics, technology, or socio-cultural groupings, but the organization of Radburn and nearly all subsequent American new towns has been predicated upon children from toddlerhood to puberty. Subatantial recreational facilities and programs were geared to this age group. Moreover, the interior parks of the superblocks, the very heart of the city, were intended for children. From the central park or the front lawn, the world of Radburn's

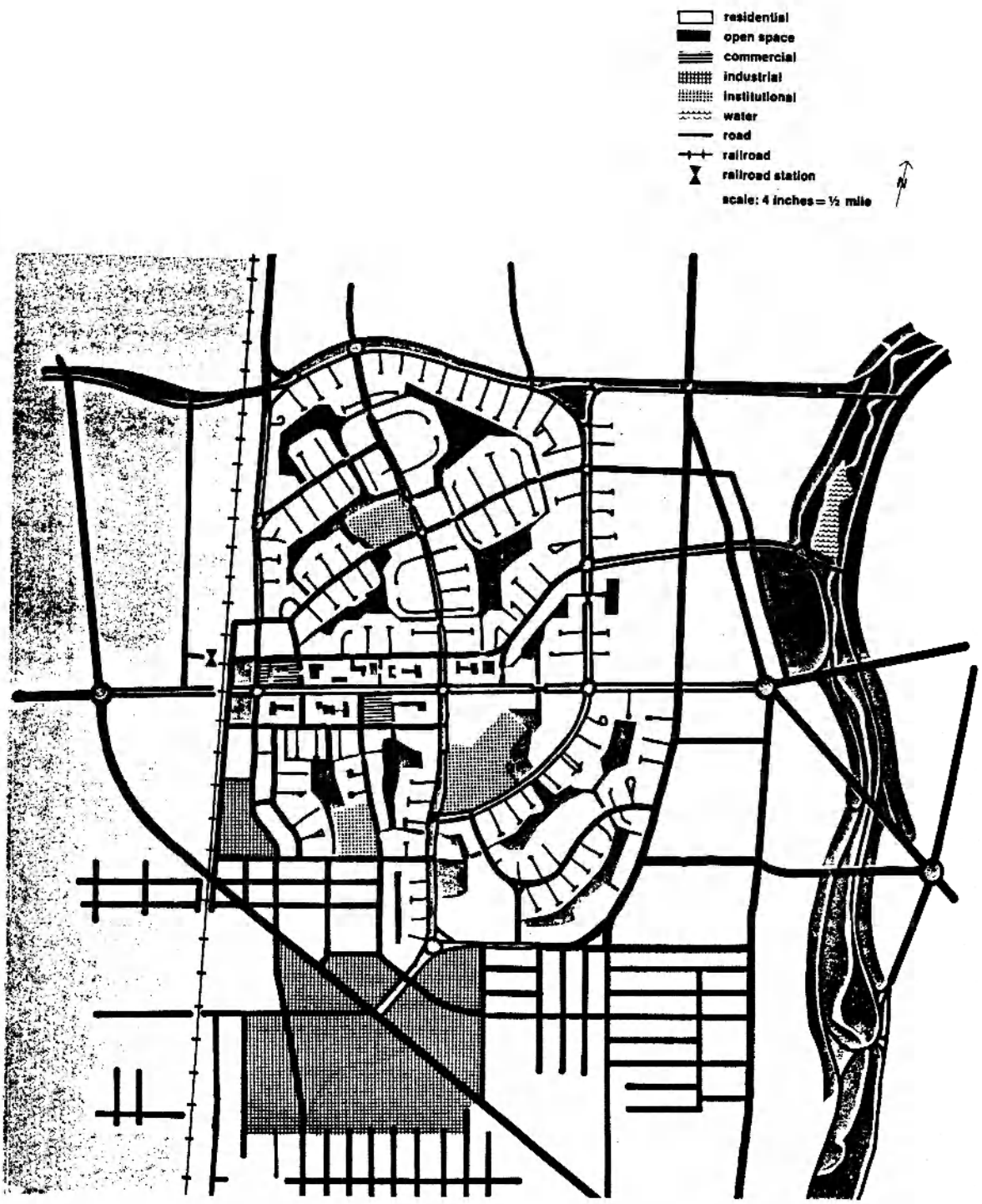


Figure 36 : Radburn Master Plan.

children was circumscribed by house and green. The houses encircling the park provided a cocoon insulating children from the disorder, stimulation and melange of humanity so characteristic of urban life. Certainly RPAA members were influenced in this protective approach by child welfare and settlement house workers who labored to remove children from the streets, which were considered physically and morally harmful. In Radburn the streets were removed from the children. Also revealing the central importance of children to Radburn's conceptual scheme was the organization of the community around the elementary school.[60]

In so many ways, the living green open space was more than the backbone of the neighborhood; it was the very foundation of the community. It provided spiritual renewal; it supported wholesome recreation; it offered a common meeting ground; it symbolized the essence of simple natural democratic cooperation. The central park and its gardens became Radburn's substitute for the greenbelt it did not have. And as Stein said," it is so spaciously open that one thinks of a lordly estate, but it is filled with democratic life." One did not have to have great wealth or enjoy aristocratic descent to benefit from the rich verdure and repose nature offered in Radburn.[61]

RADBURN : SUCCESS OR FAILURE ?

According to Clarence S. Stein, Radburn was never completed. Only a small portion of the new town was built before the Depression. On the surface Radburn may appear a failure. But essentially it was a great success. It was a splendid adventure : a voyage of discovery in search of a new and practical form of urban environment to meet the actual requirements of today. This exploration opened up and charted the way - no matter how limited the settlement that remains. Radburn did not become a Garden City. It lacked a complete green belt. It did not succeed in securing industry. Its underlying land, excepting the inner block parks, was not retained in single ownership for or by the community. All this is true - but the fact remains that in spite of the avowed intention of the Corporation to create a Garden City, eventually the pressing need of demonstrating the Radburn Idea overshadowed the Garden City Idea. In large part it superseded it. For instance, our thoughts, as planners were concentrated on the value of the living green close to homes in the midst of the super-blocks : it seemed more essential than green belts. Stein concludes that :
The Radburn Plan serves present day requirement of good living in a more practical and pleasant way than does the conventional American city pattern. Stein said :

It is safer.

It is more orderly and convenient.

It is more spacious and peaceful.

It brings people closer to nature.

It costs less than other types of development with an equivalent amount of open spaces. Most people who live in Radburn prefer it. They enjoy the expansive nearby verdure; they appreciate the freedom from worry about their childrens' safety. Radburn works in practice as it was intended to function when it was only the Radburn Idea.[62]

SECOND : COLUMBIA, MARYLAND

"A Garden for People to Grow In"

Columbia's general plan was developed between October 1963 and November 1964 by James Rouse.

The neighborhood is the nucleus of the Columbia plan. Each neighborhood holds about 3,000 people and each is a mile wide. Its size, as with Radburn, was determined by the distance a child might walk to school. Housing is clustered around a neighborhood center which includes a kindergarten through fifth grade school, a multipurpose meeting community room, a convenience store and snack bar, a park, playground, and swimming pool.

From two to four neighborhoods comprise a village which contains 10,000 people. Neighborhoods cluster around a village center, the heart of which is the secondary middle school. Village centers also contain more frequently used services (such as a bank, supermarket, pharmacy) and more recreational facilities (such as athletic clubs, ice rinks, tennis courts) as well as interfaith religious centers.[63]

The nine villages are clustered around an urban core. Each village is separated from the others by open space, streams and valleys, but tied together by the city's minibus transportation system. The bus travels on its own right-of-way and moves from village to village, to industrial parks, and to downtown.[64]

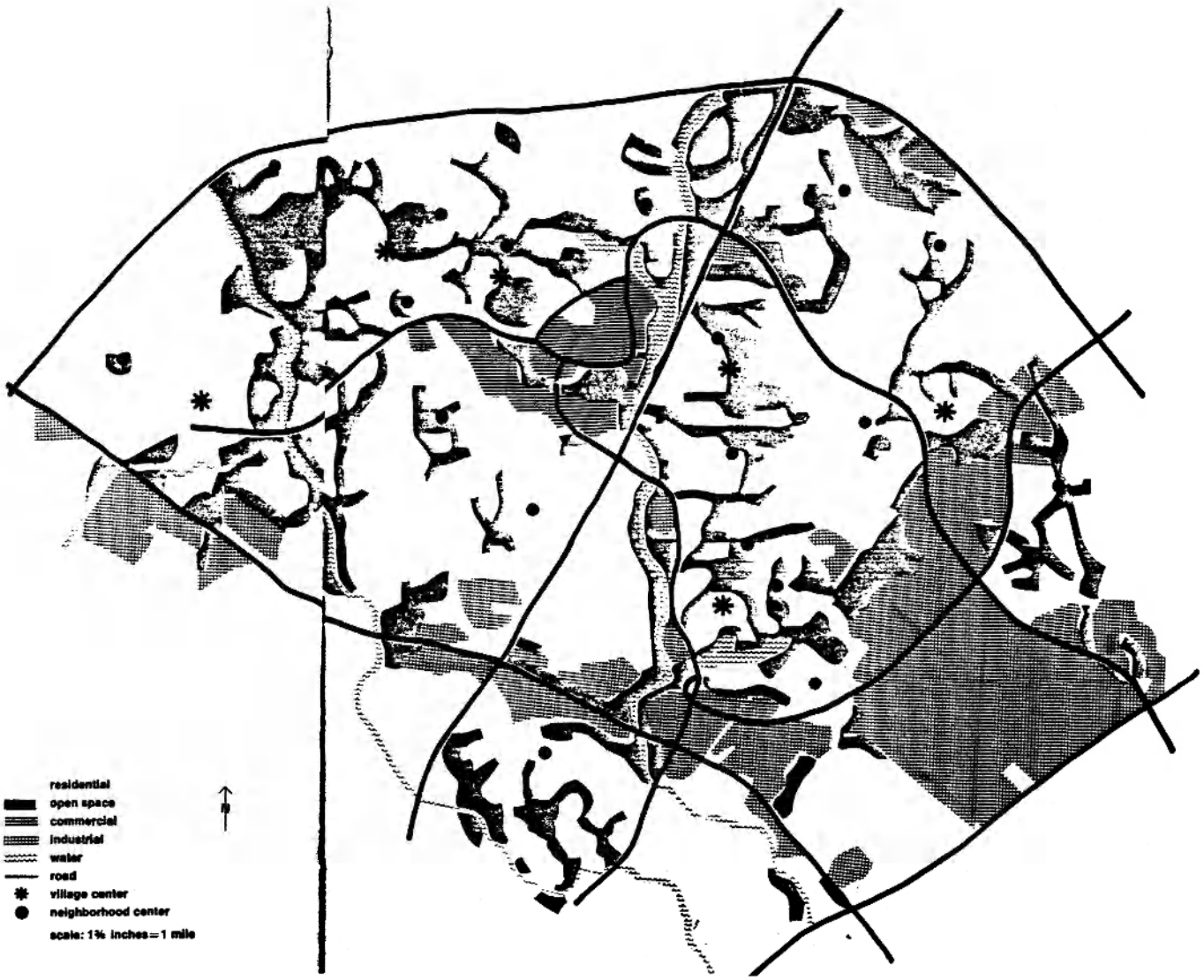


Figure 37 : Columbia, Maryland.

Land use is organized into eight categories: low-, medium-, and high density residential; commercial areas; employment centers; permanent open space; bus land; roads/utilities/miscellaneous.

Pedestrian and vehicular traffic are separated through under and over - passes. A pathway system enables people to cycle and walk "free of attack by the automobile," and only access roads enter the neighborhoods. Overall, the city plan reflects "The Radburn Idea."[65]

Originally, Columbia's development was phased over a fifteen-year period, with a population ceiling of 110,000. This was revised over the years and today the city is targeted for completion by the end of the 90s. Columbia's optimum population is now set at 100,000. As of 1985, the city was home to 65,000 people living in nine villages in 21,000 homes ranging from rental units to apartment condominiums to townhouses and single-family detached homes. Over 1,600 businesses and industries were located in Columbia, providing more than 39,000 jobs. The city has an extensive recreational program with numerous facilities for play. Columbia houses a hospital and health maintenance organization, branches of several colleges and unversities, a shopping mall, an interfaith cooperative ministry, and a symphony. This is an impressive testimonial to the vision of James Rouse.[66]

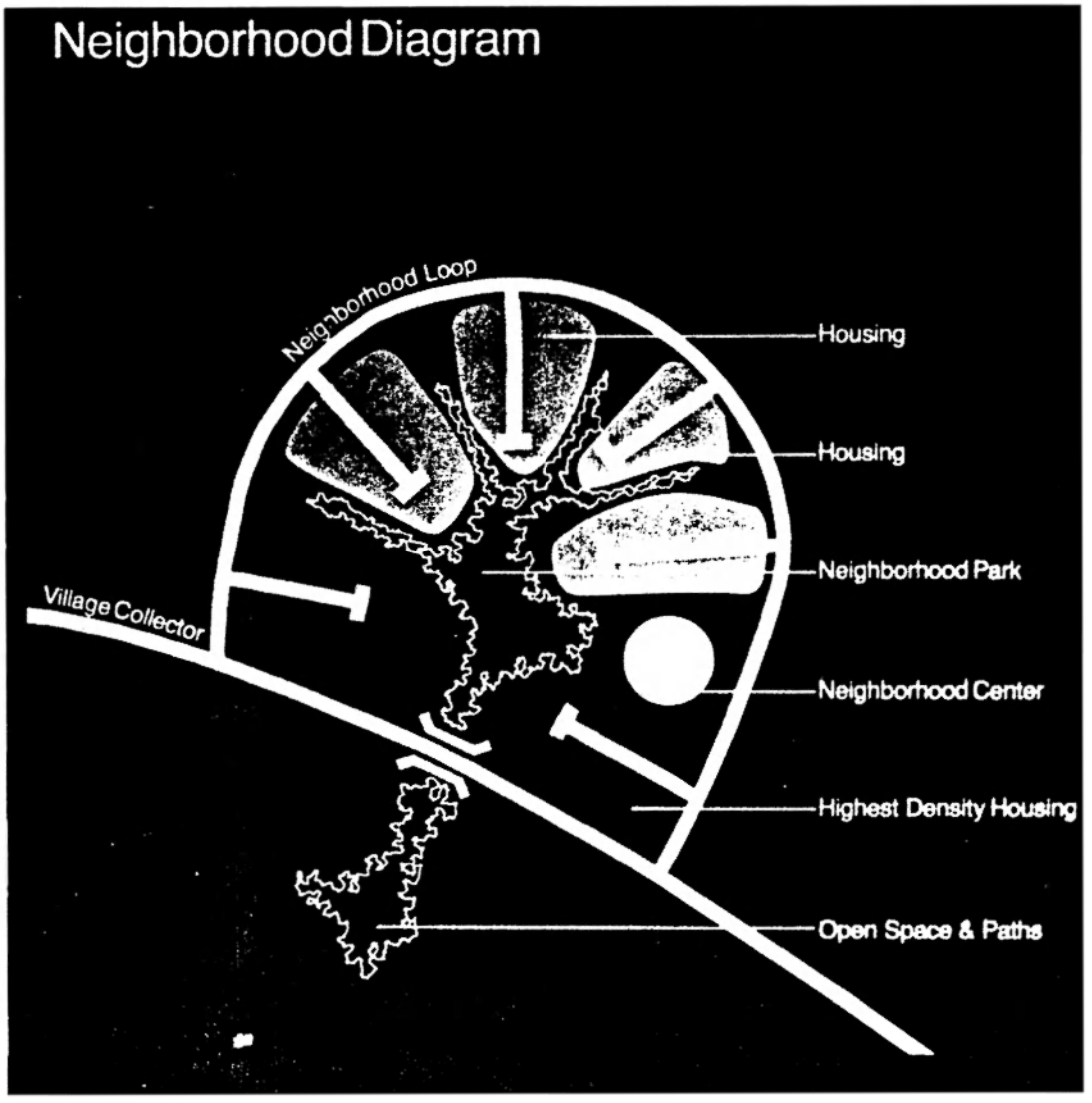


Figure 38 : The Neighborhood Concept at Columbia, Maryland.

Enormously influential among planning professionals from its beginnings, Columbia has often been cited as America's most successful new city and a bold model for future urban development.[67]

Like Clarence Stein before him, Rouse proposed the new town as an alternative to the old city. The traditional negative view of the city expressed so clearly by Stein and other menbers of the RPAA was given academic respectability in the 1960s by a substantial literature of urban criticism.[68]

As with Radburn, Columbia offered not a rejection of suburbanism but an improvement upon it. In Columbia the eye encompasses nature wherever it rests. The city appears to be planted among fields and trees. Housing is clustered to create internal parks in neighborhoods. There are three artificial lakes with over 500 acres of water surface, three golf courses, and a hunting preserve. Stream valleys and small ponds appear here and there, Picnic groves and camping sites are scattered throughout, and many miles of bridle paths interlace the city. Over 2.300 acres are designated permanent open space. More land is devoted to open space than to industrial and commercial uses combined. Parks dominate at each level of the city, and downtown Columbia is surrounded by a 40-acre oak forest and a 32-acre lake. The intent was to evoke Copenhagen's Tivoli Gardens.[69]

One of the more celebrated of Rouse's goals was "to provide the best possible environment for the growth of people,"and this goal especially placed Columbia within the social planning traditon of Radburn.[70]

IS COLUMBIA A GARDEN CITY AS HOWARD DEFINED IT ?

