Prom. No. 3233

ANALYTICAL STUDY OF THE UNDERLYING FACTORS GOVERNING THE DESIGN OF THE CONSUMERS' COMMUNITY SHOPPING CENTRES

Thesis presented to

The Swiss Federal Institute of Technology, Zürich

for the Degree of Doctor of Technical Science by

Ahmed Kamal Mahmoud Abdel-Fattah, B. Arch. of Egypt

Accepted on the Recommendation of Prof. Dr. W. M. Moser and Prof. B. Hoesli

Akerets Erben AG, Dielsdorf, July 1962
Leer - Vide - Empty
To late father and mother who would have been pleased to see this work.
Leer - Vide - Empty
Preface

I wish to extend my best thanks to Professor Dr. W. M. Moser for his kind and constructive guidance, also to Professor B. Hoesli and Professor W. Custer for their kind and constructive aid.

Moreover, I wish to acknowledge gratefully the help given by some economical and architectural experts in the field of shopping centres and retailing trade, especially Mr. Adolf Kümin (economist and consultant in the National Register Cashier in Zürich) for his guidance and revision of the economical analysis chapter, Dr. Howald (Globus Administration, Research Department in Zürich), and Professor Fred Forbat (Professor of Architecture in Stockholm University).
Leer - Vide - Empty
Contents

Introduction .......................................................... XI

PART I

SHOPPING AND SHOPPING OUTLETS IN THE PAST AND NOW-A-DAYS

Chapter 1

Historical Survey of the Development of Commercial Outlets with Analysis of the Social and Economical Factors causing the Changes
Prehistoric Ages ..................................................... 3
Old Egypt ............................................................. 3
Crete and Greece in the Pre-Hellenic Period ...................... 3
Greece in the Hellenic Period .................................... 3
The Agora and Stoas ............................................... 4
Characteristics of some Stoas .................................... 4
Rome and Roman Colonies in the Roman Period ............... 4
Economical and Trade Conditions ............................... 5
The Retailing Pattern ............................................. 5

Europe in the Middle Ages ......................................... 7
Economical and Trade Conditions in Merovingian France and West Europe in the Carolingian Ages (7th to 10th Century) ................................................................. 7
The Retailing Pattern ............................................... 7
Economical and Trade Conditions, 11th to 19th Century .... 7
The Retailing Pattern, 11th to 15th Century .................... 7

Europe in the Renaissance Period (15th to 16th Century) .... 9
Economical and Trade Conditions ............................... 9
The Retailing Pattern ............................................... 9

Europe and America in the 19th Century ........................ 10
A. Influences affecting the Development of Commerce and Commercial Outlets ........................................... 10
B. The Retailing Pattern in the 19th Century .................... 11

Europe and America in the First Half of the 20th Century ... 11
A. Main Influences affecting the Development of Commerce and Commercial Outlets ........................................... 11
B. The Retailing Pattern in the 20th Century .................... 12

Chapter 2

Types and Classification of Shopping Outlets

Different Types of Classifications (Diagrams A-D) .......... 13
Classification based on the Architectural Structure of the Outlets
Group A. Shopping Outlets having no Permanent Structure
a) The Open Market .............................................. 16
b) The Street Traders ............................................ 16
c) The Shopping Cars ........................................... 16
d) Automatic Vending Machine ................................. 16

Group B. Single Independent Shopping Outlets
a) The Corner Shop ............................................. 16
b) The Speciality Shop ......................................... 17
c) The Consumers Co-Operative Societies .................... 17
d) The Chain Store (Multiple Shop) ............................ 17
e) The Mail-Order House ...................................... 17
f) The Discount House ........................................... 17

Group C. Grouping of a variety of Shopping Outlets under one common roof
a) The Bazaar or Souk (Oriental Market) ....................... 17
b) The Wikala (Chan) and Caravanserai ...................... 18
c) Shopping Arcades ............................................. 19
d) The Department Store ...................................... 20
e) The Shopping Subcentre .................................... 21
f) The Modern Supermarket ..................................... 21

Group D. Grouping of several Independent Shops, each under its own special roof
a) The Shopping Street ............................................ 21
b) The Shopping Precinct ........................................ 22

PART II

MODERN ASPECTS, TRENDS AND THEORIES DEALING WITH SHOPPING CENTRES FROM REGIONAL AND TOWN PLANNING POINTS OF VIEW

Chapter 3

Regional Planning Pattern as affected by System of Trade
Settlement's Structure in the Medieval Ages as affected by Trade ................................................................. 25
Settlement's Structure in the Industrial Age as affected by Trade ................................................................. 25
Modern Classification of Regions on an Economic Basis and the Commercial Pattern in Each Type ................... 25
A. Regions of Balanced or Self-Sufficing Economy ........ 25
Example: New York State Region .............................. 26
B. Specialized Regions ............................................. 27
C. Partially-Specialized Regions characterized by advanced Cultures ............................................................... 27

Chapter 4

City Planning Considerations with respect to Shopping Centres
A. Town Growth, its Types and its Effect upon the Shopping Pattern with respect to:
a) Centralization and Decentralization ....................... 29
b) The Dormitory Suburb ....................................... 30
Its Shopping Pattern ........................................... 30
c) The Partially Self-Contained Suburb ...................... 30
Its Shopping Pattern ........................................... 30
Example: Vällingby and its Types of Shopping Centres .... 31
d) The Satellite Town ............................................ 31
Its Shopping Pattern ........................................... 31
An Analysis of the Commercial Areas for an Ideal Satellite Town in France of 40,000 Inhabitants in 1959 .... 31
Example: Harlow, a Satellite Town of Greater London ...... 32
VIII

PART III

ANALYTICAL STUDY AND DESIGN OF THE COMMUNITY SHOPPING CENTRE

Chapter 6

Introduction to Part III

A. Aims of Part III

B. Planning Team

Chapter 7

The Economical Analysis

Definition

Procedure

A. Analysis and Evaluation of Potentials of existing Shopping Outlets in the Community

B. Planned Distribution Pattern of the different Types of Shopping Centres in the Community

C. Determination of the Size of the Trade Area

D. Population in the Trade Area

E. Determining the Purchasing Power in Retailing

F. Determination of what Portion of these Total Purchases will be made in the New Centre

G. Determining the Sales Volume by Each Type of Stores and its Total corresponding Sales Area

H. Determining the Final Total Expected Sales Volume in the New Centre and consequently its Size

I. Selection of Tenants

Chapter 8

Site Selection and Site Planning

Introduction

A. Site Selection

B. Layout Planning Principles

C. Process of Site Planning

B. Types of Traffic occurring within the Centre

D. Single Study of Each Type

A. The Shopping Centre as affecting and being affected by the surrounding Traffic

B. Main Principles for Planning Private Car Traffic within the Centre

C. Separating the Main Types of Traffic and its different Characteristics

D 1. Pedestrian Consumers Traffic

D 2. Motorist Consumers Traffic and Parking

D 3. Service Truck Traffic

D 4. Motorist Shopping Traffic

D 5. Service Truck Traffic

A. Ownership

b) Land Cost

c) Quantity and Quality of Population

d) Size of Site

e) The Shape of the Site

f) Physiological and Topographical Characteristics

g) Accessibility

h) Visibility

i) Zoning

j) Competition of Other Existing Shopping Outlets

B. Layout Planning Principles

C. Process of Site Planning

a) The Usage Plan

b) Choosing the Site Pattern

1. The Strip Pattern

2. The L-Shaped Pattern

3. The Pedestrian Mall Pattern

4. The Cluster Pattern

Chapter 9

Analysis of the Traffic and Communication Problems

Introduction

A. The Shopping Centre as affecting and being affected by the surrounding Traffic

B. Types of Traffic occurring within the Centre

C. Separating the Main Types of Traffic and its different Methods

D. Single Study of Each Type

D 1. Pedestrian Consumers Traffic

D 2. Motorist Consumers Traffic and Parking

a) Determining the Parking Area required; Empirical Methods of Calculation

b) Main Principles for Planning Private Car Traffic within the Centre

c) Layout Patterns of Parking when wholly on the same Sales Level

d) Variations of Parking Patterns when not wholly on the same Sales Level; Roof Parking; Parking under the Stores; Multi-Storey Parking
Chapter 10

Analytical Planning of the Centre

A. Traffic-Pullers and Traffic-Users Stores—Their grouping together to give efficient Merchandising Patterns

B. Store-Grouping in the Merchandising Plan, based on Type, Quality and Price of Goods; and the recommended Location for each Category

C. Main Principles and Aspects controlling the Development of Merchandising Planning with regard to:

D. Non-Retail Establishments: Civic, Cultural and Recreational

E. Modern Patterns of Retail Outlets recently introduced in Shopping Centres

Chapter 11

Analysis of the Structure of the Shopping Centre

A. Main Factors affecting the Choice of the suitable Structure

B. Main Points to be considered in designing the Structure

C. Different Types of Construction that can be used in a Centre

Chapter 12

Effect of the Climatic Factors upon the Planning of the Centre

A. Site-Selection and Planning, providing the most advantageous Microclimate

B. Canopies

C. Covered Enclosed Malls

D. Air-Conditioning

E. Heating

F. Utilization of Daylight in illuminating the Sales Area

Chapter 13

Aesthetical Treatments and Interior Designs

A. Unity of the Centre

B. Character of the Centre

C. Scale for Motorist and Pedestrian

D. Store-Front Design in the Centre: Unity, Simplicity, Contrast, Types of Store-Fronts in a Centre

E. Show-Window Design in the Centre

F. Sign-Design in the Centre

G. Sculptures, Murals, Reliefs and Music in the Centre

H. Special Aspects of Sale Area Design as related to the Shopping Centre

Chapter 14

Landscape and Garden Design

A. Why Landscaping in a Shopping Centre?

B. Varieties of Landscape Design Treatment

C. Main Points to be considered in Landscape Design

PART IV

CONCLUSIONS

The Main recommended Lines for Planning Community Shopping Centres in the Egyptian Region

Appendix 1

Appendix 2

References

Summary in German

Curriculum Vitae
Leer - Vide - Empty
Introduction

To keep pace with the steady growth of population, housing projects are being erected, as, for example, in neighbourhoods, communities, new suburbs and even new satellite towns. In order that each of these new residential areas can function economically well, it should have an integrated shopping pattern, including all necessary types of shopping centres to cater for the different needs of the population in that area. These types of centres should be distributed, located and designed according to the convenience-frequency principles.

The word ‘Shopping Centre’ is largely misused. In Europe many people erroneously call any accidental grouping of stores or department stores a shopping centre. A modern shopping centre, scientifically defined, is: ‘a carefully selected group of stores with a calculated selling floor-area, planned, developed and managed as a unified unit, to serve conveniently and intimately the consumers living in a defined residential area, whether they come on foot or by car’. (1) This means that the centre is an important, indispensable element of a settlement, intimately related to and integrated with its residential zone and also its other, industrial and recreational, zones. In this general sense it is clear that planning shopping centres is both a town-planning and an architectural problem which must be well understood, analyzed and solved for every developing country.

It must also be mentioned here that the term ‘Modern Shopping Centre’—first used by the Americans—primarily meant ‘a totally independent centre located outside the town, on a highway, unrelated to any directly-adjoining residential areas and principally devoted to motorist consumers—providing for them vast parking areas’. According to the above-mentioned generalized definition of the modern shopping centre, such an American centre is now called ‘the Regional Shopping Centre’; it can only function effectively in countries where nearly every family owns a car.

A proof of the importance of shopping centres in our modern economy is the growth of the ‘International Council of Shopping Centres’ in 1957, also the periodical regional conferences (dealing with shopping centres in Europe, such as that in 1957 organized by the Green Meadow Foundation in Rüschlikon (Switzerland), and that in 1960 in Western Germany organized by the National Register Cashiers Association.

The aim of the present research was to develop an analytical systematic method for planning an integrated shopping centre for a community. This has been done in four stages, to each of which a whole part has been devoted.

In Part I the historical development of different types of shopping outlets through the ages (from the Prehistoric Ages till the 20th century) are analyzed, showing how the shopping pattern has always been a reflection of the changing economical and social conditions. Then the modern types of shopping outlets that usually form the elements of a modern shopping centre are briefly defined, analyzed and classified according to their functions, the type of goods they deal with, and their architectural grouping and formations.

Part II is devoted to regional and town-planning aspects of shopping centres and their interrelation with residential, industrial, recreational and green zones, also with respect to means of communication. The part ends with a whole chapter on the classification of the types of modern shopping centres on a town-planning basis, analyzing each type and giving one or more existing or projected examples, and analyzing and illustrating each.

Part III deals with the successive analytical steps that should be followed in order to plan and design one type only, that is the ‘Community Shopping Centre’, considering all the relevant factors, whether architectural, climatical, constructional, aesthetical, or engineering; and also giving comparative data whenever possible, developed from centres already established.

Part IV is an application of the analysis in Part III, with respect to Egyptian conditions. It tries to set out by stages the modified main lines for planning a community shopping centre in Egypt.

It is very important that the problem of planning shopping centres should be dealt with primarily from the point of view of consumers, trying always to create solutions that provide them with both comfort and saving.

This is very natural, as the percentage of the people working in the retail trade (as traders, developers and personnel) does not usually exceed 10% of the whole population, so it is only logical that the rest of the population (the consumers, who are in the majority) should indicate their real and human needs with respect to retail trade and that the other 10% should do their best and change their methods to fulfill these needs. Therefore before going through a detailed research analysis of the planning of shopping centres it is very important to state these human needs here at the outset, to be looked upon as a spotlight testing and keeping the planning process on the most beneficial course possible with respect to the consumers.

These can be summarized as follows:

- The consumer requires goods to be as cheap as possible. This means that the goods should not be handled by too many people on the way from the producer to the consumer. Otherwise their prices will become too high. So many wholesalers and retailing middlemen should be eliminated. For this reason also big retailing establishments and big co-operative societies are formed which can buy goods on such a large scale that they can sell them for cheaper prices and on easier terms.

- The consumer would like always to find the convenience goods (which are bought regularly or daily) abundant and near at hand. In case of selectivity goods (which are purchased periodically), the consumer wants also a diversified variety of goods to compare and choose between them.

- The buyer does not want to walk more than 300-400 m to the nearest corner shop or neighbourhood shopping centre in order to purchase the daily goods. At the same time it is not desired that a child (who might be sent to buy something) should have to cross any dangerous traffic streets. Such matters should be taken into consideration in locating the shopping outlets.

- In purchasing, the consumer wants also to find many articles in one place (one-trip shopping). One does not want to trudge for long distances between outlets located so far apart that it is difficult to compare goods and prices. Similarly, in goods arrangement in a store, one wants to find all related items placed together for convenience.

- The consumer does not like to have any barrier between herself and the goods. She wants free access to them without any obligation to buy. She wants to try and touch them. All goods or samples of goods should be within eyesight level and within easy reach. The main motive behind this is that the consumer always wants to spend his money on buying a guaranteed article in which he has confidence.

- The consumer complains that the modern trends in shopping diminish the social contact between seller and buyer. He asks that such human relation be given importance. He or she wants to talk with the seller and have the right information and explanations about the goods, especially

(1) See 'Das Shopping Center in Europa'. Stiftung 'Im Grünen', Rüschlikon, p. 6 and p. 106.
in the case of selectivity goods such as dresses and electrical appliances. This satisfies the consumer's psychological need to feel important.

- The consumer wants foodstuffs always to be fresh, especially those which spoil quickly, such as milk products, green-groceries, eggs, etc. She is even used to some of these goods being delivered to her daily at her own door. The milkman and the greengrocery van have now become indispensable in modern life.

- The consumer likes to buy effectively in the least possible time. To solve this problem an open display of goods, pre-packing, self-selection, self-service and automatic vending machines have been introduced.

- The consumer wants a pleasant and interesting shopping atmosphere where one can wander around on foot from shop to shop, away from motor traffic and noise, and rest, enjoy and perform social and recreational activities. Gardens, fountains and sculptures should be provided to create this appealing atmosphere.

- Many people would welcome the introduction of nighttime shopping so that the entire family could shop together.

Stress has been laid on the above-mentioned human needs of the consumers, because most of them are usually neglected in designing retailing establishments and only the benefit and profit of the retailers are taken into consideration.

The dangerous modern trend now in retail trade (as Vance Packard has put it) is that the retailers see their whole interest only in increasing sales of consumption goods. They apply cheap psychological means "to persuade the consumer to consume more and more. Whether he needs or even desires them, the products are almost forced upon him." New wants, new desires and dissatisfaction with the old and outmoded are always being created in him.

(1) See appendix upon protection against spoilage of perishable foodstuffs
(2) See "The Hidden Persuaders", En., p. 14-17
(3) However, this trend toward 'Consumerism' might be essential for the good of our dynamic technical development and also for our general economy, with the consequence of providing jobs and occupations for the rapidly multiplying population.
PART I

SHOPPING AND SHOPPING OUTLETS IN THE PAST AND NOW-A-DAYS
Leer - Vide - Empty
CHAPTER 1

Introduction

The retailing structure at the present time is so diversified and so complicated that it cannot be well understood before we first go through its history and investigate the influence and circumstances that affected its development. And as G. K. Chesterton put it: 'A man sees more of things themselves when he sees more of their origin; for their origin is a part of them, and indeed the most important part of them.'

Prehistoric Ages

The oldest known retailing picture was the exchange or 'barter' system (still to be found among the primitive tribes in Tropical Africa). It was based on two main elements:
1. Skilful part-time specialists.
2. Surplus products of food.

The earliest illustrative example was the skilful flint-knapper, exchanging his products for food from the fishermen and hunters who might have caught more than their needs.

Afterwards, in the Neolithic Ages, man learned to cultivate plants, settled down, and built the first villages. By employing prisoners of war as slaves on the land he began to get surplus of food products. In every village he provided a centre surrounded by his dwellings, for exchange of his surplus products. These were the first barter markets or shopping centres.

Old Egypt

(from 1st Dynasty 3360 B.C. to 30 B.C.)

Home industries were much developed. A well-to-do class of artists, artisans, handworkers and producer-retailers flourished forming an intermediate class between the higher class of kings, princes and priests, and the lower class of slaves on the land. Their new hand-made articles were brought to the markets where the system was still the barter system (an earthware pot for a fish, a wooden box for a decorated vessel, etc.), Fig. 1.

For the first time in history metallic money was used, for example, copper and gold rings of certain weights. Also from the beginning of the 1st Dynasty 3360 B.C. a short and simple business and trade writing was developed from the picturesque hieroglyphic, called 'hieratic'. It was used in bookkeeping, accounts, commercial orders, receipts, etc. (1) Shops were known and built of mudbricks.

The Nile was a natural water-way helping the commercial relations of Egypt with Sudan and Punt (now-a-days Somaliland) to flourish. In the 12th Dynasty Sesostris connected the Nile with the Red Sea by a canal in order to have a direct and easy commercial route to the Egyptian capital. There were also trade routes to Palestine and Babylon. The Egyptian commercial ships traded even with South Europe in the Aegean Greek Period (Aegean Greek vessels were found in Itlahun in tombs of the Middle Empire Period (2)).

Crete and Greece in the Pre-Hellenic Period

700 B.C. to 300 B.C.

About 2000 B.C. trade flourished between Crete and Egypt. Cyprus and Troy. During the late Minoan Ages III (~ 1500 B.C.) many types of palace-cities prospered. One interesting type was represented by Hagia Triada, wholly inhabited by a well-to-do class of merchants and handworkers. (3) The nerve-centre of the city-plan was the market place connected to the palace. In the eastern part was found a remarkable row of shops with a colonnaded gallery in front of them, Fig. 2. This can be considered as one of the oldest known organized shop groups. Clearly it was the origin of the stoas as known afterwards in the Greek Hellenic Period.

Greece in the Hellenic Period

700 B.C. to 146 B.C.

The Agora and Stoas, Fig. 3 and 4

The core of the city was highly developed and integrated into the agora which was the combined market place, business and

Fig. 1. Market scenes from the Old Egyptian Empire (after Breasted, H.).

Fig. 2. Plan of the late Minoan III Portico Market 'Hagia Triada' (after Lawrence, H.).

Fig. 3. (after Gallion, T.)

PRIENE
A Agora
B Temple of Athene Polias
C Theater
D Stadium

(1) See H., p. 94.
(2) See H., p. 173.
(3) See H., p. 114-115.
The retailing pattern of the Greek agora and stoas with its pedestrian sheltered spaces, exclusion of traffic, variety of shops, storage and delivery at back have a striking similarity to the structure of shopping centres in modern times. Compare Figures 5, 6, 7 with Figures 121 and 126.

**Rome and Roman Colonies in the Roman Period**

**Economical and Trade Conditions**

When imperialism replaced the Roman Republic in 31 B.C. peace was brought and maintained for nearly 200 years all over the Empire. The Romans extended a network
This development was particularly affected by the stoas of the Greek agoras. Later three different forms: These shops or tabernae could be found in trade areas for artisans and craftsmen and an attached vaulted store-room behind. The houses lying in the traffic of main streets utilized their fronts as shops and offices and along the two longer sides of the forum, shops offices and stalls were arranged (Fig. 8). While the Greek agora had a human scale, the Roman forum had a dignified and somewhat superhuman scale.

2. The Unit Street-Shop (Tabernae) (4) The houses lying in the traffic of main streets utilized their fronts as shops and trade areas for artisans and craftsmen (Fig. 9 and Fig. 10). Usually each shop had an attached vaulted store-room behind. These shops or tabernae could be found in three different forms:
- Tabernae attached to the typical Roman court-houses (Fig. 9).
- Detached tabernae unconnected with any house and arranged in one simple row having an island site.
- Double rows of tabernae (back-to-back shops) having an island site with several upper apartment floors rising up to 20 m high (Fig. 8, G).

This development was particularly affected by the stoas of the Greek agoras. Later they were cleared from the seas, new harbours were built, as at Ancona, or old ones enlarged, as at Ostia. In the 2nd century the speed and tonnage of trade on all the Mediterranean sea routes (providing Rome with provincial products) might be compared with those of the 19th century before the invention of steamships. (1) Also a system of farm-to-market roads was developed and navigable rivers were controlled by police boats. Trade flourished. Rome (at first an agricultural state) developed into a huge trade-business-centre of more than one million inhabitants. (2) It had many warehouses and provision-markets in its suburbs for storing foodstuffs. In its very heart beside the forum it had also many stores and several central multi-storied markets for sale and distribution of goods. Trajan erected five-storied types of these markets. A new class of craftsmen, merchants and contractors prospered and became progressive and daring as their trade grew. The two latter had their offices in the Via Sacra (the Wall Street in Rome) and the forum. They had also agents in Ostia, the port of Rome, and Alexandria (the Liverpool of the Mediterranean). (3) In 269 B.C. the silver coin (the denarius) replaced the old heavy bronze chunk (weighing a pound). With the invention of silver money farmers could live in Rome and receive a cash income. At first the barter system necessitated their living on their land.

The Retailing Pattern
Commercial activities were practiced in one of the following places:
1. The open market and the Forum.
2. The unit street-shop (Tabernae).
4. The Basilica.

1. The Open Market-Place or the Forum
It was a rectangular open space beside the intersection of the two dominating streets in a Roman town: the N.-S. Cardo and the E.-W. Decumanus. Around it a magnificent collection of monumental buildings were axially and symmetrically placed. About those public places and along the two longer sides of the forum, shops offices and stalls were arranged (Fig. 8). While the Greek agora had a human scale, the Roman forum had a dignified and somewhat superhuman scale.

3. Market-Halls (Macellum)
There were six shops on the entrance side of each Roman tabernae were the origin of the oriental bazaar or souk.

4. The Basilica
They were rectangular covered halls used for trade and commercial exchanges and as courts of justice. They were erected so that the traders could do their business in winter sheltered against bad weather. (5) They had either two or four rows of columns forming a nave, and two or four aisles. The roof of the nave was higher than that of the aisles, with clerestoreys in between for illumination (Fig. 13). These basilicas could be considered as the first covered market-halls.

Fig. 41.
Fig. 10. Pompey, street scene restored; shop and house (after Fletcher, H.).

shops opened on each side of the entrance. The main open space inside had an original feature in its design. On the straight entrance side there were six shops. On the opposite side there were two circular segments each containing five shops. This type of enclosed Roman macellum with its open court and single entrance, especially those on the outskirts of towns, clearly affected the later Islamic caravanserais which had a very similar design, compare Fig. 12 and Fig. 11 with Fig. 40. The macellum placed inside the city was similar to the ground floor of the Islamic wikala and chan.

These double rows of Roman tabernae were the origin of the Oriental bazaar or souk.

(1) See H., p. 38.
(2) See T., p. 73.
(3) See H., p. 29.
(4) See H., p. 280-281.
(5) See H., p. 12.
Fig. 11. Forum of Pompey, 80 B.C. to A.D. 79.
K: market macellum, A: forum (after Egli, Hn.).

Fig. 12. Plan of Timgad, A.D. 100 to 700 (34: western macellum, 51: eastern macellum). Both are encircled in Figure (after Holtzinger, Hn.).
Europe in the Middle Ages

Economical and Trade Conditions in Merovingian France, 7th and 8th Centuries A.D., and West Europe in the Carolingian Ages, 8th to 10th Century A.D.

From the beginning of the 4th century A.D., the old prosperous economy of the Roman Empire began to decline. Under the continuous attacks of the German tribes the old cultures of antiquity were destroyed. At last Rome fell under the Goths in A.D. 476. Dark ages of violence and uncertainty followed. The economic order of West Europe including Merovingian Gaul began to depend on agriculture. Yet trade was still going on in the ports of Gaul (Marseilles, the old Roman trade centre), Italy (Venice), Spain and Africa. In the 7th century began the Islamic conquest. From the 8th to the 11th century (the time of Charlemagne and his heirs the Carolingians) the Mediterranean became an Islamic lake. Europe was bottled up, its commerce doomed, and the whole trade movement was now directed to Baghdad. (1) With the disappearance of merchants, urban life collapsed. There were no cities, only families and small villages. (2) In striking contrast to Roman and Merovingian Gaul the empire of Charlemagne was a land empire with an economy of local production, barter and consumption; almost in complete isolation. The empire soon went to pieces owing to the wars between Charlemagne’s heirs, and the attacks of Moslem raiders on its coasts. The final blow was given by the terrible invasions of the Scandinavian Norsemen in the 9th century; these did not cease wholly before the 11th century. The sovereign’s agents became independent with their estates and serfs and the feudal system of ‘Closed Estate Economy’ began. Each estate had to produce food, clothes, tools and for its own consumption. As the country-side was not safe, and in search of security, villages and castles were surrounded by fortified walls and moats, to which the people flocked in case of danger. People were very dependent in their living upon the protection they found in the strongholds or Portus of their lords. Yet neither enmity nor religion prevented some trade connections between the Moslems and some Italian ports. For example, there was a trade agreement between Venice and the Moslems (3) at that period. Also the Scandinavian Swedes organized oriental trade by way of the North Sea, the Baltic and the Russian rivers.

The Retailing Pattern

Economical and Trade Conditions in Europe

11th to 15th Century

Piracy is the first stage of commerce. So as the Norsemen pirates settled in North France and their raids ceased, they simply became merchants. (4) Travelling became safer and consequently commerce between settlements increased. After the crusaders, trade with the Near East revived between Pisa, Genoa and Marseilles. Merchants and craftsmen began to seek permanent quarters adjacent to the markets of ‘Portuses’ especially in those situated in rivered valleys. As social life became more solid Portuses grew into towns and those quarters became their town centres. (5) The lords, who at first did not like the class of traders to live beside them, began to encourage the growing of these market-towns for the advantages they could get out of them. Handicrafts began to be more differentiated and specialized and production to be diversified. The surplus products of an estate had to be exchanged with the different products of other estates. So the ‘Fairs’ were introduced to provide for that. The new class of merchants and craftsmen, the Bourgeoisie, became wealthier, stronger and self-dependent. They established regulations to control their products, maintain their prices and protect their trade. Their first commercial and social organization was the ‘Merchants’ Guild’. Then began their struggle with the nobles for self-administration and to form ‘Communes’. At last the nobles quitted their castles. So the first democratic ‘Commune’ was born. From the 13th century the germ of the Gothic principle was at work. It was ‘the spiritual revival of the individual; and the creation of representative social organization for the community’. (6) The commune consisted of all the middle-class living in the same city. These elected representatives (Magistrates) as members of the Guild and the ‘Mayor’ or ‘Scabini’ as its head. (7) Two new types of commercial cities appeared: a) cities located on the banks of navigable rivers, or near bridges, such as Stein-am-Rhein and London, and which were very advantageous for commerce, b) pure market cities placed on the intersection of land routes, such as Munich and Zurich.

Toward the end of the 12th century and the beginning of the 13th century, the communes in Northern France and the Lowlands prospered largely in the drapery industry and commerce. Prosperous commercial cities, such as Ypres, Burgus, Arras and Gand became rivals to Venice, Pisa and Genoa. Each specialised in the trade of a certain product: Ypres and Burgus in wool cloths and drapery, Arras in grain and Malines in fish. All had magnificent Halles as a symbol of their prosperity, and city towers (Belfrois) expressing their political independence and freedom. Then these ‘Communes’ began to convert themselves into a ‘Bourgeois Aristocracy’. The members of the Guild reduced the salaries of the workers to the minimum. Revolts of the workers began at the end of the 13th century. These revolts, the Hundred Years War, famines and epidemics caused the decline of that prosperous Bourgeoisie in the Lowlands and Northern France. In the 15th century the kings retained their strength.

The Retailing Pattern during the 11th to 15th Century

1. The market square
2. Medieval shop group or shopping centre
3. The covered market halls (les Halles)
4. The fair

(1) See Hn., p. 2.
(2) See Hn., p. 23.
(3) See Ts, p. 81.
(4) See Et, p. 41.
(5) See Hn., p. 16.
(7) See Hn., p. 11-15.
1. The Market Square

It developed to be the commercial and civic centre into which many streets opened. It was surrounded by the guild halls or town halls, city tower, big inns, shops and the houses of the richest merchants. Festivals and executions took place there. Also the weekly local markets were held in it, providing everyday needs. Raw materials and foodstuffs from the country were exchanged for manufactured goods of the city. Luebeck market place, Fig. 14, is a good example. It was separated from the main street to exclude non-pedestrian traffic. Although the market square and the church square were different in form and function, yet they stood in direct relation to each other (Fig. 15 and Fig. 16) for shopping always benefits from being adjacent to places where people congregate.

In most medieval French towns, open spaces and squares were restricted, so the markets were held in the open streets. (1)

Fig. 14. Luebeck market place (A), 12th to 14th century (after Hilberseimer, T.).

Fig. 15. Montpazier, a medieval city of regular plan, 13th to 14th century. A: cathedral-square B: market-square (after Gallion, T.).

2. Medieval Shop Groups

(Their Development)

They first appeared as attached warehouses and shops gathered around the castle and defended by its lord. Then they grouped at the focal points of the towns: a bridge, a market square or a site adjoining a church.

Then came the habit of renting the places attached to the community buildings — such as the 'Halles', churches and cathedrals— to small shopkeepers. Those small timber shops for butcheries and bakeries always bordered the sides of the 'Halles' or cathedrals, in Spain and in the Netherlands.

After this came the grouping of similar trades in particular streets, which is very similar to the oriental specialized Souks or Bazaars.

Fig. 17. The 'Halles' and Beffrois: Bruges (after Fletcher, H.).

3. The Covered Market Halls

(Les Halles) (2)

Their development is wholly connected with that of the guild hall, beffrois and town hall and can be summarized in the following stages:

- At first they were covered galleries of a simple timber structure with a simple tower and situated on the junction of two roads or on the bank of a water-way. These were where the merchants received their goods and formed their first guilds.

- The timber structure was succeeded by a two-storied stone one. The ground floor, heavily vaulted and with a cellar, was designed to act as a covered market and as warehouses. So it was provided with selling stands and the official weighing control office. In these market halls, merchants bought the products of the local family industries such as drapery and cloths (in Northern France and the Lowlands) and sold the people wines, oils, eastern perfumes, etc. In the first floor was the assembly hall of the guild and the special guild's court of law.

- The simple tower mentioned before now came to be a very high, magnificent city tower ('Beffroi'), representing the city power and independence besides its defensive and aesthetic functions, Fig. 17. Sometimes the first floor of the tower was used as the guild's hall, while the ground floor was used as a warehouse.

- 'Les Halles' in the Lowlands reached their highest development in the 13th century. They had three floors. The ground floor was now divided into two to three naves, where the foreign merchants had obligatorily to sell their goods, because only the members of the guild could have their shops in the city. They could also have one inside the 'Halles' paying a reduced tax. There was also a special hall for verifying and classifying the cloths before they were exposed for sale. In front of these 'Halles' there was usually a portico where merchandise could also be exposed and people could walk in shelter. These porticos had their origin in the galleries around the Roman Forum. On the 3rd floor was the guild hall. The cloth hall in Ypres was the most imposing monument of medieval commercial architecture, Fig. 18.

- Then, in the 14th century, the guild hall was separated from the 'Halles' and had its own building known now as the town hall (Sala). This happened in Belgium and Flanders; but in England and France they were still combined in the same building, with the ground floor (sometimes with open sides), as the market hall, and the town hall on the 2nd floor.

- Once independent, the market hall develop-

Fig. 16. Relation between the church-square (A) and market-square (B), Mewe, 13th century (after Ortmann, T.).

Fig. 18. Cloth hall, Ypres, A.D. 1200 to 1304, Belgium (after Fletcher, H.).

Fig. 19. Timber-roofed market, Créminien (Isère), France, 14th century (after Lavedan, A.).

(1) See A., p. 234.
(2) See H., p. 3-3.
same time roads were improved, navigable rivers deepened, a network of canals organized and customs duties greatly simplified and reduced. Consequently inland trade, which was previously confined to articles of small bulk and high value now covered all sorts and large quantities of bulky articles of a less relative value. All manufactures were brought to cities or made in them. People flocked to them and villagers came to buy tools and manufactured goods instead of making them themselves. Due to the absolutism and the centralization of the Baroque system, life was concentrated in the capital city. The importance of the Court life and fashion, which became a ruling factor, transformed the capital into a main trade and business centre. The life-blood of its trade was fashion. Shopping became one of the principal social preoccupations of all classes with a great excitement especially for the ladies. During the 18th century a great progress took place in mathematics, study of motion (Newton's Laws), analysis of matter and other scientific researches. The urge towards invention at the end of that century lead to the invention of new weaving and spinning machines, steam-engines and the erection of factories. Thus began the industrial revolution with its mass production affecting the retailing pattern in requiring a mass distribution.

The Retailing Pattern
15th to 18th Century

1. The pure retailer shop
2. The open market
3. The covered market hall
4. The Fair and the 'Verleger'.

1. The Pure Retailer Shop and Shopping Parade

They developed through the following stages:
- The old open shop developed into the typical merchant's or craftsman's town dwelling with the shop or workshop and kitchen occupying the ground floor, with the master's dwelling on the 1st floor and the workers and apprentices living on the upper floors, Fig. 21a and b.
- Goods produced specially to order decreased, being replaced by ready-made goods for selling to any buyer. The age of the small master's shop and apprentices tended to disappear, to begin a new system of pure display retailer shops, for every day now had to be a market day.
- The shop became the centre of fashion display.
- Glass bow-windows began to be used on a wide scale during the 18th century. The new type of shop took shape behind a wide scale during the 18th century (2)
- Richly and smartly decorated, Baroque shopping streets were transferred to shopping parades with their fashion attractions.

2. The Open Market

In cities it did not disappear, yet it tended to be restricted to bulk provision (3), and to be the centre of purchasing the weekly necessities for the housewife. The principal function of the Renaissance market square was dedicated to wheeled traffic. It represented a transitional stage between the medieval market and the later avenue market. Its characteristics were:
- Uniform roof-line, symmetrical placing of the buildings; duplication of churches and towers on each side of the avenue of approach, Fig. 21a.

(1) See E., p. 96-102
(2) See H., p. 99
(3) See H., p. 108.
In villages the weekly market continued to keep its importance. In England it formed the focal point of the squared villages type of the 17th and 18th century. All formal buildings were centered about it and dominated by the covered market hall, Fig. 22.

3. The Covered Market

In England:
The combination of market hall on the ground floor and the town hall above continued in the Renaissance period; for example, Ledbury market hall with its 16 oak pillars, Fig. 23.

Another type which had the same function as the market hall was the market cross, Fig. 24. Butter markets were also similar covered markets with the same structure, Fig. 25. It is to be noted that all three types were open from the sides.

In France:
They were independent 'Halles' closed from the sides. The 'Halle' was divided into several parts for the sale of bread, meat, fish, vegetables, fruit, etc.

Stress was laid upon easy approaches from various streets. Some 'Halles' were designed as a rotunda with arcades(1) surrounding an open court as Halle aux Blés (A.D. 1783).

