ABSTRACT

STANDARDS FOR URBAN DEVELOPMENT IN SYRIA

by Najati Ibrahim El-Imam

Inspired by thier fine taste and culture, the Syrian people through the ages created a vast domain of commercial and industrial enterprise, and they built big cities. By its nature the city is a permanent institution whose purpose is to shelter the continuing activities of people.

The Syrian people have gathered in cities to exchange their mutual welfare. This is an age of industry and technology, and the urban texture accommodates the Syrian economic and social system. By the year, 1956, the number of urban dwellers had increased to one-third the total population. The Syrian cities are scarred by congestion and corruption, faulty experiments and ugliness. It is not the desire of the Syrian people that their cities and urban communities be so built. It is rather their desire and ambition to create fine cities to accord the requirements of science, technology and new inventions of this remarkable age.

The Syrian urban dwellers during the last two decades, have been fleeing from the city in search of relief from the ugly evils of congestion in the old sectors of Damascus and Alleppo. This has never meant to raise the question of decentralization versus rebuilding. This was an outward movement under the pressure of new waves of overspill that sought dwelling space in the vicinities of the two big cities, Damascus and Aleppo. The central problem is to accommodate this overspill in small, compact and healthy urban environment.

Thus far, expansion has sprawled in the form of scattered homes

over the available outlying orchards and countryside. This has provided an outlet to the congestion in the outmoded living environment within the old sectors of the cities rather than a means to accommodate gracefully the expanding urban population. It has not been guided by the conceptions of planners, progressive civic leadership in business and governmental administration. In brief, it lacked coordination, systematic direction, and inspired design.

Stability depends upon the quality of the new developments themselves. It also depends upon the quality of the other inherited urban environments and those that will follow. Stability is dependent on the physical, social and economic standards at which a community maintains itself, the improvements and maintenance of existing facilities and the standards it demands for future improvements. These standards show the difference between healthy and degenerated urban environment.

Urban growth is, in some respects, similar to organic processes in nature. All urban activities and functions are separable. The only case in which they may be isolated is that of sprawl, and, for that reason, sprawl is bad and destructive to the urban texture.

Urban development requires continuous responsibility, all contributors act together and interdependently. The degree to which the efforts of these contributors are integrated reflects the ambitions and aspirations of the community; the responsibility and social interactions of the Syrian citizens. When the efforts of those contributors to the urban development are unbalanced, absolescence develops and the community declines. Progress becomes inert, the community no longer provides a successful commercial and living opportunity, and the environment degenerates.

The real plans for the Syrian cities are the standards of the physical environment as prescribed by the living habits, social economic and educational activities. The implementation of these standards imposes a singular responsibility upon the citizen as must be self evident. It is the obligation of the Syrian urban dwellers to determine the standards they deem appropriate for the urban environment and translate these standards into effective codes. It can be fairly stated that this responsibility has been accepted with intelligence and ambition by the Syrian citizens. Damascus is an arena to that fact. If the Syrian urban dweller will bring improvement to the urban environment, it is the duty of the people, civic leaders in politics and business to assure this responsibility with courage, integrity and impartiality to serve the public interest.

Since the principles and plans applied for the physical development of the community set the standards for that development, it is important to examine, re-check and change the effect of these principles and the potentials for progressive improvements in them. As a matter of fact, the urban developments themselves bear evidence to the ineffective principles and bad physical planning.

The standards and master plans mold the urban environment progressively, but, it is the responsibility of the Syrian urban dweller to avoid drifting this environment into a state approaching anarchy.

As a basic solution for the physical planning dilemma, this study designates the areas of the proposed new community-unit and the various urban land uses: residential, commercial, recreational, transportation and open space. It spells out the density of land use in terms of

population or building coverage; it specifies the areas for multiple housing and single dwellings.

This study will establish the allocation of the heiye or neighborhood units, centered by the educational institutions, shopping stores and other servicing facilities. It is the study which sets the standards to a sound comprehensive and health urban growth. This study establishes sound standards for major highways, minor arterials and local streets network as well as the pedestrians sidewalks and malls. These standards as proposed in this study will help in the integration of the vehicular and pedestrian circulation systems. This study forms the foundation for zoning ordinances, and the precise plans for parks and recreation, the location of schools, children and youth play areas, the community center, social and recreational center and adult athletic fields. No doubt that these standardized urban facilities will create a decent Syrian urban environment and improve contemporary Syrian living patterns.

STANDARDS FOR URBAN DEVELOPMENT IN SYRIA

A SCHEDULE OF STANDARDS FOR COMMUNITY FACILITIES AND LAND SPACE REQUIREMENTS AS RELATED TO THE DEVELOPMENT OF A THEORETICAL NEW COMMUNITY-UNIT TO SERVE DAMASCUS, SYRIA. BASES OF CALCULATIONS AND DERIVATIONS FROM ACCEPTED STANDARDS OF OTHER NATIONS ARE INCLUDED.

By

Najati Ibrahim El-Imam

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER IN URBAN PLANNING

Department of Urban Planning and
Landscape Architecture

1962

ACKNOWLEDGMENTS

The author wishes to express deepest gratitude and sincere appreciation to his advisor, Professor Myles A. Boylan, chairman of the Department of Urban Planning and Landscape Architecture, for his knowledge, understanding and guidance toward the completion of this thesis.

The author also would like to express his hearty appreciation to Associate Professors Robert B. Hotaling, Carl Goldschmidt, Joseph M. Prochaska and Stewart D. Marquis for their criticism and critical reading of the text of this study.

TABLE OF CONTENTS

PAGE

PART ONE: HUMAN SOCIETY 1

CHAPTER

1. HISTORIC BACKGROUND 2

Glimpse in History 2
Geographic Characteristics 2
Emergence from Subjugation 3
Damascus Oasis 5
Late Medieval Urban Pattern 6

2. NEW HORIZONS 15

The Experience of Other Societies in Accommodating New Urban Development 15
Sweden 16
Holland 20
Britain 23
Summary 26

3. PROPOSAL: A BETTER SYRIAN URBAN SOCIETY 28

Social Goals 28
Cultural Goals 34

PART TWO: PHYSICAL PLANNING AND LAND USE 36

Proposed Community Unit to Accommodate New Urban Growth 37

4. LAND FOR HOMES 39

No Planning Era--Bad Planning Era 39
The Urban Land Problem 40
Density Standards 41

5. LAND FOR COMMUNITY-SERVING FACILITIES 52

I. Land Requirements for Educational Facilities . . . 52
School Age Population Distribution 53
Pre-School Facilities--Physical Planning and Space Criteria 57
Elementary School, Physical Planning and Space Criteria 59
Intermediate and Secondary School, Physical Planning and Space Criteria 67

TABLE OF CONTENTS (Cont.)

CHAPTER PAGE

II. Land Requirements for Social and Cultural Facilities 69
Community Center, Physical Planning and Functions. . 69
Age Distribution of Adults in the Population 71
Criteria for Calculating Land Area Requirement . . . 71

III. Land for Health Service Facilities 75
Elements of Health Service Facility. 75
Criteria for Calculating Land Space Requirement. . . 75

6. LAND FOR RECREATION 78

Pre-School Children Play-Area 78
School Age Youth Play-Area 78
Adult Athletic Field 80
Passive Recreation "Community Parks" 82

7. LAND FOR COMMERCE AND BUSINESS 87

Historic Background 87
Present Economic Perspective 87
Facilities Needed 88
Criteria for Calculating Land Area Requirement . . . 90
Land for Industry 94

8. LAND FOR TRANSPORTATION 96

Land for Vehicular Traffic 97
Land for Pedestrian Walks and Malls for Internal Circulation 101
Bus Terminal Station 101
Municipal Parking Lot 101
Freight and Parcel Pick-Up Service Station 102
Taxi Cab Parking Station 102
Other Facilities 103

9. SUMMARY 105

Residential Areas 107
Educational Institutions 108
The Community Center 108
Health Services Center 109
Recreation Facilities 109
Commerce and Business Facilities 110
Transportation Facilities 110

TABLE OF CONTENTS (Cont.)

	PAGE
PART THREE: APPENDICES	114
APPENDIX I	115
APPENDIX II	121
APPENDIX III	122
BIBLIOGRAPHY	125

LIST OF TABLES

TABLE		PAGE
1.	Net Dwelling Densities, Bases of Calculations	46
2.	Variable Net Residential Density and Land Coverage Recommended for Areas of Multi-Family Dwelling Units	48
3.	Net Dwelling Units Density per one Acre if Residential Land and Building Coverage	49
4.	Land Areas Recommended as Exterior Space per Habitable Room of All Major Dwelling Uses	50
5.	Land Requirements per 1000 Persons for Auxillary Land Uses for Various Gross Densities	51
6.	Assumed Family Size and Age Distribution for Nursery, Kindergarten and Elementary School Ages	54
7.	Assumed Intermediate and Secondary School Age Distribution	56
8.	Space Requirements for a Pre-School Unit to Accommodate Nursery and Kindergarten Functions for One "Heiye" or Neighborhood	60
9.	Elementary School Site Size. Areas for Different School Uses, and Total Area by School Age Population	66
10.	Secondary School Site Sizes	68
11.	Age Distribution of Adults per 1000 Persons	72
12.	Community Center Activities and Land Uses, Basis of Calculations	73
13.	Community Center Land Uses, Lot Size, and Total Area for 10,000 and 30,000 People Community	74
14.	Health Services Site Size	77
15.	Bases of Calculation of Unit Space Requirements for Play-Park Area for Pre-School Children 2-6 Years . .	79
16.	Bases of Calculation of Unit Space Requirements for Play-Park Area for Elementary School Age Children .	81
17.	Bases of Calculations of Unit Space Requirements of Athletic Field for Adults Aged from 18 and Over. . .	83

LIST OF TABLES (Cont.)

TABLE PAGE

18. Syrian Urban Communities Recreational Park Sizes Recommended Total Area, by Type of Use and Population of Community 86

19. Space Requirements for Shopping Facilities for Different Sizes of Urban Developments and Use 93

20. Standards for Highways, Streets and Pedestrian Walks. . 104

APPENDIX I. TABLES

1. Application of Different Rates of Densities on Families With Households that Range Between 3-4 Persons With Number of Rooms per Dwelling Unit 115

2. Allocation of Net Residential Area Per Dwelling Unit, To Major Dwelling Uses 116

3. Allocation of Net Residential Area per Dwelling Unit, To Major Dwelling Uses for Multi-Family Dwellings. . 117

4. Analysis of Space Requirements of Unit Per Pupil for Syrian Secondary School 118

5. Space Requirements by Standards for Syrian Secondary School Facilities 119

6. Estimation of Various Gross and Net Densities and Its Effect on Open Space Standards 120

LIST OF GRAPHICS AND PHOTOS

GRAPHICS PAGE

A Map of Syria 4

A Graphic Presentation for a Schematic Grouping of Residential and Urban Facilities 121

PHOTOS

An Aerial View of the Old Sectors of Damascus 10

A Scene of a Street With the Abutting Houses in the Old Sectors of Damascus 13

PART ONE

HUMAN SOCIETY

CHAPTER 1

HISTORIC BACKGROUND[1]

A. Glimpse in History

Owing to its geographical position, Syria has been well known historically as the bridge of three continents. Asiz, Europe and Afica. It has been the battle ground of many wars that have changed the face of history. It has witnessed the wars involving the Phoenicians versus the Greeks, Assyrians versus Egyptians, Greeks versus Persians, Romans versus Parthians, Byzantians versus Arabo-Persians, Crusaders versus Saracens and, more recently, the French versus the Syrians. As a frontier, Syria has had only the briefest periods of security and independence. Prosperity of this country usually went hand in hand with systematic development. For example, Syria experienced stability, security, a high standard of living and wealth during the rules of the Romans (27 B.C.-284 A.D.) and Omayyads (700 A.D.-1050 A.D.).

B. Geographic Characteristics

As a geographic region it is limited from the north by the Tourus mountains of Turkey, the Arabic Desert to the south, the Euphrates River to the east and the Mediterranean Sea to the west.

Nature and weather complicates living conditions. The Alawites, Lebanon, Anti-Lebanon and the Hermon ranges of mountains influence the

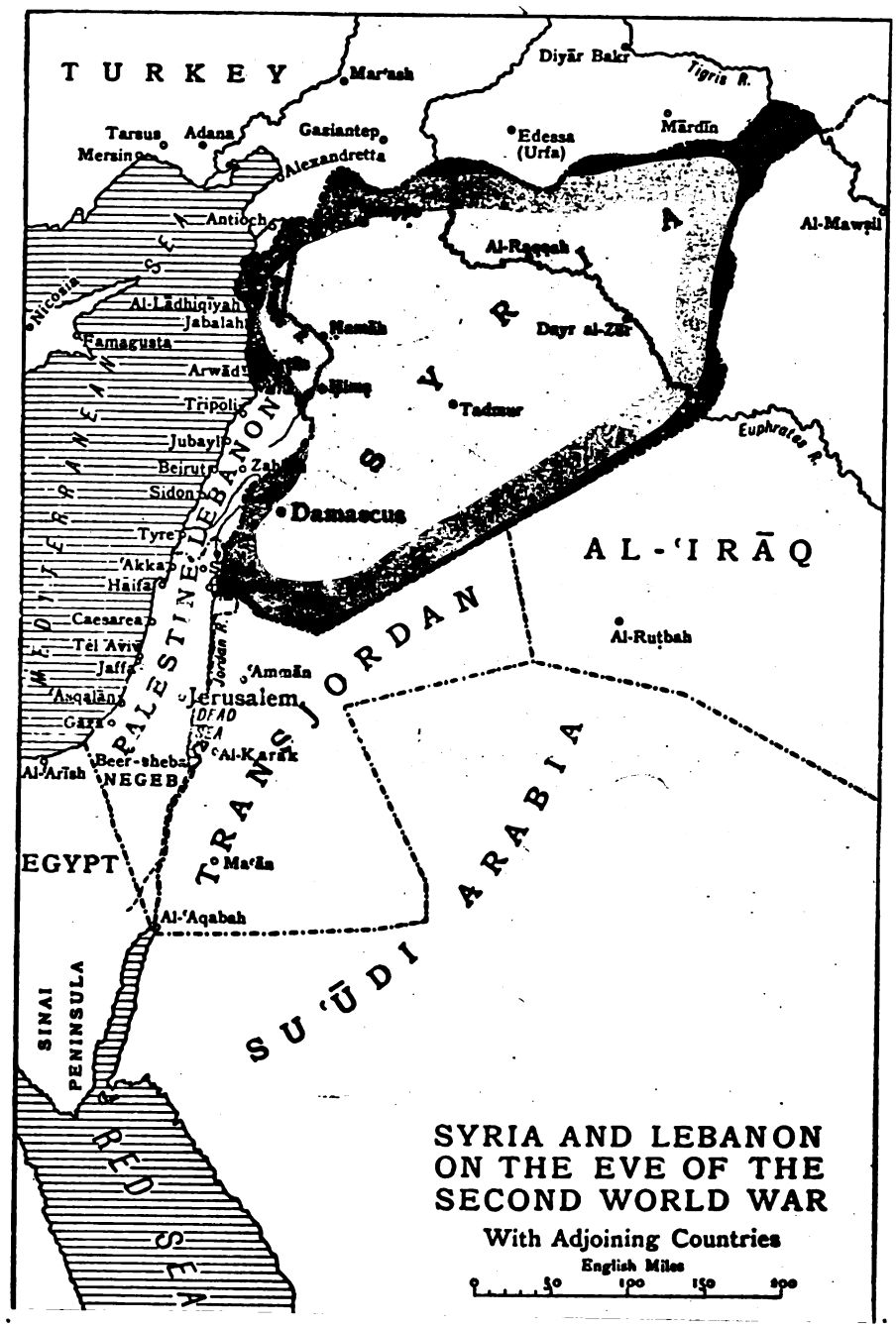
[1]R. Fedden, Syria, An Historic Appreciation, London: Robt. Hale Ltd., pp. 4-39.

rainfall season. The Orontes River runs from the south to the north. The Euphrates crosses the northeastern corner of the region. The Barada River courses for 100 miles creating the Damascus Oasis and then plunges into a desert marsh lake; wasted, in an area that needs every drop of its water for land reclamation projects; an example of irrational combination of water and land resources. Where there is a sea of flowers in Spring, there are absolute grassless plains and arid lands in July. Thus, types of vegetation in the mountains and hills, in the littoral, and the inland are utterly different. This difference creates very unbalanced income levels and standards of living between the farmers in different parts of the country. These geographic and political factors have played major roles in the general decline of Syria and the atrophy of its life over the last ten centuries.

C. Emergence from Subjugation

The descendants of the men who presented to civilization the first alphabet and a permanent numerical system, who explored the Indian Ocean and West Coast of Africa. who contributed to the Greek anthology and civilization, who harboured and preserved the refugee Greek culture from Roman occupation and built the great basilica of St. Simeon Sty-lites in Damascus were disorganized and impoverished by the incompetence of the Fatimid Caliphs in Cairo (1350-1420), ravaged by the holocaust of the Mongal emperor Tamerlane (1400) and finally impoverished by the uncompromising rule of the Turks (1550-1915) and later by the French (1920-1948).

The middle of the nineteenth Century saw new horizons in the Syrian history. This country, with a heavy load of debt and a painful heritage,


TURKEY
Mar'ash
Diyār Bakr
Tigris R.
Tarsus
Adana
Mersina
Gaziantep
Alexandretta
Edessa (Urfa)
Mārdīn
Al-Mawṣil
Antioch
Al-Raqqah
Nicosia
Al-Lādhiqiyah
Jabalah
Famagusta
Homs
Dayr al-Zūr
Arwād
Tripoli
Tadmur
Jubayl
Euphrates R.
Beirut
Zah
Sidon
Damascus
Tyre
AL-'IRĀQ
'Akka
Haifa
Caesarea
Al-Ruṭbah
Tel Aviv
Jaffa
Jordan R.
'Ammān
Ashqalān
Jerusalem
DEAD SEA
Gaza
Al-Karak
Al-'Arīsh
Beer-sheba
NEGEB
EGYPT
Ma'ān
Al-'Aqabah
SINAI PENINSULA
RED SEA
SU'ŪDI ARABIA
MEDITERRANEAN SEA
LEBANON
SYRIA
PALESTINE
TRANSJORDAN
SYRIA AND LEBANON
ON THE EVE OF THE
SECOND WORLD WAR
With Adjoining Countries
English Miles
0 50 100 150 200

began to draw a new plan of life and survival. Syria integrated itself into the near-eastern countries and the Mediterranean family. The economic development was obvious but slow; cultural and social developments were enormous. Western techniques were adopted to improve local industries. Western educational methodology, clothes, and urban way of life were adopted to improve the domestic life in Syria, and are continuing to do so with ever-increasing effect.

D. Damascus Oasis[2]

To trace the urban growth of Syrian cities more specifically, a description of some of the characteristics of such a city as Damascus, the oldest city in the World, will illustrate this development. The ancients were right when they called the Barada the "River of Gold". It literally creates Damascus and its surrounding Oasis. The so called oasis is a fertile land surrounded by arid and semi-desert areas. The Barada River springs from the anti-Lebanon mountains and flows to the southeast irrigating the valleys and nourishing villages and life along its way. Barada made possible the existence of this ancient city and contributed more than anything else to its particular structure and character.

The complex system by which this river is made to irrigate the city and its suburbs dates mainly from the Aramic, Greeks, Romans, and Umayyad periods. Turkish baths, bazaars, and inns bringing the echo of gurgling and running water to the ears of the residents. To this essential resource the old sectors of Damascus owe most of their charm,

---

[2]Ibid.

and private residences owe much of their atmosphere of leisure and comfort.

The history of Damascus, unlike that of many other cities, does not have to be compiled from fragments of manuscripts or pages of books, It exists in carefully located monuments and architectural remains that tell the whole story and reflect the ages and events.

For most historians and archeologists the importance of the City does not begin with the Aramic, Roman or Byzantine Damascus; they begin with the period of the Umayyad's Caliphs who are famous for their efficiency in administration and executing improvement projects. Under the regime of these Caliphs the town, as the Capital of the Islamic World, witnessed its golden age; a hundred years of incomparable splendour, from the middle of the seventh to the middle of the eighth centuries.

E. Late Medieval Syrian Urban Pattern

For a newcomer to Damascus and its Oasis, it is precisely the Damascus character and Syrian tradition that create its charm. The more it thoughtlessly imitated the West, the more it lost its charm and oriental flavour. In the more interesting parts of Damascus, where the influences of the West have hardly penetrated, a medieval tradition of life and conduct exists unchanged.

Should a governor or "Wali" of the fifteenth and sixteenth century return in a visit to Damascus he would recognize the same types of craftsmen and artisans in the same spots where he used to see them. He would find his way without difficulty through the twisting and tin-roofed markets and bazaars, locating many of the crafts he knew in their

old streets. He would find the Turkish public baths he used to enjoy with his friends still in use. He would see the mosques at noon jammed with rows of worshipers facing Mecca with confidence and dignity.