Certainly there is no common ownership of land, the axial principle on which Garden City was premised, but the single ownrship of the substantial open space acreage, coupled with the careful master planning, serves to minimize speculative behavior and therfore helps to control land values, which was Howard's intent. Like Howard, Rouse did not believe that individual greed accounted for this elevation in land values, but rather the city-building process itself where thousands of small separate decisions made with little or no relation one to another could have enormous impact on the whole. Unlike Howard, however, Rouse believed that sound planning within market realities could produce the good city.[71]

Columbia most clearly approaches Howard's ideals in the extent to which the city is fully a city, supplying the commercial, recreational, educational, social, and employment needs of a diverse population. In this respect Columbia's social and economic development have been remarkable and singular in the history of American new town planning. As of

1985 there were 1,600 firm doing business in the city, supplying 39,000 jobs.[72]

As F.J.Osborn states in the preface of the book, "Garden Cities of Tomoorow", :
Howard's Garden City idea is coming into its own to-day. But not necessarily under his banner, and not without modifications. No one was better aware than he that inventions change as they develop.[73]

In conclusion I would like to mention what Lewis Mumford stated in the book, "Garden Cities of To-Morrow," he said :
"At the beginning of the twentieth century two great new inventions took form before our eyes : the aeroplane and the Garden City, both harbingers of a new age : the first gave man wings and the second promised him a better dwelling - place when he came down to earth.[74]

He also said :
"The Garden City, as conceived by Howard, is not a loose indefinite sprawl of individual houses with immense open spaces over the whole landscape : it is rather a compact, rigorously confined urban grouping."[75]

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CHAPTER (4)

DESIGN CONSIDERATIONS

(I) DESIGN CONCEPT

(II) THE SITE

CHAPTER (4)

DESIGN CONSIDERATIONS

(I) DESIGN CONCEPT :

The foregoing analysis has clearly shown that the region where the great majority of the Egyptian population live - the Nile Valley and Delta - is extremely congested, especially in its main urban centers of greater Cairo and the city of Alexandria.

In the writer's view the only solution to these grave human problems is :

(i) to draw and execute city plans for all settlements - rural and urban - with priority being given to the greater Cairo conurbation and the city of Alexandria.

(ii) to draw and execute plans for new development regions outside the Valley and Delta, where a substantial proportion of the immense increase of population up to the year 2000 could live.

Because of Egypt's grave economic condition, and consequently the need to minimise expenditure on the necessary infrastructure for the new development regions, an important suggestion was emphasised for these new development regions which is : Many of the regions and the new development to

be planned bordering the Valley and Delta, in this way reducing the expenditure on transport (roads, railways, and navigable canals) and water supply (either for irrigation, or for domestic use, or for use in industry) by services.

If these plans are achieved, then Egypt will be on its way to solving the problem of the great congestion of its population in the Nile and Delta. It is also hoped that, once Egypt succeeds in solving its population and economic problems, the rate of its economic growth can be accelerated. It is then that the country will be in a position to draw ambitious plans for developing new regions on a larger scale, and perhaps in locations quite far from the Valley and Delta.

In view of these objectives, a great deal of consideration has been given to the nature of the proposed new community as it relates to the city of Alexandria and the surrounding area. Two concepts were adopted for the proposed project :

FIRST : to confront the economic situation of the country and its needs, the location of the proposed development close to the City of Alexandria seems to be a logical solution.

SECOND: the use of some of the Garden City principles for the new community would create a dsirable atmosphere to draw people from the city to the new location.

(II) THE SITE

The site selection was accomplished at the suggestion of the Comprehensive Master Plan project of the City of Alexandria, which was done and prepared by Alexandria University upon contractual agreement with the Governorate of Alexandria, in 1984.

The fundamental concern of the Alexandria Comperhensive Master plan was how best to deal with the anticipated growth in population of approximately two million people above the present population within favorable environmental conditions. The Comprehensive Master Plan has identified some areas within and around the city as proposed residential areas to absorb the growth in population.

For my proposed housing community, I have chosen a site west of the City of Alexandria on one of the residential areas proposed by the Comprehensive Master Plan.

The chosen site is currently vacant. In size, it is approximately 3.5 km (2.2 miles) in length, and 2.0 km (1.3 miles) in width. It is quite a flat piece of land. Only part of this area will be used for the new community, the rest shall be used for a future developments to support the future needs of the community and the surrounding areas, such as a high school.

An existing industrial area lies on the east side of the site, green areas and agricultural land on the south east and south side. To the north and west lies vacant land for proposed residential areas. Also to the north is a highway which leads to the city of Alexandria and its Downtown area, in addition to a railroad at the south side of the site.

(The site location, and relationship to the surroundings can be seen on the attached map.)

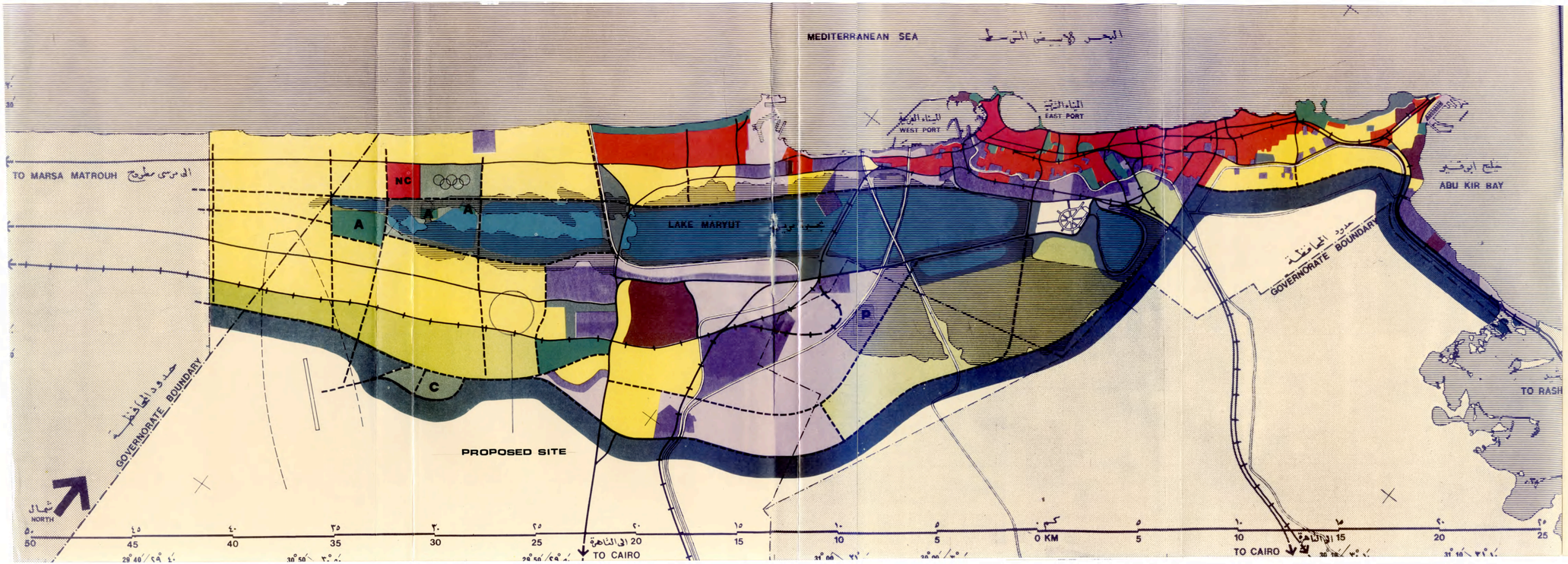
Some advantages of this site are listed as follows :

1- The proposed site is within twenty minutes driving time from the center of the city of Alexandria.

2- The area provides many employment opportunities as it is close to an existing industrial area. At the same time it lacks residential units close by.

3- Building a new housing community on this site close to the industrial area will reduce the traffic pressure on the Down-Town area during rush hours, because many of those employees and workers working in the industrial area have to drive daily from the eastern and the northern parts of the city.

4- There is a great opportunity for expansion of the community since it is close to other proposed areas for future developments and expansion, as well as the new proposed city center.



التخطيط الشامل الاسكندرية ٢٠٠٥

COMPREHENSIVE PLAN ALEXANDRIA 2005

- مناطق سكنية حالية / EXISTING RESIDENTIAL AREAS
- مناطق سكنية مقترحة / PROPOSED RESIDENTIAL AREAS
- مركز المدينة الحالي / EXISTING CITY CENTER
- مركز رئيسي مقترح / PROPOSED NEW CENTER — NC
- مناطق حضراء حالية / مناطق أثرية / ARCHEOLOGICAL/GREEN AREAS — A/
- مناطق خضراء وواجهة مقترحة / مقابر / CEMETERIES / PROPOSED GREEN AREAS — C/
- القرية الأولمبية / OLYMPIC VILLAGE
- الأراضي زراعية / AGRICULTURE
- مناطق صناعية حالية / EXISTING INDUSTRIAL AREAS
- مناطق صناعية مقترحة / PROPOSED INDUSTRIAL AREAS
- موقع الميناء النهري المقترح / PROPOSED INLAND PORT — P
- مناطق عسكرية / MILITARY ZONES

CHAPTER (5)

GOALS AND DESIGN CRITERIA (OBIECTIVES)

(I) GOALS

(II) DESIGN CRITERIA (OBJECTIVES)

1- DESIGN APPROACH

2- THE USE OF ISLAMIC ARCHITECTURE.

3- PEDESTRIAN AND VEHICULAR CIRCULATION.

4- HOUSE / APARTMENT PLANNING CHECKLIST.

5- WATER SUPPLY.

6- EDUCATIONAL SERVICES.

7- MATERIALS FOR CONSTRUCTION.

8- CLIMATIC IMPACT ON DESIGN.

CHAPTER (5)

GOALS AND DESIGN CRITERIA

Determining goals and design criteria is often considered as the most important step in the design process.

Such goals and criteria take into account not only the physical needs of a community, but also relate to social and culture considerations. From these goals, it is possible to establish overall guidelines which can be used to formulate the contents of the Master Plan.

Goals also become a method of establishing efficient working relationships within an area. They often make difficult tasks achievable. Therefore, the following goals and criteria shall be sought in the design of the proposed housing community.

(I) GOALS

During the process of the study and development of the proposal, the following set of goals were considered to be appropriate for the purpose of this study :

1- The proposed community is to be healthy, safe, convenient, and efficient with a pleasant and attractive atmosphere for shopping, passing leisure time, and everyday living.

2- Minimize the amount of through traffic in residential districts which increases accidents and lessens the amenities of residential areas.

3- Preserve an adequate amount of appropriate land to provide space for recreational facilities (parks, picnic areas, play equipment, etc.) and for open areas, which perform the positive functions of providing scenic beauty and visual variation for the community's residents.

4- Preserve cultural heritage, and respond to the concern in Egypt right now regarding the recall of Islamic Architecture in Egyptian cities.

5- To minimize the likelihood of jealousy among neighbors, a mixing of housing forms that differ substantially and have differing degrees of popularity is to be avoided.

6- Locally acceptable materials are to be used, avoiding materials that could be construed as institutional or not homelike. Include materials used in popular local middle class housing and/or those indigenous to the locality.

7- Follow the current Egyptian housing form, which is mostly apartment buildings and a few single family houses.

8- The community to be designed to the expected range of users/occupants varying from a few singles, to mostly young couples, and some small families. Therefore a range in dwelling size might include 1br. 2br. 3br., and a few family houses (in the form of row houses).

9- The proposed community is to be designed in a modest way for middle income residents.

(II) DESIGN CRITERIA (OBJECTIVES):

In order to fulfill the set of goals as stated, the following general objectives and design criteria have been established for their application during the process of development of the design proposal :

1-DESIGN APPROACH :

Having studied the Garden City Idea in depth, the author believes that the Garden City Idea, as Ebenezer Howard thought of it, cannot be used as an overall design approach for the proposed new housing community. The reason being that one of the major Garden City prinicples would not be used for the proposed new community, which states that the city must be self-sufficient, and must offer jobs for its residents. In addition, the idea of using superblocks, one ownership for the whole site and population limit of 30,000 inhabitants would not be applied. The author also believes if the Garden City Idea was used in a community or town and became successful in that area, would not mean that it could be copied in the same way and built in another area or place expecting it to succeed with the same results.

For each place and environment its own requirments and needs. As they say : "All is not gold that gliters".

However, the author find the Garden City Idea fascinating and some of its major principles could be adapted to fit, function and enhance some of the author's major goals in West Alexandria.

As Ebenezer Howarad once said :
"Each generation should build to suit its own needs"

Those principles are :

1- The proposed community is to be divided into wards, each based on the population required for one school (kindergarten/elementary).

2- A park is to be the backbone of each ward. Large open areas in the center of the blocks, joined together as a continuous park, to bring people closer to nature and closer to each other, by offering a common meeting ground. Also the parks will be an element of attraction which may bring people to the proposed site away from the coast of the Mediterranean sea. It will also generate a sense of community.

3- Complete separation of pedestrians and automobiles, or as complete separtion as possible for safety reasons, in an attempt to end the tragedy of the huge number of people who die yearly from automobile accidents in Egypt, especially children going and coming back from school.

The author believes that the previous two elements (2 & 3) support the basic needs of children, which could be summarized as follows :

A- Children need safe, uninhibited outdoor play for their physiological and mental health.

B- Parents need to be able to allow their children outside without constant, close supervision.

C- The environment around children's homes needs to be safe from traffic, pollution, and unnecessary physical and social hazards.

D- Children should be able to experience the pleasure of finding bugs, picking leaves, smelling flowers, collecting things, and so on without their parents harassing them. Through such contact with nature they may develop, among other things, an understanding of basic ecological principles.

E- Children need to create private spaces for themselves (for example, tree houses, forts, or club houses) on wild or unmaintained ground away from public view.

F- Children need easy, casual access to other children without a formal invitation to play.

G- Children need places in the communal environment that are

undeniably their territories where they can expect to find other children.

H- Childern need to be able to move around their home neighborhoods safely and to take little trips farther and farther from home to gain a sense of independence.

4- Green belt of trees to be planted around the community to reduce the wind speed and minimize unexpected blown sand.

5- Unlike Howard's idea of using superblocks, the author considered the use of short blocks instead. The use of short blocks clustered together create mixed and mingled paths (instead of mutual isolated paths in the case of the superblocks) which enhance the culture and the social life in this part of the world.

As F. J. Osborn states in the preface of the book, Garden Cities of Tomorrow :

"Howard's Garden City Idea is coming into its own today. But not necessarily under his banner, and not without modification. No one was better aware than he that inventions change as they develop.

2- THE USE OF ISLAMIC ARCHITECTURE :

Most architects and planners realize the fact that in a housing community there must be open spaces, trees, play grounds, schools, clinics, shops, community centers, etc., and these amenities are provided as part to the physical elements of the community. But very often in a housing community when the physical spaces for the various environmental amenities have been provided, the residents still do not necessarily find their life in the community very happy.

The core of the housing problem is not that we do not know how to build the physical shelters and not that we do not recognize the need to provide environmental amenities. The core of the problem lies in the lack of comprehensive understanding of the relationship of the physical aspect of housing and the social environmental aspects of housing and culture.

And since Egypt is an Islamic country, the author considered the use of Islamic facades and style in all the buildings, emphasizing interpretation of modern construction methods to enhance the relationship between the physical aspect of housing and the social and environmental aspects of housing and culture.

The following elements are to be used in designing the community:

1- Observing the basic Islamic principles in building privacy for the family from both external sound and vision.

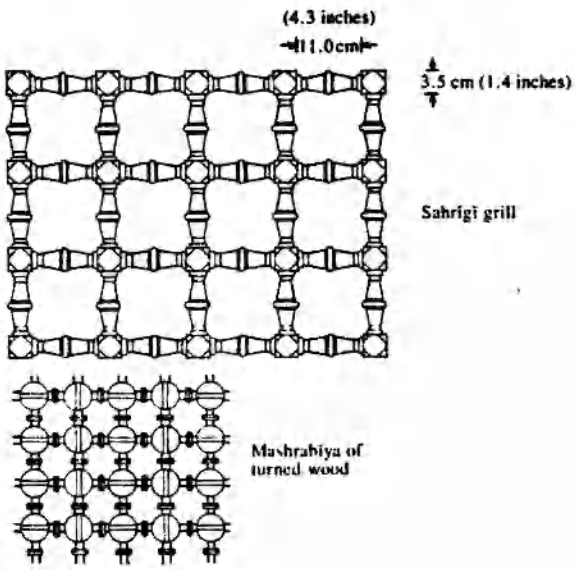
2- Orienting the urban environment through correct urban design to people rather than the automobile.

3- Providing the opportunity for a healthy social environment that encourages religious, cultural, educational, physical and recreational activities.

4- Giving special care to adequate building design that fulfills both contemporary requirements and social and cultural objectives.

5- Positions of the buildings on the site, building heights, window locations, court and gardens of each individual unit should be planned to achieve the most effective use of the site and to produce a satisfactory relationship with adjacent buildings, without violating their privacy.