4. The Fairs and Verleger

They still carried a part of the trade between countries, free from local restrictions and even encouraged by reduction of duties. The most important fairs in that period were two held each year in Leipzig.(2)

These fairs were organized by the 'Verleger' or middleman who employed homeworkers on piece-rates, brought their products to the fair and there exchanged them for the goods of foreign traders. The latter in their turn redistributed the goods to the retail markets.

With the new industrial organization the economic basis of these yearly markets disappeared. About 1840 they ceased to be a distributing agency except in remote regions.

Europe and America in the 19th Century

A. Influences affecting the Development of Commerce and Commercial Outlets

a) Industrialization:
The big quantities of colonial raw materials and the advanced mechanized industries brought a mass production, requiring a consequent mass distribution and expansion of retail trading. The department store was a product of this industrial age.

More subdivision of labour and more specialization produced a variety of similar articles, such as canned food and ready-made clothes. These created new types of shops, such as the specialty-shop for women's ready-made clothes, hats, etc.

The invention of the lift made it easier to utilize upper floors in the multi-storeyed department stores.

b) Means of Communication:
The first railways were established. As they connected cities with each other, and the commercial core of big towns with their suburbs, encouraging the growth of the latter. Thus the 'catchment area' of the commercial core widened.

The development of buses and the appearance of trams (1850-1860) and under-ground (metros) brought many clients from all parts of the town to the commercial centre.(3)

With better means of communication, and advertising by newspapers, catalogues became more effective. Mail-order shops were established depending wholly on catalogues.

c) City and Population Growth:

As society became fully industrialized there was a violent expansion of the working classes with increasing demand for cheap goods. Consequent expansion of shopping outlets took place around the existing shopping core and stretched further along the busy main roads leading to the centre. These arteries were at first interesting meeting places of both economical and social attraction(4).

Partly due to the steady and rapid rise in the value of land in the central area, people were driven out to the outskirts and suburbs, where they had their local shop groups (origin of suburban centres) each serving as conveniently as possible all residents of the suburbs. As for the shopping outlets downtown they had to go up for the better exploitation of the land by enlarging the selling floor-area.

More types of shopping outlets which catered for the average customer began to appear, such as the single-price stores, chain stores, bazaars, all characterised by their cheap prices. At the same time a type of speciality-shop was developed to serve the needs of well-to-do clients.

Co-operative operators associations were finally founded in order to save by eliminating the middle-man's profits.

d) New Materials:
The first important market to use apparent cast-iron trusses (spanning galleries 30 m wide) was the 'Halles Centrales' in Paris 1853, Fig. 26. At first the iron skeleton in the facades was concealed behind masonry. From 1870 began the iron age of markets.

Use of iron and glass, omitting all masonry began in the commercial buildings in Leeds in the eighties, then in those of St. Louis and other American North-West cities which obtained their C.I. Skeletons, prefabricated, from Britain. This system of pre-fabrication made it possible to erect multi-storey department stores and warehouses.

With the development of the glass industry it was possible to manufacture glass sheet-walls of very big dimensions which became an important element of shop-design.

e) The Anglo-American Leadership of Commercial Buildings in the 19th Century:

In England the development concentrated in the prosperous commercial buildings of iron construction in the fifties.

In the eighties the leadership crossed the Atlantic to Boston and New York.

In the nineties Chicago took the lead with its eminent architects: Richardson, Le Baron Jenny, Sullivan and Adler, etc. Commercial patrons demanded and often received the best architecture of their day.

The three main contributions of Chicago school to the commercial architecture were:

1. The integration of the typical modern commercial skyscraper, with floor ground

(1) See A., p. 214.
(2) See E., p. 131.
(4) See A., p. 6-7.
2. The skeleton construction was expressed clearly on the facades in caged or grid system or elongated Chicago windows, Fig. 28.

3. The highest development of the department store attained a prestige like that of churches and palaces in earlier period. H. Russel Hitchcock considered it 'the laboratory of modern architecture'.

B. The Retailing Pattern in the 19th Century

1. The unit shop (corner shop): including the general shop and the speciality shop types.
2. The department store and the branch department store.
3. Chain stores (multiples).
4. Mail-order houses.
5. Co-operative consumer's shops.
6. Limited-price shops (the 5–10 cents stores and up-to-one dollar stores).
7. Open markets.
8. Market halls (les Halles).
10. Shopping centres, the two main categories according to size are:
   a. very big centres such as the regional shopping centre and the downtown centre, containing all or most of the above types;
   b. small suburban centres, almost wholly composed of unit shops.

These types are dealt with and analyzed in the following chapters: chapter 2 on the classification of shopping outlets, chapter 5 on the classification of shopping centres.

Europe and America in the First Half of the 20th Century

A. Main Influences Affecting the Development of Commerce and Commercial Outlets

They are dealt with in a general way, but more specific influences will be men-

tioned in dealing with each modern type separately (chapter 2).

a) Technical Progress:
- With the ever-increasing production of diversified convenient machine-made articles, and pre-packing, mass distribution has grown rapidly. Department and chain stores reached their peak of importance.
- The invention of the escalator proved very useful in department stores during rush hours.
- The cinema, television and radio were new and effective means of propaganda.
- Changes in tastes and fashions are becoming very rapid. To get rid of the outmoded articles is one of the functions of the provincial branch department or chain stores.
- At last the shopping process became mechanical through the introduction of self-service creating the self-service shop type, the modern supermarket, and automatic merchandising, Fig. 29. The social contact between the seller and the buyer vanished.

b) Means of Communication:
The rapid expansion of transportation by automobiles is characteristic (in U.S.A. one car for every three persons). Parking areas near the shopping outlets for the motorist shopper should be provided. Pedestrians and motor traffic problems had to be solved carefully when designing a modern shopping centre.

Traffic congestion began to occur in the commercial core of big towns, creating what is called the swamped town. That was unfavourable for the shopping outlets situated there. In the U.S.A. the situation became worse. Some establishments, finding the core unable to give adequate service any longer, decided to go outside town. Thus the American regional centre was created. Such cities are called dis-integrating towns.

c) City and Population Growth:
- Our century is characterized by two kinds of shifting of population: firstly the drift

---

(1) See H., p. 252-256.
(2) See Part III, chapter 9.
(3) See A., p. 100-103.
(4) For example, Hudson Dep Store in Detroit, in order to regain its decrease in sales volume in the downtown area, erected two branch dep. stores (each of 40,000-50,000 m², total sales area) within regional shopping centres located 16-18 kilometres from downtown (Northland and Eastland regional shopping centres).
from farms to cities (from agricultural to industrial); secondly the drift from the city to the suburbs. Stores follow people, so branch department and chain stores were soon erected in these suburbs.
- After the first war the problem of housing was so pressing that the problem of commerce became secondary to it. At first shops without any planning were located intermingled with dwellings, occupying the ground floor of a house, or even built over the front garden obscuring the buildings behind, Fig. 30.
- Then, in the new settlements and housing projects, laws were passed to reserve a place for a shopping centre in good relation with the residential industrial areas.
- The small traders in the interwar years were now certainly losing ground. In order to withstand the keen competition of the chain and department stores they established unions with a big turnover.

d) New Materials and Construction:
Metal and glass construction were exposed externally; this, associated with the curvilinear decoration of the 'Art Nouveau', appeared in Department stores such as the Innovation store in Brussels by Baron Horta, Fig. 31. Then R.C. came into use. One of the earliest and most interesting markets in

R.C. is the market hall of Reims, 1930 (width of nave 39 m, without interior supports). The grid system of isolated columns of R.C. and steel construction suited the flexible open areas required for merchandising in markets and stores, Fig. 32.

B. The Retailing Pattern of the 20th Century
The outlets already known in the 19th century continued to exist. The new ones innovated are:

1. Self-service shops, supermarkets and super-supermarket.
2. Discount houses.
3. Shopping subcentres (corner-shop group).
5. District shopping centres.
6. Suburban shopping centres.
7. Regional shopping centres.

These types are also dealt with in the next chapter 2 except those centres classified on a town-planning basis which are dealt with in part II.
CHAPTER 2 Types and Classification of Shopping Outlets

Diagrams A–D are types of classification based on different points of view:
- Diagram A based on the function the outlet fulfills, and the types of goods it serves, whether convenience goods bought daily or selectivity goods bought at regular intervals, or impulse goods (luxury goods) bought infrequently.
- Diagram B1 and B2 based on historical development, and the main political, social and economical events affecting it.
- Diagram C based on the architectural structure of the outlet and its composition in space.
- Diagram D specially deals with the classification of shopping centres on a modern town-planning basis.

The analysis in this chapter is made for modern outlets, according to: the classification based on architectural structure (see Diagram C).
Diagram B1

HISTORICAL DEVELOPMENT OF SHOPPING OUTLETS FROM 3000 B.C. TO A.D. 1960

Changes and events affecting the development of retailing outlets

- 3000 B.C.: Beginning of industrial revolution
- 1300 B.C.: Commercial medieval cities prospered
- 1200 B.C.: Mediterranean dominated by Moslem traders
- 800 B.C.: Mediterranean as a prosperous Roman trade route
- 700 B.C.: Covered market halls in Pompey, Rome rules almost the known world
- 600 B.C.: Shopping stoa in rebuilt Priene
- 500 B.C.: Commercial agora, or stoa in rebuilt Milet
- 400 B.C.: 1st use of gold and copper money, Egypt
- 350 B.C.: Use of Heratic (a short trade writing), Egypt
- 300 B.C.: 1st use of gold and copper money, Egypt
- 250 B.C.: Use of Mercia (a short trade writing), Egypt

DISCOUNT HOUSE
SUBCENTRE REGIONAL CENTRE
SUPERMARKET SELF-SERVICE SHOP
SATELLITE CENTRE
SUBURBAN CENTRE
DISTRICT CENTRE AUTOMATIC VENDING MACHINE
MAIL-ORDER HOUSE
LIMITED PRICE STORE
CHAIN STORES
FRENCH BAZAARS
DEPARTMENT STORE CONSUMERS CO-OPERATIVE
COVERED MARKET-HALLS ORIENTAL BAZAAR
SPECIALITY SHOP GENERAL UNIT SHOP
GREEK STOAS OPEN MARKET

Changes and events affecting the development of retailing outlets
Diagram C

CLASSIFICATION OF SHOPPING OUTLETS w.r.t. THEIR FORMATIONS

<table>
<thead>
<tr>
<th>Group of several independent outlets, each under its own roof</th>
<th>Group of a variety of outlets under one common roof</th>
<th>Single independent shopping outlets</th>
<th>Shopping outlets having no built or permanent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td><img src="image2.png" alt="Diagram" /></td>
<td><img src="image3.png" alt="Diagram" /></td>
<td><img src="image4.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

A Not based on a plan

- Shopping street
- Old shopping precinct
- City or downtown centre

B Based on a plan

- Neighbourhood centre
- District centre
- Suburban centre
- Satellite centre
- Regional centre

- General unit shop
- Speciality shop
- Consumer's co-operative
- Chain stores
- Mail-order house
- Discount house

Diagram D

A SYSTEM FOR CLASSIFICATION OF THE MAIN TYPES OF SHOPPING OUTLETS IN A CITY OF 100,000 TO 200,000 INHABITANTS WITH 4 SATELLITES EACH OF 15,000 TO 20,000 INHABITANTS

I # CORNER SHOP or SUBCENTRE (a group of 4-10 corner shops)—it serves the residential unit of 500-1000 persons

II ○ NEIGHBOURHOOD SHOPPING CENTRE
it serves the neighbourhood: i.e. 5,000-12,000 inhabitants

III ○ COMMUNITY SHOPPING CENTRE
it serves the district (20,000-40,000 inhabitants)—100-150 shops

III' ○ SATELLITE CENTRE
similar to a big community centre

IV ♂ DOWNTOWN or CITY CENTRE
speciality shops dealing with luxury and impulse goods—it serves the whole town

Corner Shop

Neighbourhood Centre

Community Shopping Centre

Satellite Centre

Downtown or City Centre
Group A: Shopping Outlets Having no Built or Permanent Enclosure

a) The Open Market

Economic Basis and Influences: It is usually held weekly and organized by traders coming from the near villages. (1)—The goods are mostly cheap convenience goods (foodstuffs, garden produce, ready-made clothes, etc.).—The costs are small (hiring a pitch in a market costs very little).

Planning and Architectural Structure,
Fig. 33: A flat (paved) unobstructed space is required, surrounded by buildings or trees to define the space and to give protection against the wind. In hot climates they are set among trees, because the shade from the leaves outweighs the obstruction from the trunks. (2)

As the shopping activity is essentially a pedestrian one all kinds of traffic are kept aside.
The stalls are arranged usually in parallel rows huddled together to concentrate the activity. There are spaces between the rows for the public with frequent spaces between the rows to allow shoppers to cross from row to row.
Parking areas for the vendor’s vehicles near the market-place are required, a requirement which is made difficult in those towns where the market place is used for parking on non-market days.
The essence of the market scene is: a lively crowd, no separation between the shopper and merchandise and haggling over prices.

Outlook: Markets are important and successful in urban life, especially in:—1. towns which are focuses of a large rural population such as Egyptian provincial towns (Quisna, Benha . . .); 2. towns of large working-class population, as the trade is in convenience goods at bargain prices.

b) The Street Traders:
Their trade is based on competition stimulated by low prices.

Outlook: By their animated crying of the wares they create a certain amount of liveliness and sociability in the street, Fig. 34.

Yet a special sheltered space adjacent to the market place should be provided where they can congregate.

c) The Shopping Cars, Fig. 35.
They are usual in:—1. country districts, 2. remoter suburbs, 3. new housing estates which are still inadequately provided with shopping outlets. Their trade is based on low prices, and convenience to the housewife, who does not have to carry purchases farther than the length of the garden path. Also the bulk of trade is in foodstuffs, greengroceries and fruit, not requiring any wide selectivity.

Outlook: As the new estates build up adequate outlets of their own they will not need the shopping cars any more.

But the greengrocer’s van will stay, affecting the future distribution of the greengrocer’s shops.

d) Automatic Vending Machine, Fig. 29:
They are found in places where there is heavy pedestrian traffic. They are not limited to any particular location; they are found in factories, transportation centres and apartment houses. The variety of the articles they sell is constantly growing.

Group B: Single Independent Shopping Outlets

a) The Corner Shop: (The general store and the specialized shop.)

Economic and Social Basis: Both are concerned only with convenience goods needed for everyday use. But while the general store carries a variety of non-related items of merchandise, the specialized shop deals with one line—it is either a grocery, or a butchery, or a drug store . . . etc.

Usually the turnover is low and the stocks are small because they serve a limited catchment area.

Sociologically they are satisfactory, with the direct relationship between shopkeeper and shopper, and in being the social centre of local gossip for the women.

Planning and Architectural Structure,
Fig. 35a: The general store is most typically found in villages and old towns, but it can still be found in the foreign quarters of big cities where stocks are adapted to suit foreign tastes and needs.

Fig. 33. The open market (after Gibberd, T.).

Fig. 34. Wandering pedlar in a street in Teheran, animated crying of wares by sellers (after Bauen und Wohnen, August 1958).

Outlook: Their economic importance lies in the evenings and at week-ends.

In communities where labour costs are high this system of mechanized selling is being experimented with and developed in department and chain stores. The new mechanized supermarket is dealt with in group C.

Fig. 35. The greengrocer’s horse and cart in England (after Wilfred Burns, A.).

Corner shops are independent, isolated, scattered all over the district. Their ideal distribution pattern should be based on convenient walking distance for the customers in the catchment area of each shop (for the general store, the average distance is 500 m, and for the butcher’s shop 650 m). (3)

(1) Sometimes traders having their stores in the town itself also bring their goods to sell them in this open weekly market. Such goods include meat, fish, cheese, greengroceries, flowers, etc.

(2) See T., p. 99-100.

(3) See A., p. 27.
A modern corner shop should not be too small. It should have adequate storage space at the back and an enclosed backyard for delivery and keeping empty boxes and cartons out of sight. It should also be equipped with a lavatory.

**Outlook:** Their role in the city is getting smaller, as they are being ousted by chain stores (in Switzerland Migros in groceries and foodstuffs, Bell in the butchery business). In villages and small towns the local specialized shop may decline and be transformed into a general store, as it is becoming easier and quicker to travel to big cities for buying selectivity and luxury goods.

b) The Speciality Shop:

**Economic Basis and Influences:** It usually deals in a restricted field of luxury goods; within this field of specialization it has a large assortment of items. For example, women’s ready-made clothes and electric household appliances stores. A speciality shop dealing in fashion goods involves some risks and its sales are seasonal.

**Planning and Architectural Structure:** Speciality shops are independent stores located in the downtown shopping core or in district or suburban shopping centres. Effective display and advertisement are favourable. The new form of open front has been evolved, treating the whole interior as a display window, by replacing the shop case by large plate glass windows and glass doors. (1)

**Outlook:** The specialty store is growing in importance in district centres and especially in suburban centres, owing to the increased concentration of population in suburbs.

c) **Consumer’s Co-Operative Societies:**

**Development and Economic Basis:** The co-operative movement is a worldwide trend whose motive is never profit (the pioneer store was in Rochdale 1844). Each society is an independent, self-governing body owned by its members. It buys its goods in bulk at wholesale prices and resells to its members for cash, and the profits are distributed amongst the latter half-yearly in proportion to the amount they have spent at the shop. (1) The bulk of trade is in foodstuffs. In Russia the percentage carried by co-operatives in retail trade is 66%, in Britain 25%, in the U.S.A. only 1%. Many of their goods are now manufactured solely for them in factories also owned by co-operatives.

**Planning and Architectural Structure:** As they cater for daily needs they are located in the downtown shopping core or at the main suburban centres. Their equipment is modest and they are never luxurious; services such as delivery and refreshment canteens are kept to a minimum in order to cut operating costs. For the same reason self-service has lately been introduced in these co-operatives.

**Outlook:** Their development has always been linked with that of the working-class associations. Their future in countries where the standard of living is relatively high is not too bright, because of the severe competition of effective low-cost retailing by chain stores and supermarkets and the services they offer.

d) The Chain Store (Multiple Shop):

**Development and Economic Basis:** A chain store is one of a number of retail stores centrally owned and managed by a single company and selling the same line of merchandise, in which they are specialized. Their real development did not take place before 1920. Some of them spread over a whole region, sometimes even internationally (Bata shoe-chains).

Because of the large volume of their sales they buy directly from manufacturers at lower prices. So, their prices are low, their stock-turn is quick, and they can dovetail the likes and dislikes of different areas by removing stock from one branch to another as occasion demands.

**Planning and Architectural Structure:** Their sites are selected on a scientific basis with an economic analysis of the trading area. From this the size, composition and character of the chain are deduced. The distribution of chains in certain trades over a country should also be based on a regional study and actual needs.

**Outlook:** Because of their standardization they do not offer much variety of choice. In this the specialty shop is superior. Nevertheless, they will probably continue to play an important rôle in retail marketing, for they can sell things relatively cheap.

e) The Mail-Order House:

**Development and Economic Basis:** The system is based upon receiving orders and delivering goods by mail, depending for its sales upon catalogues, samples, and wide propaganda. Its economy is based upon low prices resulting from low costs and a reputation for honesty and reliability. It began in the late 19th century in the U.S.A. (Montgomery Ward Company and Sears Roebuck Company were the pioneer houses.)

**Planning and Architectural Structure:** Its system is based on a central administering office (maybe at home) and branch warehouses established in various parts of the country on sites of low land value and with convenient access to the main transportation routes. There are two kinds: a) the full-line house; departmentalized and stocking a variety of goods, and b) the specialty house offering one or few lines.

**Outlook:** They are converted into chains. The success of this system in some countries such as Switzerland is based on its relations with credit selling (Jelmoli in Zurich; Innovation in Lausanne; Veillon (for textiles) also in Lausanne).

f) The Discount House:

**Economic Basis:** Speciality stores are also in the habit of selling a restricted line of goods, so the speciality house is superior.

**Planning and Architectural Structure:** Its system is based upon receiving orders and delivering goods by mail, depending for its sales upon catalogues, samples, and wide propaganda. Its economy is based upon low prices resulting from low costs and a reputation for honesty and reliability. It began in the late 19th century in the U.S.A. (Montgomery Ward Company and Sears Roebuck Company were the pioneer houses.)

**Planning and Architectural Structure:** Its system is based on a central administering office (maybe at home) and branch warehouses in various parts of the country on sites of low land value and with convenient access to the main transportation routes. There are two kinds: a) the full-line house; departmentalized and stocking a variety of goods, and b) the specialty house offering one or few lines.

**Outlook:** They are converted into chains. The success of this system in some countries such as Switzerland is based on its relations with credit selling (Jelmoli in Zurich; Innovation in Lausanne; Veillon (for textiles) also in Lausanne).

**Group C**

**Grouping of a Variety of Shopping Outlets Under One Common Roof**

a) **The Bazaar or Souk (Oriental Market):** This still exists in Iran. Although it cannot be considered as a modern outlet yet it belongs to the same group (group c). Its introduction here provides a chance to understand some oriental shopping concepts.

**Economic Basis:** Handicraft is still important, so the bazaar combines the pure retailing outlets with traditional producer-retailer outlets, with their workshops attached at the back or nearby.

**Planning and Architectural Structure:** It is usually located in the core of the city. In Iran it is composed of a network of pre-planned narrow shopping streets intersecting at right angles and covered with rows of domes pierced by top-holes for

---

(1) Such system of profit distribution has changed, as the co-operatives now sell to everybody and not only to members.

(2) See E., p. 123.
Fig 37. The Iraqi bazaar, saddle-roof covering with muddied canvas and mats (after Langenegger, H.).

Another developed bazaar type consists of a large lofty hall, either vaulted or domed with top openings for ventilation and surrounded by galleries on two storeys looking on the central hall. This bazaar hall is usually connected to a bazaar street and a public bath, Fig. 38.

**Outlook:** This last type has similarity to the modern market hall; both may have developed from the Roman basilica. The bazaar is a favourable and intelligent solution in hot countries; it needs only to be modernized. A modern example is shown in Fig. 39 (a combination of an open market and covered bazaar).

**b) The Wikala (Chan) and Caravanserais:**
This is another traditional Islamic type and may still be needed (naturally after some development) in nomadic communities.

**Economic Basis:** In desert lands where most of the transportation was done by the caravan routes (still important in some countries), these public buildings provided illumination, Fig. 36. On both sides of the street there is a vaulted shop corresponding to each dome, with a platform on which the trader spreads his goods; behind the shops lie the stores. The intersections of the streets are also domed with a fountain in the centre. In Iraq the bazaar streets are covered by inclined timber roofs covered with mats with only very small holes for air and light, Fig. 37. The triangular end walls are pierced by earthen pipes allowing smoky air to get out.
lodgings and shopping space for the travelling trade caravans.

Planning and Architectural Structure: Whereas the caravanserai is located on the outskirts of a town, the wikala is located inside its commercial core. Both have a similar typical plan consisting of an open rectangular court, with a fountain or a water basin at its centre, surrounded on the ground floor by a cloister-like arcade having rooms behind, rented as stores or shops. On the first floor there are also surrounding arcades giving access to little dwelling-rooms to lodge the merchants, Fig. 40. Sometimes these lodgings are composed of attached one-room apartments with an independent staircase for each, Fig. 41. Usually the building has one spacious gateway high and wide enough to admit passage of a loaded camel. Sometimes there were adjacent stalls to shelter the beasts.

Comment: In a modern sense, a wikala is a combination of an enclosed pedestrian shopping centre on the ground floor and a hotel on the first floor. Probably they had their origin from the Roman macellum.

c) Shopping Arcades, Fig. 42: These are covered shopping streets occupying the ground floor of commercial buildings in the city core.

Their Economic Function: In deep sites downtown they are usually used to get the most amount of profit, owing to the high cost of land.

Planning and Architectural Structure: Their success depends upon the degree to which they can attract people to use them. A good solution is to have the arcade connecting two main streets as a short cut. For better lighting and ventilation and to overcome any feeling of congestion the height should be relatively great and the arcade should be open at both ends. Sometimes the arcade is roofed by glass at the top of the building, providing better light and ventilation, Fig. 42.

It is convenient to have basement storage, which can be extended under the arcade itself. Sometimes the shops are placed on two levels, the upper being served by balconies. Galleria Vittorio Emanuele in Milan (Fig. 43) is an interesting example of a successful
covered arcade, and the largest in the world. Being a pedestrian crossroad of Milan and having attractive cafés and restaurants it has been the favourite meeting place of the citizens. We see here how such a type of shopping outlet can fulfil both a social and a commercial function, with benefit for both.

Outlook: In hot countries these modern shopping arcades, being organized and connected together, could provide an interesting network of shady pedestrian short cuts. They can also shelter against rain.

d) The Department Store:

Economic Basis: It is a collection of many speciality shops in open display (departments) under one roof in which a wide choice of a variety of goods is sold (from pianos to pins), to suit every pocket. It reckons on the departments selling essential goods helping the sales of those selling non-essentials. In 1852 the main principles of the system were developed and applied for the first time by Boucicault in Paris in his 'Bon Marché' department store. These are: a) reduction in consumer's prices, made possible by buying in large quantities at cheaper prices direct from the manufacturer, and also made up for by a big and quick-turning over; b) for the first time goods had fixed prices written on labels and attached to them, also buying is on a cash basis; c) internal open display of goods and the principle of free entrance for all (without being obliged to buy), increase the sales of impulse goods; d) permitting the principle that purchases could be returned; e) offering services to customers and introducing of new and interesting oddities goods, sometimes imported from far countries.

Planning and Architectural Structure: As a rule it is located in downtown districts and often extends to several floors, owing to the land costs. Wide pavements and large car parks adjacent or in the vicinity are recommended. It must have access to a service street at the rear for delivery and dispatch, with loading docks. The ideal site is an island with display on three or even four sides. The internal design of the shopping space should be flexible, usually arranged as indoor shopping streets having various open shops (departments). A tendency towards treating the whole interior space as a unity flourished in the early years of the 20th century, as in Printemps stores, Paris (Fig. 44); with a central hall having the full height of the building with the floors overlooking it like balconies in a theatre. The large storage, service room and administrative spaces required should be located in areas least valuable as display space. One solution is to put all the stores in a ring form at the closed outside walls immediately behind the selling departments. Circulation of public and goods should be separate and smooth. Fig. 45 gives a diagrammatic study of the essential circulation of goods, staff and public. Service yards and areas for delivery and dispatch should be designed so as to conceal their unsightly nature.

To increase the sales value of the upper floors, quick and smooth vertical circulation is needed. Escalators are recommended. A 3'-wide escalator transports 8,000 passengers per hour, equal to the capacity of 20 lifts of normal size. (1)

Cloakrooms, a children's room, a hairdressing department, a staff canteen, soda fountains and sandwich counters and restaurants should be provided.

Development: For a detailed study on it see Pasdermadjian's research work 'Le Grand Magasin, son origine, son évolution, son avenir', 1949. But the main stages of development can be summarized as follows:

- Some of the first stores that followed Boucicault's (Bon Marché) were the Louvre 1855, Le Printemps 1865 (Fig. 44), and La Samaritaine 1869.
- The U.S.A. began to follow France's example, thus for instance the Wanamaker Store (Fig. 32), the Marshall Field Store in Chicago, and others, were established. At that time an iron skeleton was used apparently in the interior, as in the Wanamaker Store and the reconstructed Bon Marché by Eiffel in 1876, Fig. 46a and b.
- Between 1880 and 1914 the department store progressed, largely owing to the rise of the middle-class to which it was dedicated, and also to the speed and capacity of the newly-invented tramways and metros which brought so many people to the trade core. A special department store architecture was created by the Chicago school (discussed previously) which affected the development of modern architecture.

(1) See A., p. 268.
At first department stores were found only in big towns; then dependent branch stores began to appear in small cities. This chain of branch stores and the parent store work under one administration and buy their goods in common at cheaper prices.

Then their design was highly influenced by the new revolutionary process of buying, based on the open and classified presentation, and also by the rapid development of fashion. A trend toward increasing the services offered to customers became (and still is) a characteristic feature.

The period from 1920 to 1940 saw two characteristic influences at work: increasing suburbanization, leading to the erection of branch stores in suburbs; and traffic congestion in the core, leading to the erection of the American shopping centre outside the town (see Part II).

Outlook and Future Development: As suburbanization of the populace increases, the role of the downtown department stores will diminish, having a great part of their customers taken by the suburban new supermarkets and the branch stores. Gradually the stores located in the core may become departmentalized specialty stores, restricted to luxury (speciality) goods.

The downtown stores could only continue to develop if the problems of increasing traffic congestion in the core are solved. Subterranean ways, closing some streets totally to traffic, providing adequate parking areas and other solutions may be suitable as conditions requires; Fig. 47 shows a parking project for Zurich core.

**Economic Aspect**: Based on two principles: a) Open display of a variety of related articles encouraging impulse buying. (But in the one article there is no great range of choice). However, this principle has changed lately, and now supermarkets are introducing different kinds of the same article. b) Reduction in prices made possible by minimizing the number of sales personnel (self-service), and services given to customers.

**Planning and Architectural Structure**: Supermarkets are located where a large space is cheaply available, and can afford future extension and parking areas. So they are usually established in neighbourhood, district and suburban centres. A supermarket is usually one store where goods are arranged in mass display on wall shelves, island counters (sometimes refrigerated) and movable sales wagons. The design should have a flexible layout with wide aisles. Sometimes some departments are leased by the owner to other traders. Also there may be a luncheonette with a separate entrance.

Entrances should be separated from outlets and both controlled, Fig. 49. Adjoining the entrance there should be a basket or trolley storage racks; they are helpful if they are also near the exit to minimize the work of transferring baskets. Also cash registers should be provided. Outside a place for cycles and perambulators is required.

**Outlook**: The success of grocery supermarketing may lead to their extension to many other forms of retailing. There is a trend now towards the mechanized supermarket. It began by making the restocking of shelves automatic, keeping them filled from behind by gravity. A developed automation is expressed in Fig. 50 and 50a, where the shopper would ride a moving sidewalk down a spiral ramp past food displays, picking and marking with a code number items along the way. On the main floor the groceries choosed, assembled by chute, would be ready before a computer added up the bill. She would then pay to a change-making automated cash receiver. During the last ten years supermarkets have experimented with introducing large non-food departments, such as apparel goods; confectionery; special services; delicates-sens; restaurants... etc. In this case they are called super-supermarkets.

**Group D Grouping of Several Independent Shops, Each under its Own Special Roof**

a) The Shopping Street:

**Economic Aspect**: Based on two principles: a) grouping creates activity, competition and animation, thus increasing the shopping capacity; b) a large percentage of the sales are impulse sales, requiring elaborate advertising and attractive window display to attract both pedestrians and motorists.

**Planning and Architectural Design**: A shopping street is usually bounded on both sides by shops, which have show windows, storage spaces, and delivery access at rear through secondary service streets. It should have a continuous window display uninterrupted by other building uses. Cantilevered canopies or colonnades are favourable giving shelter to the shoppers and a significant functional separation between the ground and upper floors. The street should not be so wide as to lose the feeling of animation. There should also be a balance of interest both between opposite sides of a street and between its various lengths. Wide pavements are required and pedestrian access across the street should be made easy and safe.

A shopping street should be designed so as to be a place for shopping and not as a traffic way, but the parking areas ought to be within short distances of it (see Fig. 88).
b) The Shopping Precinct:
This is an open paved shopping space, from which all wheeled vehicles are excluded, surrounded by shops opening upon it.
It has three forms: 
- a) Alleys not wide enough to be converted into shopping streets;
- b) Shopping streets closed to wheeled traffic as in Kalvar Straat in Amsterdam;
- c) Precincts designed as such from the first.

A comparatively narrow rectangular precinct is preferable to a square one. Access to storage is from the surrounding streets, with loading and unloading bays for service vehicles. Short cuts are made between the precinct and the surrounding streets, with display windows placed on them. These display windows may even return to face the streets at the end, so that a visual link between the heart of the precinct and outside is attained.

Outlook: Although they require a larger site than the department store they are far cheaper to construct.

Fig. 49. Eavey's Supermarket in Fort Wayne, Indiana, one of the biggest in U.S.A. (ground floor).
B: Bakeshop; C: Deep-frozen food; D: Quality goods; E: Coffee stand, O: Pharmacy, T: Children's corner.

Fig. 50 and 50a. Supermarket of the sixties, moving sidewalk down a spiral ramp. Project by William Berger (U.S.A.)(after 'Architectural record', 2/1960).
PART II

MODERN ASPECTS, TRENDS AND THEORIES DEALING WITH SHOPPING CENTRES FROM REGIONAL AND TOWN-PLANNING POINTS OF VIEW
Leer - Vide - Empty
'We ought to plan in acres and miles, while we really are planning in feet and inches.'

James Rouse

Settlement’s Structure in the Middle Ages as Affected by Trade

It is very important to note that most of our modern cities began their urban life in the Middle Ages as trade centres, which then developed into centres of industry.

As the only means of inland transportation known at that time were either travel on foot or by horse-and-cart, the cities in the agricultural regions were located and spaced in an organic pattern so that the people in the villages surrounding the city could travel to it and back in one day’s time, i.e. approx. 16-20 kilometers max. distance. The maximum distance between two villages was determined in the same way. This would give a systematic hexagon pattern (Fig. 51), naturally developed to make the exchange between urban and rural products effective, through the weekly market held in the trade centres.

To-day some regions of pure agricultural economy still give the same pattern, as in some provinces in the Nile valley in Egypt.

Transportation between regions in the Middle Ages was mainly through navigable canals; that between continents and across seas by ships. This led to the flourishing of commercial cities along the coasts, on the intersections of canals and rivers, and where the inland waterways connect with the open sea (as in London)—in general, where goods were shifted from one means of transportation to another. For example, Cairo, in the Middle Ages, was a big transit-trade centre, being a link between Europe and the trade of the Far East. Goods coming to the Suez harbour on the Red Sea were taken across the desert to Cairo, whence they were shipped from Boulak (Cairo harbour) through the Nile and across the Mediterranean to Venice, Piza... etc. Such trade centres flourished, prospered and became full of life, with their fairs, bazaars, caravanserais, wikalas... etc.

Trade stimulated the development of crafts and industries, which gradually took the place of commerce. It was also natural that the educational and governmental establishments were—as they always are—ready to move to the already established large urban settlements close to the people which they are intended to serve.

This is how trade affected and changed the form of the regional planning pattern in the Middle Ages and the development of urban settlements.

Settlements Structure in the Industrial Age as Affected by Trade

Trade, agriculture and industry are usually the most important ingredients forming the economic basis of any region and consequently affecting the settlement’s pattern.

As cities in the 18th and 19th centuries developed from centres of commerce to centres of industry the three main factors affecting the pattern of their distribution were—and still are—:

a) Transportation costs of raw materials and products.
b) Transportation costs of the final products to the market.
c) The problem of spoilage of goods before their delivery to consumers.

In the case of heavy industry, its location, together with its attached residential settlements, tends to follow the raw materials site rather than the market site, as the costs of shipping the manufactured products, are much less than those required for the transportation of the bulky and heavy raw materials.

On the other hand, in the case of light industries, such as foodstuffs, milk products industries and greengroceries pre-packing, the raw materials are less bulky. Naturally industrial locations close to the consumers are then advantageous. There will be a considerable reduction in the transportation costs and a solution to the spoilage problem.

Therefore, in planning modern communities such as those designed by Hilberseimer, the community is linked with small farms or vegetable gardens with workshops and small factories connected to them. These farms supplement the livelihood of part-time or migrating workers, and daily provide fresh products to the community shopping centre, with which they are directly connected (see Fig. 52). However, this theoretical scheme of Hilberseimer is not ideal, as it does not integrate all the essential activities of a true city. (1) For example, the business and administration downtown centre is not well dealt with, w.r.t. its future extension and its location and links with the different residential communities. But, what interests us here is the fact that it gives a solution to the problem of having the production of foodstuffs close to the consumers and their shopping centres.)

Modern Classification of Regions on an Economic Basis and the Commercial Pattern in Each Type

A. Regions of Balanced or Self-Sufficient Economy:

Although few regions to-day exhibit such a balance we can generally say that agricultural areas tend to be of this type.

The Trade Pattern (Influences and Characteristics):

*Modern mechanized agriculture is wholly dependent upon an interchange of goods and services between village and town. The consequent urban pattern would be com-

Fig. 51. Schematic representation of the Hexagon pattern in the old agrarian region. 1: small market towns; 2: surrounding villages; x: max. distance determined by journey from village to trade-town and back again in one day’s time, i.e. ~ 16-20 kilometres.
Fig. 52. Schematic design of modern communities by Hilberseimer showing the adjoined small farms (A) providing daily fresh products to the community shopping centre (B) (after Hilberseimer TO)

Fig. 53. The regional pattern development and settlement's distribution in New York's state region as affected by production and trade. 1st period: 1840–1880; 2nd period: 1880–1920; 3rd period: 1920, 1st regional plan. (After Mumford, H.)