The town declined when Abbasides of the eighth century moved the Caliphate (the capital) to Bagdad on the banks of the Tigris. During the reign of Saladin and the Ayyubids in the twelfth and thirteenth centuries, the town re-built its glory and magnificence and there arose countless buildings - mosques, bazaars, hospitals, khans, mausoleums, monastaries, and public baths - which were a dominant feature of the urban pattern of this era. The Mongol invasion (1400 A.C.) was so completely destructive that it left the town in ashes and desert-like conditions for two generations. However, the buildings that escaped Tamerlane's holocaust in the year 1400 A.D. are still existing up to the present time, a living record of its fascinating history. The principal features of the Syrian city that have endured from the past till the present time are: (1) the mosque, (2) the inn, or "Khan", (3) the market, or "Suk" and (4) the homes and residential areas, or "heiyes".

1. The Mosque

In the course of reviewing the medieval Syrian urban patterns of Damascus and Allepo, the visitor sees many fascinating architectural features: the magnificent and balanced architectural massing of the Tekkiyeh - Mohammaden monastary - of Sultan Salim; the pencil-shaped minarets of the mosque, with arcaded cloisters built in alternating courses of black basalt and white stone, and capped with small domes penetrated with glass discs; its basin of grey-green water and perpetually bubbling fountain.

The great mosque which stands on the site of the temple of Jupiter Damascenus was once the center of the early Roman town. Avenues lead up to it from east and west. What makes the great Mosque's magnificence is in fact its atmosphere and its mosaics - not its history. The court- conveys a sense of spaciousness and dignity in spite of its silence and echos. The stones are worn and dim. Some of the courses of masonry are mortarless, and the arches are piled with faded decorations of red and blue. All the features of the mosque show repeated adaptations to particular circumstances and the flavor of time. When looking at specific details, such as the massive northern minaret, one's interest in history stirs. The mosaics show the Byzantine elegance and fine craftsmanship; they are the wonder of the mosque. They exhibit a design that is a masterpiece of craftsmanship, made by Byzantine artisans with a compromise that was characteristically Syrian.

2. The Inn "the khan"

The vaulted Azem Khan is another prominent feature of the medieval quality of Damascus. This urban facility was built for the convenience of the eighteenth century merchants and caravanists. It exhibits an impressive facility of the caravan traffic which at that period brought immense wealth and repute to the town. The Khan in general represents a type of multi-purpose facility. It is built in the standard fashion of the college of the past with four sides of a quadrangle centered through an archway. A Khan is designed to accommodate not only a variety of oriental goods but a number of merchants and travelers.

The first story (in America the second story above the ground) is divided into separate living quarters, while the ground floor consists

of a series of lock-ups for a safe storage of merchants goods. Stables for the camels and horses of the caravan are included here along with food storage vaults. The courtyards with water fountains, planted trees and bright sunlight round out the picture. The functions of Khans are obsolete today; but because of their close proximity to the markets, they are still used as handicrafts workshops and warehouses.

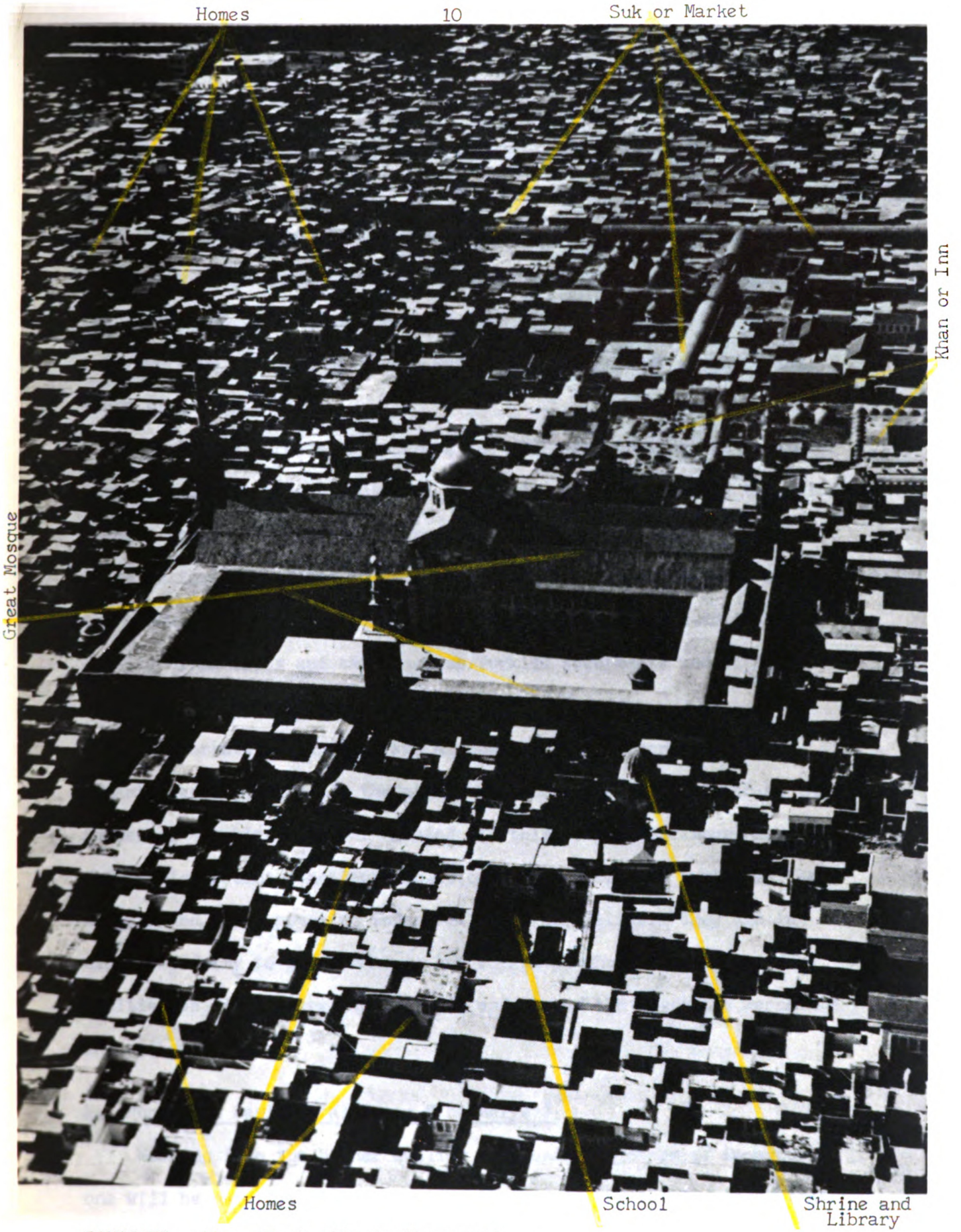
3. The Market "the Suk"[3]

The traveler, wandering through the Suks of Damascus in the old parts of town would be surprised and delighted at certain local figures: the sherbet seller with his leather geared lever, dressed in striped Damascus silk of red and white; the student of the koran, in the dark gown over a striped silk robe; and the university of Damascus student with his western type dress enthusiastically rushing to school. These and many other types are as good examples as could be found combining the ancient with the new, the East with the West.

Shops for gifts and oriental souveniers of Damascus include a variety of the best articles of the Syrian artisans. For example, there is the Damascus pottery of richness and elegance and the Turkish and Persian imported carpets reflecting the colorful image of the oriental bazaar. The silver-hilted daggers, bridles, leather works, and saddlebags of purely nomadic character are sold along busy streets which cater to the Bedouins and supply the tools for local crafts and livestock husbandry. In the neighborhoods there are other streets that trade the modern textile, the Damascus silks and embroidered cottons and silks which are well known to all fashion designers in Europe.

---

[3]Ibid.



DAMASCUS: The oldest city in the world.

Unhealthy urban environment in the old sectors of Damascus. The Grand Mosque as the focal point of the Old City.

Outdated land use pattern, where the Mosque, the Khan, the Suk and the homes are in close proximity.

The creditable workmanship of the past still exists. It has been transferred from fathers to their grandsons through inherited taste based upon traditions. The cunning glass blowers and leather workers still resist the tough competition of the machine with patience and courage. The smiths who tempered the world-famous blades, no longer exist. The inlay workers still produce rich works famous for their elegance and sense of design.

The fruits markets demonstrate the different products of Damascus Oasis, some of the best fruits of the middle East. There are the multi-colored grapes with their different flavors, the apricots for which the Oasis is famous, and the great, coral-colored water-melons that melt in the mouth. One can also find the well known crystallized fruits and candies of Damascus and the luscious Turkish sweetmeats and biscuits stuffed with sugar and Turkish nuts.

The markets of Damascus and Aleppo have been described by many romantic writers with all the atmosphere and contrasts familiar to the reader of "Arabian Nights". Behind all this romantic glamour, however, exists significant functional relationships between the hustle of the markets and the supporting industrial-like activities. They are in close proximity to the warehouse and workshops where many of the commodities on display are manufactured and stored and where the merchants and workers live.

4. Homes and Residential Areas "the heiye"[4].

Walking into the higher quality residential sectors of Damascus, one will be surprised at the unattractive, dull and twisted lanes that extend across those sectors.

[4]Ibid., pp. 4-32.

Entering one of the private houses, one sees a prison-like exterior facade, but an interior like a miniature palace. He would recognize a dignified merchant-family life like that common to the fifteenth century. The romantic traveler Warburton in the nineteenth century visited the English counsul in one of these old Damascus houses. His description is still fitting today.

> entered from a dull street, by a low and unpretending portal - the small outer court whence I passed into a garden, round three sides of which the apartments ranged. A little lake of crystal water lay enclosed by marble banks, and over shadowed by beautiful weeping willows. Little fountainsleaped and sparkled in all directions, and shook their loosened silver in the sun ... at one end of this court, or garden, was a lofty alcove, with a ceiling richly carved in gold and crimson fretwork. The walls were ornamented with arabesques, and a wide divan ran around the three sides of the apartments, which opened on the garden and its fountains. Next to this alcove niches and softened lighting falling on delicately painted walls. In the middle of the room was an alabastar basin, into which fell water from four fantastic little fountains.[5]

Some private houses of the high income people have typical design: the house is entered through a lobby bordered on both sides by stairwells that lead to the rest of the house. A series of rooms open to the courtyard surrounded by a gallery. The ceiling of the gallery and the reception saloon "divan" on the first floor, (American second floor) covered with exquisite paintings in geometrical design. The rest of the rooms are decorated with branches of flowers, and geometric ornaments combined with arabic inscriptions, set off by medalions of relieved and colored plaster. The quality of the interior of the house reflects the social rank and the level of income of past owners.

Passing through the middle class residential sector of the old city

---

[5]Ibid., pp. 25-26.

DAMASCUS: The aged sectors of no-planning and bad-planning eras.
The twisted narrow lanes of the old city, buttressed walls, dormer windows, solid facades, lack of sunrays, lack of fresh air and open space.

of Damascus, one will be impressed by the narrow, twisted and terraced lanes. These lanes are unaccessible to vehicular traffic, engulfed by the solid exterior walls of the abutting houses. These walls are pierced with dormer windows of enriched wood work; some walls are higher than one and a quarter times the width of the abutting road, blocking out sunlight and fresh air. Thus, huge areas in the old city could be labelled as sunless and unsanitary.

The new developments which have been built during the recent era of bad planning (1890-1930) to relieve the existing conditions in the old city were not a complete success. In chapter four the writer will elaborate on the developments constructed during this era and they will be described in greater detail.

In the following chapter, some of the successful solutions that other nations have achieved in physical planning for their post-war urban problems are appraised. It is quite possible that the modification of such solutions would be helpful for a better new Syrian urban development.

CHAPTER 2

NEW HORIZONS

A. The Experience of Other Societies in Accommodating New Urban Development

In comparison to what other nations experienced in new urban developments, examples of new developments in Sweden, Holland and Britain reveal possible guidelines for directing Syrian growth.

This chapter is not intended to be an analytical discussion or chronological review of the urban problems of the countries mentioned herein. The author touches very briefly on the broad aspects only of some urban issues and new developments of these selected countries.

Syrian planners should benefit from the experience of other nations who have worked out solutions for similar or different urban problems. This experience will help to give some clues and to crystallize new ideas and concepts which could be adopted with some modification to suit the Syrian circumstances. Review of experiences of other nations can offer evidence as to: How other nations analyzed their urban growth problems, how problems developed and what forces lay behind them; how solutions have been achieved and what objectives were accomplished in solving the problems.

These three nations have been selected for review in terms of these questions just stated. Selection was based on the validity of the following conditions.

1. The existence of urban land problems.
2. Natural increase in population.

3. Necessity for the growth limitation of existing urban centers.

4. The development of a solution to solve the previously mentioned conditions.

B. Sweden[1]

Swedish planners abandoned the old plans of Stockholm they had prepared before World War II in response to the drastic demand for new urban developments caused by natural growth and immigration of population. The old Stockholm master plan consisted of ring developments surrounding the core of the old town. One ring was for business, another for industry and another for residences. All the areas were punctuated byy green pockets of parks and open spaces. This concept was outdated by World War II influences and new planning concepts.

By the end of World War II, the housing situation had deteriorated badly because of many unforseen problems. The new solution was summarized by a comprehensive master plan based on two principal objectives: (1) an overall redevelopment project for the already existing older areas of the capital city and (2) the construction of new self-contained communities outside the built-up area of the metropolitan limits... a decentralization program.

Sweden is outstanding in terms of what has been done in relation to Stockholm because of the existing condtions there.

Three farm estates known as (1) Vallingby, (2) hasselby, and (3) Racksta were chosen as the sites of new development.

---

[1]W. Vera Beggs, "Operation Vallingby", The American City Magazine, July 1955, pp. 117-120.

1. Operation Vallingby[2]

Planning authorities of Sweden in their experiments for planned decentralization started with Vallingby, the first organized suburban development in that country. This type of development started from a dormitory village concept with fairly complete built-in social, economic, and cultural facilities; but still politically tied with Stockholm. Many of the sixty thousand persons who lived in this new town easily found employment opportunities near their homes; many others had to commute between Vallingby and the Capital City.

Mr. Sven Markelius, the eminent Swedish authority in town planning, based his apporach to the whole planning process on the philosophy of "The human being first". He said, "We require to be constantly reminded that the aim of all this progress must be to serve mankind to build a new world which represents a better way of life in the widest sense."[3] This philosophic concept has guided the planning of Vallingby. It has more planning lessons to offer the big cities of out time than any other recent urban development.

The factors behind the selection of the site for Vallingby were: first, the availability of land for urban development in conformity with the Swedish codes leaving an ample space for public parks and new industrial establishments; second, the existence of adequate transportation facilities; third, the feasibility of extending municipal utilities such as water, power and sewerage systems to the new developments.

The planning concept of Vallingby achieved the following objectives.

---

[2]Ibid.

[3]Ellis Clough Williams, Town and Country Planning, London: Longmans Green and Co., pp. 32-48.

1. The preservation of the beauty of the natural landscape.
2. Flexible planning and manipulation of space with green fingers of open space penetrating the built-up areas.
3. The separation of pedestrian malls and walks from vehicular traffic.
4. An integrated transportation system comprised of highways, rapid transit and railroads linking Vallingby with Stockholm.
5. A two-fold parking system to serve the shopping center and rapid transit terminal simultaneously.
6. The provision of community "centrum" as a civic center that contains shopping and entertainment facilities with transportation terminal in a compact well-balanced unit.
7. The implementation of different residential densities that range from high-rise apartments to detached cottage accommodations.

Three features of the Vallingby deserve elaboration - the transportation system, the centrum, and the residential areas.

2. Transportation System

The Vallingby site is ten miles from Stockholm's central business district. Thousands of people during the peak hours jam the traffic between home and work. To solve such traffic congestion, an efficiently integrated transportation system was needed. Previously, there existed the railroad that passes the northern territory, a main highway that goes to the west, and the underground transit lines of Stockholm that could be extended. These facilities were fused into one operational system, that was designed to terminate in the underground floor of the terminal station in the norther corner of the centrum.

3. Vallingby Centrum

The second principal element is the Vallingby Centrum, a physical focus as well as a functional one. This spacious centrum includes commerical, cultural, and entertainment facilities for a population of over 60,000 people.

People can feed into this centrum by many ways. Pedestrians can walk to its malls through carefully designed systems of sidewalks. Bicycle riders can reach it through special cycling routes. Private drivers and main transit riders can get in through the terminalstation and parking facility, both neatly located on the edge of the centrum. Vallingby Centrum demonstrates efficient multiple land use accommodating all the facilities needed for 60,000 residents.

4. Vallingby Residential Areas

A new comer to Vallingby will notice the gradually increasing height of residential buildings as they near the centrum. The high-rise apartments on one fringe of the Centrum indicate the grouping of a great number of people who prefer to live close to the core of the community where the higher density exists. The homes of aged persons have been appropriately located, bordered by the centrum on one side and open green space on the other.

In a lower density beyond the high-rise apartments, there are medium-height apartments buildings for large families with children. These apartment blocks are carefully designed so that there is ample space available for the use of all residents.

Beyond the apartment block areas, row houses and cottages in a very low density are available for those who own cars and prefer to live in the fringes of the community. Vallingby exhibits the best

thinking in residential areas. The whole town is subdivided into neighborhood units, or residential sectors, each with such neighborhood facilities as nurseries, kindergartens and shopping stores, skillfully located in green pockets, within walking distances convenient for children and housewives.

C. Holland

1. The Land and the People

According to the census of 1951, the Netherlands had a population of ten million persons living on 3 million hectares (7.4 million acres).[4] Thus an average denisty of 333 persons per square kilometer (.385 square mile) makes this country one of the most densely populated areas in Western Europe. By 1970 it is expected that the population will grow by 2 or 2.5 million. The ministry of Reconstruction and Housing estimated in 1955 that not less than 800,000 dwelling units will be needed for the next 15 years; to balance the existing housing shortage and to provide housing accomodations for the natural growth of the population.

The population is densely concentrated in the Western provinces where the seaports of the country, the industrial towns along the navigable rivers, the centers of commerce, ship building and other local industries are located. For example, "Randstad District" the industrial core of the Netherlands, which has a total population of 3.5 million, is expected to absorb most of the anticipated population increase.

At the present time, there are strong local trends to urbanize the agricultural suburbs in the vicinity of the big cities, thus creating

---

[4]"United Nations' Urban Land Problems, Policies," Housing and Town and Country Planning Bulletin 7, ST/SOA/SER. C/F., pp. 98-104.

sharp conflict in land use policies. Where there is a need of land for urban development, there is also a need of land for cultivation and production of food and fiber. The land shortage and the continual population increase make it very essential to rationalize land use within a frame of natural resources policy.

The traditional skill of the Dutch people in land reclamation has continued since the 16th century. A long series of draining and land-reclaiming-activities developed greater technical efficiency. One-fifth of the land area of this country lies below the average sea level, which has been won and maintained through continuous struggle with the ocean. In total, five "polders"--regions of land under sea level-- have been reclaimed since 1916, to bring the total area of gained land to 546.000 acres.

Big municipalities of the Netherlands followed systematic land acquisition policy. Half a century ago, the City of Amsterdam pioneered in acquiring its own tracts of land for development. Other municipalities have acquired title to substantial properties which they develop for residential purposes. The objectives of municipal land policy have been stated by an official of the Hague, a quarter of century ago as follows.[5]

1. Sufficient land should always be available for the City's growth.
2. The municipality should guide the development of the new areas, and should anticipate in advance the need for land for schools and other public buildings and for recreational facilities, so as to assure the availability of sites at minimum costs.
3. The increase in land value resulting from the development of these areas should redound primarily to the benefit of the community.

---

[5] Ibid.

These recommendations are just as good today as they were a quarter century ago.

Water canals are used as roads in carrying freight, passengers and urban traffic in this country. The bicycle or boat is as important to the Dutchman as the car is to the American. Houses are built without porches or outdoor living areas. In the more recently finished parts of the Zuyderzee polders, buses and trucks play a dominant role[6] in transportation. The school bus is already in use in these parts. Moreover, the ordinary bicycle has been replaced by the motorized one, especially in the unsheltered and windy parts of the country. In the residential and industrial regions, the scale of development is determined by the speed and mode of transportation. Motorized transportation permits light densities whereas canals and bicycles permits more dense development.

2. New Urban Developments

Rutterdan was destroyed during the bombing of World War II. In the course of restoring the residential sectors of the city, the Dutch constructed neighborhoods of at least 3,000 people to justify the establishment of minimum urban facilities. Dutch planners modified the concept of the neighborhood unit in the restoration of their community structure. They considered the neighborhood as an urban nucleus and located the nursery, rather than the elementary school in the center of the unit and developed their own formula for the rest of urban growth. Their formula reflects their urban planning philosophy and social understanding. They believe that the growth of a town develops out of four four concentric circles.

[6]J. T. P. Bijhouwer, "The Netherland Landscape," Forum, the Netherlands Magazine of Architecture and Applied Arts. pp. 9-22.

1. The family as the basic unit of the society.
2. The neighborhood, with the nursery as focal point, populated by 3,000 to 5,000 people.
3. The community with elementary schools, churches, big shopping centers, well balanced traffic and street patterns, and an administrative center. Its population ranges from 15,000 to 30,000 people.
4. The urban district where the young people contribute to social and cultural activities in secondary schools, concert halls, theaters and where housewives shop in highly organized centers.