6- To insure privacy, and to prevent the possibility of overlooking between the external windows to other living, sleeping or service quarters of the building, an Islamic design feature such as the perforated wooden screens known as (Mashrabia) is encouraged on windows and terraces. The



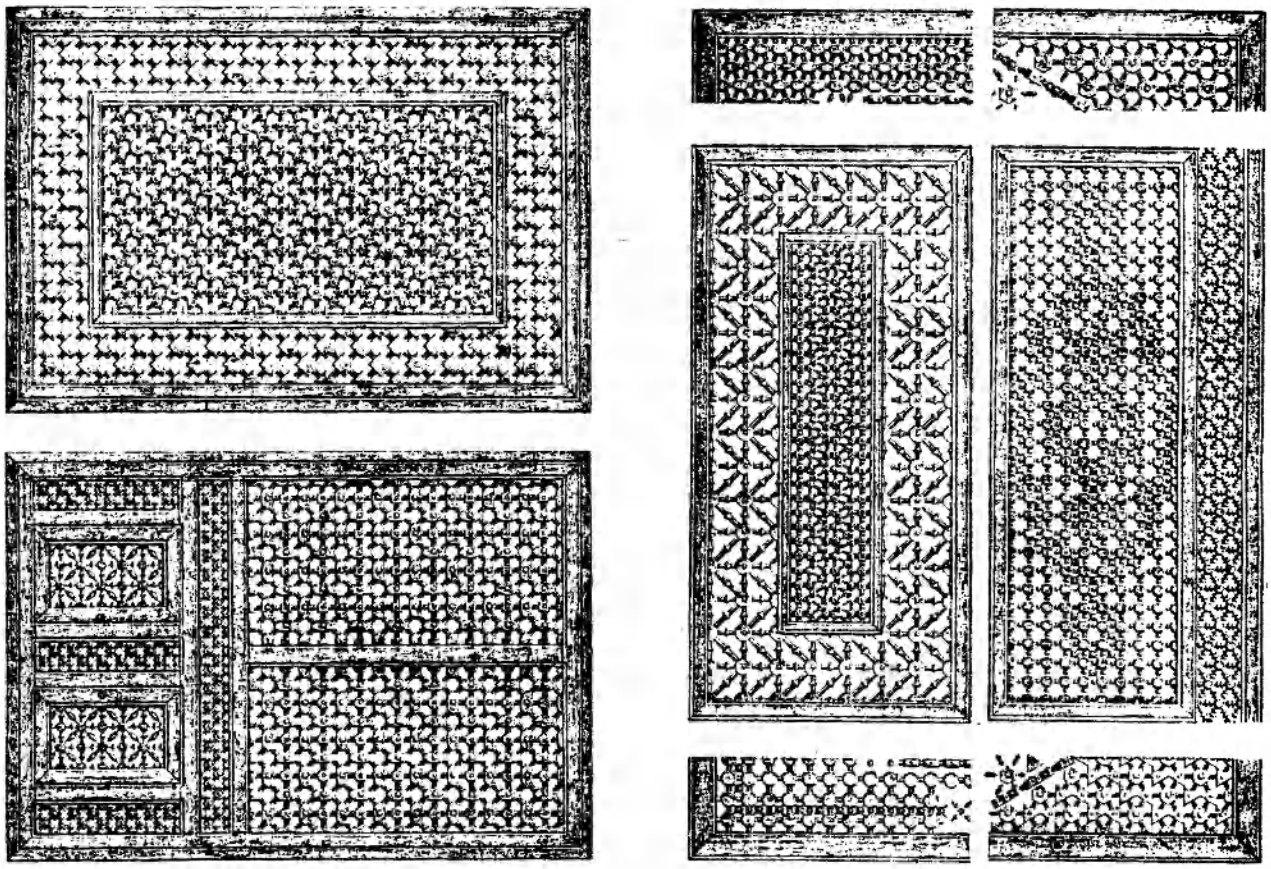


Figure 40 : Examples of Mushrabiyyah, Cairo.

same feature also helps in stopping the penetration of sunlight into the units when undesirable.

7- A Mosque is to be located in the center of the community, aligned to form an axis facing the main shopping area, providing a space in front of it for religious gatherings.

It would be, indeed, difficult to put into words the intangible spirit of Islamic Architecture and its ambience, but if we are to study subtleties of approach of the Muslim builders rather than the obvious manifestation of physical forms, we could perhaps attempt to spell out this quality of the Islamic environment.

Some of the main features and characteristics of Islamic Architecture are highlighted below without attempting to provide a "formula" which constitutes Islamic Architecture :

A- The close integration of the building with the landscape, the use of both flowing and static water, formal planting of gardens and the treatment of different levels in the form of terraces.

B- The adoption of geometric forms and symmetrical and axial planning.

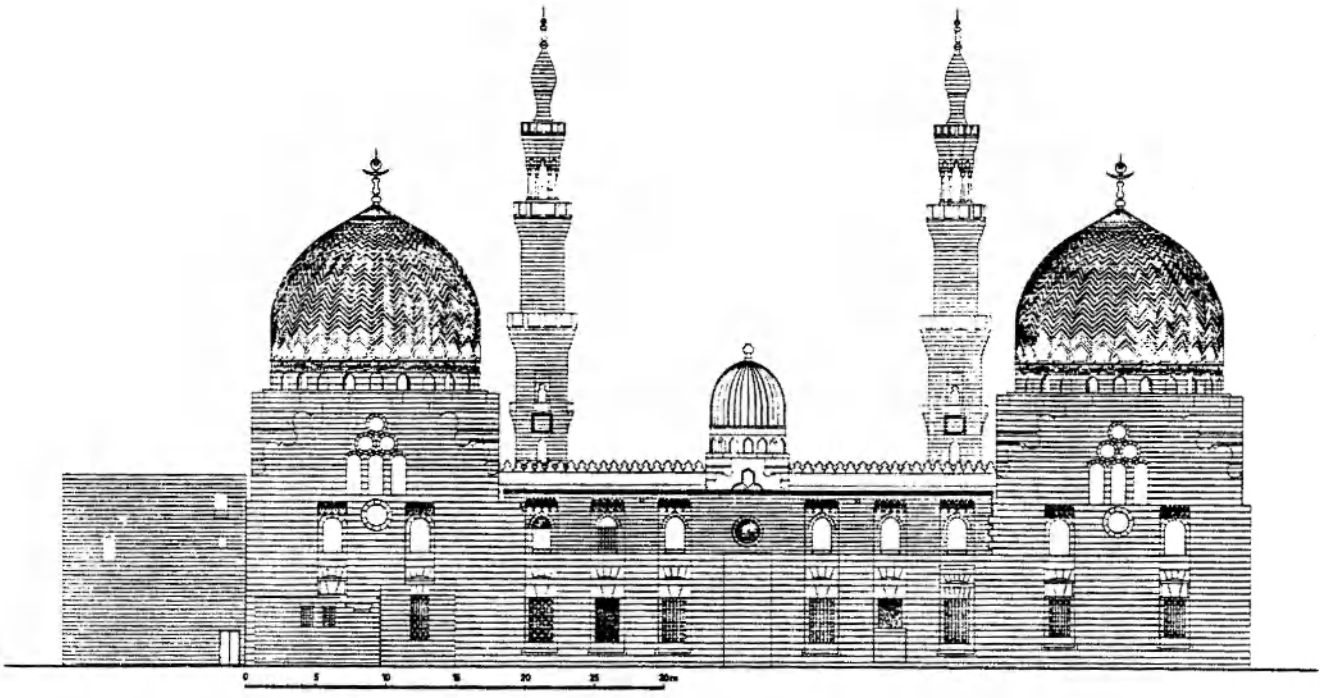


Figure 41 : Bin Barquok Mosque - East Elevation - Cairo.

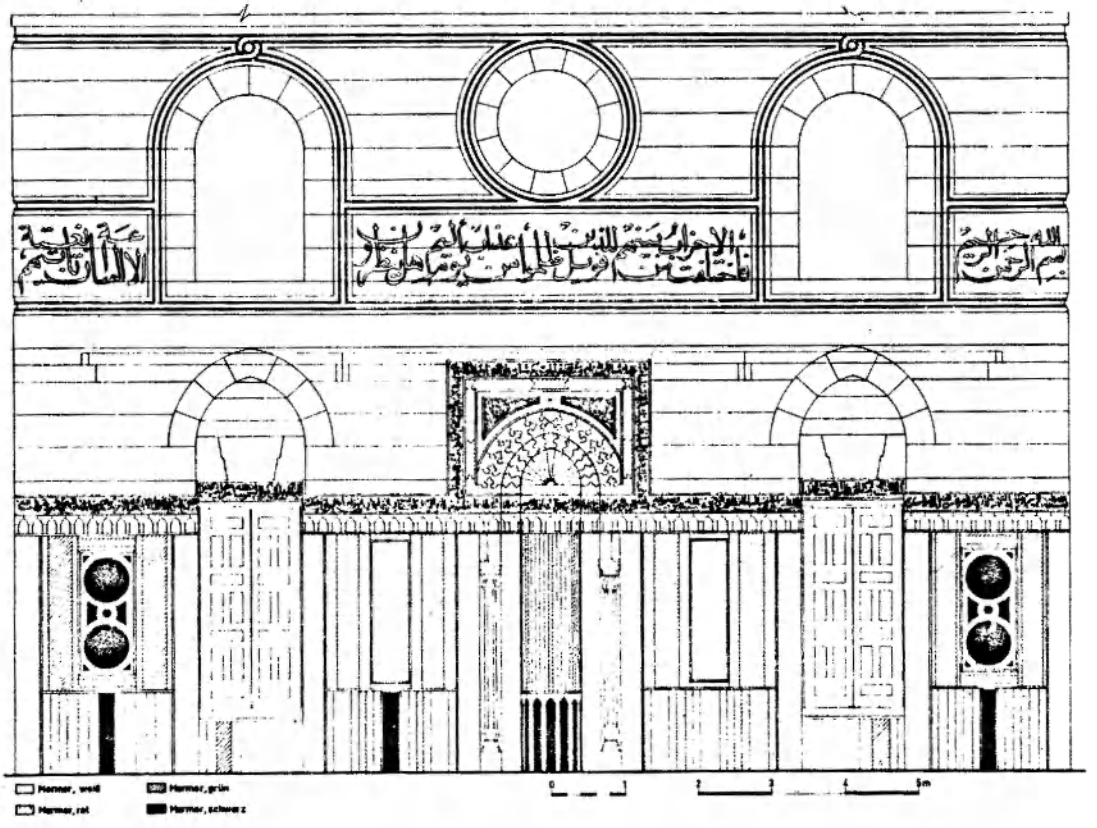


Figure 42 : Bin Barquok Mosque - Interior - Cairo.

C- The placement of buildings in relation to each other to create interesting spaces.

D- The adoption of interesting structural forms such as domes of various shapes, interlacing arches, stalactite pendentives and squinch arches. Each of these structural forms was strictly functional, but the Muslims also used them in such a way as to create interesting decorative effects.

E- Finally, perhaps the finest contribution of Islamic Architecture is in the vast field of surface treatment and decoration. In some cases, the emphasis was on color and texture, the form of the building being less prominent. In other cases, surface decoration was used to emphasize and heighten the sculptural qualities of the form of the building. The main types of surface decoration used by the Muslims were :

- The enamelled tile - work.
- Interesting geometric patterns and calligraphy were used in colors to create a dramatic effect of illusion by interlacing forms and patterns.
- The exquisite geometric pierced screens in marble.
- The arabesques, and the inlay work of colored marbles.
- Calligraphic inscriptions as decoration in bold relief.
- Geometric relief panel work.

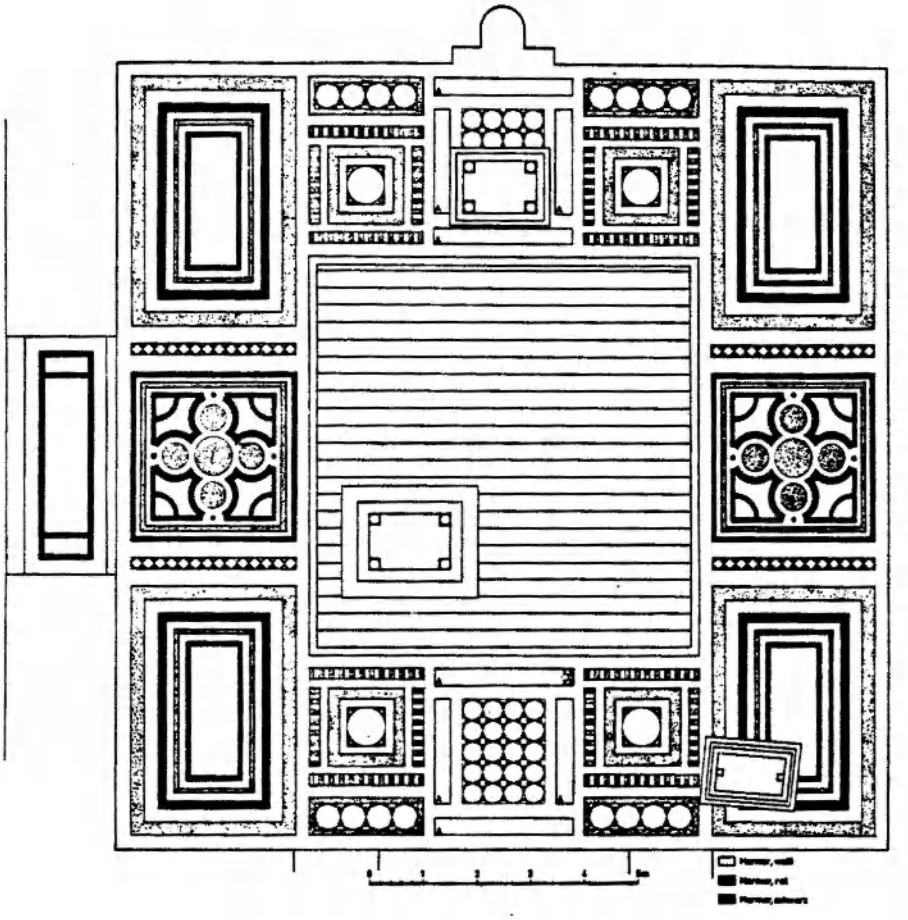


Figure 43 : Marble floor, Cairo.

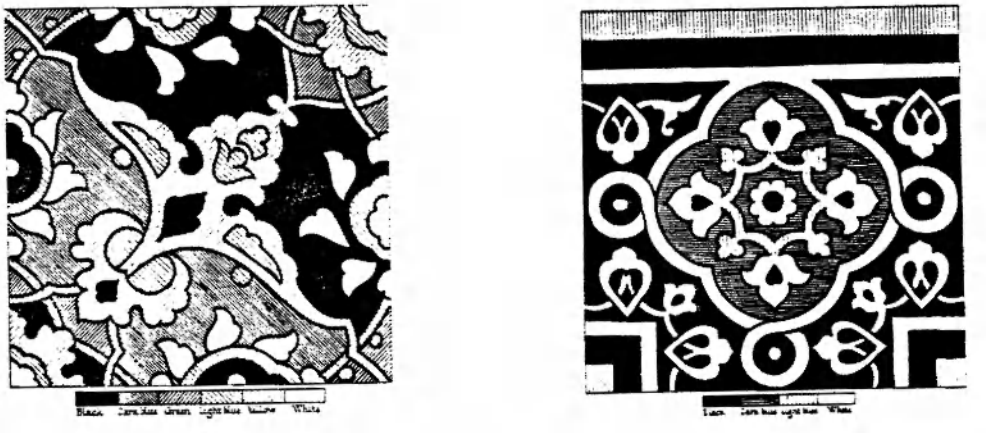


Figure 44 : A specimen tile floor - Dome of the Rock - Jerusalem.

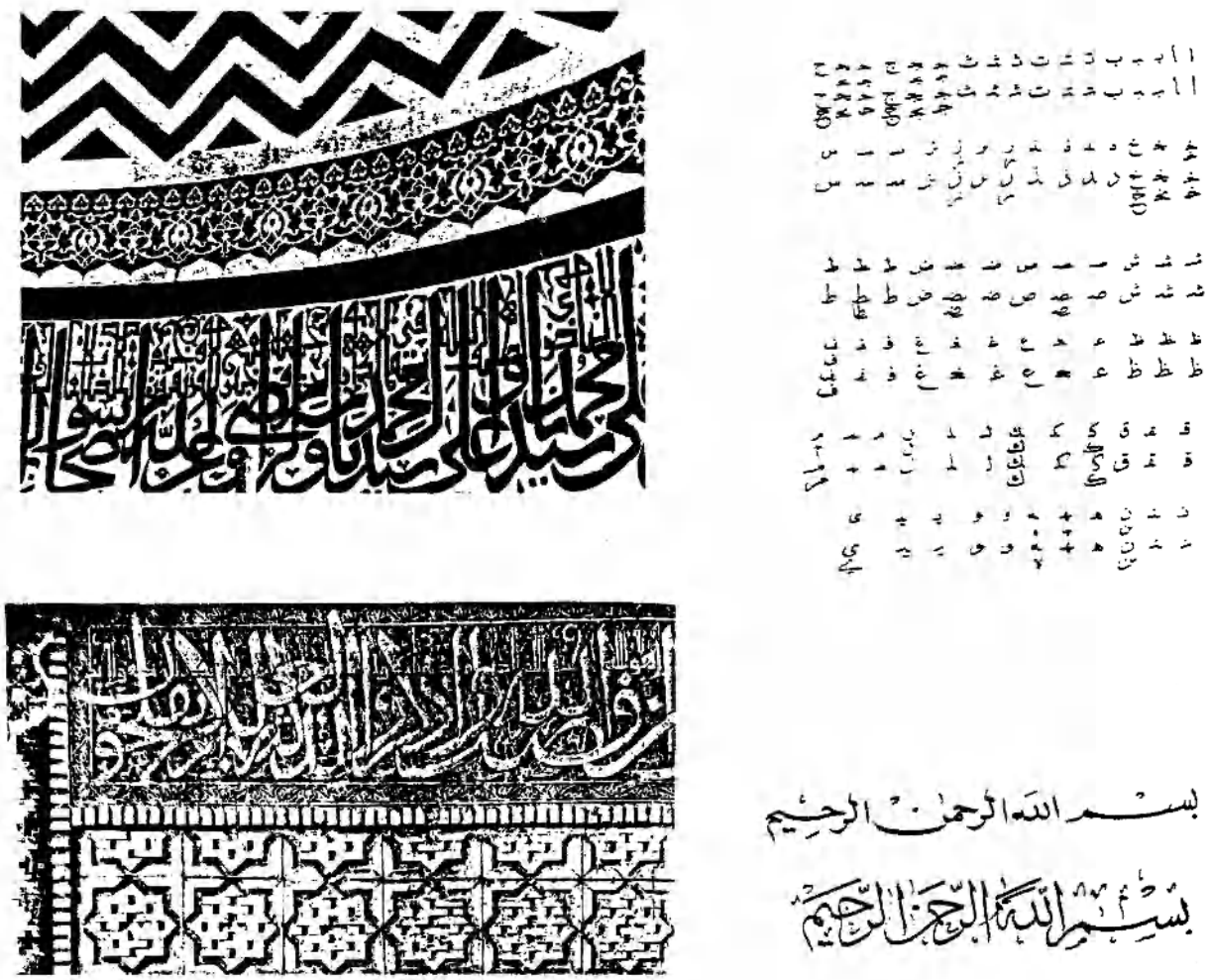


Figure 45 : Calligraphy, geometric patterns and the Alphabet

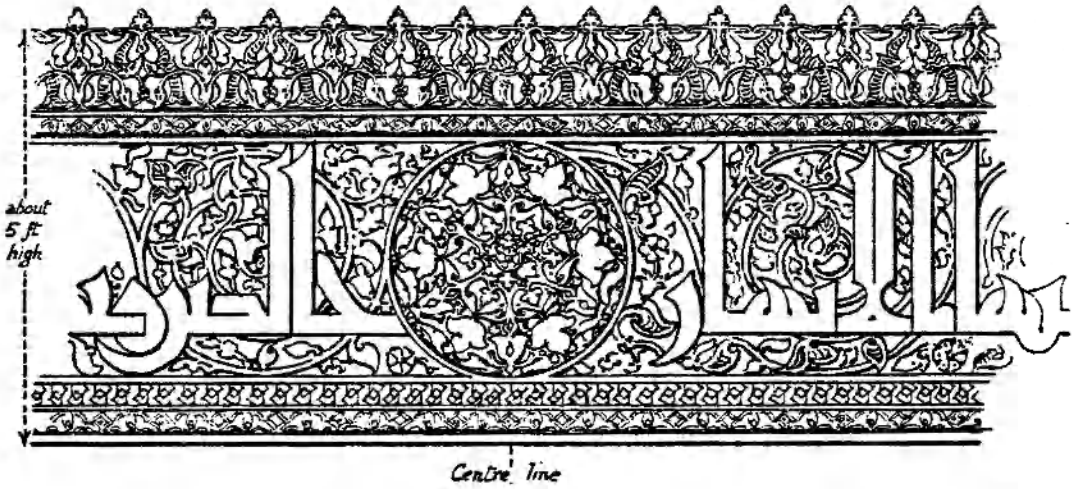


Figure 46 : Madrasah of Sultan Hasan - Part of stucco frieze round sanctuary - Cairo.