Epoch I
900 miles of canals
5000 water wheels
400 thriving small industrial towns

Epoch II
Great trunk railroads and coal power conger a score of crowded cities

Epoch III
With the water power of northern New York

It is the province of regional planning to see to it that this renaissance shall be guided into the most favorable development of all the resources of the state

Epoch I
State-wide activity and intercourse

Epoch II
1880–1920
Concentration along main line transportation

Epoch III
Highway development revitalizes the isolated villages

Epoch III

The motor truck widens the range of commerce, while giant power from

the great coal field of Pennsylvania is linked up

* The trade in these surplus products of the region should take place in big regional trade centres with its markets and commercial establishments.
* By the help of modern science (fertilizers and complete control of light and heat) there has been a trend toward intensification of cultivation with regard both to time and to space. The area of cultivation is being reduced, and horticulture (market gardening) is increasing. (1) This, with spreading of electric power and standardization, will produce a closer pattern of small industrial-agricultural villages within the rural region.

These small industries can satisfy a great part of local needs, and can manufacture many small standard articles. In other words, this will be the beginning of partial decentralization of manufacture and trade over the whole agricultural region. Each village will be partially self-sufficient while the whole region can be almost totally self-sufficient, importing nothing that it can produce itself and exchanging its surpluses for those things it is unable to produce.

Example:
New York's State Region is an example of a region of balanced economy based on:

a) Agricultural surplus products (milk, cheese, grapes and excellent apples).
b) Wholesale and retail trade (New York is an international trade port, and Buffalo is a centre of grain shipments).

Figure 53 shows the development of the regional pattern of settlements distribution in the state during three periods: 1st Period 1840–1880: characterized by 900 miles of canals, as means of transportation. The main sources of power were 500 water wheels. This made the growth of 400 small industrial country towns possible, spread all over the countryside (where the sources of power were accessible). 2nd Period 1880–1920: characterized by great truck railroads and coal power. Consequently there were concentrations along the main trade transportation route between New York and Buffalo. The population crowded into a score of trade cities along the route. 3rd Period 1920–...: In 1926 the first regional plan and zoning of the state as whole was made. This modern period is characterized by the increase in the number of motor vehicles, the development of motor highways, and the linking up of the giant power reserves of the great coal fields of Pennsylvania with the hydro-electric power of Northern New York. This led to a widening of the range of commerce. Isolated villages for the first time began to play a rôle in the retail trade along the new motor highways.

(1) Originally practiced by the Dutch in the 17th century.
B. Specialized Regions:
These are one-sided economic units specialized in the production of certain products, such as in the case of mining regions. Their economy is always dependent upon other regions from which they import agricultural and other surplus products they lack, in exchange for their specialized products. This creates great activity in the wholesale and retail trade in regional and local markets.
The apparent fault of such a specialized economy is that when an industry gives out, as coal mines gave out in Durham and Wales, the population is left stranded.

The Settlements Pattern:
It is characterized by a great uncontrolled concentration of the population near the sources of raw materials or the sources of power.

C. Partially-Specialized Regions Characterized by Advanced Cultures:
Usually the economy of such regions is based on a varied range of resources and products, both agricultural and industrial. At the same time they are partially specialized. Out of this partial specialization, individualized skills and experience, such a region contains the elements that are needed for a many-sided human culture. Consequently it attracts a continuous flood of people from all other regions to its technical institutes, research departments, exhibitions, cultural monuments, museums and universities. Naturally a certain considerable flourishing of retail trade and other service jobs accompanies this cultural activity. In these service jobs more than one-third of the whole population is usually engaged.
Leer - Vide - Empty
A. Town Growth, its Types and its Effect upon the Shopping Pattern with respect to:

a) Centralization and Decentralization:
Most of the big cities during the first phase of our industrial age have been—and still are—characterized by concentration. This was the outcome of unplanned random growth, which evolved as follows:

At first the wealthy merchants and craftsmen settled close to the commercial centre of the town within easy walking distances from their places of work. The poor workers had to come daily from the fringes of town where they lived in squalor.

After the railroads had in the 19th century come to be used extensively as a means of transportation, the wealthier members of commercial communities moved to the open countryside at the far periphery of the city, as the latter itself became ugly to look at and insanitary to live in (it became slums and plighted areas). Commerce and light industries filled the evacuated space, creating more and more congestion. Again as these outside territories became in their turn more congested and less suitable for residential purposes the wealthier people moved more further outwards, being replaced by the commercial and industrial establishments, and the fine old houses being converted into cheap rooming houses.

With the automobile becoming more and more a private means of transportation, the same process continued: haphazard centralization, congested growth in cities and unplanned flood towards the suburbs.

Fig. 54 shows the concentric zones of a modern city of concentric growth. Zone a) is the centre, occupied by shopping, business, administration and other communal activities serving the whole city.

Usually, this zone is vertically extended in tall buildings. Zone b) is residential with high density, schools and hospitals. Zone c) is residential with low density. Zone d) is for heavy industry, air-ports, goods stations, market gardens and recreational areas.

Comment:
Such haphazard concentric growth gives the following paradox in the commercial business cores of our cities: where the traffic congestion is the greatest we have the narrowest streets; where we need big parking lots for public buildings we have the smallest parking facilities; where we need large plots for new designs and requirements there is no room to move at all. If no adequate solutions are created to solve this problem the centre will unavoidably be strangled and start to disintegrate. One good solution is given by Dr. Constantinos Doxiades in what he called 'Dynapolis' or the 'Dynamic City'. The new conception it emphasizes is that the growth of the city should be attained by the gradual process of building up sectors mainly in one direction, allowing the centre to expand without difficulty and without being overlapped (Fig. 55).

The result will be that we will have a gradual transfer of the centre of the gravity along one axis and will have new areas to develop, always with their own centres, because the centres will have new functions which will
Decentralization: With the use of motor vehicles and highways, industry, which had at first required central locations to be served by rail and water transportation, began to decentralize and be located out of town. This and the difficult and unhealthy conditions in the congested central area led to a considerable decrease of population of the downtown and a dramatic and rapid increase of population in the suburbs. Fig. 56 shows this clearly in two big towns: London and Paris; beginning in the first years of this century. In the U.S.A., too, between 1950 and 1959 the suburbs grew 29 times as fast as the central cities. Department stores and commercial establishments consequently followed the population to the suburbs where there is more space, less costs, lower taxes and parking areas available near the customers.

Also recently, large regional centres located on highways have been created, absorbing a great part of the buying power of suburban areas—which used to be absorbed in the downtown centre—and thus easing the traffic and parking problems in the latter.

Comment:
If this trend toward suburbanization is not well planned and provided with the necessary services (commercial, cultural, health, transportation facilities, etc.) they will develop—as in the past—into the slums of the future. (2) The only solution for this lies in decentralization, which actually has two different aspects: firstly, the dispersal of the large city into several smaller self-contained communities, and secondly, the outward peripheral and suburban growth of the town.

The Decentralized Town:
'Die Traubenstadt' (Fig. 57) is a diagrammatic aspect of decentralization. Zone a) is the central core for administration and central institutions such as specialty retail stores requiring special customers from a very wide catchment area. Units b) are the various outer town communities each having its own business and commercial main centre surrounded by residential neighbourhoods. Units c) are various self-contained suburbs each having its own local centre. Zone d) is for heavy industry, air ports, good stations and market gardens and recreation facilities. The theory of the 'Traubenstadt' is based on separation of different functions of the town. The central commercial core, the communities, and the suburbs, each have a different and distinct function; the same thing is true of the community, suburban and downtown shopping centres.

b) The Dormitory Suburb (1,000-90,000 Inhabitants), Fig. 58:
This is a suburban settlement developed on the fringes of large cities, and most of its population have their work place outside it. It should not be more than 25-30 minutes away from the heart of the city. Usually it is either newly built or grown around an old village on the outskirts of the town.

Shopping Pattern:
- Such a dormitory suburb has a main shopping, cultural, social and recreational centre.
- Dormitory suburbs with more than 10,000 inhabitants are composed of several neighbourhoods, each having its own secondary shopping centre. These supplement the main centre in providing daily and periodical needs for the suburbs.

Example: Schwamendingen as a dormitory suburb in Zurich (Fig. 59)—only 20-25 minutes away from Zurich core, which is the work place for most inhabitants of the suburb.

c) The Partially Self-Contained Suburb:
This type is being created due to the trend towards transferring industrial, commercial and (lately) business and employment areas from the congested city core to the fringes. Therefore its most important characteristic is that it has work and employment establishments within the suburb itself, providing work close at hand for a great percentage of its population. Other characteristics are:
- The suburb should be big enough in area and population to justify the erection of well-equipped and integrated service establishments, providing for shopping, recreational, medical, educational and social needs. The suggested size for such a community can be considered as not less than 20,000 and not more than 100,000 inhabitants.
- It should not be more than half an hour away from the city, and should be connected to it by quick and convenient communication services.
- The housing area should be kept within a radius of 800-900 m from the suburban station. This distance could be exceeded if local bus lines are used in the suburb.

Shopping Pattern:
- One main central community and shopping centre usually connected to the suburban station. Generally it is designed as a pedestrian area where the shopping

(2) 'They will also ruin the countryside no less than urban centres.' Lewis Mumford.
- The main suburban centre (Fig. 61) is intended as urban focus for the whole suburb. It is a vast pedestrian area in which two adjacent centres are established: the 'Business Shopping Centre' and the 'Cultural Centre', the latter being composed of a church, a parish hall and a library, grouped around a quiet courtyard separated from the business centre. The theatre, cinema and community hall straddle the two centres. The shopping business centre (in 1957) consisted of 18,000 m² of shops (~70 shops), 41,000 m² of offices, a medical centre, a dental clinic, a restaurant, a market place, the suburban station, a garage for 2,500 cars and parking spaces. It is interesting to note that the centre is surrounded by a group of tall apartment buildings indicating and marking the location of the centre from far away.

- The small neighbourhood shopping centres: each catering for the daily and weekly needs of each neighbourhood, the population of which varies between 2,000 and 4,000 persons.

**Types of Shopping Centres in Vällingby (Fig. 60, 61, 61a)**

- The main suburban centre (Fig. 61) is intended as urban focus for the whole suburb. It is a vast pedestrian area in which two adjacent centres are established: the ‘Business Shopping Centre’ and the ‘Cultural Centre’, the latter being composed of a church, a parish hall and a library, grouped around a quiet courtyard separated from the business centre. The theatre, cinema and community hall straddle the two centres. The shopping business centre (in 1957) consisted of 18,000 m² of shops (~70 shops), 41,000 m² of offices, a medical centre, a dental clinic, a restaurant, a market place, the suburban station, a garage for 2,500 cars and parking spaces. It is interesting to note that the centre is surrounded by a group of tall apartment buildings indicating and marking the location of the centre from far away.

- The small neighbourhood shopping centres: each catering for the daily and weekly needs of each neighbourhood, the population of which varies between 2,000 and 4,000 persons.

**d) The Satellite Town:**

This is another form of town growth resembling the partially self-contained suburb, with the sole difference that it is somewhat further from the city core.

The main reason for their erection is the modern trend towards dispersing the population, industry and commerce from the city to small out-of-town self-contained communities, and thus attracting people back to the country.

**Shopping Pattern:**

These small semi-isolated satellites are complete cities in themselves, each having its own industry, its own main complete shopping-business centre, and other services. The central core of the big town still acts as the dominating main centre for all satellites and town districts in administration, culture, transportation, wholesale trade and specialized retail trade. The satellite itself is divided into a number of neighbourhoods, each of 3,000-5,000 inhabitants, and has its own shopping centre, Fig. 62.

**An Analysis of the Commercial Areas for an Ideal Satellite Town in France (1959) of 10,000 Apartments (~40,000 Inhabitants) as related to Other Areas.**

(1) As shown in Fig. 62 the town proper (Zone A) requires about 200 hectares for all the town activities, of which 68 hectares are for housing, 70 hectares for common green areas and only 3.5 hectares required for commercial areas, i.e. only ~1.75% of the town proper area and ~5% of both the housing and the common green areas. These commercial areas consist of two items: 1) the main commercial centre ~2 hectares (calculated on the assumption that each apartment requires ~1.96 m² selling area in the main centre), and 2) six secondary commercial centres each serving 7,500 apartments and with a total area of 15,000 m² (calculated on the assumption that each apartment requires ~2 m² selling area in the neighbourhood centres). Zone B is a green belt outside the town.

**Fig. 59. Schwamendingen (25) a new dormitory suburb in Zürich (having its own main shopping centre) in relation to the city core and districts (after Real, T.).**

**Fig. 60. View for Vällingby main centre (taken from north), Stockholm (after Billard, E.).**

**Fig. 61. Plan of Vällingby, main centre indicating the grouping and different heights of its buildings. For details see Fig. 61a on the next page. (After 'Bauen und Wohnen', Am.).**
proper and is utilized as: an industrial zone ~ 60 hectares, recreation woods ~ 30 hectares and future extension of the satellite. The catchment area of the main centre does not exceed a radius of 3-4 kilometres for the motorist (~ 25-30 minutes).

Note:
A lot of theories have been suggested to organize the relation of the satellites with the city. The 'Trabantenstadt' is one of these solutions, shown clearly in diagrammatic representation in Fig. 63.

Example: Harlow (80,000 inhabitants, one of the satellite towns of Greater London): ~ 38 kilometres to the north. Other satellite new towns around London, such as Corby, Hemel Hempstead, Stevenage, etc. lie 30-45 kilometres from the city, Fig. 64. The general layout plan of the satellite with its four big districts (communities) is shown in Fig. 65 and 66, each district consisting of a cluster of neighbourhoods. The plan also shows the distribution of three distinct types of shopping centres: 1) a main shopping and business centre C, providing the special and impulse goods and services for the whole satellite, and at the same time providing the daily and weekly goods for the adjacent district. This main centre also includes a new market, where the farmers from the surrounding countryside bring their goods and produce to sell; 2) three district shopping centres B, B1 and B2; each is located in the hub of the district (community) on the intersection of the main roads connecting the neighbourhoods; 3) several neighbourhood shopping centres in each district, each serving its neighbourhood unit with daily necessities and convenience goods.

In Fig. 67 a detail layout plan of one of the district shopping centres (Harlow the Stow Community Shopping Centre) B1 is shown. It serves three neighbourhoods of about 16,000 inhabitants. It contains about 60 shops, a post office, bank, community centre, health centre, church, service garage, library, dance hall, etc., i.e. integrating the shopping with business and other communal activities. The shops are arranged to form two small squares connected by a narrow straight street in a Z-shaped plan. From any point in the centre the shoppers have a closed view and a feeling of intimacy and enclosure. Above the shops there are dwellings. Parking areas are provided behind the stores, see Fig. 67. The treatment of shopfronts is diversified, but the unity of the centre is achieved by a unified treatment of the elevation of the upper floors.

B. New Theories and Solutions of Modern Urban Pattern as reflected in Layout and Locations of Shopping Centres. (1)

a) The Linear City or Ribbon City (Die Bandstadt):
This is one solution for the decentralized city and escape from congestion. Here the city is spread out along the railroad and highway as a continuous narrow band always close to the countryside. This system was first thought of by Soria y Mata in 1882 and known as the linear city, then developed by Miljutin in 1930 into the Ribbon City, put into practice for the first time in Stalingrad, Fig. 68. The general theme is composed of parallel zones separated by green recreation belts: Zone 1 is the railroad; Zone 2 is the industrial zone; Zone 3 is a green zone having communal and shopping establishments scattered in it; Zone 4 is the highway; Zone 5 is the residential zone with a main commercial and business core; Zone 6 is another green zone, having recreational, park areas, schools, sport fields, small farms and vegetable gardens.

Another development of the Ribbon City is prospered by Hilberseimer as shown in Fig. 69, in which a series of residential units are extended on one side of the highway, each accessible by a cul-de-sac road, and having its shopping centre along the local highway—which is fed from the main highway. On the other side, and separated by a green belt, is the industrial area.

Comment:
The local shopping centre for each residential unit is in direct contact with it and within walking distance from the farthest dwelling. Clearly this is advantageous, but speciality shops could not be placed in such centres as they require a wider catchment area. A need for a main speciality commercial and business city core is apparent. Such a core is found in Stalingrad.

The commercial area, being near to the highway, facilitates delivery of goods. Also it is connected to the farms and vegetable gardens by means of cul-de-sac roads. Therefore daily fresh products can easily be provided to the shopping centres.

b) The 'Kammstadt' and the City as a Grouping of Townships:
The theme of the 'Kammstadt' is a further development of the ribbon city, Fig. 70. The industrial zone here is still a continuous band extended along the main artery of

(1) Except for Chandigarh and Brazilia, all the schemes mentioned on p. 32-37 are abstract theoretical solutions for ideal cities.
Fig. 62. Diagrammatic scaled analysis of the commercial areas for an ideal satellite in France, 1959, of ~40 000 inhabitants as related to other areas. Scale 1 cm = 200 m.

| Fig. 62 a. Commercial area of a satellite of 40,000 persons in relation with other town areas. Total town area = 200 hectares (1400 x 1400 m). |
| 1 = Commercial areas 3.5 ha |
| 2 = total area without common green areas = 130 ha |

Industrial zone 60 ha
Residential area
Neighbourhood shopping
centre ~ 15 000 m²
Main centre ~ ~ 2 ha
Green belt 30 ha
Prevailing wind

100 m satellite town proper 200 ha
Diameter = 1600 m
Fig. 63. The 'Satellite Town' or 'Trabantenstadt. A: the city core with commercial areas surrounded by residential areas (after Real T).
move to the country and place the new industries with their related industrial cities along the main transportation routes connecting great existing cities. Fig. 73 c shows the basic organization: between the passenger-highway and the three main means of transportation (river, the railway and the service highway), are the industrial areas, 'Green Factories'. Opposite lie the residential areas with shopping, sports and cultural facilities for the immediate population.

Comment:
1. The existing cities remain concentric, acting as the main commercial, administrative and cultural downtown centres for the industrial cities. I think such centres will be too distant and inconvenient for the people and can only function in highly motorized countries.
2. It is very interesting to note that Le Corbusier classifies the new residential areas here in two distinct groups, Fig. 73 a: a group of tall buildings (vertical residences) placed near the local shopping and civic centre, and another group of single-family homes (horizontal residences) away from the local centre, for greater convenience and freedom for families.

d) The Cellular City (Die Zellenstadt), Fig. 74:
Here the city has no central dominating administrative and commercial core. Instead it is composed of a number of cells or small cities connected to each other by highways and railroads. Each cell (of 100,000 inhabitants) has its own local administrative, business and shopping centre concentrated in the core. Surrounding the core is the industrial zone, and then comes the residential zone in the outer ring. The green zone between these cities is used for recreation, cultural and shopping establishments.

Comment:
1. The commercial business core is isolated from the residential areas by the industrial zone. At the same time it lacks the social institutions which are usually placed in the green zone between the cities near to the inhabitants.
2. The best solution is to get the commercial core out of its congested and isolated location in the centre, and place it between the cities, near to, and accessible from, the highways connecting them. Such centres between cities are called regional shopping centres. Fig. 75 shows such a centre placed at the intersection of the highways connecting four cities. Such centres should not be merely for shopping; they usually contain areas for social and recreational activities. This solution naturally only works effectively in countries where nearly every family owns a car.

e) The New Capital Brasilia (by Lucio Costa) and its Shopping Pattern, Fig. 76(1):
Brasilia is intended for a maximum number of inhabitants = 500,000. The plan is based on two main arteries crossing each other at right angles. The shorter one—which underpasses the longer one—is monumental, extending from east to west from the capital to the railway station and having the civic cultural, recreational, commercial, administrative centres and light industries all grouped on it. The longer curved artery is north-south serving the residential areas.

Brasilia's Shopping Pattern is represented by two types of centres:
- the main business and shopping centres are located at the intersection of the two arteries (denoted by 7 in Fig. 76). These centres have approach roads, pedestrian walks and two level parking areas. They are inconveniently far from the residential superblocks on the fringes (~ 5-7 kilometres);
- the residential local shopping centre (Fig. 77) serving each superblock, the latter measuring ~ 400 x 400 m and inhabited by ~ 5,000 people. The superblocks are closed to the residential expressway artery and are only accessible from the rear by a longitudinal parallel service road. The shops lie on both sides of the transversal vehicular roads (shopping streets) separating the superblocks, and at the same time accessible to pedestrians from the adjacent superblocks by footpaths. I find the function of such shopping streets is greatly impaired by letting vehicular traffic pass through it.

f) Chandigarh (by Le Corbusier) and its Shopping Pattern, Fig. 78:
The first plan of the city is for 150,000 but flexible enough for future extension up to 500,000 inhabitants. The over-all plan is a grid of 31 sectors, 1/7 of which are residential. The head sector 1 to the north is the government central commercial administrative and cultural band along the Thames forming the core (after Ortmann, T.).

Fig. 71. The city as a grouping of townships (total population = ~ 1 million) by José Sert. A: civic and commercial centre; B: township community and shopping centre; C: light industry; D: heavy industry; E: main highway; F: main railway; G: airfields. (After Gallion, T.)

Fig. 72. Proposed plan for London by M.A.R.S.-group. A central commercial, administrative and cultural band 

Fig. 74. The cellular city (each cell has its local business and shopping centre in the core) (after Giedion).

Fig. 75. Regional shopping centre located between cities and acting as their outside downtown (after Hierl, A.).
mental capital. The two core sectors 2 and 3 are the main social and shopping centre and the business centre respectively. Sector 4 is the recreational centre, and sector 5, to the extreme west, is the cultural and university centre. Each residential sector (superblock) measures \( \times 800 \times 1,200 \) m, and \( \times 20,000 \) people live there undisturbed by traffic and fully supplied with all services. The road system is for the first time elaborately differentiated according to Le Corbusier's system of the '7 V's'.

**Chandigarh's Shopping Pattern:**

One can differentiate here between two types of shopping centres:

1. **Downtown centres:** represented by two kinds:
   - the east-west parade \( V_1 \) traversing the city and containing the main commercial buildings. In the west it enters the cultural centre; Fig. 78
   - the main shopping and business centres located on both sides of the commercial parade \( V_1 \) at its intersection with the other 'Capital Avenue' \( V_2 \), leading to the governmental capitol.

2. **Local Shopping in Residential Superblocks,** Fig. 79:
   - This is done in one of three places:
     - the superblock core, containing market, stores, library, police and fire services;
     - \( V_3 \)'s shopping street, crossing the sectors from east to west and lined with local shops, some of them open stalls. These \( V_3 \)'s are connected to the \( V_4 \)'s (distributor ring streets from shops to neighbourhoods);
     - commercial areas lining the circumference of the superblock, from the sides of \( V_5 \)'s roads only. These areas are either acces-
The 4-Tier System of Shopping Distribution in a Modern Decentralized City, Fig. 80 (Compare Diagram D):

This system is the basis most commonly accepted and practiced, especially in England’s modern urban development. It is based on the planning organism of the modern city and is composed of:

1. **Town Centre or ‘Downtown’**:
   
   In cities of more than 150,000 population the shopping outlets of the centre are highly specialized, either in price-range or in type of goods. The types of goods and facilities offered are those which serve the whole city, requiring a wider catchment area, and could not be offered by district or suburban centres, such as is the case with luxury and impulse goods.

   In cities of less than 150,000 population, especially if the distance between the downtown and the boundaries of residential development is not more than two miles, the downtown cannot be entirely specialist. So it fulfils the functions of the district and the neighbourhood centres at the same time.

2. **District or Community Shopping Centre**:
   
   This serves a district of 20,000 up to 90,000 people.

   It is usually composed of 100-120 or more shopping outlets providing all selectivity goods (bought at regular periods, such as clothes and furniture) except the specialist lines bought in the downtown.

3. **Neighbourhood Shopping Centre**:
   
   This serves a neighbourhood unit of 3,000 to 12,000 people.

   It is usually composed of 20-30 shopping outlets providing daily and weekly needs, and should not be more than 400-500 m (walking distance) from the furthest dwellings.

4. **The Shopping Subcentre**:
   
   It serves a residential unit of 1,000-2,000 persons.

   It is usually composed of 4-10 corner shops, providing convenience goods and foodstuffs in daily use.

**Comment:**

I do not agree with eliminating subcentres and replacing them by corner shops. I find them indispensable for new settlements and residential units, as they are more advantageous from a number of points of view (already mentioned on p. 21 when speaking about subcentres). A good solution is to make a combination of scattered corner shops and small subcentres in a planned distribution pattern based on convenience for the consumer.

— Wilfred Burns (1959) suggesting that the shopping pattern should be composed of:
Fig. 80. The 4-tier system. 1: downtown centre; 2: district centre; 3: neighbourhood centre; 4: subcentre.

Fig. 81. The 3-tier system. 1: downtown centre; 2: neighbourhood centre; 3: corner shop.

Symbols

- Corner shop
- Subcentre
- Neighbourhood centre
- District centre
- Downtown centre
Leer - Vide - Empty
Fig. 82. Location of shopping centres w.r.t. town and towns. Type A: along a main expressway; Type B: at a considerable distance from expressway having a p.p. junction to it; Type C: on the road connecting the city with a satellite; Type D and D': between 2, (A and B) or more small towns (A, B, C and D) on a road or near the intersection of 2 roads; Type E: principal and secondary centres in a satellite town; Type F: on the periphery of old city adjacent to suburban development.
CHAPTER 5

Classification of the Modern Shopping Centres on a Town-Planning Basis

A. Definition and Main Characteristics of the Shopping Centre in general

'A modern shopping centre is a carefully selected group of stores with a calculated selling floor area, planned as a unified unit, to suffice for the different consumption needs of the people living around, in a defined residential area. These centres vary from a small neighbourhood centre serving 4,000-10,000 persons to the gigantic establishments and grouping of department stores in the downtown centre serving a whole city up to a million persons.' For the consumer, such a centre is advantageous, in making it possible for him to do all his day's shopping at one place, and in providing ample parking space for his car. For the retailer it provides the advantage of the cumulative pull of grouping (the economic fact that two stores side by side always do more than twice the business of a single store).

The General Characteristics are:

1. The site has to be chosen from an economic analysis and a thorough study with respect to suitable and comfortable means of transportation, enough floor area, future extension, and reserve parking places.
2. Great care should be taken in completely separating the circulation routes of the outside heavy vehicular traffic, pedestrians, those coming by bus, and private motor cars and goods traffic (delivery and dispatch); delivery and dispatch usually take place in the basement, with direct access through underground tunnels at the back.
3. The circulation in front of the shops should be dedicated exclusively to pedestrians, as sheltered galleries and precincts.
4. Unity of character and style—as for example in facades and advertisements—should be a dominant feature.
5. The centre should provide social services and recreational activities. In many cases it is combined with cultural, amusement, and medical centres. From the point of view of the traders, this trend has an economic aspect—that of holding more people longer, meaning 'cash registers ringing more often and for longer periods'.
6. The centre is generally erected by: a) the developer of the new housing project, or b) a retailers' association owning the principal dominant outlets (department stores, supermarkets and chain stores), c) independent associations specialized in building such centres and renting the selling floor areas to retailers.
7. The centre is managed by a co-operative effort between the traders and the owners, together forming 'the centre administrative association'. Decisions are taken by majority of votes and executed by an authoritative committee. The obligatory services organized usually deal with: parking areas, green areas, central heating, common advertisements, fixing the opening hours of shops, etc. The non-obligatory services organized deal with administration, delivery and dispatching services, space for storage, common buying of shop furniture, fixtures and other equipment and organization of festivities, etc.

B. Types of Modern Shopping Centres

Diagram D (in Chapter 2) and Fig. 82 show the classification and the location of different types of modern shopping centres in relation to the organism of a town or towns from a modern town-planning point of view. The main types discussed on the following pages are: (1)

a) the neighbourhood shopping centre
b) the suburban and district shopping centre (also called the community shopping centre)
c) the downtown centre
d) the new satellite town centre
e) the regional shopping centre.

a) The Neighbourhood Shopping Centre:

Planning and Architectural Structure and Characteristics: The centre should be located in the middle of the neighbourhood and serve its population (varying from 4,000-12,000 persons). As there is evidence that most people do not like walking more than 400 m for many activities and needs, and as this is found to be at the same time the maximum distance at which the buildings of the centre are visible, the residential area should not be more than 400 m radius from the centre. This suggests a neighbourhood of 800 m diameter and of ~ 9,000 population giving a density of 54 persons per acre (130 persons per hectare). The centre should be composed exclusively of pedestrian malls (precincts) having all vehicular traffic diverted away from it. It is usually built up of 15-30 shops dominated by a big supermarket (for foodstuffs), with adjacent parking spaces. Sometimes the drugstore is the major tenant. There should be special driveways for truck traffic, leading directly to loading platforms, and other special roads for the motorist consumers. The centre should provide sweeping strips of lawn, flower beds, trees, recreation areas for adults, and playgrounds for children.

Examples and Comments:
- Commercial Centre of Rueil (France)
  Fig. 83 a, b, c:
  Rueil is a newly constructed neighbourhood on the outskirts of Paris, with a population of 17,000. The new centre is built on an area of 14,000 m² of which 4,000 m² form the built area, 5,000 m² are green space and pedestrian walks, and 5,000 m² parking areas.

Fig. 83 a. Shopping centre of Rueil (France); an example of a neighbourhood shopping centre. Layout indicating location of centre (after 'L'Architecture d'aujourd'hui' 83).

The plan is based principally on two attractive and planned pedestrian malls perpendicular to each other and organized in such a way as to be easily accessible to pedestrians from two sides, and to parking and motorist consumers from the opposite two sides. The centre is composed of a dominating department store of 2,000 m² sales area (having two storeys and a terrace above the ground floor), connected to a self-service supermarket (550 m² floor space with 500 m² reserve space in the basement), a cinema seating 700, and 28 diversified shops and chain stores. In future the centre will combine a medical service centre, a children's nursery, and banks. Connected to the supermarket is a subterranean passage leading to the basement, accessible by a stairway and a ramp for children's perambulators.

(1) The basis on which the classification is made here is the 4-tier system already mentioned on p. 37.
Linda Vista Shopping Centre (California, U.S.A.). Fig. 84 a and b:
Linda Vista is a modern neighbourhood of 3,000 dwellings (9,000–10,000 inhabitants) built in 1943 as one of the great American defence-housing projects for rehousing 8 million people (1940–1945).
The core of the plan is a quiet lawn and a pedestrian precinct on which the shops face, turning their backs on the service roads and surrounding parking areas. The latter are differentiated in three areas each skilfully designed to give easy access from the perimeter road, having an entrance at one end and an exit at the other, while at the same time avoiding any interference with pedestrians.
The centre consists of a number of shops (bakery, foodstuffs, drugs, sweets, barber, etc.), a small department store, and a market, and is dominated by a big department store; all these are loosely grouped together by a system of canopies cantilevered over the shop fronts, or bridging the gaps between the buildings in the form of covered ways.

Two additional criticisms could be made. Firstly, the parking areas, being so close to the stores, will to a certain degree hinder the process of delivering goods at the back doors of the stores. Secondly, the interior precinct court is rather wide. This and the green lawn in the middle tend to prevent the shopper from going from one shop to the opposite one and thus the centre lacks the animation and busy atmosphere required in such centres. Perhaps a better solution would be to leave the central space paved for pedestrians, with some points of interest such as kiosks, show-windows, fountains, etc.
Yet this centre is considered one of the most successful and has had a wide influence on design both in America and Europe.

b) The District and Suburban Shopping Centres:
These are just two different names for similar centres, each serving a whole community composed of several neighbourhood units of the same total population (varying from 20,000 up to 100,000 inhabitants). Each also fulfils the same function, that of bringing all selectivity goods and periodical needs near to the inhabitants (15 minutes on foot or by car), providing them with a wide choice of articles, and stimulating competition between the merchants. The consumer does not need to make any frequent shopping trips to the downtown except for buying luxuries and highly specialized articles.

Planning and Architectural Structure and Characteristics:
1. The only difference between district and suburban shopping centres is the location, the former being within the city proper, usually developed upon an old commercial and handcrafts centre, and the latter being in suburbs outside the city or on its fringes, usually on a busy main traffic road. In some medium-sized towns (~200,000 persons) a new district shopping centre is sometimes erected at a considerable distance from the old specialist and administrative downtown, taking most of the selectivity goods from the latter and leaving it exclusively for administration and the highly specialized and luxury goods, thus relieving the central city from the traffic burden.
An example of this is Wichita Town (Kansas, USA); Fig. 85 shows the old downtown connected to the newly-erected district centre by traffic streets.

2. The centres are composed of a sufficiently large number of small shops branches of chain stores and co-operative societies (the two latter are often a great factor in ensuring the success of the centre) and dominated by 1-2 branch department stores and 1-2 supermarkets. A large group of crowded small shops is recommended rather than a smaller group of large spacious ones, in order:
   a) to stimulate further competition and
   b) to create a more active, bustling, interesting shopping atmosphere, which is both popular and essential to the centre.

3. In the U.S.A. a selling floor area of 7,500 to 30,000 m² is considered to be sufficient for a community of from 20,000 to 100,000 inhabitants. (1) In general the number of shops in such a centre varies between 20 and 60.

4. Usually a district centre is a combined cultural, recreational, medical and administrative centre.

5. The trend in redeveloping old district centres or erecting modern suburban centres is to create a sort of a pedestrian shopping precinct surrounded by parking areas (Fig. 86 and 87) to cater also for the motorist.

Example of a Suburban Shopping Centre:
Vällingby (suburb of Stockholm), already discussed on page 31; see also Fig. 60 and 61.

Examples of and Comments on District Shopping Centres:
- The secondary district shopping centre 'Harlow the Stow' (England) serving a community composed of three neighbourhoods of 16,000 total population—in Harlow—(already discussed on page 32; also see Fig. 67, 66 and 65).

- Poplar Lansbury Market and District Centre in England, Fig. 86 and 87:
  1. It is the chief centre for a reconstructed community in London composed of three neighbourhoods (heavily damaged by bombing during the second World War).
  2. The centre is laid out in two main spaces, blending into each other: the shopping area and the market area; the former is composed of a long narrow precinct with shops on both sides, a corner 3-storied department store, and another row of shops facing the market square, all shops being surmounted by maisonettes. The latter space is composed of a rectangular open market square for pedestrians and a small covered market for the sale of meat, fish, and other goods that require protection against spoilage.
  3. On the perimeter of the centre are the parking areas.
  4. A pleasant rest area with a public lavatory and an interesting high clock tower is provided, the latter contrasting with the comparatively low shops behind.
  5. The recessed colonnades adjacent to the shop windows form sheltered shopping parades terminated at each end by a public house to define the limit of the market square.
  6. The department store is designed and located to act as a visual fulcrum to both the shopping and market spaces.
  7. The whole scheme is based upon an 18 ft. grid, even reflected in the design of the paving of the market square, subdivided by bollards (narrow covered canals) which contain electrical lighting fixtures. This paving pattern facilitates and co-ordinates the setting out of the stalls.

Example of a Suburban Shopping Centre:
Vällingby (suburb of Stockholm), already discussed on page 31; see also Fig. 60 and 61.

Examples of and Comments on District Shopping Centres:
- The secondary district shopping centre 'Harlow the Stow' (England) serving a community composed of three neighbourhoods of 16,000 total population—in Harlow—(already discussed on page 32; also see Fig. 67, 66 and 65).

- Poplar Lansbury Market and District Centre in England, Fig. 86 and 87:
  1. It is the chief centre for a reconstructed community in London composed of three neighbourhoods (heavily damaged by bombing during the second World War).
  2. The centre is laid out in two main spaces, blending into each other: the shopping area and the market area; the former is composed of a long narrow precinct with shops on both sides, a corner 3-storied department store, and another row of shops facing the market square, all shops being surmounted by maisonettes. The latter space is composed of a rectangular open market square for pedestrians and a small covered market for the sale of meat, fish, and other goods that require protection against spoilage.
  3. On the perimeter of the centre are the parking areas.
  4. A pleasant rest area with a public lavatory and an interesting high clock tower is provided, the latter contrasting with the comparatively low shops behind.
  5. The recessed colonnades adjacent to the shop windows form sheltered shopping parades terminated at each end by a public house to define the limit of the market square.
  6. The department store is designed and located to act as a visual fulcrum to both the shopping and market spaces.
  7. The whole scheme is based upon an 18 ft. grid, even reflected in the design of the paving of the market square, subdivided by bollards (narrow covered canals) which contain electrical lighting fixtures. This paving pattern facilitates and co-ordinates the setting out of the stalls.