In this way the big city will be composed of such urban districts as reflect rational land use, cohesion, and strong functional interrelationships.

D. Britain

1. Limitation for the Urban Growth

"London shall grow no more." This was the decree of Queen Elizabeth I in the 16th Century. But London continued to grow in spite of all the decrees and measures imposed to stop the natural growth of the big city. The capital, like many other British cities, witnessed the birth of the industrial revolution (1765) and was the stage for its successful development. The towns expanded with no planning (1500-1750) or with the bad planning of the laissez-fair era, the period of the late 18th and early 19th Centuries (1750-1870) when cities expanded without effective planning policy and control.

The modest court stenographer, Ebenezer Howard, was the first man to plant the seeds of the new town policy. Howard was influenced and pushed by the evils of all phases of urban life in the industrial

British cities. Howard's book, "Tomorrow: A Peaceful Path to Real Reform," explained his proposals for a new solution to the endless urban sprawl.

Many distinguished philosophers such as George Bernard Shaw, Sir Raymond Unwin and Fredric J. Osborn, and later Lewis Mumford, Clarence Stein and Clarence Perry advanced his philosophy. The first applications of the garden city approach were achieved in two garden cities, Letchworth, (1903) and Welwyn, (1917).

The extraordinary loyality of such people to the concept of the garden cities, limited their awareness of many of the shortcomings of new towns. At the time there were drastic obstacles for carrying out this idea; the enthusiastic people pushed aside these obstacles so that the experience could survive in Letchworth and Welwyn. Whatever the judgment that planners and others may form in criticism of the experience, the initial concept has been realized despite all the mistakes, and the financial and administrative obstacles. The two small towns of Letchworth and Welwyn were built and proved to be living solutions to the problem of urban sprawl. These Garden Cities pioneered some significant physical planning innovations in Britain:

1. Careful grouping of compatible uses such as, residential separated from commercial and industrial.
2. A form of residential sector originally labelled as a "neighborhood".
3. The employment of the green-belt ring for twofold benefits - firstly, the control of future expansion of the built-up area of the small city, and secondly, the provision of scenic and recreational area.
4. The incorporation of urban land ownership for effective land management by local government.

World War II imposed new determinants and influences on physical planning philosophy in Britain. Planning literature, research studies, and planning projects turned to such new problems as unmanageable size of cities, the need for comprehensive planning, the need for natural resources policies, industrial population dispersal, etc. Mr. William Ellis reviewed the issues of the time in his book "Town and Country Planning":

> When a city or town has swollen to an unmanageable size, when its traffic is jammed, when its country has been pushed out of reach and people are forced to live in dirt and noise and darkness, it is surely humane, sensible, and even good business to replan and rebuild with more trees and grass and open spaces and amenities of all sourts, and with fewer people. But where are the people thus displaced to go? Are they to be housed by yet more planless sprawl, yet more ribbon-building? . . . . . We've tried that and we don't want any more of it.[7]

London is a good example of all the evils caused by maldistribution of land use and of bad planning inherited through the decades. It is unbelievable that the amount of built-up-area added to its urban limits between World War I and World War II, was as large as its entire area in 1918. This growth was partially unplanned addition of new chaos to the old.

2. New Towns

The exciting, simple two words - New Towns - were the promising answer to the urban chaos. Since 1945 approximately a dozen new towns appeared in carefully selected positions in a ring around London with a radius of some thirty miles from the center.

As Vallingby was to Stockholm, the new British towns were planned primarily to stop the unmanageable size of London by housing the surplus

---

[7]Ellis Clough William, op. cit., pp. 32-48.

population. Then the new town's project developed into a national land use and natural resources policy, within comprehensive regional planning projects.

Mr. William Ellis briefly described the new towns' functions and urban facilities.

> Each New Town so far envisaged in the Home Counties is only a part of the Greater London Plan, into which it must fit harmoniously. Each will be carefully and individually zoned; where will be industrial, shopping, residential and recreational areas, with parks and playing fields separating ward from ward, and wards themselves forming compact and recognisable social units. The optimum population of 60,000 already referred to means that each town will be big enough to allow the main Town Center and the chief municipal and other amenities to be on a generous, even a handsome scale.[8]

The new towns opened new horizons for the urban dwellers in Britain, and the results attained up to the present time show the success of the British venture.

In those new towns the British planners crystallized the concept of Ebenezer Howard whereby the garden city is concerned as a residential entity. The towns were subdivided into a number of neighborhoods some of them as high as five to ten thousand inhabitants to justify the establishment of a nursery, kindergarten, infants and grammar schools. Neighborhood shopping centers were located in convenient areas for the housewives. In conclusion the towns were designed to serve as social, cultural, educational and economic units.

Summary

The main objectives of all the reviewed philosophies of physical planning as applied to new urban developments, are first, to stop the

---

[8]Ibid.

uncontrolled growth of the city, and secondly to accommodate the overspill in new towns. The new towns are composed of several neighborhoods, each a compact residential sector, constructed within the confines of green open areas, integrated with common urban facilities, such as schools and shopping centers. These objectives will be emphasized in application to what might be needed for new urban developments around Syrian cities.

CHAPTER 3

PROPOSAL: A BETTER SYRIAN URBAN SOCIETY

This chapter is not intended to be an empirical review of social problems, nor to submit proposals for the solution of such problems that endure within the Syrian Society. What is intended is the review of social goals that might be achieved through sound physical planning, based upon social needs.

A. Social Goals

The labor force of Syrian urban population is comprised predominantly of workers engaged in industry, crafts, art, professional work, government services and small businesses. The actual figures for those employed in various industries during the summer of 1953 and early 1954 were 132,400.[1] This shows a large ratio of industrial population in a country considered to be primarily agrarian. This trend reflects indirectly the fast development and progress of the Syrian region toward urbanization and industrialization.

Social life in Syria is a true picture of Syrian culture as influenced by the following significant forces: first the Arabic cultural heritage; secondly, the physical environment; thirdly, the religious traditions; and fourthly, adaptations of the western culture.

The old walled city of Damascus that dates back to the fifteenth and sixteenth centuries had been comprised of three principal sectors

---

[1]Nichola Ziadeh, Syria and Lebanon, New York: Frederick A. Praeger, pp. 236-261.

or quarters: Moslem, Christian, and Jewish. This showed some kind of social partitioning as inherited from the medieval age. Such partitioning has been vanishing gradually since the early twentieth century. In the new urban developments in Damascus and Aleppo, the income factor is dominating social grouping rather than the religious factor.

A tourist or passerby might be unable to recognize any big difference between the Syrian urban environments of thirty years ago and those of today. But Syrians are aware of the progressive changes and developments occurring in their society. In fact, changes are really deep in the complete sense of the word, even within the religious, occupational, social and neighborhood groups. For example, a religion and Arabic culture used to form the basis of values, but recently some of the western cultural values have been adopted. No one can tell to what extent the latter is being absorbed by the Syrian Society.

Social patterns and manners of living influence physical planning, but physical planning can also help to correct social problems. In urban Syria, problems are created by the following social patterns: (1) Conservatism and rigidity of living habits. (2) Excessiveness of privacy for each family. (3) Very strong family ties. (4) The lack of community organizational activities. (5) The lack of public initiative, and (6) Middle and low income status of many of the people.

How effectively can physical planning solve such social problems?

1. Physical Planning and Social Interaction

Dr. John P. Dean[2] of Cornell University indirectly answered the

[2]John P. Dean, "The Neighborhood and Social Relations," Philadelphia Housing Association, Paper 3, April, 1958, Forum.

question as to how far physical planning influence social problems.

> The kinds of social relationships a given family will develop in a residential area depend on two sets of factors: (a) the composition of the family and the activities, organizational ties, and social habits of the individual members and (b) the types of families and individuals that live in the locality, the organizational life of the area, and the nature of the informal social activities and interactions that take place there. The second set of factors is, of course, determined in part by the physical layout of the area and the facilities such as schools, playgrounds, community services, and shopping areas that service the locality.

Some of the findings emerging from Cornell University's various community studies seem rather obvious when achieved and stated, but they are of significant value to physical planning. Most people, the Syrian people included, develop a pattern in their daily activities. A sort of "beaten path" stretches from home to work, then back to home, to lodge meeting and back to home. The weekend includes a visit to the Mosque, or to the church, perhaps a visit to relatives, or close friends, or an excursion to a public park. Then the pattern repeats.

For the average Syrian this "beaten path" is a narrow walk of life that exposes him to three, four, or maybe five different social environments--that's all. Each of these environments imposes on him its social pressures, its values and standards of behaviors.

As mentioned above, the physical planning and community facilities stimulate and develop inter-action among Syrian family members. In fact more and more evidence suggests that members of families are influenced by their living environments in a manner that neither the family members nor the urban planner, nor the social scientists realize.

2. Planning For the People

The question is now being asked how far social physical planning of new urban developments will improve the old situation: Will selfishness and poor social relationships, give way to good neighborliness

and sociability, and will the sharp interest in local and national affairs and cultural pursuit continue to develop? The answer depends on the extent to which the structure of a new urban development is designed to foster and to stimulate the desire of Syrian urban dweller for a better life.

The intimate social life of the outdated "heiye" or neighborhood of the old city of Damascus engenders a natural feeling of community. Everyone knows his neighbor's troubles, feel that their welfare is his own concern, and can take his part in the discussion and adoption of collective remedies for common ills. Also, the "heiye" as a place of social interaction and community activities, exposes the family to experiences and gives the children an opportunity to intermix with others of their own age as well as with older children. This experience has its benefits and its drawbacks, but generally it exposes the children to experiences that develop their growth and maturity.

In comparison we shall now turn to a review of some new suburban developments around Damascus.

3. New Extensions--Bad Planning vs. Good Planning

When the new extensions of urban development spread the suburbs of Damascus into a sprawling, shapeless mass of masonry and concrete, their density became blurred along with the civic sense of their inhabitants. The community in these poor developments became a remote environment rather than a fact of everyday experience. The individual could no longer make his voice heard by the vast multitudes of his neighbors. There no longer existed an opportunity for local opinion to crystallize and find effective response.

In some extensions, narrow front setbacks and poor facade design, interrupt the privacy of the apartments that are facing the streets. For the dweller who is accustomed to the privacy of the old city houses, it is very discomforting and irritating.

Thus, these new extensions, in short, had lost touch with their citizens. It is hardly surprising, then, that most of citizens lost interest in an organized growth of Damascus.

Even in the western culture, the sociologist Louis Wirth in reviewing social ills as related to planning, said,

> The distinctive features of the urban mode of life have often been described sociologically as consisting of the substitution of secondary for primary contacts, the weakening of bonds of kinships, and the declining social significance of the family, the disappearance of the neighborhood, and the undermining of the traditional basis of social solidarity. All these phenomena can be substantially verified through objective indices. Thus, for instance, the low and declining urban-reproduction rates suggest that the city is not conducive to the traditional type of family life, including the rearing of children and the maintenance of the home as the locus of a whole round of vital activities.[3]

For a better result in these new urban developments, experiments are needed in which physical planners, architects and sociologists would work together in order to analyze the relationship between physical urban design and social interaction. The conclusions would make it possible to progress toward the goals that society deems desirable - the nourishment of the community and true social self-expression.

An urban environment can be designed to promote a large amount of social interactions by providing many contact points, and at the same time to assure great privacy by allocating the space required to conform

---

[3]Louis Wirth, Community Life and Social Policy, Selected Papers, Chicago: University of Chicago Press, "Urbanism as a Way of Life." pp. 110-132.

to Syrian social patterns.

Desirable social contacts[4] are the results of more than just time, and proximity, since they may flow from ease of meeting, the layout of the new extension should assist these social goals. The extensions should be large enough to provide social relationships and activities. Yet they should be small enough to operate as real social cells in whose life every individual can take an effective share.

Privacy is, in large part, an individual matter. Each will find it in his own way. The planner's job then is to designate the space criteria to help achieve privacy in the new urban developments.

The "Heiye" or the neighborhood, as an urban extension unit, should be a nucleus based on the home and the school. It should include a unit of schools from nursery to elementary schools--and dwellings to incorporate an average cross section of the population. In this self-contained unit all facilities for daily family activity -- schools, markets, parks -- should be within a walking distance of the dwellings. This organic cell should possess the best qualities of the "small towns", without sacrificing the variety of opportunities available in the large city.

In conclusion, the large new developments should be grouped and integrated in wider inter-woven organizations to form an urban community or district large enough to justify the establishment of high schools, branch libraries, community centers and other urban facilities that offer social benefits.

---

[4]James Dahir, The Neighborhood Unit Plan, Its Spread and Acceptance, (Selected Bibliography) New York: Russel Sage Foundation, p, 38.

B. Cultural Goals

As mentioned in the first chapter, due to political and weather catastrophes, the Syrian region has suffered serious damages and drawbacks. These experiences led the Syrian people closer to each other. They have become more friendly, more interested in their neighbors and more fully aware of their social responsibilities.

At the present time, political activities are apparent in mild clashes between power groups. These clashes center around improvements projects such as land reform, irrigation, housing, education, health services and social security.

Culturally, the Syrian people in urban areas are showing an increasing enthusiasm for music, dramatic arts, new concepts of Western literature. The trend in response to these cultural currents is to absorb and localize the Western concepts to add to the Syrian culture rather than to adopt them in a senseless, blind imitation.

The naked adoption of Western culture imposes tremendous strain on the social and cultural patterns of the country. How is the Syrian to preserve all of the fruitgul Islamic and Arabic culture, adopting only what he lacks from the Western culture, thought and technology, and working a stable framework of ideas with dignity? These are problems to the Syrians that exceed all others in importance. The thinking people of the country will have to solve these problems during the coming generations.

1. Physical Planning Establishs Cultural Institutions

One of the progressive elements in the design of new urban units is the educational system--extended to include nursery and kindergarten

for the very young, secondary schools for the youths, and night classes for adults. Educational structures[5] will not be "mere school buildings where children and youths are to be educated". The secondary school campus as described in chapter five on land use will probably be the strongest social and cultural institution in Syria when the facilities are available for more community activities.

The cultural and social prospects of any civilization can only be enjoyed to their full in an urbanized community of a certain size and compactness[6]. No matter to what extent communications and transport may be improved, the new urban development still remains essential to civilization and prosperity. What that urban development should have in the way of industries and optimum population, of commercial and business areas, universities, schools, movie theaters, clinics, public halls, museums, and public libraries, and so on is a matter about which most of us still speculate.

Piecemeal developments which had seemed very promising made the Syrian urban environment uncomfortable. Fewer and fewer remained in the old city who were willing to put up with the unpleasantness for the sake of its cultural and social advantages.

The cultural goal that has to be achieved is primarily a higher intellectual standard for the average Syrian individual by making optimum use of community facilities. These facilities are suggested by the author in the following land use chapters.

---

[5]Ibid., pp. 37-38.

[6]Ellis Clough Williams, Town and Country Planning, Longman's, Green and Co. London, p. 20.

PART TWO

PHYSICAL PLANNING AND LAND USE

PROPOSED COMMUNITY-UNIT TO ACCOMMODATE NEW URBAN GROWTH

In chapter two, the necessity of examining other nations' experiences was cited. For example, the British "New Towns" system, designed primarily to help in decentralization of the industrial population, was described. In Holland, the use of the neighborhood concept with a population of 3,000 as the nucleus for the new urban development serving Rotterdam was analyzed. Vallingby, a satellite town serving Stockholm, Sweden, was seen as a "village"-dormitory, a completely separate physical unit with partial economic independence, but without political autonomy.

These examples all show the use of the physically-separate unit of urban development, with or without political autonomy, as a solution for accommodating surplus population from dense urban concentration. They are sufficiently representative to suggest the use of this concept as a means for accommodating increased urban growth in such Syrian cities as Damascus. Namely, new urban units, physically separated, serving as residential satellites, preferably with some economic base operations of their own. The size of any one unit may not be big enough to allow for economic and political independence, and thereby would have to rely heavily on Damascus for economic and political nourishment. It would have to be carefully located on a site that would make it easy to extend municipal utilities within reasonable costs. It would have to be close enough so that its dwellers would not suffer from traffic delays and difficulties in their daily trips from home to work, and vice-versa.

The proposed new urban development will be designed in accordance with the concept of a series of residential "heyes" or "neighborhoods", as the nuclei for the new community-unit. Each "heiye" will accommodate 2500 persons and, collectively, will compose the total community. This size of population for the "heiye" justifies the establishment of nursery, kindergarten and elementary schools within a reasonable walking distance of homes. The community-unit, then, would consist of four heiyes, each with an approximate population of 2,500 persons. The combined population of the four "heiyes" justifies the establishment of intermediate and secondary schools that will also be used for adults in education programs and activities.

Within the confines of the proposed community-unit, usual urban facilities would be included in conformance with the author's concept for optimum living environment for Syrian urban dwellers; for there would be a library, dramatic arts theater, Syrian arts and crafts exhibition hall, workshops, social and recreational indoor activities center, playing fields, public parks, health services center and other facilities. In spite of the fact that the population of the proposed new development will rely on Damascus economically, a compact neighborhood shopping market for purchasing convenience goods should be included. The material in the following chapters presents a basis of justification for the proposed concept of the community-unit and offers a schedule of standards for development in keeping with the characteristics of the Syrian people and their culture.

CHAPTER 4

LAND FOR HOMES

A. No Planning Era--Bad Planning Era

1. The "No Planning Era"

During the nineteenth century, large areas of the old cities of Damascua and Aleppo grew haphazardly. This indelible urban growth made it impossible to renew the old cities without painful and expensive operations.

After the period of no planning in the nineteenth century, there next arose a period of bad planning. The new developments were planned and built in immitation of the European system of the apartment block. These poor developments had been constructed without any basic study or analysis of the fundamentals of urban growth, such as analysis of population characteristics, residential density standards, land use analysis, and urban community facilities.

At the present time housing problems in all Syrian urban communities have reached intolerable conditions and are creating a very serious dilemma. There are many factors contributing to this acute problem. Some have deep foundations in the Syrian culture and manner of living as previously mentioned in Chapter 3. Others have developed during the last two decades as a consequence of the industrial and agricultural boom following World War II. Another important factor was the continuous rapid increase of population. The expansion of families was so high that the demand for new dwelling units exceeded what the home builders could manage to build.

B. The Urban Land Problem

The major cause of present housing inadequacies is the defective and incompetent urban planning that has occurred since the early 1930's. However, planning has been basically hampered by a scarce supply of developable land for urban development. Nobody had been aware of the natural growth of the population and the perpetual expansion of the city which had doubled its built-up area in the last four decades. Damascus as the focal point in the Damascus Oasis, is surrounded by extremely fertile and productive orchard land. Home builders prefer to develop these lands because of their proximity to the city and the ease of development and economical extension of municipal utilities. In general, there is an abundance of arid land that should first be utilized for expansion development; but such lands are more costly to develop and are farther out from the developed urban fringe.

Under the pressure of social and economic forces, new urban type developments sprawled over into the orchard land areas. Piecemeal planning projects and partial solutions were worked out, one after the other. Orchard land areas and naturally beautiful open lands were abruptly changed from open use to dense use without any consideration of relationship to the total living environment.

1. Steps Towards Solution to the Urban Land Problem[1]

In the way of submitting a permanent solution for major urban centers, including Damascus, the following policies should be instituted:

---

[1]The International Bank for Reconstruction and Development, The Economic Development of Syria. Baltimore: The Johns Hopkins Press, pp. 10-13.

1. Land use survey as basis for development of effective land use policies.
2. Land use policies to be drawn up for the control of urban growth.
3. A comprehensive master plan for each major urban center.
4. The participation of the central government by controlling the urban land prices and by purchasing large tracts of land in advance of need, establishing development standards, and even specific site plans, and finally supervising actual development.
5. The use of modern machinery in land development operations--particularly the earth-moving equipment for reshaping land forms, excavating rock, and reclaiming marshlands. Such equipment can afford to reclaim big enough areas to help solve the urban land-supply problem, and thereby eliminate this obstacle to sound urban growth.

Residential land uses are the predominant occupants of urban areas. In this chapter workable requirements for the residential land uses in the proposed community-units are offered. The cornerstone of any criteria for allocating development space is density.[2] It is on this basic standard that all other standards must be structured.

C. Density Standards

The relationship between the people and the amount of land they need to accomodate their various activities may be designated by different methods. The major method to physical planning is an estimation of the amount of land that a given number of people will require for

---

[2]Types and Definitions of which are included in the Appendix III, of Technical Definitions.

their dwellings, schools, commercial and business stores, recreation facilities, public parks, open spaces, and other associated needs. In all this kind of research and analysis that involves what is known to all planners as the calculations of density, or the density at which land is occupied, there are two significant purposes.

The first is related to the rate of land use. The density calculations are made for the estimation of land area needs by each type of activity. Land area estimation should be carefully figured, since the availability of urban land for an exact purpose is a complicated problem in major Syrian urban centers, especially in one the size of Damascus.