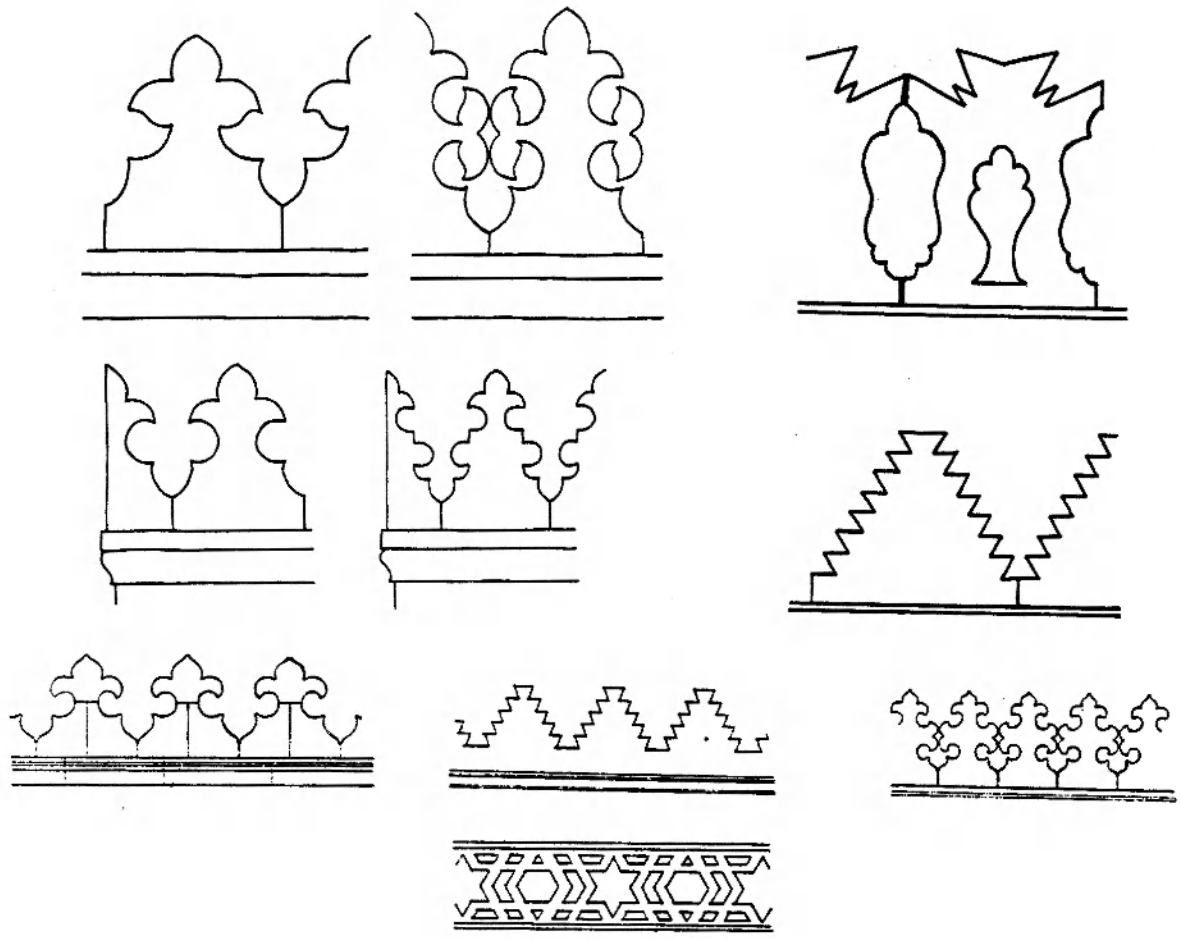


Figure 47 : Typical Parapets - Cairo.

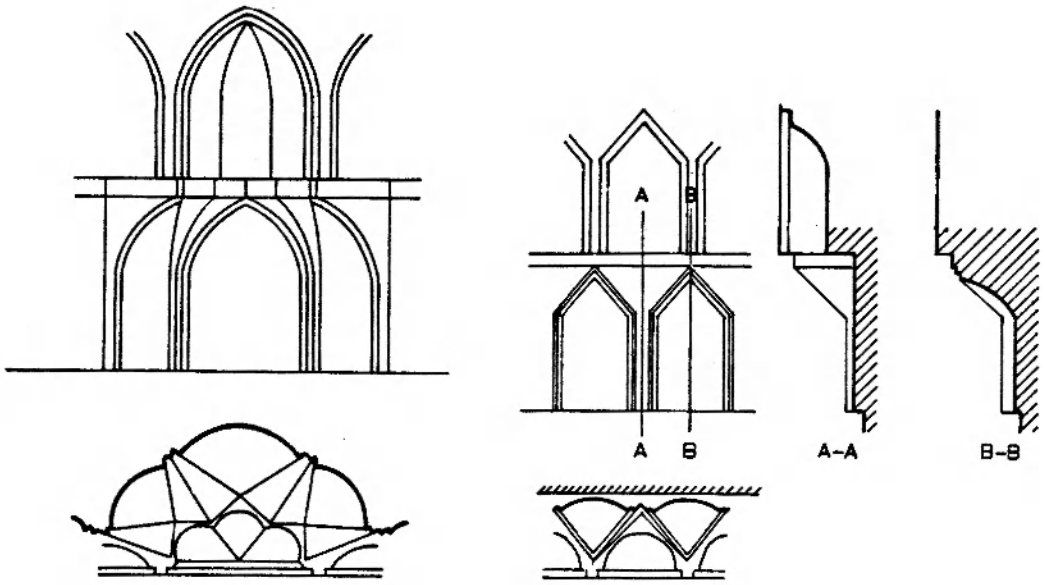


Figure 48 : Typical Friezes - Cairo.

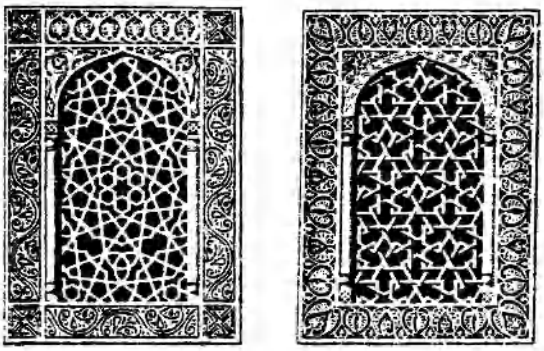
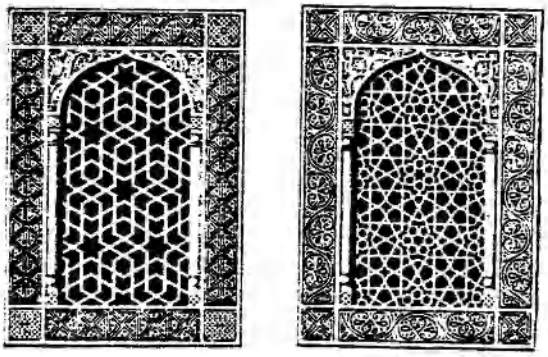


Figure 49 :

Examples of pierced windows, Cairo.



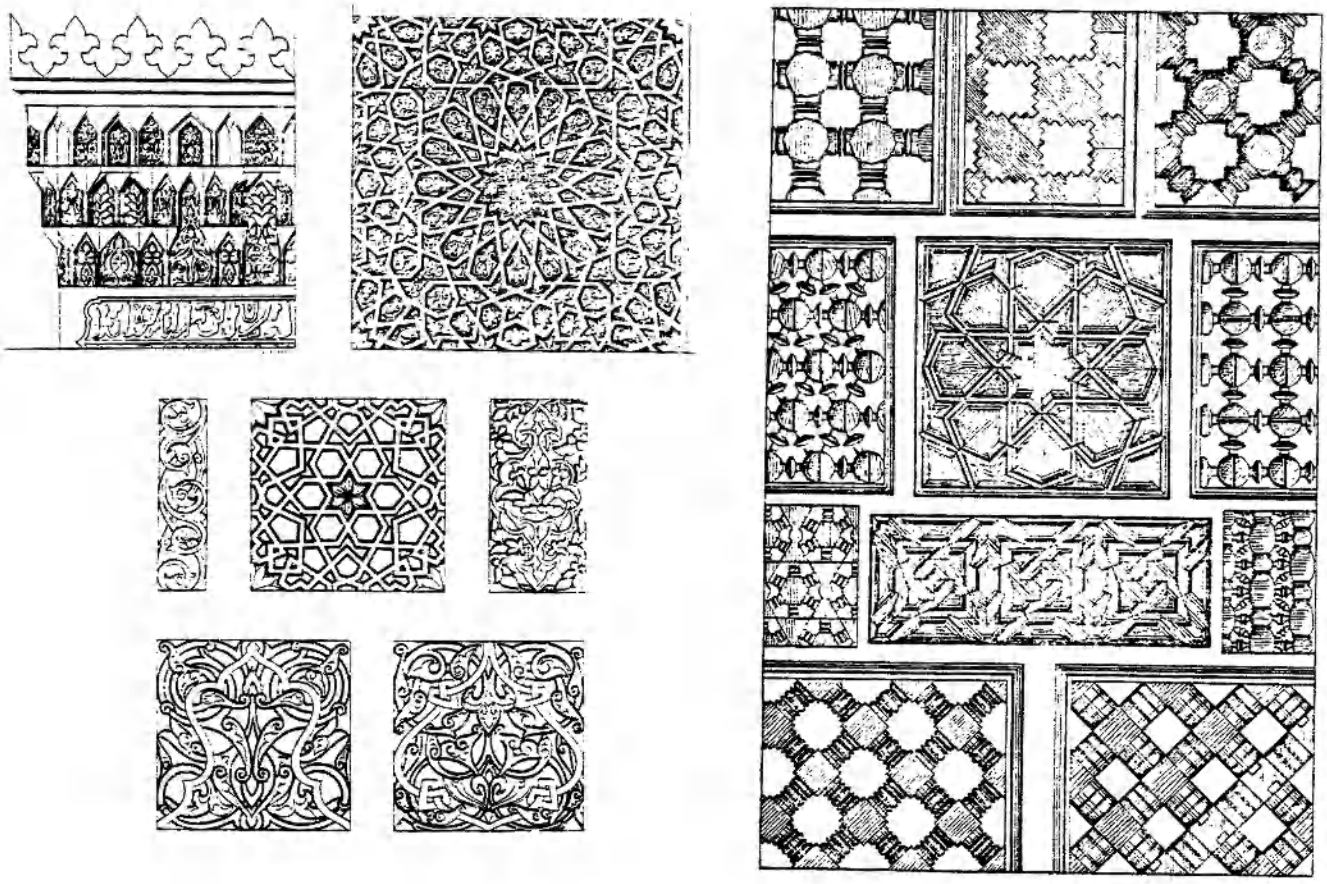
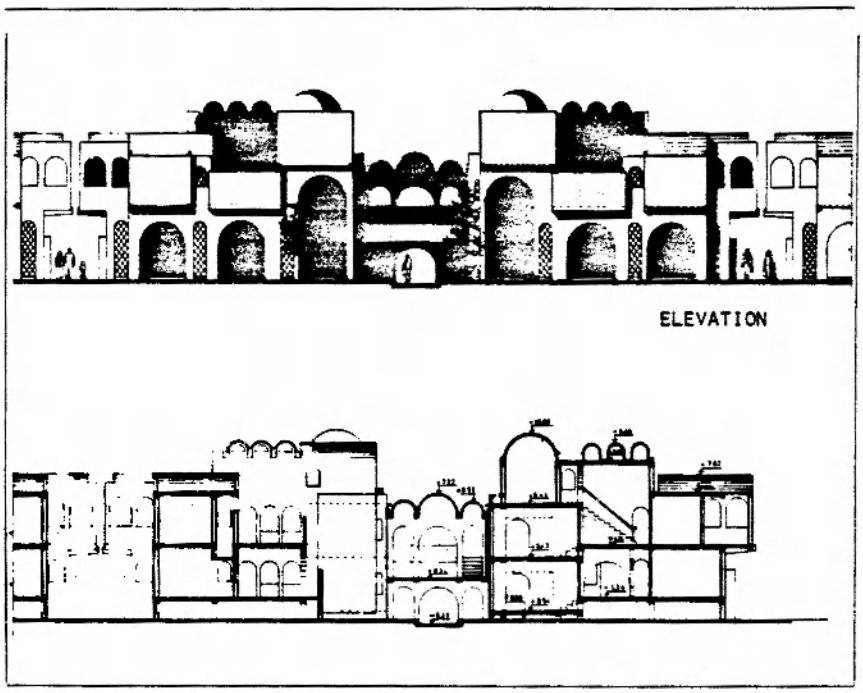


Figure 50 : Islamic wood work, Cairo.



M'sila, longitudinal section

Figure 51 : Apartment building - M'sila, Algeria.

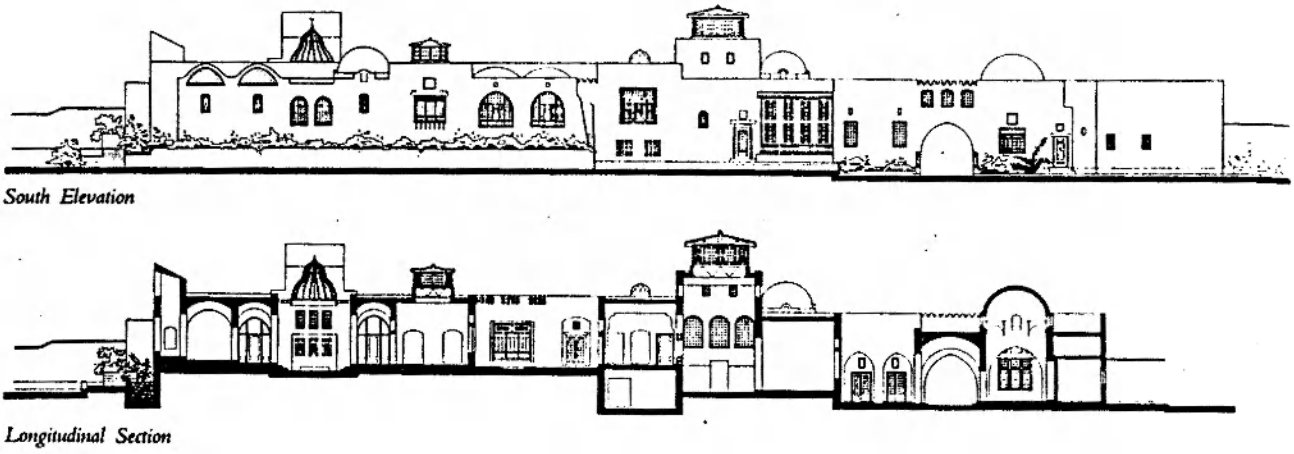


Figure 52 : Sulaiman Palace - Jeddah, Saudi Arabia.

- Arrangement of mirror - work for decorative effect.
- The use of light colors, especially white and light browns.

3- PEDESTRIAN AND VEHICULAR CIRCULATION :

The circulation system within the community should be an integral part of the overall development and should consist of footpaths, cycle paths and roads. This system should give priority to the safety and convenience of pedestrians.

To satisfy the above objectives, the following general rules are to be followed :

A- A complete separation between pedestrian and vehicular traffic network. Cycles could use pedestrian walkways.

B- One major road circumscribes the entire periphery of each ward. Vehicles should not be permitted to enter the interior such as in the gridiron system.

C- Special cars and vehicles should have access to the ground floor of dwelling units, such as service vehicles, fire, maintenance etc.

D- Pedestrian paths are to be designed for human use, for safe pedestrian use and should include convenience facilities such as pergolas, shadows provided by trees, street furniture, such as seats, drinking fountains and lights. These paths should be connected to the children's playgrounds.

E- All daily communal facilities should be easily connected to the pedestrian system. They should also be served indirectly by the vehicular system.

F- It should be possible to distinguish the main roads from the secondary ones and the main pedestrian paths from the secondary walkways through size, sign, colors and position, plantings and possibly special structures such as arcades or pergolas.

G- All streets and approaches should be illunimated at night.

H- Parking lots are to be located on the edges of the wards.

4- HOUSE / APARTMENT PLANNING CHECKLIST :

In the design of any human space it is always important to remain sensitive to basic human needs, but it seems especially important with residential design, because of the special significance which we attach to our homes.