Note: Part III of this research is wholly devoted to a detailed and analytical study of the community shopping centre.

c) The Downtown Shopping Centre or the 'Urban City Centre':

'There is romance and sentiment, needed in the heart of our cities, and all the human qualities that go with the moment of leisure.'

Carl Feiss (2)

Modern Trends in Downtown Development:
Recent analytical surveys of many of our big cities show that the modern trend toward suburban expansion is leading to the decay, blight and disintegration of their central areas.

(1) See Am, p. 267.
(2) See Tm, p. 380.
(3) See Tm, p. 4.
loosing its population, and with it its importance in social life. Being increasingly swamped by motor traffic it has become a death trap and a noisy congested place—a place for a man to leave as soon as he can. Consequently, business and commerce are gradually deserting it for the suburban areas. With the exception of working hours (40 hours per week) the core is almost deserted during the other 128 hours and during a hundred a three days a year during holidays. Also, children, youths, housewives, and the aged people (together representing the majority of the population) go very rarely to the downtown. This is the case with most big towns in Europe and the U.S.A., such as Paris, London, and New York, Fig. 56. In some oriental cities, such as Cairo, the case is different, for although there is also a trend toward suburbanization, the central core is increasing in population. The reason is that the old buildings are being continuously replaced by new taller ones (up to 20 storeys and more), having stores and commercial establishments on the ground and mezzanine floors, offices and business on the next 2-5 floors, and dwellings on the floors above. Although the newly planned out-of-town regional and suburban shopping centres may be more attractive and efficient for both retailer and consumer, satisfying some of the sociological aspects of shopping, it cannot be a satisfactory replacement for the downtown shopping centre. The latter is geographically the heart of the town and it ought to function as the heart; it should not merely be remodelled to meet modern needs and the new type of culture and life of the 20th century. This recent process is called 'recentralization' or 'replacing the old cores by new ones', and is characterized by the following:

1. The downtown is beginning to fight back in an effort to recapture some of the business and commerce lost to suburbs and outlying areas, and regain its place as a main specialist retailing centre. This is also encouraged by the traditional strong belief among retailers that the core is the main locale for merchandizing activities, for it is the most animated place, with a large group of people coming together for a wide variety of purposes, and offers more opportunities to purchase some impulse goods which the suburban shopping centre does not provide.

2. The downtown will have to provide attractions, new excitements and a pleasant animated atmosphere of sufficient magnetic power to draw the suburban shoppers into the downtown district more often and for longer periods.

3. The downtown should be planned basically around a protected pedestrian space or plaza where the people can shop or enjoy the atmosphere, free from motor traffic and noise. Shopping, business, social, recreational, cultural and civic activities are grouped in wide-spaced buildings (sometimes concentrated in tall buildings), having green areas, flowers, birds and fountains between them, and making a significant integrated contribution to better living.

4. Another modern characteristic is that the downtown tries to occupy much less land, as land prices have now got so high.

5. Recent evolution of suburban and regional shopping centres has affected the development of downtown shopping centres in two ways:(2)
   a) It has stirred the city municipalities, officials and business men to take some action towards redeveloping their city core.
   b) The regional shopping centres serve as an experimental workshop in which ideas for downtown reconstruction might be developed.

In short, the modern downtown centre should provide those things—whether they are goods, services, attractions, or excitements—which are either highly developed and specialized, or require a wider and extensive catchment area.

Types of Downtown Redevelopment:
These can be analyzed and classified into three main groups:

Type 1: Where the Existing Old City Centre could not be reconstructed:
This, though already congested and swamped by over-increasing motor traffic, at the same time could not be reconstructed for some reason, such as the bulk of the buildings in the city being of great architectural or historical value, so that their destruction would be an offence against culture; such is the case in Oxford and 'Mosky' (medieval old city centre) in Cairo.

Some traditional solutions are: one-way traffic roads, simply widening the streets, constructing separate lanes for automobiles, trucks, and pedestrians, increasing the width of pavements according to the bulk of pedestrian traffic, and providing municipal parking. Such solutions have proved inadequate as the traffic only becomes greater and the crossings more congested and dangerous.

Some other solutions, proved to be more successful but still considered temporary, include closing whole shopping streets to motor traffic, converting them to pedestrian malls, such as Kalverstraat in Amsterdam, Fig. 88.

But the two logical main solutions are:

1st Solution: basically, separating the different types from each other by using a system of more-than-one-level shopping streets. It is very interesting to note that such an idea of traffic separation in a congested city occurred to Leonardo Da Vinci. Fig. 89 shows a sketch drawn by his own hand expressing the idea: (3) the street for the pedestrians only and the underground way for vehicular traffic.

One aspect of this modern solution is the elevated\textit{t}raffic express way \textit{in} the centre of a wide street, Fig. 90. It is supported on pillars, having the area beneath used as parking places and show-windows, and thus on the ground floor the street is split into two parallel pedestrian shopping streets. The only disadvantage here is that the unity of the original street is broken and the view across it is obstructed, causing the stores to lose half their business.

Another aspect is the elevated pedestrian shopping street, Fig. 91 (a, b, c), often located in the centre, bordered on sides by show-windows and being connected by bridges to the upper entrances of stores. The lower street is wholly devoted to vehicular traffic with the truck and express traffic in the centre and private cars on the side lanes. As for the stores, they have two main selling floors: the ground floor accessible to motorists and the upper floor accessible to pedestrians. Here the pedestrians can enjoy a good, unobstructed view of both sides of the streets, and the motor traffic beneath can occupy the full width between the building fronts as there is no need for sidewalks.

2nd Solution—The Ring Road (Fig. 92):
The basis of this solution is to prohibit the express and private motor traffic from the core area and surround it by an inner ring express road connected with parking areas for long-term parkers. (4) These areas are located near the stations of the public transport system, which carries the consumers inside the core area. This first ring road is connected to efficient radial express highways, designed so that they can evacuate great masses of the population working or

(1) This Cairo development is the same as that in Paris and London up to 1910.
(2) See Am. p. 202
(3) See T., p.18.
(4) The parkers here are those who are working in the core area.
visiting the core within a minimum of time (especially in rush hours). Parking areas controlled by parking meters could be provided inside the core for unavoidable short-term parking (for visitors and motorist consumers).

Example—The new Traffic Organization of Essen Core (Fig. 93 a, b):
In spite of some damage suffered during the 2nd World War, the old historical core remains so significant and important that it cannot be pulled down. The penetrating traffic streets (Fig. 93) are replaced by a ring highway connected to long-term parking areas on the outside border of the core, and at the same time connected by short cuts to short-term parking areas inside the core, Fig. 93. So the shopping pedestrian traffic in the city centre is almost isolated from the motor traffic.

Type 2: Reconstruction of a New Modern Downtown Centre:
Planning and Architectural Structure: A whole district of the old city centre is pulled down and replaced by a newly planned and integrated city core, formed by an architectural group of buildings devoted to social, recreational, business, administrative and shopping services. Usually the whole new district is devoted to pedestrians only, with ample park areas on the periphery. Delivery, dispatching and truck traffic is through underground ways leading directly to the basement floors.

Examples and Comments:
- Back Bay Downtown Centre in Boston, Project designed by W. Gropius (Fig. 94 a, b and c, Fig. 95):
The shops and department stores forming the shopping group in the centre (denoted by 'S' in Fig. 94 b) are designed to cater for 70,000 consumers daily. Business and other services are provided for in one tall office building and three lower ones. The cultural group is composed of a big auditorium of 7,500 places and three exhibition halls. There is also a hotel with 750 beds and underground parking places for 5,000 cars.

- Westchester Terminal Plaza and Urban Shopping Centre in New Rochelle:
This will be located only 800 m from the present downtown business centre. The main characteristic of the project is that it is a high-rise centre with vertical grouping of services, and occupies only 10 acres. If it is to be built on cheap suburban land it would have covered about 100 acres, Fig. 96 a, b and c. It will include a railroad terminal, a bus terminal, a multideck parking for 5,000 cars on six levels, a theatre, an auditorium, an office building, a hotel and about 75,000 m² of retailing area at three merchandising levels.

There are entrances, stairs and escalators leading to the main covered two-storied pedestrian shopping 'Garden Court'. It is skylighted and air-conditioned, and has plants, fountains and sculptures, and shops opening onto it on both sides. This sort of high-rise urban centre being erected on the minimum of land makes it possible to devote the whole central to pedestrians only as they will have minimum walking distances.

Type 3: New Shopping Centre Built beside and Combined to the Old Cultural and Administration Core:
Here the old city had central shopping located far from its business, cultural and—
The new traffic organization of Essen core area.

Fig. 93a. The existing traffic penetrating the commercial old core.

Fig. 93b. Solution, using ring road, scale 1:5000.

(After Hierl A.)

Fig. 95. Perspective of model of Back Bay Centre.

Fig. 94 and 95. Reconstruction of a new modern downtown centre. Back Bay Downtown Centre of Boston, designed by Walter Gropius (after Giedion "Gropius, Mensch und Werk").

Fig. 94a. The existing sector.

Fig. 94b. Project (s = shops).

(After Hierl A.)

Fig. 94c. Plan of Back Bay Downtown Centre (1-4: office buildings; 5: shopping centre; 6: department store; 7: super-market; 9: hotel; 11: meeting).

It is more convenient and beneficial to both the consumer and retailer to combine these centres. After the 2nd World War some cities whose central areas had been badly damaged had a chance to realize this idea of developing and integrating the old cores into multipurpose modernized and organized ones.

Example: Modern Downtown Shopping Centre in Rotterdam (Lijnbaan, the New Bijenkorf and the Binnenweg), Fig. 97a, b, c, and d:

- This is almost completely reconstructed after the 2nd World War, near the main railway station and adjacent to the old business and civic centre (the city hall, the general post office and the stock exchange).

- It is composed of:
  a) the famous L-form Lijnbaan, a shopping pedestrian precinct 60 m wide and 600 m long containing 65 shops and department stores;
  b) the new Bijenkorf: an adjacent, big department store of 36,000 m² sales floor area;
  c) the Binnenweg shopping centre. A future extension of the Lijnbaan precinct is planned to connect it to this, Fig. 97a.

- These three elements are grouped together, forming the main part of the shopping centre west as far as the Cool Singel. This should be tied by pedestrian underpasses to the other shopping centre and business administration centre on the east side.

- Small parking areas are provided for nearby.

- The delivery of goods to the shops and department stores takes place at the back through back service streets.

- The Bijenkorf is equipped with plenty of service facilities to make the shopping trip as attractive and comfortable as possible, inducing consumers to stay longer (and consequently buy more). A restaurant for 500 persons is provided on the second floor, a big quick-service buffet on the ground floor, hairdressers’ saloons, travel offices, post offices, a cinema for 600 persons accessible from the street as well as from the selling floor area in the ground floor, and an art gallery. The number of visitors of the Bijenkorf is about 40,000 daily.

- The facades of the Bijenkorf are almost wholly closed because as a modern department store—with its undivided interior areas—it has only very little wall area, so the outside walls are used for placing the shelves, cupboards and other fittings. Besides, owing to the deep sites of big stores, natural ventilation and daylight would be impossible. Artificial light and air-conditioning are indispensable.

It is very interesting to note here that when it was proposed to erect the Lijnbaan, there were objections at first from the traders who feared that preventing the motor traffic from going through the trade centre would diminish their business. Yet it turned out to be a big success, for immediately the street was closed to traffic, it was transformed into an animated shopping precinct and one of the best-loved central places in Rotterdam.

Another point is that the centre is still lacking in parking areas. Maybe the ground floor or basement of the Bijenkorf should
have been devoted to parking. On the other hand, we should consider here that the density of motor vehicles in Holland is not so high (\( \frac{1}{2} \) that in Germany) and that the bicycle plays an important rôle in communication inside the city (\( \frac{1}{4} \) 1 bicycle to every two Dutch). However, in the masterplan of Rotterdam a multistoreyed garage will be provided near the centre.

d) The New Satellite Town Centre:
This type is similar in its planning and architectural structure to the big district centres. However, it is discussed separately already with its examples on pages 31 and 32.

e) The Regional Shopping Centre(1):
This type could only flourish in countries where the density of automobiles is rather high, or is expected to become so in the near future (as in U.S.A. and Western Germany). The factors that led to its erection can be analyzed as follows:
- As the motorist customer now no longer has any geographical focus (he and his car are now everywhere), so the retailer found out that the logical and best location for his retailing business is the free unrestricted site on highways leading to towns.
- The newly built decentralized suburbs and satellites lack the social, cultural, civic and recreational crystallization points (youth centres, sport centres, assembly halls, big cinemas and auditoria, etc.) that can be afforded only in the far downtown. So these centres were erected to fill this vacuum near the intersection of highways between small towns or between a city and its satellites. They can be regarded as outside downtown areas offering many of the services and modern needs which the central city downtown used to provide.

Planning and Architectural Structure

1. The traffic affects the location of the centre and so there is a variety of solutions (Fig. 82):
- on a main traffic artery, with a parallel secondary local road to take the centre traffic away from the main artery and providing a recessed site where the motorist shopper moves at his ease;
- the ‘Separation System’; the centre located at a considerable distance from the main expressway having a perpendicular junction road leading to it;
- on one of the roads that connect the city with suburban districts or satellites;
- between two or more small or medium-sized towns (on a road or near the intersection of two roads).

2. At first the centres provided parking at the back, then it was found that 90% of the customers came in by the back door (the same entrance as for goods and services). So large parking and free green areas (that could be transformed for future extension and more parking) were provided in front.

3. The traders, still feeling that their interests were tied to the automobiles, gave main emphasis to the store-fronts facing the parking areas, leaving the inside pedestrian malls and plazas neglected and empty, considered only as short cuts between the stores. This led to the congestion of the roadways along the parking areas. At last the traders realized that arranging their outlets around pleasant and attractive pedestrian precincts away from traffic, danger and noise induces more successful business.

4. Such regional centre is designed to serve a population of more than 100,000 persons. It should be a true urban crystallization point including office buildings, medical centre, hotels, exhibition halls, big cinemas, auditoria and youth centre, beside its shopping centre, i.e. a place for congregation for many hours. The shopping centre is composed of a variety of stores having a great variety and selection of merchandise and dominated by one or more major department stores. These outlets are architecturally grouped in many types. Fig. 98 shows some

---

(1) Actually there are two kinds of regional centres: that occupying the core of a regional capital (see analysis of downtown centres, p. 43-47), and the modern independent regional centre (discussed here), located outside the town on a highway and principally devoted to motorist consumers.
Fig 97a, b, c and d. Modern downtown shopping centre in Rotterdam (a new shopping centre built beside and combined to the old cultural and administrative core: 1: city hall, 2: general post office, 3: stock exchange (after Bauen unci Wohnen August 1958).

5. Other characteristics are that the centre should have easy access by an outer ring road (Fig. 99), to facilitate the movement of the motorist and underground services.

6. The centre should have gardens, fountains, sculptures, etc., offering restfulness, safety and aesthetic values.

Examples and Comments:

- **Northland Regional Shopping Centre, Detroit (U.S.A.), Fig. 100 a, b, c and d:**
  1. The centre is designed to serve a wide catchment of 600,000 inhabitants.
  2. It is located 14 km outside Detroit on the intersection of two highways. As the site is sloping, parking could be provided on different levels, leading to two main selling floors.
  3. Unlike high rise downtown shopping centres (see p. 45) the centre here is composed wholly of low buildings extending horizontally. The whole centre covers an area of 65 hectares, of which 10% only, i.e. 6.5 hectares, is devoted to built-over areas and pedestrian inner malls, courts and plazas. The existing parking areas occupy 27 hectares, providing space for 7,500 cars (i.e. short-term shopping space for 40,000-50,000 cars daily). 32 hectares are now occupied by wide green laws.
  4. The centre is composed of a big department store (Hudsons) forming the core of 80 specialty shops, two lecture halls, a bank, a tourist agency, eight restaurants and tea-rooms and a nursery, i.e. providing for people's social, cultural and shopping needs. All this is grouped in the floors of a cluster in a central area restricted to pedestrians and surrounded by parking areas accessible from all sides by a ring road. 90% of the consumers come by private cars, and only 10% by bus.
  5. Goods are delivered direct to the storage places in the basement through special underground passages, wholly separated from the pedestrian and motor traffic.
  6. The most interesting idea in this project is that it is very flexibly designed, to allow for an integrating future extension (Fig. 100 b1 and b2) with the green lawns as an area reserved for future parking extension.

- **'Roca Tarpeya' Regional Shopping Centre in Caracas (the Venezuelan Capital), South America, (Fig. 101 a, b, c, f, d):**
  1. The centre is a boldly conceived project (now in execution) to be built on the Tarpeya cliff of Caracas. At the foot of the cliff is an express highway connecting the military academy and the new university city with the new residential districts on the other side of Caracas.
  2. Branching off from this expressway a spiral one-way traffic street goes up around the hill, then curving in an S loop at the top comes spirally down again, Fig. 101 b. Between each successive pair of rings there is a shopping level composed of a row of shops with adequate parking spaces in front of them, and places for industrial exhibitions. On the floor at the level of circle 1 the motorist finds a big service and repairs centre. On the floor at the level of circle 4 there is a large parking area with garage cut-off and a nursery. At the level of ring 6 there is a dance-hall, a bar and a television studio. On ring 7 lies the traffic S loop and a parking garage for ~ 100 cars. On the summit there is a big domed exhibition hall, a restaurant, and the television transmission mast.
  3. As the hill is steeper toward the city than on the opposite site, pedestrians coming by bus to the terminal at the foot of the
hill are then taken by four batteries of inclined lifts to the summit of the hill.
On the less steep side opposite there are escalators with supplementary stairs on
both sides.

Comment:
1. With its zikkurat form the centre resembles a sight-seeing tower rather than a
shopping centre. It lacks the unified familiar atmosphere and cumulative pull
of face-to-face grouping of shops. Here no shops can see the others.
2. The pedestrian shopper is not truly separated from the motorist going up or
down the spiral road beside him, distracting his attention, endangering his
safety and annoying him with its bustling and noise.
3. Moreover the motorist who may have finished his shopping on the second or
third ring level could not turn down before climbing up to the turning loop to
take the descending spiral road.
4. Gardens, fountains and pedestrian courts and plazas, which are characteristic
congregation places fulfilling human social needs, disappear totally here.
5. Again, the pedestrian coming by escalators or lifts have to walk on so many
levels and unavoidably ascend the spiral ramps, or the stairs connecting the suc-
cessive levels.
6. As the shops along the spiral roads are attached directly to the core of the hill
behind, back delivery of goods could not be introduced and unavoidable inter-
ference with pedestrian shopping traffic will occur in the front of shops.
In short I find that this centre does not ful-
fill the true function of a modern shopping
centre effectively.

Fig. 99. A ring road around the pedestrian centre
giving access to garages and parking areas (after
Wilfred Burns, A.).

Fig. 99. A ring road around the pedestrian centre
giving access to garages and parking areas (after
Wilfred Burns, A.).

Fig. 100a. Site plan: 1: Hudson's department store;
2: shops; 3: supermarket; 4: pedestrian precinct; 5: un-
derground tunnels for delivery; 6: parking; 7: green.

Fig. 100b. Initial and final stage of the centre. The green lawns in 1 will be used as parking when the whole
centre is developed in 2.

Fig. 100a, b, c and d. Northland regional shopping
centre, Detroit, U.S.A. (Architect Victor Gruen)
Total area: 60 hectares; built area: 6.5 hectares; park-
ing area: 27 hectares (for 7,500 cars) (after ‘Bauen
Fig 100c. Aerial view shows parking lots and Hudson's department store in centre.


Fig 101b. Plan of 6th circle level. 10: shops; 11: television studio; 13: dance; 14: parking.


Fig 101d. View showing valley station of lifts; left, parking area and nursery; right, service station. Uppermost, restaurant and exhibition hall.
PART III

ANALYTICAL STUDY AND DESIGN OF THE COMMUNITY SHOPPING CENTRE
Leer - Vide - Empty
A. Aims of Part III:
- The main aim is to explain in orderly successive steps an analytical method of designing a successful shopping centre for a community in a suburb or in a satellite town of a metropolis. (This community is either a modern one planned on a sound town-planning basis, having its core zone dedicated and planned beforehand for commercial activities, or one with shopping outlets scattered or accidentally grouped but with no intended group planning.)
- The community or district shopping centre discussed in this part (sometimes called the suburban shopping centre) serves 20,000-100,000 inhabitants. In the U.S.A. such a centre of average size, serving 75,000 inhabitants, draws its trade from a radius of 4.8-6.4 kilometres. In addition to convenience goods, it provides more beneficial competition between the merchants. The key tenant is either a junior department store, or a group of large apparel stores, or both.
- The study will comprise a step-by-step analysis of some faults in the design of centres already established, so that they may be avoided, and will suggest remedies for them.
- The study will also try to lay down certain broad lines and measures that could be used to control and test the efficiency of design at its different stages so as to provide convenience for both the retailers and consumers.

B. Planning Team:
The process of designing a shopping centre can be most successfully carried on by teamwork, and a fully integrated collaboration between architect, economist and developer. Each of the three has his own organized team of experts, consultants and other planning collaborators. This teamwork should go on throughout the planning and the construction period, until the centre goes into operation.
Although the primary function of a shopping centre is the provision of goods to consumers, one of its aims is also to realize a profit for the developer. Two important features must thus be present:
1. a good trade potential coming to the centre;
2. a well-planned and inviting group of buildings, constituting the environment for convenient shopping.
The job of the analyst is to detect, forecast and evaluate the potential. The job of the architect is to handle the architectural problems so as to design the most efficient, appealing, organic and economically sound shopping centre for this evaluated potential. An architectural design without analysis is very risky, because it is altogether unrealistic.
For better comprehensive collaboration the architect should be fully aware of the general outlines of economic problems, especially those of retail trade. He should also have experience and wide knowledge of city planning and modern trends of contemporary architectural and structural design. (He should have enough imagination to project into future trends, his charts and statistics drawn from the past.)
On the other hand, the economic analyst should have enough knowledge about architectural and constructional proceedings, costs and traffic planning. The diagram in Fig. 102 shows the planning team as constituted of the developer’s, economist’s and architect’s organizations and their relationships with each other and with other outside organizations.

---

Notes:
CHAPTER 7 The Economical Analysis

**Definition:**
The economic analysis is the process of analysing all economic statistics and data of the community relevant to the shopping centre, in order to evaluate beforehand the following items:

1. Expected total trade volume that would be attracted to the new centre (from the net sales area and the total gross area of the centre could be determined).
2. What types of stores are required in the new centre? What will be the sales volume per type? How many stores per line of trade: And how would these types of stores be distributed in the centre to give a good merchandizing plan?
3. The probable rents from stores.
4. Financing requirements.

The analysis can be done systematically according to the following nine successive points:

A. Analysis and Evaluation of Potentialities of Existing Shopping Outlets in the Community:
1. The existing retailing structure should be thoroughly investigated and the results organized in series of maps, diagrams and tables indicating:
   a) The total sales volume for all outlets—the total sales floor area—the development of these over (at least) the five preceding years—the relationship between the total sales volume and the total expenditure of the population in retailing for each year—the relationship between the total sales floor area and the residential area or the number of population for each year.
   b) Location of outlets and how they expand or shift by time.
   c) In what pattern are they distributed? Whether they are grouped. Whether the community has a sort of downtown shopping centre at its core. Whether each neighbourhood has its own commercial core. And how does this pattern develop?
   d) Type of shops, the total sales volume and the respective total sales floor area per each type or line of trade.

2. By comparing very carefully the total existing sales volume with the purchasing power of population one can determine whether sufficient sales exist in the community and consequently whether a new shopping centre could be constructed or not.
   If the purchasing power exceeds the existing total sales volume, a shopping centre can be erected to cater for the surplus purchasing volume plus the natural increase in purchases due to the annual population growth.

3. The opposite case is very frequent, especially in already established communities. It is found that in most of our big towns there has been an overzoning for commercial uses beyond a reasonable limit. (New York City has 4–5 times more stores than its real need and demands in retailing warrant.)

B. Planned Distribution Pattern of the Different Types of Shopping Centres in the Community:
1. In the case of a new suburban community or a community in a satellite town, newly-established or in the project stage (provided that it is based on modern town-planning conceptions), the problem of making a distribution pattern is easier to plan and control. Here the pattern is planned according to the 4-tier system: the shopping subcentre, neighbourhood centre, community centre, and the downtown or core centre (already mentioned in part II, p. 37). Most of the new satellite towns around London have their shopping pattern built on this system (see Harlow new town, p. 32).

2. In the case of older communities the suggested modified distribution pattern will be more or less, closely connected with the already existing shopping districts. The process of enlarging, renovating, reconstructing, or constructing a new shopping centre in such a community should aim at improving the whole pattern of different types of shopping centres, making them better related to and better integrated with each other.

3. As already mentioned in chapter 5, the location and spacing of the shopping centres are based on 'frequency-convenience distances' principles. Hence, by planning the distribution pattern two important matters will be determined:
   a) the suitable site or sites for the required community shopping centre, integrated with the whole community, and related and spaced with respect to the other centres within and outside the community;
   b) the distances between the new centre and the rather more distant shopping centres and shopping districts. From this the competitive attraction between the latter and the former can be determined.

C. Determination of the Size of the Trade Area:

a) Divisions of the Trade Area:
The trade area is the surrounding area from which the centre expects to draw its customers. Usually analysts divide it into three main areas (see Fig. 103):

1. Primary trade area: This immediately surrounds the centre. The people living in this area make their purchases in...
foodstuffs, drugs and services in the centre, as there is no other important shopping outlet in this area that is nearer or capable of competing with the centre in convenience goods.

The boundary of such primary area in the USA is taken to be 5-10 minutes from the centre for both the pedestrian and motorist consumer. In Sweden this primary area is itself subdivided into smaller concentric zones, for example: Zone 1 (300 m radius) the demand area for milk and bread, Zone 2 (1,500 m radius) the demand area for meat,(1) and so on.

2. Secondary Trade Area: This area already has its own neighbourhood stores (foodstuffs, drugs and services) nearer than the new centre. But it has no other stores, such as clothing, furniture, apparel, hardware and department stores, of quality equal to those in the new centre. In the U.S.A. the boundary of this area is 15 minutes from the centre for the pedestrian and 15-30 minutes for the motorist. Such walking and driving boundary distances vary according to the shopping habits of each country and to the different means of communication in use.

3. Tertiary or Fringe Trade Area: This area already has all types of stores, like the new centre, but much closer. However, the centre can still attract a small percentage of its consumers from this fringe area (usually less than 10% of the total number of the centre's consumers). Such consumers are attracted by greater selection of goods, the advantage of one-stop-shopping, and maybe more ample parking facilities.

The boundary of this area is 15-20 minutes from the centre for the pedestrian and 20-30 minutes for the motorist. According to Cohen, the primary trade area is responsible for 50-60% of the whole turnover of the centre, the secondary area for 30-40% and the fringe trade area for 10%.

b) Combination Method for Determining the Boundaries of the Trade Area: (2)

This method is called the combination method because it combines several methods together. I think it is the most accurate and up-to-date in this field. It can be summarized step by step as follows:

1. The natural topographical and geographical barriers that actually limit the extent of the trade area, such as rivers, mountains, railroads, forests, park areas, etc., should be indicated on a map (see Fig.104). Sometimes whole residential areas behind these barriers are isolated from the trade area. The outline connecting these boundary barriers is considered the 1st 'Geographical Boundary Circle'.

2. On the same map, the following time-distance curves (isochrons)3 should be drawn:
   - Isochron for pedestrians of maximum time-distance = 10 min.
   - Isochron for motorists of maximum time-distance = 20 min.
   - Isochron for buses of maximum time-distance = 20 min.

The enveloping curve of these isochrons will be the 2nd 'Time-Distance Boundary Circle'.

3. Taking into consideration the competition of the surrounding shopping centres, old commercial districts, or a near downtown centre, the 3rd curve ('Competition Boundary Circle') should be drawn on the same map. This is determined by using 'Reilly's Gravitation Law of Retail Trade', modified to determine the boundaries of the trade area of a shopping centre. The modified law says: The trade pull of two competitive shopping centres A and B on a residential area X near the breaking point is in direct proportion to the sales area of each of A and B and in inverse proportion to the square of the time-distance from X to each of A and B.'

i.e. Trade pull of A upon X = Sales area of A \times (Time-distance B-X)^2
Trade pull of B upon X = Sales area of B \times (Time-distance A-X)^2

To determine the time-distance A-C where both the trade pull of A and B upon C is equal the following formula is used (deduced from the above law):

Hence: The boundary time-distance A-C = \frac{\text{Total time-distance A-B}}{1 + \frac{\text{sales area of B}}{\text{sales area of A}}}

4. The three above trade area curves should be compared with each other. In the overlapping areas interviews and investigations should be carried out and questionnaires circulated to discover buying habits in these areas, and where the people make their purchases. From this one can determine whether these areas should be included in the trade area.

5. Finally the boundaries of the primary, secondary and fringe trade areas are determined by means of isochrons.

(1) In England the average walking distance to the butcher's shop is designed at 1,000 m.
(2) This method was first practiced by Cohen in the U.S.A., see E., p. 47-48.
(3) The isochron is a curve connecting points of equal driving or walking time to a certain centre. Such points are usually not of equal distance from the centre.
(4) See E., p. 44.
3. Great care should be taken in determining the trade area of the latter. It may, for example, extend only a kilometer if another supermarket of equal drawing power is located 2 km away.
4. Also the existence of services such as doctors, health centres, lawyers, banks, etc., and cultural institutions, such as schools, museums, meeting halls, cinemas, etc., will affect the extension of the trade area.

D. Population in the Trade Area:
1. The number of families and the number of persons per family in the primary, secondary and fringe trade areas should be calculated from the census figures for the current year. If no such figures are available, the figures taken from the latest available census should be corrected and brought up-to-date by checking them against counts furnished by utility companies, for electricity, gas or water meters and consumptions.
2. In each of the three trade areas the families should be classified into categories according to:
   a) The Income Level and the Profession of the Members of the Family: Quarters dominated by rich families are characterized by the fact that the majority of their purchases are made in the downtown centre. On the other hand, if the greater part of the trade area is dominated by working-class families of lower income level the daily convenience goods will take the first importance in the centre.
   b) The Average Age of the Members of the Family: Youthful families having children purchase more essentials than do small families with older members.
3. The most important thing at this stage is to assume the future (rapid) population growth for (at least) the next ten years.
   This can be determined by reference to past growth rates (Fig. 105), trends in population shifts, and whether or not vacant adjacent land is available for future residential development, to justify the increase of population.
4. Consumers coming from outside the trade area should also be considered. (In the U.S.A. their purchases vary from 2% to 5% of the total sales volume of the centre.) In some cases this percentage may rise to 10%. Such consumers belong to one of three groups:
   a) Those consumers who are willing to travel greater distances to reach a shopping centre with outstanding planning character and wider selection and comparison facilities or containing a well-known and reputable department store.
   b) Workers and employees in nearby industrial and office buildings. The European worker (also the Egyptian) likes to buy one or two things from the shopping centre nearest to his place of work before he goes home.
   c) The third group of consumers neither live in the residential areas in the vicinity nor work in nearby industrial or business areas. They simply buy from the centre because it is on their way to work and back home every day. This is very natural for such as tobacconists, petrol stations and service stores. Similarly, in cases where the centre is located so as to intercept suburban residents on their way downtown, it can draw more than 10% of its total sales volume from these passers-by.

E. Determining the Purchasing Power in Retailing:
1. In each of the primary, secondary and fringe trade areas the total expenditure should be calculated, being analyzed and organized into groups of families of different income levels. This retailing expenditure should also be differentiated and classified with regard to different kinds of goods, into five principal categories: foodstuffs, drugs (and cosmetics), apparel (clothing), home furnishings (household goods, radio, etc.), services and miscellaneous items (not covered in the previous four categories). Table 1 and 2 are the suggested tables for presenting such calculations.
2. The total for each income group should be taken from the detailed current annual census for the community. If such census are not up-to-date or do not exist at all, these incomes may be ascertained or estimated at the date of survey by one of the following methods:
   a) based on the tax records, which is the surest and most direct method;
   b) on the basis of the monthly rental of apartments (assuming that the rental usually forms a uniform percentage of income, for families in the same income group);
   c) by sample surveys in which the average family income for each group is obtained by personal interviews.
3. The average percentages spent by families—of different income groups—on different categories of goods could also be determined by sample surveys and personal interviews to find out the buying habits of each group. Then the total expenditure per category of goods is obtained by multiplying its relative average percentage by the total income of this group (the total income is obtained from table 1).
   In the U.S.A. the total expenditure in retailing is 67-70% of the total income. Table 3 is also a survey in the U.S.A. showing how these percentages (of the family income) for categories of goods vary according to the income group. (2) Table 4 shows a comparison between the distribution of retail trade among six principal goods categories (expressed in percentages of the whole retailing trade volume) in the U.S.A., Canada and Sweden. (3)
4. Statistics in the U.S.A. and Europe show that the class spending most in shopping centres is the middle class, for this class is always trying to raise its standard of living.
5. It is very important to take the annual income during the next 5-10 years into consideration. It should be assumed to correspond to the average income during the previous years. In the U.S.A. an allowance of 1% income increase per year is usually made.
   At the same time, the sales volume of the centre (when fully developed) should not be calculated on the basis of expected increased sales from the increase of population only. From the first day the centre opens it will secure some business from the people living there at that time. However, the sales volume in the first years of operation will not be large, and it will take about five years to reach the expected full capacity. Actually, it might even work at a loss for some years.

F. Determination of what Portion of these Total Purchases will be made in the New Centre:
1. The Discount Method
   a) Competition of Existing Shopping within the Trade Area: This induces different discounts for each line of trade. In case of foodstuffs the discount will be very big (60% in the primary area, 90% in the secondary area and 100% in the fringe area). The reason is that the trade area is already almost self-sufficient with regard to such goods. On the contrary, in the case of apparel the discounts are only 35-70%.
   b) Competition of the Main Downtown Shopping Centre: The percentage of the total retail expenditure in town that downtown shopping takes, varies

---

1. See T., p. 31.
2. See E.
3. For figures of U.S.A. and Canada see E., p. 55. For figures of Sweden see An, p. 94.
Table 1. Calculation of total incomes for each income group in the primary, secondary, and fringe trade areas (suggested by the author).

<table>
<thead>
<tr>
<th>Suggested classification of income groups (annual incomes)</th>
<th>Primary area</th>
<th>Secondary area</th>
<th>Fringe area</th>
<th>Total income for the whole income group in the 3 areas</th>
<th>Total number of families in each income group</th>
<th>Average income per family in each income group</th>
</tr>
</thead>
<tbody>
<tr>
<td>In U.S.A.</td>
<td>In Egypt</td>
<td>No. of families</td>
<td>Total income</td>
<td>No. of families</td>
<td>Total income</td>
<td>No. of families</td>
</tr>
<tr>
<td>&lt; 1500 $ (~6500 sFr.)</td>
<td>&lt; 180 £ (~2300 sFr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500–3000 $ (~6500–13000 sFr.)</td>
<td>181–360 £ (~2301–4500 sFr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3001–6000 $ (13001–26000 sFr.)</td>
<td>361–720 £ (4501–9000 sFr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6001–8000 $ (25001–34000 sFr.)</td>
<td>721–1320 £ (9001–16600 sFr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 8000 $ (~ &gt; 34000 sFr.)</td>
<td>&gt; 1320 £ (~ &gt; 16600 sFr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Total expenditure portions (and percentages) spent by different income groups on different categories of goods in the primary, secondary and fringe areas.

<table>
<thead>
<tr>
<th>Income groups (annual income)</th>
<th>On foodstuff</th>
<th>On drugs</th>
<th>On apparel</th>
<th>On home furnishings</th>
<th>On service and miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Per- cent. %</td>
<td>Prim. area</td>
<td>Sec. area</td>
<td>Fringe area</td>
<td>*Per- cent. %</td>
</tr>
<tr>
<td>less than 180 £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>181–360 £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>361–720 £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>721–1320 £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 1320 £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Total expenditure in primary area = 3 + 7 + 11 + 15 + 19
Total expenditure in secondary area = 4 + 8 + 12 + 16 + 20
Total expenditure in fringe area = 5 + 9 + 13 + 17 + 21

* The percentage here is of the whole income per family in each income group (see table 3).

Table 3. Percentages of the total family income, spent by families of different income groups on different categories of goods (example in U.S.A.).