The second purpose is connected with living conditions. Density calculations are provided for the achievement of specific standards in new urban developments like the one proposed. This process of relating living conditions to density calculations involves problems more complicated than mere land need computations. It is essential to establish the bases of calculations that must support standards for residential development.[3]

1. Residential Densities[4]

Residential development is the biggest and fastest consumer of urban land; therefore, it is most important to develop workable standards for this use before considering other land uses. As a basis for drawing up residential standards for Syrian urban circumstances, some basic development and environmental objectives should be first established:

---

[3]The Ministry of Housing and Local Government, The Density of Residential Areas, London: By Her Majesty's Stationery Office, pp. 2-14.

[4]Ibid.

1. A sufficiency of living accomodations distributed among suitable variety of dwelling units.
2. These dwelling units must be grouped and arranged on the ground so that living rooms get sufficient light, air and sunshine. In addition to this, it is necessary to have ample open space surrounding all dwelling structures as a multi-purpose outdoors area.
3. The clusters of blocks of dwelling units should be conveniently located in relation to stores, nurseries, kindergartens, eleschools, parks and other urban facilities required for the self-containment of the residential sector of "heiye."
4. The residential sectors as a whole should be functionally and physically related to the rest of the town allowing ease of access and sound functional interrelationships with the other sectors.

2. Density in Relation to the "Heiye" or Neighborhood

It is evident that within each "heiye" of the proposed community-unit, there should be planned, in addition to dwelling units, certain other facilities which the residents need which may be classified as follows:

1. Convenience goods shopping stores to include sale of all foodstuffs and drug supplies (See Chapter 7).
2. Personal service facilities to include barber shops and laundries, etc.
3. Schools to include nursery, kindergarten and elementary units.
4. Public buildings such as mosques, churches, and clinics.

5. Public open space in adequate amounts and location.

The amount of land required for the whole "heiye" will clearly depend in part upon the net density of the residential pockets and also on the amount of space devoted to the other facilities listed. Space criteria for each facility will be presented in separate following chapters.

Gross denisty is the scale by which the planner is able to gauge approximately the total amount of land a given concentration of people will require for their dwelling units and supporting uses. Thus, it would appear that the fundamental relationship is one of people to space, and that a usable term in which to express density is the number of people occupying a unit area. This is the basis of the commonly-used method of expressing gross density in "person per acre".

Any particular figure of persons per acre will not indicate the manner the dwelling units are arranged on the ground. The people may be housed in flats at a high net density but with a generous provision of green common open space, or alternatively, there could be no common green open space when people are housed in cottages and detached houses at lower net densities. The land still accomodates the same gross figure per acre, but the figure is capable of conveying at once a general idea of the distribution of people on land. The community planner inevitably faces the difficulty of including and evaluating the many variables that affect residential density calculations.

Density standards must be sufficiently flexible to permit application to varying residential needs. For example in the proposed standards it is recommended that the average dwelling unit consist of 5.5 rooms. It could be split into two halves of two or three room units for small

families, thus doubling the number of dwelling units without changing the land coverage rate.

In the pages following, bases of calculations and supporting tables will show a variety of applicable densities that suit residential needs of the proposed community-unit.

3. One-Family Detached and Semi-Detached Dwelling Units

The typical Syrian family, deeply affected by traditions, strongly prefers a strict atmosphere of privacy for its living environment. The one-family detached and semi-detached dwelling unit most completely fulfills this significant requirement. But it is apparent that not every Syrian family can afford this type of dwelling structure. Only the higher income families can afford the one-family detached house, and the middle-income families, at least, might afford the one-family semi-detached house.

4. Two Family Attached Dwelling Unit

This type of dwelling unit will comprise most of the built-up area in any newly developed heiye as a middle class residential area. These blocks of dwelling units can enclose communal interior green spaces between each other and between other neighboring buildings. With adequate landscape features they will create interesting and satisfying spaces which will enhance the environmental amenity. These areas will be used by the middle income families and will provide healthy, secure dwelling accommodations with reasonable rents in interesting surroundings and sociably-balanced environment.

This type of dwelling is transitional between the single family detached and semi-detached unit and the apartment flat of three, four

The following residential densities are proposed as a basis of calculating land space needs:

Table 1.Net Dwelling Densities[a]: Basis of Calculations

Dwelling Type	Lot size per Dwelling Structure		Net Land area per family	
	feet	meters	sq. ft.	sq. meters
a) one-family detached	60 x 121	21 x 32	7260	672
b) one-family semidetached	100 x 83[b]	33 x 25	4150	412
c) two-family attached, two story	90 x 120[b]	30 x 36	5400	540
d) one-family attached (row)	30 x 90*	9 x 27	2700	243
e) two-family semidetached	53 x 100	16 x 30	2650	240
f) multi-family	See Tables "2" and "3".			

*Plus 33 ft. or 10 meters side yard between each 10 units.

[a]The standards in this table are adopted from the American Public Health Association book--Planning the Neighborhood, pp. 37, modified to suit the standards of new urban developments in Syria.

[b]The area shown for two families.

and five stories. The author has detailed this type of dwelling unit into different densities as shown in Table 1 of Appendix I for more efficiency and variety in the layout of this type of dwelling.

5. Multi-Family Dwelling Units

Multi-family dwelling density as related to number of stories and land area covered per family is most usefully figured on the basis of the number of rooms per acre rather than dwelling units per acre.

Table 2. Variable Net Residential Density and Land Coverage Recommended for Areas of Multi-family Dwelling Units.[a]

Number of Stories	Dwelling Units Per Acre[b]	Total Land Area, Sq. Ft.[d] "covered by building"	% of Land Covered by Buildings Gross[c]	Rooms per net Acre	Persons Per Acre
2	10	7040	16.2	55	50
2	12	8448	19.5	66	60
2	14	9856	22.6	77	70
2	18	12672	29.0	99	90
2	22	15455	35.0	121	110
3	27	12672	29.0	148.5	135
4	28	9856	22.8	154	140
5	30	8448	19.5	165	150

[a]This table is adapted from the American Public Health Association Committee on the Hygiene of Housing book, Planning the Neighborhood, Table 3, p. 38, modified to suit the Syrian circumstance, published by the Public Administration Service, Chicago.

[b]Family dwelling unit is 5.5 rooms for a household of 5 persons.

[c]Percentage of the ground floor area to the acre 7040/43560 = .162.

[d]These figures are obtained by multiplying the number of rooms (55) by the number of the area of each room (256) then dividing by the number of stories(2) = 55 x 256/2 = 7040.

Table 3. Net Dwelling Units Density per One Acre of Residential Land and Building Coverage. Recommended Standard Values by Dwelling Units.[a]

Dwelling Type	Net Dwelling Density[b] Units per acre of net residential land		Net Building[c] Coverage-"Percent net Residential Land Built over"
	Standard Desirable	Standard Maximum	
One and Two Family			
1-Family detached	6	9	16.7
1-Family Semi-detached	10	15	20
1-Family Attached Row Houses			
2-Family Detached	16	19	31
2-Family Semi-detached			
Multi-Family			
2-Story	22	28	35
3-Story	27	32	28
4-Story	28	33	22.5
5-Story	30	35	19

[a]This table is adapted from American Public Health Association Standards published in Planning the Neighborhood, Table 4, page 39, modified to suit the standards of the proposed new urban development.

[b]The dwellings meant here are those of Table 2 of Appendix I.

[c]Percentage of built up area of dwelling unit of 1408 sq. ft. to the land provided for the unit.

Table 4.[a] Land Areas Recommended as Exterior Space Per Habitable Room of All Major Dwelling Uses[b]

Type of Dwelling No. of Stories	Dwelling Units per Acre	Number of Rooms per Acre	Area per Acre Covered by Buildings	Exterior Space not Covered by Buildings	Exterior Space[c] per Habitable Room	
					Sq. Ft.	Sq. Mt.
2	10	55	7040	36520	665	62
2	12	66	8448	35112	532	49
2	14	77	9856	33704	437	41
2	18	99	12672	30888	310	28
2	22	121	15488	28072	232	21.8
3	27	148.5	12672	30888	208	19.4
4	28	154	9856	33704	221	20
5	30	165	8448	35112	213	20

[a]This table is adapted from the American Public Health Association book, Planning the Neighborhood, Table 3, page 38, modified to suit the standards of the proposed new urban development.

[b]For design purposes an area equivalent to 15-25% of the developed area for garages, roads, paths and miscellaneous.

[c]This number is the quotient of the non-built up area in one acre divided by the number of rooms per acre.

Table 5.[a] Land Requirements per 1000 Persosn for Auxiliary Uses for Various Gross Densities for Optimum Development

Gross Densities persons per acre	Acres of Land Required per 1000 Persons land uses			Total
	Shops	Public Buildings[b]	Service lands	
10	1.1	1.8	0.9	3.8
20	0.9	1.3	0.8	3.0
30	0.8	1.0	0.7	2.5
40	0.7	0.9	0.6	2.2
50	0.6	0.8	0.5	1.9
60	0.5	0.7	0.4	1.6
70	0.4	0.6	0.3	1.3

[a]This table is adapted from the Ministry of Housing and Local Government--London--Book entitled, The Density of Residential Areas, Table 6, p. 34; modified to suit the new community unit of Damascus.

[b]This use will include schools of all kinds, mosques, churches, hospitals, libraries, etc.

CHAPTER 5

LAND REQUIREMENTS FOR COMMUNITY-SERVING FACILITIES

As noted, the community-unit proposed herein as the means for accommodating additional population of a city like Damascus would consist of four distinct sectors, (heiyes or neighborhoods) each containing such facilities and arrangements of land uses as to provide physical, social and cultural unity. The facilities considered essential to achieve this unity, over and above purely residential facilities, are those that are community-serving in nature. In the sense that they occupy land, they are commonly classified as particular "land uses". Land space is reserved in a community plan to accommodate these uses--the amounts of area determined by established standards.

In approaching determinations of land area needs for a new Damascus community-unit, the following general categories of land use will be used:

I. Land for educational facilities.

II. Land for social and cultural facilities (other than education).

III. Land for health services facilities.

Manifestly, varying amounts of land area are required for all of these facilities and activities. The following space requirements are offered as rules-of-thumb for calculations of space needs for Community-Serving facilities.

I. Land Requirements for Educational Facilities

The Syrian educational curriculum of pre-college schools requires the establishment of the following facilities:

a. Nursery schools for children of ages from 3 to 5 years.

b. Kindergarten for children of ages from 5 to 6.

c. Elementary schools for boys and girls from 7 to 11 years of age.

d. Intermediate and secondary schools for boys and girls from 12 to 17 years of age.

A. School Age Population Distribution

1. The Pre-school and Elementary School Age Groups

From the research and analysis made by the board of the International Bank for Reconstruction and Development[1], as shown in its report, The Economic Development of Syria, it was convenient to predict calculations in terms of a population similar in structure to Syria's over-all population, that is, by grouping the age groups of children, in every year of age from 6 through 11 inclusive. Each year of age is found to comprise approximately 2.6 percent of the total population. This can be calculated in urban areas only. The six years of age groups comprising the pre-school and elementary school ages would, therefore, be:
2.6 x 6 = 15.6 percent of the population.

For example, in Damascus, Aleppo, and the proposed community-unit the pre-school and elementary school age population will be as follows:

Town	Population	Percentage	Pre-School and School Age Population
Damascus	400,000	15.6	62,400
Aleppo	400,000	15.6	62,400
Proposed new Community-unit	10,000	15.6	1,560

[1]The International Bank for Reconstruction and Development, The Economic Development of Syria, Baltimore: Johns Hopkins Press, pp. 452-462.

Table 6. Assumed Age Distribution of Children in Nursery, Kindergarten and Elementary School Age Levels

1) Average size of family	5 persons	
2) Age distribution of children[a] served by the Community		
Children by School age Group	Children per 1000 persons	Children per family
Pre-school from 1 - 2 1/2 years	62.5	.313[b]
Nursery school from 2 1/2 to 5 years "Inclusive"	62.5	.313
Kindergarten from 5 to 6 years "Exclusive"	25	.125
Elementary School from 7 to 11 years	125	.625
Total Children 1 - 11 years	275	1.376

[a]It is assumed that there are 150 children of elementary school age per 1000 persons of Syrian urban population. The 150 have been evenly distributed over the 6 years that include one kindergarten and five elementary schools. This gives 25 children per 1000 per year of each age which is very close to the figures mentioned before in the report of the International Bank for Reconstruction and Development.

[b]This figure represents the population of the age bracket in one family which is 5/1000 x 62.5 = 0.313.

For more accuracy in school age population problems, an analysis of school age distribution on the basis of the Syrian household of 5 persons and a sample of population of 1000 people is essential. The author will adapt the standards and methodology recommended by the American Public Health Association[2], Committee on the Hygiene of Housing, and will modify it to suit the Syrian circumstances.

The author would like to point out that statistical concepts have limitations and it must be realized that the application of such statistics must be continually examined as to reliability and brought up to date to conform with new census figures or revised estimates.

2. Intermediate and Secondary School Age Population

The percentage of the total population consisting of each year of age of intermediate and secondary school students is 2 percent.[3] This level of school includes boys and girls of 12 to 17 years old. It is evident that 6 x 2 percent, or 12 percent, of the total population of an average Syrian Community consists of students of intermediate and secondary school age and the following tabulation shows how this distribution applies to specific cities.

Town	Population	Percentage	Students of Intermediate and Secondary School
Damascus	400,000	6 x .02 = 12	48,000
Aleppo	400,000	12	48,000
Proposed new urban develop.	10,000	12	1,200

[2]American Public Health Association, Committee on the Hygiene of Housing, Planning the Neighborhood, Chicago: Public Administration Service, p. 4.

[3]The International Bank for Reconstruction and Development, op. cit. pp. 455-462.

Table 7. Assumed Age Distribution of Children in Intermediate and Secondary School Levels

1) Average size of family	5 persons
2) Age distribution of students including boys and girls at equal percentages[a]	

Students (boys and girls) by School Age Groups	Students per 1000 persons	Students per Family
Intermediate School from 12 to 14 years	60	0.30
Secondary School from 15 to 17 years	60	0.30
Total: 12 - 17 years old	120	0.60

[a]It is assumed that by age groups there are 120 students, boys and girls, of intermediate and secondary schools age per 1000 persons in a Syrian urban population. The figure 120 will be evenly distributed over the 6 years that include the secondary school. This gives 20 students per 1000 per year of age which is very close to the findings of the International Bank for Reconstruction and Development, Committee for the Economic Development of Syria.

By applying the same analysis and tabulation used for the elementary school children (Table 6), the distribution of children of intermediate and secondary school age levels would be as shown in Table 7.

B. Pre-School Facilities, Physical Planning and Space Criteria

In the Syrian school system, pre-school facilities and institutes are separated from the elementary school, either as a combination of nursery school and kindergarten or by separating both as each case may deem necessary. The nursery and kindergarten are considered as child-care and transitional functions respectively. For this reason, the basis of calculation of the nursery and kindergarten space requirements are presented as separate analyses.

1. Nursery School

Space requirements for nursery school and the number of children assigned to each school should be determined on the basis of size of the neighborhood and the residential areas that each school is to serve. It is important that reliable bases of calcuation for space requirements be established so that each school facility will be used to its maximum.

The ministry of education regulations permit classrooms of combined sexes for both nursery and kindergarten schools. Since these school units are such an intimate and integral part of the residential areas, it is fortunate that this combination can be used.

The table on the following page shows the bases of calculations for space requirements for nursery school with allowance for outdoor playing space.

Basis of Calculations for Site Space Requirements for Nursery School[a]

Number of pupils from 2 1/2 - 5 years	Lot size or equivalent in sq. ft.	Net area per pupil in sq. ft.
40	1/3 acre = 14520 sq. ft.	363
for each additional 20 pupils	1/8 acre = 5445 sq. ft.	273
maximum capacity 120 pupils[b]	1/3 x 4(1/8) = 0.84 acres or 38640 sq. ft.	322

[a]This table is adapted from the recommendations of the American Public Health Association, Committee on the Hygiene of Housing in the book Planning the Neighborhood, p. 46, but the figures are modified to suit the proposed new Syrian community-unit.

[b]Number of pupils in the nursery school is tied to the size of neighborhood or sector of the community that the school serves and the capacity might range from 20 - 120 children.

As regards the number of pupils per class or per supervisor, educational sources recommend a range of 15 - 20 pupils per supervisor or up to 30 children under one teacher and one assistant. The total nursery school capacity might range from 30 to 120 children. As previously shown in the school age distribution tables, there would be the following number of children of nursery school age in the proposed community-unit.

For a population of 1000 persons . . . . . 62.5 children

For each neighborhood of 2500 persons . . . . . 156.25 children

For the proposed community-unit of 10,000 persons 625 children.

The author recommends two pre-school units for each of the four heiyes comprising the proposed community-unit, provided that it is functionally designed and constructed alone, separate from the kindergarten.

2. The Kindergarten

As previously mentioned, the Syrian educational curriculum considers the kindergarten as a second transitional step that transfers the child from the atmosphere of the home to that of the school.

A standard recommended by the American Public Health Association considered most workable for application to space requirements for the Syrian kindergartens. Both indoor and outdoor spaces are considered as one space to serve integrated functions.

The basic kindergarten room[4] should be a self-contained one that measures approximately 26 feet by 60 feet supplemented by an outdoor activities area of 90 feet by 90 feet.

Basis of Calculations for Site Area Requirements for Kindergarten.

Number of pupils	Type of facility-area in sq. ft.	Area per pupil
40	26' x 60' indoor self-contained kindergarten, 5th or 6th year room.	30 sq. ft.
40	90' x 90' outdoors activity space	200 sq. ft.

As mentioned earlier, it is customary to combine nursery and kindergarten functions into one facility. It is proposed that each of the four heiyes contain one combined nursery-kindergarten. In such a case the maximum number of children to be admitted to the facility could be ignored because there will be more efficiency in management. For combined facility the land areas shown in Table 8 are required.

C. Elementary School, Physical Planning and Space Criteria

1. Basic Considerations in School Planning

There has been very little study of education processes and needs

[4]American Public Health Association, op. cit., p. 5.

Table 8. Space Requirements for a Pre-School Unit to Accomodate Nursery and Kindergarten Functions for one "Heiye" of 2500 Persons

Kind of facility	No. of pupils per 2500 persons, one "Heiye"	Site Size in sq. ft. and acres	Space Requirements[d]	
			indoors	outdoors
Nursery[a] 2 1/2 - 5 yr.	156.25	1/3 + 5 4/5(1/8) = 1.04 acre 14520 = 30927 = 45447 sq. ft.	6 classrooms[c] for 6000 sq. ft.	39447 sq. ft.
Kindergarten[b] 5 - 6 years		1.6(26' x 60') + 1.6(90' x 90') = 2496 = 12960 = 15456 sq. ft.	2 classrooms for 3120 sq. ft.	12336 sq. ft.
Total		60903 sq. ft. = 1.4 acre	9120 sq. ft.	51783 sq. ft.

[a]Site size is figured on the basis shown on page 58.

[b]Site size is figured on the basis shown on page 59.

[c]The area of class units includes the toilets, kitchenette and dining space.

[d]The site size includes front, rear and side set backs and building setting.

in Syrian schools. Both detailed and comprehensive data are needed to support the standards proposed in this study; but in the absence of available information, four factors are offered as basic considerations for planning physical facilities for Syrian elementary and secondary education.

a. The School Program.-[5] This includes the academic curriculum, athletic acitivies, and possible community organization activities and should be accommodated in the school plant. Since a school building, once built, must be used for a good many years, it is vital that all possible foreseeable developments of the Syrian educational program be provided for.

b. The Community Needs.- The up-to-date Syrian educational program of this day is greatly different from that of a generation ago. This change has come about gradually hand in hand with many economic, social and cultural phenomena. There is convincing evidence that there will continue to be educational developments in the future, and the possibility of the use of school buildings and equipment for non-school community purposes. Thus physical planning must give consideration to expansion and flexibility, to meet the needs of the growing and developing Syrian urban communities.

c. Pupil Population to be Housed in Schools.- This third factor determines the number and location of the school buildings. Taking into consideration the lack of reliable statistical data; the determination of future pupil enrollment is a very difficult problem.

---

[5]Walter F. Bogner, et al, "Planning a School House for Tomorrow's Citizens." A report of a case study for Kingston, Massachusetts, Published by the City Council, pp. 15-22.

In addition to community needs there are other factors that must be known, such as, the trends of increasing population growth in the urban areas, and the expanding birth rate provide perplexing variables in any planning analysis. The planner must rely on his own judgment for reliable calculations. His plans should be primarily flexible to meet unpredictable variations in ultimate need.

d. The economic Strength of the Community.- In Syria, local planning is a function of the central government including planning for school facilities. This factor is strongly related to the implementation of planning proposals. The effectiveness of any local school systems, including the planning and implementation into ultimate construction depends very much on the economic well-being of the community as that condition relates to tax-paying ability and general participation in the educational process. The central ministry can carry forward school programs much more effectively when the community can offer this economic strength. In relation to school planning, it is a vital matter to provide adequate funds for the research, planning and construction of new schools and education institutions.