Appealing to our consciousness of centrality, the house is imagined as a concentrated being, our corner of the world.

The following checklist is a useful tool to use both during the design process and immediately following it to verify if the unit meets the basic needs of intended users (young couples & small families) in the Egyptian culture.

The answers for the following checklist questions is to be in the design of the unit's parts.

A- LIVING AREA :

* Is its form flexible enough to allow for alternate furniture arangements ?
* Can it be separated from the main circulation pattern of the house ?
* Can it be visually and acoustically separated from the other interior spaces ?
* Is it connected to the private outdoor space so the living function can be easily extended outdoors (in the case of a single family house) ?

* Can it function as a temporary extension of the dining area ?
* Are doors and windows placed to enhance view, daylighting and ventilation without violating privacy ?

B- DINING AREA :

* Is the space large enough to seat family and guests at a table ?
* Is it directly connected to the kitchen ?
* Can it function as a secondary living or study space ?
* Is it connected to the private outdoor space so the dining function can easily be extended outdoor (in the case of a single family house) ?
* Are doors and windows placed to enhance view, daylighting and ventilation without violating privacy ?

C- KITCHEN :

* Is the equipment and counter arrangement efficient for food preparation ?
* Is prepared food easily transferred from kitchen to dining space ?
* Is it directly accessible to entry for ease of bringing in groceries, etc. ?
* Does it have adequate view and day lighting amenity ?

Does it have adequate natural and/or mechanical ventilation to exhaust cooking odors ?

* Is there space for informal eating ?

D- PRIMARY BEDROOM :

* Is the space flexible enough to have different furniture arangements ? Double bed or twin beds ?
* Is there space for secondary furnishings ? Chest of drawers, desk, chairs, bedside table, T.V. ?
* Is there adequate closet storage ?
* Can a baby crib and infant supplies fit in ?
* Is there adequate view, daylighting and ventilation ?
* Can it be made dark and quiet ?
* Does it have easy access to a bathroom ?

E- ENTRY :

* Is it directly accessible to living/dining/kitchen ?
* Does it have a closet nearby ?
* Is it possible to view a person outside the door without being seen ?
* Is it well illuminated at night ?

F- HALLWAYS / STAIRWAYS :

* Are they wide enough for people to by-pass ?

* Are they well illuminated ?
* Are they acoustically dampenend ?

G- BALCONIES /TERRACES :

* Are they large enough to accommodate outdoor furniture ? chairs, tables, umbrella, barbeque ?
* Are they easily accessible from living/dining/kitchen spaces ?
* Are they level with interior spaces ?
* Can they be observed from other units or public spaces ?

5- WATER SUPPLY :

The High Dam at Aswan was constructed between 1959 and 1969 to make use of billions of cubic meters of water which were annually lost to the Mediterranean Sea. Twenty billion cubic meters could be stored annually by the dam, of which twelve million cu.m. were alocated to the Sudan, and eight million to Egypt. This water could be used by Egypt to irrigate 1.3 million feddans of new land.

Water studies also revealed other potential resources in quantities of underground, artesian and rain fall water, enough to irrigate about 120,000 feddans in the immediate future.

A plan for reclamation of nearly three million feddans has been approved to be reclaimed by the year 2000. These lands will be partly irrigated by Nile water and partly by underground water.

The Nile water will be the main water resource for the propsed housing community west of the City of Alexandria.

6- EDUCATIONAL SERVICES :

The norms for establishing schools in the new communities in Egypt, to offer the best educational results are as follows :

* Primary school for a population of 3,000 persons.
* Preparatory school for a popualtion of 10,000 persons.
* Secondary school for a population of 40 - 50,000 persons.

(according to Ekistics 277, July/Aug 1979).

7- MATERIALS FOR CONSTRUCTION :

Reinforced Concrete Frames is suggested to be used with Sand/Cement Bricks infilling as well as Stones, because of the reasons discussed in chapter 2.

8- CLIMATIC IMPACT ON DESIGN

Climate should be one of the main planning considerations at each stage of the planning process from regional level to detailed design. At the regional level climate should influence the location of settlements. Economic logic will probably dictate the distribution of the major economic activities but climate should have a decisive influence on the location of residential areas.

In Alexandria the wind always blows from north to south and the prevailing wind direction is to the northwest (as described in chapter 1). Therefore, housing and residential areas should be concentrated in the north of the city, or in areas where no industrial areas are located directly between it and the Mediterranean. Based on this, the proposed site for the proposed new housing community was selected.

Wind blown dust can be a severe problem in desert regions, and the lack of surface vegetation enables these winds to collect a dust load. When the wind passes over settlements its velocity is reduced and a thin layer of dust is spread over everything. This happens regularly every year in Alexandria during the first week of spring.

The best ways of combating the problem are by the establishment of a layer of vegetation cover in the zone

where the dust is picked up and by the use of tree belts outside the community or the city to slow the wind and reduce the dust load before it reaches the settlement.

Other than that the weather is generally pleasant all year round, and no other major or special design treatments need to be considered for the proposed site.

CHAPTER (6)

(I) FEATURES OF THE DESIGN.

(II) ARCHITECTURAL PRESENTATION.

CHAPTER (6)

(I) FEATURES OF THE DESIGN

"When we build let us think that we build for ever, let it not be for present delight, nor for present use alone; let it be such work as our descendants will thank us for."

John Rusking, the seven lamps of Architecture, 1849.

The characteristic features of the proposed design developed for the new housing community are described here, while Architectural Presentation illustrate the proposed design in the next section.

The proposed design includes the following features :

1- GENERAL :

A- Five residential areas (wards), each based on the population required for one school (Kindergarten/Elementary). The residential areas offer a range of four housing types to encourage family diversity and allow for market flexibility.

B- The proposed community is designed for a total population of approximately 14,000 inhabitants. They would be grouped in the five residential areas.

C- Each residential area consists of a number of buildings clustered around an open space, which would become the communal land for the cluster. All five residential areas are organized around a large central park, which would serve all the community, and around a community center with convenience commercial uses and a Mosque.

D- In the center of each residential area we find Kindergarten / Elementary school.

E- A convenient local shop is provided for each residential area within a walking distance for the daily needs of the residents. In addition to large community shopping and commercial area in the center of the five wards.

F- The center of the five residential areas includes :

- A large park and a Preparatory school
- A Mosque surrounded by variety of shops clustered around a sociable sized plaza with trees, flowers and a fountain.

2- ALLOCATION OF LAND USE :

According to the new Egyptian housing codes, it is recommended that in a planned new housing community, the percentage of land allocation to residential use be kept to 60 percent or less. The other 40 percent assigned to ancillary uses, including streets.

In fact, however, the percentage of land area for residential use as well as other uses varies according to each project. Based on the requirements and the goals which are considered for the proposed new community, the following land use percentage are obtained :

- Residential 55%
- Commercial and Institutional 5%
- Open space and Recreation 40%

Since the total area of the site is 102 acres (41 hectares), area in acres and hectares for land use are ;

	acres	hectares
- Residential	56.1	22.6
- Commercial and Institutionl	5.1	2.0
- Open space and Recreation	40.8	16.4

3- RESIDENTIAL TYPES :

The residential areas offer a range of four different types of housing :

* Detached single family houses
* Attached single family houses (row houses)
* Walk ups (2 stories high)
* Apartment buildings (5 to 10 stories high)

4- DENSITY :

As far as the density is concerned, there is, in fact, no such thing as ideal density. The suitability of a density varies from site to site, dwelling type to dwelling type. There are four different major dwelling types in this proposed new community, and each dwelling type has its own appropriate density. The density of each type of dwelling is very difficult to choose. If the density is too low, it will result in high costs of land development, increased out lay for operating utility services, and long travel distances. On the contrary, if too high, it will result in low livability in terms of air, light, and open space.

Therefore, the reasonable density for dwelling types on the proposed site for the proposed community which the author has achieved in the design are :

* Detached single family houses	12	dwelling/acre
* Attached single family houses	16	dwelling/acre
* Walk ups	40	dwelling/acre
* Apartments	60	dwelling/acre

The average density for the whole community :

$$= \frac{\text{total number of units}}{\text{all areas except the public park}} = 54 \quad \text{DW/acre}$$

5- TOTAL NUMBER OF UNITS :

The Total number of dwelling units in all the residential types is :

* Detached single family houses	21	units
* Attached single family houses	180	units
* Apartments		
studio and one bed-room	1618	units
two bed-room	1418	units
three bed-room	1080	units
Total number of dwellings in the community is	4317	units

6- THE APARTMENT BUILDINGS :

For the apartments, the author kept the plan simple. Typically, one, two, and three-bedroom units. The one-bedroom unit average 100 square meters; each has a balcony and a small service terrace. The two-bedroom unit average 135 square meters, each has two balconies. The three-bedroom unit average 150 square meters, each offers a large balcony.

Islamic facades are used for all the buildings as well as the Islamic element known as Mashrabia (perforated wooden screen). The buildings are organized to reinforce the open space system and the visual amenities of the landscaped site.

The author also has attempted to directly relate the dwelling units to the open space by maximizing the number of units with immediate access and views to open space. The concept of clustering was to group the buildings together and preserve the land thus saved for common open space in the center of each group as well as around it. The advantage of this concept is to provide a variety of active and passive open space.

7- OPEN SPACE SYSTEM :

The open space is planned as a system, and represents a breakaway from the traditional block and lot building patterns used in most Egyptian cities. A variety of active and passive open spaces are provided in the proposed design. On the site are three major types of active open space :

A- The major central park at the middle of the community, surrounded by the five residential areas. Its linear shape is free of building development in order to maintain an open park. This park is to be shared by all the residents in the community.

B- The Major open space in the center of each ward, contains the school and the local shop. This space is to be shared by the residents of each ward.

The major central park and the major open space in the center of each ward would provide game tables for chess, backgammon, seating, and drinking fountains. Some of these facilities will be in the open, under trees, and some under a roof shelter. In addition, a work of art such as a sculpture would be added to provide a visual excitement to the atmosphere.

C- The open space in the center of each clustered group of buildings, would contain play equipment for children, such as climbers, swings, paddle pools or similar facilities, which meet the safety standards. This space is to be shared by the residents of each clustered group of buildings.

Provision of illumination during the hours of darkness would be provided to all the open spaces to increase safety and usage in all open sapces.

8- CIRCULATION SYSTEM :

A- Vehicular:

Eight loops of curved collector streets are planned in the proposed design. They are laid out to create a diversity and interruption (unlike the gridiron system).

"There must always be an end in view, and the end must not be final."

(Architect Eliel Saarinen)

The curved streets also discourage high speed vehicles, in addition to adding a natural look to the landscaped site. Cul-de-sacs are used for providing safe access to and from housing sites.

Generally speaking, the road system includes collector streets, community streets, and cul-de-sacs. All designed to elimimate through auto circulation within the residential areas.

B-PEDESTRIAN :

A continuous pedestrian circulation of walkways and paths is provided to link the various residential clusters with community facilities, recreation, amenities and open space. The convenient pedestrian access is largely achieved while minimizing pedestrian-auto conflicts.

The purpose of the planned pedestrian circulation is to provide an unbroken ribbon from residences to open space, community facilities, and convenient stores. It is so planned that the residents can take the pedestrian walkway to

almost anywhere they want to go within the site. In addition to that, a continuous pedestrian walkway is planned around the open space in the center of each ward to provide the residents a nice "jogging track", and "a place to take a walk."

Steps would be avoided wherever possible, ramps for easy change in grade would be used as they make the transition for wheelchairs, elderly residents and guests.

C-PARKING :

Adequate parking is provided within close proximity to dwelling units. Also the apartments parking areas are located with immediate access to the roadway. The following number of parking space would be provided for each type of dwelling:

* Detached single family houses;
  Private parking with a private driveway, provide two parking spaces per dwelling unit.

* Attached single family houses;
  One parking space for each dwelling unit in the drive way, in addition to on street parking spaces.

* Apartments;
  One and one-half parking spaces per dwelling unit in parking lots. Additional parking spaces for guests are also provided, in addition to on street parking.

9- SHOPPING AND COMMERCIAL :

The design of the proposed community provides two types of shopping and commercial :

A- A total of five local convenient shops, one for each residential area close to its center, within a walking distance from the residences . These local shops provide the daily needs of the residents.

B- A large community shopping and commercial area in the center of the community and around the Mosque.

10- THE MOSQUE :

The Mosque is the most important religious organization in the Muslim cities and communities. Here the inhabitants of the community gather to pray.

In the proposed community the Mosque is located near the center of the site, and part of it can be seen from the center of each ward, acting as the main vista and land mark for the whole community. Its identifying signs which characterize its form are the two minarets and the dome.

This location for the Mosque will also give a first impression image to the visitors since the Mosque would be visible to any comer who is entering the community from any

of the three streets that lead to the center of the community.

The Mosque is surrounded by a variety of shops, forming a U shape and an open plaza. The Mosque is aligned to form an axis facing the open plaza, which will be used for sociable communtiy and religious gatherings.

11- GREEN BELT :

To combat and overcome the problem of blown dust, which occur regularly every year in Alexandria during the first week of spring, a green belt of trees would be planted around the on the west, east, and north sides. In the south of the community the existing agriculture land would provide a natural green belt. The green belt is to reduce the wind speed and minimize unexpected blown sand.

(II) ARCHITECTURAL PRESENTATION

ARCHITECTURAL PRESENTATION :

PROPOSED NEW HOUSING COMMUNITY

WEST ALEXANDRIA - EGYPT

BY: HISHAM F. IBRAHIM

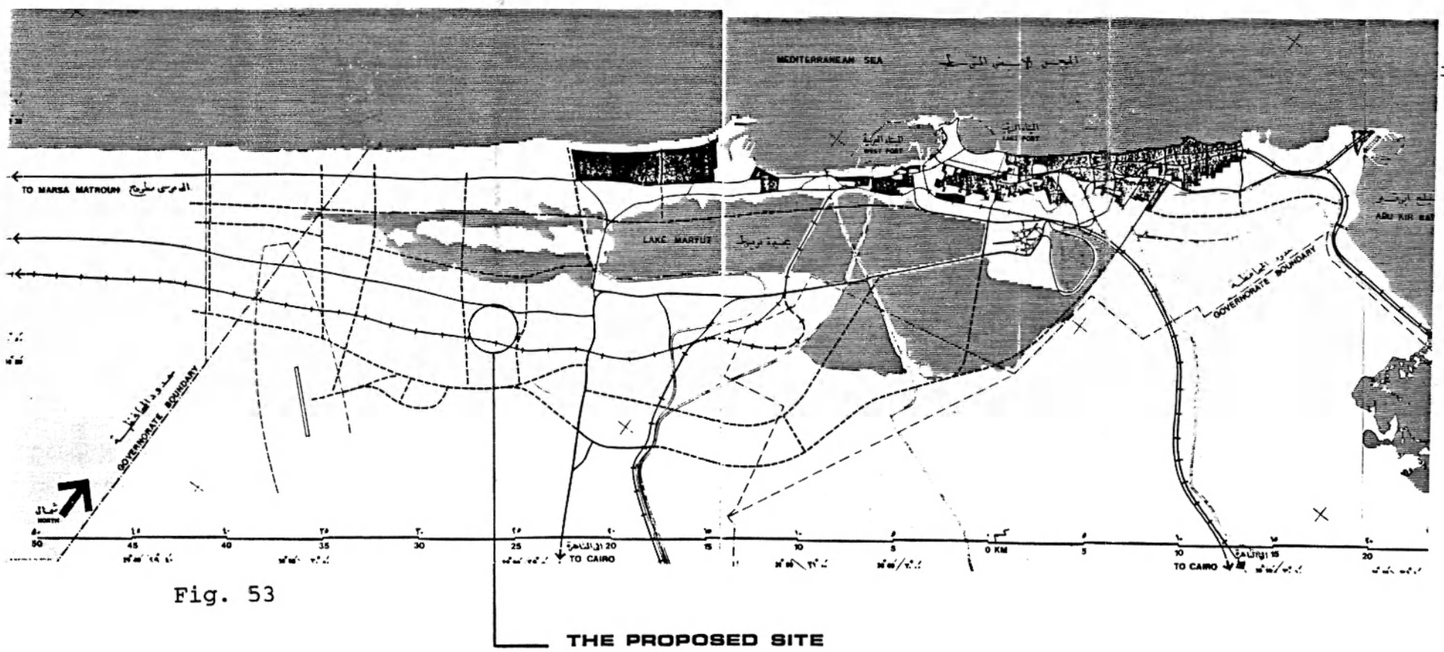


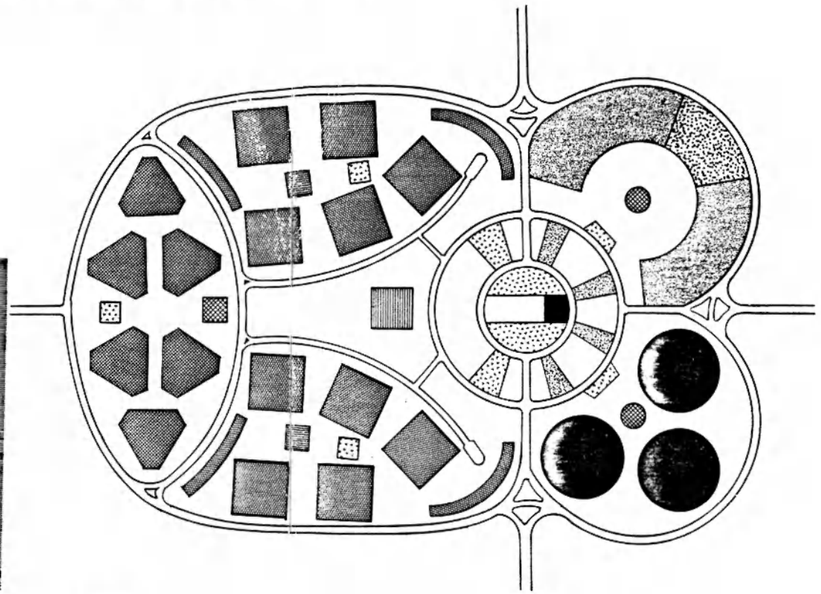
Fig. 53

ADVISORY COMMITTEE:

F. GENE ERNST (MAJOR)

BERND FOERSTER (MEMBER)

RAY WEISENBURGER (MEMBER)



BUILDING TYPE A - 118 BUILDING - 5 STORIES EACH, TOTAL OF 2832 UNITS - 1418 ONE BR. UNITS (100 M² EACH) 1418 TWO BR. UNITS (135 M² EACH).