<table>
<thead>
<tr>
<th>Income groups</th>
<th>Foodstuff</th>
<th>Apparel</th>
<th>Home furnishings</th>
<th>Personnel care-goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 1500 $</td>
<td>60 %</td>
<td>15 %</td>
<td>0.5 %</td>
<td>6 %</td>
</tr>
<tr>
<td>1500 to 2000 $</td>
<td>40.7 %</td>
<td>14 %</td>
<td>0.8 %</td>
<td>5.6 %</td>
</tr>
<tr>
<td>2001 to 3000 $</td>
<td>33 %</td>
<td>13 %</td>
<td>3.3 %</td>
<td>4.7 %</td>
</tr>
<tr>
<td>3001 to 4000 $</td>
<td>30 %</td>
<td>12 %</td>
<td>4 %</td>
<td>3.6 %</td>
</tr>
<tr>
<td>4001 to 5000 $</td>
<td>28 %</td>
<td>11 %</td>
<td>4 %</td>
<td>3.3 %</td>
</tr>
<tr>
<td>5001 to 6000 $</td>
<td>26 %</td>
<td>10 %</td>
<td>4 %</td>
<td>3 %</td>
</tr>
<tr>
<td>6001 to 8000 $</td>
<td>22 %</td>
<td>7.5 %</td>
<td>4 %</td>
<td>2.5 %</td>
</tr>
<tr>
<td>8000 and more $</td>
<td>18 %</td>
<td>6 %</td>
<td>4 %</td>
<td>1.7 %</td>
</tr>
</tbody>
</table>

* The percentage here is of the whole income per family in each income group (see table 3).
Table 4. Comparison between the distribution of the retail trade among 5 principal categories (in percentages of the whole retailing trade volume), in U.S.A., Canada and Sweden.

<table>
<thead>
<tr>
<th>Goods categories</th>
<th>U.S.A. 1954</th>
<th>Canada 1951</th>
<th>Sweden 1952</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foodstuffs</td>
<td>24 %</td>
<td>22.6 %</td>
<td>54.1 %</td>
</tr>
<tr>
<td>Eating and drinking</td>
<td>18 %</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Drugs and cosmetics</td>
<td>2.8 %</td>
<td>1.2 %</td>
<td>4.4 %</td>
</tr>
<tr>
<td>Alcohol</td>
<td>2 %</td>
<td>?</td>
<td>3.2 %</td>
</tr>
<tr>
<td>Apparel and shoes</td>
<td>7.6 %</td>
<td>7.4 %</td>
<td>18.8 %</td>
</tr>
<tr>
<td>Home furnishings</td>
<td>7 %</td>
<td>5 %</td>
<td>7.3 %</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>38.6 %</td>
<td>?</td>
<td>12.2 %</td>
</tr>
</tbody>
</table>

Table 5. Comparative analysis of the sales volume per m² of the net sales area for different types of stores in England, Canada and the U.S.A. (i.e. the annual turnover per m² of the sales area).

<table>
<thead>
<tr>
<th>Merchandise</th>
<th>Sales volume per m² (annual turnover per m² of the net sales area)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>England(1) sFr.</td>
</tr>
<tr>
<td>Foodstuff average</td>
<td>4400</td>
</tr>
<tr>
<td>Grocery</td>
<td>3800</td>
</tr>
<tr>
<td>Butchery</td>
<td>2200</td>
</tr>
<tr>
<td>Other goods</td>
<td>2200</td>
</tr>
<tr>
<td>Clothing</td>
<td>1350</td>
</tr>
<tr>
<td>Furniture</td>
<td>1350</td>
</tr>
<tr>
<td>Motor-vehicles</td>
<td>2700</td>
</tr>
<tr>
<td>Department store</td>
<td>2830-4180</td>
</tr>
<tr>
<td>Drug store</td>
<td>2580-3260</td>
</tr>
<tr>
<td>Variety store</td>
<td>2700</td>
</tr>
<tr>
<td>Bakery</td>
<td>2100</td>
</tr>
<tr>
<td>Confectionery</td>
<td>1850</td>
</tr>
<tr>
<td>Restaurant</td>
<td>1850</td>
</tr>
<tr>
<td>Hardware</td>
<td>1850</td>
</tr>
<tr>
<td>Paints, Wall-paper</td>
<td>1850</td>
</tr>
<tr>
<td>Glass and Porcelain</td>
<td>2340</td>
</tr>
<tr>
<td>House-furnishings</td>
<td>2580-3080</td>
</tr>
<tr>
<td>Photosupplies</td>
<td>2580</td>
</tr>
<tr>
<td>Radio and Television</td>
<td>1850</td>
</tr>
<tr>
<td>Shoes for ladies</td>
<td>2200</td>
</tr>
<tr>
<td>Shoes for men</td>
<td>2340-2830</td>
</tr>
<tr>
<td>Sporting articles</td>
<td>2340</td>
</tr>
<tr>
<td>Alcohol</td>
<td>2830</td>
</tr>
<tr>
<td>Washing</td>
<td>1600</td>
</tr>
<tr>
<td>Flowers</td>
<td>2340</td>
</tr>
</tbody>
</table>

with the kind of goods. For example, in Los Angeles in 1948 the percentage was 1.8%, for foodstuffs, while it was 21.8% for apparel and accessories (the average percentage of the total retail trade done downtown was 9.8%).(4) Such downtown shares should be considered and discounted when determining the volume of purchases in the new centre. These shares should be obtained from up-to-date statistics, as they vary continuously owing to the continuous rapid shift in retailing from downtown to the suburban outlying areas. In the abovementioned example, the average downtown share in the total retail trade, which was 9.8% in 1948, became 6.1% in 1954.

c) Assumed Competition with Shopping Outlets that do not exist at the time when the Centre is established but are likely to come into being.

<table>
<thead>
<tr>
<th>Dist. Zone</th>
<th>Inhabitants</th>
<th>Sales per capita in department store</th>
<th>Total sales</th>
<th>% spent in centre</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1 mile</td>
<td>7,650</td>
<td>$50</td>
<td>$380,000</td>
<td>13%</td>
</tr>
<tr>
<td>1 - 11/2 miles</td>
<td>6,550</td>
<td>$40</td>
<td>$260,000</td>
<td>11%</td>
</tr>
<tr>
<td>1 1/2 - 2 miles</td>
<td>9,000</td>
<td>$30</td>
<td>$270,000</td>
<td>7%</td>
</tr>
<tr>
<td>2 - 3 miles</td>
<td>24,000</td>
<td>$25</td>
<td>$615,000</td>
<td>6%</td>
</tr>
<tr>
<td>3 - 5 miles</td>
<td>76,000</td>
<td>$20</td>
<td>$1,535,000</td>
<td>5%</td>
</tr>
</tbody>
</table>

(1) For 1953-1954, see British Shopping Centres, A., p. 66.
(2) See Urban Land Institute, 'Shopping Centres Restudied', part 1. T.B. No. 30, Tme, 1957.
(3) See market analysis for St. Foy Centre in Quebec, 1956 by H. Hoyt.
(4) See Pr. (City planning research upon the distribution of retail trade in Los Angeles Metropolitan Area, University of California, June 1959.)
(5) See Es, p. 60.
4. Besides all these discount percentages applied to purchases within the trade area, allowance should be made for purchases by people from outside the trade area and tourists, plus the amount of sales by mail order. This allowance is assumed as a percentage increase on the total sales volume in the new centre and is already given on p. 56.

- The above-mentioned discount method is the most recommended and the most capable of giving relatively practical results.

*The Surplus Method*(1)

This method is very approximate, as it neglects many important factors, but it is used to determine quickly whether the centre can attract enough business or not. It can be summarized as follows:

- Let the total turnover of the existing shopping outlets be \( X \), and the total turnover for each line of trade be \( x_1, x_2, \ldots \).
- Let the total expenditure in retailing in the trade area be \( Y \), and those for each line of trade be \( y_1, y_2, y_3, \ldots \), taking into consideration an allowance for future increase;
- Let the percentage share of the suburban general purchases be coefficient \( k \), those for each line of trade be \( k_1, k_2, \ldots \), etc.
- Then the total volume of purchases in the centre for each line of trade = \( k \cdot Y \) — \( x \) (\( k_1 \cdot y_1 \) — \( x_1 \), \( k_2 \cdot y_2 \) — \( x_2 \), etc.) and the total volume of all purchases in the centre (= 'surplus') = \( K \cdot Y \) — \( X \).

**The Number of Stores of Each Type:**

is dependent upon assuming that for each type of store there should be a minimum effective size below which the store will not operate efficiently. According to this rational minimum size and the general merchandising plan and the desired areas by the tenants, the number of shops per each type could be determined.

In England recent researches suggest the following minimum sizes for different types of stores:

For grocers the suggested efficient minimum turnover of a single store is £ 9,100 a year corresponding to 29 m². For other food stores it is £ 10,000 a year corresponding to 55 m². As a general rule if the annual turnover per m² is low, the sales floor area of the minimum-sized shop should be bigger to justify a considerable profit percentage.

**Table 5:**

<table>
<thead>
<tr>
<th>Country</th>
<th>Net sales area per capita</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>0.60 m²</td>
<td>For both main and secondary centres.</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.05 m²</td>
<td>in Stockholm.</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>1.75 m² or</td>
<td>New York City Area (4)</td>
</tr>
<tr>
<td></td>
<td>3.50 m² and 7.00 m² parking, or</td>
<td>For a community of</td>
</tr>
<tr>
<td></td>
<td>3.27 m² (national average)</td>
<td>5,000 persons. (5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended by The Urban Land Institute.</td>
</tr>
</tbody>
</table>

**G. Determining the Sales Volume by Each Type of Stores and Its Total Corresponding Sales Area:**

1. The total sales volume expected in the centre for a certain line of trade — the sum of partial sales volumes for this line of trade in the primary, secondary and fringe trade areas, i.e.:

\[
\begin{align*}
(1) & \quad s_1 + s_2 + s_3; \\
(2) & \quad s_1 = (1 - k_1) \cdot E_1; \\
(3) & \quad s_2 = (1 - k_2) \cdot E_2; \\
(4) & \quad s_3 = (1 - k_3) \cdot E_3.
\end{align*}
\]

(Where \( E \) is the total expenditure for this certain line of trade in each one of the trade areas, and \( k \) is the sum of all corresponding discount percentages that should be subtracted from it.)

2. This calculated sales volume is the turnover of each line of trade (type of shop) in the centre. It is translated into the following sales areas:

**Net Floor Sales Area:** This is simply determined by dividing the total turnover by the national, or standard, or local average sales volume per m² for this type of store.

**Gross Floor Sales Area:** is determined approximately by multiplying the above-mentioned net sales area by \( 4/3 \). (The net floor area is usually estimated to be 70-80% of the gross sales area in modern suburban shopping outlets, owing to the trend toward minimizing the store places and the open display of goods in the whole sales area.)

Sales volume per m² for different types of stores is taken from up-to-date statistics and vary from country to country.

**H. Determining the Final Total Expected Sales Volume in the New Centre and consequently its Size:**

1. By simply adding the sales areas required for each line of trade (which is already calculated in the previous step), one can get the total net sales area of the centre.

2. Also the proportional percentages of the m² area devoted to each type of store with regard to the total net sales area should be calculated. Usually the net sales area of the branch department store should not exceed 50% of the total net sales area. The sum of both the department store and apparel sales areas also does not amount to more than \( 7/8 \) the total net sales area in a community centre. The following proportional percentages are the averages calculated from a survey made recently on several existing operating shopping centres in the U.S.A.:

- Food 6%
- Dep. Store 38.6%
- Apparel 17.6%
- Furniture 8.3%
- Remainder 29.5%

Total 100%

3. Now, as the total net sales area of the centre, the sales area devoted to each type of store, and the proportional percentages of these with regard to the former, are determined, the economical analysis carried out mainly by the analyst is more or less finished.

4. **Empirical rules for determining the net sales area:**

Although these rules are developed from practice and experience yet they are inaccurate and sometimes misleading, as they do not take into consideration all the specific factors that affect the sales volume in a given community. However, some empirical figures are given below for the required sales area per capita:

- 51.9 m² per capita for department and apparel shops
- 37.6 m² per capita for grocers

**I. Selection of Tenants:**

This is a very important item on which the success of the centre depends. The developer must make it in close collaboration with the analyst after a tentative analytical study. This selection should be based on two things: a) quantity aspects and balanced tenancy; b) quality aspects.

a) **Quantity and Balanced Tenancy:**

This means:

1. Providing a complete and integrated selection of merchandise, with many service stores, in order to provide a one-stop shopping centre where a person will find everything he needs.

2. In any community there is a proper ratio between different types of stores. This ratio differs from country to country and even from city to city according to the income levels, buying habits of the population in the city, etc. For a given city this ratio represents the balanced tenancy of that city. In the planned centre the proportional percentages of the sales areas for each type of store with regard to the total net sales area (already discussed in step H) should be modified so as to

(1) See E5, p. 57.
(2) See As., p. 67.
(3) £ is the English Pound.
(4) Calculated to cater for the annual population growth, see Tm. T.B. No. 39, p. 17.
(5) The average income of families is 1,900-2,000 dollars per year, see Tm, p. 293-295.
(6) See The Urban Land Institute, T.B. No. 39, p. 62.
coincide with the ratio of balanced tenancy of the city.

3. There should be planned controlled competition for the merchants in the centre, so that the consumers will find their goods at competitive prices. For example, two stores of each type should be introduced 'following the Noah's ark idea of having two of everything'.(1) At the same time there should not be excessive competition as this is ruinous to the centre.

b) Quality:
1. Merchants should be chosen from those who have had many years of successful retail experience. That is why A-1 rated national chain stores are almost always included in planned shopping centres.
2. Also it is a good and sound policy to include respectable local merchants of good reputation, experience and strong customer followings. Otherwise they will be stout competitors of the centre.
3. In selecting the merchant for the key tenant (the branch department store), the standard of living of the population in the trade should be taken into consideration; the suitable branch department store which will suit them should be included.

Introduction
The total site area of the centre is the sum of several areas:
1. The gross building area on the ground floor = the gross sales area (determined by methods already mentioned in chapter 7) + areas for other community establishments that may be erected in the centre, such as auditoria, health centres, etc.
2. Space area between the buildings.
3. Communication area for pedestrian, service and motor traffic and for parking (determined by methods that will be discussed in chapter 9).
4. Buffer areas (green areas and future extension areas).

Once the total site area is known, then the process of siting will take place, going through the following points:
A. Site selection
B. Layout planning principles
C. Process of site planning

A. Site Selection
The following 10 factors should be taken into consideration when choosing a site:

a) Ownership:
Here there are three different cases to be considered:
- The site is already owned by the developer.
  In this case the job of the analyst is to determine firstly whether it can be developed as a shopping centre or not, secondly what kind of centre will be erected.
- The second case is where the suitable site is still to be sought. The analyst is asked by the developer to analyze all the various communities in the city area (or in the suburb area), to find out which community gives the most advantageous trade potential. Then, within this community, several available sites (that could be owned by the developer) should be examined and analyzed, so as to recommend the most suitable for the centre from the economical point of view.
- The third case is where the whole community is being newly erected or replanned. In such a modern town-planning development the state (or the municipality or the government, etc.) plans the centre to have the best location taking into consideration all different points of view. This case provides the best chance for erecting an ideal centre (see Harlow and Villingby shopping centres, p. 32 and 31).

b) Land Cost:
- The cost of the land must be in keeping with economic considerations. This means that it should not be too expensive. At the same time one should not acquire isolated sites in the country, far from civilization, with the only advantage that it is cheap. A centre in such site will not secure a sufficient trade potential to make it successful.
- Therefore as the cost of the site itself is often quite a minor item in the total costs of a centre, a higher-priced location might add a very small percentage increase in the total costs yet produce a 50% increase in sales and net income.
- With the trend toward suburbanization, suburban land suitable for shopping, once cheap, is becoming more and more expensive. Therefore in countries where planned shopping centres are not yet introduced, developers should sensibly cease to attach themselves solely to downtown sites, and should acquire cheaper sites in the rapidly growing suburban areas where the trade potential is consequently increasing.
- If the site is composed of separate lots the developer must buy them all, even if some of them could not be bought at a reasonable price. Otherwise, stores or even centres will be erected there, which will be troublesome. They could not be controlled by the main developer, either in type or in quality; also their customers may borrow parking spaces from the centre.
- From the very beginning the developer should buy the maximum area required for the complete centre at its fullest capacity and with its maximum future extension, for the price of the adjacent land will begin to rise as soon as the centre begins to operate. This is because this land will be more advantageous for residential, business and even industrial uses, being near to the commercial facilities, having more adequate means of communication and having more adequate service utilities such as gas and electricity. So if the developer did not buy enough land before, and wants to expand his centre after a couple of years, he would have to pay tens of times the initial price or even more.

c) Quantity and Quality of Population:
- It is advantageous to build a centre in a heavily-populated city-community.
- Another advantageous location is the core of a rapidly developed suburban community, or on its downtown border so that the centre will intercept the natural flow of shoppers to the downtown stores. At first the centre will have to serve some rural areas, then later it will serve the rapid future increase of population. It can expand into a regional centre by simply adding a major department store.
- The income brackets of the population are also very important. In the U.S.A., it is found that the most successful centres are located in communities where more than 50% of the families are in the middle and high income brackets. The case might be different in other countries under other conditions. For example, the Migros Co-operatives in Switzerland have made a success of their supermarkets (dealing in daily goods and foodstuffs), by selling only to persons in the lower and middle income brackets.
- A community having a majority of recently married couples with babies and young children, living in small houses, is more advantageous for a centre than a community of apartment houses. Both houses and children are insistent in their needs.

d) Size of Site:
- The most desirable size is that which is sufficient to permit easy placement of all the centre's elements when complete. It should also have sufficient space for future extension, parking, landscape and buffer areas. That is why most centres existing to-day contain more space than is needed at the moment.(1)
- Having more land is cheaper than acquiring a smaller-sized area requiring too expensive multi-deck parking. From the very beginning, in order to determine the size of a site, the architect should settle upon the system of centre arrangement, whether it is one-level or multi-level (see later ‘The Site Planning’).
- In the U.S.A. previous experience indicates the following sizes for different community centres:
  - a centre serving 30,000 population requires 5 acres of land;
  - a centre serving 80,000 population requires 20-30 acres of land.(2)

e) The Shape of the Site:
- It should permit flexible planning and future expansion.
- The most abundant site is the strip shape. Fig. 107a. Nearly all the commercial zoning in American cities was made as two narrow longitudinal strips along the main roads, and of 30-60 m depth. In such a strip site its length L is usually disproportionately large in relation to its depth D. Where L is along the road, there will be inconvenient parking and over-extended distances between stores. Where D is along the road more disadvantages will

---

(1) See E7, p. 42. (2) See Homer Hyot, Urban Land Institute (Tim, Technical Bulletin No. 33).
arise, such as poor accessibility and visibility. In short such a centre is not recommended.

- The site should not have acute angles. The portions X in Fig. 107b are useless. Similarly, irregular shaped sites are unfavourable, as their full utilization could only be achieved (if at all) by expensive designs, Fig. 108a.

- The site should be in one piece, undivided by any road, brook, ditch or telephone and power lines, otherwise it will require expensive underpasses and bridges. If it is composed of several lots as in Fig. 108 b, then it can only be utilized if [1] is of sufficient area to take a complete shopping centre, [2] and [3] being available for use as secondary centres for other community establishments, or non-retail uses such as a recreational centre.

f) Physical and Topographical Characteristics:

In general these should be either advantageous to planning or could be turned to advantage through inexpensive architectural and site planning solutions.

- The site should be adjacent to adequate utilities, such as water, sewers, gas and electricity.

- Sites of uneven topography require cuttings and fillings as in the following representative cases:

  The case in Fig. 109a dealing with a swamp or a ditch in the site is very disadvantageous, as it requires very expensive filling. The case in Fig. 109b is relatively more advantageous, if the fill and cut can be balanced.

- Slightly sloping sites can be utilized for double-deck parking on the lower part, see Fig. 110 a.

- Steeply sloping sites can be favourably utilized for two-level arrangement centres as in Fig. 110b. The building group 1 is one storey high, group 2 is two storeys high. Also the parking is on the higher level of the site and the pedestrians on the lower level. The second floor of group 2 can be entered by ramps or stairs from the pedestrian side and directly from the parking side.

h) Visibility:

The site should be chosen so that the centre’s structures may be seen from the main surrounding roads. Lack of visibility is very harmful especially for neighbourhood and community shopping centres. Below are discussed three different cases of sites from the visibility point of view:

(1) See A, p. 21.
In case 1 the existing surrounding structures conceal the site from the surrounding roads, Fig. 113a. The remedy is to place road signs along the roads leading to the centre or on curves where the traffic slows. Signs should be set at angle to the traffic flow and should be large enough to be read at 40 m.

In case 2 the site is a hollow in the ground, Fig. 113b. Here only the roofs are visible from the surrounding roads. One remedy is to erect a sign tower with the only dis-

advantage that it adds to the costs of the construction.

In case 3 the site is an elevated ground, Fig. 113c. Motorists might drive by the centre without seeing it. A remedy is to set attractive signs on the green slopes of the site.

i) Zoning:
Either the site is an already commercially zoned area, or commercial zoning should be obtained for it. The second case, although it is the most usual, yet it is not guaranteed. On the one hand, the people living in the area usually resist any attempt to change the zoning from residential to commercial because of the noise and dirt which the centre will bring. On the other hand, obtaining the consent of the authorities is not easy.

j) Competition of Other Existing Shopping Outlets:
The surrounding areas should be free from strong active retailing competitors, such as a well-known department store for example.

B. Layout Planning Principles

1. Protection against the probable future blight of the surrounding residential areas: great care should be given to the following points:
   a) Screening the unsightly elements in the centre, such as service yards, loading docks, rear facades, etc., Fig. 114.

2. Spacing Area between the Structures SPG:
Usually utilized as malls and plazas for pedestrian shoppers.

3. Transportation Area TA:
This is made up of three elements: parking areas, private car movement areas, and public transportation areas. TA is usually calculated to be approximately 3-4 times the net rental sales area RA (in the U.S.A.). The transportation area on the ground floor is called TGA.

4. Buffer ground areas, green areas and reserve areas for future extension 'BUA'.

b) Protection against noise from trucks, shopping activities, etc. (by a screen planting).

c) Protection against smells and fumes.
d) Protection against infiltration of commercial traffic of the centre into residential streets.

2. Selection of a pattern for the store arrangement which will be relatively compact, achieving the greatest interplay among the stores and eliminating poor store locations.

3. Creation of the safest, cosiest, pleasantest, and most attractive atmosphere for pedestrian shopping, exposing all the retail facilities to the maximum pedestrian flow.

It is now clear for many retailers that the old romance between them and the automobile is wrong. Only after the motorist becomes a pedestrian is he converted into a potential buyer.

4. Minimum walking distances, both from the parking areas to the stores and also within the store group itself.

5. Total separation of the three main systems of traffic (see chapter 9): pedestrian shoppers, motorist shoppers and service traffic.

6. Providing the pedestrian and motorist shopper with all his needs and with the maximum comfort and convenience at all times, and protecting him against all weathers (see chapter 12).

7. Provision of community activity areas, such as auditoria, clubs, eating places, etc.

8. Providing an architecturally appealing layout for shopping, considering unity, orderliness, beauty, sign design and landscaping.

C. Process of Site Planning

This is done in two steps, firstly determining the usage plan, then choosing the most efficient site pattern.

a) The Usage Plan:
Before such a plan can be made the total required ground area (GA) should be determined, as the sum of the following types of areas, each having its special usage:

1. Gross Building Area BA =
   a) gross retail sales area (net retail sales area 'RA' + a certain percentage for service areas such as corridors, storage, etc.). Most planners try to keep service non-retail sales area within 8% RA (see Tu, p. 87);
   + b) other commercial and public usage buildings.
   The gross building area in the ground floor is called BAG.

2. The Spacing Area between the Structures SPG:
Usually utilized as malls and plazas for pedestrian shoppers.

3. Transportation Area TA:
This is made up of three elements: parking areas, private car movement areas, and public transportation areas. TA is usually calculated to be approximately 3-4 times the net rental sales area RA (in the U.S.A.). The transportation area on the ground floor is called TGA.

4. Buffer ground areas, green areas and reserve areas for future extension 'BUA'.

b) Protection against noise from trucks, shopping activities, etc. (by a screen planting).

c) Protection against smells and fumes.
d) Protection against infiltration of commercial traffic of the centre into residential streets.

The rule governing these areas is that

\[ GA = BA + SPG + TGA + BUA. \]

Then the planner, in comparing this calculated GA with the acquired site SA, finds himself confronted with one of the following cases:

- **SA = GA**
  - good; the centre can be built in a one-storey arrangement.

- **SA = GA + x**
  - additional land uses such as medical centres; dental clinic can be added.

- **SA + x = GA**
  - the site chosen is not sufficient. If it cannot be changed, an efficient usage plan is required.

However, in the three cases \( SA = BAG + SP + TCA + BUA. \)

The following case studies represent three different solutions for the usage plan for the same centre.

**Case a (Fig. 115a) \( SA = GA \):**
All buildings one storey high; no basement; one-level parking; suitable site: on the fringe of a suburb.

- **RA = 50,000 m²**
- **SP = RAG = RA = 50,000 m²**
- **TA = 3 . RA = 150,000 m²**
- **BUA = (assumed) = 25,000 m²**

Total site area = \( SA = GA = BA + SP + TA + BUA = 285,000 m² \) (28.5 hectares).

**Case b (Fig. 115b) \( GA = SA \):**
4 level department store; other merchandising on 3 levels; one level parking.

- Net sales area of department store \( x = 20,000 m²; \)
- Net sales area of other stores \( y = 30,000 m²; \)

\[ BAG = \left( \frac{x}{4} + \frac{y}{3} \right) \times 1.2 = 18,000 m² \]
The suitable site in the core of a suburban community.

**Case c (Fig. 115c):**
4 level department store; other merchandising on 3 levels; 4 level parking.

\[
\text{BAG} = \left( \frac{x}{3} + \frac{y}{3} \right) \times 1.2 = 18,000 \text{ m}^2
\]

\[
\text{SPG} = \text{RAG} = 15,000 \text{ m}^2
\]

\[
\text{TGA} = \frac{\text{TA}}{4} = 37,500 \text{ m}^2
\]

\[
\text{BUA} = \frac{25,000}{4} = 6,500 \text{ m}^2
\]

\[
\text{SA} = \text{BAG} + \text{SPG} + \text{TGA} + \text{BUA} = 77,000 \text{ m}^2, \text{i.e.} = 7.7 \text{ hectares.}
\]

The suitable site is in the core of an existing community where the price of land is relatively high.

**b) Choosing the Site Pattern:**

Mentioned below are the main site patterns usually adopted for a community shopping centre, each with its own characteristic advantages and disadvantages. According to these and the shape and topography of the site one can hit upon the suitable pattern.

1. **The Strip (Fig. 116 a and b):**
   - This is suitable for narrow, extended sites. It should not be longer than 120 m (1) (which is the maximum convenience-shopping walking distance); otherwise the shopping traffic will be limited. As the back is usually used for service traffic it is not attractive with its loading docks and unsightly refuse.
   - **In case A** the stores are directly along the road with a very narrow front area for parking. **Advantages:** good visibility for all stores (that is why it is preferred by chain stores). **Disadvantages:** inconvenient and inadequate parking areas.
   - **In case B** the strip of the stores is set back from the road and placed approximately in the centre of the site, with parking areas at the front and on two sides. Sometimes even rear parking with rear entrances can be introduced. This needs a considerably bigger depth. **Advantages:** more adequate and convenient parking; shorter walking distances from parking to stores.
   - An example for a strip community shopping centre is shown in Fig. 117.

2. **The L-Shaped Pattern (Fig. 118):**
   - This is a solution to shorten the inconvenient frontage length of the strip pattern. Other advantages are that: a) it is well suited to sites located at two important intersecting roads, b) it provides an interesting focal corner suited to the branch department store (seen from the two roads), c) it is a flexible pattern that can be laid out in any direction on the site (see Fig. 118).
   - An example of an L-shaped community shopping centre is shown in Fig. 119. **Note:** In the above two patterns (the L and strip) there can be no complete screening between the pedestrian areas and motor traffic areas.

3. **The Pedestrian Mall Pattern (Fig. 120a, b, c):**
   - This is the most advantageous and popular pattern. Its core is a sort of cozy inner pedestrian precinct or court, totally or partially enclosed, open to the sky, or even covered to protect against the weather; all kinds of motor traffic are excluded from it and the stores open on to it. It is surrounded on all sides by parking areas. Usually each of the two main magnets (junior department store and the apparel or variety store), is placed on one end of the mall with the other stores located between them, and thus benefitting them, through the induced pedestrian shopping traffic passing between the magnets.
   - **Advantages:** a) total separation between the inner pedestrian shopping traffic and the outside motor and parking traffic, as the stores here turn their fronts toward the inside and their backs toward the motor traffic outside; b) as the pedestrians are funnelled through a limited number of entrances into the inner mall the density of the pedestrian traffic is markedly increased; c) these malls create an animated attractive atmosphere, shielded from noise, smells and the dangers of motor traffic; this the shoppers like; d) they also provide adequate space for festivals and other communal activities. Allocating community facilities on the mall, such as restaurants, auditoria, etc., will be convenient to the shopper and at the same time will increase the foot traffic.
   - **Disadvantages:** there are always difficulties with the service traffic in this pattern. The most effective solution, though expensive, is to construct a truck tunnel which connects directly with the service, stock, delivery and dispatching departments in the basement.
   - An example of a centre with an open mall is shown in Fig. 121 and Fig. 121a, another with an enclosed covered pedestrian mall is shown in Fig. 122.

---

Note: In the above two patterns (the L and strip) there can be no complete screening between the pedestrian areas and motor traffic areas.

---

(1) See Tm, T.B. *30, p. 27.
4. The Cluster Pattern (Fig. 123, see also Fig. 100):

Here the major dominating key tenant (the branch department store) is located in the core of the cluster surrounded on all sides by other stores. Between them and the key core are pedestrian shopping malls. In the same concentric organization the whole cluster is surrounded by parking areas. The service traffic goes directly to the basement through tunnels.

Advantages: a) the key tenant here has the privilege of being exposed on the four sides to the pedestrian traffic (in the previous patterns, while one side was exposed to the pedestrians the other was exposed to the parking); b) this pattern minimizes distances between the utmost parking space and the building.

Disadvantage: the only disadvantage of this pattern is that it is the most costly one.
Leer - Vide - Empty
CHAPTER 9

Analysis of the Traffic and Communication Problems relating to the Community Shopping Centre

Introduction

The rapid mass motorization during the last two decades in the U.S.A. was one of the main reasons that led to the appearance of the planned suburban shopping centre. This modern trend toward mass motorization and rapid increase in the number of motorcars has now become universal, very important, and of great influence on our economical and social activities. In Europe it was only after the ratio of car ownership per capita approached half that in the U.S.A. that such shopping centres (serving a considerable percentage of motorist consumers), have been introduced. According to 1958 statistics the number of cars per 1,000 inhabitants in Sweden, Britain, Switzerland and West Germany is respectively 115, 90, 79 and 52, while in the U.S.A. it is 330. (1) In Egypt the number of cars per 1,000 inhabitants in metropolitan areas was 14 in 1957, which is still low. Yet planned shopping centres should be erected, especially in the newly-built settlements and in the suburban communities within the metropolitan areas of our big Egyptian cities. Although such Egyptian centres (designed primarily as indispensable integral component of these new communities) will be mostly dependent upon pedestrian traffic, it is essential to provide adequate parking areas for consumers arriving by their private cars. Also additional areas for future parking demand are essential, as the number of cars is expected to increase rapidly owing to industrialization, the consequent higher standard of living, and the new motor-car industry which has already been established in Egypt.

Previous practices in planned shopping centres in the U.S.A. and Europe show that it has always been a common and serious mistake to under-estimate the space required for future parking demands. For example, Vällingsby centre in Sweden was provided with 500 parking places only, on the assumption that most consumers would be pedestrians.

In 1957 it was found that 30% of the consumers came by their private cars and that the centre lacked ca. 2,500 parking places for which there was no reserve area. (2) From all this it is clear that a careful study of the traffic is very important, indeed essential.

The procedure of the traffic analysis will deal with the following successive points:

A. How the centre affects and is affected by the location of the surrounding streets, and the quantity and quality of their traffic.

B. Types of traffic occurring within the centre.

C. Separations of main types of traffic and the different methods of doing this.

D. (1-4) Single study for each type.

A. The Shopping Centre as affecting and being affected by the surrounding Traffic:

In locating the centre, heavily-travelled express highways should be avoided as this will not secure a large sum of impulse goods, as already believed by retailers. Recent surveys show that only 4% of the retail shopping is attracted by motorists passing by through adjoining traffic highways. (3) At the same time motorist consumers are discouraged to reach the centre through such dangerous expressways, especially if buses and trucks also exist. Usually centres secure most of their business from local traffic of less speed.

If the site is already located on an expressway it is recommended that a secondary local loop road—encircling the centre and connecting it to the expressway—should be provided. This will slow down the intra-traffic and will also provide adequate space for the out-traffic in peak hours, since it will wait before funneling through the expressway instead of congesting the parking area.

Checking the capacity of the roads approaching the centres can be summarized in the following steps:

1. On a map of the trade area the roads which the consumers are expected to follow to reach the centre should be indicated.

Then from the economic analysis (see chapter 7) the expected average volume of shopping traffic on each of these approach roads could be determined (number of cars per normal shopping day).

2. From normal mean curves, (4) indicating the hourly percentage of daily car total coming in and out of the centre at different hours in normal shopping days (after Gruen, T.).

3. The existing non-shopping traffic on each of the approach roads is also determined and tabulated for each half hour of the shopping days.

4. Also the total capacity of each road per hour is determined. The practical capacity for a 3.60 m multi-lane divided highways is ca. 300 cars per hour per lane, at 70-75 km p.h., and 450 cars at 55-65 km p.h.

(1) See Es, p. 214.
(2) See Et, p. 142.
(3) See Et, p. 305.
(4) Such curves are based on figures for existing centres, for U.S.A. conditions; they are found similar for many centres (see Amu, June 1950, p. 97).
Tabulation of existing shopping traffic and combined traffic at critical traffic periods as well as existing road capacities. Note that in some cases anticipated total traffic is in excess of road capacities.

5. Then the hour peak shopping traffic load is added to the existing (1) non-shopping traffic load at the same peak hour. The sum is called the critical combined hour load. By comparing it with the capacity of the road, one can realize if each approach road can afford that extra expected load or not (Fig. 125). If not, improvements to correct conditions could be applied such as broadening the roads or even building new ones.

After this comes the study of how the traffic on the boundary approach roads is transferred in the site and vice-versa. A limited minimum number of entrances and exits should have strategical locations in order to balance and ease the traffic flow on the surrounding roads. Such entrances and exits should be at least 120-180 m from highway intersections.

B. Types of Traffic occurring within the Centre:
1. Pedestrian consumers traffic.
2. Motorist consumers traffic and parking.
3. Public transport traffic carrying consumers to the centre.
4. Pick-up stations and goods dispatch traffic.
5. Freight delivery and service truck traffic.

C. Separating the main Types of Traffic and its different Methods:
This is one of the most important principles of designing the shopping centre traffic. Essential, and of special importance, are two main separations:

a) Separation between Pedestrian Shopping Traffic, and Motorist Shopping Traffic (discussed later in D 1, when speaking about the pedestrian consumers traffic);

b) Separation of Service Truck Traffic. This can be attained by:
1. Separation in time, by limiting freight delivery to non-shopping hours, and so requiring no special service areas. This is the cheapest method and is suited for strip-pattern centres having front and back parking.
2. Providing special separate back service roads and courts which should also be concealed from the shopper’s eye by screens and landscaping (see Fig. 114). This method is suitable when the service is on the same level as the merchandising. The service back road is usually used in one-front strip centres, while the service court is used in two-front strip centres (having front and back parking) and the bent-strip centres (Fig. 142).
3. Making a separation in level, giving two main possibilities: one is to ramp down the truck road to the basement where there are the loading docks and the service areas. These are connected by lifts and stairs to the sale areas above (Fig. 143 b); the other possibility is to have the truck road, delivery and service above the sale areas. Goods are transferred from above conveniently by chutes. This solution is suitable for sloping sites where a basement could not be built, for rocky ground, or where there is a high underground water level (Fig. 144).
Such solutions are expensive and usually only big, prosperous centres (generally the mall and cluster patterns) can afford them.

D. Single Study of Each Type:

D 1. Pedestrian Consumers Traffic (Walk-in Traffic):

In entering and leaving the centre the safety of the pedestrian shoppers must be ensured by totally separating their footpaths from the motorist shopping traffic. This separation can be achieved either by a clever layout arrangement or by providing pedestrian overpasses and underpasses leading directly to the centre. Although the latter solution is almost perfect it is rather costly, Fig. 126.