2. New Policies Needed

In the absence of published reliable data, the author must offer his own observations of the principal problems that impede the effective operation of the existing educational facilities in Syrian cities. Problems of curriculum administration and teaching are not included in these considerations. The following factors are considered to be the most significant obstacles to effective use of school sites and buildings:

a. The outmoded location and structure of a majority of existing schools.

b. The lack of other school facilities besides the academic classrooms and laboratories.

c. The separation of sexes which imposes some economic and operational pressures on the school administrators.

In an endeavor to cure some of the present short comings the author would like to suggest the following:

a. The availability of land for school facilities, play areas, and parks is even a greater problem than that for residential uses. It is most important that any lands acquired for these community-serving functions be used to the fullest possible capacity. The "school-park" concept, so well-developed in some American cities, is offered as one solution to achieve maximum utilization of public facilities in Syrian communities. The advantage of this system is well illustrated by the following quotation:

> It... combines a park, a school, and a playground, and similar recreation facilities into a single functional unit for education, recreation, and other community activities. The concept is greater than just a grouping of these facilities on a single site. It is a unit, the wholeness of which is its essential characteristic. It is a plant functionally designed to house and make possible an integrated program of education, recreation, and community activities suitable to the geographic area it serves. In addition to the economy it represents in land use, construction, and operation, it represents a wholeness of environment in which integrated living in education, recreation, and community life takes place.[6]

---

[6]The Athletic Institute Description of the School-park Concept Sylvania Township and Village, Toledo-Lucas County Planning Commissions, School-park plans report, pp. 34. Published by the Toledo-Lucas County Planning Commission

b. The elementary school buildings have to be designed as a school campus i.e., a complex of buildings composed of separated academic classrooms and laboratory units for both sexes, with a combined-use gymnasium, library, audio-visual hall, cafeteria and auditorium. The use of these units by boys and girls in alternative time schedules will be a financial saving to the concerned authorities both in operating costs and teaching staff.

c. Accessibility to the school is very important. Elementary and secondary schools should be within walking distance for the pupils. In the "heiye" they should be centered in the residential area and there should be direct and safe home-to-school transportation routes for commuting students and instructors.

In establishing a basis of calculation for space criteria for the elementary school space needs the area required per pupil will be used as a unit of measurement. The number of students per classroom will be a maximum of 40 and a minimum of 30. As a rule of thumb, 16 square feet, or 1.5 square meters, per pupil is sufficient for the traditional urban school program. In addition to classrooms, there are many other indoor activities that require space. The following activities are tabulated to indicate the component floor and land areas needed for a complete elementary school plant.

By extracting the elementary school population from the age distribution, (Table 6) there will be 125 pupils per 1000 people, or 312.5 pupils for each heiye of 2500 persons. These figures include equal distribution of both males and females. Theoretically there should be an elementary school for each residential neighborhood of the new community-unit. The author subject to his experience is of the opinion

Analysis of Unit Space Requirement[a] for an Elementary School

Type of Facility	Space per pupil[c] Sq. Ft.	Sq. Mt.	Remarks
I. Indoors Areas			
1.Classrooms and Labs	16	1.5	including administration and services
2.Multipurpose	20	1.86	(50x80)ft. standard for schools less than 500 pupils
3.Library and Audio-visual facility	10	0.93	
4.Arts and Crafts Studios	6	0.53	may be provided on standardized basis
5.Auditorium	9	0.83	
6.Cafeteria	8	0.74	
7.Workshop	6	0.56	
Total	75	6.98 or 7.00	
II. Outdoors Activities[b]			
School playgrounds "not play-fields"	54	5	standard by ministry of education-Damascus
III. Playing fields on basis of 1/2 acre or 2 Dunums per 1000 pupils	1/2 A	2000	

[a]Exclusive of playing field.

[b]Playfields are excluded from this space requirement.

[c]These standards are adapted from British Standards by E. and O.E. in their book Planning, pp. 125-175. They are modified to suit school buildings in the proposed new community-unit.

Table 9. Elementary School Site Size--Areas for Different School Uses, and Total Area by School Age Population

School Site Area	Neighborhood Population					
	1000 persons 200 families 125 pupils		2500 persons 500 families 312.5 pupils		5000 persons[c] 1000 families 625 pupils	
	sq.ft.	sq.mt.	sq.ft.	sq.mt.	sq.ft.	sq.mt.
Component Uses						
1.Indoors uses and activities[a]	9375	875	23437	2160	46875	4375
2.Outdoor uses and playgrounds[b]	6750	625	16875	1550	33750	3125
Total	16125	1500	40312	3710	80625	7500
Total areas[d] in acres and Dunums	Acres .37	Dunums 1.5	Acres 1.12	Dunums 3.7	Acres 1.85	Dunums 7.5

[a]Based on providing 75 sq. ft. per pupil or 7 sq. mt.

[b]Based on providing 54 sq. ft. per pupil or 5 sq. mt.

[c]For more than 500 pupils provide 65 sq. ft. per pupil for indoors activities.

[d]Twenty-six percent of total areas should be added as a margin for expansions for ten years to indoors and outdoors uses.

that it is more feasible to provide an elementary school campus for every two adjacent neighborhoods. This is mainly because of the shortage in teaching staff, and the plans of the Ministry of Education to cut down maintenance and operating costs.

D. Intermediate and Secondary School, Physical Planning and Space Criteria.

In the Syrian educational system the school program beyond elementary years actually consists of "intermediate" and "secondary" units. However, to avoid confusion, one term "secondary", will be used to refer to the school years of 7th through 12th grades. All the factors and problems outlined in relationship to the elementary schools apply with equal validity to the secondary level.

The secondary school campus will be well-centered within the residential areas, within easy reach of the pedestrian students as well as to those traveling by vehicles.

As already mentioned, the secondary school campus has to serve as a tool for integrating the community with the educational institutions. In addition to the fact that the campus should be planned according to the school-part system, the component facilities of the campus, such as the gymnasium, cafeteria, library, audio-visual rooms, auditorium, and playing grounds, could and should be used by the community groups and organizations. For example, the gymnasium when designed as a multi-purpose hall could be used for various adult group meetings, dramatics, banquets, luncheons, and dances. The auditorium may be used for lectures, general meetings, panel discussions, debates, films and concerts.

1. Space Requirements for Intermediate and Secondary School Sites.

As shown in Table 7, the proposed community-unit will have a secondary school age population of 1200 pupils. Again, it is assumed that use of all facilities will be more or less equally divided between both sexes.

The following table shows the site size of a complete unit of intermediate and secondary schools for given population groups.

Table 10. Secondary School Site Sizes. Areas required for different school uses, and total area required by community and school age population.

School Site Area[a]	Governing Population Factors					
	10,000 people 2,000 families 1,200 pupils		15,000 people 3,000 families 1,800 pupils		20,000 people 4,000 families 2,400 pupils	
Component School Uses and Activities	Sq.ft.	sq.mt.	sq.ft.	sq.mt.	sq.ft.	sq.mt.
1. Indoor uses and activities in built up areas[b]	96,600	9,000	144,900	13,500	193,200	18,000
2. Outdoors uses and playgrounds (not playfields)[c]	70,800	6,600	106,200	9,900	141,600	13,200
Total Areas	167,400	15,000	251,100	23,400	334,800	31,200
3. Acres or Dunums	3.83	15.6	5.76	23.4	7.70	31.2

[a]Margin of expansion is ignored in the case of secondary school. A drastic population increase would require a new school.

[b]Based on areas taken from Appendix I, Table 4, 73 sq. ft. and Table 5, 7.44 sq. ft. totaling 80.5 sq. ft. or 7.5 sq. mt. per pupil.

[c]Based on figures taken from Appendix I, Table 5, 59 sq. ft. or 5.5 sq. mt. per pupil-playfields are not included in this standard.

II. Land for Social and Cultural Facilities

A. Community Center, Physical Planning and Functions

The Community Center will be used for the following three major activities that are strongly related to the welfare of the community: (1) social, (2) recreational, and (3) educational. The activities to be held in the Community Center of the proposed community-unit could be accommodated within one building. But the great variety of community-centered activities would be most effective is housed as groups of activities. The activities will be accommodated in separate buildings purposely designed so that the residents will be able to experience the different activities to an optimum degree. However, a community-center would be most useful if the many buildings housing activities were grouped in a campus-type arrangement.

The social, recreational, and educational activities that might function in this center are as follows:

1. Educational activities to be held in a branch library for science and arts. The size of the typical community justifies the establishment of a branch library including a special section for the children to enjoy story-telling, movies and slide-shows, reading and other children's activities.

2. Educational activities to be held in a Syrian Arts and Crafts Center to include an exhibition hall and workshops. The Syrian arts and crafts workshops and exhibition hall will aim to establish a permanent demonstration and exhibition of the famous Syrian Arts and Handicrafts in jewelry, brass, copper and metal works, embroideries, and many other local handicrafts and industries.

3. Social and indoor recreational activities to be held in a Social and Recreational Center. The social activities center will accommodate branches of all the Syrian urban community organizations in a manner that will organize functions effectively. By having the community chest, charitable societies, red crescent and cross association in one compact wing, they can operate and be in closer contact with the community. The recreation wing will function as an indoor, active recreation center for games, billiards, TV watching, lounging and many other recreational functions.

4. Educational, recreational and entertainment activities to be held in a Dramatic Arts Theater. This is a very promising element of the community center. It has the potential to stimulate the Syrian people and advance their good taste and love for music and the other arts. A well organized program of adult education or professional programs of arabian literature, staging, singing, and folk dancing will be a good revival of the Syrian heritage in dramatic arts. The function of this facility is similar to the author's concept for achieving the Social and Cultural Goals of the Syrian Urban Society as explained in Chapter 3.

5. Religious and cultural activities to be held in religious institutions. Because the Syrians are a religious people, the designation of land for the use of religious institutions is essential for the proposed new Damascus community-unit. In the Syrian culture, religious institutions also accommodate mass activities such as occur on holidays when the whole community meets to enjoy ceremonial festivals and feasts.

B. Age Distribution of Adults in the Population

An analysis of Syrian urban population indicates the age distributions that are significant for determinations of space requirements for community center activities. (See Table 11).

C. Criteria for Calculating Land Area Requirements

The space required for the great variety of activities that could be accommodated in a community center are listed in Table 12, in accordance with the area required per person for different sizes of population.

Table 11. Age Distribution of Adults for 1000 Persons.[7]

1) Average size of family		5 persons
2) Age distribution of adults by age groups.	Adults per 1000 persons	Average Number of Adults Per Family
Youths 18 - 20[a] inclusive	60	.30
Adults 21 - 30[b] inclusive	160	.80
Adults 31 - 40[c] inclusive	180	.90
Adults 41 - 50[d] inclusive	120	.60
Adults 51 - 60[e] inclusive	80	.40
Total Adult Population	600	3.00
Children of age 1 - 17 years (see Tables 6 and 7)	395	1.96
Total Population	995	4.96

[a]Assume 60 youths per 1000 people for the population for three years of age bracket making 20 youths per year.

[b]Assume 160 adults per 1000 people for 10 years making 16 persons per year.

[c]Assume 180 adults per 1000 people for 10 years making 18 persons per year.

[d]Assume 120 adults per 1000 people for 10 years making 12 persons per year.

[e]Assume 80 adults per 1000 people for 10 years making 8 persons per year.

[7]This table is adapted from the American Public Health Association Committee on the Hygiene of Housing Book, Planning the Neighborhood, p. 4, Table 1, modified to suit the Syrian circumstances.

Table 12. Community Center Activities and Land Uses -- Basis of Calculation

1. Libraries[a] = The American Library Association Rule can be used as a rule of thumb:

   10,000 to 50,000 people, provide .5 sq.ft. or .047 sq.mt. per person.
   50,000 to 100,000 people provide .45 sq.ft. or .0425 sq.mt. per person.
   100,000 to 200,000 people provide .35 sq.ft. of .032 sq.mt. per person.

2. Syrian Arts and Handicrafts Exhibition and Workshops.

   10,000 - 50,000 population = 1 acre site or 4.00 DM.

   50,000 - 100,000 population = 2 acre site or 8.00 DM.

   100,000 - 500,000 population = 4 acre site or 16.00 DM.

3. Social and Recreational[8]

   a) games = 6.5 sq. ft. or .60 sq. mt. per person
   b) billiards = 7 sq. ft. or .65 sq. mt. per person
   c) TV watching = 7 sq. ft. or .65 sq. mt. per person
   d) lounging = 7 sq. ft. or .65 sq. mt. per person.
   e) club rooms = 8 sq. ft. or .75 sq. mt. per person.

4. Dramatic Arts Theater. Entertainment Uses[9]

   a) Audience = 6 sq. ft. or .55 sq. mt. per person
   b) Orchestra = 9 sq. ft. or .84 sq. mt. per person
   c) Choir = 6 sq. ft. or .55 sq. mt. per person
   d) Dining halls, cafes and restaurants = 10 sq. ft. or .93 sq. mt. per person
   e) Conference hall = 6 sq. ft. or .55 sq. mt. per person
   f) Dancing = 5 sq. ft. or 10 sq. ft. per couple, or 0.9 sq. mt.

5. Religious Institutions

   For a community population up to 10,000 = 1 1/2 acres or 6 Dunums

   For a community population up to 30,000 - 50,000 = 2 1/2 acres or 10 DM

[a] These figures are adapted from the standards provided by the American Library Association, modified to suit Syrian circumstances. They are roughly based on the maximum number of readers likely to be in an area of a lending library.

[8] These figures are adapted from British and American Standards modified to suit the new community-unit in Syria. Refer to E. and O.E., op. cit., and Community Builders' Handbook, Urban Land Institute, Washington

[9] Ibid.

Table 13. Community Center Land Uses. Space Criteria, Lot Sizes and Total Area for 10,000 and 30,000 People Community. (Service radius, 1 - 2 miles)

Community Center Facility	Community Population: 10,000 people, 2,000 families, 6,980 adults[a]		30,000 people, 6,000 families, 20,940 adults[b]	
Component Uses and Facility	sq.ft.	sq.mt.	sq.ft.	sq. mt.
1. Library[c]	5,000	468	15,000	1,400
2. Syrian Arts and Crafts[10] Exhibition Hall and Workshops	43,560	4,046	43,560	4,046
3. Social and Recreational Facility				
a. Games	1,900	177	1,900	177
b. Billiards(300x7)	2,100	195	2,100	195
c. TV watching lounge	2,100	195	2,100	195
d. Lounging	2,100	195	2,100	195
e. Club rooms	2,400	223	2,400	223
Sub-Total	10,600	985	10,600	985
4. Dramatic Arts Theater[11]				
a. Theater for play acting music, concerts, Syrian ballet	9,000	835	9,000	835
b. Movies show hall[12]	9,000	835	9,000	835
Sub-Total	18,000	1,670	18,000	1,670
5. Religious Institutions[d]	43,560	4,046	65,340	6,000
Grand Total	102,720	11,215	152,500	14,101

[a] See Table 11 of age distribution.

[b] Ibid.

[c] These standards are adapted from the American Library Association modified to suit the Standard of the proposed Syrian new community-unit.

[d] This facility may be constructed as independent item and separate from the community center.

[10] These standards are adapted from British standards of E. and O.E., op. cit., pp. 201-219.

[11] Ibid., pp. 208-211.

[12] Ibid., pp. 355-366.

III. Land for Health Service Facilities

A. Elements of Health Service Facility

The essential elements of health service facilities in Syrian urban communities are the following:

1. Pre-natal and post-natal care clinics.
2. School and infant health service.
3. Community hospital services.
4. Examination and laboratory facilities for diagnosis.
5. Outpatient departments.

B. Criteria for Calculating Land Area Requirements

Bases for calculation of space requirements for health services facilities are not needed. There are international standards developed by the United Nations, and influenced by local factors, such as:

1. The density of population where the health service center will be located.
2. The health standard of the average individual and the whole community.
3. The availability of doctors, nurses, and medical technicians which some Syrian rural areas lack.

The five health service facilities considered herein will be considered on the basis of 2 square feet[13] for each person in the community. Hospital space requirements and nurses' housing will be tabulated by following the international standards that are considered acceptable and practical for many countries.

[13]United Nations Health Organizations Standards Bulletin No. 35, of 1953, Published by the United Nations. Modified to suit the Syrian circumstances.

Basis of Calcualtions for Space Requirements for Health Service Buildings

Type of Facility and Service	Sq. Feet per person	Sq. Meters per person
1. Child, school, infants, examinations laboratory for diagnosis, X-rays, and outpatient, clinics	4	0.36
2. Area per bed in hospital	125 per patient	11.6 per patient
3. Nurses homes	250 per nurse	23 per nurse
4. Nurses need as staff for the care of patients	one nurse per 8 patients	
5. Community hospital services including maternity sections[b]	10 beds per 1000 persons of population	

[a]This standard is adapted from British standards and modified to suit Syrian circumstances, See E. and O.E., Planning, op. cit., pp. 407-414.

[b]This figure is adapted from Denver, Colorado intercounty standards, modified to suit the Syrian circumstances. Urban Land, March 1961, of the Urban Land Institute.

[c]These standards are adapted from United National Health Organizations Standards Bulletin No. 35, modified for Syrian circumstances.

Table 14. Health Services Site Size[a], Recommended Total Areas by Type of Facility and Population of Community

Type of Facility	Community Population 10,000 persons -- 2,000 families Area Required	
	Square Feet	Square Meters
1. General Health Services "To include child, school, infants examination, laboratory for diagnosis, X-ray, and outpatient clinics	40,000 = 0.92 acre	3710 = 3.70 Dunums
2. Community Hospital Services (100 bed)	12,500 = 0.29 acre	1160 = 1.16 Dunums
3. Nurses' Homes (on basis of 250 sq. ft. per nurse for 12 permanent nurses plus 3 reserved)	3,750	345
Total in Acres and Dunums	56,250 sq.ft. 1.30 acres	5215 sq.mt. 5.21 Dunums

[a]All areas here are figured on basis shown in previous tabulation of basis of calculations, page 76. NOTE: It is important to realize that all of the space standards offered are rules of thumb and should be used as average figures.

CHAPTER 6

LAND FOR RECREATION

For the proposed community-unit extension of Damascus, school buildings, parks, apparatus areas, and play fields will be integrated for the well being of the whole community.

Neighborhood and community recreation in Syrian cities can best be met by the "school-park" principle (as noted in Chapter 5). The scarce supply of land alone would justify this principle that provides for multiple use of school properties.

A. Pre-School Children Play Area[1]

The following tabulation (Table 15) presents space requirements for play area of different groups of activities.

It will be recalled that the proposed community-unit will contain four "heiyes" or neighborhoods, each to accommodate 2500 persons. From the age distribution data (Table 6) there would be 250 children aged 2 - 6 years in one neighborhood. Assuming that the total area of 7250 square feet, shown in the basis of calculation is adequate for one "heiye", the space requirement of apparatus and general play area for one "heiye" or neighborhood, would be:

Apparatus play area	7250 sq. ft.
Children per "heiye" or neighborhood	250 children[a]
Apparatus area per one child	7250/250 = 29 use 30 sq. ft.
Adding as general play area	20 sq. ft.
Total area per child	50 sq. ft.

[1]George D. Butler, Recreation Areas, their Design and Equipment, New York: The Ronald Press Company.

Table 15. Basis of Calculations for Unit Space Requirements[a] of play-park for Pre-School Children 2 - 6 Years

Name of activity or game	Dimension of play area	Space requirements	Remarks
1. Swings	3(20x25)[a]	1500	The number of units is-optional
2. See-saw	3(14x10)[b]	420	" "
3. Giant stride	30' diameter[b]	700	" "
4. Sand box	2(10x10)[b]	200	" "
5. Slide for young children	2(12x25)[b]	600	" "
6. Slides 6' high for older children	2(12x25)[b]	600	" "
7. Climbing bars	(10x10)	100	
Total activities area		4120	
Safety zone 75%[c] of the activities area		3130	
Total site requirement		7250	

[a]These standards are adapted from the American Standards as recommended by the National Recreation Association in the book, The New Play Areas--Their Design and Equipment, pp. 37. Slightly modified to suit Syrian circumstances.

[b]These dimensions are international standards.

[c]The 75% safety zone is an extra area to be added to and encircle the play area for the safety of the players and the spectator children.

Total area per one "heiye" or neighborhood	250x50 = 12500 sq. ft. or 0.28 acre or 870 sq. mt. = 0.87 dunums
Area for four "heiyes"	4 x 12500 = 50000 sq. ft. = 1.15 acres = 4.6 dunums.

---

[a]As rule in American practice, it is impractical to provide recreation play area for less than 200 children. See Arthur Gallion, The Urban Pattern, New York: D. Van Norstand and Co., Inc., p. 283. The author arbitrarily recommends 250 children for one play area.

B. School Age Youths Play Area

The possible recreational unit as park-play area of 12,500 square feet could be integrated with the nursery school and kindergarten facility provided each "heiye".

Children from 7 - 11 years of age need recreational areas. Manifestly the requirements for these older groups are substantially greater. The following tabulation (Table 16) presents the basis of calcualtions for the recreational space requirements for this 7 - 11 age group.