BUILDING TYPE B - 72 BUILDING - 3 STORIES EACH, TOTAL OF 648 UNITS - 3 BR EACH (150 M² EACH).

BUILDING TYPE B - 48 BUILDING - 3 STORIES EACH, TOTAL OF 432 UNITS - 3 BR EACH (150 M² EACH).

BUILDING TYPE C - 180 SINGLE FAMILY HOUSES, "ROW HOUSES"

BUILDING TYPE D - 21 SINGLE FAMILY HOUSES, "DETACHED".

BUILDING TYPE E - 10 STORIES APARTMENT BUILDING, "FOR SINGLES".

KINDERGARTEN.

ELEMENTRY SCHOOL.

PREPARATORY SCHOOL.

MOSQUE.

PARKING, OPEN SPACE AND RECREATION.

COMMERCIAL AND ADMINISTRATION.

Fig. 54 LAND USE DIAGRAM

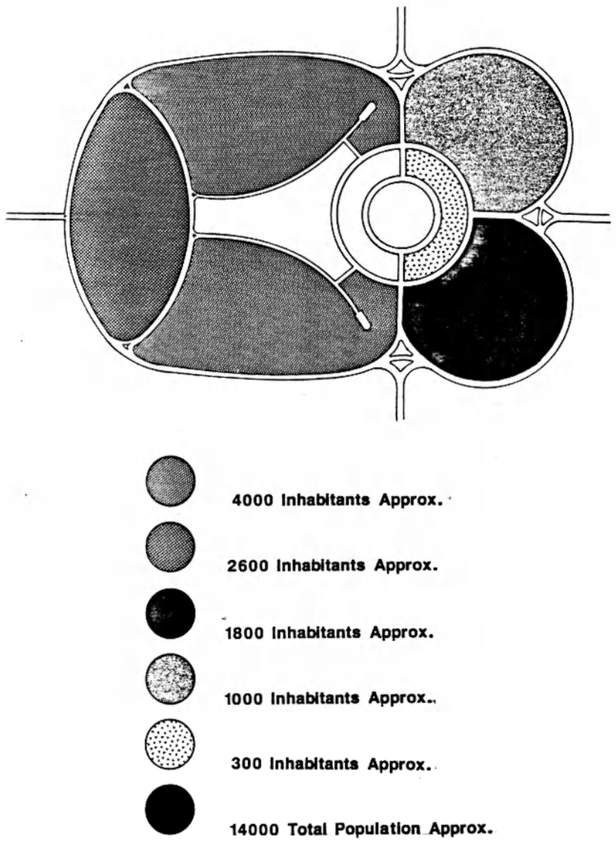


Fig. 55

POPULATION DISTRIBUTION DIAGRAM

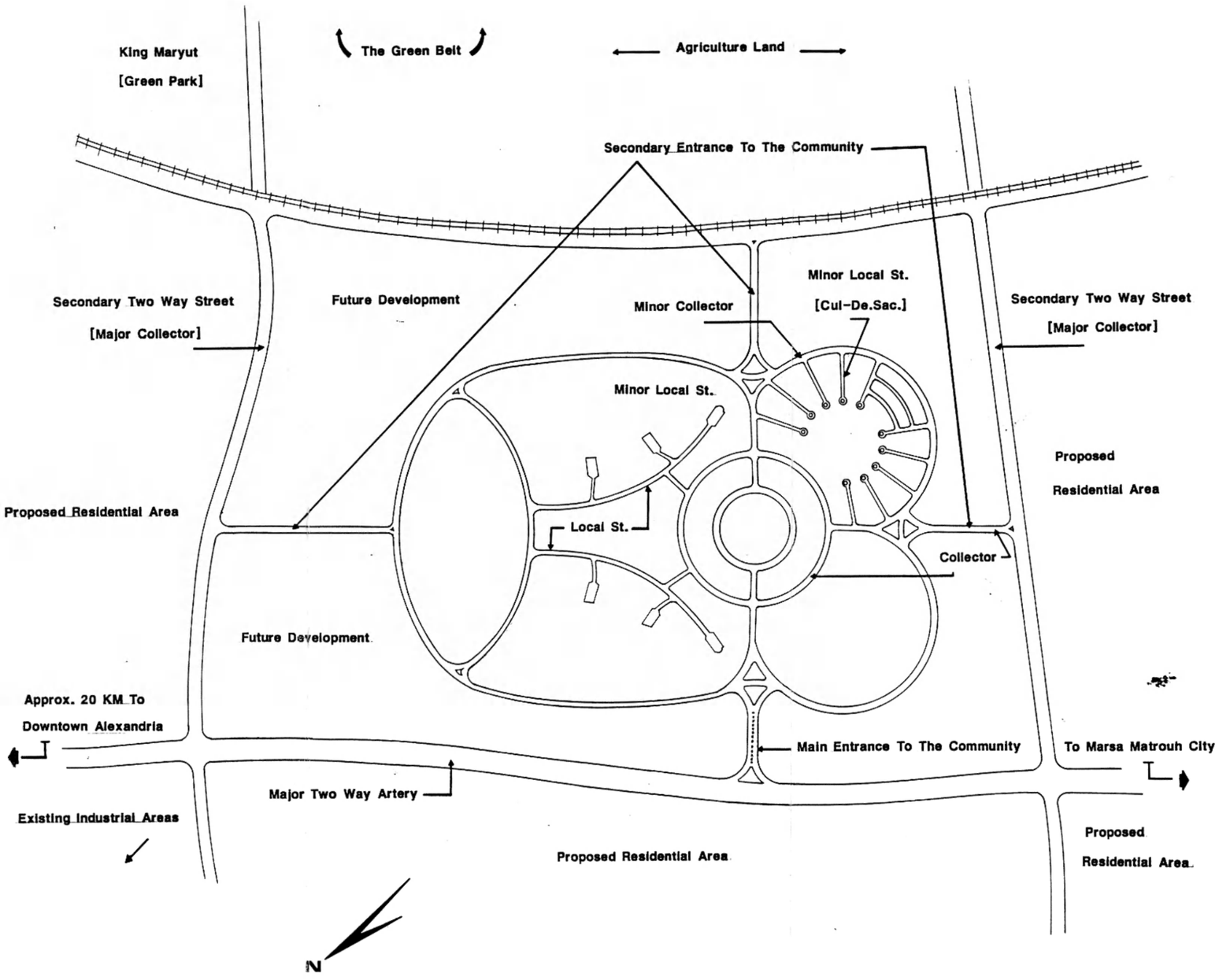


Fig. 56

SITE ANALYSIS DIAGRAM

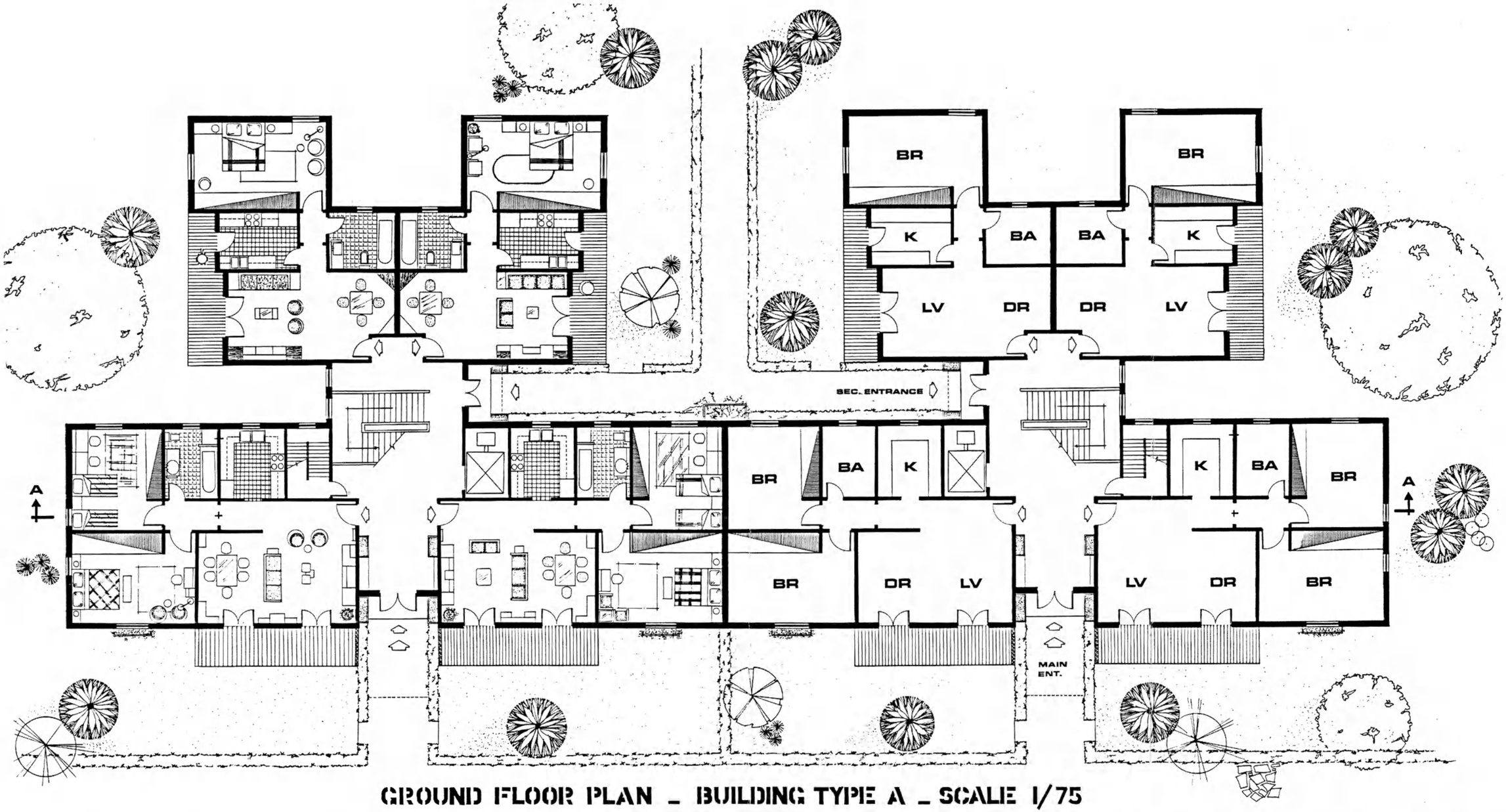
(1) BUILDING TYPE A – RESIDENTIAL – APARTMENT BUILDING .
(2) BUILDING TYPE B – RESIDENTIAL – APARTMENT BUILDING .
(3) BUILDING TYPE C – RESIDENTIAL – ROW HOUSES .
(4) BUILDING TYPE D – RESIDENTIAL – DETACHED HOUSES .
(5) BUILDING TYPE E – RESIDENTIAL – APARTMENT BUILDING .
(6) KINDERGARTEN SCHOOL . (7) ELEMENTRY SCHOOL .
(8) PREPARATORY SCHOOL . (9) LOCAL SHOP .
(10) COMMUNITY SHOPPING, COMMERCIAL AND RETAIL .
(11) HOSPITAL . (12) COMMUNITY PARK AND RECREATION .