(1) See A., p. 22.
Once the pedestrian shopper is within the centre he would find himself in pedestrian shopping malls and plazas from which all types of motor traffic are excluded, and where he would not be distracted from shopping by noise, danger, fumes, odours, or unconcealed service courts, garbage, etc. Such malls should be somewhat narrow, to suggest activity, intimacy and unity. Wide malls cut through the centre, may somewhat divorce the two opposite rows of shops from each other and thus endanger the centre’s unity.

At the same time the pedestrian mall must not be monotonously long or imposing; otherwise the human scale cannot be maintained. To avoid this, covered cross-walks are recommended so as to organize and divide the pedestrian mall into several intimate and pleasantly proportioned plazas and squares of different sizes and different aesthetic atmosphere. Fig. 127. The aim is to create variety, excitement and interest and to give a feeling of leisure, fun and gaiety which is very important in shopping.

A loop or circulatory mall is most advantageous for two reasons. Firstly, it creates a smooth flow, the shopper being continuously urged round the corner. He may even circulate the centre several times before realizing that he has done so. Secondly, the shopper would always have a closed view giving a good feeling of enclosure and of being in a definite space, Fig. 128.

Shoppers should be protected against weather by colonnades, canopies, wholly-covered and air-conditioned malls, etc., see chapter 12.

Places for rest and relaxation should be provided in the malls, taking into consideration varying human preferences. Some like sunny places, others shady landscaped ones and others prefer to sit in conversational groups. Moreover, public lavatories and drinking fountains should be provided in visible or easy-to-find locations.

D 2. Motorist Consumers Traffic and Parking:

*a) Determining the Parking Area required:

Empirical Methods of Calculation: The method I strongly recommend is that in which the number of parking places per 100 m² of gross sales area (n), or the parking area per car stall, which varies according to the average time-length of the shopping visits, and secondly, the different parking requirements of the different types of stores.

A comparative study of empirical parking ratios in 1958 in American, British and Swedish centres is shown in the table below. Also assumed ratios for Switzerland and Egypt are mentioned (ratios here are based on 30 m² per car stall).

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of cars per 1,000 people</th>
<th>Parking ratio</th>
<th>No. of cars per 100 m² of sales area</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td>330 cars</td>
<td>75</td>
<td>3.00:1</td>
<td>Ratio found satisfactory, taken from a survey (3). Recommended by Homer Hoyt.</td>
</tr>
<tr>
<td>Sweden</td>
<td>115 cars</td>
<td>30</td>
<td>1.20:1</td>
<td>Ex. Farsta shopping centre (south of Stockholm).</td>
</tr>
<tr>
<td>Britain</td>
<td>90 cars</td>
<td>13</td>
<td>0.50:1</td>
<td>Reference is British shopping centres by Burns (A).</td>
</tr>
<tr>
<td>Switzerland</td>
<td>75 cars</td>
<td>15</td>
<td>0.60:1</td>
<td>Assumed to cater for existing conditions.</td>
</tr>
<tr>
<td>Egypt (in the metropolitan areas)</td>
<td>14 cars</td>
<td>3</td>
<td>0.10:1</td>
<td>Assumed to cater for existing conditions.</td>
</tr>
</tbody>
</table>

(1) See table E, p. 132. (2) = average percentage of consumers coming to the centre by their private cars. (3) The survey is made by the Urban Land Institute, T.B. 30. |
Unit Sales Method of Calculation of the Parking Area: (considered the most accurate method)

\[ a = \text{average unit sales in one shopping trip} \]
\[ c = \text{number of customers per car} \]
\[ m = \text{minimum car turnover per parking stall} \]
\[ n = \text{average number of shopping days per year} \]
\[ \gamma = \text{average percentage of consumers coming by private cars} \]

Hence the minimum expected annual sales volume per parking stall (ASPS) = \( a \cdot c \cdot m \cdot n \)

in the U.S.A. = \( 5.40 \times 1.40 \times 3.30 \times 300 \times 50\% = 15,000 \) $ in the U.S.A.

By dividing the annual gross area by ASPS, the number of car stalls can be determined.

By multiplying this by 35 $^2$ (the average parking stall area), then the total parking area is determined.

It should be noted here, that one should not calculate the parking area according to the peak loads on public holidays. Otherwise, the parking lots will be expensive. Also they will be so unproportionally big with regard to the daily load on normal shopping days, that they will look somewhat deserted, having a very bad psychological effect upon the consumers.

*b) Main Principles for Planning Private Car Traffic within the Centre:

1. Easy Circulation Flow: In addition to the usual outer traffic loop road around the edge of the site it is recommended to have another inner loop road around the centre buildings linking the parking areas together, Fig. 130. These two loops help to give a better, easier flow of the circulatory type for the motorists coming in and out of the parking or looking for empty parking stalls.

2. Subdivision into Smaller Lots: The parking area should be subdivided by walkways into smaller lots (each not greater than for 800 cars). Each is marked by posts carrying identifying symbols, visible from all directions, so that the motorist can find his way back easily. Animal and flower symbols are found to be very popular and are easy to remember. An example for the adoption of such symbols is in Southdale shopping centre, Fig. 131.

4. Convenient Walking Distances from Parking to the Centre: Parking lots should be kept as close as possible to the centre. The motorist shopper should not have to walk long distances to reach the stores. Such distances must not exceed 150 m and are better kept below 90 m. However, in big centres, long distances cannot be avoided. Some remedies against them are:

Moving Gangways: between parking lots to carry motorist shoppers from parking lots to stores.

Pick-up Stations: where the consumer drives to pick up his bulky goods instead of being obliged to carry them to his car.

Drive-in Stores: in which the consumer makes his purchases from his car without any need to leave it. Such system can be adopted for service stores, such as laundries, shoe repairing, banks, etc. Such stores should be located on the fringes of the centre where their customers flow, having no need to park their cars.

5. Parking Lots should look busy: To attain this, some centres like to have the front parking lots more accessible and of far smaller area than the big parking lots at the back. The former will then fill first, giving an impression of the centre's prosperity, which is very important for the success of the centre. Other managers even encourage employees to park in view of the road for the same purpose.

6. Convenient Dimensioning and Arrangement for Parking Stalls and movement aisles (discussed later on page 71).

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Depth of parking area (d)</th>
<th>Limited parking ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strip</td>
<td>30 m</td>
<td>1:1</td>
</tr>
<tr>
<td></td>
<td>60 m</td>
<td>2:1</td>
</tr>
<tr>
<td></td>
<td>90 m</td>
<td>3:1</td>
</tr>
<tr>
<td>L-shaped</td>
<td>30 m</td>
<td>0.5:1-0.8:1</td>
</tr>
<tr>
<td></td>
<td>60 m</td>
<td>0.8:1-1.5:1</td>
</tr>
<tr>
<td></td>
<td>90 m</td>
<td>1:1-2:1</td>
</tr>
<tr>
<td>U-shaped</td>
<td>30 m</td>
<td>0.2:1-0.7:1</td>
</tr>
<tr>
<td></td>
<td>60 m</td>
<td>0.5:1-1:1</td>
</tr>
<tr>
<td></td>
<td>90 m</td>
<td>0.6:1-1:5:1</td>
</tr>
<tr>
<td>The court mall</td>
<td>30 m</td>
<td>1.3:1-1.7:1</td>
</tr>
<tr>
<td>with parking encircling</td>
<td>60 m</td>
<td>4:1-3:1</td>
</tr>
<tr>
<td></td>
<td>90 m</td>
<td>5:1-7:1</td>
</tr>
</tbody>
</table>

Note: The average depth of all stores in all study cases = 30 m. No allowance is made for walks, service yards and buffer areas (20 % of site area).

(1) In the community shopping centre, the turnover per car space may reach 8-9 owing to the greater importance the supermarket has in U.S.A. (see E, p. 134).

(2) In the U.S.A. drive-in banks have already been a success.
1. Parking Patterns as affected by the Pattern of the Centre: The table in p. 70 shows how the parking ratio for each centre is limited by the centre pattern. Therefore, when deciding upon the suitable pattern, one should choose that which allows the parking ratio expected.

2. Front Parking: Used in strip, L and U pattern centres. Here there is a total separation of both the pedestrian and parking at the front, from the service and delivery traffic at the back. Also, if the depth of the parking lot is conveniently designed—as being varied according to the needs of the stores fronting it—the consumer can park her car in front of and near to the stores she wants to visit, Fig. 117.

3. Rear Parking: Used in strip, L and U and mall patterns. The main disadvantage is that many consumers enter the stores from the delivery back entrances, causing great confusion (Fig. 134). One solution to prevent this is to introduce several frequent pedestrian arcades cutting through the store strip to connect the front of the stores with the rear parking areas (Fig. 133 a). The best solution is to have a truck tunnel for delivery.

4. Split Parking (Fig. 133 b): This means having both front and rear parking. Usually the front parking area is smaller and of quick turnover, intended for quick in-and-out shopping. (1)

*d) Variations of Parking Patterns when not wholly on the same Sales Level:

1. Roof Parking: The roofs of stores are utilized as parking areas, made accessible by ascending and descending ramps. Motorists are transferred to the sales area below by means of escalators, lifts and stairs (Fig. 135). Such a pattern is suitable for one-storey centres, located on high-priced sites where as much land as possible has to be devoted to the sales area. Also it gives a good separation between motorist and pedestrian traffic. The only disadvantage is that the ramps are somewhat expensive. Therefore this pattern is very favourable and economical in case of sloping sites, as the expensive ramps are eliminated (Fig. 136). (See also the previously discussed solution for sloping sites in the 'Site Selection' chapter, p. 62, Fig. 110 a and b.)

2. Parking under the Stores: Either in basements or by raising the merchandising floor on columns, leaving the ground floor to be utilized as parking areas (Fig. 137). In the latter pattern, motorist consumers reach the above shopping malls by means of escalators and stairs.

3. Multi-Storey Parking: This type can be adopted in high-rise centres, erected on narrow urban sites, and is considered economical if the price of land is so high as to prevent buying bigger areas. Usually this pattern has two possibilities: one is to include the parking levels as an integral part of the centre building, some above the sales area and some below, called the 'Sandwich Parking Pattern' (Fig. 138), applied in Westchester Terminal Plaza centre (see section Fig. 96 c). The other possibility is to have a separate multi-level parking garage building near the centre. This is a solution to cater for more parking places for centres where existing parking areas have proved insufficient and where at the same time there is no adequate land available for surface parking. Such is the case in the Vällingy and Lijnbaan centres. (2)

*e) Dimensioning and Arranging the Stalls and Movement Alleys:
Space for parking stalls and aisles should generally be generous and designed for the convenience of the motorist. This is more important to attain than deciding upon the exact angle of parking. This parking angle is dependent upon the parking habits in the region. The two main types are:

1. 90° degree parking (head in): It allows for two-way movement through the aisles.
2. Diagonal parking (45°—60°, etc.): overlapping or interlocking patterns (Fig. 139): This type is used when saving in the parking space is required. Therefore it is preferred by most centres (especially

1 It is always a good policy to separate short-time parking.
2 See the modern downtown shopping centre in Rotterdam, p. 46.
0° (PARALLEL)

45°

60°

90°

45° OVERLAPPED

45° HERRINGBONE

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

60° h 20

15°

45° OVERLAPPED

45° HERRINGBONE

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

158 CARS PER ACRE WASTE SPACE NOT COMPUTED

Fig. 139. A detailed data for the convenient dimensions, for different angles and types of parking.

Fig. 140. A system of circulation of a package pick-up station (after Howard T. Fisher and Associates Architects, U.S.A.).

the 60° degree pattern). (1) But this pattern allows one-way movement only.

In Fig. 139, detailed data for convenient dimensions for the different angles and types of parking are given.

Parking aisles should be at right angles to the most-visited line of stores. This gives a better view, better accessibility to the stores, and a shorter walking distance to reach them than in the case of parallel aisles to the stores.

Parking in sloping sites should be across the prevailing grade rather than parallel to it.

Even in countries where most consumers go shopping in their private cars, as in the U.S.A., the consumers coming by public transport to a centre form a percentage varying from 1%–33% of the total number of the centre’s consumers. Especially in the initial stages of a new centre, it is not wise to depend totally on motorist consumers for support. In Northland shopping centre the percentage of consumers coming by buses and taxis from both the central city and the surrounding suburbs is 7%.

A very good idea that contributes largely to the success of suburban shopping centres is to combine it with a subway terminal (as in Vallingby, Fig. 61) or a railroad or a main bus station. (2) Care should be taken to keep such public transport traffic separate (by means of different levels) from the pedestrian and the other motor traffic in the centre. The points to be considered in designing public transport are:

1. Special road for buses, separated from any other type of traffic.
2. Stops for embarking and disembarking should be located as close as possible to the stores and pedestrian areas. They should be visible and easily accessible by safe footpaths.
3. Stops and terminals should be sheltered by sheds or colonnades.
4. Storage space for public transport vehicles should be available near the site, so that extra vehicles could be immediately put into service for peak shopping hours.

D 4. Goods Dispatch Traffic and Pick-up Stations:

a) Goods Dispatch:

Many consumers like the convenience of having their purchases dispatched to their homes; sometimes it is a necessity in case of bulky goods such as furniture.

It is better to have one dispatching unit for the whole centre, to which all the goods to be dispatched—from all stores—come. The dispatching unit—usually located in the basement—should have its own independent loading docks. These docks must be directly and conveniently accessible to dispatching truck vehicles; it is better if they are located immediately on the service truck road.

b) Package Pick-up Stations:

Their Function: Laden with her bundles the shopper finds it very inconvenient to continue shopping or walk tiring distances from the stores to her parked car. So the parcel pick-up station was introduced for her convenience.

The Procedure of the System, Fig. 140:

In each store the shopper hands over her package after going through the check-out and receives a numbered check. By means of underground conveyor-belts the packages are transferred to (preferably) one pick-up station serving the whole centre and usually located at the edge of the parking area. The station should be provided with a special, adequate space for short-time parking at peak hours, Fig. 140.

(1) See the questionnaire carried out over 163 shopping centres in the U.S.A. Urban Land Institute (T.B. No. 30, May 1951).

(2) I suggest that the community shopping centres in Heliopepla (big Cairo suburb), be connected to the principal stations of the suburban metro-ways.
After the consumer finishes her shopping she fetches her car from the parking lot, drives to the station, and in return for her checks, receives her packages and loads them with the help of an attendant.

D 5. Freight Delivery and Service Truck Traffic:

a) Principal Requirements:
1. Convenient accessibility from surrounding public roads.
2. Separation from motorist and pedestrian consumers traffic (already discussed on page 68).
3. Screening these delivery and service activities from the eyes of consumers.
4. Effective design of truck roads and docks so as to have easy delivery without loss of time or interruption of motion, one direction flow, and maximum safety for both truck and building elements (such as platforms and columns).
5. Convenient accessibility to storage areas from delivery docks.

b) Different Methods of Delivery:

1. Back Service Roads and Courts: In strip, L and U centres (having split parking), the delivery can be attained by having several back service courts, each serving a group of stores. These courts are screened and separated from the parking areas by walls. At the same time stores requiring bigger service courts are located at ends of the strip, Fig. 141.

2. Truck Tunnel in Basement (see Pages 68 and 69): This is usually located under the pedestrian mall, having unloading docks on both sides, connected to service passages, along which the storage spaces lie. These service passages lead to several compact service-core-units, each serving a group of stores and equipped by freight elevators and stairways to transfer the goods to identical cores above them, whence the goods are delivered to the store group, Fig. 143a, b, c. To cut down expenses the truck tunnel—after coming out from under the centre—becomes an open depressed road sloping upward to the ground level.

3. Truck Road, Storage and Service above the Sales Area, Fig. 144: This is already discussed on page 68.

4. Freight Handling with no docks, Fig. 145: Goods are transferred by means of gravity roller conveyors.

c) The Truck Road and Dock design, and dimensioning:

It is better to have underground truck roads straight, to avoid all difficulties of turning and peak hour service. In case such turnings exist, they should be of minimum outside radius = 18 m.

It is more convenient and economical to make the part of the truck road adjoining delivery sunk in the ground, so that the docks and storage space will be on a level with the truck floor.

In locating and dimensioning the docks, one should take into consideration the length of the longest available truck (15 m) and whether loading and unloading are from the back or the side of the vehicle.

'\nThe dock area should be 1–2 the total floor area of the largest number of trucks that can be docked at one time.' However, the width of the dock should not be less than 3.00 m. (1)

Fig. 141. Back service road and courts, Baldwin Hills shopping centre, Los Angeles (after Baker and Funaro, A.).

Fig. 142. Service court in bent-strip centre.

Fig. 143a. Truck tunnel in basement, and service cores connected to identical service cores in the above floors. (1: furniture; 2: post-office; 3: children's centre; 4: lavatory; 5: barber; 6: beauty-shop) (Southdale centre near Minneapolis, by Gruen.)

Fig. 143b. Service core equipped by freight elevators and stairways.

Fig. 143c. Truck tunnel turned to an open depressed road.

Fig. 144. Storage and service, above sales area for sloping sites (Scale 1 : 600).

Fig. 145. Freight handling, with no docks by means of gravity roller conveyors (Scale 1 : 900) (after Architectural Record, Am.).

\[ \text{Breadth of the dock } B = \frac{n \times L}{n^{\prime} \times 2.40 \times 2} \text{ where } L = \text{ the docks length}, \quad n' = \text{ length of truck}, \quad n = \text{ number of the trucks at one time}, \quad 2.40 \text{ is the normal breadth of truck (see Tr., p. 131).} \]
Leer - Vide - Empty
The three previous chapters (7, 8 and 9) contain essential data and materials for the planning process, namely: what types of stores are required—the sales area required for each type (p. 59)—the parking area—the buffer area—the usage plan (p. 83)—the best-suited layout pattern (p. 64-65). Then the planning process will follow the stages suggested below:

A. Dividing the types of stores into ‘Traffic-Pullers’ and ‘Traffic-Users’ and grouping them together to give an efficient merchandising pattern.

B. Grouping the stores into characterized categories on the basis of price, and type and the recommended locations for each category with regard to the others.

C. Main principles and aspects controlling the development of merchandising with regard to:
   1. General layout design.
   2. Multi-level pattern design.
   3. Basement design.
   4. Design for future extension and variation.
   D. Non-retail establishments: Civic, cultural and recreational.
   E. Modern types of retail outlets recently introduced in the centre.

A. ‘Traffic-Pullers’ and ‘Traffic-Users’ Stores—
Their Grouping together to give efficient Merchandising Patterns:
Dividing the stores into traffic-pullers and traffic-users does not mean that the centre can do without the latter. A centre can never be fully integrated and be a true one-stop centre until it has a full assortment including all types of stores at a wide range of prices. Therefore, a store is here called ‘Traffic-Puller’ when it is more an attracter of consumers than an exploiter of consumers already attracted by other means, while the ‘Traffic-User’ shop is the converse.

‘Main Traffic-Pullers’: In the community centre they are those big outlets that deal with main demand goods bought periodically. Generally they are the junior department store and the big apparel stores, and they bring a steady flow of consumers; usually they pay small rents (not more than 4% of its sales volume).

‘Secondary Traffic-Pullers’: These are the stores dealing with standard goods and daily convenience requirements, such as supermarkets, drugstores, banks and service stores. Although they do no local advertising they draw also a steady flow of consumers.

‘Traffic-Users’: They are those small shops dealing with the impulse and luxury goods such as candy, gifts, millinery, etc. They get benefit (impulse sales) by being near to the traffic-pullers (magnets). Because they enjoy pedestrian traffic which they could not generate themselves they usually pay high rents (10% of sales volume). (1)

(1) The developer (whether a corporation, the municipality, a department store, or other entity), usually leases most of the stores to selected tenants, who can pay satisfactory rents. If it is the department store, chain stores, co-operatives or the supermarket, it erects its branch as the main magnet of the centre and manages it. It might also manage some other stores related to its line of specialization.
In preparing the merchandising plan, the planner is confronted with one of two alternative solutions: one is to locate the competing stores in the same branch of trade at a distance from each other, giving a better interplay between the stores, and hence helping to distribute the consumers more evenly in the centre. Such solution is also advantageous if the centre later expands or is to be built on more than one stage. Each stage alone will have its own integrated architecture, as in the case of Garden State Plaza Centre (Fig. 148). The other alternative (often adopted), is to group stores of the same branch of trade or dealing with inter-related and complementary goods beside each other. This is advantageous for the consumers in helping them to shop and compare price and quality of goods more conveniently; it is also advantageous for the retailers because it produces activity, more impulse buying and easier service. The main categories into which the stores are grouped are:

a) Food Stores and Supermarkets Category:
Although they are not the main Traffic-Puller in the community shopping centre, they are essential to provide the nearest residential neighbourhoods with the convenience-frequency goods. This category includes groceries, butcheries, candy shops, confectioneries, etc., supermarkets, and places of refreshment. These stores attract a big volume of pedestrian traffic. At the same time they cannot afford high rents. Thirdly, they need plenty of service-delivery space. Therefore it is better to locate the whole of this group of stores on the outer extremities of the centre, far from the department store, where the land is least expensive, and where an attached adequate parking space could be provided. Another solution is to isolate the whole group from the rest of the centre and put them—with other convenience goods needed for the immediate neighbourhood—in a separate satellite centre (Fig. 149), having its own separate parking area.

However, in separating the foodstuffs category from the other stores the consumer is obliged to walk longer, tiring distances to make all her purchases; also, other categories lose the impulse buying which they should have gained had they been attached to the foodstuffs category. Yet recent researches have indicated that the purchase of, for example, foodstuffs and clothes never occurs at the same time. Only one out of four supermarket consumers buys her apparel goods at the same time as her food requirements. (1)

By grouping the small specialized food stores around the supermarket inter-store shopping is encouraged. The modern trend now-a-days is towards very large self-service markets with giant stocks (average in the U.S.A. is 1,800 to 2,000 m²).

Such a supersized supermarket usually breaks into non-food lines (i.e. converted into a super-supermarket or a combination store), and so will compete dangerously with the other stores specialized in these lines. To prevent this therefore it is recommended to have two small supermarkets of 1,000 m² each, instead of one. (2)

b) The Junior Department Store
This is the principal magnet, usually of a sales area = 1/3 the total rentable area of the centre. Often its owner is the centre's owner. Otherwise the developer has found it more economical to sell or rent land to the department store, the latter erecting its own building at its own expense. The reason for this is that the low rents which the department store usually pays for built rentable sales area do not make up for the high construction costs of the department store building.

However, the department store is located in the most valuable location in the centre (central location in the cluster pattern; hinge location in the L-shaped pattern, etc.). Due to the big pedestrian traffic it attracts, the adjacent locations are considered the strongest and pay the highest rents. They are therefore occupied by a large number of small stores dealing with impulse goods and luxuries and can afford to pay the highest guaranteed rent.

c) Apparel Stores Category
Apparel stores for men's and boys clothing should be grouped together with haberdashery, sporting goods, shoes and leather goods stores. Also women's apparel, shoes and millinery stores, with children's wear and toys, prosper in close proximity. Usually these stores are located near the department store. The small shops of this group (such as hosiery) can be located on the pedestrian ways and arcades leading from the parking lots to the centre, Fig. 150.

d) Drugstores Category
This includes pharmacies and drugstores—essential convenience-units, without which a centre cannot be complete. The modern trend in drugstores is toward a larger area in open display and self-service. The best location for this category is the corner location (see Fig. 83b and 84a) adjacent to the foodstuffs and supermarket category or a major tenant. As they are usually open even after the other stores have closed, it is rather vital that they should be directly accessible and clearly visible from the surrounding roads.

e) Service Stores Category
This includes laundries, chemical cleaning, barbers, beauty shops, shoe repairs, banks, post offices, telephone and telegraph office, filling station, etc.

As these service shops cannot pay high rents, and as at the same time their customers need them and will reach them regardless of their locations, they are placed in the most unimportant and low-rent locations, such as side streets and basements. The filling station should be visible and accessible; it is better located along the access to the centre or on a corner location.

f) Household and Furniture Category
This includes stores selling furniture, household goods, drapery, upholstery, floor coverings, hardware, electrical appliances, radio, television and musical instruments, etc.

As such stores deal with selectivity goods purchased periodically, they are located
nearer to the department store and apparel stores category. It is only the furniture store which is usually located in the basement, as it requires a large display space, which gives a low sales volume per m².

g) Speciality Stores Category

Usually these stores deal in impulse and luxury goods, such as candy, gifts, jewellery, silverware, tobacco, perfumes, women's wear, furs, photo supplies, etc. Generally they are small stores of 50-100 m². They increase the shopper's interest and contribute to the integration of the centre.

As they can afford high rents they occupy the most important and expensive locations adjacent to the department store or on the pedestrian passages that lead to it from the parking areas.

It is recommended to have at least two stores of the same branch of merchandise in a centre to encourage healthy competition and to provide a wider selection of goods in a diversified range of quality and price. Similarly it has been good policy to have both the chain stores and the independent tenants in the centre. While the latter can provide the exact articles the consumer requires and many variations he desires, the chains can only offer standardized merchandise, but at lower price.

C. Main Principles and Aspects controlling the Development of Merchandising Planning with regard to:

a) General Layout Design

In addition to the principles already mentioned in the previous pages (grouping the traffic pullers and users; locating the different store categories), there are other main principles, as follows:

- One of the first matters the architect has to consider is which of the two patterns of traffic-user stores to choose: a small number of large-sized stores or a large number of smaller ones. However, the latter is more favourable, and experience has shown that the success of the centre is largely dependent upon the prosperity of many smaller shops. They add more activity and competition to the centre, and at the same time pay more rent per m² of sales area than bigger shops. Moreover, enlarging the size of a store usually makes it deviate from specializing in its particular branch of trade.

It begins to include different articles in its potential, a matter which is rather undesirable and serious, as the other small shop specialized in these articles will not be able to do business rationally. Such small stores should intermingle with the main and secondary magnets.

- Walking distances all over the centre should be convenient: by making the distances between the stores not too great, by making the malls not too long, and by making the distances from the parking areas to the stores not more than 120 m. The latter can be attained by centralizing the building group in the site. Inter-shopping (cross shopping on both sides) should be encouraged by making the malls narrow (12-15 m) also by introducing sheltered cross-walks at convenient intervals (see p. 68 and Fig. 127).

- In a mall-pattern centre an integration between promotional stores (department store, specialty shop, etc.) and non-promotional stores (supermarket, food-stuffs, etc.) can be obtained by locating the former on one side of the mall facing the latter on the other side.

b) Multi-Level Pattern Design

This pattern of planning is very suitable for either sloping sites (see Fig. 110b), or for narrow high-priced urban sites, of an area (SA) less than the total required for the different uses of the centre (GA) (see p. 63). So either the stores or the parking, or both, has to go high.

The main advantage of a multi-level centre is its compactness; creating a busier and more animated shopping atmosphere. For the shopper, all places look within easy reach. She makes her purchases, here and there, across (by bridges), or up and down. (See two-level Southdale shopping centre, Fig. 151.) For such centres to operate successfully, two points should be considered:

- It is best for the parking also to be split into levels, each directly connected to a related sales area level, but not be located between the sale levels, requiring the pedestrian to tramp up and down to reach them, as was the case in the unsuccessful two-level 'Shopper's World' shopping centre (Fig. 152).

- Stairs, lifts and escalators should be abundant, provided at strategic points and comfortably designed. Of these the escalators are the most efficient in handling the vertical traffic. (1)

Also, in the case of multi-level mall centres, cross bridges should be introduced so that the two sides are not separated from each other, thus impairing the effective unity of the centre.

However, it has been the habit of consumers to resist moving between the levels; they favour one-level centres more than multi-level ones.

c) Basement Design

From enquiry conducted by the Urban Land Institute in December 1956 over 34 community shopping centres, it has been found that 40% of the centres have a basement,(2) mainly used for delivery by truck tunnel under the main mall. The principles of such underground delivery have been already analyzed on p. 68 and p. 73; but the basement offers valuable and desirable space for parking, sanitation, and various other purposes (Fig. 143), such as:

- Storage space; each store has its own basement storage underneath, with direct access to the delivery docks.

- Stores which can only afford to pay low rents, such as service stores; also photo studios and travel agencies (accessible from truck road).

- Stores that require big sale-areas and have a low sales volume per m² of sales area, such as the furniture store. Usually this store has a small sales area on the mall at ground-floor level, connected to the large sales area below by a wide stairway.

- Places for community services and activities, such as post-offices, telephone and telegraph offices, meeting rooms, clubs, bowling alleys, kitchens, public lavatories, etc.

- Parcel dispatch units and pick-up stations.

d) Design for Future Extension and Variation

The rate and nature of residential growth of a certain community determine how and where the expansion of its shopping centre will take place. From the very beginning, this vital matter should be considered in planning and dealt with by acquiring beforehand enough suitable adjacent land for the expected expansion, and by designing the whole complete centre at its final stage of development.

So, as the centre will be built in stages, it is very important that at each stage it should be fully integrated and complete in itself, and at the same time be flexible so as to allow the addition of the next stage (see Fig. 148). It is interesting to note that Victor Gruen and Welch (two of the most active experts in designing shopping centres), give the same solution for a future extension problem. The problem is how to plan for a centre which is intended to have two department stores in the future but which has only one department store for the time being. Both agreed that the first stage centre must be complete and integrated without the

---

(1) A 90 cm escalator can carry about 6,000 persons per hour = the capacity of 9 (ten person) lifts per hour.

(2) See Tn., T.B. 30, p. 90.
attained by putting a secondary traffic-puller at the end opposite the department store. Then in the next stage the second department store with additional secondary stores would be added immediately at the open end (Fig. 153). Otherwise, if the design is made for the two department stores, and only one is built in the first stage, the centre will be incomplete and the flow of pedestrian traffic will suffer badly, for this missing store is vital to draw the shoppers down the mall.

Moreover, the second store would have been so badly needed that it would weaken the developer's bargaining strength, and he might even not succeed at all, so that the centre might remain incomplete for ever, as in the case of 'Shopper's World Centre' which has been a failure (Fig. 152).

Another aspect of future expansion and variation, is that the individual stores themselves want to enlarge their sales area, or change their tenants totally. This can be provided for by designing a standardized flexible unit that allows such expansion and will be suited to multiple tenancy and different types of stores. Flexibility can be given to the structure as follows:

- **With respect to width of the Store**: A flexible unit breadth is chosen, which gives the minimum width of the small store, and at the same time a multiple of it gives the width of column spacings and a variety of widths for medium and big stores. From practice the unit width generally used is 3, 4.5 and 6 m (Fig. 154).

- **With respect to depth of Store**: Stores having their delivery and storage space at their back on the ground level cannot expand in depth. They can only expand vertically in mezzanine or basement areas. On the other hand, stores on pedestrian malls, having their storage and service areas in basement, are free to expand in depth at the back (Fig. 154).

So the rear walls are kept free of ducts and piping, to allow flexibility of expansion. Such expansion may take in the space behind the neighbouring stores forming an L-shaped or T-shaped form (Fig. 154 b). In the case of a two-front stores block, the depth of the store will be greater as it has two entrances. The only location that allows variation in width and depth of store is the corner of the block (Fig. 154 c). A staggered arrangement of stores also allows a more desirable variation in store depth within an interesting architectural frame (Fig. 154 d).

- **With respect to height of Store and Vertical Expansion**: By making the height of the store not less than 4.40 m more flexibility is attained, as a mezzanine floor for future expansion can be added. A basement could be made inviting for future extension of the sales area, by air-conditioning it and connecting it to the ground floor by wide shallow stairways (Fig. 154 a and Fig. 155 a'.) In the case of multi-level centres, the upper floors can be used for expansion by overlapping. These different floors should blend into each other by means of shallow stairways or escalators (Fig. 155 a).

- **For more future expansion a frame (Fig. 154 d).**

D. **Non-Retail Establishments**: 'Civic, Cultural and Recreational'

A shopping centre must be more than a mere collection of stores. With its commercial functions, it should combine other community facilities: social, medical, cultural and recreational. Such a combination is important for it fulfils two main aims:

1. It fills the vacuum created by the absence of civic and recreational crystallization points in the new suburban areas. Such a combined, integrated and well-designed centre provides a focal point of civic life for the community. Here again (after a long absence from medieval times up to our own day), and very badly needed, is the right place for that primary human instinct to mingle with other humans—to have social meetings, to relax together, to enjoy art, music, civic activities, the theatre, films, good food, and entertainment in the company of others. This tendency of the shopping centre to become a complete community centre where all activities are combined can be seen in Harlow new town centre, see p. 32.

2. Shopping benefits from such a combination. It has always been true to say that commerce flourishes where social gatherings are made easy, gay and animated. These social and recreational facilities will attract more people and hold them for longer spells, resulting in more impulse buying and more prosperity to the centre than would be the case if it were only a commercial centre. These non-retail activities (see Vällingby Centre, Figs. 61 and 61 a) can be classified as follows:

a) **Civic and Social Activities**: These can take place in auditoria, community centres, church building-group, clubs, meeting rooms and children's nursery.

b) **Medical Services**: such as doctors and dentists, usually located on the first floor over the stores, or in a separate health centre.

c) **Cultural Activities**: These take place in libraries, lecture rooms, youth centres, evening classes, etc.

d) **Recreational Activities** in theatres, cinemas, cafés, restaurants, gymnastic halls, etc.

e) **Outdoor Festivals and Attractions** such as Christmas and St. Nicholas celebrations, Easter with the Easter Rabbit, fashion shows, floor shows, painting and sculpture exhibitions, concerts, dancing, Mother's Day celebrations, etc. These festivals take place in garden courts, plazas, open or covered malls, terraces and other public areas (Fig. 156), and always after the actual shopping hours. 'They may or may not have any immediate effect on the shopping traffic at the time of the festival, but the cumulative effect of bringing people to the centre at these times is to establish close indentification by the public with the centre, and thus serves ultimately to increase traffic and business.'(2)

E. **Modern Patterns of Retail Outlets recently introduced in Shopping Centres**

In our modern time, shopping habits change rather more rapidly(3) even the shoppers themselves change. For example, in night

---

(1) Victor Gruen (see Progressive Architecture, June 1952, p. 68).

(2) James Gruen (see T., p. 258).

(3) To illustrate: in 1948 only 7% of the total number of supermarkets in the U.S.A. introduced self-service; in 1957 the percentage increased to 62% (in only 9 years).
Shopping—flourishing now in American shopping centres—the whole family go shopping together: wife, husband, son and daughter. Only a few years ago, the housewife was alone responsible for most of the shopping. Also new patterns of retailing are continuously being evolved and introduced in the centre such as:

a) **Do-It-Yourself Shops**: As people have more and more leisure a trend toward creative and constructive hobbies is flourishing. The consumer is being his own painter, plumber, carpenter and gardener.

b) **Discount Houses**: These have recently been introduced in shopping centres in the U.S.A. In a way they will benefit other stores by the extra traffic they will draw, but at the same time stores dealing with the same articles (electrical appliances stores, radio and furniture stores, department stores, etc.) will suffer from the kind of heavy price competition that the discounters threaten to generate. However, by coming into the centre and paying more rent and operating costs, the discount house cannot afford to give the same discounts it offered before.

c) **Drive-In Stores** (already discussed on p. 70).

d) **Automation Centre**: This is a group of automatic vending machines concentrated and integrated, to give a more complete selection of important articles. It has been found very valuable when shops are closed, in the evening and at week-ends. It should have an easily-visible location directly accessible from the surrounding roads.
Leer - Vide - Empty
In dealing with the structural analysis of the community shopping centre one has to differentiate between three different main types of buildings, each requiring totally different treatment.

I Multiple-Tenancy or Row-Type Store Buildings: Usually 1-2 storeys high, with or without a basement, 30-45 m in depth, and of flexible, variable breadth, suitable for different types of stores.

II Single-Tenancy or Special-Purpose Buildings such as the junior department store. Usually multi-storey and with a basement.

III Supermarket-Type Buildings: Usually of one storey and requiring a clear sales area with a minimum of interior points of support or none at all.

A. Main Factors Affecting the Choice of the Suitable Structure

1. The Location of the Site: The cheapest and most effective structure would be that in which local materials and methods of construction are used, and which takes into account the habits of contractors in the region. For example, R.C. may be expensive in a certain site, for the high cost of transportation of such a bulky material. Also, certain climates require special structural treatment. For example, hot countries need heat-insulated double roofs and cross-ventilation systems (Fig. 176). One should avoid any site with physical disadvantages—sites such as rough, rocky places requiring expensive rock-blasting. Also sites having very weak soils, or a high underground watertable, might require deep foundation (such as pile foundation), which is far more expensive than the normal shallow foundations. Also, sloping sites might suggest the adoption of two-level structures for both the sales area and the parking (Fig. 110 a and b).