Table 6, of age distribution shows that the children, aged from 7 - 11 years in the four "heiyes" of the whole community-unit total 1250 children. For calculating the space requirement of apparatus and general play area, it is assumed that the total area shown in the basis of calculations on page 81 is adequate for the four "heiyes", and that the following data is the result:

Play park area	50,810 sq. ft.
Children Aging 7 - 11 in four "heiyes"	1,250 children
Area per one child	50,810/1250 = 40.60 sq. ft.
Adding 40 sq. ft. per child for general play area	40
Total area for the children population aged 7-11 years	80.60 sq. ft.
	1250 x 80 = 100,000 sq. ft. or 2.3 acres that equals 9290 sq. mt., or 9.29 dunums.

Table 16. Basis of Calculation of Unit Space Requirements for Play-Park Area for Elementary School Age Children 7 - 11.[2]

Name of Activity or Game	Dimension of Actual Play Area	Overall space Requirements Dimension[a]	Area Required Sq. Ft.
1. Basketball	35x60 ft.	50x70 ft.	3,750
2. Soccer	240x120 ft.	260x140 ft.	36,400
3. Handball	20x30 ft.	35x40 ft.	1,400
4. Deck tennis	18x40 ft.	28x50 ft.	1,400
5. Swings	20x20 ft.	20x25 ft.	500
6. Paddle Tennis and Badminton	20x44 ft.	30x54 ft.	1,620
7. Volley Ball	25x20 ft.	40x60 ft.	2,400
8. Rings	22x20 ft.	35x40 ft.	1,400
9. Horizontal bars	15 x 8 ft.	25x20 ft.	500
10. See-saws	3(14x10) ft.	3(24x20) ft.	1,440
Total Area Required			50,810

[a]This area includes the safety zone per each game.

[2]E. and O.E., Planning, op. cit., pp. 463-473. These standards are adapted from the British standards modified to suit the standards of the Syrian new community-unit.

It should be obvious that the community can economize if school functions are carefully planned in conjunction with recreation functions. As stated in Chapter 5, the use of the school-part system can benefit all the residents of a neighborhood.

In analyzing the needs of play area space for children of ages 12 - 18, the intermediate and secondary school ages, it is recognized that the same kind of play area is needed for this group as for the 7 - 11 age group. In addition, the dimension of each type of play space would be the same. Therefore, the gross space requirement per youth of 12 - 18 will be the same -- 80 square feet.

In the proposed community-unit, there will be 1200 youths. For calculating the gross space requirement for apparatus and general play area, it is assumed that the total area shown in the basis of calculations on page 81 is adequate for the four "heiyes" and the following space requirements result:

Area per single youth	80 sq. ft.
Population of youths, aged 12 - 18	1200 youths
Total area of apparatus and general play	1200 x 80 = 96000 sq. ft. = 8900 sq. mt. or 2.2 acres or 8.9 dunums.

C. Adult Athletic Field

One athletic field should be adequate for active play needs of the adult population over 18 years of age that will be residing in the proposed community-unit.

The following tabulation (Table 17) shows the basis of calculation of one athletic field.

[3] A Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education, Chicago: The Athletic Institute, Inc., 1947.

Table 17. Basis of Calculations of Unit Space Requirements of Athletic Field for Adults Aged from 18 and Over[a]

Name of Activity or Game	Dimension of Actual Play Area (ft.)	Overall Space Requirement (feet)	Area sq. ft.
1. Basketball	94 x 50	105 x 60	6300
2. Handball	20 x 30	35 x 40	1400
3. Deck Tennis	18 x 40	28 x 50	1400
4. Paddle Tennis	26 x 44	30 x 54	1620
5. Swings	20 x 20	20 x 25	500
6. Volley Ball	25 x 50	40 x 60	2400
7. Rings	22 x 20	35 x 40	1400
8. Horizontal Bars	15 x 8	25 x 20	500
9. Tennis-single Tennis-double	27 x 78 36 x 78	60 x 120	7200
10. Athletic arena[b] to include: soccer, 4 running tracks, high jump, javelin, long jump, discus base.	$(328 \times 297) + 2\pi r^2 =$ $2(\pi 123^2) + (16 \times 378)$		97416 47529 6048
Total Area			173,713

[a]These standards are adapted from the Standards submitted by the national recreation association in the book, The New Play Area, pp. 37-80, and the National Industrial Recreation Association in the book, Standards Sports Area, and British Standards of E. and O.E. in the book, Planning, pp. 451-476--all modified to suit the Syrian circumstances.

[b]Soccer field alone for adults could be (360 x 225) feet.

For the purpose of calculation, the people likely to use this facility are the adults aged 18 - 40. From the age distribution (Table 7) there would be 3,880 adults in this age group. So space requirements could be estimated as follows:

Athletic field total area		173,713 sq. ft.
Number of people most likely to use it		3,880 adults
Area per one adult	173713/3880 =	44.5 sq. ft. per adult
Adding 50 sq. ft. per adult open space		50
Total area per adult for this type of facility		94.5 sq. ft. use 100 sq.ft.
Total area for the new community-unit as proposed	3880 x 100 =	388,000 sq. ft. = 8.9 acres
	or	38,800 sq. mt. = 38.8 dunums.

D. Passive Recreation: "Community Parks"[4]

There are no standards to govern this important land use which is a necessity for Syrian urban development. The difficulty of acquiring land in the midst of the built-up areas is insurmountable.

Many of the American standards published by metropolitan authorities the National Recreation Association, and the Urban Land Institute while usual for American needs, are extravagant for Syrian conditions. Even the rough standard of one acre per 1000 persons generally used as a point-of-departure by American and European planners is much too liberal for application to Syrian urban situations. In lieu of any degree of precision, it is deemed reasonable to propose an arbitrary scale of one-half acre per 1000 persons for community parks, that is, for non-active types of urban open space use.

---

[4]Arthur B. Gallion and Simon Eisner, The Urban Pattern, City Planning and Design, New York: D. Van Norstand and Company, Inc., pp. 282-290.

Application of this rough standard will yield 21.78 square feet, or 2.00 square meters per person. Personal knowledge gained by the author in his life-time supports this figure as being reasonable for Syrian urban conditions and capacities. Overall, there should be provided no more than four acres, or 16 dunums, of community park for the 10,000 residents of the proposed Damascus community-unit.

Basis of Calculation for Passive Recreation Space Requirements[5]

Type of Development	Acres per Population		
Community Park	1000-2000	2000-5000	5000-10,000
1. Zones of detached residential dwelling units		3/10 per 1000 persons	1/4 per 1000 persons
2. Semi-detached and multi-family dwelling units	1/2 per 1000 persons	4/10 per 1000 persons	3/10 per 1000 persons

[5]These figures are adapted from British Standards as shown in the book, by the Ministry of Housing and Local Government, The Density of Residential Areas, London: Her Majesty's Stationery Office, pp. 33. Modified to suit the Syrian standards.

Table 18. Syrian Urban Communities Recreational Park Sizes Recommended Total Area, by Type of Use and Population of Community[a]

Type of Development and Component Used	Community Population					
	2500 people 500 families		5000 people 1000 families		10,000 people 2,000 families	
	sq.ft.	sq.mt.	sq.ft.	sq.mt.	sq.ft.	sq.mt.
Active Recreation						
1.Pre-School children[b] play area, 2-6 years	14125	4308	28,250	8616	56,500	17,232
2.Children Play Area[c] aged 7-11 years	--	--	50,000	15,250	100,000	30,500
3.Youth Play Area[d] aged 12-17 years	--	--	48,000	14,640	96,000	29,680
4.Adult Athletic field[e] aged 18-40 years	--	--	--	--	360,840	34,300
Passive Recreation						
			acres	dunums	acres	dunums
5.Community Park[f]	--	--	2.5	10	4	16

[a]See tables of Basis of Calculation and Analysis.

[b]On basis of 50 sq. ft. for one pupil of 113 per 1000 of population.

[c]On basis of 80 sq. ft. for one pupil of 125 per 1000 of population.

[d]On basis of 80 sq. ft. for one pupil of 120 per 1000 of population.

[e]On basis of 93 sq. ft. for one pupil of 388 per 1000 of population.

[f]On basis of 1/2 acre for each 1000 of population, but not to exceed 4 acres for 10,000 population.

CHAPTER 7

LAND FOR COMMERCE AND INDUSTRY

A. Historic Background

In reference to what has been said in Chapter 1, the Syrian people naturally lean toward commerce and trading because of their country's location between three continents.

Since the days of the Phoenicians, the dawn of Commerce, Damascus and Aleppo, the main Syrian cities, have had the oldest markets or "Suks" in the Middle East. Some historians counted as many as 139 Suks in Damascus.

Regional and local economic factors were behind the formation, character and function of the Suks. They were unique in their character, the organization and classification of individual enterprises being based on and named according to the commodity, trade, or craft they provided, e.g. tailor Suk, coppersmith Suk, and silk Suk. These Suks can still be visited in the old sectors of Damascus and Aleppo. Even in the past, the Suks were strongly and functionally related to other urban facilties such as the khans, the workshops and the residential districts. The photograph in the first chapter shows a typical layout of Suks from the last two centuries.

B. Present Economic Perspective

The older type of arrangement doesn't work in the new sectors of Damascus and Aleppo because of the new developments in the whole economic system and urban life in Syria. A systematic approach based on economic

factors is very essential for the development of bases of calculations for floor space requirements. This kind of approach can prevent such problems as an oversupply of many commercial facilities, particularly small marginal stores and provides a basis for determining fundamental commercial space needs. A basic kind of information needed for any sound analysis of commercial facilities space needs is the determination of the purchasing power of the population and the conversion of this data to actual floor space requirements. This is a difficult task for Syrian circumstances.

C. Facilities Needed

In recent years in America and Western Europe some very elaborate and sophisticated techniques have been perfected for measuring the floor area and land area needs for commercial facilities in a given urban center. Most of these techniques are based on potential purchasing power, measurement of trade areas, and predictable shopping habits that are based primarily on the use of the automobile.[1]

The Syrian shopper has unique characteristics that render these techniques, referred to, inoperable; for the Syrian family is very erratic in its shopping habits. Its volume and quality of purchases have little direct relationship to family income. Most Syrian shoppers are pedestrians; and they shop in the large, central, market place, leaving scant economic opportunity for the development of suburban or neighborhood markets. With this important qualification in mind, the following

---

[1]F. Stuart Chapin, Jr., Urban Land Use Planning, New York: Harper and Brothers, pp. 303-327.

lists indicate those kinds of commercial facilities that are needed in the Syrian community of today.

I. Daily Conveniences and Service Shops

1. Bakery
2. Grocery
3. Butcher
4. Green grocery
5. Delicatessen shop
6. Sweets shops
7. Restaurants
8. Preserved and Conserved foods shop
9. Nuts shop
10. Refreshments shop
11. Dairy
12. Cafes
13. News-stand and Tobacconist.

II. Shops for Periodically-Consumed Goods.

1. Pharmacy and drugs shops
2. Arabic drugs shop
3. Textiles shops
4. Clothing and Wear shop
5. Grains shop
6. Bookstore
7. Laundry shop
8. Glassware and porcelain
9. Fancy goods shop
10. Stationery shop
11. Barber shop
12. Fuel(coal, wood and oils)
13. Souvenir shops
14. Furniture shop
15. Hardware and building materials
16. Beautician shop

III. Handi-Crafts Shops and Light Industries.

1. Tailors
2. Textiles workshops
3. Blacksmith
4. Carpentry "domestic"
5. Car repair shop
6. Furniture makers
7. Tinsmith
8. Leather crafts shops
9. Shoemaker shop

IV. Warehouse, Wholesale and Brokers Shops "Suk el Hal".

1. Vegetable and fruit brokers
2. Grains brokers
3. Oils and dairy goods brokers
4. Miscellaneous storage

V. Public Service and Highly Skilled Professionals' Offices.

1. Banks
2. Finance and auditing offices
3. Doctors' "physicians" clinics
4. Bacteriological labs
5. Engineers' offices
6. Contracting offices
7. Lawyers' offices
8. Foreign trade agency
9. Other uses
10. Hotels.

D. Criteria for Calculating Land Area Requirement

Because of the lack of any statistical data or prepared basis of calculation, it was necessary that the author analyze and adapt the techniques used by the American Public Health Association and the British Planner Wilfred Burns, the author of British Shopping Centers, as bases of calculations for commercial land needs. Difficulties have arisen in adapting and correlating some of the terminology and principles followed in the American Public Health Association and Mr. Burns' techniques. The major obstacles were the differences in shopping habits, manners of living, commercial commodities and purchasing powers. For this type of facility it is apparent that in the Syrian case, the area needed is less than that of the American because of the factors noted. Relying on his experience, the author was obliged to develop arbitrarily workable bases of calculation for this type of facility.

It is assumed that one-half of each "heiye" or neighborhood of the proposed community-unit that contains 1250 persons or 250 families should

have at least the following facilities for their daily needs. This need shall be the basis for land area estimates.

1. Bases of Calculation for Space Requirements of Commercial and Business Shops

	Feet	Meters	Area Sq. Mt.	Area Sq. Ft.
I. Convenience and Service				
1. Bakery	32.8x32.8	10 x 10	100	1075
2. Two Grocery	2(16.4x16.4)	2(5x5)	50	540
3. Two Butchers	2(16.4x16.4)	2(5x5)	50	540
4. Two Green grocer-fruiterer	2(16.4x16.4)	2(5x5)	50	540
5. Sweets and Refreshments	16.4 x 16.4	5 x 5	25	270
6. Dairy	16.4 x .6.4	5 x 5	25	270
		Total	300	
II. Periodically Consumed Goods				
7. Clothing and Apparel shop	16.4 x 26.24	5 x 8	40	430
8. Textiles and Silks	16.4 x 26.24	5 x 8	40	430
9. Newstand and Tobacconist	16.4 x 16.4	5 x 5	25	270
10. Glassware and Porcelain	16.4 x 16.4	5 x 5	25	270
11. Furniture	16.4 x 32.8	5 x 10	50	537
12. Barber	16.4 x 13.12	5 x 4	20	275
13. Miscellaneous	16.4 x 32.8	5 x 10	50	537
		Total	250	

	Feet	Meters	Area Sq. Mt.	Area Sq. Ft.
III. Handicrafts and Light Industries[a]				
Assume that the need of 250 families or 1250 people can justify and support economically an area of 10 x 10 sq. mt. = 100 32.8 x 32.8 = 1085 sq. ft.	32.8 x 32.8	10 x 10	100	1075
IV. Warehouses, Wholesale and Brokers' Shops[a]				
Assume that the need of 250 families or 1250 people can justify and support economically an area of 10 x 10 meters	32.8 x 32.8	10 x 10	100	1075
V. Public Service and Highly Skilled Professional Offices[a]				
Assume that the need of 250 families or 1250 people can justify and support economically an area of 10 x 45 meters including service areas and driveways	32.8 x147.6	10 x 45	450	4820
		Total	1300	

[a]Through his research the author could find no bases, no experience and no field research available for determining the land area required for such facilities. These figures are to be used carefully and are put here arbitrarily because of the need for this type of land use.

The following table (Table 19) shows the space requirements for shopping facilities for different sizes of urban developments.

Table 19. Space Requirements for Shopping Facilities for Different Sizes of Urban Developments and Use.[a]

Population		Space as builtup area[b]		Space required for dirves and circulation		Total Area		Remarks	Major Functions[d]
Families[a]	Person	sq.ft.	sq.mt.	sq.ft.	sq.mt.	sq.ft.	sq.mt.		
250	1250	10763	1000	3228	300	13991	1300	Built up area might include arcades and pedestrian malls	Convenience goods, daily consumed types
500	2500	12850	1200[b]	3200	300	16050	1500		Same plus drugs, wearing apparel etc.
1000	5000	16000	1500[c]	8000	750	24000	2250		Same plus variety store, bigger wearing apparel and clothing
2500	12500	32000	3000	10763	1000	42763	4000	Built up area could be modified subject to economic neet	Same plus textile handicrafts, bigger wearing clothing and variety
5000	25000	64500	6000	21526	2000	86026	8000	Built up area is doubled on the assumption that the purchasing power will be higher because of higher income groups	Same plus major merchandise, wearing clothing apparel, appliances, furniture and glassware and hardware

[a]The author would like to acknowledge that there are no bases for determining the land area required for such facilities, no field experience to help estimating land needs. This type of land use is needed; but these standards have to be used carefully. They have been adapted from Wilfred Burns' book British Shopping Centers, pp. 60-75, modified and recommended arbitrarily. (b) These standards have been taken from bases of calculation tabulation on pages 91, 92. (c) This figure represents the increase of space required for 500 families plus 25 percent. (d) This does not exclude some other functions.

E. Land for Industry

The Damascus, Alleppo, and Homs-Hama[2] areas are the main centers of manufacturing in Syria. These industrial towns are less than 150 miles from the nearest sea port. By nature of their location, Damascus, Alleppo, and Homs-Hama have the advantages of easy accessibility through railroads and highways, the proximity in raw materials, water and power services and skilled labor. Latakiya, next in importance, is a growing port town with a promising industrial future.

After World War II, industry in Syria grew steadily. The number of workers employed in manufacturing is difficult to estimate because of the continuous growth since the last census of 1947[3].

Industrial development in Syria has become such a significant component of the nation's economy that it deserves careful consideration in the planning for all urban areas. Provisions of land for industry is a unique feature now for Syrian community development; and such industry promises to be a steadily more significant economic factor. It is most important to establish sound standards for reserving adequate land for industrial functions in major Syrian Urban centers.

The new community-unit of Damascus as proposed by this study will not be an industrial community; criteria for space requirement for industrial uses must be based on very many and complicated factors and requires extensive research. Such a study is beyond the scope of this thesis, and therefore, will not be presented. Land for industry is

---

[2]The International Bank for Reconstruction and Development, The Economic Development of Syria, Baltimore: The Johns Hopkins Press, pp. 10-13

[3]Ibid.

worthy of being the topic of another thesis in physical planning and urban land use analysis.

Industrial nations, through long experience, become aware of certain factors that are essential for the success of any industrial establishments, such as markets, labor, land, transportation, utilities including gas, water waste and refuse disposal, etc. Most of these factors are available in major Syrian cities including the proposed community-unit. This proposal does not call for any significant industrial activities; but it is quite likely that it could serve as the location for some new light industries.... particularly those that might be served by the resident labor force. However, industrial development without question, shall be booming as a substantial key to the economic up-grading of Syria, and considerable research should be carried on to determine Syria's need potentials in this important direction.

CHAPTER 8

LAND FOR TRANSPORTATION

Effective transportation facilities are the lifeblood of any nation or community. The principal core of the Syrian economy, throughout its history, has been commerce. Syria has served as the "crossroads" for the exchange of goods in all but recent periods of civilization. It is evident that over the ages transportation has been extremely critical to the success of commercial ventures. However, up until this century, the transportation means were principally the beast-of-burden and the water-borne vessel.

As Syria emerged, tardily, from its persistent medieval culture into the dynamic and turbulent streams of contemporary civilization, it has been feverishly transforming its economy from one of predominant agriculture and commerce to one with strength in manufacturing. This transformation has required parallel development in up-to-date transportation systems.

Syria's transportation requirements are essentially similar to those of any other nation; there must be adequate land to accommodate vehicular traffic, pedestrian traffic, passenger terminals, vehicular parking space, freight and parcel pick-up service stations, taxi-service stations, airports, water-transportation terminal facilities, and railroads.

As part of the total needs for a new community-unit to serve a city like Damascus, there are land area needs to accommodate most of these transportation facilities. Standards to fit the peculiar needs of Syrian circumstances are outlined in the following sections.

A. Land For Vehicular Traffic

Up until World War I most roads and streets in Syria, even those in urban areas, were predominantly earth materials, brick, or cobblestone surfaced. Starting in the early 1920's, impervious-surfaced, or all-weather surfaced, roadways began to replace the wearing-courses of the more important routes, particularly in the major urban centers, like Damascus and Aleppo. Roadway improvements proceeded much more slowly in the rural and minor urban areas. Today, street facilities in the larger urban centers are still quite limited. Improvements are made piecemeal, in response to particular pressures and expediencies; there are no systematic, coordinated programs, based upon sound fiscal policies.

The planning, construction and/or improvement of a street system is completely absent in the processes that bring about new development in Syrian cities. Even standards of design and construction appear to be lacking. It is most important, therefore, that some basic, minimal standard be included in any consideration of criteria for community development.

In terms of circulation needs for a city like Damascus, the following types of road structures should be developed in accordance with the prescribed standards.

1. Intercity Highway for All Automotive Vehicles

A road of this category is already located within the vicinity of the proposed community-unit. This road not only connects Syrian cities but its neighbors, Turkey, Jordan, Iraq. This roadway should be constructed with four lanes, with two lanes for each direction. Each two

lanes should be 15 feet in width separated by a median strip ten feet wide. The roadway system should be placed within a right-of-way 200 feet (60 meters) wide, should not exceed a six percent gradient, and should accommodate speeds up to 50 miles per hour (25 kilometer/hour) for each direction.