Fig. 57

THE MASTER PLAN _ PROPOSED NEW HOUSING COMMUNITY

SCALE 1/1500

0 10 20 30 50 100 200 M



GROUND FLOOR PLAN _ BUILDING TYPE A _ SCALE 1/75

Fig.58

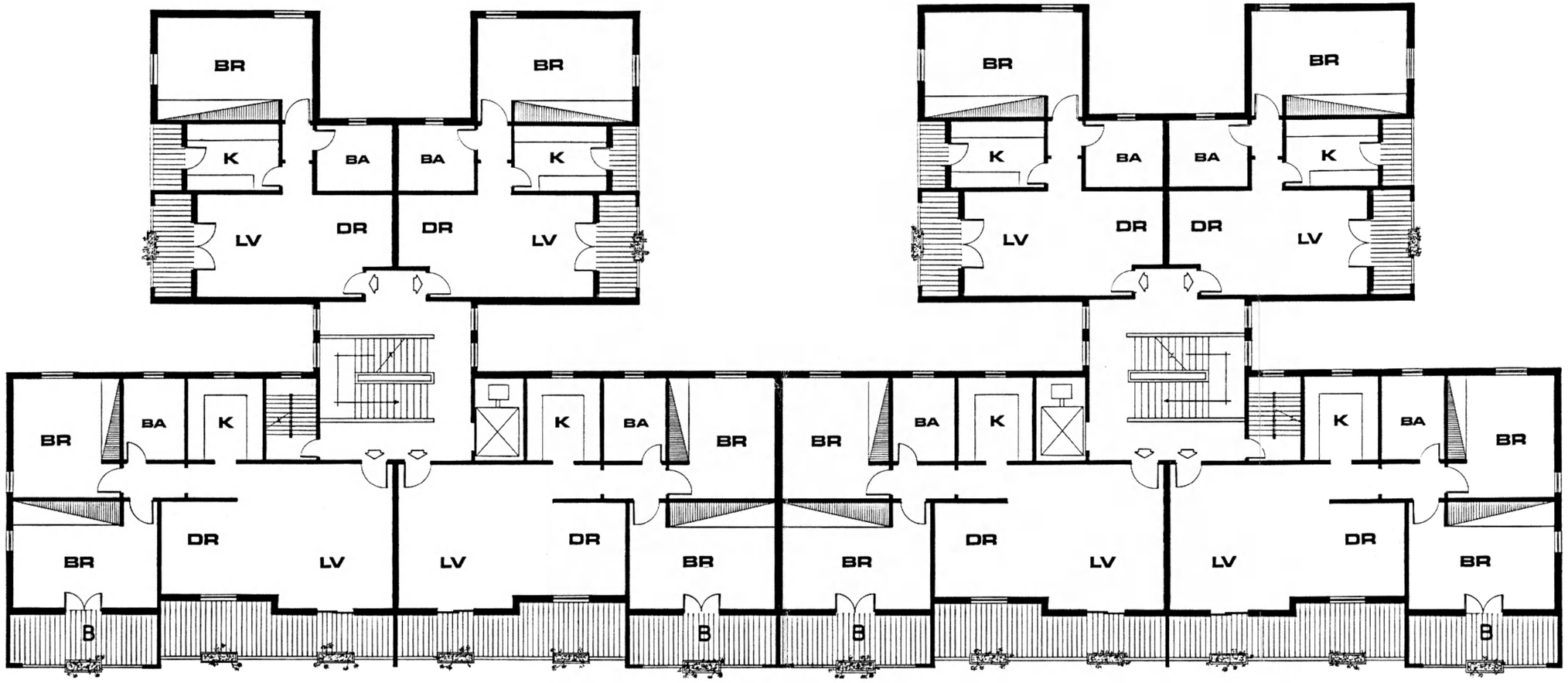


Fig. 59

TYPICAL FLOOR PLAN _ BUILDING TYPE A _ SCALE 1/75

0 0.5 1 1.5 2.5 5 10 M

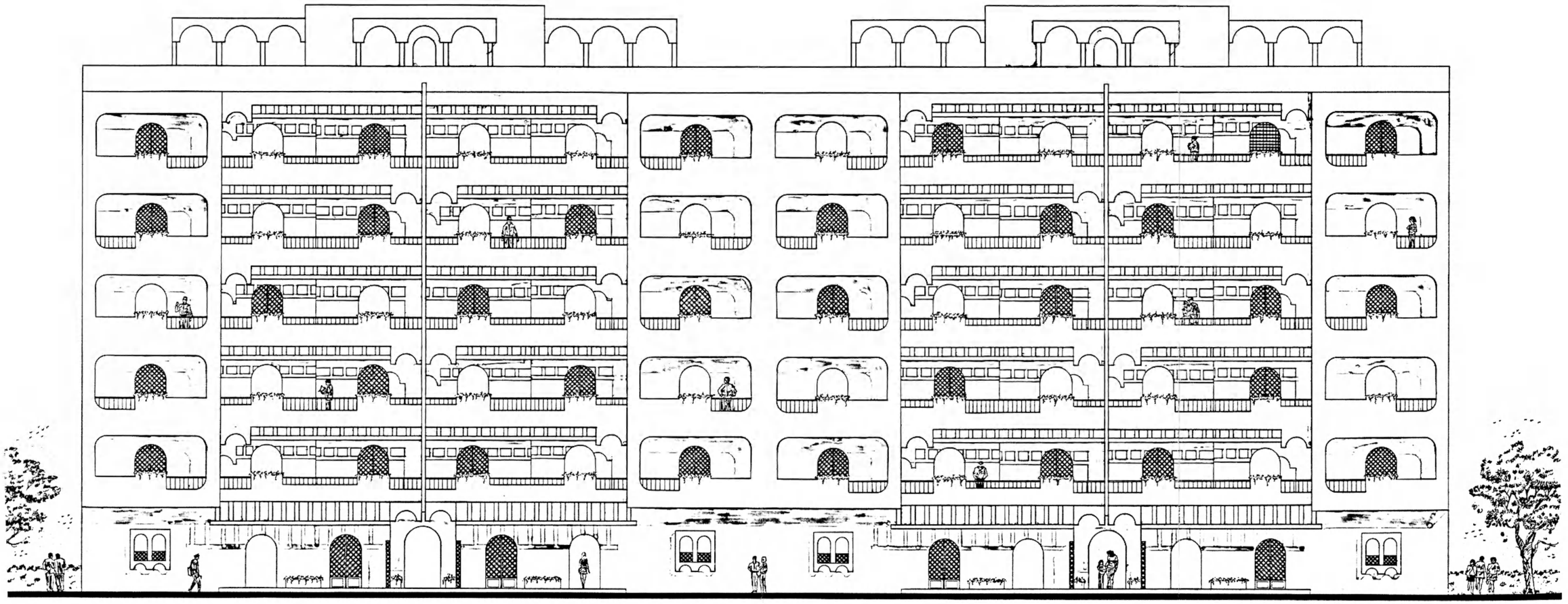


Fig. 60

ELIEVATION _ BUILDING TYPE A _ SCALE 1/75

0 0.5 1 1.5 2.5 5 10 M

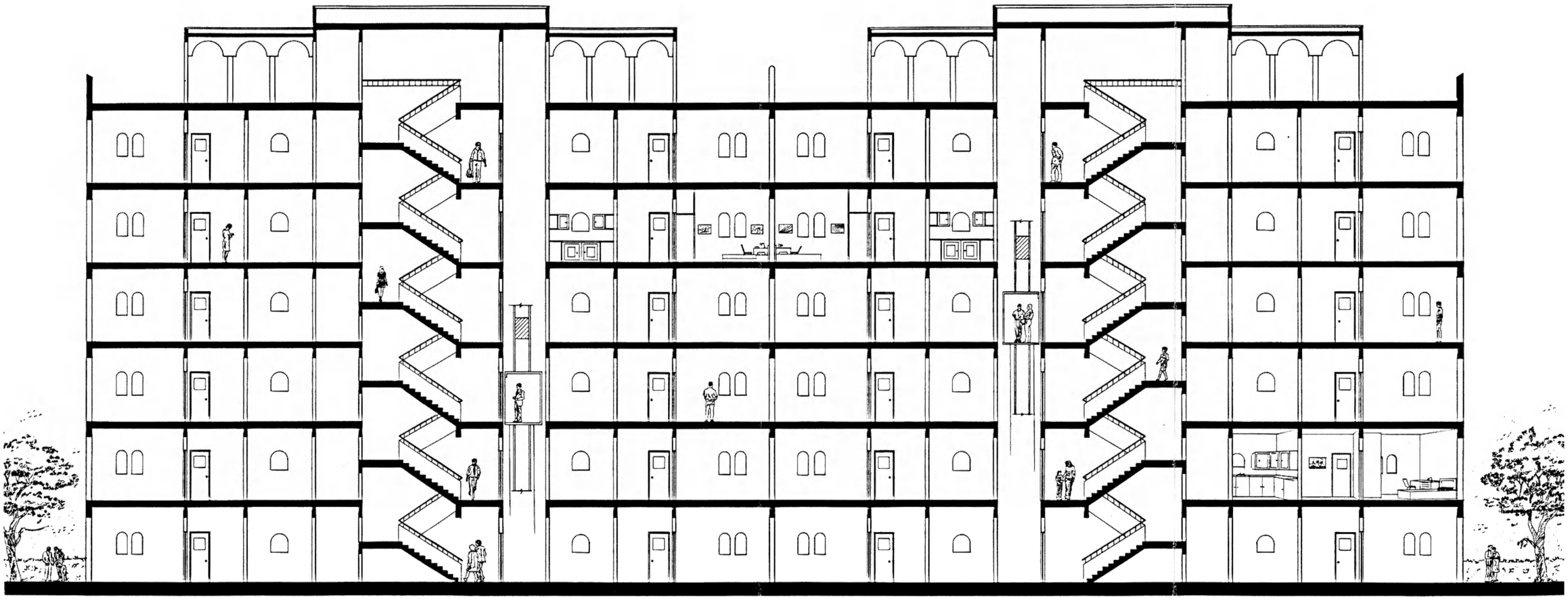


Fig. 61

SECTION A-A - BUILDING TYPE A - SCALE 1/75

0 0.5 1 1.5 2.5 5 10 M

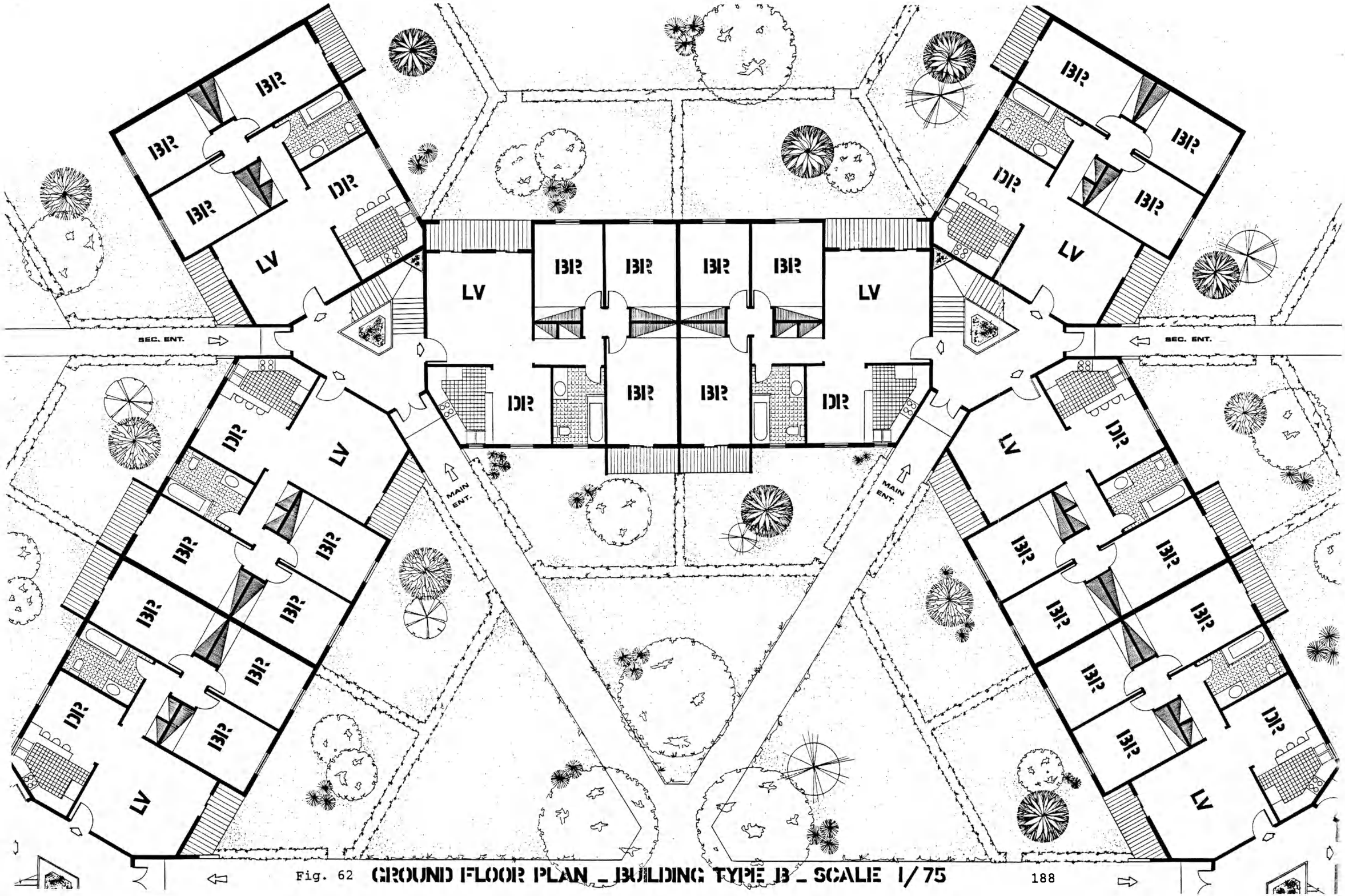


Fig. 62 GROUND FLOOR PLAN _ BUILDING TYPE B _ SCALE 1/75

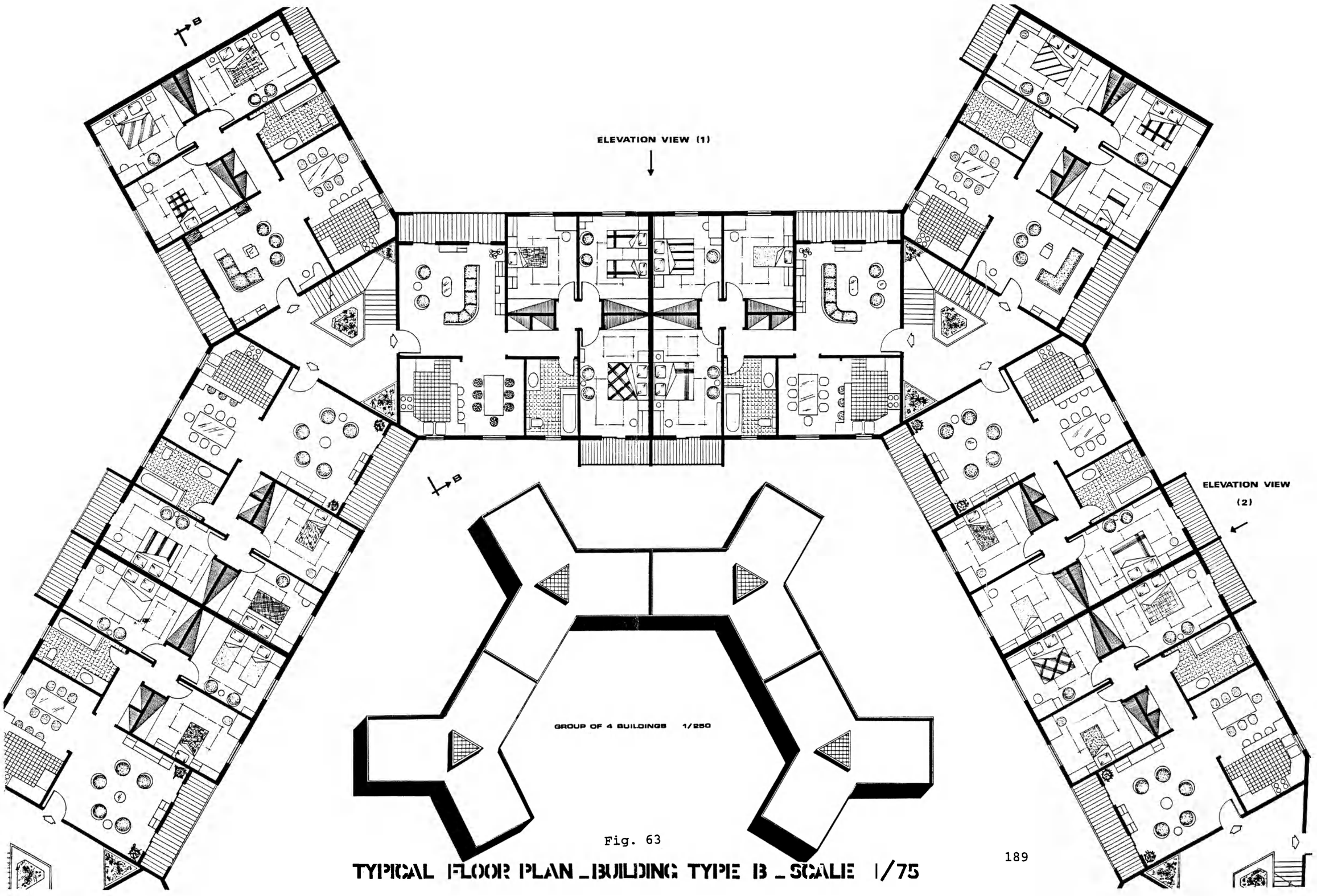


Fig. 63

TYPICAL FLOOR PLAN _BUILDING TYPE B _SCALE 1/75

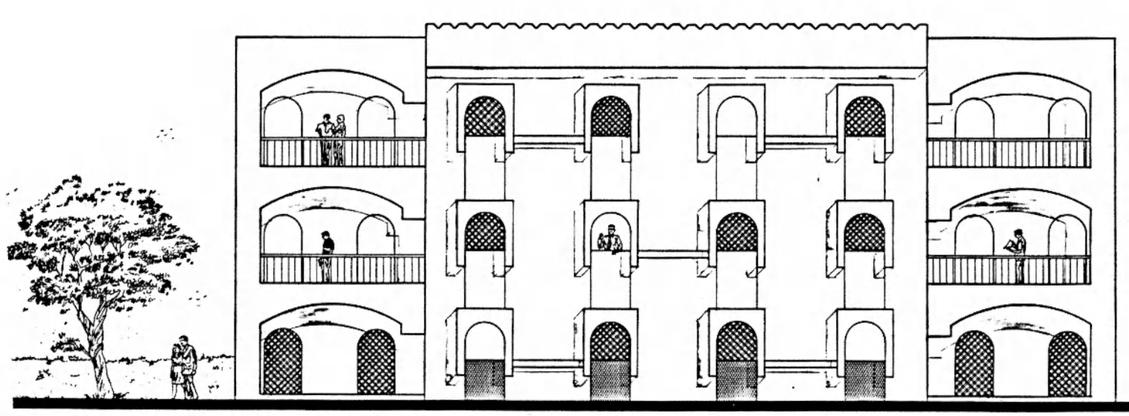


Fig. 65

ELIEVATION 1 _ BUILDING TYPE B _ SCALE 1/75

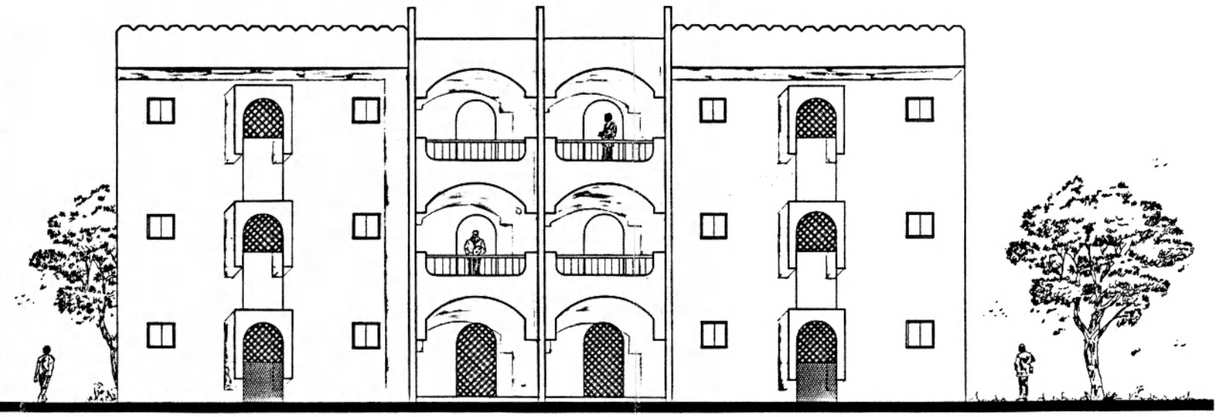


Fig. 66

ELIEVATION 2 _ BUILDING TYPE B _ SCALE 1/75

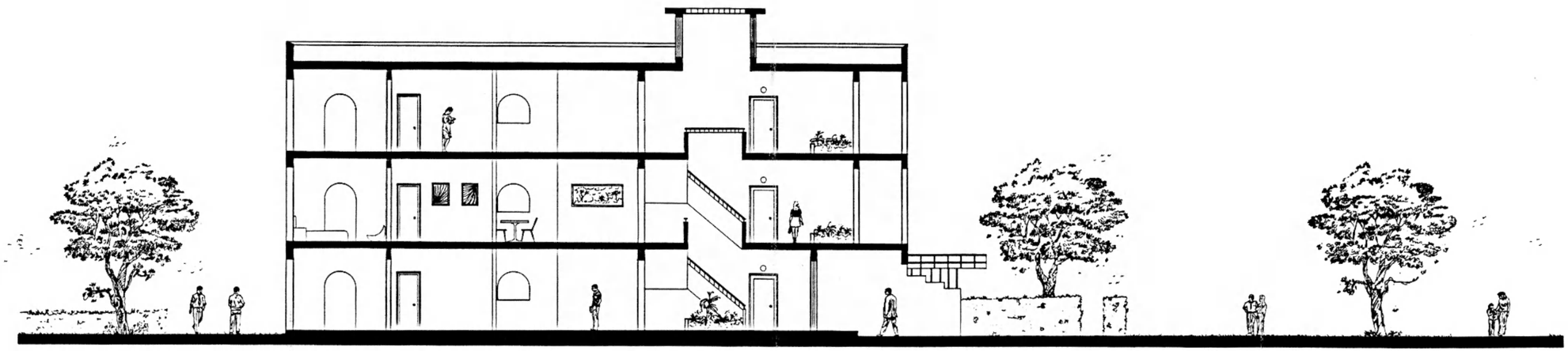
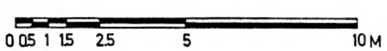