2. Physical Characteristics of the Site: One should avoid any site with physical features which could not be turned into structural advantages—sites such as rough, rocky places requiring expensive rock-blasting. Also sites having very weak soils, or a high underground watertable, might require deep foundation (such as pile foundation), which is far more expensive than the normal shallow foundations. Also, sloping sites might suggest the adoption of two-level structures for both the sales area and the parking (Fig. 110 a and b).

3. The Size of the Centre: If the centre is large, the architect has to think of a suitable method of construction, so designed that a repetition of a limited number of standardized units or elements will occur on a large scale, thus giving the structure the advantage of economy, ease of construction and flexibility (Fig. 157). The structure can then also quickly be constructed or altered. On this basis, prefabrication and building with factory-made structural elements are favourable for big projects (discussed later on, see p. 83).

B. Main Points to be considered in Designing the Structure

1. Column Spacing: In choosing suitable column spacings, the architect settles upon either a narrow-span, or a wide-span pattern, or makes a compromise between the two. The former gives a more economical structure, while the latter aims to eliminate interior columns to keep them at a minimum, in order to achieve an unobstructed area visually open, for sales, service and display functions. (For the same reason, interior columns should be cylindrical or square with rounded corners, or better, conical, tapering toward the base.) In practice, for building type I it has been found that narrowing the spacing in the longitudinal direction and enlarging the spacing in the transversal direction gives more flexibility; and that a spacing of 6x6 m at basement level, supporting 6x12 or 6x18 m spacing at main level, is very satisfactory. For building type II (the department store), column spacing of equal dimensions in both directions is favourable, such as 7.5x7.5 m or 9x9 m; the latter is found to be most satisfactory, especially when 'waffle-type' R.C. construction is adopted, Fig. 162. Generally, the column spacing unit in both directions should be a multiple of a smaller module derived from typical fixture dimensions. (1)

2. Ceiling Heights: As air-conditioning and interior artificial lighting is being increasingly adopted by modern stores there has been a recent trend towards lower ceilings (3.00-4.00 m). In countries where air-conditioning and artificial lighting is not yet common or is still too expensive to be used extensively, higher ceilings are preferable (4.40 to 5.60 m), especially for the ground floor. They permit better ventilation and natural lighting. Moreover, such a height allows for later introduction of a mezzanine floor which can be used for future extension of the sales area.

3. Flexibility of the Structure: This is very important, especially for the row-type buildings, in order to allow for their future vertical or horizontal expansion, and because their tenancy may be changed from time to time. Therefore all columns should be eliminated from the storefront of these row-type buildings, in order to allow for maximum flexibility in the division of the stores and in the design of the store front. This can be attained either by recessing the columns a reasonable distance inside the store and cantilevering the transversal girders (Fig. 158a) or by providing colonnade columns at the outer edge of the sidewalk (Fig. 158b). Moreover, the structure should allow the greatest freedom for introducing future openings, through floor and roof, for stairs, escalators, lifts, ducts, etc. In the case of R.C. construction, this can be attained either by a

(1) Such smaller module is determined by the breadth of a typical counter or sales fixture (60-75-90 cm).
4. Fire-Proofing: All the structural elements should be fire-proofed; of special importance is the underground truck road. Therefore the materials used should preferably be concrete or fire-proofed structural steel or the like. It is also better to adopt double-ceiling system, the upper being the fire-proof ceiling (for example R.C.) and the lower the suspended or finished ceiling.

5. Structure for Multi-Storey Centre including Parking Levels below or above the Sales Levels: In this case the column spacing, repeated in both the sales and the parking floors, should be designed so as to permit effective use of all the parking space, and also to give good flexibility in the subdivision of tenant stores at sales levels (Fig. 161). Westchester Terminal Plaza shopping centre is an example of this, with two sales levels sandwiched between two levels of basement parking and two levels of roof parking (Fig. 96c). The column spacing chosen was 9 m in one direction alternating with 9 and 7.5 m in the other direction, and thus allowing for an efficient parking layout (angle parking with one-way circulation road).

C. Different Types of Constructions that can be used in a Centre

1. Reinforced Concrete Structures:
   a) Pre-Cast or Cast-in-Place R.C. Frames (Fig. 158a and b): In a R.C. frame the column and girder act together in a monolithic continuity, resulting in a considerable reduction in the girder’s section and its degree of reinforcement than in the case of the ordinary column, beam and slab system. Frames with cantilevers are very suitable for type I buildings, as they offer bigger spans in one direction (12-18 m), a lesser number of interior columns, and a free, flexible store front.

   b) The Waffle Construction Type (Fig. 162): This is an economical type of construction suitable for wide spans which are equal in both directions (9 x 9 m or more).

   c) The R.C. Flat Slab System (Fig. 163): In this system wider spans (7.5 x 7.5 m up to 9 x 9 m) can be attained. At the same time the system gives the minimum thickness of slab, thus resulting in reduced total building height, with a consequent saving in total building costs. So it is usually adopted in department store buildings.

   d) Thin R.C. Shell Construction: This is suitable for one-storey buildings requiring clear-span structure, such as supermarkets. In countries where steel is costly and hand labour cheap (such as Egypt), shells, reinforced only with steel wire-mesh, have proved to be economical, especially when the shell is a repetition of a standard segment, allowing the re-use of moulds, or

---

Fig. 158a and b: Pre-Cast or Cast-in-Place R.C. Frames. (Progressive Architecture, June 1952).

Fig. 159: All precast R.C. framing construction, Eastland shopping centre, Detroit, Michigan (after Progressive Architecture, June 1952).

Fig. 160: A compromise between cast-in-place and precast elements, in order to conserve steel (after Progressive Architecture, June 1952).

Fig. 161: Westchester Terminal Plaza Centre, column spacing is designed to allow for an efficient parking layout, and also giving good flexibility in the subdivision of tenant stores at sales levels.

---

Typical retail floor framing

Same as typical parking level framing: 1.25 x 30 and 30 x 20
when it is composed of simple pre-cast units, or when it is cast in an earth mould on the ground. Shells having hyperboloid curvatures (formed by the rotation of a straight line in space), are also economical and easy to construct. The only disadvantage of concrete shells is that, owing to their thinness, they do not insulate the inside space well from the weather outside.

2. Steel-Framed Structure:
This is suitable for big spans and is being increasingly used for most of the centre’s structure owing to the speed of its erection, especially as field-welding is continuously replacing the traditional bolting and riveting system. It has many types such as: tapered steel beams, Fig. 164a, exposed steel open-web, Fig. 164b, (economical and of good appearance) domed steel framing, and trusses. The latter cover very big spans (up to 60-90 m). Although a truss is more suitable for a one-storey building it can be also used for multi-level buildings such as the department store.

In Fig. 165a and b, there are two solutions showing how trusses are used in multi-level department stores. The one, by Raymond, depends mainly upon artificial lighting of the sales area; the other, by the Swiss architect, Dr. Louis Parnes, is based on the introduction of maximum daylight. In both, the depth of the truss (2.10-2.40 m), is utilized as a mezzanine floor used for storage, packing, delivery, lavatories and service areas, also for concealing pipes, ducts, escalator motor-rooms, etc. The only disadvantages here are cost and the fact that too much area is given to service and stock areas in proportion to the sales area.

Another interesting system is the ‘Suspended Canopy Structure’, which is very suitable for hot climates, as in the case of a projected shopping centre in Texas, where the stores are arranged beneath a huge canopy suspended by steel cables from steel columns widely spaced (9 x 18 m) (Fig. 166). Such a structure is light and economical, and provides big spans and small columns.

3. Wooden Framing Structure: This is economical, and has a good architectural appearance. Different modern types such as laminated wood beams, nailed hollow-box girders, and laminated wood arches, Fig. 167, allow for big spans and so they are usually used to cover supermarkets. Their only disadvantage is that they are neither fire-proof, or insect-proof.

4. Prefabrication: Here all the structural elements—columns, girders, beams, slabs, dismantlable painted wall panels, and even repeatable shell segment units—are completely factory-made, and it is only on the site that they are assembled and tied together.

The system is most advantageous for three main reasons: firstly, it is economical, as all forms and scaffoldings are entirely eliminated; secondly, it permits a shorter erection time, with less disturbance and noise for the neighbours; and thirdly, a higher standard of execution and finishing can be controlled and attained.
The first project of Eastland shopping centre adopted prefabrication for its structure, consisting of pre-cast R.C. columns supporting pre-cast R.C. double cantilevered girders. Spanning these girders are pre-cast channel panels (1.20 x 0.07 m). The two bays between the end of the girder's cantilevers are also spanned by the same channel panels (see Fig. 159).

5. Structure for covering Main Pedestrian Malls:
The mall can either be covered by trusses (Fig. 151) or by frames, whose vertical supports are purposely left apparent and treated as rhythmical architectural elements (Fig. 122). Ventilation and natural lighting should be achieved by skylights and clerestories.

According to the main factors affecting the choice of structure and the main points to be considered in its design the most suitable structure for each type of building in the centre can be found.
One of the main problems the architect has to study thoroughly and find adequate and economic solutions for is how to protect the shopper against sun, rain, snow, wind, and excessive heat and cold, from the moment he enters the centre until the moment he leaves it. The aim is always to attain the right atmosphere providing the maximum comfort and convenience, which in climatic terms means comfortable temperature, humidity and air movement. Some of the architectural and planning means to attain this in shopping centres are discussed below.

A. Site Selection and Planning, providing the most advantageous Microclimate

Geographical, biological and man-made factors often make local climatic conditions different from the general climate of the region. This local climatic pattern is called the 'Site-Microclimate'. For example, in sub-arctic climates (such as in Canada) sheltered sites behind hills or trees or forests (existing or artificially planted) have an advantageous microclimate, being sheltered against the cold winds. On the other hand, in hot, dry climates a milder microclimate can be created by introducing artificial lakes, ponds, pools and fountains, or by planting vegetation and shady trees, or by the proper grouping of buildings. One efficient grouping pattern is to put the buildings of the centre so close that they overshadow each other, resulting in a considerable reduction of temperature. Another pattern, usually adopted, is the closed inner court or mall plan, turning its back on the unbearable heat and glaring light outside and giving coolness and shade inside (Fig 126). Therefore malls should be oriented so as to be open to cool prevailing winds (1) and shut off from dusty, hot ones.

B. Canopies

Covered walkways connecting the extended parking lots to the centre should be provided, Fig. 168. If there is a strong prevailing wind they could be enclosed from the sides. Along the stores and at the entrance of department stores and supermarkets cantilevered overhangs or adjacent colonnades should be provided, Fig. 169. They should be low and wide, for high overhangs give inefficient protection against driving rain. But they should not be too low, as there must be an adequate space below the canopy for the recommended continuous store-sign band, Fig. 170.

Such overhangs are also important in protecting the show-window from rain and sun and in reducing the veiling glare to the minimum (see p. 90 and Fig. 185). Recently new materials have been used for canopies, such as translucent plastic on laminated wood beams, Fig. 171, and fiber glass.

C. Covered Enclosed Malls

Recently these have been increasingly adopted for shopping centres in both hot and cold countries. The main idea behind a covered mall is that it creates an interesting, compact and enclosed shopping space under one roof, the climate of which can be controlled and kept always comfortable, totally independent of the weather outside. Its prototype is the traditional oriental covered bazaar (see p. 17 and 18, and Fig. 37 and 38). The only difference between the two is that while the bazaar controls the indoor climate by purely architectural means (such as lofty heights, thick walls, top ventilation, slots, etc.) the modern covered mall achieves this control mainly by mechanical means (air-conditioning) which is more expensive. However, to save in air-conditioning and structural costs, the covered area should be kept small in size. To attain this a multi-level pattern is usually adopted, giving more compactness to the sales area (Fig. 172 and 96c). As all stores are under one roof they cannot be easily identified as in the open mall by different heights. But the same effect can be achieved by protruding some stores, Fig. 174a, and by varying surface texture and colour treatments.

In such air-conditioned malls, stores require no open front, or even doors. Only sliding grills or panels are required for closing the stores at night.

Air-conditioned covered malls might not be so extravagant, if one considers the following facts:

1. In Egypt the cool prevailing wind blows from north and north-west.
2. "It is possible to build an air-conditioned, enclosed-mall centre at a cost close to that of the conventional type." (See Chain Store Age, May 1960.)
a) If the mall were open, the surrounding stores would have lost winter heating, or summer cooling into it, while the conditioned malls saves this leakage.

b) The conditioned interior climate will be easy on building materials, and so less expensive materials can be used on store fronts, such as plaster and wood instead of stone and brick. Also, glass can be less thick, instead of being heavy, thick plate. Sometimes these construction savings will actually pay for the mall’s air-conditioning.

c) The mall can also be utilized as an enclosed meeting place with a stage for fashion shows, concerts, lectures, etc., Fig. 156.

The types of structures covering the mall are already mentioned on page 84, Fig. 122 and 151. Such roofs should have top-sky-lights and clerestory windows for ventilation and daylighting, for shoppers must feel they are out of doors. Planted trees, landscaping and sidewalk cafés (open in summer and winter) contribute to the same aim. For example in Southdale shopping centre the height of the enclosed court is dramatized by sculpture and trees that lift the eyes up to the shafts of sunlight or the dimness of dusk coming through a louvered skylight, Fig. 173.

Another pattern of covered malls can be achieved by adopting a cable-suspended roof, covering the whole centre, stores and malls such as the one big five-acre canopy covering a shopping centre in Texas (Fig. 174 and 166). It is also a version of the oriental bazaar, set down in the dusty hot climate of Texas. To avoid a feeling of monotony of shoppers under this huge canopy, three treatments have been introduced. Firstly, courts (open to the sky) are punched through the canopy to let down light, but not air, as the walls of the court will be glazed. Secondly, the height of the canopy is occasionally raised and provided with clerestory windows for ventilation and illumination. Thirdly, the malls are staggered to cut their length and give a sense of enclosure to the shopper.

D. Air-Conditioning

At first it was a luxury only introduced in high-priced specialty shops. Now it is rather standard equipment for most of the modern stores, and essential for providing comfort for the consumer and ventilating both the storage and display areas. Further, if good days (with fine weather) are few a year, one also has to think of air-conditioning the enclosed malls and plazas. In that case store doors and store fronts could be eliminated, converting the centre to one completely air-conditioned enclosure, within which the individual stores will be like different departments in a huge department store.

One Central Air-Conditioning (and Heating) Plant or several individual Plants for each Store

The latter solution will result in unsightly, haphazard cooling towers, compressors and other superstructures on the roofs, which is ruinous to the architectural appearance of the centre, especially when this is located in a hollow of the ground, with its roofs visible from the sloping approaching roads. On the other hand, the central plant solution (preferably in a separate utility building), can be integrated with the design of the whole building group of the centre. It should be located centrally and designed compactly enough to allow short runs for the conditioned air to circulate in ducts.

Which of the two solutions should be more suitable for a given centre, can only be determined after considering the following factors:
1. **Initial Cost**: Experience has proved that the initial costs of the central plant, with its distributing ducts, are higher than the sum of those of the individual plants. Moreover, the central plant installation is rather complex as compared to the simplicity of individual plant installations.

2. **Operating Costs**: (maintenance, supervision, fuel consumption and repairs): In the case of individual plants these are twice those of a central plant serving the same number of tenants, for any individual refrigeration load greater than twenty tons of refrigeration will require the presence of a first-class engineer. This means that if we have 5-7 plants we will have 5-7 engineers, while one engineer with a helper would be quite enough at the central plant.

3. **Flexibility**: The central plant gives more flexibility.

4. **Architectural Design**: The central plant is more advantageous for the reasons already discussed.

5. **Advantages to the Tenant**: In central plant solution, the tenant gains more space by the elimination of the space required for the compressors, condensers, etc., and so giving him a larger net sales area.

We conclude from this that the central plant is, in general, more favourable for big community shopping centres.

**E. Heating**

In cold climates one central plant for 'Central Heating' is usually adopted, with its normal equipment of boilers and warm water pipes. However, in hot and dry and desert climates where summer is extremely hot and winter is rather cold, air-conditioning preferably replaces the central heating plant in order to fulfil both functions of heating in winter and cooling in summer. For example, in Southdale shopping centre a system of air-conditioning by air-pump is adopted, eliminating boilers entirely and thus cutting down operation costs. The conditioned air, whether cool or warm, fingers from the main supply located above the roof of the enclosed garden court, enters each store through continuous grills at the store ceiling line and is exhausted at the rear of the store into the service corridors. Then it travels into the basement and finally into the truck road where it exhausts under the loading docks and out through roof stacks (see circulation of conditioned air in Fig. 175).

**F. Utilization of Daylight in illuminating the Sales Area**

Generally, artificial light is preferred in illuminating the sales area continuously, as it can be varied in intensity, character and colour as display requires, while natural light cannot be controlled with the changing brightness of the sun and sky. So the latter is rather adopted in work and service areas, such as offices, laundries, etc. In hot climates, however, where almost every day is sunny, costs can be largely saved by adopting elaborate diffused daylight illumination such as in the solution shown in Fig. 176, suggested for one-storey stores in a shopping centre for the Egyptian climate. It is an inclined double roof, the upper shell being of glass blocks fitted in reinforced concrete framing. Below and suspended from this upper shell is a light grid pattern holding changeable panels, which can be louvers, opaque, or translucent glass. The void between the two shells serves as insulation against heat. The heated air inside is continuously escaping through the ventilation slots at the upper end of the roof, being replaced by fresh, cooler air from below. Thus, no chance is given for hot air to accumulate and raise the temperature of the interior. However, daylight is very essential for the display of certain goods which can only look their best and show their full colour in daylight, such as clothes and dresses. So, even in modern department stores of closed-front type, slots for introducing daylight for this function are introduced (see the Bijenkorf department store in Lijnbaan shopping centre in Rotterdam, Fig. 182). Also, in designing the shop-window illumination the intensity of artificial lighting should be greater than that of daylight outside, to avoid veiling glare. Otherwise special designs for shop-window glass should be adopted (see show-window lighting, p. 91).

---

![Fig. 175. Circulation of conditioned air in section of Southdale shopping centre.](image)

![Fig. 176a. Suggestion for adopting daylight to illuminate the sales area.](image)

![Fig. 176b. Detail of roof in Fig. 176a. 1: Glass blocks fitted in R.C. framing; 2: suspended ceiling.](image)
Leer - Vide - Empty
A. Unity of the Centre
The unity required does not mean an extremely standardized treatment for all the stores, resulting in monotony and inadequacy for different types of stores. Each individual store needs an individual identifying expression with regard to proprietor and kind of goods. For example, while a furniture store requires a totally open front, a jeweller’s shop requires very small shop windows to display its tiny previous merchandise effectively. Therefore the best solution is to allow individual diversity, but within a unifying architecturally-controlled overall framework, which should be strong enough to contain the varying individual designs of tenant stores in an integrated unity, Fig. 177 and 181.

These unifying architecturally-controlled elements are:
1. Uniform continuous roof lines, parapet walls, or cantilevered canopies, Fig. 84b.
2. Using one facing material, and repeating the same modular grid in all buildings of the centre, reflected even in paving design as in Poplar Lansbury centre in London (see p. 43 and Fig. 86 and 87).
3. Continuous colonnades or arcades adjacent to the stores give a strong unifying rhythmical pattern, Fig. 169.
4. Uniform dividing vertical panels between individual stores give repetition and minimize colour and texture clashes.
5. Blind walls more than 6 m long should not be permitted to avoid interrupting the continuity and unity of store’s front.

B. Character of the Centre
The centre should be designed to have something of the character and atmosphere of the core of an old medieval market town (13th to 15th centuries, see p. 8). What is common to the two can be demonstrated as follows:

a) In both, shopping is combined with or adjacent to places of communal, recreational, even cultural and religious activities. The only difference is that in the past the church had the main importance and shopping benefited from being near to it. Now-a-days the case is reciprocal: business, trade and shopping have first importance in our modern life and the cultural and religious institutions find it advantageous and profitable to be adjacent to them (compare the location of church with regard to shopping in Meve, medieval market town A.D. 1297, Fig. 16, with that in Välingby shopping centre A.D. 1964, Fig. 60 and 81).

b) In both, shopping is done exclusively on foot.

c) In both, the atmosphere is designed to give a sense of animation, variety, leisure and gaiety (compare Fig. 178 with Fig. 156). In a pedestrian mall or plaza, the shopper should feel a sense of enclosure and intimacy. This is attained by making such pedestrian space relatively narrow, and also by giving the shopper an enclosed view, but at the same time giving him the sense of continuity and curiosity as in the case of curved shopping precincts (see p. 88 and Fig. 128, see also Fig. 179).

d) Contrast: This gives the store-front interest and attracts the shopper’s attention. It can be achieved by varying heights, materials, colours, textures, treatments, etc. Fig. 181 shows a contrast between dark grid-framing and light-coloured panelling.

A. Character of the Centre

The centre should be designed to have something of the character and atmosphere of the core of an old medieval market town (13th to 15th centuries, see p. 8). What is common to the two can be demonstrated as follows:

a) In both, shopping is combined with or adjacent to places of communal, recreational, even cultural and religious activities. The only difference is that in the past the church had the main importance and shopping benefited from being near to it. Now-a-days the case is reciprocal: business, trade and shopping have first importance in our modern life and the cultural and religious institutions find it advantageous and profitable to be adjacent to them (compare the location of church with regard to shopping in Meve, medieval market town A.D. 1297, Fig. 16, with that in Välingby shopping centre A.D. 1964, Fig. 60 and 81).

b) In both, shopping is done exclusively on foot.

c) In both, the atmosphere is designed to give a sense of animation, variety, leisure and gaiety (compare Fig. 178 with Fig. 156). In a pedestrian mall or plaza, the shopper should feel a sense of enclosure and intimacy. This is attained by making such pedestrian space relatively narrow, and also by giving the shopper an enclosed view, but at the same time giving him the sense of continuity and curiosity as in the case of curved shopping precincts (see p. 88 and Fig. 128, see also Fig. 179).

C. Scale for Motorist and Pedestrian
On the one hand, the centre should be impressive in scale, as seen by motorist approaching the centre from far away. This can be attained by:
a) raising a part of the centre above the ground, sometimes on an artificial hill managed by using the earth from the excavation of foundations, basements and pools;
b) by including a high-rise building in the centre, whether it is an office building, or a water tower, or (as it usually is) the department store itself (2-4 floors), Fig. 96b.

On the other hand, for the pedestrian within the centre the buildings, plazas and malls should not look so huge or imposing. Otherwise the consumer will feel awe, and even the merchandise will look inadequate. Such large-scale buildings or spaces should be brought down by architectural means to suitable human scale, by, for example, introducing relatively low arcades or colonnades, Fig. 180. Also, the width and length of the malls and plazas should be studied in proportion to the heights of the buildings surrounding them. (1)

D. Store-Front Design in the Centre
As window-shopping now-a-days is one of the greatest pastimes of men and women, store-fronts are considered the catalysts which will turn window-shoppers into customers, and they should be carefully designed to fulfil this purpose.

Such analytical design will consider the following points:

a) Unity of store-front, already discussed under the title of ‘Unity in the Centre’.
b) Simplicity: Store-fronts should be simple in design, enriched by simple sensitive detailing, and with minimum decoration.

Lavishly exaggerated decoration will only have a deadening effect on the merchandise displayed. The latter must have always the greater importance—one must not forget that the store-front is only a medium for displaying the merchandise.

(1) Galeria Vittorio Emanuele in Milan is a good example for this, Fig. 43. Other means of obtaining the adequate scale for both motorist and pedestrian consumer are already mentioned on p. 68.
(2) Such traditional open shops still abound in Egyptian provincial towns.
3. The Recessed Front gives a more convenient space for "Window-Shopping" (elbow room) without interrupting or being interrupted by passing pedestrian traffic. It can be in the form of a splayed recess having the two advantages of leading shoppers unconsciously to the entrance and presenting display more at right angle to their eyes, Fig. 183b. It can also be in the form of an open front lobby, Fig. 183c.

The advantages of the recessed front are:

a) It provides more space for show-windows (Fig. 183d and e).

b) For a corner store an open lobby is a sure attraction (Fig. 177).

c) In case of restaurants and tea-rooms these recessed spaces are utilized for customers to sit outside (see Fig. 177).

E. Show-Window Design in the Centre

For an efficient design the following points should be considered:

1. Flexibility and Suitability to the Merchandise displayed:

In the case of the open front, adjustable platforms are used, the height and breadth of which can be varied to suit the size and shape of the merchandise displayed. In the case of the closed front the height and depth of the show-window can be variably determined with regard to two standards, Fig. 184a:

- the eye-level standard (165 cm), and
- the zone of convenient vision confined between an angle of 45° below eye-level and an angle of 15° above it (the maximum angle above eye-level is 45°).

A most interesting show-window type, "the double-level, closed-back show-window", is an example designed according to these standards, Fig. 184b.

Valuable but tiny items such as cosmetics, perfumes and jewellery require a suitable type of show-window: small, and raised close to the eye-level. For better visibility the floors of such show-windows are sometimes inclined towards the pavement.

In store construction the supporting columns are set back behind the building line, Fig. 158, to allow more flexibility in design, and continuous stop windows.

2. Protection Against Veiling-Glare Reflections:

If the amount of illumination inside the show-window is less than the outside, the exterior glass surface of the show-window will turn into a mirror or acquire a very annoying semi-transparant mistiness called 'Veiling-Glare'. (1) Naturally this problem arises only in day time and to overcome the high intensity of the outside daylight by increasing the intensity of illumination inside the window would

(1) Welch's Law of reflection in shop windows says that 'The critical point of apparent veiling-glare is reached when the ratio of brightness of the principal surfaces being reflected to the brightness of surfaces being viewed through the glass is 1:1. When the ratio of reflected to viewed brightness reaches 5, it will produce the most annoying glare. A ratio of 2 is a medium case where the glare begins to be annoying.' (See A., p. 86-87).
4. Access to the show-window:

Firstly, by Controlling the Sources of Brightness in the surrounding environment. To understand this systematically we will divide the veiling-glare glare area of the shop window into three parts, Fig. 185, the lower part A occupied by the reflection of the pavement, the eye-level part B occupied by the reflection of the opposite buildings and the cars, and the upper part C by the reflections of sky and clouds. Reflection A can be reduced by black-tipping the pavement or over-shadowing it with trees. Reflection B can be reduced by painting the opposite buildings in dark colours or by awnings hung from the edge of canopies, Fig. 185. Reflection C can be entirely prevented by overhangs or by adopting a recessed or a lobby front. Through a clerestorey window, daylight can also be reflected by the overhang into the show-window helping visibility of display by increasing its brightness, Fig. 185.

The second solution for preventing the glare, is the adoption of a special design for the show window glass front. Some of these designs are:

Forward Tilted Glass, Fig. 186. Reflections A and C are prevented but a part of B is not.

V-Shaped Tilted Glass with overhang, Fig. 186b: All glare is prevented.

The U.S. Invisible Glass: This is a patented system made of segments of glass curved inward and scientifically calculated to give the minimum veiling-glare. It is ideal but expensive, Fig. 186c.

Note: Show-windows curved in plan should be avoided as they will reflect everything in the street.

3. Ventilation:

The show-window should be adequately ventilated, to avoid condensation on the glass. This can be attained by introducing currents of warmed air on the inner surface of the glass or by double-glazing.

4. Access to the show-window:

In closed fronts, it is usually through service doors and openings in the back or sides of the show-window. These should be as numerous and as large as possible, and adequately designed and located to make it easy and convenient to change the display, Fig. 187a. Another interesting method of access is the 'Lift-Display-Platform' and 'Double-Display-Stage', Fig. 187b. Both travel vertically and can be dressed either in the basement or at first floor level.

5. Show-Window Lighting, Fig. 187a and Fig. 185:

Light sources should be flexible, adjustable and shielded from the eyes of the observer. The stress should be upon brightly illuminating the goods, contrasted against less bright and neutral-coloured backgrounds. Care should be taken that the parts of the displayed objects seen by the observer should not be in the shadow. Therefore spotlights should be located above or in front of the object; spotlights from rear or below should be avoided, except in the case of glassware and transparent objects.

White light is recommended if it is important that goods should be seen in their true colour values.

Naturally a greater intensity of show-window light is needed in the day time than at night. While not less than 500 ft. candles is recommended in the day, 200-300 ft. candles is enough at night.

F. Sign Design in the Centre

The main functions of a sign are: a) to identify the merchandise or the proprietor, b) to inform the public in a clear, direct and simple way, and c) to act as a powerful and pleasant magnet that attracts consumers.

If the centre's architect does not insist upon controlling the locations, sizes and colours of signs, and treating them as an integral part of the whole design, misplaced unsightly signs will soon unavoidably spring up here and there in a confusing way.

Types of Signs Required in a Centre:
- The high centre's own sign identifying the centre is attached to a tall structure such as a stair or a water tower, so that it can be seen by motorists at a distance and from all directions, Fig. 188.
- The large centre's signs should be located near the public accesses to the loop road encircling the parking area (at right angles to the direction of the traffic flow), Fig. 189.
- A logotype for the shopping centre's name, repeated everywhere on doors, service-vehicles, and napkins and menus in the restaurants.

- The junior department store's sign should be simple and not exaggerated, for the bigger higher structure of the department store is in itself a sufficient identification.

- Individual Store Signs: There are perhaps three kinds:
  a) Signs placed over the canopy, not recommended as they are only visible to the motorist from a distance;
  b) signs placed under the canopy and above the show-windows;
  c) small hanging signs under the canopy for pedestrians, brought near their eye-level and at right angles to the store front, Fig. 190a and b.

What Should be controlled in the Individual Design of a Centre's Signs

The size and level of signs and lettering should be controlled to give unity. It is recommended to confine the individual store signs to a continuous horizontal band of limited width and height under the canopy, Fig. 190 and 170.

Thus a unified appearance of sign design in the centre is obtained. For sign lighting, which is important in night shopping, the band can be of diffusing glass lighted from behind by rows of fluorescent lamps. On this band, the shopper can adjust any kind of lettering design. The structure will look dignified and will have some unity.

Paper signs, window-stickers and signs having moving or flashing parts should be prohibited.

The height of letter signs should be calculated with regard to the maximum distance from which it is viewed.

\[
\text{Letter height in m} = \frac{\text{max. view distance in m}}{K}
\]

(Coefficient \( K = 300-500 \); width and letters \( \sim \frac{1}{3} \) the letter height.)

G. Sculptures, Murals, Reliefs and Music in the Centre

Function:
1. These artistic features add beauty, unity and contrast to the centre's building complex and spaces; interest, appeal and gaiety to the shopper's eye.
2. Sculptures in malls and courts provide characterized, easily remembered rendezvous points; for example the 'Joy-ride Sculpture' in one of the malls in Stevenage main shopping centre, Fig. 191.
3. The criticism of these artistic features and the resulting arguments create activity, which is very valuable to the community life.

Architect and Artist collaborating in the Centre:

- The architect determines and controls the location of the artistic elements, their approximate sizes and the required accent of horizontality or verticality. His task is to fuse art, landscape and architecture into one integrated unity.

- As most of the centre's customers are women and children, the artistic features should not be heroic or dramatic. On the contrary, they should be gay, humorous, fanciful, colourful, amusing and challenging.
- The artist should carefully design the feature with regard to the outdoor scale and in spatial harmony with the suggested site and the architectural and landscape surroundings.
- In choosing suitable materials for the feature the artist should take into consideration its weathering qualities and weather maintenance.

Modern Trends in Sculptural and Mural Design:
1. Modern colourful expressionism and abstract forms, Fig. 192 and 193.
2. Mobile forms, moving and creating new forms as the breeze blows.
3. Water Sculpture: fountain jets move objects, then dissolve into mists and sprays, Fig. 201.
4. Play sculptures for children, Fig. 194.

Music in the Centre:
Restful classical music from hidden sources are recommended. In the U.S.A. in 1955 three out of four new supermarkets had installed store-music.(1)

H. Special Aspects of Sales Area Design as related to the Shopping Centre
Each type of store in the centre requires a special study for the interior design of its sales area. Such studies lie outside the scope of a research dedicated to the planning of shopping centres, as they are the job of individual stores architects and interior designers. These can only begin their work after the main architect-planner of the centre has already fixed the main defining structural characteristics, both interior and exterior, without which the centre could not be more than a mere accidental grouping of stores. These characteristic features which the centre's architect provides for the interior of all stores alike should be controlled by the following modern merchandising principles: a) flexibility, b) adaptability to self-selection, self-service and other modern shopping trends.

a) Flexibility of Interior Design provided by the Centre's Architect:
In line-stores it is rarely possible to settle upon certain defined tenants for all stores, even after the centre's construction is complete. Moreover, some of these defined tenancies are liable to change, owing to failure in business. Therefore the 'Raw Interior Design' provided by the centre's architect should be simple, based on a standardized module, flexible, and easily and economically transformed into any required design.
In designing the interior of the centre's magnet outlets (a junior department store or a supermarket), flexibility is also required to arrange the sales space according to the changing demands of seasonal selling, style variation, or the enlargement of a given department to cope with the peak selling
b) Adaptability to Modern Merchandising Trends:

Self-Selection: This is a very old system and already known in the oriental bazaars (p. 17), book stores, and weekly open markets. Its main characteristic is the open display of goods, having no barrier at all between them and the consumers. Usually this open display is based on one of two systems:

1. 'Duplication or Quantity System': suitable for routine merchandise that gains impressiveness with quantity, such as canned foods, safety-pins, and notebook refills (few people can resist buying two when they intended to get one).

2. 'One-of-a-Kind display System': One of each item is out, others are in easy-to-reach stock cabinets below or behind. This is a tidy and goodlooking solution for luxury goods, which lose impressiveness with duplication, Fig. 197. This system is further developed in the gravity-wall shelves of quick automatic back loading of the stock, Fig. 198.

The sales staff is still important in self-selection for servicing and advising the consumers.

Self-Service(2): Here the sales staff is kept to a minimum, thus cutting the operating costs to a large degree, resulting in cheaper goods for the consumers. Entering a self-service shop, the consumer takes a basket or trolley (arranged in racks near the entrance), selects his own goods from open-displayed merchandise on islands or wall fixtures, and finally goes to a clearly visible battery of cash-registers (near the exit) where he pays for his goods, see Fig. 49.

(1) However well a sales area may be planned, the human eye tires of it rapidly. After it has become accustomed to it, the human brain hardly recognizes that the object exists (see A., p. 45).

(2) Self-service was introduced for the first time in the U.S.A. by Clarence Saunders in 1918 (43 years ago). In 1957 the number of self-service shops in the U.S.A. was 18,000, in Sweden 5,000, in England 4,000, in Germany 3,200 and in Switzerland 1,120, of which 291 shops are owned by Migros Co-operative Foundation (see E., p. 9-11).
At first self-service was confined to food-stuffs only (in the supermarket, see p. 21-22) but now it has spread to non-food articles, such as confectionery in departments stores, discount houses and variety stores.

**How should the Centre's Architect provide for Primary Essentials of Interior Design of the Self-Selection and Self-Service Stores?**

1. There should always be an unobstructed view of the whole store. The sales area should therefore be almost partitionless, free from interior-bearing walls, clumsy piers, and excessive number of columns. For example, modern supermarkets have no interior columns at all, Fig. 167.

2. While the back storage area of the traditional service unit-store still forms more than 60% of the total area of the store it usually forms less than 25% in the case of a self-service store, because in the latter most of the merchandise is displayed openly in the sales area, Fig. 199. Sometimes, even this small storage area with delivery-service is put in the basement.

3. Planning the general pattern of the interior and locating the entrances and exits should aim at giving direct flowing traffic aisles, suitable to the self-service system.

4. Self-service stores dealing with food-stuffs and demand goods prefer now-a-days to have more solid enclosing walls instead of show-windows. The former are more effectively used for interior self-service display space.
Leer - Vide - Empty
A. Why Landscaping in a Shopping Centre?

Good architecture requires full integration with surrounding nature and designed landscaping. The latter, if well planned, gives the simplest building beauty and charm. In shopping centres it is even more a necessity, as it contributes largely to the gay, appealing and interesting shopping atmosphere which will persuade the consumers to stay longer in the centre, resulting in more profits for the retailers. Also the dull, vast, monotonous, black-topped parking areas could be greatly relieved and tempered by introducing green areas, flower beds and shady trees into the strips dividing the lots and into the triangular areas at the end of stall rows, Fig 200.

B. Varieties of Landscape-Design Treatment

1. Open-Air Rest Gardens provided with comfortable seats in sunny or sheltered places, approached by pathways paved with attractive flagstones or bricks, and sensitively located among green lawns, trees, sculptures, etc.

2. Water Features, such as ponds, brooks, pools, and especially fountains, for playing water appeals to the eye and ear—'Like fire, it holds eternal magic'. Fig 201 shows a fountain with moving sculptural parts. In hot, dry climates such water features are essential to cool the air and provide a modified mild microclimate for the centre. In cold climates, pools located at the edge of the centre can be transformed into iceskating rinks in winter. For fear of accidents to small children the water in pools should not be deep and should be surrounded by protective parapet walls.