2. Major Arterial Road

This road is known in Syria as a "First Class Road" and is the type of roadway which ties together the capital cities of the Syrian Districts. The following specifications should be met by this kind of roadway:

Basis of Calculations[1]

Type of Facility

Major Arterial

Right-of-Way	120-150 ft. or 36-45 mt.
Pavement	56 ft. or 17 mt.
Desirable Maximum grade	6 percent
Desirable Speed	60 miles/hour of 40 kilometers/hour.

3. Minor Arterial Road

This road is known as a "Second Class Road". It ties the major urban centers or the capitals of the districts together and is linked to the major arterial. The proposed new urban development is tied with Damascus' major arterial by one of these roads. The following dimensions are suggested as the basis of calculation for this type of road:

---

[1]These standards are adapted from the Denver Standards as shown in Urban Land, May 1961, magazine of Urban Land Institute, "Standards for new Urban Development", The Denver-Colorado, modified to suit Syrian developments.

Basis of Calculations[2]

Type of Facility

Minor Arterial

Right-of-Way 81 ft. or 27 mt.

Pavement 36 ft. or 12 mt.

Desirable Maximum grade 5 percent

Desirable Speed 50 miles/hour or 35 kilometers/hour.

4. Collector Roads

This is the busiest type of road in Syrian urban centers. In the proposed new-urban development, this road will have paved sidewalks and planting strips on each shoulder. A detailed study of the pedestrian circulation system shows that the sidewalks have to be tied with the pedestrian malls for the safety of the pedestrian. For the basis of calculations, the author suggests the following dimensions:

Basis of Calculations[3]

Type of Facility

Collector

Right-of-Way 60 ft. or 20 mt.

Pavement 30 ft. or 10 mt.

Desirable Maximum grade 4 percent

Desirable Speed 30 miles/hour or 20 kilometers/hour.

5. Major Neighborhood Street

This type of main road collects the neighborhood minor roads and

---

[2]Ibid.

[3]Ibid.

pours traffic into the neighborhood collector road. For the proposed new community-unit, pedestrian sidewalks of this street should be given the same consideration as those of the collector road. The following dimensions are suggested as the basis of calculation:

Basis of Calculations[4]

Type of Facility

Major Neighborhood

Right-of-Way 45 ft. or 14 mt.

Pavement 18 ft. or 6 mt.

Desirable Maximum grade 4 percent

Desirable Speed 30 miles/hour or 20 kilometers/hour.

6. Minor Neighborhood Street

This type of street should be detailed in the early stages of the design of the residential blocks. It ites the residential sectors together, then ties the whole with the nursery, the kindergarten, and elementary school, which are located in the green park in the middle of the residential area. The proposed new community-unit can be designed in accordance with the cul-de-sac pattern or any other system which the terrain allows. The author suggests the following dimensions as the basis of calculations.

Basis of Calculations[5]

Type of Facility

Minor Neighborhood Street

Right-of-Way 36 ft. or 12 mt.

Pavement 12 ft. or 6 mt.

Desirable Maximum grade 3 percent

Desirable Speed 10 miles/hour or 7 kilometers/hour.

[4]Ibid.

[5]Ibid.

B. Land for Pedestrian Walks and Malls for Internal Circulation

The majority of the Syrian people are either pedestrians or bus riders, so the road and street network in the proposed new urban development will be designed to work without conflict with the pedestrian walks, malls and circulation systems.

As a rule-of-thumb for the basis of calculations the author suggests five square feet or 0.50 square meter as a minimum land area per resident of the development for the pedestrian walks and malls. This criteria applies only to the pedestrian malls specially designed in the areas and prohibited to vehicular traffic; sidewalks abutting vehicular roads are excluded from this rule.

C. Bus Terminal Station

This is a very important urban facility, but there have never been developed any specific standards for designating land area requirement by any planning authority for such facility. For the proposed new urban development and others, the author, relying on his experience, proposes arbitrarily the following:

Basis of Calculations for Bus Terminal Station

Size of Town	Site Size
400,000 persons or more	2 acres or 8 Dunums
400,000 - 100,000 persons	1 acre and half or 6 Dunums
100,000 - 5,000 persons	1 acre or 4 Dunums.

D. Municipal Parking Lots

Car registration in Syria is less than in many other countries, but it is on the increase. The author is of the opinion that public

parking lots near the central business districts is essential for the proposed new community-unit. The only basis of calculations that could be considered for this facility is the space required for parking one car which is 10 feet by 30 feet which equals 300 square feet or 30 square meters. It is assumed that car ownership in this development will be as high as 100 cars; thus, for a municipal parking lot of 100 cars capacity, land area requirement will be:

Basis of Calculations for Municipal Parking Lot

Type of Facility	Areas
Space required for parking of one car	10 ft. by 30 ft. or 3 by 10 mt.
Area per 100 cars	100(10 x 30) = 30,000 sq. ft. or 2,760 sq. mt.

E. Freight and Parcel Pick-up Service Stations

In this facility, pick-ups park to offer their rental services for moving merchandise, parcels and furniture within the city limits. The proposed new community-unit population does not justify the establishment of such facility. It will be mentioned for possible use in other urban extensions. The basis of calculation and space requirement of the municipal parking lot governs this facility: 300 square feet per vehicle.

F. Taxicab Parking Station

The basis of calculation and space requirements of the municipal parking lot governs this facility: 300 square feet per vehicle.

G. Other Facilities

Other facilities which are necessary in connection with the new community- unit would be: Airport facilities, Railroad facilities, and Waterfront facilities.

The physical planning of the above mentioned facilities requires emperical analysis, surveys and miscellaneous data compiled for a specific project to be planned and executed in any area. Railroads stations, airport terminals and water-front facilities are unique in their requirements and highly complicated in function. Such conditions impose drastic impact on the adjoining land uses that requires the serious consideration of the planning authorities in the preliminary stages of the planning process.

The size, population, and occupations of the proposed community-unit does not justify the establishment of railroads, airports and water-front facilities; the author must leave the task of evolving planning standards for such facilities to subsequent research endeavors.

TABLE "20": STANDARDS FOR HIGHWAYS, STREETS, AND PEDESTRIAN'S WALKS.

TYPE OF FACILITY	PURPOSE AND DESIGN FEATURES	SPACING	WIDTH			DESIRABLE MAX. GRADE.	SPEED.	REMARKS	SET—BACK
			RIGHT OF WAY	SHOULDER	PAVEMENT				
INTERCITY HIGHWAY.	PROVIDES REGIONAL AND INTER-PROVINCIAL CONN--ECTIONS, LIMITED ACC--ESS, BY-PASS CONGEST--ED RESIDENTIAL AREAS.	VARIABLE, RELATED TO REGIONAL MASTER PLAN	FT. MT. 200 60	FT. MT. ONLY IN URBAN AREA 10 3	FT. MT. FOUR LANES EACH 15', MEDIUM STRIP 10'	6 PERCENT	75 K/HOUR. 50M/HOUR.	TO BE DEPRESSED IN URBAN AREAS	BEYOND CITY LIMITS FROM THE CENTER OF THE ROAD 200' OR 67 M.
MAJOR ARTERIAL	CONNECTS MAIN SYRIAN CITIES AND CAPITALS OF DISTRICTS, CHANN--ELIZED INTERSECTION FIRST CLASS ROAD	VARIES IN ACCORDANCE WITH THE RE--GIONAL MASTER PLAN	150 46	ONLY IN URBAN AREA 15 5	FOUR LANES EACH 12 FT. WITH MED--IUM STRIP 8 56 17	6 PERCENT	60 K/HOUR 40 M/HOUR		OFF CITY LIMITS, FROM THE CENTER OF THE ROAD IS TO BE 150 FT. OR 45 MT.
MINOR ARTERIAL	THIS ROAD FEEDS IN MAJOR ARTERIALS AND TIES THEM WITH MAJOR URBAN CENTERS	AS THE CASE MAY REQUIRE BUT NOT MORE THAN 1/2 MILE	81 27	MIN. 10 FT. INCLUDING PLANTING STRIP.	THREE LANE--S 12' EACH 36 12	5 PERCENT	50 K/HOUR 35 M/HOUR	PROVIDE SHOULDERS IN CITY LIMITS ONLY.	OFF CITY LIMITS, FROM THE CENTER OF THE ROAD IS TO BE 100 FT. OR 30 MT.
COLLECTOR ROAD	A MAJOR INTERNAL CIRCULATION STREET IN URBAN AREAS TO ACC--OMMODATE URBAN TRAFFIC.	NOT LESS THAN 1/4 MILE OR 1 KM.	60 20	SAME	THREE LANE--S 10' EACH 30 10	4 PERCENT	45 K/HOUR 30 M/HOUR	SAME	WITHIN CITY LIMITS, FROM THE CENTER OF THE ROAD IS TO BE 60 FT. OR 20 MT.
MAJOR NEIGHBORHOOD STREET	A TWO WAY NEIGHBORHOOD COLLECTOR ROAD IN WHICH ALL MINOR ROADS FEED IN	WITHIN A REASONABLE DISTANCE	45 15	10 3	21 7	4 PERCENT	30 K/HOUR 20 M/HOUR	TO HAVE A SIDEWALK WITH CURBS & GUTTERS TO ACC--ORD MUNICIPAL CODE	TO ACCORD ZONING AND MASTER PLAN
MINOR NEIGHBORHOOD STREET	ACCOMMODATE INTERNAL TRAFFIC BETWEEN RES--IDENTIAL SECTORS	ACCORDING MASTER PLAN	36 12	6 2	18 6	3 PERCENT	15 K/HOUR 10 M/HOUR	SAME	SAME
PEDESTRIAN WALKS AND MALLS	PAVED PEDESTRIAN SIDE--WALKS WITH PLANTING STRIPS	SAME	MAX. WIDTH = 15 FT. MIN. WIDTH = 8 FT.					SAME	SAME

THIS TABLE IS ADAPTED FROM APPENDIX "I" P. 68 OF THE BOOK "THE DENSITY OF RESIDENTIAL AREAS" - BY THE MINISTRY OF HOUSING & LOCAL GOVT. LONDON.
MODIFIED TO SUIT THE SYRIAN CIRCUMSTANCES.

CHAPTER 9

SUMMARY

A city is an ever-changing, organic manifestation of a vast number of forces, ideas, beliefs, and confluences. Depending upon the nature and intensity of such factors, it either shrinks or expands; but it never remains fixed in static dimension.

Professor Myles Boylan, in an unpublished paper treating urban growth said:

> A striking phenomenon of the twentieth century is the rapid expansion of population in all parts of the world; and a major share of this expansion is occurring in cities. Congestion of people, structures, and vehicles in urban centers is building up at such a rate that the prospects for most large cities indicate a future of endless proliferation and unmanageable size. If cities are to continue to fulfill their traditional role as "the vessels and generators of civilization", as "special instruments of social organization", or as centers of man's creativity, they must be brought into manageable size, organic and coherent form, and systematic ordiliness.

Urban planners as well as local government officials in all countries worked out proposals in different forms for curing the unhealthy urban environment. Professor Boylan suggested in his paper pre-requisite steps for a healthy urban environment:

> Any means for achieving rational and effective management of urban environment can only be developed from the institution and application of many separate and combined actions. Basic to the success of any action is the development of enlightened leadership among the political, technical, and professional personnel of all nations. Any such leadership must be sustained by the prerequisites of clear-cut objectives and environmental standards for all urban, rural, and regional redevelopment and expansion.

The concern of this study was the articulation of those objectives and standards that can nourish the urban administrative processes in

Syria for the achievement of satisfying urban environment.

Urban development in Syria is not significantly different from that in other nations of the world, except for the factor of time. As Syria shakes off the torpor of medieval influences and engages in the social, economic, and cultural realignments more characteristic of the contemporary Western world, it is finding that the city is the focus for its creative energy. Since land is a basic ingredient for urban physical development anywhere, any objectives and standards should, in large measure, be predicated on land area requirements for the different components of urban structure.

In most nations, land needed for urban expansion is obtained by the simple natural economic process of converting land from existing uses to those that promise a greater economic return to the entrepreneur. This process often does not take into consideration the welfare of the community at large and, thereby, imposes problems for the general economy of the community and the nation. Syrian cities suffer greatly from this arbitrary and inefficient conversion of land from one use to another as they expand. This process represents, essentially, the predominant urban land policy in this nation.

Syria's needs for effective development policies and programs are very fundamental ones; it has to develop frameworks in the next few years that have taken many generations to achieve in other countries. As basic steps in policy formulation Syria should, first, establish an urban research center in which significant land use data can be collected, analyzed, and published for daily application; and, second, utilize all appropriate technical personnel for evaluating urban land use needs as they may relate to all urban facilities required for

economic and social functions of the community. These kinds of analyses will result in comprehensive master plans for major urban areas and for urban-rural regions.

It is unthinkable to consider a future Syria where the present sporadic and unsystematic processes of expansion development will continue unabated. Urban development throughout the Western worl over the past half-century offers many alternatives that might serve as models for Syrian needs; but studied consideration of Syrian circumstances suggests that any one previously tested policy must be greatly modified if success is to be achieved.

This study has proposed that new urban development for major urban centers in Syria can best be accommodated by the organizational form of new, physically separate units of development, similar, in general, to the satellite town that is typically economically dependent upon the major urban center; but is physically separate and self-servicing.

These "community-units", as related to such a city as Damascus, would contain all the essential urban-type land uses, services, and facilities. In terms of the types of land use, any one community-unit would consist of the following:

A. Residential Areas

In parallel to what other nations experienced, the homes for a new community-unit will be grouped in a compact modernized "heiye" or neighborhood. Hygiene and safety, as well as social and cultural aims, have been taken into consideration. Nurseries, kindergarten and elementary schools would be located in green pockets between the residential blocks for the convenience and safety of the inhabitants. Table 6, Appendix I

demonstrates a variety of neighborhood gross and net densities. Land area requirements are shown for dwelling structures, appurtenant open space, roads, and school sites in accordance with a variety of desirable neighborhood densities.

B. Educational Institutions

Nurseries and kindergartens will be located in green pockets between the residential blocks with ample sites for integrating the preschool units with the residential environment. In regard to elementary and secondary school facilities, two important concepts are recommended The first, is the utilization of the school-park system and the second, the adoption of the elementary school-campus concept for boys and girls, with segregated classroom units and combined activities facilities such as gymnasium, library, cafeteria and auditorium. The secondary school facilities will be organized similar to those of the elementary school campus, and will also be made available to community organizations. The playing fields will be used by community athletic clubs and organizations.

C. The Community Center

The community center will be the focal point for cultural as well as social and entertainment activities. The center will include the following groups of facilities:

1. The library for literature and science with a special branch for children, a lecture hall, different reading halls, and audio-visual facility.

2. Syrian arts and crafts exhibition hall and workshop for demonstrating Syrian masterpieces of arts and crafts.

3. Dramatic arts theater for staging music concerts, Syrian folk dances, movies, lectures and public meetings.

4. Social and recreational center for social and recreational activities, television lounges, game rooms, billiard halls, etc. are included.

D. Health Services Center

This facility will include an out-patient clinic, pre-natal and post-natal clinic, diagnosis laboratories and a branch hospital. Many people of the average and low income in the new Syrian community-unit will enjoy the services of this center.

E. Recreation Facilities

1. Pre-School Children Play Area

The proposed new community-unit will include a pre-school play area for each neighborhood designed for youngsters aged 2-6 years. This play area is divided into open space and apparatus that fits the age of the children.

2. School Age Youth Play Area

The play area of this group is combined with the public park. It includes playing fields for basketball, soccer, handball and paddle tennis. Open space for general play area will be provided.

3. Adult Athletic Fields

This facility will serve all the population of the proposed new

community-unit. It will contain a soccer field, basketball courts, an athletics arena, volley ball courts, and many other game areas.

4. Community Parks

The land designated for recreation includes ample space for passive recreation and picnic grounds, in a community park. The tables included in Chapter 6 show the rule of thumb for allocating the land area requirements for this kind of facility.

F. Commerce and Business Facilities

For each neighborhood of the proposed new community-unit there will be a compact group of lock-up shops for convenience and goods daily-consumed commodities. These units have to be located in very close proximity to residential areas, on the fringes of the green pockets, to protect the customers from the dangers of traffic. A supermarket for periodically-needed commodities may be included on a trial basis.

G. Transportation Facilities

Different categories of roads and highways are standardized for use in the proposed new community-unit such as the following:

1. Inter-city Highway

This type of road is part of the international roads network and the author assumes that the proposed new community-unit will be laid out in the vicinity of this road, whose width will be 200 feet or 60 meters.

2. Major Arterial or "First Class Road"

This type of road ties the proposed new community-unit with Damascus as well as to the capitals of other provinces. Its recommended width is 150 feet or 46 meters.

3. Minor Arterial or "Second Class Road"

This road is recommended to be 80 feet wide or 27 meters. It is the major transportation facility in the local street network of the proposed new community-unit.

4. Collector Road

This road is the main collector that runs through the urban limits. It is intended to be 60 feet or 20 meters wide, with paved sidewalks and planting strips.

5. Major Neighborhood Street

This is the neighborhood major street. It is intended to be 45 feet or 15 meters wide. It conveys the neighborhood's traffic to the main collector. It will have two sidewalks with planting strips.

6. Minor Neighborhood Street

This road ties the residential blocks of the neighborhood with the rest of the community. It will be shouldered with wide pedestrian sidewalks for the convenience of the residents, especially the youngsters in their daily trips to school.

7. Pedestrian Walks and Malls

These walks will be mapped out for the convenience of pedestrians. The transportation facilities for vehicles and pedestrian walks will be

integrated in a flexible system to avoid traffic congestion and dangerous crossings.

8. Bus Terminal Station

The proposed new community-unit will be tied with Damascus through organized bus lines that terminate in a bus station functionally located in the vicinity of the community center.

These seven functions, namely, residence, public education, cultural activities, health services, recreation, local business, and transportation, comprise the principal ones necessary for the adequate operation of a self-servicing residential unit of any urban community. There are many additional functions that are essential for the overall urban operation, such as, industry, specialized transportation facilities (airports, water ports, railroads, etc.), centralized retail, wholesale, and service businesses, government centers, and universities; but these serve the urban complex as a whole, and so, have not been included in this study that has concentrated on the more parochial aspects of the residential sector of urban development.

The standards proposed in this study may impress the reader as being too elementary for the more advanced development of community standards in use in a country like the United States; but it must be emphasized that Syria has little or no knowledge of standards, and it truly does not have any policies or programs based on sound standards. This thesis is intended as a primer for Syrian urban development. After some initial experience, the standards offered in this study should be re-evaluated and progressively expanded to more detailed and sophisticated dimensions and determinations. This thesis is a most humble and

sincere effort to break ground on this most fundamental area of community development in Syria.

Under the influence of the forces mentioned at the beginning of this chapter, urban Syria manifestly needs progressive and continued research in the following fields:

1. Continuous inventory and comprehensive research in housing.
2. Regional planning programs within the frame of a policy to accomplish fast and sound urbanization and growth of rural areas.
3. Transportation.
4. Industrial development, land requirements, locational and space criteria.
5. Commercial land needs--particularly in the cores of the cities.

PART THREE

APPENDICES

APPENDIX I

TABLES

APPENDIX II

A Schematic Grouping of Residential and Urban Facilities

APPENDIX III

Definitions of Selected Terms

APPENDIX I

Table 1. Application of Different Rates of Densities on Families with Households that Range between 3-4 persons with number of rooms per dwelling unit[a]

Rooms per Acre	Persons/acre	Rooms per Dwelling Unit	Persons per[b] dwelling unit	Dwelling units/acre
55	50[c]	3.9	3.56	14
55	50	4.58	4.17	12
66	60	3.3	3	20
66	60	4.4	4	15
77	70	3.50	3.18	22
77	70	4.28	3.88	18
99	90	3.3	3	30
99	90	4.5	4.1	22

[a]This table is adapted from the booklet of "The Density of Residential Areas", published by the British Ministry of Housing and Local Government, Table 14, pp. 18-19, modified to suit the Syrian circumstances.

[b]Rate of occupancy 0.91 persons per room.

[c]Example to show how the table is used: divide the household (3.56) over the recommended occupancy rate of (0.91) to have (3.9) rooms per dwelling units; then divide number of rooms per acre (55) over that of dwelling unit (3.9) to have (14) dwelling units per acre.

Table 2.[a] Allocation of Net Residential Area per Dwelling Unit to Major Dwelling Uses.

Dwelling Type	Land Area: Square Feet per Dwelling Unit					
	Total		Percent of Lot Covered by Building	Percentage of Non-built-up Area of Each Lot.		
	Sq.Ft.	Sq.Mt.		Front Yard[b]	Back Yard[b]	Side Yard[b]
One Family						
1. One family detached-6D.U./acre	7260[c]	675	Varies	20	20	10
2. One family semi-detached-8D.U./acre	5400	500	Varies	17.5	17.5	5
3. One family attached[d] "row houses" 14 D.U./acre	3111	288	Varies	11	11	3
Two Family						
4. Two family detached-split lot or one family semi-detached, 8 D.U./acre	5400	500	Varies	17.5	17.5	5
5. Two family semi-detached-14 D.U./acre	3111	288	Varies	11	11	3
Multi-Family						
See Next Table No. 3.						