Fig. 64

SECTION B..B _ BUILDING TYPE B _ SCALE 1/75



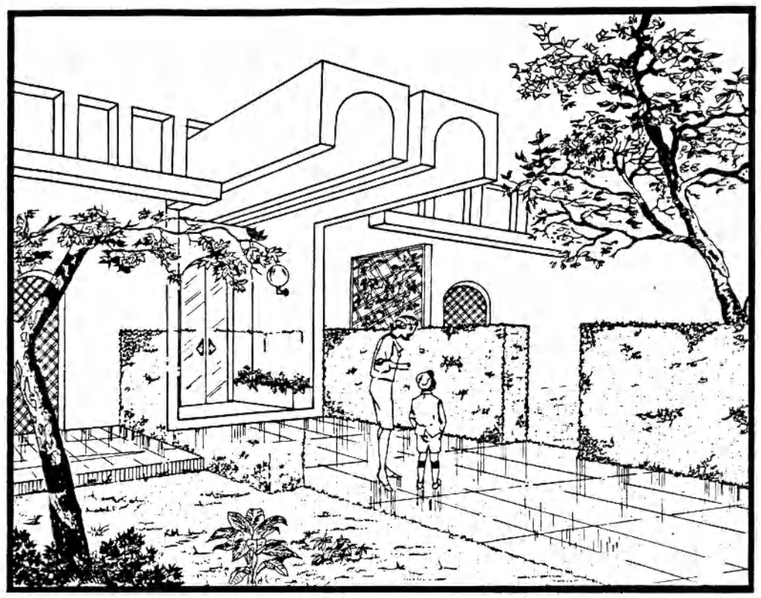


Fig. 68

MAIN ENTRANCE _ BUILDING TYPE A

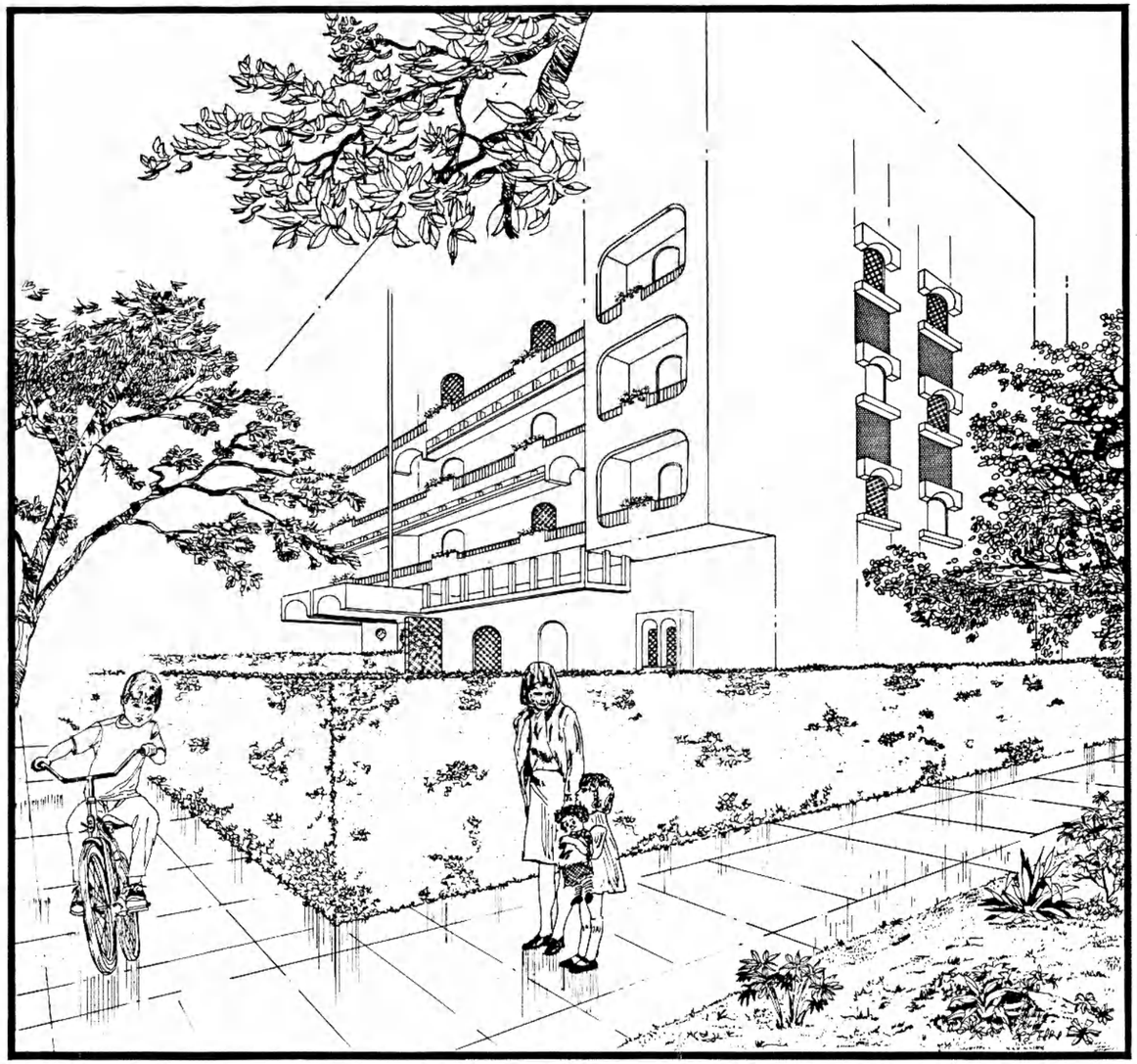


Fig. 67

PERSPECTIVE _ BUILDING TYPE A

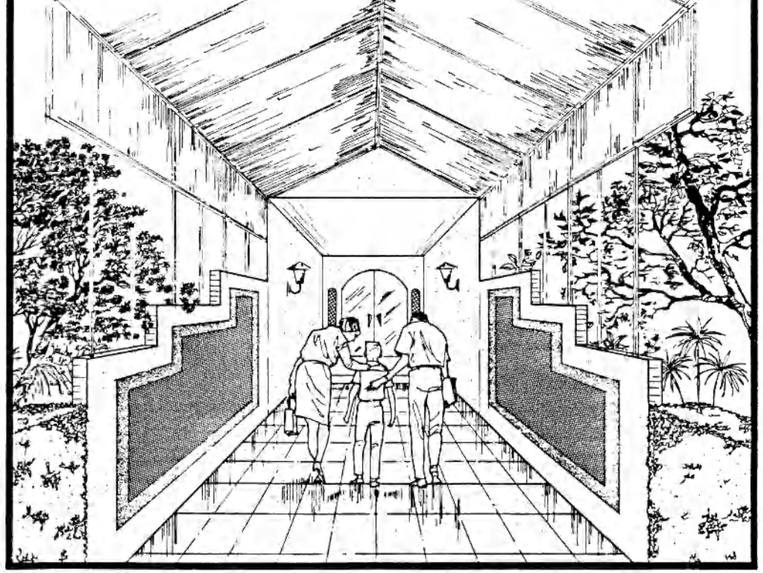


Fig. 69

MAIN ENTRANCE _ BUILDING TYPE B

Fig. 70 Model's Photograph

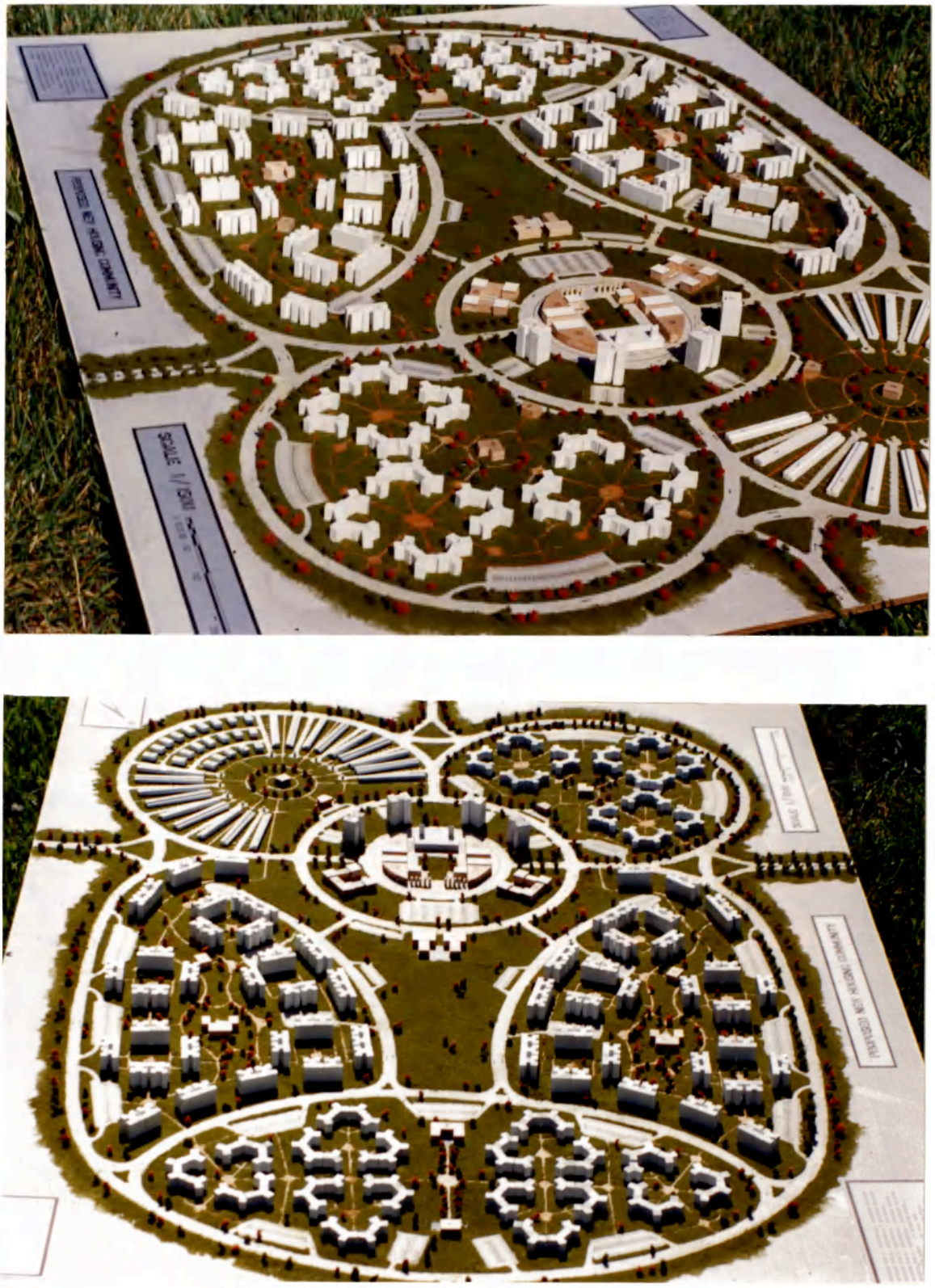


Fig. 71 Model's Photographs

Fig. 72

Model's Photographs (walk ups - 2 stories high)

Fig. 73

Model's Photographs (apartment buildings - 5 stories high)

Fig. 74

Model's Photograph (cluster of apartment buildings)

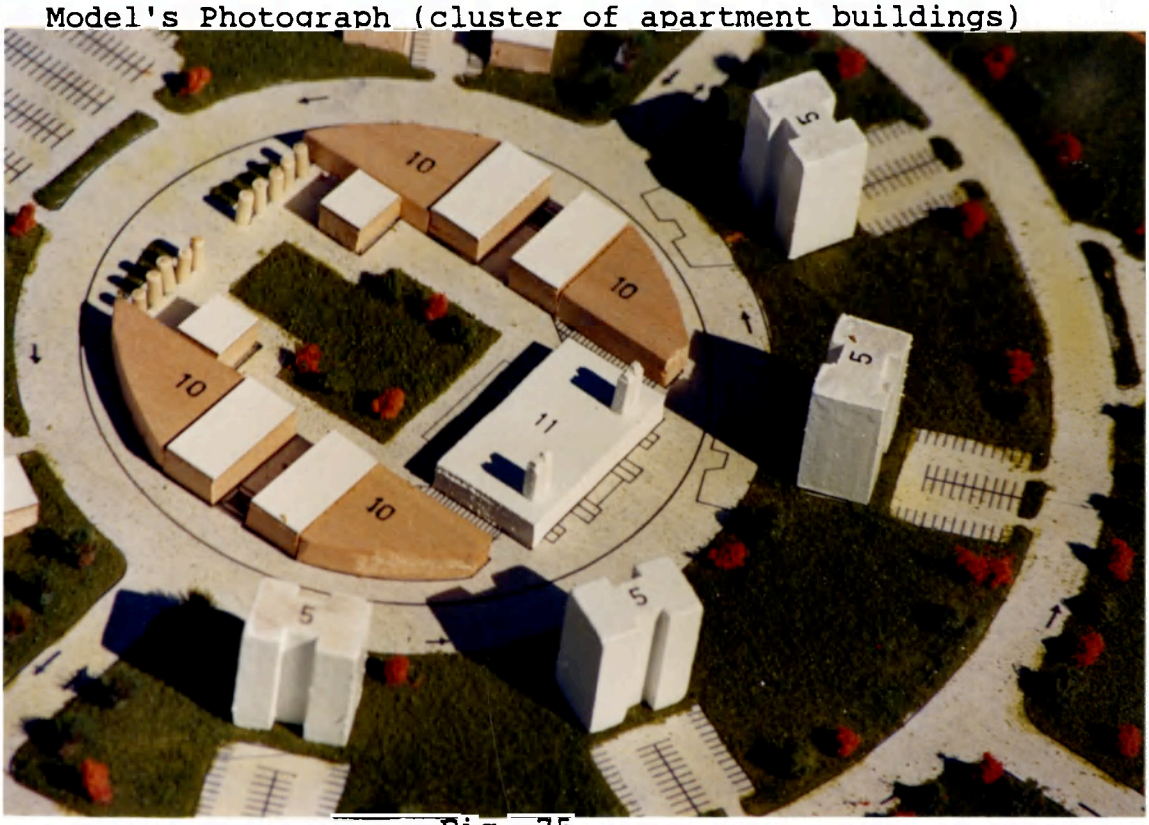


Fig. 75

Model's Photograph (the Mosque and the surrounding area)

CONCLUSION

The foregoing analysis has clearly shown that the region where the great majority of the Egyptian population live - the Nile Valley and Delta - is extremely congested, especially in its main urban centers of greater Cairo and the City of Alexandria.

As the total population of Egypt has grown and the nation has became more urbanized, the housing shortage began to reach crisis proportions.

This thesis is a design of a "proposed new housing community" west of the City of Alexandria on one of the proposed residential sites identified in the Alexandria Comprehensive Master Plan, which was done and perpared by Alexandria University upon contractual agreement with the Governorate of Alexandria.

The purpose of this proposed new housing community is an attempt to create a desirable atmosphere and unique environment to draw people from the city to the new location. Also to support a large industrial area and provide much - needed housing in Alexandria.

In the design of the proposed community the author has attempted to combine past and present, which is a necessity in the perpetuation of culture.

The use of the Garden City Idea was considered as a design form for the proposed new housing community. After a comprehensive study of the Garden City Idea some of its major principles were adapted in the design of the proposed communtiy, these principles are :

1- The community is to be divided into wards or neighborhoods, each based on the population required for one school. Howard recommended six, the proposed community includes five.

2- A park is to be the backbone of each ward. Large open areas in the center of the blocks, joined together as a continuous park.

3- Complete separation of pedestrians and automobiles, or as complete separation as possible.

4- Green belt around the community.

5- The community is to have a fixed physical limits.

6- Common ownership of land for the open parks.

The author believes that the use of the above principles would bring people closer to nature and closer to each other by offering a common meeting ground (open space and parks). The Parks also would be an element of attraction which may bring people to the proposed sity, and generate a sense of community.

The separation of pedestrians and automobiles would help alleviate the tragedy of the huge number of people who die yearly from automobile accidents in Egypt, especially children going and coming back from school. The green belt of trees would reduce the wind speed and minimize unexpected blown sand.

The design of the proposed community did not adapt the following major Garden City's principles :

1- In order to have a complete Garden City, the city must be self-sufficient, and must offer jobs for its own resident. The proposed community does not offer jobs, but on the other hand its location is close to a large industrial area.

2- Ebenezer Howard recommended a population limit of 30,000 inhabitants within the town and 2000 in the country belt. The proposed community is designed for about half this number (14,000 approximately).

3- Unlike Howard's idea of using superblocks, short blocks are used instead. The use of short blocks clustered together create mixed and mingled paths (instead of mutual isolated paths in the case of the superblocks) these enhance the culture and the social life in this part of the world.

Egypt will have to tackle its spatial housing problems over a very long period. Less reliance on foreign models and alien culture will help to challenge the problems of the future. A new consideration and appreciation of local traditions of Islamic culture and of the existing human resources with interpretation of modern ways of living will be necessary to improve the living and working conditions of all Egyptians.

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PROPOSED NEW HOUSING COMMUNITY
WEST ALEXANDRIA - EGYPT

by

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AN ABSTRACT OF A MASTER'S THESIS

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College of Architecture and Desig

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Manhattan, Kansas

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ABSTRACT

As the total population of Egypt has grown and the nation has become more and more urbanised, the housing shortage began to reach crisis proportion. The region where the great majority of the Egyptian population live - the Nile Valley and Delta - is extremely congested, especially so its main urban centers of greater Cairo and the City of Alexandria.

The Government of Egypt is fully alert, and has responded with a desert settlement strategy. This strategy has already moved into the implementation stage. It calls for the development of new settlement outside Cairo - particularly in the canal zone and along the coast to the west of Alexandria.

A Comprehensive Master Plan Project for the City of Alexandria was done and prepared by Alexandria University upon contractual agreement with the Governorate of Alexandria, in 1984. The fundamental concern of the Alexandria comprehensive master plan was how best to deal with the anticipated growth in population of approximately two million people above the present population within favorable environmental conditions. The comprehensive master plan has located some areas to absorb the growth in population.

This thesis is a design of a "proposed new housing community" west of the City of Alexandria on one of the proposed

residential sites identified in the comprehensive master plan.

The purpose of this proposed new housing community is an attempt to create a desirable atmosphere and unique environment to draw people from the city to the new location. The major goals were :

- Minimizing the amount of through traffic in residential districts which increases accidents and lessens the amenities of residential areas.
- Preserve an adequate amount of apropriate land to provide space for recreational facilities and for open areas, which perform the positive functions of providing scenic beauty and visual variation for the community's residents.
- Preserve cultural heritage, and respond to the concern in Egypt right now regarding the recall of Islamic Architecture in Egyptian cities.
- The community is designed for middle income residents. The expected range of users/occupants vary from a few singles to mostly young couples, and some small families.

The proposed community includes :

- Five residential areas grouped to form the housing community.
- The residential areas offer four different types of housing:
    * Detached single family houses

    * Attached single family houses (row houses)
    * Walk ups
    * Apartment buildings

- Five Kindergarten/Elementary schools and one Preparatory school.
- Five local convenience shops, in addition to a large community shopping and commercial areas.
- Central Park, open green areas, recreation and entertainment facilities.
- Administration and retail spaces.
- Circulation system and appropriate parking spaces.
- Mosque.

The proposed community is designed for a total population of approximately 14,000 inhabitants, resulting in an average density of 54 dwellings per acre.