3. Rows of trees as screens for the unsightly service courts and delivery docks, also serving as a sound barrier, protecting the adjacent residential areas from the noise of the centre. Sometimes tall trees surrounding the centre serve as wind and dust barriers. In cold countries where there are strong prevailing winds two successive rows of low trees can provide a snow trap.

4. Flower and Plant Beds: These should not be so big as to be obstacles to pedestrian traffic. A greater number of smaller beds is a better solution, Fig. 202. The parapet walls enclosing these beds should be designed to add colour and interest, Fig. 202.

5. Bird Cages lend gaiety, interest and activity, Fig. 173.

6. Planting the Basement Roofs: In designing such roofs, the extra load due to earth, sound damp-proofing and proper drainage should be considered.

7. Seasonal Floral Displays especially in springtime will give the centre appeal and interest.

8. Indoor Garden Courts usually take place in covered mall centres. Where these malls are air-conditioned, the landscape architect will not be limited in his choice of plants to those which are suitable to the climatic region. He can even include tropical and subtropical plants, Fig. 122 and 173.

C. Main Points to be considered in Landscape Design

1. Landscaping should contrast with the architectural character of the centre. If the centre buildings are rational, then landscaping should be informal and natural, Fig. 203, and vice versa.

2. Interesting natural features of the site, such as rocks, brooks, big shady trees, etc., should be spared. This would enable the centre to look its best at the day of opening, with grown-up trees casting beautiful shadows on the facades. Also a big shady tree might provide a favourable site for an open air café, giving it beauty, cosiness and character.

3. The varieties of plants, trees and flowers chosen should be:
   a) suitable to the climatical geographical region;
   b) those requiring the least maintenance; for example, flowering trees and shrubs require less maintenance than flowering annuals. Also, in hot, dry climates where not much water can be spared, desert plants and cacti are suitable. In cold climates evergreens are favourable.

4. To cut down the maintenance costs, automatic irrigation and sprinkling system, equipped with automatic controls, are introduced, provided they cost less than manual upkeep.
Leer - Vide - Empty
Leer - Vide - Empty
In the previous chapters a detailed analysis has been developed to integrate an organized method of planning a community shopping centre, taking into consideration almost all the relevant factors, whether from the historical, town-planning, architectural, constructional, climatic or engineering points of view.

Here, as a final conclusion, I should like to state (in successive steps) how the previous analysis could be modified and adopted to give the main lines for planning shopping centres for the many new communities which are being erected or projected now-a-days on a large scale all over the Egyptian region, taking into consideration the local Egyptian conditions in the urban and suburban development areas.

The urban Egyptian population (living in cities and small towns) increases very rapidly. While it was four million in 1937 it increased to 5.9 million in 1947 and it became 7.95 million in 1957. Up to 1975 an average normal increase of about 3½ % of the urban population (due to birth and emigration) is expected annually, that is to say about 0.3 million persons. Further, due to the important first and second five-year industrialization programmes (under execution now) it is also expected that there will be a wave of emigration of the rural population from the countryside to the urban or urbanized areas where the new industries are located.

All these people will need new dwellings. So the government has devoted 100 million £ (about 1,200 million Swiss Francs) to housing projects in the second five-year programme. These new dwellings are provided either as new communities in the suburban development areas of old cities (such as Mokattam and Nasr, new suburbs in Cairo), or as whole new towns in the newly industrialized and developed regions, such as Aswan, Sad-el-Aali and Kattara depression regions.

In order for each of these new communities to function well economically, it should have an integrated shopping pattern correctly located and planned, in relation to residential zones and other communal facilities.

The main lines recommended for planning a suitable shopping pattern for such a new Egyptian community are mentioned in the following steps.

A. Town-Planning Considerations

- The rapid urban and housing development should be controlled through well preplanned regional or master plans and the necessary by-laws, especially in the case of the extension of our old cities such as Cairo and Alexandria. These plans should indicate precisely the location of the commercial zones with respect to residential and other zones. Shopping centres and any other big shopping outlets should be built only in these commercial zones. Any attempt to change the zoning from residential to commercial should be strictly prohibited. Otherwise, these new communities will develop, in a haphazard and unplanned way, into future slums.

- A new community should accommodate from about 20,000 to 100,000 persons, taking into consideration a minimum future increase in its population of about 30 % in the next ten years. The plan of such a community should consist of a cluster of neighbourhoods, each accommodating about 5,000 to 12,000 persons. Each of these neighbourhoods, in its turn, is composed of residential units, each accommodating 1,000 to 1,500 persons. A suggested plan should be carefully developed to organize the location of the following types of shopping centres (which must exist in a new community):

  The Main Community Centre: This serves the whole community and is located at its centre. It can be combined to the main community railway station or its bus terminus. All residents should be within a radius of 700-900 m from the centre (not exceeding a twenty-minute maximum walking distance). The centre
provides the consumers mainly with selectivity goods, such as clothes, shoes, radio and household appliances and some luxury goods. The key tenants are one or two branch department stores.

**Several Neighbourhood Shopping Centres:** Each serves its own neighbourhood and is located near its primary school. Walking distances to it should not exceed 300–400 m (5–7 minutes). It provides the consumers with convenience and demand goods. The key tenant is a supermarket or a fruit and vegetable market.

**Several Shopping Subcentres:** Each subcentre is composed of 3–5 shops serving the nearest residential unit with daily and foodstuff goods (groceries, greengroceries, milk products, meat, etc.).

- The commercial areas required by each of the community and neighbourhood shopping centres can be roughly estimated on the basis of a local empirical sales area per capita. But this can only be known and safely used after much experience has been gained in the field of planning shopping centres in Egypt. So it is recommended that questionnaires and thorough surveys should be carried out at the established centres every five years and that the data gathered should be analysed by experts to deduce some empirical figures for different communities of different standards of living, different buying habits and different degrees of motorization. (1) Such detailed data will be of great help for the process of planning. However, to calculate the exact area required by a centre one should follow exactly the economic analysis as discussed in the next step.

### B. Economic Analysis

Economic analysis and the settling upon a centre's site are two steps that should be handled simultaneously and repeatedly, for it is only after economic analysis that it is possible to see if the centre could attract enough trade potential to justify erecting it at the suggested site or not. If not, then another site or sites should be tried until the one giving the biggest potential and the most convenience to the consumers is settled upon.

Once a location for the community shopping centre is chosen, the economic analysis will proceed as follows:

1. The boundaries of the trade area around the centre should be determined, taking into consideration the natural topographic and geographic barriers, the maximum convenient walking (700–900 m) and driving distances, and the competition of nearby shopping centres or old shopping districts, see p. 55-56.

2. Then the number of families in the trade area should be calculated, plus an allowance of 30% for the expected future growth of population in the next ten years. These families should be classified according to their annual income level. The average annual income for each category should be determined from the current census, or by sample surveys and questionnaires. (The tables suggested for making such calculations are shown on p. 57 and p. 58.)

3. By the same method the percentage of income expended on the principal lines of retail goods for each income category are determined. (2) From this the total expenditure on each line of retail goods can be obtained by multiplying the number of families in each income category by the appropriate average expenditure per family on this line of goods, and adding the products together. **Note:** Annual income increase during the next ten years should be considered (in Egypt it is estimated to be 2% of income yearly).

4. Owing to the competition of shopping outlets existing nearby, and the main downtown shopping centre, an empirical discount percentage should be subtracted from the total expenditure in the trade area upon each line of goods. Such empirical discount percentages can only be worked out from local questionnaires designed to discover where the population in the trade area usually buy each line of their consumption goods. For example, the estimated percentages expected to be spent in a community centre in Heliopolis were as follows for five main lines of goods:

---

(1) Such empirical estimated figures for a community in Heliopolis of average annual income per family are ~ 0.47 m² per capita for the neighbourhood shopping centres, and ~ 0.45 m² per capita for the community shopping centre.

(2) Estimated percentages of family income on 5 principal lines of goods—calculated for a community in Heliopolis of average annual income per family 360–420 — are as follows:

<table>
<thead>
<tr>
<th>Line</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and drink</td>
<td>33%</td>
</tr>
<tr>
<td>Apparel</td>
<td>10%</td>
</tr>
<tr>
<td>Drugs</td>
<td>5%</td>
</tr>
<tr>
<td>Household needs and furnishing</td>
<td>4%</td>
</tr>
<tr>
<td>Service and miscellaneous</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>56%</td>
</tr>
</tbody>
</table>

---

102
### C. Site Selection

- As a principle, in choosing the site for a centre (also for any big building group) fertile land should be avoided, as this is so limited in the Egyptian region, (2) being reserved for agriculture.
- Location on express highways should be avoided.
- The site should be easily accessible from at least one residential road. It is better if it is accessible from two roads.
- The centre should be located so that the surrounding areas are free from strong retailing competition.
- From the very beginning the maximum area required for the complete centre at its full development and with its maximum future extension including buffer and green areas should be acquired and reserved. However, in the case of a very high-priced location the area can be reduced to a minimum if a multi-storeyed centre pattern is adopted.
- The site should be one piece, undivided by any road, ditch or brook, and should have no acute angles.
- It should have adequate necessary utilities such as water, sewers, and electricity.

### D. Land-Use Plan

This depends mainly upon the location of the centre and the price of the land. This can be clearly understood if we compare two extreme cases: one is the case of an open desert location in Assuan of very cheap land price, allowing a one-storey centre with no basement; the other case is of a centre for a reconstructed community in Cairo city proper where the land is very limited and expensive, suggesting a compact high-rise centre.

The aim of the land-use plan is to fit the total required area (GA) into the site area (SA) properly. GA is composed of the following subsidiary areas:

1. **Gross building area (BA)** = gross sales area + non-retail commercial areas included in the centre, such as offices, cinemas and medical clinics. BA can be in one or more levels.

2. **Spacing area between the structures (SPG)**: usually assumed to be equal to the gross building area on the ground floor only (BAG).

3. **Transportation area (TA)** is the parking area plus private car movement and public transportation areas. TA is usually calculated by multiplying the net sales area (RA) by an empirical local parking ratio. 0.2 to 0.3 is the estimated parking ratio for Egypt considering the motorization conditions in the urban areas. TA can be on one level or distributed on many levels.

4. **Buffer and green areas (BUA)** are the green and recreational areas, and areas reserved for future extension.

Several different land-use plans (3) should be made; the rule governing them all is that SA = BAG + SPG + TAG + BUA. The most suitable plan will be that which takes into proper consideration the limitation of the site and by-laws governing the heights, spacing between the buildings, basements, etc.

---

1. These average annual sales per m² (turnover per m²) should be taken from current statistics or by sample surveys.
2. Fertile land is only 1/4 of the total area of the Egyptian region in Switzerland the productive land (pasture and agricultural land) is 76.4% of its total area (see 'L’Office Suisse d’Exposition Commerciale').
3. See p. 63-64.
E. Choosing the Centre Pattern

- The strip pattern is suitable for extended elongated sites. Service traffic could be at the back, while parking could be in front of the row of stores.
- The L-shaped pattern is suitable for sites located at two intersecting roads.
- The pedestrian covered mall pattern is the most suitable for community shopping centres in Egypt. Stores face a cool, shady inner pedestrian court from which all kinds of motor traffic are excluded, and have their backs to the motor traffic and the blazing heat outside. Such a pattern is a sort of modern version of the traditional old Oriental bazaar, see page 17.
- For a big centre erected to serve a reconstructed community in the city proper, a compact high-rise cluster pattern (integrating high buildings with low ones) is the most suitable (see Westchester Terminal Plaza and urban shopping centre, Fig. 96). One or more downtown department stores are the main magnets, located at the hub of the centre, and surrounded on all sides by covered shopping malls and courts for pedestrians.

F. Analysis of Traffic and Communication Problems

Most shopping in commercial districts of Egyptian towns is done on foot. Only a very small percentage of the population goes shopping by car. This is because the number of cars per 1,000 inhabitants in the Egyptian urban areas is only 14, which is still very low. The parking ratio (transports and parking areas : net sales area) suggested for these Egyptian conditions is 0.2 to 0.3, taking into consideration the expected future increase in the degree of motorization due to industrialization, the consequent higher standard of living and the motor car industry which has already been established in Egypt.

Separation between Pedestrian Shopping Traffic and Motor Traffic

This is achieved firstly by excluding all types of motor traffic from the pedestrian shopping malls and secondly by providing overpasses or underpasses leading the pedestrian directly to the centre without any need to cross dangerous motor traffic streets, see Fig. 126.

Delivery and Service Truck Traffic

- This should be separated from all other types of traffic in the centre. With the strip pattern centre, this is attained by either limiting delivery to non-shopping hours or by separate accessible back delivery truck roads or screened back service courts.
- For mall and cluster patterns another method might be recommended by having the delivery truck road either above or below the sales area. However, in the Nile valley, tunnel truck roads are unfavourable due to high underground water level.
- The principles of proper delivery are: screening from the eyes of consumers, ease without loss of movement and time, one-way flow, and maximum safety for both truck and building elements.

Private Car Traffic and Parking

- By dividing the transportation (TA) determined in step (D) by 35 m², which is the average area per small car stall (with allowance for spacing between cars, access drives, etc.), then the number of parking stalls could be determined.
- The parking area should be subdivided into smaller lots, each with an organized entrance and exit to allow a smooth circulation flow.
- The department store, apparel and luxury stores (the only outlets attracting motorist consumers in Egypt) should get more parking spaces as close as them as possible.
- In case of a centre erected for a reconstructed community located in Cairo or Alexandria city proper, the parking area should be compactly designed, being either provided in basements under the stores or above them or in an adjacent multi-storey parking garage. Another practical solution suitable to Egypt's hot climate is to raise the centre wholly or partly on columns, leaving the ground floor to be utilized as shaded parking and green areas.

Public Transport

- It is a good thing to combine the main shopping centre of a community with its bus, motor or railway station. Such public transport should be kept separate and access to it provided by safe walk-ways from the pedestrian areas of the centre.
- Loading and unloading stops should be visible and sheltered by sheds or colonnades.

(4) Such ratio can be attained in L-shaped and U-shaped patterns of shopping centres having front parking.
G. Designing the Centre

From the previous steps the essential data and primary studies are developed. In this step the process of designing and planning the centre is as follows:

The Merchandising Plan (or Grouping of the different Types of Stores):
- Stores are divided into two main categories: the traffic-pullers (magnets) such as the department store, apparel store and food-stuffs store, and the traffic-users such as the small stores dealing with impulse and luxury goods.
- In principle the store arrangement should be compact, allowing the greatest interplay among the stores, exposing them all to the maximum pedestrian traffic and eliminating poor store-location. To attain this several suitable arrangement schemes should be tried. (1) In a single-pull scheme the magnet is located in the hub of the centre surrounded by the small traffic-user stores. In a double-pull or triple-pull scheme the magnets have end or hinge locations, and the non-magnet stores are located between them to benefit the pedestrian traffic passing between them. (2)
- A very favourable grouping is that which creates a closed-ring circulatory pedestrian flow around all stores (see Northland shopping centre, Fig 100).
- Foodstuff stores and supermarkets should be located on the outer extremities of the centre, where there is more adequate open space to permit their combination to the greengrocery and fruit open market (such combination is traditional and has been found convenient in Egyptian shopping districts). This foodstuff combination might be located in a separate nearby satellite centre.
- The department store has the most important position in the centre. Its estimated sales area (for an Egyptian community centre) is 18 to 24% of the total net sales area of the centre (RA). Adjacent to it a large number of small luxury and impulse goods stores should be located. The apparel stores should also be grouped together and located near the department store.
- Pharmacies and drugstores should have a corner location directly accessible and clearly visible from the surrounding roads.
- Service stores should have unimportant locations, for example, basements.
- In order for a vital and beneficial competition to occur in the centre, there should be at least two of each type of store.

Main Principles that should be considered in the Designing Process:
- With its commercial functions, the centre should combine other community facilities: social, medical, cultural and recreational. Some of these activities, such as offices, clubs, libraries, medical clinics, cafes, and cinemas could be located on the floors above the stores. Shopping always benefits from such combinations.
- The centre should have a sort of automation centre (which is a group of automatic vending machines) well integrated to give a fairly complete selection of the important articles one needs in the evening and at the week-ends, when all the shops are closed.
- In case of future extension, or when the centre is built in stages, it is very important that at each stage it should be fully integrated and complete in itself, and at the same time flexible to allow the proper addition of the next stage.
- The plan of the centre should be based on a suitable uniform grid, which allows great flexibility in both the width and the depth of the store and facilitates future extension and variation of the stores.
- The height of the main sales floor should not be less than 4.80 m for good ventilation. It also gives the store more room to expand vertically by a mezzanine floor, which could be added later on.
- In order to encourage inter-shopping and in order that the centre shall not lose its intimacy, the width of malls should not exceed 12-15 m. Also they should not be monotonously long—the maximum walking distances should not exceed 100 to 120 metres.
- Pedestrian malls and plazas should be designed and equipped so that they can be used as places where attractions, shows and outdoor festivals can take place.
- The basic pattern recommended for Egypt’s hot weather is the ‘Inner Court’ pattern, having the stores facing inwards toward a cool, shaded inside area with pools, fountains and greenery, and turning away from the blazing heat outside.
- The buildings should be grouped close enough together to overshadow each other, this resulting in a considerable reduction in temperature.

H. Climatic Consideration

(1) See p. 75.
(2) See Roosevelt shopping centre, Long Island, Fig. 147.
Cantilevered overhangs or adjacent colonnades should be provided along the store to give shelter against the sun and reduce the annoying veiling-glare of the show-windows.

A compact, multi-storey, enclosed type of mall is the most recommended, whether it is a direct development of the oriental bazaar with its lofty height, thick walls and top ventilation, or a modern design covered by R.C. shells or trusses, having its climate controlled artificially by air-conditioning. In the former top skylights and clerestorey windows are essential for ventilation and daylight.

The long cool summer nights encourage night shopping, which could be real fun, and pleasure for the whole family to enjoy together.

With such night shopping it is recommended that the centre should include open-air cinemas and cafés, contributing to the consumer's convenience and inducing more impulse buying in the centre. Similarly, roof gardens are recommended to be used as summer night resorts; at the same time they are a good roof insulation.

Trellises and perforated and breathing walls are recommended to diffuse the high intensity of light and for ventilation.

Although artificial light is preferred to illuminate the sales area by night and day, in Egypt, where almost every day is sunny, much expense can be saved by adopting elaborate diffused daylight illumination. (1)

I. Aesthetical Treatment

Unity of the Centre: This does not imply a monotonous, inadequate standardized treatment for all stores. It should be an architecturally unified over-all framework, strong enough to allow within it the individual designs of tenant stores, while still moulding them into a unified whole. Unifying elements could be: continuous roof lines, colonnades, arcades, use of one facing material, etc.

Character of the Centre: The shopping malls and plazas should be designed, dimensioned, and treated so as to look always busy and animated, giving the consumers a sense of 'Enclosure' and 'Intimacy' and a feeling of safety, leisure, gaiety and amusement.

Store-Front Treatment: Storefronts should have unity, simplicity, flexibility and contrast. The latter gives the store-front interest and attracts the shopper's attention.

Show-Window: They should be flexible and easily changed in size and treatment to suit displaying of different articles. Thus the store front should be free of columns to make such flexibility possible. The show-window should also be protected against veiling-glare, either by using special glass or by special design of canopy and awnings. Artificial lighting of the window must be adequate, flexible, adjustable and shielded from the eyes of the shopper. The principle is: bright illumination of the goods, contrasted against a less brightly illuminated background of neutral colour.

Signs: Location, size and colour of store signs and letterings should give diversity and variety, but still within a frame of unity and order (unity in diversity). These factors should be controlled by the architect-planner of the centre, in order to have such a unified appearance integrated with the whole design.

Sculpture, Murals and Reliefs add beauty and contrast to the centre's building complex. They should be gay, colourful, and amusing. Their locations, appropriate sizes, and appropriate accents should be controlled by the architect of the centre. His task is to fuse merchandising, architecture, art and landscape into one integrated whole.

(1) See solution suggested in Fig. 176.
APPENDIX 1

Protection against Spoilage of Perishable Foodstuff Goods

Recent surveys have shown that about 35 millions tons of foodstuff goods are spoiled yearly through storage, conservation, and transport processes; that is, about 20% of the total world production of nourishment. Such a huge loss would have been sufficient to nourish about 150 million people for one whole year (approximately the whole population of the United States of America). Therefore one of the most important matters in planning for modern retailing is protection against spoilage of goods. Spoilage should be reduced as far as possible by adopting well-thought-out modern methods of deep freezing, rapid, smooth delivery of goods from producer to consumers (made possible by eliminating many wholesalers and middlemen) and special, quick means of transport.

APPENDIX 2

Definition of Some Shopping Centres

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales Area:</td>
<td>(Retail sales area) The total area used for selling on all sales floors.</td>
</tr>
<tr>
<td>Gross Sales Area:</td>
<td>The net sales area plus service, storage, corridors and other non-retail areas.</td>
</tr>
<tr>
<td>Parking Area:</td>
<td>The area taken by parking cars plus allowance for spaces between them, access drives, etc.</td>
</tr>
<tr>
<td>Parking Ratio:</td>
<td>$\frac{\text{Parking area}}{\text{Gross sales area}} = K$ (Coefficient)</td>
</tr>
<tr>
<td>Transportation Area:</td>
<td>Parking area plus private car movement plus public transportation area.</td>
</tr>
<tr>
<td>Buffer Area:</td>
<td>Green areas and reserve areas (for future extension).</td>
</tr>
<tr>
<td>Convenience Goods:</td>
<td>Goods bought daily or frequently such as foodstuffs and drugs.</td>
</tr>
<tr>
<td>Selectivity Goods:</td>
<td>Those selected by the customers after comparing quality, price and style, such as dresses, shoes and furniture.</td>
</tr>
<tr>
<td>Speciality Goods:</td>
<td>Those requiring from the consumer a special purchasing effort, as they are usually bought occasionally, such as luxury goods, watches and jewellery.</td>
</tr>
<tr>
<td>Land-Use Plan:</td>
<td>The plan of a certain building or building group (such as in a centre), as composed of different areas differentiated according to its function or use.</td>
</tr>
<tr>
<td>Purchasing Power:</td>
<td>(Buying Power) The capacity to purchase possessed by an individual buyer, or a group of buyers, or the aggregate of the buyers in an area or a market.</td>
</tr>
<tr>
<td>Retailing:</td>
<td>The activities incident to selling to the ultimate consumer.</td>
</tr>
<tr>
<td>Retailing Outlet:</td>
<td>A commercial or business establishment that sells mainly to the ultimate consumer.</td>
</tr>
<tr>
<td>Marketing Research:</td>
<td>(Market Analysis) The gathering, recording and analyzing of all facts about problems relating to the transfer of goods and services from the retailers to the consumers in a defined area or region.</td>
</tr>
<tr>
<td>Annual Turn-Over:</td>
<td>Total amount of sales by a commercial establishment per year.</td>
</tr>
</tbody>
</table>
Leer - Vide - Empty
REFERENCES (1)

I. Encyclopedia and Handbooks
Enc1 Wasmuths Lexikon der Baukunst
Enc2 Der Grosse Brockhaus
Enc3 Encyclopedia Britannica
Enc4 Das Fischer-Lexikon, Bände 8, 14, 21, 22 and 23.

II. Books on Economics and Retail Trade
E4 Billard, Charlotte and others: Das Shopping Center in Europa. Stiftung 'Im Grünen', Rüschlikon 1957.
E5 Bachmann, Dr. Hansruedi: Die jüngere Entwicklung im Einzelhandel. Winterthur 1959.
E8 Casto, Don M.: The Modern Concept in Mass Merchandising in Suburban Shopping. Columbus, Ohio.

III. Books on History of Development
H1 Farag, Fouad: El-Kahira. Vol. 1, 2, 3, Cairo 1946.
H4 Lawrence, A.W.: Greek Architecture. Pelican History of Art, Great Britain 1957.
H7 Robertson: Handbook of Greek and Roman Architecture.
H8 Frankl, Paul: Baukunst des Mittelalters.
H9 Aymar, Verdier and others: Architecture Civile et domestique au Moyen Age et la Renaissance. 1858.
H12 Singer, Charles and others: A History of Technology.
H15 Haskell: The New Deal in Old Rome.
H16 Holzinger, Heinrich (Prof. Dr.): Timgad und die römische Provinzialarchitektur in Nordafrika.
H17 Diez, Ernst: Islamische Baukunst in Chūrāsān.
H18 Priemke, Henri: Medieval Cities.
H21 Diez: Die Kunst der islamischen Völker.
H22 Langenegger, Felix: Die Baukunst des Iraks.
H23 Priemke, Henri: Economical and Social History of Medieval Europe.

IV. Books on Town Planning and Architectural Design and Planning
T4 Casson, Hugh: Homes by the Million. Great Britain 1946.
T7 Sert, José Louis: Can our Cities Survive? 1942.
T9 Real: Erfahrungen und Möglichkeiten bei der Aufstellung von Richtlinien für die Stadtplanung. 1950 (Thesis).
T14 Ortmann, Wulf: Städtebau früher und heute.
T15 Le Corbusier: Œuvre complète.
A2 Rannels, John: The Core of the City.

(1) References are arranged in the following sequence: Encyclopedias are mentioned first and denoted Enc, then books on economics denoted E, then books on history of development denoted H, then books on town planning denoted T, then books on architecture denoted A. Afterwards come the periodicals (m) in the same sequence.
Abschnitt I

Abschnitt I behandelt die Analyse der Entwicklung der Tendenzen in den Vertriebsformen des Einzelhandels in der Vergangenheit und Gegenwart.

In Kapitel 1 wird die historische Entwicklung der verschiedenen Arten der Detailhandelstruktur im Verlaufe der Jahrhunderte untersucht, und es wird gezeigt, wie sie stets die sich ändernden allgemeinen, wirtschaftlichen und sozialen Bedingungen bis zu den vielseitigen römischen Lebensmittelmärkten in Rom und in seinen Basiliken im 2. und 3. Jahrhundert, bis zu den überdeckten Markt- hallen (les halles) des Mittelalters, bis zur modernen Struktur des zeitgenössischen Handels, der sich in diesen Selbstbedienungsflächen, Diskonthäusern und Einkaufscentren wesenhaft äussert, verfolgt.


Abschnitt II

Abschnitt II behandelt die modernen Gesichtspunkte und Theorien der Einkaufszentren vom Standpunkte der regionalen und städtebaulichen Planung aus.


In Kapitel 5 folgt eine technische Beschreibung mit einer Darstellung der hauptsächlichsten Merkmale eines modernen Einkaufszentrums. Darauf werden die wichtigsten Arten von Einkaufszentren in bezug auf die Stadtplanung eingeteilt in:

a) Nachbarschaftseinkaufszentren (für 4 000 bis 12 000 Personen).

b) Distrikteinkaufszentren (für 20 000 bis 90 000 Personen).

c) Stadtzentren (Downtown Centre) für die ganze Stadt.

d) Die neuen Satellitenstadtzentren (für 40 000 bis 100 000 Personen).

e) Die regionalen Einkaufszentren (üblicherweise für mehr als 100 000 Personen).


Abschnitt III

Abschnitt III ist gänzlich einer ins einzelne gehenden Studie der Faktoren gewidmet, die bei der Planung eines Einkaufszentrums einer Gemeinschaft von 20 000 bis 100 000 Einwohnern in einer Vorstadt zu beachten sind.

Kapitel 6 verdeutlicht den Umstand, dass der Planungsprozess eines solchen Zentrums ein Gemeinschaftswerk sein muss, eine enge Zusammenarbeit zwischen Architekt, Wirtschaftler (Markt spezialist) und Unternehmer oder Eigentümer.

Kapitel 7 behandelt die Marktanalyse (für das Marktbereich des Shopping Centers), die der architektonischen Planung vorausgeht, da diese auf ihr aufgebaut ist. Zuerst wird der Umfang des Marktegebietes (aus welchem die Verbraucher zu erwarten) festgestellt, und es wird gezeigt, wie sie stets die sich ändernden allgemeinen Wirtschaftsverhältnisse berücksichtigen.

Kapitel 8 behandelt die Standortbestimmung und die Planung der Bebauungsfläche. Die Gesichtspunkte, die bei der Wahl des Standortes in Betracht gezogen werden müssen, die Anzahl und Qualität der Bevölkerung im Gebiet, ihre Dichte, die physikalische und topographische Beschaffenheit, die Zugänglichkeit des Standortes, seine Übersichtlichkeit und die Konkurrenz seitens der schon vorhandenen Detailhandlungen. Das Vorgehen bei der Planung der Überbauung geschieht in zwei Stufen:

1. Aufstellen eines Zonenplanes, um festzustellen, ob ein ein- oder mehrstöckiges Gebäude am besten für den Standort geeignet sei, und
2. die Wahl einer geeigneten räumlichen Gruppierung der Gebäude für das Shopping Centre: Strip, L-förmig, Mall-Centre, Cluster-Centre.

**Kapitel 10** handelt vom Vorgehen beim Planen, das sich auf die Angaben und das Material gründet, die sich aus den vorhergehen-
den Kapiteln 7, 8, 9 ergeben. Die Planung wird schrittweise folgen-
dermassen behandelt:

A. Die Einteilung der Läden in «Kundenmagneten» (Traffic-Pullers) und in Läden, die vom Kundenstrom profitieren (Traffic-Users), und ihre Zusammensetzung in einziehende oder zweiziehende oder dreiziehende Magnetschemas, um zu einer übersichtlichen Gruppierung der Läden im Zentrum zu gelangen.


C. Weiterhin werden die Grundlagen untersucht, welche die Planung kontrollieren, bezüglich des räumlichen Gruppierungs-
plans, mehrgeschossiger Typen, Planung des Untergeschosses, zukünftiger Erweiterungen, Abänderungen und Anpassun-
gen an moderne Verkaufsmethoden, wie sie in «Drive-in»-Ge-
schäften und beim Verkauf durch Automaten oder in Selbst-
bedienungsflächen auf Anwendung gelangen.

Im **Kapitel 11** wird die Konstruktion des Einkaufszentrums der Untersuchung unterzogen. Die hauptsächlichsten Punkte, welche die Wahl der geeigneten Konstruktionen beeinflussen, sind: die Lage des Standortes, seine physikalische und topographische Be-
schaffenheit, die Größe des Standortes und die verschiedenen 
rollischen Gesichtspunkte. In der Hauptsache müssen bei der Planung der Struktur folgende Umstände in Betracht gezogen werden: Der Abstand der Säulen voneinander, die Flexibilität und die Anpassungsfähigkeit an zukünftige Erweiterungen und Ab-
änderungen sowohl in waagrechter als in senkrechter Richtung und der Feuerschutz. Dann werden verschiedene Arten von Konstruk-
tionen für die Gebäude im Zentrum untersucht:
Eisenbeton, Stahlbau, Holzbau, vorfabrizierte Bauteile und solche mit grosser Spannweite zur Abdeckung der Hauptverkehrsarkaden für Fussgänger.

**Im Kapitel 12** wird der Einfluss von klimatischen Faktoren auf die Planung des Zentrums betrachtet, bezüglich:

A. Wie der Standort gewählt und geplant werden soll, um das günstigste Mikroklima zur Verfügung zu haben.
B. Die Verwendung und Konstruktion von Vorsprüngen und Vor-
dächern
C. Überdeckte Verkaufswege (covered malls)
D. Klimaanlagen
E. Heizungen

Das **Kapitel 13** ist der ästhetischen Behandlung und dem Innen-
ausbau des Zentrums vorbehalten. Es werden der einheitliche Auf-
bau, der Charakter und die geeignete Massstabe für den Auto-
benutzer wie für den zu Fuss kommenden Kunden behandelt. Es folgt eine Studie über die Front der Läden und über die Konstruk-
tionen der Schaufenster und ihre verschiedenen Typen, wobei ganz 
besonderer Nachdruck auf den Schutz gegen die Reflektierung durch das Schaufensterglas gelegt wird. Ferner wird das An-
bringen von verschiedenen Aushängebildern, Zeichen und Re-
klamen im Zentrum behandelt.

Das **Kapitel 14** ist der Gartenanlage im Zentrum vorbehalten. Es wird darin beschrieben, wie eine solche Anlage sich in die archi-
tektonische Planung der Gebäude im Zentrum fügen kann. Das ist sehr wesentlich, da es im grossen Massstab dazu beiträgt, eine fröhliche, anziehende Atmosphäre für das Einkaufen zu schaffen.

**Abschnitt IV**

Abschnitt IV stellt den Abschluss dar und ist den vorgeschlage-
nen Richtlinien für die Planung eines Distrikt Shopping Centre in der ägyptischen Zone vorbehalten. In schrittweiser Folge (in der-
selben Folge wie in Abschnitt II, Kapitel 6 bis Kapitel 14) werden alle Gesichtspunkte der Planung untersucht, angefangen von der Städteplanung über die Marktanalyse, über die Wahl des Stand-
ortes, über die Art seiner Verwendung (Land-use plan), über die Wahl der Struktur des Zentrums, über die Untersuchung der Ver-
kehrsprobleme und über den Betriebs- und Verkaufsplan (Mer-
chandising plan) bis zu den Prinzipien architektonischer Gruppie-
run, bis zur Inbegriffenheit der klimatischen Verhältnisse und schliesslich bis zur ästhetischen Behandlung und landschaftlichen Gestaltung der Gartenanlagen. Alle diese Vorschläge wurden unter-
breitet, um den Anforderungen Ägyptens zu entsprechen, und zwar 
unter der Berücksichtigung der örtlichen Bedingungen, welche die städtebauliche Entwicklung der Vorstädte unter den geographischen, klimatischen, sozialen und wirtschaftlichen Bedingungen beein-
flussen.
Leer - Vide - Empty
Ich bestätige hiermit, dass ich die vorliegende Promotionsarbeit über «Analytical study of the underlying factors governing the design of the Consumers' Community Shopping Centres» selbständig verfasst habe.

(A. Kamal Mahmoud Abdel-Fattah)
Architect Ahmed Kamal Mahmoud Abdel-Fattah, son of late Mahmoud Abdel-Fattah, LL.B., (Ex-Assistant Secretary of Ministry of Finance of the U.A.R.), was born in Om-Knan, Menofeya Province, Egypt on the 1st of February 1930. After finishing his studies in the primary and secondary schools, he entered the Architectural Department, Faculty of Engineering, Cairo University in 1946. In May 1951, he obtained his degree of Bachelor of Architecture. His first architectural practice was in the Department of Military Projects, Ministry of Defence, where he collaborated in designing some military factories, a cemetery and a swimming pool. Then he was appointed as an assistant in the teaching staff of the Architectural Department, Faculty of Engineering, Ein-shams University from 1952 to 1958. During the same time, he proceeded with his architectural practicing in his private office, which he had opened in 1954.

In 1955, he won with the collaboration of Architect Abdel-Fattah Shihata, the first prize of a competition for planning a housing project for the employees of Port-Said (1200 inhabitants), which had been executed in 1960. Also he designed and controlled the execution of several villas and apartment houses in both the Egyptian Region and Saudi Arabia. In the latter he was entrusted to design 2 villas for Prince Khalid-Ibn-Saud and Prince Abdel-Megeed-Ibn-Saud (built in Al-Riad in 1957), and a housing project for the employees of Al-Riad’s Municipality.

From 1952 to 1955, he devoted a part of his time for post-graduate studies in Islamic Art and Architecture at the Institute of Islamic Archaeology, Cairo University. In May 1955 he obtained the Diploma of these higher studies and registered for the Doctorate Degree in Islamic Architecture, Cairo University. From 1957 to 1958, beside his work in Ein-Shams University, he was appointed as delegate Architect and planner in the Design Department of Al-Tahrir, Province in the Egyptian Region.

In 1958, Mr. Abdel-Fattah obtained a scholarship of Ein-Shams University to study for the Doctorate Degree in Architectural Design at the Swiss Federal Institute of Technology, E.T.H., in Zurich. He reached Zurich in May 1958. Under the guidance of Prof. Dr. W. M. Moser, Prof. W. Custer, Prof. B. Hoesli and Architect E. Weber, he designed the architectural and town-planning projects of the 6th and 7th semesters (1958—1959). In October 1959 he passed the admission examination for the research work. In the same month he began his work on ‘The Community Shopping Centres’ thesis. The thesis has been accepted on the recommendation of both Prof. W. M. Moser and Prof. B. Hoesli and he passed the Doctorate Degree Examination on 20 December 1961.

During his stay in Europe, Mr. Abdel-Fattah visited London and the satellite towns around it, Paris, Germany and Belgium to see and get first-hand informations about architectural projects related to his thesis.