[a]This table is adapted from the American Public Health Association book, Planning the Neighborhood, Table 3, p. 38, modified to suit Syrian new community-unit standards.

[b]Variable, subject to detailed site planning and general community layout plan and design concept. I will show the front and rear set back equal assuming that the building will be centered in the middle of the lot.

[c]The figures in this column are the results of dividing the acre square footage over the number of D.U. per acre, i.e., 43560/6 = 7260.

[d]Side yards for row houses should be 3 feet or 1 meter from each D.U. totaling 30 feet or 10 meters in every 10 D.U.

Table 3. Allocation of Net Residential Area Per Dwelling Unit[a] to Major Dwelling Uses for Multi-Family Dwellings

Dwelling Type	Land Area: Square Feet							
	Lots Total		Covered by Buildings[c]	No. D.U.	No. of D.U. Structural Blocks	Front Yard	Back Yard	Side Yards
	Sq.Ft.[b]	Sq. Mt.						
	1	2	3	4	5	6	7	8
Multi-Family								
1)2story-split lot-10D.U./acre	8712	810	5x1408= 7040	10	5	3000	3000	1304
2)2story-split lot-12D.U./acre	7260	679	6x1408= 8448	12	6	2400	2400	1052
3)2 story-split lot-14D.U./acre	6222	580	7x1408 9856	14	7	1907	1907	1000
4)2story-split lot-18D.U./acre	4840	445	9x1408 12072	18	9	1300	1300	832
5)2story-split lot-22D.U./acre	3960	368	11x1408= 15488	22	11	1000	1000	552
6)3 story 27 D.U./acre	4840	448	9x1408= 12672	27	9	1300	1300	832
7)4 story 28 D.U./acre	6223	580	7x1408= 9856	28	7	1600	1600	1615
8)5 story 30 D.U./acre	7260	670	6x1408 8498	30	6	2400	2400	1052

[a]This table is adapted from Table 4 of the book, Density of Residential Area, of the Ministry of Housing and Local Government in England, modified to suit Syrian new urban development standards.

[b]Figures in this column are the quotients of the division of the acre on the number of lots as shown in Column '5'.

[c]This column shows the total built up area per acre. Note: Add the figures in Columns 8, 7, 6 and 1408 sq. ft. as shown in Column 3 and you will have the total as shown in Column 1. One D.U. area = 5.5 x 256 = 1408 sq. ft.

Table 4. Analysis of Space Requirements of Units per Pupil for Syrian Secondary Schools[a]

Type of Facility	Space Requirement per pupil		Remarks
	Sq. Ft.	Sq. Mt.	
I. Indoors Area[b]			
1. Classrooms and Corridors only	20	1.86	
2. Lockers and toilets	1.5	0.14	
3. Administration(including health services)	1.5	0.14	
4. Horizontal and vertical circulation and mechanical	6.5	0.65	
5. Multi-purpose spaces	20	1.86	
6. Library facilities(including art exhibition)	5	0.46	
7. Audio-visual	1	0.093	
8. Auditorium	9	0.85	
9. Cafeteria facilities	8.5	0.79	Including kitchen facilities
Total area per pupil	73	6.84	

[a]These standards have been adapted from American Standards and British Standards modified to suit the standards for the Syrian new urban developments.

[b]G. Russell Holy, "The Relationship of City Planning to School Plant Planning," James MacConnell, "Planning for School Building", E. and O.E., Planning, The Architects' Handbook, pp. 125-175.

Table 5. Space Requirements by Standards for Syrian Secondary School Facilities[a]

Type of Facility		Space Requirement in Standards Sq. Ft.	Sq. Mt.	Remarks
I. Indoors Area[b]				
1. Space for Teachers and staff for 40 teachers plus 10 janitors		1500	140	Standard by the Syrian Ministry of Education
2. Arts and Crafts Shop (900+960)		1860	173	Std. facility/school
3. Science Room Facility		1200	111	The same
4. School Activities and Hobbies (20x30)		600	56	The same
5. Carpentry Shop		850	79	The same
6. Metal work shop		850	79	The same
7. Drawing Room		960	89	The same
8. Music Room	(20 x 25)	500	46.5	The same
9. General Laboratory	(25 x 24)	600	56	The same
Total of Standardized facilities		8920/1200 = 7.44	819.5/1200 = 0.68	
Area per Pupil		7.44	0.68	
II. Outdoors Academic Activities				
1. School play grounds and outdoors academic activities, including outdoors teaching area		59	5.5	Standard by the Syrian Ministry of Education
III. Playing Fields				
Field to include all athletic activities on basis of unit area per 100 students		32750 6/8 acres	3000 or 3 Dunums	Standard by the Syrian Ministry of Education

[a]The number of students is 1200, the secondary school age population for the proposed new urban development.

[b]These standards have been taken from the standards designated by the Syrian Ministry of Education as modified originally from British and French Standards to suit the Syrian School uses.

TABLE 6 ESTIMATION OF VARIOUS GROSS & NET DENSITIES & ITS EFFECT ON OPEN SPACE STANDARDS

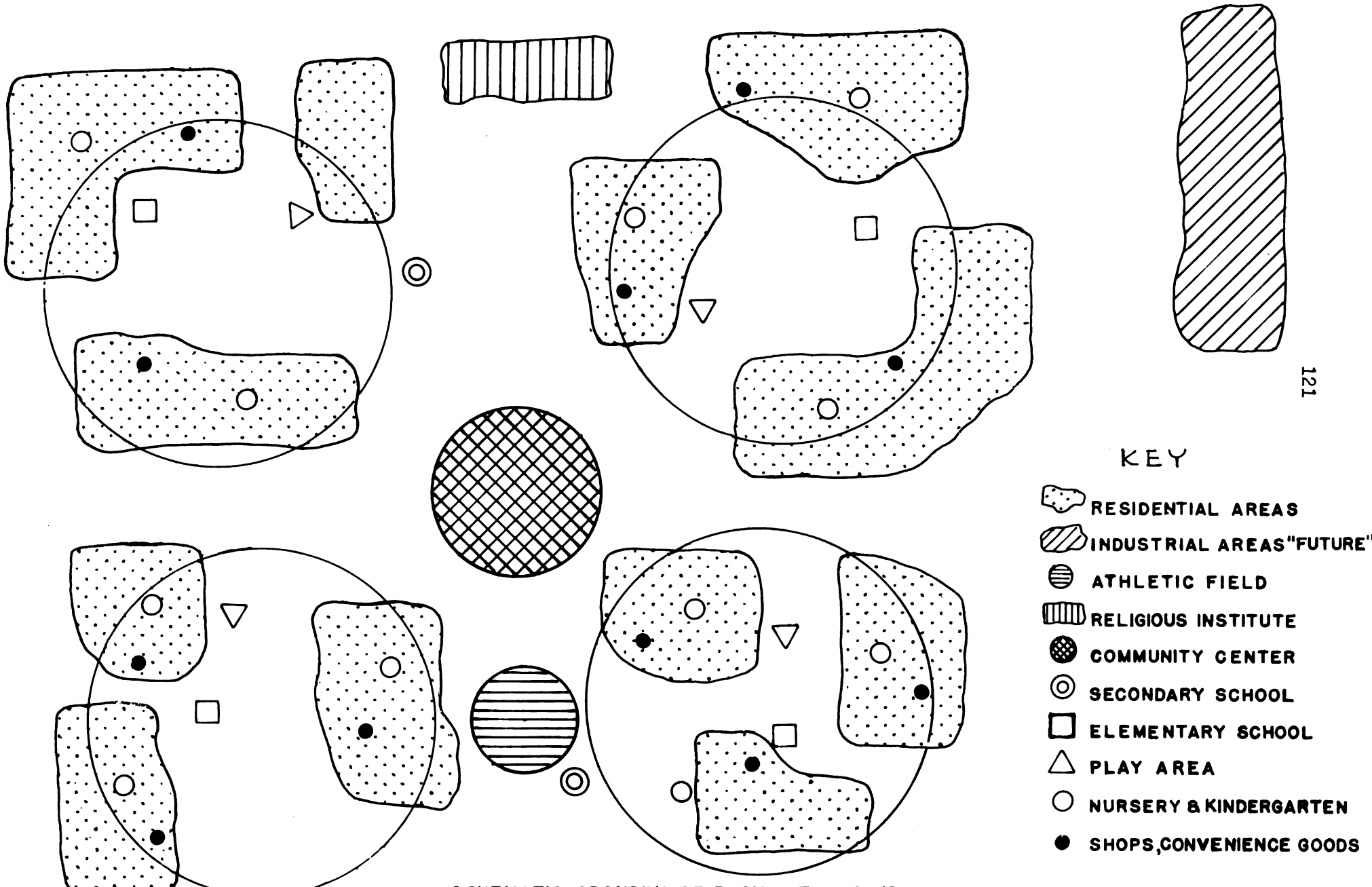
THIS TABLE IS DESIGNED TO SHOW THE AMOUNT OF LAND AVAILABLE FOR HOMES & OPEN SPACE (OR OTHER ALLIED USES) AT VARIOUS COMBINATIONS OF GROSS & NET DENSITIES THAT SUITS NEW URBAN DEVELOPMENTS IN SYRIA. EACH GROSS DENSITY (COL. 1) IS FIRST RE-EXPRESSED AS A LAND AREA PER 1000 PERSON (COL. 2) – (COL. 3) SHOWS THE ALLIED USES SUCH AS SCHOOLS, SHOPS, ROADS, ETC. (COL. 4) SHOWS THE BALLANCE AVAILABLE AS SPACE FOR HOUSING & OPEN SPACE. IN THE REMAINING COLUMNS THIS BALLANCE IS ALLOCATED BETWEEN HOUSING AND OPEN SPACE FOR VARIOUS NET DENSITIES. FOR EXAMPLE AT A GROSS DENSITY OF 30 PERSONS PER ACRE IT WOULD BE POSSIBLE TO HAVE AN AVERAGE NET DENSITY OF 60 RM. PER ACRE & OPEN SPACE 3.2 ACRES / 1000 PERSONS OR ALTERNATIVELY AN AVERAGE NET DENSITY OF 120 RM. PER ACRE WITH OPEN SPACE AT 12.5 ACRE / 1000 PERSON.

ONE DUNUM = 1000 SQ. METERS

GROSS DENSITY PERSONS PER 2.5 ACRE OR 1 DUNUM	LAND AREA ACRES OR DUNUMS PER 1000 PERSONS		PROVISIONS FOR SCHOOLS, SHOPS ROADS, ETC. LAND FOR 1000 PERSON		BALANCE AVAIL. FOR; 1-HOUSING 2-OPEN SPACE LAND PER 1000 PERSON		ALLOCATION OF COL. 4 BETWEEN HOUSING AND OPEN SPACE FOR VARIOUS NET DENSITIES IN ROOMS PER ACRE - "OCCUPANCY RATE = .81"																
							COLUMN A = ACRES OR DUNUMS OF NET RESIDENTIAL AREA / 1000 PERSON										COLUMN B = ACRES OR DUNUMS OF OPEN SPACE PER 1000 PERSON									
							20 ROOMS PER ACRE OR 4 DUNUMS		25 ROOMS PER ACRE OR 4 DUNUMS		40 ROOMS PER ACRE		60 ROOMS PER ACRE		80 ROOMS PER ACRE		100 ROOMS PER ACRE		120 ROOMS PER ACRE		140 ROOMS PER ACRE		180 ROOMS PER ACRE		200 ROOMS PER ACRE		
1	2		3		4		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
	ACRE	DUNUM	ACRE	DUNUM	ACRE	DUNUM	55	14	43,9	25,1	27,6	41,4	18,3	50,7	13,75	55,25	10	59	9,2	59,8	7,9	61,1	6,1	62,9	5,5	63,5	ACRE
10	75	300	6	24	69	276	220	56	175,6	100,4	110,4	165,6	73,2	202,8	55	221	40	236	36,8	239,2	31,6	244,4	24,4	251,6	22	254	DUNUM
									43,9	1,1	27,6	17,4	18,3	26,7	13,75	31,25	10	35	9,2	35,8	7,9	37,1	6,1	38,9	5,5	39,5	A
15	50	200	5	20	45	180			175,6	4,4	110,4	69,6	73,2	106,8	55	125	40	140	36,8	143,2	31,6	148,4	24,4	155,6	22	158,	D
											27,6	5,4	18,3	14,7	13,75	19,25	10	23	9,2	23,8	7,9	25,1	6,1	26,9	5,5	27,5	A
20	37,5	150	4,5	18	33	132					110,4	21,6	73,2	58,8	55	77	40	92	36,8	95,2	31,6	100,4	24,4	107,6	22	110	D
													18,3	7,7	13,75	12,25	10	16	9,2	16,8	7,9	18,1	6,1	19,9	5,5	20,5	A
25	30	120	4	16	26	104							73,2	30,8	55	49	40	64	36,8	67,2	31,6	72,4	24,4	79,6	22	82	D
													18,3	3,2	13,75	7,75	10	11,5	9,2	12,3	7,9	13,6	6,1	15,4	5,5	16	A
30	25	100	3,5	14	21,5	86							73,2	12,81	55	31	40	46	36,8	49,2	31,6	54,4	24,4	61,6	22	64	D
															13,75	1,7	10	5,45	9,2	6,25	7,9	7,55	6,1	9,35	5,5	9,95	A
40	18,75	75	3,3	13,2	15,45	61,8									55	6,8	40	11,8	36,8	25	31,6	30,2	24,4	37,4	22	39,8	D
																	10	3,6	9,2	4,4	7,9	5,7	6,1	7,5	5,5	8,1	A
45	16,60	66,4	3	12	13,6	54,4											40	14,4	36,8	17,6	31,6	22,8	24,4	30	22	32,4	D
																	10	2,15	9,2	2,85	7,9	4,25	6,1	6,05	5,5	6,65	A
50	15	60	2,85	11,5	12,15	48,6											40	8,6	36,8	11,8	31,6	17,0	24,4	24,2	22	26,6	D
																			9,2	1,8	7,9	3,1	6,1	4,9	5,5	5,5	A
55	13,60	54,4	2,60	10,4	11,00	44													36,8	7,2	31,6	12,4	24,4	19,6	22	22	D
																					7,9	2,1	6,1	3,9	5,5	4,5	A
60	12,50	50	2,50	10	10	40															31,6	8,4	24,4	15,6	22	18	D
																							6,1	3,1	5,5	3,7	A
65	11,60	46,4	2,46	9,6	9,2	36,8																	24,4	12,4	22	14,8	D
																							6,1	2,3	5,5	2,9	A
70	10,70	42,8	2,30	9,2	8,4	33,6																	24,4	9,2	22	11,6	D

ADAPTED FROM THE MINISTRY OF HOUSING AND LOCAL GOVERNMENT BOOK "THE DENSITY OF RESIDENTIA AREAS" TABLE 8, MODIFIED TO SUIT THE SYRIAN STANDARDS – PUBLISHED BY H.M.S.O, LONDON.

APPENDIX: II



SCHEMATIC GROUPING OF RESIDENTIAL & URBAN FACILITIES FOR THE PROPOSED NEW URBAN DEVELOPMENT IN THE SUBURBS OF DAMASCUS

APPENDIX III

DEFINITIONS[a]

A Habitable Room: is a room which is normally used for any of the major living activities, i.e., sleeping, dining and sitting or lounging. A kitchen is regarded a habitable room when it is also used as dining space.

Occupancy Rate: The ratio of persons living in a dwelling unit to the number of habitable rooms in one or a group of dwelling units.

Detached Dwelling Units: a dwelling unit for one household that has direct access to the exterior from all four sides.

Semidetached Dwelling Units: Two dwelling units in one structure divided by a partition wall.

Attached Dwelling Units: A structure that contains a row of dwelling units divided by a combined partition wall.

Multi-Family: A structure that contains three or more dwelling units, usually with common access, services and use of land.

Density: The number of dwelling units or habitable rooms or households or persons per acre or Dunum.

Overall Density: The total number of residents in a community divided by the total developed area of the community.

Gross Density: The total number of residents in an area divided by the gross residential area.

[a]These definitions are adapted from the American Public Health Assoc. Committee on Hygiene book, Planning the Neighborhood, pp. 71-76, and the ministry of Housing and Local Government, London,"The Density of Residential Areas", pp. 70, modified to suit Syrian circumstances and standards.

Gross Residential Area: The area includes the net residential area and

a. The sites and the courts of nurseries, kindergartens and elementary schools, local shops, professional offices, business premises, cinemas, public houses, neighborhood local service industries and handicrafts, mosques and churches and public buildings;
b. Open spaces not included in the net area;
c. Half the width of any street that abuts the land of any of the facilities mentioned in (a) and (b).

Net Residential Area: The area of land actually developed to contain the dwelling units, and including:

a. The sites of the houses and other residential buildings and their outddors living areas and courts;
b. Any small public or private open courts included in the project;
c. Half the width of any street abutting the sites of dwelling units or attached open courts.

Neighborhood or "Heiye" Density: The number of persons, households, dwelling units and habitable room per acre of neighborhood land area. Included in the essential facilities of the neighborhood or "Heiye" such as nursery, kindergarten, elementary school, lock-up-shops, streets, open space, service premises.

Net Population Density: The total number of persons in a residential sector of an urban development, divided by the net residential area in acres. It is quoted as persons per net residential acre or dunum.

Urban Facilities: All facilities essential for urban way of living such as, residential neighborhoods or "Heiye," local commercial and industrial facilities, educational institutions, schools from nursery to secondary school; recreation facilities, public open spaces, religious institutions, streets, roads and transportation facilities, cultural and social activities facilities.

Neighborhood Shopping Facility: A group of lock-up-shops of convenience goods and daily needed commodities and services, located within walking distance from the residential buildings of the neighborhood.

Play Area: A lot of ample space containing some apparatus and diversified facilities for active recreation of pre-school children.

Playground: A play area containing apparatus and diversified recreational facilities, primarily for active recreation for children of elementary school age population.

/

BIBLIOGRAPHY

American Public Health Association, Committee on the Hygiene of Housing, Planning the Neighborhood, Chicago: Public Administration Service.

Athletic Institute, The, A Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education, Chicago: The Athletic Institute, Inc.

Bogner, Walter F., et al., "Planning a Schoolhouse for Tomorrow's Citizens", Kingston, Massachusetts: A case study.

Beggs, W. Vera, Operation Vallingby, The American City Magazine, July 1955, pp. 117-120.

Bijhouwer, J. T. P., "The Netherland Landscape," The Netherlands Magazine of Architecture and Applied Arts, pp. 9-22.

Burns, Wilfred, British Shopping Centers, London: Leonard Hill, Ltd.

Chapin, F. Stuart,Jr., Urban Land Use Planning, New York: Harper and Brothers,

Dahir, James, The Neighborhood Unit Plan its Spread and Acceptance , New York: Russel Sage Foundation, (Selected Bibliography).

Dean, John P., "The Neighborhood and Social Relations," Philadelphia Housing Association Paper 3, April, 1958, Forum.

E. and O.E., Planning, The Architect's Handbook, London: ILIFFE and Sons, Ltd., (The Architect and Building News).

Fedden, Robin, Syria, an Historical Appreciation, London: Robert Hale Ltd.

Gallion, B. Arthur and Eisner, Simon. The Urban Pattern, City Planning and Design, New York: D. Van Norstrand and Company, Inc.

George, D. Butler, Recreation Areas, Their Design and Equipment, New York: The Ronald Press Company.

Goodman, Paul and Percival, Communitas-Ways of Livelihood and Means of Life, New York: Random House, Vintage Books.

Gruen, Victor and Larry Smith, Shopping Towns U.S.A., The Planning of Shopping Centers, New York: Reinhold Publishing Corp.

Hitti, Philip Khalil, History of Syria, Including Lebanon and Palestine, New York: The Macmillan Company.

International Bank for Reconstruction and Development,The, The Economic Development of Syria, Baltimore: The Johns Hopkins Press.

Ministry of Housing and Local Government, The, The Density of Residential Areas, London: Her Majesty's Stationery Office.

National Recreation Association, Play Areas; Their Design and Requirements, A. S. Barnes and Company, 1935.

Perry, Clarence, Housing for the Machine Age, New York: Russel Sage Foundation.

"Special Attention to Land Problems as Related to Housing", House and Home, August 1960.

Stamp, L Dudly, Applied Geography, Harmondsworth, Middlesex: Penguin Books, Ltd.

Sylvania Township and Village, Toledo-Lucas County Planning Commissions, School-Park Plans.

United Nations, Urban Land Problems and Policies, Housing and Town and Country Planning, Bulletin 7-ST/SOA/Ser. C/7, pp. 98-104.

Urban Land Institute, "Urban Land", monthly paper, May 1961, Washington, D.C.

Urban Land Institute, The Community Builders, Washington, D.C.: Urban Land Institute.

Urban Land Institute, "Standards for New Urban Development--The Denver Background," Urban Land, May 1961, pp. 1-8.

Williams, Ellis Clough, Town and Country Planning, London: Longmans, Green and Co., pp. 32-48.

Wirth, Louis, Community Life and Social Policy, Chicago: University of Chicago Press, (Selected Papers).

Ziadeh, Nichola, Syria and Lebanon, New York: Frederick A. Praeger.